A318/A319/A320/A321

FLIGHT CREW OPERATING MANUAL

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TRANSMITTAL LETTER

Issue date: 21 JAN 19

This is the FLIGHT CREW OPERATING MANUAL at issue date 21 JAN 19 for the A318/A319/A320/A321 and replacing last issue dated 14 JAN 19

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FILING INSTRUCTIONS

Please incorporate this revision as follow:

Localization Subsection Title	Remove	Insert Rev. Date
PLP-LESS **LIST OF EFFECTIVE SECTIONS/SUBSECTIONS**	ALL	21 JAN 19
PLP-AAT **AIRCRAFT ALLOCATION TABLE**	ALL	21 JAN 19
PLP-LOM **LIST OF MODIFICATIONS**	ALL	21 JAN 19
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DSC-20-30 **Ground Handling**	ALL	21 JAN 19
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DSC-22_10-40-50 **Navigation Display**	ALL	21 JAN 19
DSC-22_10-50-20 **Characteristic Speeds**	ALL	21 JAN 19
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DSC-22_20-30-20-28 **FMS2 Thales**	ALL	21 JAN 19

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DSC-22_20-90-10 **FMGC Reset**	ALL	21 JAN 19
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PRO-ABN-COM **COM**	ALL	21 JAN 19
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PRO-ABN-DATALINK **DATALINK**	ALL	21 JAN 19
PRO-ABN-DOOR **DOOR**	ALL	21 JAN 19
PRO-ABN-EIS **EIS**	ALL	21 JAN 19
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PRO-ABN-ENG **ENG**	ALL	21 JAN 19
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PRO-NOR-SOP-14 **Climb**	ALL	21 JAN 19
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	DSC-33-40-10	**Controls and Indicators**	22 MAR 16
	DSC-34-NAV-10-10	**Description**	22 MAR 16
E	DSC-34-NAV-10-20	**Controls and Indicators**	21 JAN 19
	DSC-34-NAV-15-10	**Description**	22 MAR 16
E	DSC-34-NAV-20	**Standby Instruments**	21 JAN 19
	DSC-34-NAV-30-10	**Tuning**	22 MAR 16
E	DSC-34-NAV-30-20	**Navaids**	21 JAN 19
	DSC-34-NAV-30-30	**Controls and Indicators**	22 MAR 16
	DSC-34-NAV-40-10	**Description**	22 MAR 16
E	DSC-34-SURV-10-10	**Description**	21 JAN 19
E	DSC-34-SURV-10-20	**Controls and Indicators**	21 JAN 19
	DSC-34-SURV-10-30	**Remote ATC Box**	31 DEC 18
E	DSC-34-SURV-30-10	**Description**	21 JAN 19
E	DSC-34-SURV-30-15	**On Path Envelope Boundaries Definition**	21 JAN 19
E	DSC-34-SURV-30-20	**Predictive Windshear System**	21 JAN 19
E	DSC-34-SURV-30-30	**Controls and Indicators**	21 JAN 19
	DSC-34-SURV-40-10	**Description**	22 MAR 17
E	DSC-34-SURV-40-20	**GPWS Basics Modes**	21 JAN 19
E	DSC-34-SURV-40-35	**Predictive GPWS Functions**	21 JAN 19
E	DSC-34-SURV-40-40	**Controls and Indicators**	21 JAN 19
E	DSC-34-SURV-60-10	**Description**	21 JAN 19
E	DSC-34-SURV-60-20	**Controls and Indicators**	21 JAN 19
	DSC-35-10	**General**	07 APR 11
E	DSC-35-20-10	**Description**	21 JAN 19
E	DSC-35-20-20	**Controls and Indicators**	21 JAN 19
	DSC-35-30-10	**Description**	17 MAY 16
E	DSC-35-30-20	**Controls and Indicators**	21 JAN 19
E	DSC-35-40-10	**Description**	21 JAN 19
	DSC-36-10-10	**General**	22 MAR 17
E	DSC-36-10-20	**Engine Bleed System**	21 JAN 19
	DSC-36-10-30	**APU Bleed Air Supply**	20 NOV 17
E	DSC-36-10-40	**Crossbleed**	21 JAN 19
E	DSC-36-10-50	**Leak Detection**	21 JAN 19
E	DSC-36-10-60	**Operation Following Failures**	21 JAN 19
E	DSC-36-20	**Controls and Indicators**	21 JAN 19
E	DSC-38-10	**Description**	21 JAN 19
	DSC-45-10	**Description**	22 MAR 16

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	DSC-45-20	System Operation	22 MAR 16
	DSC-45-25	Data Loading	11 JAN 13
	DSC-45-30	Printer	22 MAR 16
E	DSC-46-10-10	General System Description	21 JAN 19
	DSC-46-10-20-10	General	22 MAR 17
	DSC-46-10-30-10	Notifications	31 DEC 18
	DSC-46-10-30-20	Controller/Pilot Datalink Communication (CPDLC)	31 DEC 18
	DSC-46-10-30-40	Departure Clearance (DCL)	31 DEC 18
	DSC-46-10-30-50	Oceanic Clearance (OCL)	31 DEC 18
	DSC-46-10-30-60	Digital - Automatic Terminal Information Service (D-ATIS)	31 DEC 18
	DSC-46-10-30-70	Message Record	31 DEC 18
	DSC-46-10-40-10	ATC Message Pushbutton (ATC MSG PB)	31 DEC 18
	DSC-46-10-40-20	Datalink Control and Display Unit (DCDU)	31 DEC 18
E	DSC-46-10-40-30	MCDU Datalink Pages	21 JAN 19
E	DSC-46-10-40-40	MCDU Scratchpad Messages	21 JAN 19
	DSC-46-10-40-50	MCDU Data Entry Format	31 DEC 18
	DSC-46-10-40-60	ECAM	22 MAR 17
E	DSC-46-10-50	How To	21 JAN 19
	DSC-46-20-20	Applications	16 AUG 17
	DSC-46-30	Electronic QRH (eQRH)	22 MAR 17
	DSC-46-40-10	General	14 MAY 18
	DSC-46-40-20	In Seat Power Supply System	14 MAY 18
	DSC-46-40-30	Controls and Indicators	18 JUN 18
E	DSC-49-10-10	General	21 JAN 19
E	DSC-49-10-20	Main Components	21 JAN 19
E	DSC-49-20	Controls and Indicators	21 JAN 19
E	DSC-52-10-10	General	21 JAN 19
	DSC-52-10-20	Passenger Doors	22 MAR 16
E	DSC-52-10-30	Emergency Exits	21 JAN 19
	DSC-52-10-40	Cargo Doors	22 MAR 17
	DSC-52-10-50	Avionics Compartment Access Door	22 MAR 16
	DSC-52-10-60	Cockpit Door	22 MAR 17
E	DSC-52-10-80	Escape Slides/Rafts	21 JAN 19
E	DSC-52-20	Controls and Indicators	21 JAN 19
	DSC-52-40-10	Description	22 MAR 17
E	DSC-52-40-20	Cockpit Door Locking System (CDLS)	21 JAN 19
E	DSC-52-40-30	Cockpit Door Surveillance System (CDSS)	21 JAN 19
	DSC-52-50	How to	22 MAR 17
	DSC-56-10	General	22 MAR 17

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M(1)	Localization	Subsection Title	Rev. Date
	DSC-56-20	**Fixed Windows**	22 MAR 17
	DSC-56-30	**Sliding Windows**	22 MAR 17
	DSC-56-40	**Description**	22 MAR 17
E	DSC-70-05	**Overview**	21 JAN 19
E	DSC-70-10	**System Description**	21 JAN 19
E	DSC-70-20	**FADEC**	21 JAN 19
E	DSC-70-30-10	**General**	21 JAN 19
E	DSC-70-30-20	**Thrust Levers**	21 JAN 19
E	DSC-70-30-30	**Thrust Rating Limit**	21 JAN 19
E	DSC-70-30-40	**Thrust Control**	21 JAN 19
E	DSC-70-35-10	**General**	15 OCT 18
E	DSC-70-35-20	**Engine Power Setting**	15 OCT 18
E	DSC-70-35-30	**Thrust Levers**	15 OCT 18
E	DSC-70-35-40	**Thrust Rating Limit**	15 OCT 18
E	DSC-70-35-50	**Thrust Control**	15 OCT 18
	DSC-70-40	**Fuel System (CFM56)**	15 OCT 18
E	DSC-70-45	**Fuel System (IAE)**	15 OCT 18
E	DSC-70-48	**Fuel System (PW1100G)**	21 JAN 19
E	DSC-70-50	**Oil System**	21 JAN 19
	DSC-70-60	**Airbleed System (CFM56)**	15 OCT 18
E	DSC-70-65	**Airbleed System (IAE)**	21 JAN 19
E	DSC-70-68	**Airbleed System (PW1100G)**	21 JAN 19
E	DSC-70-70	**Thrust Reverser System**	21 JAN 19
	DSC-70-80-10	**General**	22 MAR 17
E	DSC-70-80-20	**Architecture**	21 JAN 19
E	DSC-70-80-30	**Ignition System**	21 JAN 19
R	DSC-70-80-40	**Engine Starting System**	21 JAN 19
E	DSC-70-90-10	**Overhead Panel**	21 JAN 19
	DSC-70-90-20	**Pedestal**	22 MAR 17
	DSC-70-90-30	**Maintenance Panel**	24 OCT 16
E	DSC-70-90-40	**Engine Display**	21 JAN 19
E	DSC-70-90-50	**Memo Display**	21 JAN 19
R	PRO-PLP-LETDU	**LIST OF EFFECTIVE TEMPORARY DOCUMENTARY UNITS**	21 JAN 19
	PRO-ABN-ABN-00	**INTRODUCTION**	13 MAR 18
E	PRO-ABN-ABN-ADV	**[ADV] ECAM ADVISORY**	21 JAN 19
E	PRO-ABN-ABN-MEM	**[MEM] MEMORY ITEMS**	21 JAN 19
E	PRO-ABN-ABN-QRH	**[QRH] PROCEDURES**	21 JAN 19
E	PRO-ABN-ABN-RESET	**[RESET] SYSTEM RESET**	21 JAN 19
E	PRO-ABN-A-ICE	**A-ICE**	21 JAN 19

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M(1)	Localization	Subsection Title	Rev. Date
E	PRO-ABN-AIR	**AIR**	21 JAN 19
	PRO-ABN-APU	**APU**	22 MAR 17
	PRO-ABN-APUF	**APU FIRE**	22 MAR 17
E	PRO-ABN-AUTO_FLT	**AUTO FLT**	21 JAN 19
	PRO-ABN-AVNCS	**AVIONICS SMOKE**	22 MAR 17
E	PRO-ABN-BLEED	**BLEED**	21 JAN 19
E	PRO-ABN-BRAKES	**BRAKES**	21 JAN 19
E	PRO-ABN-NWS	**BRAKES-N/WS**	21 JAN 19
E	PRO-ABN-CAB_PR	**CAB PR**	21 JAN 19
	PRO-ABN-CRG_SMOKE	**CARGO SMOKE**	14 MAY 18
	PRO-ABN-C_B	**C/B**	22 MAR 17
E	PRO-ABN-COM	**COM**	21 JAN 19
E	PRO-ABN-COND	**COND**	21 JAN 19
	PRO-ABN-CONFIG	**CONFIG**	25 APR 17
E	PRO-ABN-DATALINK	**DATALINK**	21 JAN 19
E	PRO-ABN-DOOR	**DOOR**	21 JAN 19
E	PRO-ABN-EIS	**EIS**	21 JAN 19
E	PRO-ABN-ELEC	**ELEC**	21 JAN 19
R	PRO-ABN-ENG	**ENG**	21 JAN 19
E	PRO-ABN-F_CTL	**F/CTL**	21 JAN 19
E	PRO-ABN-FUEL	**FUEL**	21 JAN 19
	PRO-ABN-FWS	**FWS**	14 SEP 18
E	PRO-ABN-HYD	**HYD**	21 JAN 19
E	PRO-ABN-LG	**L/G**	21 JAN 19
E	PRO-ABN-MISC	**MISC**	21 JAN 19
E	PRO-ABN-NAV	**NAV**	21 JAN 19
E	PRO-ABN-OVERSPEED	**OVERSPEED**	21 JAN 19
	PRO-ABN-RECORDER	**RECORDER**	22 MAR 17
	PRO-ABN-SEVERE_ICE	**SEVERE ICE**	31 DEC 18
E	PRO-ABN-SMOKE	**SMOKE**	21 JAN 19
E	PRO-ABN-SURV	**SURV**	21 JAN 19
E	PRO-ABN-VENT	**VENT**	21 JAN 19
E	PRO-ABN-WHEEL	**WHEEL**	21 JAN 19
E	PRO-ABN-W_A_ICE	**WING A.ICE**	21 JAN 19
	PRO-ABN-W_S	**WINDSHEAR**	18 JUN 18
E	PRO-ABN-90	**Detailed Cabin / Cockpit Evacuation Procedure**	21 JAN 19
	PRO-NOR-SOP-01	**General Information**	05 DEC 17
E	PRO-NOR-SOP-02	**Flight Preparation**	21 JAN 19
	PRO-NOR-SOP-03	**Safety Exterior Inspection**	05 DEC 17

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M(1)	Localization	Subsection Title	Rev. Date
E	PRO-NOR-SOP-04	Preliminary Cockpit Preparation	21 JAN 19
E	PRO-NOR-SOP-05	Exterior Walkaround	21 JAN 19
R	PRO-NOR-SOP-06	Cockpit Preparation	21 JAN 19
E	PRO-NOR-SOP-07	Before Pushback or Start	21 JAN 19
E	PRO-NOR-SOP-08	Engine Start	21 JAN 19
E	PRO-NOR-SOP-09	After Start	21 JAN 19
E	PRO-NOR-SOP-10	Taxi	21 JAN 19
E	PRO-NOR-SOP-11	Before Takeoff	21 JAN 19
E	PRO-NOR-SOP-12	Takeoff	21 JAN 19
E	PRO-NOR-SOP-13	After Takeoff	21 JAN 19
E	PRO-NOR-SOP-14	Climb	21 JAN 19
E	PRO-NOR-SOP-15	Cruise	21 JAN 19
E	PRO-NOR-SOP-16	Descent Preparation	21 JAN 19
E	PRO-NOR-SOP-17	Descent	21 JAN 19
E	PRO-NOR-SOP-18-A	Approach General	21 JAN 19
E	PRO-NOR-SOP-18-B	Aircraft Configuration Management	21 JAN 19
E	PRO-NOR-SOP-18-C	Aircraft Guidance Management	21 JAN 19
E	PRO-NOR-SOP-19	Landing	21 JAN 19
E	PRO-NOR-SOP-20	Go-Around	21 JAN 19
E	PRO-NOR-SOP-21	After Landing	21 JAN 19
E	PRO-NOR-SOP-22	Parking	21 JAN 19
E	PRO-NOR-SOP-23	Securing the Aircraft	21 JAN 19
E	PRO-NOR-SOP-90	Standard Callouts	21 JAN 19
E	PRO-NOR-SUP-SUP	Supplementary Procedures Menu	21 JAN 19
E	PRO-NOR-SUP-ADVWXR	Adverse Weather	21 JAN 19
E	PRO-NOR-SUP-ENG	Engines	21 JAN 19
E	PRO-NOR-SUP-FUEL	Fuel	21 JAN 19
E	PRO-NOR-SUP-LG-LG_DN	Flight with Landing Gear Down	21 JAN 19
	PRO-NOR-SUP-LG-LG	Operation with Nosewheel Steering Offset	16 AUG 17
E	PRO-NOR-SUP-MISC-D	Pushback with Power Push Unit	21 JAN 19
E	PRO-NOR-SUP-MISC-A	High Altitude Airport Operations	21 JAN 19
E	PRO-NOR-SUP-MISC-C	Operations at QNH Above 1050 hPa	21 JAN 19
E	PRO-NOR-SUP-SURV	Surveillance	21 JAN 19
	PRO-NOR-SRP-01-05	Introduction	13 NOV 12
E	PRO-NOR-SRP-01-10	Cockpit Preparation	21 JAN 19
E	PRO-NOR-SRP-01-15	Before Pushback or Start	21 JAN 19
E	PRO-NOR-SRP-01-20	Taxi	21 JAN 19
E	PRO-NOR-SRP-01-30	Takeoff	21 JAN 19
E	PRO-NOR-SRP-01-40	Climb	21 JAN 19

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M(1)	Localization	Subsection Title	Rev. Date
E	PRO-NOR-SRP-01-50	Cruise	21 JAN 19
E	PRO-NOR-SRP-01-60	Descent	21 JAN 19
E	PRO-NOR-SRP-01-70	Approach	21 JAN 19
E	PRO-NOR-SRP-01-80	Go-Around	21 JAN 19
E	PRO-SPO-20	Flight Without Cabin Pressurization	21 JAN 19
	PRO-SPO-40-10	General	17 JUL 15
	PRO-SPO-40-20	Operational Limitations	22 MAR 17
	PRO-SPO-40-30	Dispatch Consideration	17 JUL 15
	PRO-SPO-40-40	Diversion During Extended Range Operations	22 MAR 17
E	PRO-SPO-40-50	Procedures	21 JAN 19
E	PRO-SPO-40-60	Performance	21 JAN 19
E	PRO-SPO-43	FADEC Intermix Operations	21 JAN 19
	PRO-SPO-45	Engine Intermix Operations	15 OCT 18
	PRO-SPO-50	Reduced Vertical Separation Minimum - RVSM	22 MAR 17
	PRO-SPO-51	Performance-Based Navigation (PBN)	18 JUN 18
E	PRO-SPO-60	Operations on Narrow Runways	21 JAN 19
	PRO-SPO-63	Operations at LEH	24 SEP 18
	PRO-SPO-85	ILS PRM Approach	22 MAR 17
R	LIM-PLP-LETDU	LIST OF EFFECTIVE TEMPORARY DOCUMENTARY UNITS	21 JAN 19
	LIM-INT	Introduction	03 OCT 17
	LIM-AG-F_CTL	Flight Maneuvering Load Acceleration Limits	22 MAR 17
E	LIM-AG-OPS	Operational Parameters	21 JAN 19
E	LIM-AG-SPD	Speeds	21 JAN 19
E	LIM-AG-WGHT	Weights	21 JAN 19
	LIM-AIR	Air Bleed/Cond/Press/Vent	22 MAR 17
E	LIM-AFS-10	General	21 JAN 19
E	LIM-AFS-20	Automatic Approach, Landing and Rollout	21 JAN 19
E	LIM-APU	Auxiliary Power Unit	21 JAN 19
	LIM-CAB	Cabin Systems	31 DEC 18
	LIM-COM	Communication	15 MAY 17
E	LIM-ENG	Engines	21 JAN 19
	LIM-F_CTL	Flight Controls	22 MAR 17
E	LIM-FUEL	Fuel	21 JAN 19
	LIM-ICE_RAIN	Ice and Rain Protection	18 JUN 18
	LIM-LG	Landing Gear	03 OCT 17
E	LIM-NAV	Navigation	21 JAN 19
E	LIM-OXY	Oxygen	21 JAN 19
	LIM-SURV	Surveillance	20 AUG 18
	OEB-PLP-LETDU	LIST OF EFFECTIVE TEMPORARY DOCUMENTARY UNITS	11 JAN 13

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M(1)	Localization	Subsection Title	Rev. Date
	OEB-PLP-LEOEB	LIST OF EFFECTIVE OPERATIONS ENGINEERING BULLETIN	14 JAN 19
	PER-PLP-LETDU	LIST OF EFFECTIVE TEMPORARY DOCUMENTARY UNITS	11 JAN 13
	PER-LOD-GEN	GENERAL	20 AUG 10
E	PER-LOD-CGO	CARGO LOADING	21 JAN 19
E	PER-LOD-FUL	FUEL	21 JAN 19
E	PER-LOD-WBA-LTS	LOAD AND TRIM SHEET	21 JAN 19
E	PER-LOD-WBA-FIT-10	FUEL INDEX TABLE	21 JAN 19
	PER-OPD-GEN	GENERAL	07 APR 11
E	PER-OPD-CON-AEO	ALL ENGINES OPERATIVE	21 JAN 19
E	PER-OPD-CON-OEI	ONE ENGINE INOPERATIVE	21 JAN 19
	PER-THR-GEN	GENERAL	07 APR 11
E	PER-THR-MTO	MAXIMUM TAKEOFF	21 JAN 19
E	PER-THR-MGA	MAXIMUM GO AROUND	21 JAN 19
E	PER-THR-FLX	FLEXIBLE TAKEOFF	21 JAN 19
E	PER-THR-MCT	MAXIMUM CONTINUOUS	21 JAN 19
E	PER-THR-MCL	MAXIMUM CLIMB	21 JAN 19
E	PER-THR-MCR	MAXIMUM CRUISE	21 JAN 19
E	PER-THR-N1	N1 MODE THRUST CONTROL	15 OCT 18
	PER-TOF-THR-FLX-10	DEFINITION OF FLEXIBLE TAKEOFF	07 APR 11
	PER-TOF-THR-FLX-20	USE OF FLEXIBLE TAKEOFF	07 APR 11
E	PER-TOF-THR-FLX-30	REQUIREMENTS	21 JAN 19
	PER-TOF-THR-FLX-40	RECOMMENDATION	22 DEC 15
	PER-TOF-TOC-05	INTRODUCTION	07 APR 11
	PER-TOF-TOC-10-10	TAKEOFF PERFORMANCE	07 APR 11
E	PER-TOF-TOC-10-20	TAKEOFF CHART DESCRIPTION	21 JAN 19
E	PER-TOF-TOC-10-30	ADDITIONAL INFORMATION	21 JAN 19
	PER-TOF-TOC-12-10	DETERMINATION OF MAXIMUM TAKEOFF WEIGHT AND SPEEDS	06 AUG 18
E	PER-TOF-TOC-12-30	EXTRAPOLATION	21 JAN 19
	PER-TOF-TOC-12-40	MAXIMUM STRUCTURAL TAKEOFF WEIGHT	07 APR 11
	PER-TOF-TOC-12-50	SUMMARY	07 APR 11
E	PER-TOF-TOC-14-10	DETERMINATION OF FLEXIBLE TAKEOFF TEMPERATURE AND SPEEDS	21 JAN 19
	PER-TOF-TOC-14-20	FLEXIBLE TAKEOFF NOT POSSIBLE	15 OCT 13
	PER-TOF-TOC-14-25	FLEXIBLE TAKEOFF POSSIBLE BUT NOT USED	15 OCT 13
	PER-TOF-TOC-14-30	SUMMARY	07 APR 11
	PER-TOF-TOC-16-10	TAKEOFF PERFORMANCE	17 JUL 15
E	PER-TOF-TOC-16-20	TAKEOFF CHART DESCRIPTION	21 JAN 19
E	PER-TOF-TOC-16-30	ADDITIONAL INFORMATION	21 JAN 19

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M(1)	Localization	Subsection Title	Rev. Date
	PER-TOF-TOC-18-10	DETERMINATION OF MAXIMUM TAKEOFF WEIGHT AND SPEEDS	10 AUG 16
E	PER-TOF-TOC-18-20	EXTRAPOLATION	21 JAN 19
	PER-TOF-TOC-18-30	MAXIMUM STRUCTURAL TAKEOFF WEIGHT	07 APR 11
	PER-TOF-TOC-18-40	SUMMARY	07 APR 11
E	PER-TOF-TOC-20-10	DETERMINATION OF FLEXIBLE TAKEOFF TEMPERATURE AND SPEEDS	21 JAN 19
	PER-TOF-TOC-20-20	FLEXIBLE TAKEOFF NOT POSSIBLE	07 APR 11
	PER-TOF-TOC-20-30	SUMMARY	07 APR 11
E	PER-TOF-TOD-24	QNH/BLEEDS CORRECTION	21 JAN 19
E	PER-TOF-TOD-25-10	SPEEDS LIMITED BY VMCG/VMCA	21 JAN 19
R	PER-TOF-TOD-25-20	V2 LIMITED BY VMU/VMCA	21 JAN 19
	PER-TOF-CTA-10	GENERAL	23 SEP 14
	PER-TOF-CTA-20	DEFINITIONS	13 MAR 18
	PER-TOF-CTA-30	OPERATIONAL CONDITIONS	14 SEP 18
E	PER-TOF-CTA-40-10	TAKEOFF PERFORMANCE	21 JAN 19
E	PER-TOF-CTA-40-20	TAKEOFF FROM A WET RUNWAY	21 JAN 19
	PER-TOF-CTA-40-40	EXAMPLE	13 MAR 18
E	PER-FPL-GEN-MFR	MINIMUM RECOMMENDED FUEL REQUIREMENTS	21 JAN 19
	PER-FPL-GEN-FPL	FLIGHT PLAN	07 APR 11
E	PER-FPL-FLP-QFP-10	INTRODUCTION	21 JAN 19
	PER-FPL-FLP-QFP-20	CORRECTION FOR DEVIATION FROM REFERENCE LANDING WEIGHT	03 OCT 17
	PER-FPL-FLP-QFP-30	EXAMPLE	16 AUG 17
E	PER-FPL-FLP-QFP-40	FLIGHT PLANNING AT A GIVEN MACH NUMBER	21 JAN 19
E	PER-FPL-FLP-QFP-50	FLIGHT PLANNING AT LONG RANGE SPEED	21 JAN 19
E	PER-FPL-FLP-ALN-20	ALL ENGINES OPERATIVE	21 JAN 19
	PER-CLB-GEN	GENERAL	07 APR 11
E	PER-CLB-CLT	CLIMB TABLES	21 JAN 19
	PER-CRZ-ALT-10	OPTIMUM AND MAXIMUM ALTITUDES	22 MAR 17
E	PER-CRZ-ALT-20	WIND ALTITUDE TRADE FOR CONSTANT SPECIFIC RANGE	21 JAN 19
	PER-CRZ-CRT-10	GENERAL	24 OCT 16
E	PER-CRZ-CRT-20	CRUISE AT M.78	21 JAN 19
E	PER-CRZ-CRT-30	CRUISE AT LONG RANGE	21 JAN 19
E	PER-CRZ-ICQ-10	GENERAL	21 JAN 19
	PER-CRZ-ICQ-20	EXAMPLE	22 MAR 17
E	PER-HLD-GEN	GENERAL	21 JAN 19
E	PER-HLD-HLD	HOLDING TABLES	21 JAN 19
	PER-DES-GEN	GENERAL	20 AUG 10
E	PER-DES-STD	STANDARD	21 JAN 19

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M(1)	Localization	Subsection Title	Rev. Date
E	PER-DES-EMG	**EMERGENCY**	21 JAN 19
E	PER-GOA-GEN	**GENERAL**	21 JAN 19
E	PER-GOA-ACG-NOR	**NORMAL**	21 JAN 19
E	PER-GOA-ACG-CAT	**CAT II**	21 JAN 19
	PER-LDG-GEN	**GENERAL**	25 APR 17
	PER-LDG-CTA-10	**GENERAL**	23 SEP 14
	PER-LDG-CTA-20	**DEFINITIONS**	13 MAR 18
	PER-LDG-DIS-MAT	**Runway Condition Assessment Matrix for Landing**	18 JUN 18
E	PER-LDG-DIS-RLD	**REQUIRED LANDING DISTANCES / MANUAL LANDING**	21 JAN 19
E	PER-LDG-DIS-RLA	**REQUIRED LANDING DISTANCES**	21 JAN 19
	PER-OEI-GEN	**GENERAL**	22 MAR 17
	PER-OEI-ALT-10	**CEILINGS**	22 MAR 17
E	PER-OEI-CRT-10	**STANDARD AND OBSTACLE STRATEGIES**	21 JAN 19
E	PER-OEI-CRT-20	**FIXED SPEED STRATEGIES**	21 JAN 19
E	PER-OEI-ICQ-10	**STANDARD STRATEGIES**	21 JAN 19
E	PER-OEI-ICQ-20	**FIXED SPEED STRATEGIES**	21 JAN 19
E	PER-OEI-HLD	**HOLDING**	21 JAN 19
E	PER-OEI-DES-10	**STANDARD STRATEGY**	21 JAN 19
E	PER-OEI-DES-15	**OBSTACLE STRATEGY**	21 JAN 19
E	PER-OEI-DES-20	**FIXED SPEED STRATEGIES**	21 JAN 19
E	PER-OEI-DES-30	**DESCENT TO LANDING**	21 JAN 19

(1) Evolution code : N=New, R=Revised, E=Effectivity, M=Moved

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This table gives, for each delivered aircraft, the cross reference between:

- The Manufacturing Serial Number (MSN).
- The Fleet Serial Number (FSN) of the aircraft as known by AIRBUS S.A.S.
- The registration number of the aircraft as known by AIRBUS S.A.S.
- The aircraft model.

M(1)	MSN	FSN	Registration Number	Model
	01767		VT-IDV	320-214
	01920		VT-IDS	320-214
	01957		VT-IKC	320-232
	02097		VT-IHW	320-232
	02108		VT-IDQ	320-232
	02121		VT-IHU	320-232
	02135		VT IKD	320-232
	02138		VT-IKE	320-232
	02139		VT-IKA	320-232
	02195		VT-IHV	320-232
	02204		VT-IDM	320-232
	02275		VT-IDO	320-232
	02334		VT-IDN	320-232
	02359		VT-IDP	320-232
	02388		VT-IHT	320-214
	02405		VT-IHE	320-232
	02443		VT-IHS	320-232
	02457		VT-IDU	320-232
	02482		VT-IHF	320-232
	02584		VT-IHC	320-214
	02609		VT-IHK	320-232
	02626		VT-IHL	320-232
	02649		VT-IDR	320-232
	02670		VT-IHQ	320-232

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M(1)	MSN	FSN	Registration Number	Model
	02712		VT-IHB	320-214
	02737		VT-IHM	320-232
	02804		VT-IHJ	320-232
	02908		VT-IKB	320-232
	02914		VT-IHD	320-232
	03071		VT-IHZ	320-232
	03138		VT-IHH	320-214
	03264		VT-IDZ	320-232
	03308		VT-IHG	320-232
	03330		VT-IHA	320-232
	03357		VT-INP	320-232
	03414		VT-INQ	320-232
	03453		VT-INR	320-232
	03457		VT-INS	320-232
	03497		VT-INT	320-232
	03541		VT-INU	320-232
	03618		VT-INV	320-232
	03750		VT-IDW	320-214
	03782		VT-INX	320-232
	03863		VT-INY	320-232
	03943		VT-INZ	320-232
	04008		VT-IGH	320-232
	04113		VT-IGI	320-232
	04156		VT-IGJ	320-232
	04216		VT-IGK	320-232
	04294		VT-IHP	320-214
	04312		VT-IGL	320-232
	04314		VT-IKF	320-214

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M[1]	MSN	FSN	Registration Number	Model
	04328		VT-IGS	320-232
	04384		VT-IGT	320-232
	04393		VT-IKG	320-214
	04394		VT-IKH	320-214
	04397		VT-IKJ	320-214
	04399		VT-IDX	320-214
	04433		VT-IHO	320-214
	04438		VT-IDY	320-214
	04481		VT-IGV	320-232
	04488		VT-IGU	320-232
	04491		VT-IHX	320-232
	04506		VT-IGW	320-232
	04510		VT-IHN	320-214
	04518		VT-IGX	320-232
	04532		VT-IHY	320-232
	04535		VT-IGY	320-232
	04552		VT-IGZ	320-232
	04603		VT-IEA	320-232
	04609		VT-IEB	320-232
	04614		VT-IEC	320-232
	04630		VT-IED	320-232
	04637		VT-IEE	320-232
	04645		VT-IKI	320-232
	04752		VT-IEF	320-232
	04757		VT-IEH	320-232
	04762		VT-IEG	320-232
	04813		VT-IEI	320-232
	04818		VT-IEJ	320-232

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M(1)	MSN	FSN	Registration Number	Model
	04868		VT-IEK	320-232
	04888		VT-IEL	320-232
	04947		VT-IEM	320-232
	04954		VT-IEN	320-232
	04965		VT-IEO	320-232
	05027		VT-IEP	320-232
	05036		VT-IEQ	320-232
	05076		VT-IER	320-232
	05080		VT-IEV	320-232
	05090		VT-IES	320-232
	05092		VT-IEU	320-232
	05094		VT-IET	320-232
	05120		VT-IDL	320-232
	05155		VT-IEW	320-232
	05158		VT-IDT	320-232
	05190		VT-IEX	320-232
	05218		VT-IHR	320-232
	05230		VT-IEY	320-232
	05231		VT-IEZ	320-232
	05259		VT-IFA	320-232
	05262		VT-IFB	320-232
	05291		VT-IFC	320-232
	05298		VT-IFD	320-232
	05313		VT-IFE	320-232
	05365		VT-IFF	320-232
	05411		VT-IFG	320-232
	05437		VT-IFH	320-232
	05460		VT-IFI	320-232

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M[1]	MSN	FSN	Registration Number	Model
	05473		VT-IFJ	320-232
	05476		VT-IFK	320-232
	05507		VT-IFL	320-232
	05537		VT-IFM	320-232
	05577		VT-IFN	320-232
	05641		VT-IFO	320-232
	05676		VT-IFP	320-232
	05683		VT-IFQ	320-232
	05712		VT-IFR	320-232
	05727		VT-IFS	320-232
	05744		VT-IFT	320-232
	05807		VT-IFU	320-232
	05829		VT-IFV	320-232
	05893		VT-IFW	320-232
	05898		VT-IFX	320-232
	05923		VT-IFY	320-232
	05952		VT-IFZ	320-232
	05992		VT-IAL	320-232
	06010		VT-IAN	320-232
	06036		VT-IAO	320-232
	06208		VT-IAP	320-232
	06247		VT-IAQ	320-232
	06275		VT-IAR	320-232
	06287		VT-IAX	320-232
	06289		VT-IAS	320-232
	06336		VT-IAY	320-232
	06720		VT-ITB	320-271N
	06744		VT-ITA	320-271N

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M[(1)]	MSN	FSN	Registration Number	Model
	06772		VT-ITS	320-271N
	06799		VT-ITC	320-271N
	06819		VT-ITD	320-271N
	06829		VT-ITV	320-271N
	06849		VT-ITE	320-271N
	06860		VT-ITF	320-271N
	06868		VT-ITG	320-271N
	06904		VT-ITX	320-271N
	06914		VT-ITH	320-271N
	06946		VT-ITY	320-271N
	06952		VT-ITI	320-271N
	06967		VT-ITJ	320-271N
	07001		VT-ITK	320-271N
	07033		VT-ITL	320-271N
	07053		VT-ITM	320-271N
	07083		VT-IVE	320-271N
	07192		VT-IVF	320-271N
	07252		VT-ITN	320-271N
	07329		VT-ITO	320-271N
	07331		VT-ITP	320-271N
	07391		VT-ITQ	320-271N
	07396		VT-ITR	320-271N
	07504		VT-ITT	320-271N
	07510		VT-ITU	320-271N
	07618		VT-ITW	320-271N
	07892		VT-ITZ	320-271N
	07912		VT-IVA	320-271N
	07914		VT-IVB	320-271N

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M[1]	MSN	FSN	Registration Number	Model
	07931		VT-IVC	320-271N
	07961		VT-IVD	320-271N
	08077		VT-IVJ	320-271N
	08101		VT-IVG	320-271N
	08158		VT-IVH	320-271N
	08168		VT-IVI	320-271N
	08206		VT-IVK	320-271N
	08218		VT-IVL	320-271N
	08255		VT-IVM	320-271N
	08259		VT-IVN	320-271N
	08310		VT-IVO	320-271N
	08345		VT-IVP	320-271N
	08387		VT-IVQ	320-271N
	08397		VT-IVR	320-271N
	08414		VT-IVU	320-271N
	08416		VT-IVS	320-271N
	08417		VT-IVX	320-271N
	08426		VT-IVT	320-271N
	08432		VT-IVW	320-271N
	08440		VT-IVV	320-271N
	08455		VT-IZB	320-271N
	08459		VT-IZC	320-271N
	08460		VT-IVY	320-271N
	08465		VT-IVZ	320-271N
	08492		VT-IZA	320-271N
	08511		VT-IZG	320-271N
	08527		VT-IZD	320-271N
	08540		VT-IZE	320-271N

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M(1)	MSN	FSN	Registration Number	Model
	08541		VT-IZF	320-271N
	08557		VT-IUA	321-271NX
	08558		VT-IZH	320-271N
	08570		VT-IZI	320-271N
	08586		VT-IZJ	320-271N
	08587		VT-IUB	321-271NX
	08627		VT-IZK	320-271N
	08628		VT-IZL	320-271N
	08630		VT-IZM	320-271N
	08654		VT-IZN	320-271N
	08655		VT-IUC	321-271NX
	08688		VT-IZO	320-271N
	08702		VT-IZP	320-271N
	08710		D-AYAK	321-271NX
	08737		VT-IZQ	320-271N
	08768		D-AZAQ	321-271NX
	08771		VT-IZR	320-271N
	08782		F-WWDQ	320-271N
	08789		F-WWIN	320-271N
	08832		D-AUBK	320-271N
	08864		D-AXAT	320-271N
	08877		F-WWIJ	320-271N
	08896		F-WWIK	320-271N
	08901		D-AVVL	320-271N
	08905		F-WWIQ	320-271N
	08922		F-WWIO	320-271N
R	08928		F-WWBJ	320-271N
R	08932		F-WWBO	320-271N

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M(1)	MSN	FSN	Registration Number	Model
N	08961			320-271N
	08967			320-271N
	08978			320-271N
N	09031			320-271N
N	09045			320-271N
N	09063			321-271NX

(1) Evolution code : N=New, R=Revised

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	G1142	36-1069 00	10 AUG 16	PNEUMATIC - Bleed Monitoring Computer - Introduce NEO BMC SW 4.1
	Applicable to: MSN 06720-09063			
E	G1213		20 AUG 18	AIRBORNE AUXILIARY POWER - GENERAL - UPDATE THE STANDARD AND OPTION DEFINITION FOR APU
	Applicable to: MSN 08158-09063			
E	G1220	36-1078 00	15 JAN 18	PNEUMATIC - ENGINE BLEED AIR SUPPLY SYSTEM - Introduce NEO BMC SW 4.3
	Applicable to: MSN 06799, 06849, 06904, 06952, 07053, 07252, 07331, 07931, 08077-09063			
	J0006		20 AUG 10	FUEL SYSTEM - ADDITIONAL TREATMENT OF CENTRE TANK STRUCTURE AND INSTALLATION OF CENTRE TANK SYSTEM
	Applicable to: ALL			
	J0012		20 AUG 10	NAVIGATION LIGHTS SYSTEM - INSTALLATION OF A SECOND NAVIGATION LIGHT SYSTEM
	Applicable to: ALL			
	J0022		17 NOV 15	INSTALLATION OF A FUEL QUANTITY SELECTOR IN THE FLIGHT COMPARTMENT
	Applicable to: MSN 01767, 02108, 02388, 03138			
	J0071		20 AUG 10	WING STRUCTURE-INTRODUCTION OF A WING TIP INCORPORATING A TIP FENCE FOR 72T MTOW A/C
	Applicable to: ALL			
	J0664		20 AUG 10	FUEL SYSTEM-TO IMPROVE LOW LEVEL WARNING
	Applicable to: ALL			
	J0689		20 AUG 10	WING-TO DELETE L/E VENTILATION SYSTEM (PICCOLO TUBE)
	Applicable to: ALL			
E	J1255		20 AUG 10	FUEL - TANK LEVEL SENSING - CHANGE TO LOW PRESSURE WARNING
	Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
	J1334		20 AUG 10	LANDING GEAR-MLG-LGCIU-INTRODUCTION OF A NEW STANDARD FOR IMPROVED PROXIMITY SENSOR FAULT MONITORING FUNCTION
	Applicable to: ALL			
E	J1617		20 AUG 10	FLIGHT CONTROLS - GENERAL - DELETE LAF FEATURE FROM A320 DEFINITION (PRODUCTION SOLUTION)
	Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	J2190		20 AUG 10	FUEL - MAIN FUEL PUMPS SYSTEMS - CENTRE TANK PUMPS AUTO FEED FAULT.ADAPT PUMP CONTROL LATCH FOR FLIGHT DECK REFUEL CABABILITY
	Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	J2257	28-1106 03	20 AUG 10	FUEL - MANUAL MAGNETIC INDICATORS - ATTITUDE MONITOR DELETION
	Applicable to: MSN 01920-09063			
	J2332		17 NOV 15	FUEL - MANUAL (MAGNETIC) INDICATORS - REINTRODUCE ATTITUDE MONITOR ON A/C
	Applicable to: MSN 02359, 02405, 02482			
E	J2360		20 AUG 10	FUEL - QUANTITY INDICATION - INTRODUCE FUEL LEAK DETECTION ASSOCIATED WITH FQIC - 13 - 9
	Applicable to: MSN 02388-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	J2361	28-1150 01	20 AUG 10	FUEL - QUANTITY INDICATION - REMOVAL OF FUEL LEAK DETECTION FUNCTION ASSOCIATED WITH THE FQIC 13 - 9
	Applicable to: MSN 02405, 02457-02482, 02649, 02712-02737, 03071-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	J2527		20 AUG 10	FUEL - QUANTITY INDICATING - INTRODUCE NEW STANDARD OF FUEL QTY INDICATING COMPUTER 13-10
	Applicable to: MSN 02135, 02139-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	J2567		22 MAY 18	FUEL QUANTITY INDICATING - INTRODUCTION OF STAGE 8.0 FQIC
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	J2649	32A1293 00	28 MAR 18	NOSE LANDING GEAR - STEERING DISCONNECT BOX - INTRODUCTION OF NEW MICRO-SWITCH AND SEALING TO IMPROVE RELIABILITY (S-B ONLY)
	Applicable to: MSN 01920-02097, 02121-02138, 02204-02388, 02457-09063			
E	J2662		09 OCT 12	FUEL - QUANTITY INDICATING - INTRODUCE NEW STANDARD OF FQIC (P/N SIC5059 14-20)
	Applicable to: MSN 03414-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	J2816		07 APR 11	WING - FIXED PARTITION - INTRODUCED A STANDARD OF BOX WITHOUT DRY BAY
	Applicable to: MSN 03264-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	J2817		07 APR 11	WING - FIXED PARTITION - INTRODUCE A VERSION OF WING BOX WITH A DRY BAY
	Applicable to: MSN 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	J2832	28-1159 00	28 MAR 18	MAIN FUEL PUMP SYSTEM - FUEL PUMPS - INSPECT AFFECTED EATON FUEL PUMPS
	Applicable to: ALL			
E	J2879	47-1002 08 47-1026 14	07 OCT 11	INERT GAS SYSTEM - CERTIFICATION OF FUEL TANK INERTING SYSTEM
	Applicable to: MSN 02405, 02482, 04314, 04393-04397, 04965-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	J2887		22 MAY 18	WING - FIXED PARTITION - INTRODUCE A STANDARD OF WING BOX WITHOUT DRY BAY ON A321 AIRCRAFT
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	J2937		22 MAY 18	FUEL - QUANTITY INDICATION - INTRODUCE FUEL LEAK DETECTION FUNCTION ON A321 A/C
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	J2963		07 APR 11	REDUCTION IN QUANTITY OF MAGNETIC LEVEL INDICATORS
	Applicable to: MSN 03863-09063			
E	J3063		22 MAY 18	TO REMEDY INCORRECT ECAM INSTRUCTION.
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	J3240	28-1214 02	13 NOV 12	FUEL - QUANTITY INDICATING - ACTIVATE FUEL LEAK DETECTION WARNING SYSTEM
	Applicable to: MSN 02804, 05365-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	J3282		11 JAN 13	WINGS - General - Define and Certify Structural Provisions for Sharklet for A320 family
	Applicable to: MSN 05313-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	J3283		13 NOV 12	WINGS - GENERAL - Certify Sharklet Installation for A320/A319/A318
	Applicable to: MSN 05437-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
	J3430	32-1407 01	28 MAR 18	LANDING GEAR - NORMAL EXTENSION AND RETRACTION ? Modify the MLG Door actuator damping mechanism.
	Applicable to: ALL			
E	J3448		22 MAY 18	WINGS - GENERAL - Certify Sharklet Installation for A321
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	J3527		06 MAR 14	FUEL - MAIN TRANSFER SYSTEM - Introduce the A321 Centre Tank Fuel Transfer System onto A319 and A320 Single Aisle Variants
	Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	J3559	28-1216 01	30 MAY 13	FUEL - TANK LEVEL SENSING - ACTIVATE FUEL OVERFLOW CAUTION ON A318/A319/A320
	Applicable to: MSN 03138, 05641-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	J3702		22 MAY 18	FUEL - QUANTITY INDICATING - INTRODUCE FQIC, MTI AND PRESELECTOR UPGRADE.
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	J3896		15 JUN 15	FUEL - QUANTITY INDICATING - INTRODUCE NEW FUEL QUANTITY INDICATING SYSTEM UPGRADE FOR NEO A/C
	Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	J4030	32-1432 01 32-1442 00	03 OCT 17	LANDING GEAR - NORMAL BRAKING - INTRODUCE NEW BSCU SOFTWARE STANDARD (L4.10).
	Applicable to: MSN 01767-01920, 02108, 02135, 02139-02275, 02359-02388, 02457, 02649, 03071, 03414, 03541-03750, 04008-04156, 04399, 04438-04488, 04506, 04532, 04552-04762, 04818-04947, 04965, 05036-05090, 05094-05158, 05230-05231, 05298, 05476, 05641-05676, 05727-05744, 05893-05898, 05952-09063			
	J4051		16 AUG 17	LANDING GEAR - NORMAL BRAKING - INTRODUCE NEW MLG BRAKE DESIGN FROM UTAS
	Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-08864, 08901			
E	J4209		22 MAY 18	FUEL - QUANTITY INDICATING - INTRODUCE FQIC SOFTWARE DEVELOPMENT
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	J4231		22 MAY 18	LANDING GEAR - NORMAL BRAKING - MODIFY AUTOBRAKE LOW MODE SETTINGS
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	J4302		15 FEB 16	FUEL - FUEL RECIRCULATION - COOLING - ESTABLISH MISSING GRND CONNECTION TO INHIBIT RECIRCULATION DURING GRAVITY FEED
	Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	J4337		22 MAY 18	FUEL - TANKS - INTRO FULL ELEC SYS PROVSN FOR ACT1, 2 & 4.1 & FLUID MECH SYS PROVSN for ACT1 ON A321 ACF
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	J4376	28-1245 00	06 DEC 16	FUEL - QUANTITY INDICATING - Update Software FQIC (-0203)
	Applicable to: MSN 06720-09063			
E	J4386		15 NOV 18	LANDING GEAR - WHEELS AND BRAKES - Install SepCarb IV carbon with OPS Anoxy 360 (Long Life)
	Applicable to: MSN 08877-08896, 08905-09045			
E	J4530		22 MAY 18	CERTIFICATION DOCUMENTS - GENERAL - CERTIFY UP TO 3 ACTS ON A321NX
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
	K0024		20 AUG 10	INSTALLATION OF ADDITIONAL CARGO DOOR (BULK DOOR)
	Applicable to: ALL			
	K0026		20 AUG 10	LIGHTS - LOGOLIGHTS - INSTALLATION OF LOGOLIGHTS SYSTEM
	Applicable to: ALL			
	K0035		20 AUG 10	FIRE PROTECTION - FWD LOWER HOLD - INSTALLATION OF SMOKE DETECTION SYSTEM
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	K0036		20 AUG 10	FIRE PROTECTION - AFT LOWER HOLD - INSTALLATION OF SMOKE DETECTION SYSTEM
	Applicable to: ALL			
	K0037		20 AUG 10	FIRE PROTECTION - FWD AND AFT LOWER HOLD INSTALLATION OF A SINGLE SHOT FIRE EXTINGUISHING SYSTEM
	Applicable to: ALL			
	K0052		20 AUG 10	INSTALLATION OF AN AIDS
	Applicable to: ALL			
	K0064		20 AUG 10	LIGHTS - INSTALLATION OF STROBE LIGHTS SYNCHRONISED MODE
	Applicable to: ALL			
	K0070		04 MAY 15	AIR CONDITIONING - VENTILATION SYSTEM FOR AFT CARGO COMPARTMENT
	Applicable to: MSN 01767-02097, 02121-02139, 02204-02334, 02388, 02443, 02609-02649, 02804, 03071, 04314, 04393-04397, 05158			
	K0071		26 AUG 15	AIR CONDITIONING - HEATING SYSTEM FOR AFT CARGO COMPARTMENT -
	Applicable to: MSN 01767, 01957-02097, 02121-02139, 02275-02334, 02388, 02443, 02609-02649, 03071, 04314, 04393-04397, 05158			
	K0082		20 AUG 10	WATER WASTE-INSTALL VACUUM TOILET SYSTEM
	Applicable to: ALL			
E	K0151		07 APR 11	EQUIPMENT FURNISHINGS ESCAPE FACILITIES INSTALL SLIDE RAFTS (AIRCRUISERS)
	Applicable to: MSN 01957-02097, 02121-02334, 02443-02457, 02649-02712, 02804, 03071, 03264, 03330, 04314, 04393-04397, 04491, 04532, 04645-04954, 05027-05076, 05090-05092, 05120, 05218, 05744-05807, 05893-05923, 05992-06336, 08455-08459, 08511-08541, 08558-08586, 08627-08654, 08688-08702			
	K0344		04 MAY 15	LIGHTS-INSTALLATION OF A LSI-EEPMS FOR 164
	Applicable to: MSN 01767-01920, 02195-02334, 02388, 02737-02804, 03071-03138			
	K0860		17 NOV 15	COMMUNICATIONS - CIDS - DELETE EVACUATION SIGNALLING EQUIPMENT.
	Applicable to: MSN 02359, 02405, 02482			
E	K10003	49-1070 00 49-1099 05	07 APR 11	AIRBORNE AUXILIARY POWER - CONTROL AND MONITORING INTRODUCE SOFTWARE VERSION 06.00.000
	Applicable to: MSN 01957-02097, 02121-02195, 02275-02334, 02405, 02482, 02609-02626, 02712, 02908-08101, 08864-09063			
E	K10009		20 AUG 10	EQUIPMENT/FURNISHINGS - CURTAINS AND PARTITIONS INTRODUCE IMPROVED STRIKES FOR COCKPIT DOOR
	Applicable to: MSN 02584-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	K10081		17 OCT 17	GENERAL - DESIGN WEIGHTS - MULTIPLE WEIGHT VARIANT CAPABILITY - VARIANT 008/009/010
	Applicable to: MSN 04294, 04433, 04510			
E	K1014		20 AUG 10	WATER/WASTE-RELOCATION OF POT.WATER TANK FROM SECTION 18 TO SECTION 15 AND REDESIGN OF POT.WATERSYSTEM
	Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
	K10143	23-1293 02	20 AUG 10	EQUIPMENT/FURNISHING - MISC.EMERGENCY EQUIPMENT - INSTALL ELT (406AF) WITH PROG. DONGLE AND RCP IN COCKPIT - THALES
	Applicable to: MSN 02584-02670, 03138-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336			
	K10359		20 AUG 10	LIGHTS - EMERGENCY LIGHTING - DEFINE FLOOR MOUNTED LUFTHANSA TECHNIK 900 SERIES EEPMS
	Applicable to: MSN 03138, 03308, 03357-04216, 04312-04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			
E	K10463	21-1160 00	25 NOV 11	AIR CONDITIONING PACK TEMPERATURE CONTROL INTRODUCE IMPROVED AIR CONDITIONING CONTROLLER P/N 1803B0000-02
	Applicable to: MSN 02584-02609, 02908-09063			
E	K10494	49-1099 05	20 AUG 10	AIRBORNE AUXILIARY POWER - CHANGE STANDARD APU HONEYWELL GTCP36-300 TO APIC APS3200
	Applicable to: MSN 02405, 02482, 02649-08101, 08864-09063			
E	K10516	49-1067 01 49-1069 22 49-1075 01	15 JUN 15	AIRBORNE AUXILIARY POWER - CONTROL AND MONITORING INTRODUCE HONEYWELL VECB WITH SOFTWARE -04
	Applicable to: MSN 01920, 02204, 02443-02457, 02584, 02649-02670, 02737, 02908-02914, 03138-03264, 03330, 03750, 04294, 04399-04438, 04510, 05158, 06720-09045			
E	K10575		20 AUG 10	FIRE PROTECTION - CARGO COMPARTMENT FIRE EXTINGUISHING - INSTALL 2ND FIRE EX BOTTLE FOR ETOPS 120/180 ON A320
	Applicable to: MSN 03414-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05155, 05190-06336, 06772, 06829, 06904, 06946, 07083-07192, 08455-08459, 08511-08541, 08558-08586, 08627-08654, 08688-08702			
E	K10838	29-1135 01	12 FEB 18	HYDRAULIC POWER GENERAL - PIPING INSTALLATION OF MODIFIED HYDRAULIC PIPES IN MLG-BAY AT FRAME C42
	Applicable to: MSN 01767-02097, 02121-02195, 02275-02334, 02388, 02457, 02584-02649, 02712, 02914-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	K11047		17 OCT 17	COMMUNICATION - ANTI HIJACK CAMERA MONITORING - INSTALL COCKPIT DOOR SURVEILLANCE SYSTEM DISPLAYEDON SD
	Applicable to: MSN 04294, 04433, 04510			
	K1119		20 AUG 10	EQUIPMENT FURNISHINGS-C.C-REARRANGE COMPARTMENT 4 INTO TWO ZONES
	Applicable to: ALL			
E	K11694		15 JUN 15	EQUIPMENT/FURNISHINGS-MISCELLANEOUS EMERGENCY EQUIPMENT-INSTALLATION OF ELT(406AFN) WITH RCP IN COCKPIT AND NAV PROVISIONS-HONEYWELL
	Applicable to: MSN 03750, 05158, 06720-09063			
E	K12405		07 APR 11	COMMUNICATIONS-CIDS-INTRODUCE HANDSET SERIES N40A FROM VENDOR HOLMBERG
	Applicable to: MSN 04008-09063			
E	K12824		07 OCT 11	COMMUNICATIONS - CIDS - INSTALL CIDS AND SDF OBRM SOFTWARE P/N -33A AND CAM UPDATE
	Applicable to: MSN 04438-09063			
E	K12825		07 OCT 11	COMMUNICATIONS - CIDS - INSTALL CIDS DIRECTOR P/N -333B
	Applicable to: MSN 04438-09063			
	K12882		15 OCT 18	DOORS-EMERGENCY EXIT-DE-ACTIVATE FORWARD OVERWING EMERGENCY EXIT ON A320 A/C
	Applicable to: MSN 04314, 04393-04397			
E	K13046		17 MAY 16	OXYGEN - CONTROL AND INDICATING - ADAPT PASS INFO RELAY, RELAY SOCKET AND WIRINGS FOR CHEMICAL OXYGEN SYSTEM
	Applicable to: MSN 05992-09063			
	K13078		19 JUL 16	OXYGEN - PASSENGER OXYGEN - INTRODUCE OPTIONAL CHEMICAL OXYGEN HYBRID CONTAINER 22 MIN (DAE SYSTEMS)
	Applicable to: MSN 04314, 04393-04399, 04438			
	K1420		20 AUG 10	DOORS-FWD/AFT CARGO DOOR-INTRODUCTION OF LOCKING INDICATION
	Applicable to: ALL			
E	K1688		20 AUG 10	ETOPS-FIRE PROTECTION-INSTALL A FLOW METERING SYSTEM FOR FIRE EXTINGUISHING IN CARGO COMP.
	Applicable to: MSN 01920-02097, 02121-02204, 02457, 02670, 02804, 03071, 03308, 03357, 08557, 08587, 08655, 08710, 08768, 09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	K17059		26 AUG 15	OXYGEN - CREW OXYGEN - INTRODUCE COCKPIT OXYGEN SEGREGATION FOR NEO A/C
	Applicable to: MSN 06720-09063			
E	K17120		09 NOV 15	Lights - Cabin Emergency Lighting Define Floor Mounted EEPMS Lufthansa Technik 1000 Series
	Applicable to: MSN 06720-09063			
E	K17133		17 JUL 15	GENERAL - DESIGN WEIGHT - INTRODUCE WV050 (MTOW 73,5T, MLW 66,3T AND MZFW 62,8T) FOR A320 NEO
	Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
	K17136		17 JUL 15	GENERAL - DESIGN WEIGHT - INTRODUCE WV051 (MTOW 73,5T, MLW 67,4T AND MZFW 64,3T) FOR A320 NEO
	Applicable to: MSN 06720-08206			
E	K17137		13 MAR 18	GENERAL - DESIGN WEIGHT - INTRODUCE WV055 (MTOW 79T, MLW 67,4T AND MZFW 64,3T) FOR A320 NEO
	Applicable to: MSN 08218-08345, 08397-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	K17996		22 MAY 18	AIR CONDITIONING - FLOW CONTROL AND INDICATING - Install A320 pack flow selector with three positions on A321
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
	K1806		20 AUG 10	AIR CONDITIONING SYSTEM POWER SUPPLY - MODIFY POWER TO FLOW CONTROL VALVE
	Applicable to: ALL			
E	K18070		22 MAY 18	GENERAL - DESIGN WEIGHT - INTRODUCE WV050 (MTOW 89T, MLW 77,3T AND MZFW 73,3T) FOR A321 NEO
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	K18102		28 MAR 18	AIR CONDITIONING - PACK TEMPERATURE CONTROL - Introduce improved Air Conditioning System Controller
	Applicable to: MSN 06720-09063			
E	K18256		24 OCT 16	OXYGEN - FLIGHT CREW PORTABLE DEVICES - INSTALL PBE P/N 15-40F-80 (AIR LIQUIDE) IN THE COCKPIT (702VU)
	Applicable to: MSN 06720-09063			
	K18325		04 JUL 18	GENERAL - DESIGN WEIGHT - INTRODUCE WV075 (MTOW 74T, MLW 67.4T AND MZFW 64.3T) FOR A320 NEO
	Applicable to: MSN 08387			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	K18418		22 MAY 18	GENERAL - DESIGN WEIGHT - INTRODUCE WV072 (MTOW 97T, MLW 79.2T AND MZFW 75.6T) FOR A321NEO ACF
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	K19351	29-1174 00	07 JUN 16	HYDRAULIC POWER - GENERAL - EXTEND ENVIRONMENTAL OPERATION ENVELOPE TO ISA +40DEG C
	Applicable to: MSN 06720, 06772-06799, 06829-06849, 06868-09063			
E	K2106		22 MAY 18	FIRE PROTECTION - INSTALL A FIRE DETECTION AND EXTINGUISHING SYSTEM
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	K2113		22 MAY 18	FUSELAGE - AFT SECTION - DEFINE A321 BASIC STRUCTURE OF SECTION 16
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
	K2319		15 MAY 17	GENERAL-INCREASED MAXIMUM TAKE-OFF WEIGHT (MTOW) TO 75.5T
	Applicable to: MSN 03138			
	K2335		20 AUG 10	LAVATORY SMOKE DETECTION - IMPROVEMENT OF SMOKE DETECTION
	Applicable to: ALL			
	K2393		20 AUG 10	AIR COND.-CABIN PRESSURE CONTROL-IMPROVE CONTROLLER TO ENABLE USE OF EXTERNAL MODE
	Applicable to: ALL			
E	K2450	49-1029 27	07 APR 11	AUXILIARY POWER UNIT - INTRODUCTION OF APIC APS-3000
	Applicable to: MSN 01957-02097, 02121-02334, 02609-08101, 08864-09063			
E	K2762		22 MAY 18	HYDRAULIC POWER - AUXILIARY HYDRAULIC POWER - INTRODUCE A321 RAM AIR TURBINE
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
	K2938		20 AUG 10	DOORS - C.C.DOOR HYDRAULIC SYSTEM - INTRODUCE MODIFIED ELECTRICAL (MANUAL) SELECTOR VALVE -
	Applicable to: ALL			
E	K2962		20 AUG 10	HYDRAULIC POWER - MAIN BLUE HYDRAULIC POWER - IMPROVE MAINTENACE STATUS OF BLUE HYDRAULIC RESERVOIR -
	Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	K3065		10 OCT 14	INCREASED MAXIMUM TAKE OFF WEIGHT(MTOW) TO 77T
	Applicable to: MSN 02712, 04294, 04399-04438, 04491, 04510, 04532, 04645, 05120, 05218			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	K30673		22 MAY 18	FIRE PROTECTION-CARGO COMPT FIRE EXTING - IMPROVE FIRE SUPPRESSION TIME FOR HIGHLY FILLED CARGO COMPT FOR NEO ACF
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	K30674		22 MAY 18	LOWER DECK CARGO COMPT FIRE EXTING - IMPROVEMENT OF FES BY ADAPTATION OF THE FLOW METERING SYSTEM FOR ETOPS 120 ACF
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
	K3118	49-1099 05	20 AUG 10	AUXILIARY POWER UNIT - CONTROL AND MONITORING - INTRODUCTION OF NEW ECB P/N 304817-1
	Applicable to: ALL			
E	K32137		04 JUL 18	GENERAL - DESIGN WEIGHTS - OPERATE A320 NEO WITH MOW - MTOW 70/74/79T MLW 67.4T MZFW 64.3T - WV057/075/055
	Applicable to: MSN 08218-08345, 08397-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
	K32138		06 AUG 18	GENERAL - DESIGN WEIGHTS - OPERATE A320 NEO WITH DUAL OPERATIONAL WEIGHT - MTOW 70.0/74.0T - WV057/075
	Applicable to: MSN 08387			
	K3279		20 AUG 10	AUXILIARY POWER UNIT - CONTROL AND MONITORING - MODIFIED WIRE HARNESSES TO NEW ECB
	Applicable to: ALL			
E	K3471		20 AUG 10	GENERAL - INCREASE DESIGN WEIGHT TO 61T MZFW
	Applicable to: MSN 01767-06336			
	K3599		20 AUG 10	AIR CONDITIONING - COCKPIT AND CABIN TEMPERATURE CONTROL - INTRODUCE IMPROVED ZONE TEMPERATURE CONTROLLER -03
	Applicable to: ALL			
E	K3867		28 MAR 18	HYDRAULIC POWER-AUXILLIARY HYDRAULIC POWER- INTRODUCE R.A.T. WITH IMPROVED MAIN BEARING
	Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	K3901	23-1544 06	20 AUG 10	COMMUNICATIONS - CIDS - MODIFICATION OF DIRECTOR POWER SUPPLY PRINCIPLE
	Applicable to: MSN 01767-01920, 02204, 02443-02457, 02584-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	K39270	21-1243 00	31 DEC 18	AIR CONDITIONING - CARGO COMPARTMENT VENTILATION - DE-ACTIVATE AFT CARGO VENTILATION (BY SB)
	Applicable to: MSN 01957-02097, 02138, 02388			
	K3941		17 OCT 17	FUSELAGE - REAR FUSELAGE REMOVE BULK CARGO DOOR
	Applicable to: MSN 04510			
	K3984		28 MAR 18	AIR CONDITIONIN -COCKPIT AND CABIN TEMPERATURE CONTROL-INTRODUCE MODIFIED TEMPERATURE SENSOR -02 ON MIXER UNIT
	Applicable to: ALL			
E	K4277		22 MAY 18	FIRE PROTECTION-ETOPS-CARGO COMPARTMENTS INSTALL A FLOW METERING SYSTEM
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	K4457	49-1067 01 49-1069 22	04 MAY 15	INTRODUCTION OF NEW ALLIED SIGNAL APU GTCP 131-9 (A)
	Applicable to: MSN 01767-01920, 02108, 02195-02204, 02359-02388, 02443-02457, 02584, 02649-02670, 02737-02914, 03138-03264, 03330, 03750, 04294, 04399-04438, 04510, 05158, 06720-09045			
	K4574		20 AUG 10	AIR CONDITIONING-FLOW CONTROL AND INDICATING- INTRODUCE IMPROVED AIR CONDITIONING PACKAGE FOR FLOW CONTROL
	Applicable to: ALL			
	K4724		04 MAY 15	OXYGEN-PASSENGER OXYGEN-INTRODUCE IMPROVED CHEMICAL OXYGEN CONTAINER SERIES 15 MIN (DRAEGER)
	Applicable to: MSN 01920-02097, 02121, 02138, 02204, 02609-02626, 02804-03071, 04294, 04433, 04510			
	K4725		17 MAY 16	DOORS - CARGO COMPARTMENT DOOR FWD AND AFT - MODIFY CARGO DOORS
	Applicable to: ALL			
	K4726		20 AUG 10	WATER/WASTE-TOILET SYSTEM-INTRODUCE IMPROVED TOILET ASSY
	Applicable to: ALL			
E	K4787		20 AUG 10	LIGHTS - INTRODUCTION OF A COMMON EPSU
	Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	K4788		22 MAY 18	LIGHTS - INTRODUCTION OF A COMMON EPSU FOR A321
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
	K4793		20 AUG 10	AIR CONDITIONING-AIR COOLING SYSTEM-INTRODUCE AN IMPROVED RAM OUTLET (RAO)
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	K4913		20 AUG 10	HYDRAULIC POWER - AUXILIARY HYDRAULIC POWER - INSTALL A319 RAM AIR TURBINE ON A320
	Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
	K5070		20 AUG 10	COMMUNICATIONS - CIDS - DUAL DIAL CODE ON HANDSET KEYBOARD (A319/A321)
	Applicable to: MSN 01920, 02204, 02443, 02584-02626, 02670, 02737-02804, 03264-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336			
E	K5104		10 OCT 14	LIGHTS - EMERGENCY LIGHTING - INSTALL A FLOOR PROXIMITY EMERGENCY ESCAPE PATH MARKING - PHOTOLUMINISCENT SYSTEM LTAG
	Applicable to: MSN 01920, 02108, 02275-02334, 02388, 02443-02457, 02584-02712, 02908-02914, 03264, 03330, 04294, 04433, 04491, 04510, 04532, 04645, 05120, 05218			
	K5157		19 JUL 16	OXYGEN-PASSENGER OXYGEN-INTRODUCE IMPROVED OPTIONAL CHEMICAL OXYGEN CONTAINER (22 MIN) TO REPLACE "HIGH FLOW" CONTAINER
	Applicable to: MSN 04314, 04393-04399, 04438			
	K5213		20 AUG 10	AIR CONDITIONING - PACK TEMPERATURE CONTROL - INTRODUCE IMPROVED PACK TEMPERATURE CONTROLLER
	Applicable to: ALL			
	K5317		22 MAR 16	INDICATING/RECORDING SYSTEMS - DEFINE/INSTALL HARDWARE OF OPTICAL QUICK ACCESS RECORDER (QAR) TELEDYNE P/N 2248000-61
	Applicable to: MSN 01920-02097, 02121, 02138, 03071			
	K5355		26 AUG 15	LIGHTS - EMERGENCY LIGHTING - INSTALL FLOOR PROXIMITY EMERGENCY ESCAPE PATH MARKING SYSTEM - PHOTOLUMINESCENT SYSTEM VENDOR LTAG
	Applicable to: MSN 01920, 02108, 02275-02334, 02388, 02443-02457, 02670-02712, 02908-02914, 03264, 03330, 04294, 04433, 04510			
	K5382		04 MAY 15	OXYGEN - PASSENGER OXYGEN SYSTEM - INTRODUCE O2-CONTAINER WITH IMPROVED FUNCTION (DRAEGER, 15 MIN.)
	Applicable to: MSN 01920-02097, 02121, 02138, 02204, 02609-02626, 02804-03071, 04294, 04433, 04510			
	K5446		20 AUG 10	INDICATING/RECORDING SYSTEMS - INSTALLATION OF A COMBINED FDIU/DMU
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	K5549		20 AUG 10	OXYGEN - PASSENGER OXYGEN - INTRODUCE CHEMICAL OXYGEN CONTAINER (15MIN) WITH IMPROVED ACTUATOR (VENDOR PURITAN)
	Applicable to: ALL			
	K5638		04 MAY 15	EQUIPMENT/FURNISHINGS - MISCELLANEOUS EMERGENCY EQUIPMENT - INSTALL ELT CEIS A06V2 WITH CONTROL PANEL IN COCKPIT
	Applicable to: MSN 01920-02097, 02121, 02138, 02195-02204			
	K5801		20 AUG 10	AIR CONDITIONING-PRESSURE CONTROL AND MONITORING- INTRODUCE MODIFIED PRESSURE CONTROLLER P/N 9022-15702-10
	Applicable to: ALL			
	K5869		19 JUL 16	GENERAL - DESIGN WEIGHT - OPERATE A320 WITH DUAL WEIGHT VARIANTS CERTIFICATION (008 OR 010)
	Applicable to: MSN 04399, 04438			
	K6156		20 AUG 10	AIR CONDITIONING-PACK TEMPERATURE CONTROL- INTRODUCE MODIFIED PACK TEMPERATURE CONTROLLER
	Applicable to: ALL			
	K6164	00-1069 38 03-1072 06	07 APR 11	GENERAL-INCREASE A320 DESIGN WEIGHTS TO 77,0T MTOW; 66,0T MLW AND 62.5T MZFW (WV012)
	Applicable to: MSN 02138, 02457, 03308, 04314, 04393-04397, 04752-04954, 05027-05076, 05090-05092, 05158, 05437-05460, 05476-05577, 05712-06336			
E	K6318	49-1029 27	07 APR 11	APU-CONTROL AND MONITORING-INTRODUCE APIC ECB SOFTWARE VERSION 5
	Applicable to: MSN 01957-02097, 02121-02334, 02609-08101, 08864-09063			
E	K6443		20 AUG 10	AIR CONDITIONING_AIR COOLING INSTALL A NEW ECS
	Applicable to: MSN 02443-02457, 02584-09063			
	K6472		19 JUL 16	CERTIF.-MOD TO BE OPENED FOR O-2 BOXES DRAEGER 22-MIN CONTAINER RFC LAN35D2011302E
	Applicable to: MSN 04399, 04438			
	K6746		14 MAY 18	EQUIPMENT/FURNISHINGS - PAX COMPARTMENT: DEFINE A PC POWER SYSTEM PROVIDING 110V/60HZ - VENDOR KID
	Applicable to: MSN 01957-02097, 02121, 02138, 03071			
	K6807		26 AUG 15	EQUIPMENT/FURNISHINGS -MISCELLANEOUS EMERGENCY EQUIPMENT- INSTALL AN SEXTANT

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
				ELT WITH CONTROL PANEL IN COCKPIT AND PROGRAMMING DONGLE
	Applicable to: MSN 01767, 02108, 02135, 02139, 02275-02334			
E	K6936		20 AUG 10	AUXILIARY POWER UNIT (APU)-GENERAL- INCREASE OPERATION ENVELOPE TO 39800 FT. FOR GTCP36-300
	Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	K7072		20 AUG 10	LIGHTS-EMERGENCY LIGHTING- EPSU LOAD DISTRIBUTION IMPROVEMENT
	Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
	K7220		28 MAR 18	GENERAL - DESIGN WIGHTS - DECREASE A320 DESIGN WEIGHT TO 71,5T MTOW (WV 013)
	Applicable to: MSN 02388			
E	K7221		10 OCT 14	GENERAL - DESIGN WEIGHT - OPERATE A320 WITH MULTIPLE WEIGHT VARIANT CAPABILITY (VARIANT 008/ 009/010/013) BY SB
	Applicable to: MSN 04491, 04532, 04645, 05120, 05218			
E	K7253		22 MAY 18	LIGHTS-EMERGENCY LIGHTING- EPSU LOAD DISTRIBUTION IMPROVEMENT
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
	K7735		22 MAR 16	EQUIPMENT/FURNISHINGS LININGS AND FURNISHINGS CHANGE OF MANUFACTURING PROCESS FOR DADO PANEL SPACER
	Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02359, 02405, 02482			
	K7755	25-1305 06	20 AUG 10	EQUIPMENT/FURNISHINGS PAX COMPARTMENT INTRODUCE A MODIFIED INTRUSION AND PENETRATION RESISTANCE COCKPIT DOOR
	Applicable to: ALL			
E	K7778	23-1208 14 23-1277 13 23-1373 03 23-1473 09	20 AUG 10	COMMUNICATIONSAUDIO AND VIDEO MONITORING INSTALL A COCKPIT DOOR SURVEILLANCE SYSTEM
	Applicable to: MSN 01767-02121, 02138-02334, 02443-02457, 02584-02670, 02804-04216, 04312-04399, 04438-04506, 04518-09063			
E	K7782	23-1214 10	10 OCT 14	COMMUNICATIONS CABIN INTERCOMMUNICATION COCKPIT CREW TO CABIN CREW ALERTING SYSTEM (COCKPIT PART)
	Applicable to: MSN 02097, 02121, 02138, 02195-02204, 02457, 02609-02626, 03071, 04491, 04532, 04645, 05120, 05218			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	K7784	23-1214 10	10 OCT 14	COMMUNICATIONS CABIN INTERCOMMUNICATION CABIN CREW TO COCKPIT CREW ALERTING SYSTEM (COCKPIT PART)
	Applicable to: MSN 02097, 02121, 02138, 02195-02204, 02457, 02609-02626, 03071, 04491, 04532, 04645, 05120, 05218			
	K7790	25-1305 06	20 AUG 10	DOORS PASSENGER COMPARTMENT FIXED PARTITIONS INTERIOR DOOR-ELECTRICAL COCKPIT DOOR RELEASE SYSTEM
	Applicable to: ALL			
	K7847		09 NOV 15	EQUIPMENT/FURNISHINGS PASSENGER COMPARTMENT DEFINITION OF A PED POWER SUPPLY SYSTEM PROVIDING 110/60 HZ FROM VENDOR THALES
	Applicable to: MSN 02649, 03750, 04314, 04393-04397			
	K7919	52-1115 04	15 JAN 18	DOORS- COCKPIT DOOR RELEASE SYSTEM ELECTRICAL OVERRIDE SYSTEM
	Applicable to: MSN 01957-02097, 02121, 02138, 02609-02626, 03071			
E	K8400		20 AUG 10	COMMUNICATIONS CABIN INTERCOMMUNICATION MODIFY CABIN INTERCOMMUNICATION DATA SYSTEM ON A319
	Applicable to: MSN 02443-02457, 02584-09063			
E	K8734		25 NOV 11	AIR CONDITIONING - AIR COOLING ADAPT A318 ECS TO A320
	Applicable to: MSN 02443-02457, 02584-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	K8905	25-1400 17 25-1789 05	20 AUG 10	EQUIPMENT/FURNISHINGS -CURTAINS AND PAR INSTALL A DEADBOLT FOR THE REINFORCED COCKPIT DOOR
	Applicable to: MSN 01957-02097, 02121, 02138, 02405-02626, 02670, 02737, 02908-02914, 03264, 03330, 03453-04312, 04328-04384, 04399-09063			
	K9009	23-1485 16	17 NOV 15	COMMUNICATIONS-PASSENGER ADDRESS EMERGENCY POWER SIMPLIFICATION
	Applicable to: MSN 01767, 02359, 02405, 02482, 02609-02626			
	K9163	00-1143 15	22 MAR 17	GENERAL - INCREASE A320 DESIGN WEIGHTS TO 66,0T MLW AND 62,5T MZFW
	Applicable to: MSN 01920-02097, 02121, 02204, 02405-02443, 02482-02670, 02804-02914			
	K9230		20 NOV 17	EQUIPMENT/FURNISHINGS -MISCELLANEOUS EMER EQMT INSTAL AN ELT WITH RCP IN COCKPIT BASED ON ENHANCED PROVISIONS-ELTA
	Applicable to: MSN 02737-02804, 03071			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	K9231		17 MAY 16	EQUIPMENT/FURNISHINGS - MISCELLANEOUS EMER EQPT INSTALL AN ELT WITH RCP IN COCKPIT BASED ON ENHANCED PROVISIONS - HONEYWELL
	Applicable to: MSN 02457, 02712			
	K9232		22 MAR 17	EQUIPMENT/FURNISHINGS -MISCELLANEOUS EMER EQMT INSTAL AN ELT WITH PROG.DONGLEAND RCP IN COCKPIT BASED ON ENHANCED PROVISIONS-THALES
	Applicable to: MSN 02388, 02443, 02908-02914			
E	K9234		10 OCT 14	EQUIPMENT/FURNISHINGS - MISCELLANEOUS EMER EQPT INSTALL AN ELT (406AF) WITH RCP IN COCKPIT BASED ON ENHANCED PROVISIONS - ELTA
	Applicable to: MSN 04491, 04532, 04645, 05120, 05218			
E	K9235	23-1277 13 23-1373 03 23-1473 09	22 MAR 17	COMMUNICATIONS - ANTI HIJACK CAMERA MONITORING REPLACE HINGE ASSEMBLY FOR CDSS LCD/SYSTEM CONTROLLER
	Applicable to: MSN 01767-01920, 02139-02195, 02275-02334, 02443-02457, 02584-02670, 02804-04216, 04312-04399, 04438-04506, 04518-09063			
E	K9458		25 NOV 11	AIR CONDITIONING - PACK TEMPERATURE CONTROL IMPROVED AIR CONDITIONING SYSTEM CONTROLLER P/N 1803B0000-01
	Applicable to: MSN 02443-02457, 02584-09063			
E	K9473		20 AUG 10	AIR CONDITIONING-PRESSURE CONTROL AND MONITORING-INTRODUCE RESIDUAL PRESSURE CONTROL UNIT (RPCU)
	Applicable to: MSN 02584-09063			
	K9496		10 AUG 16	COMMUNICATIONS - CIDS - REINTRODUCE PREVIOUS CIDS ON A320 A/C
	Applicable to: MSN 02712			
E	K9877	25-1400 17 25-1789 05	20 AUG 10	EQUIPMENT / FURNISHINGS - CURTAINS AND PARTITIONS - MODIFY DEADBOLT FOR REFORCED COCKPIT DOOR
	Applicable to: MSN 01957-02097, 02121, 02138, 02405-02626, 02670, 02737, 02908-02914, 03264, 03330, 03453-04312, 04328-04384, 04399-09063			
E	K9920	23-1277 13 23-1373 03 23-1473 09	20 AUG 10	COMMUNICATIONS - ANTI HIJACK CAMERA MONITORING REPLACE CDSS LCD /SYSTEM CONTROLLER
	Applicable to: MSN 01767-01920, 02139, 02275-02334, 02443-02457, 02584-02670, 02804-04216, 04312-04399, 04438-04506, 04518-09063			
	P0003		28 MAR 18	BASIC AIRCRAFT DEFINITION - ELECTRICS
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P0015	32-1283 35	14 MAY 18	BRAKE COOLING FANS
	Applicable to: MSN 01957-02097, 02121, 02138, 02359			
	P0033	23-1654 00	07 APR 11	COMMUNICATIONS - HF1 SYSTEM PROVISION FOR HF1 SYSTEM
	Applicable to: ALL			
	P0034	23-1654 00	07 APR 11	SINGLE HF SYSTEM
	Applicable to: ALL			
	P0040		20 AUG 10	4TH OCCUPANT SEAT
	Applicable to: MSN 01767-02584, 02649-04216, 04312-04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			
	P0046		15 JAN 18	ELECTRICAL FOOT WARMERS FOR CAPTAIN AND FIRST OFFICER
	Applicable to: MSN 02609-02626			
	P0052		15 JAN 18	TYRE PRESSURE INDICATION SYSTEM
	Applicable to: MSN 02609-02626, 04314, 04393-04397			
	P0091		20 AUG 10	ALTERNATIVE FLIGHT CREW OXYGEN BOTTLE (77.1CU/FT) IN COMPOSITE MATERIAL FOR FIXED SYSTEM
	Applicable to: ALL			
	P0143		20 AUG 10	COMMUNICATIONS - INSTALLATION OF A 3RD RMP
	Applicable to: MSN 01767-02097, 02121-02139, 02204-02443, 02482, 02609-02670, 02737-02804, 03071-04216, 04312-04397, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			
	P0147		20 AUG 10	DESIGN WEIGHT-MTOW 72T-STRUCTURAL REINFORCEMENT
	Applicable to: ALL			
E	P0160		10 OCT 14	OXYGEN-FLIGHT CREW OXYGEN STORAGE-INSTALLATION OF A 115 CU/FT (STEEL) OXYGEN CYLINDER
	Applicable to: MSN 01920-02121, 02138, 02195-02359, 02405-02482, 02609-03264, 03330, 03750, 04294, 04314, 04393-04397, 04433, 04491, 04510, 04532, 04645, 05120, 05218			
E	P0197	23-1653 00	07 APR 11	COMMUNICATIONS-SINGLE HF SYSTEM INSTALLATION
	Applicable to: MSN 02135, 02139, 02275-02334, 02405, 02482-02649, 02712-02737, 03264-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063			
	P0287		15 FEB 16	NAVIGATION-REPLACE EXISTING VOR DDRMI WITH A COMBINED VOR ADF DDRMI COLLINS
	Applicable to: MSN 02584, 02737, 03264, 03330, 03750, 05158			
	P0357	23-1485 16	17 NOV 15	ELECTRICAL GENERATION-PUBLIC ADDRESS SWITCHING BY P/B ON HOT BUS BUSBAR
	Applicable to: MSN 01767, 02359, 02405, 02482, 02609-02626			
	P0415		20 AUG 10	COMMUNICATIONS-HOT MIKE RECORDING
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P0435		15 JAN 18	ICE AND RAIN PROTECTION-WINDSHIELD WIPER SYSTEM- ADDITION OF AN INTERMITTENT FUNCTION
	Applicable to: MSN 02609-02626			
	P0622	34-1033 47	26 AUG 15	NAVIGATION-USE OF THE QFE BARO SETTING
	Applicable to: MSN 01767, 02108, 02275-02334, 02649			
	P0959		22 MAR 17	INSTRUMENTS-USE OF US UNITS IN PLACE OF METRIC UNITS
	Applicable to: MSN 02405, 02482			
	P10022		17 MAY 16	ENGINE FUEL AND CONTROL FADEC SYSTEM INTRODUCE NEW "5BO" ECU SOFTWARE STD ON CFM56-5B ENGINES - CNF CFM 109B -
	Applicable to: MSN 03750, 04294, 04314, 04393-04438, 04510			
E	P10054	34-1384 02	28 MAR 18	NAVIGATION - MMR - INSTALL COLLINS MMR STANDARD P/N 822-1152-122
	Applicable to: MSN 01957-02097, 02121, 02138, 02275-02334, 02584-02649, 02712-02737, 03264-09063			
E	P10062	34-1444 01	28 MAR 18	NAVIGATION - SENSORS, POWER SUPPLY AND SWITCHING -INSTALL THALES ANGLE OF ATTACK SENSORS P/N C16291AB
	Applicable to: MSN 01767, 01957-02195, 02359-02405, 02482-02584, 02649-02737, 03071, 03308, 03357-04113, 04216-09063			
	P10098	24-1120 04	20 AUG 10	ELECTRICAL POWER AC ESSENTIAL GENERATION SWITCHING INSTALL AUTO SWITCHING SYSTEM FOR AC&DC ESS BUS.
	Applicable to: ALL			
	P10148	00-1179 08	19 JUL 16	* CERTIFICATION - GENERAL - CERTIFY OPERATION ON RUNWAY WITH SLOPE BETWEEN 2% AND 3%
	Applicable to: MSN 02443, 02670, 02908-02914, 04399, 04438			
	P10166	33-1057 03	20 AUG 10	LIGHTS - INSTRUMENT & PANEL INTEGRAL LIGHTING ENSURE EMERGENCY LIGHTING FOR STAND-BY INSTRUMENTS (WITH ISIS PROV)
	Applicable to: MSN 01767-01957, 02108, 02135, 02139, 02359-02405, 02482, 02609-02626, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04954			
	P10178	22-1499 06 22-1587 02	28 MAR 18	AUTO FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC)- RE-INSTALL HONEYWELL FMS PERFORMANCE DATA BASE (PDB) -901
	Applicable to: MSN 02443, 03071-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P10257	32-1244 74 32-1327 01	16 AUG 17	LANDING GEAR - WHEELS AND BRAKES - INTRODUCE REDESIGNED MESSIER-BUGATTI SEPCARB BRAKES ON MLG
	Applicable to: MSN 02275, 02359, 03264-06336, 08877-08896, 08905-09045			
	P10267		20 AUG 10	NAVIGATION - RADIO MAGNETIC INFORMATION SWITCHING AND INDICATING : RE-INSTALL THALES DDRMI VOR/DME INDICATORS (ANTI-MOD 33503)
	Applicable to: MSN 03264-04216, 04312, 04328-04384, 04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190			
E	P10321	22-1289 01	07 APR 11	AUTO-FLIGHT - GENERAL - REMOVE AFM LIMITATION ON NON PRECISION APPROACHES WITH ONE ENGINE OUT
	Applicable to: MSN 01767-02359, 02405, 02457-02908, 03071-03138, 03357-06336			
	P10383	31-1334 04 31-1414 03	20 AUG 10	INDICATING/RECORDING SYSTEMS FLIGHT WARNING COMPUTER (FWC) INSTALL FWC STANDARD H2-F5
	Applicable to: ALL			
E	P10402	23-1333 04	28 MAR 18	COMMUNICATIONS - AUDIO MANAGEMENT- MODIFY AMU POWER SUPPLY TO COPE WITH DC ESSENTIAL BUS LOSS
	Applicable to: MSN 02097, 02121, 02138, 02584, 02649, 03071-09063			
	P10439	22-1248 01	17 MAY 16	AUTO-FLIGHT FMGC INSTALL FMGC HNWL STD P1C12 ON CFM A/C
	Applicable to: MSN 01767-01920, 02388, 02584, 03750, 04294, 04314, 04393-04438, 04510			
	P10440	22-1247 01	19 JUL 16	AUTO-FLIGHT FMGC INSTALL FMGC THALES S4C12 ON CFM A/C
	Applicable to: MSN 02712, 03138, 04294, 04314, 04393-04438, 04510			
	P10443	27-1182 04	07 APR 11	FLIGHT CONTROL - ELAC SYSTEM - INTRODUCE ELAC "L93" SOFTWARE STANDARD
	Applicable to: ALL			
E	P10447		07 APR 11	POWERPLANT - GENERAL - INTRODUCE SELECT ONE PRODUCTION PACKAGE ON IAE V2500-A5 ENGINES
	Applicable to: MSN 03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
E	P10493	27-1183 03	07 APR 11	FLIGHT CONTROL - ELAC - ACTIVATE HIGH ALTITUDE UPSETS VMO/MMO OVERSHOOT PROTECTION FUNCTION ON ELAC
	Applicable to: MSN 01767, 02275-02334, 02457, 02584-02649, 02712, 02914, 03138-03457, 03541, 03750-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P10527	31-1372 10 31-1415 00 31-1433 01	07 APR 11	INDICATING/RECORDING SYSTEM - ELECTRONIC INSTRUMENT SYSTEM (EIS)- INSTALL DISPLAY MANAGEMENT COMP. SOFTW. EIS2 S8-1
	Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02649-02737, 02908-03264, 03330-04216, 04312-04399, 04438-04506, 04518-09063			
E	P10660		09 NOV 15	NAVIGATION - ADIRU - INSTALL HONEYWELL ADIRU BLOCK III STANDARD L3.5
	Applicable to: MSN 04314, 04393-04397, 04481-04506, 04518-05155, 05190-09063			
E	P10686	22-1266 03	07 APR 11	AUTO-FLIGHT - FMGC INSTALL HONEYWELL PERFORMANCE DATABASE RELEASE 1A (PS4087592-901)
	Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02443-02457, 02584-02670, 02737-02804, 03750-09063			
	P10687	22-1276 03 22-1499 06 22-1587 02	07 APR 11	AUTO-FLIGHT - FMGC- INSTALL THALES PERFORMANCE DATABASE RELEASE 1A (P/N G2831AAA02)
	Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			
E	P10694	22-1296 06 22-1536 10	20 AUG 10	AUTO-FLIGHT - FMGC ACTIVATE "MOD NAV IN GO AROUND" ON FMGC
	Applicable to: MSN 01767, 01957-02195, 02275-02443, 02482-02626, 02670, 02737-02908, 03071-03138, 03308, 03357-09063			
	P10721	73-1090 00	28 MAR 18	ENGINE FUEL AND CONTROL - FADEC SYSTEM INTRODUCE "5BQ" FADEC SOFTWARE STANDARD ON CFM56-5B ENGINES - CNF CFM 111B -
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
E	P10763	22-1270 04	07 OCT 11	AUTO FLIGHT - ON IAE & PW A/C INSTALL FMGC HWL H2I11 (RELEASE 1A) ON IAE & PW A/C
	Applicable to: MSN 02108, 02275-02334, 02457, 02609-02670, 02737-02804, 04491, 04532, 04645, 04965-09063			
	P10784	22-1361 03 22-1499 06 22-1587 02	07 OCT 11	AUTO-FLIGHT - FMGC INSTALL FMGC THALES S5I11 (RELEASE 1A) ON IAE & PW A/C
	Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02908-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			
E	P10891	32-1350 00	28 MAR 18	LANDING GEAR NORMAL BRAKING INSTALL BSCU SOFTWARE STD "L4.9 B"(EM2)
	Applicable to: MSN 02108, 02135-09063			
E	P10960	34-1561 07	27 MAY 14	NAVIGATION - T3CAS - INSTALL T3CAS COMPUTER WITH TRANSPONDER FUNCTION INACTIVE
	Applicable to: MSN 03138, 06336-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P11146	32-1381 01	07 APR 11	LANDING GEAR - PARKING/ULTIMATE EMERGENCY BRAKING ACTIVATE PARKING BRAKE MONITORING FUNCTION ON SA A/C
	Applicable to: MSN 02609-02626, 04481-09063			
	P11247	46-1049 21	15 FEB 16	INFORMATION SYSTEMS - GENERAL - CERTIFY FANS B+ CONFIGURATION (OVERALL MODIFICATION)
	Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158			
	P11325	73-1095 02	19 JUL 16	ENGINE FUEL AND CONTROL - FADEC SYSTEM INTRODUCE ECU SOFTWARE STANDARD "5BR" ON CFM56-5B ENGINES
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
E	P11330		28 MAR 18	ENGINE INDICATING - GENERAL - INTRODUCE NEW ARLON TRIM BALANCE PROBE ON IAE V2500 ENGINES - CNF IAE 400 -
	Applicable to: MSN 03863, 04156-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	P11354		15 OCT 13	AUTO FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER - INTRODUCE FMGC S6PI11 (THALES/IAE-PW)
	Applicable to: MSN 05923-06336			
E	P11356		06 MAR 14	AUTO FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER - INTRODUCE FMGC H2PI11 (HONEYWELL/IAE-PW)
	Applicable to: MSN 06208-09063			
E	P11363		24 OCT 16	AUTO FLIGHT - AUTOPILOT/FLIGHT DIRECTOR (AP/FD)- ACTIVATE AP/FD TCAS FUNCTION
	Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063			
	P11473	22-1315 05 22-1319 13 22-1536 10	07 OCT 11	AUTO FLIGHT - FLIGHT MANAGEMENT SYSTEM (FMS) ACTIVE BARO RADIO SETTING FUNCTION
	Applicable to: ALL			
E	P11490	34-1489 10	27 MAY 14	NAVIGATION - TRAFFIC AND TERRAIN INTEGRATED SURVEILLANCE (T/TISS) ACTIVATE XPDR FUNCTION ON T3CAS
	Applicable to: MSN 03138, 06336-09063			
E	P11510	34-1506 34 34-1533 26	15 FEB 13	NAVIGATION - TCAS - INSTALL TCAS HONEYWELL TPA-100B CHANGE 7.1 CAPABLE OF ATSAW
	Applicable to: MSN 01767-01920, 02108, 02195-02204, 02457, 02609-02626, 02670, 02804, 02914, 03750, 04491, 04532, 04645, 05120, 05158, 05218, 05712-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P11588	34-1466 14	17 MAY 16	NAVIGATION - ATC - INSTALL "ACSS" ATC XS 950 P/N 7517800-10100 COMPLIANT WITH DO-260A
	Applicable to: MSN 03138, 04393-04397, 05411-09063			
E	P11614		30 MAY 13	INDICATING/RECORDING SYSTEMS - EIS - INSTALL ENHANCED DU INSTEAD OF EIS2 LCDU
	Applicable to: MSN 05158, 05473-09063			
E	P11620	31-1352 00	07 APR 11	INDICATING/RECORDING SYSTEMS - FWC - ACQUISITION/INTERFACE - ACTIVATE MONITORING OF ATC / XPDR
	Applicable to: MSN 03357-03618, 03782-04216, 04312, 04328-04384, 04481-09063			
E	P11652		10 OCT 14	NAVIGATION - WEATHER RADAR SYSTEM - INSTALL SINGLE WEATHER RADAR RDR 4000 HONEYWELL
	Applicable to: MSN 04532, 04645, 05120, 05218, 08414-09063			
E	P11677	73-1097 00	30 MAY 12	ENGINE FUEL AND CONTROL - FADEC SYSTEM INTRODUCE EEC SOFTWARE STANDARD SCN21/AA FOR IAE V2500-A5
	Applicable to: MSN 01957-02121, 02138, 02275-02359, 02405, 02457-02482, 02609-02670, 02737, 03308, 03618, 03863-04008, 04156, 04312, 04328-04384, 04481-04506, 04518-04868, 04947-06336			
E	P11744	27-1219 02	07 APR 11	FLIGHT CONTROLS - SEC SYSTEM - INTRODUCE NEW SPOILER ELEVATOR COMPUTER (SEC) SOFTWARE STD 120 WITH HARD B'
	Applicable to: MSN 04481-09063			
E	P11807	31-1372 10 31-1415 00 31-1433 01	11 JAN 12	INDICATING/RECORDING SYSTEM ELECTRONIC INSTRUMENT SYSTEM (EIS) INSTALL NEW EIS2 SOFTWARE S9
	Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02649-02737, 02908-03264, 03330-04216, 04312-04399, 04438-04506, 04518-09063			
	P11819	31-1373 00 31-1414 03	09 OCT 12	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) INSTALL FWC STANDARD H2-F6
	Applicable to: ALL			
	P11844	46-1047 13 46-1075 07	07 JUN 16	RFC FIN091010D4610 - SA - INFORMATION SYSTEM - UPGRADE ATSU WITH FANS B+ APPLICATION
	Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158			
	P11856	22-1315 05 22-1319 13 22-1536 10	07 OCT 11	AUTO - FLIGHT FMGC: ACTIVATE NO AP DISCONNECTION BELOW MDA/MDH UNTIL MISSED APPROACH POINT
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P11955	31-1374 01	17 NOV 15	INDICATING/RECORDING SYSTEMS -GENERAL - SYSTEM DATA ACQUISITION CONCENTRATOR (SDAC) - INSTALL SDAC STANDARD H2-E3
	Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02204, 02609-02626, 02712, 03138, 03308, 03357-03541, 03750, 03863-04113, 04216, 04312, 04384, 04481-04491, 04532, 04552-04947, 04965-09063			
	P12061	22-1499 06 22-1587 02	15 OCT 13	AUTO FLIGHT - FMGC HONEYWELL RE-INSTALL FMGC IAE/PW MOD 31897 (ANTI-MOD 38779)
	Applicable to: MSN 04965-05094, 05155-05190, 05230-06336			
	P12093	22-1361 03 22-1499 06 22-1587 02	07 OCT 11	AUTOFLIGHT - FMGC INSTALL FMS THALES RELEASE 1A S6 (WITH FG I11) ON IAE & PW A/C
	Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02908-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			
E	P12094	34-1561 07	27 MAY 14	NAVIGATION - TRAFFIC AND TERRAIN - INTEGRATED SURVEILLANCE SYSTEM (T/TISS)ACTIVATE OBSTACLE FUNCTION
	Applicable to: MSN 03138, 06336-09063			
E	P12095	34-1561 07	27 MAY 14	NAVIGATION -TRAFFIC AND TERRAIN - INTEGRATED SURVEILLANCE SYTEM (T/TISS) ACTIVATE ELEVIEW FUNCTION
	Applicable to: MSN 03138, 06336-09063			
	P12126	22-1461 12	30 MAY 13	AUTO FLIGHT - FLIGHT AUGMENTATION COMPUTER - INSTALL FAC B0622 (SHARKLET PROJECT)
	Applicable to: MSN 02626, 05437-05898			
E	P12127	27-1238 00	30 MAY 13	FLIGHT CONTROLS - ELEVATOR AILERON COMPUTER SYSTEM - INSTALL ELAC B L96 (SHARKLET PROJECT)
	Applicable to: MSN 01767-04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04888, 05437-09063			
E	P12171		11 JAN 12	NAVIGATION - WEATHER RADAR SYSTEM - INSTALL COLLINS SINGLE WEATHER RADAR CAPABLE OF PWS FUNCTION IN SINGLE CONFIG (WITH TRANSCEIVER -624)
	Applicable to: MSN 04965-09063			
E	P12173		11 JAN 12	NAVIGATION - WEATHER RADAR SYSTEM - INSTALL COLLINS MULTISCAN WXR IN FULL SINGLE CONFIG (WITH P/N -213) AND MULTISCAN FUNCTION ACTIVATED
	Applicable to: MSN 04965-05094, 05155, 05190, 05230-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P12301		14 SEP 18	COMMUNICATIONS - COCKPIT VOICE RECORDER - INSTALL CVR STANDARD L3-C P/N 2100-1025-02 (ANTI-MOD 150806 and 157368 and 159888)
	Applicable to: MSN 04603-05155, 05190-09045			
	P1237		26 AUG 15	INDICATING RECORDING SYSTEM-TOGGLE SWITCHES RELOCATED IN 25VU ON OVERHEAD PANEL
	Applicable to: MSN 02275-02334			
	P12413	34-1521 01	28 MAR 18	NAVIGATION - GENERAL - INSTALL A NEW CONIC PLATE FOR AOA (ANGLE OF ATTACK SENSOR) GOODRICH 0861ED AND OLD AOA THALES 45150320
	Applicable to: MSN 01957, 02108, 02275, 02359, 03414-03457, 04113, 04603-04637, 05120, 05218			
E	P12484		30 MAY 13	INDICATING/RECORDING SYSTEMS - SDAC - ACQUISITION/INTERFACE - REMOVE USELESS PIN PROGRAMMING ON SDAC (FWC H2-F5 INSTALLED)
	Applicable to: MSN 05291-09063			
	P12603	34-1516 00	30 MAY 12	NAVIGATION - Traffic Collision Avoidance System (TCAS) - Install ACSS T2CAS standard 3 Change 7.0
	Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03264-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336			
	P12604	34-1521 01	28 MAR 18	NAVIGATION - GENERAL - INSTALL A NEW CONIC PLATE FOR NEW AOA (ANGLE OF ATTACK) THALES C16291XX
	Applicable to: MSN 01957, 02108, 02275, 02359, 03414-03457, 04113, 04603-04637, 05036-05411			
	P12637		27 JUN 16	NAVIGATION - WEATHER RADAR SYSTEM - INSTALL COLLINS MANUAL EQUIPMENTS FOR CONFIGURATIONS WITH DUAL PROVISIONS
	Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192			
E	P12697	31-1415 00 31-1433 01	15 OCT 13	INDICATING/RECORDING SYSTEMS - Electronic Instrument System (EIS) - Introduce EIS2 Standard S10
	Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02649-02737, 02908-03264, 03330-04216, 04312, 04328-04384, 04394-04399, 04438-04506, 04518-09063			
E	P12746	34-1561 07	27 MAY 14	NAVIGATION - Traffic and Terrain Integrated Surveillance (T/TISS) - Install T3CAS corrective standard STD1-1
	Applicable to: MSN 03138, 06336-09063			
E	P12753		06 MAR 14	AUTO-FLIGHT - FLIGHT AUGMENTATION COMPUTER (FAC) - INSTALL STANDARD FAC CAA02 (SHARKLETS CAPABILITY AND ROPS FUNCTION)
	Applicable to: MSN 05923-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	P12909		15 OCT 18	NAVIGATION - AIR DATA/INERTIAL REFERENCE SYSTEM - Install ADIRU Honeywell OPS Software STD

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
				L4.2 (Vzbi evolution and hybrid FPA within Block III ADIRU)
	Applicable to: MSN 05473-09063			
E	P12911	22-1359 05 22-1360 02 22-1379 01 22-1463 02 22-1476 00 22-1499 06 22-1536 10 22-1547 00 22-1587 02	17 JUL 15	AUTO FLIGHT SYSTEM ? FMGC ? ACTIVATE "NO AP DISCONNECTION UPON PROFILE OR F-PLAN INVALIDATION IN FINAL DES MODE" FUNCTION BY PIN-PROGRAMMING
	Applicable to: MSN 01767-04384, 04399-09063			
E	P12946	34-1563 04	15 OCT 13	NAVIGATION - SENSORS, POWER SUPPLY AND SWITCHING - Define static probe monitoring on ground function on FWC/SDAC
	Applicable to: MSN 01957, 05641-09063			
E	P12994	34-1571 02	15 JUN 15	NAVIGATION - WEATHER RADAR SYSTEM - INSTALL COLLINS WXR CAPABLE MULTISCAN WITH TRANSCEIVER WRT-2100 (P/N 822-1710-214)
	Applicable to: MSN 02584, 02649, 03453, 04614, 04762-05094, 05155, 05262-05298, 05473, 05507, 05641-05676, 05712, 05744-05807, 05952-06010, 06720-09063			
	P1302		20 AUG 10	LANDING GEAR-POST EIS STANDARD 4 OF BSCU EQUIPMENT
	Applicable to: ALL			
	P13023	31-1414 03	11 JAN 13	INDICATING RECORDING SYSTEMS - FWC - Introduce FWC Standard H2-F7
	Applicable to: ALL			
E	P13061		15 JUN 15	NAVIGATION - GROUND PROXIMITY WARNING SYSTEM (GPWS) - INSTALL NEW EGPWS STANDARD PNR 965-1676-006
	Applicable to: MSN 06720-09063			
	P1312		07 APR 11	LIGHTS-COCKPIT-INTEGRALLY LIGHTED PLACARD 25VU,ANTI ICE PART MODIFIED
	Applicable to: ALL			
	P13147	34-1539 36	03 JUL 12	NAVIGATION - Traffic and Terrain Collision Avoidance System (T2CAS) - Install ACSS T2CAS STD3.5 with TCAS Change 7.1 algorithm
	Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03264-03541, 03943-04113, 04294-04328, 04393-04488, 04506-04518, 04535-04552, 04609-04630, 04752-04947, 04965-05036, 05080-05092, 05155, 05190, 05230-06336			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P13210	34-1561 07	28 MAR 18	NAVIGATION - TRAFFIC AND TERRAIN INTEGRATED SURVEILLANCE SYSTEM(T/TISS) - INSTALL ACSS T3CAS STD 1.2
	Applicable to: MSN 03138, 06336-09063			
E	P13235		09 NOV 15	NAVIGATION - ADIRU - INSTALL HARDWARE ADIRU HONEYWELL BLOCK III BE04
	Applicable to: MSN 06208-09063			
E	P13322		06 MAR 14	AUTO FLIGHT - FMGC - INTRODUCE FMS HONEYWELL PEGASUS II ASSOCIATED WITH FG 3G PI12
	Applicable to: MSN 06208-09063			
E	P13357	22-1480 03	06 MAR 14	AUTO FLIGHT ? FLIGHT AUGMENTATION COMPUTER (FAC) - DEFINE STOP RUDDER INPUT WARNING FUNCTION ON AIRCRAFT
	Applicable to: MSN 01767-02139, 02204-02405, 02457, 02584-02712, 02804-04156, 04294, 04314-04506, 04518-04532, 04552, 04609-05036, 05090-05094, 05155-05230, 05259, 05291, 05313-09063			
E	P13476	22-1554 01	17 MAY 16	AUTO-FLIGHT - FLIGHT AUGMENTATION COMPUTER (FAC) - INSTALL FAC CAA03 STANDARD
	Applicable to: MSN 05923-09063			
E	P13481	27-1252 01	28 MAR 18	FLIGHT CONTROLS - SPOILER AND ELEVATOR COMPUTER (SEC) - INSTALL STANDARD SEC C 126
	Applicable to: MSN 05712-09063			
E	P13482	27-1251 01	17 MAY 16	FLIGHT CONTROLS - ELEVATOR AILERON COMPUTER SYSTEM (ELAC) - Install ELAC L98 STANDARD WITH DATA LOADING CAPABILITY
	Applicable to: MSN 04399, 04438, 04491, 04510, 04532, 04645, 04947, 04965-05080, 05120-05155, 05190, 05230-05262, 05298-05507, 05577, 05676-05807, 05898, 05992-06010, 06208-06287, 06336-09063			
E	P13487	31-1492 00	18 JUN 18	INDICATING/RECORDING SYSTEMS - FWC - Install FWC H2-F8 for NEO EIS
	Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063			
E	P13489		09 NOV 15	ELECTRICAL POWER-AC MAIN GENERATION - DEFINE AND INSTALL IDG ON NEO PW ENGINE
	Applicable to: MSN 06720-09063			
E	P13491		15 JUN 15	ICE AND RAIN PROTECTION - AIR INTAKES - CONNECT NACELLE ANTI ICING PUSH BUTTON TO ENGINE INTERFACE UNIT for PW engines (NEO CONFIGURATION)
	Applicable to: MSN 06720-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P13508	22-1476 00	15 OCT 13	AUTO FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER - INSTALL FMGC S7PI12 THALES ON IAE AIRCRAFT
	Applicable to: MSN 05923-06336			
E	P13619	27-1234 01 27-1243 01	27 NOV 13	FLIGHT CONTROLS - ELEVATOR AILERON COMPUTER SYSTEM (ELAC) - INSTALL L97 STANDARD ON ELAC B WITH DATALOADING CAPABILITY
	Applicable to: MSN 04314, 04393-04438, 04491, 04510, 04532, 04645, 04947-09063			
E	P13630	31-1450 01	03 OCT 17	INDICATING/RECORDING SYSTEMS - SDAC ACQUISITION/INTERFACE - Install SDAC standard H2-E4
	Applicable to: MSN 01957-02097, 02121, 02138, 04491, 04532, 04645, 06720-09063			
E	P13706		20 NOV 17	NAVIGATION - AIR DATA/INERTIAL REFERENCE SYSTEM - Install ADIRU Honeywell OPS/OPC1/OPC2 Software L4-4
	Applicable to: MSN 06720-09063			
	P1371		22 MAR 16	LANDING GEAR-INSTALLATION OF GOODRICH BRAKES COOLING FANS
	Applicable to: MSN 02359, 02405, 02482			
E	P13834		22 MAY 18	AUTO-FLIGHT - FLIGHT AUGMENTATION COMPUTER (FAC) - INSTALL STANDARD FAC CAA02 (SHARKLETS AND ROPS PROJECT) on A321 AIRCRAFT
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	P13843		15 JUN 15	NAVIGATION - ATC - INSTALL ACSS ATC XS-950 P/N 7517800-12401 COMPLIANT WITH DO-260B MANDATE
	Applicable to: MSN 06772, 06819-09063			
	P1390		20 AUG 10	ELECTRICAL GENERATION-BCL'S CHANGE
	Applicable to: ALL			
E	P13922	22-1618 00	20 NOV 17	CERTIFICATION DOCUMENTS - GENERAL - DEFINE SOFT GO AROUND FUNCTION FOR NEO
	Applicable to: MSN 06720-09063			
E	P13937	31-1433 01	28 MAR 18	INDICATING/RECORDING SYSTEMS - ELECTRONIC INSTRUMENT SYSTEM (EIS) - INTRODUCE EIS2 STANDARD S11
	Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02649-02737, 02908-03264, 03330-04216, 04312, 04328-04384, 04394-04399, 04438-04506, 04518-09063			
E	P14095		15 JUN 15	AUTO FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC) - INSTALL FMGC

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
				3G H2BPI14 FMS KIT PEGASUS II HONEYWELL ON IAE/PW AIRCRAFT
	Applicable to: MSN 06720-09063			
	P14130	22-1476 00	27 MAY 14	AUTO FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE - INSTALL FMGC S7API12 THALES ON IAE A/C
	Applicable to: MSN 05923-06336			
E	P14155		18 JUN 18	NAVIGATION - ATC/MODE S (SELECT) - ACTIVATE ADS-B OUT DO-260B CAPABILITY FOR ATC TRANSPONDEUR
	Applicable to: MSN 08511, 08558-09063			
E	P14160		15 JUN 15	NAVIGATION - TRAFFIC AND TERRAIN INTEGRATED SURVEILLANCE SYSTEM (T/TISS) - Install ACSS T3CAS std 2 P/N 9005000-11203 capable DO-260B and ROPS
	Applicable to: MSN 06772, 06819-09063			
E	P14161	34-1649 02	07 JUN 16	NAVIGATION - WEATHER RADAR SYSTEM - INSTALL COLLINS WXR SYSTEM WITH HAZARD FUNCTION (P/N 822-1710-411) IN FULL SINGLE CONFIGURATION
	Applicable to: MSN 06720-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252-09063			
	P14283		27 JUN 16	NAVIGATION - WEATHER RADAR SYSTEM - INSTALL COLLINS WXR SYSTEM WITH HAZARD FUNCTION (P/N 822-1710-411) IN DUAL PROVISION CONFIGURATION
	Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192			
E	P14306		27 MAY 14	NAVIGATION - TRAFFIC COLLISION AVOIDANCE SYSTEM (TCAS) - REINSTALL TCAS PROVISIONS CONFIGURATION
	Applicable to: MSN 06336-09063			
E	P14307		15 JUN 15	NAVIGATION - TRAFFIC COLLISION AVOIDANCE SYSTEM (TCAS) - REINSTALL TCAS HONEYWELL TPA-100B P/N 940-0351-001
	Applicable to: MSN 06720-09063			
	P14308		27 MAY 14	NAVIGATION - TRAFFIC COLLISION AVOIDANCE SYSTEM (TCAS) - REINSTALL TCAS 2000 ACSS P/N 751-7900-10003
	Applicable to: MSN 06336			
E	P14310		17 MAY 16	NAVIGATION - ATC/MODE S (SELECT) - REINSTALL XPDR1 AND XPDR2 TRA-67A P/N 066-01127-1101
	Applicable to: MSN 06336-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P14311		17 MAY 16	NAVIGATION - ATC/MODE S (SELECT) - REINSTALL ATC XPDR HONEYWELL (TYPE TRA67A P/N 066-01127-1402)
	Applicable to: MSN 06720-09063			
	P14312		28 MAR 18	NAVIGATION - ATC/MODE S (SELECT) - REINSTALL ATC XPDR ACSS XS950 PN 7517800-10100 TYPE COMPLIANT TO DO260A
	Applicable to: MSN 06336			
E	P14313		23 SEP 14	NAVIGATION - GROUND PROXIMITY WARNING SYSTEM (GPWS) - REINSTALL EGPWS P/N 965-1676-002
	Applicable to: MSN 06336-09063			
E	P14314		15 JUN 15	NAVIGATION - GROUND PROXIMITY WARNING SYSTEM (GPWS) - REACTIVATE GEO ALTI/PEAKS/OBSTACLE/LATERAL GPS POSITION
	Applicable to: MSN 06720-09063			
	P14391		11 FEB 15	AUTO FLIGHT - FMGC - REINSTALL HNWL FM H2 and IAE HNWL FG PI11
	Applicable to: MSN 06208-06336			
E	P14457		28 MAR 18	NAVIGATION - WEATHER RADAR SYSTEM - Install new RDR-4000 step 2 Radar Processor and activate WX ahead function (for FULL SINGLE CONFIGURATION)
	Applicable to: MSN 08414-09063			
	P1450		20 AUG 10	NAVIGATION - ATC MODE "S" - ACTIVATION OF SELECTIVE INTERROGATION FUNCTION
	Applicable to: ALL			
E	P14510	27-1243 01	20 NOV 17	FLIGHT CONTROLS - ELEVATOR AILERON COMPUTER SYSTEM (ELAC) - INSTALL ELAC B L97+ WITH DATA LOADING CAPABILITY
	Applicable to: MSN 04314, 04393-04438, 04491, 04510, 04532, 04645, 04947-09063			
E	P14582		06 DEC 16	NAVIGATION - ATC/MODE S (SELECT) - Configure DO-260B TRANSPONDER ATC 1
	Applicable to: MSN 06772, 06819-09063			
E	P14628	31-1482 02	15 JUN 15	INDICATING/RECORDING SYSTEMS - ELECTRONIC INSTRUMENT SYSTEM (EIS) - INTRODUCE EIS2 S12 STANDARD
	Applicable to: MSN 01957, 02135, 02139, 02443, 02649, 02712, 02908-03071, 03264, 03330-04113, 04216, 04312, 04328-04384, 04399, 04438-04506, 04518, 04552-04757, 04888-04947, 04965-05092, 05120-05190, 05230-05259, 05291-05313, 05437-05460, 05476-05537, 05676-05683, 05727, 05829-05952, 06010-06208, 06275-06287, 06720-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P14629	31-1492 00	15 JUN 15	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC H2-F8P FOR A320NEO PW TC
	Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063			
E	P14825	31-1481 01 31-1482 02	07 JUN 16	INDICATING/RECORDING SYSTEM - EIS - INTRODUCE EIS2 S13 STANDARD
	Applicable to: MSN 01957, 02135, 02139, 02443, 02649, 02712, 02908-03071, 03264, 03330-04113, 04216, 04312, 04328-04384, 04399, 04438-04506, 04518, 04552-04757, 04888-04947, 04965-05092, 05120-05190, 05230-05259, 05291-05313, 05437-05460, 05476-05537, 05676-05683, 05727, 05829-05952, 06010-06208, 06275-06287, 06720-09063			
E	P14826	31-1490 00 31-1492 00	07 JUN 16	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC H2-F9 STANDARD
	Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063			
E	P14828		07 DEC 15	NAVIGATION - TRAFFIC AND TERRAIN INTEGRATED SURVEILLANCE SYSTEM (T/TISS) - REINSTALL T3CAS STD 1.2 AND ACSS ATC XS-950 (ANTI-MOD of 156002 & 155999))
	Applicable to: MSN 06772, 06819-09063			
	P1485		20 AUG 10	ELECTRICAL POWER-"BAT OFF"INDICATOR LIGHT POWER SOURCE MODIFIED
	Applicable to: ALL			
	P15275		06 DEC 16	NAVIGATION - ATC/MODE S (SELECT) - RE-CONFIGURE ATC1 WIRING IN DO260A CONF (ANTI-MOD 156506/P14582 & MOD 157970/P15322)
	Applicable to: MSN 06772, 06819-08492, 08527-08557			
E	P15323		12 FEB 18	AUTO FLIGHT - GENERAL - Activate ROPS function on SA-NEO
	Applicable to: MSN 08414-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	P15372	22-1575 00	03 JAN 17	AUTO FLIGHT - FMGC - INTRODUCE FG PI15 ASSOCIATED WITH HONEYWELL FMS H2C
	Applicable to: MSN 06720-09063			
E	P15391	27-1263 00	28 MAR 18	FLIGHT CONTROLS - ELEVATOR AILERON COMPUTER SYSTEM (ELAC) - Install ELAC L99 STANDARD WITH DATA LOADING CAPABILITY
	Applicable to: MSN 04399, 04438, 04491, 04510, 04532, 04645, 04947, 04965-05080, 05120-05155, 05190, 05230-05262, 05298-05507, 05577, 05676-05807, 05898, 05992-06010, 06208-06287, 06336, 06904, 06946, 07083-07192, 07618-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P15701		28 MAR 18	ENGINE FUEL AND CONTROL - FULL AUTHORITY DIGITAL ENGINE CONTROL (FADEC) SYSTEM - INTRODUCE NEW FADEC SOFTWARE ON SA NEO PW
	Applicable to: MSN 06720-09063			
E	P15748		28 MAR 18	ENGINE FUEL AND CONTROL - FULL AUTHORITY DIGITAL ENGINE CONTROL (FADEC) SYSTEM - INTRODUCE FCS2.3 FADEC SOFTWARE ON SA NEO PW
	Applicable to: MSN 06720-09063			
E	P15763	00-1263 00	13 APR 16	GENERAL-FLIGHT ENVELOPE EXTENSION - NEO PW - GRD OPERATION TO 9200FT
	Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	P15797		06 DEC 16	ENGINE - GENERAL - REDUCE #3/#4 DAMPER GAP ON NEO PW
	Applicable to: MSN 06720, 06772, 06829, 06904-09063			
E	P15799		28 MAR 18	ENGINE FUEL AND CONTROL - FUNCTIONAL INTERFACES - Install EIU software S2.4 for A320NEOPW
	Applicable to: MSN 06720-09063			
E	P15809		22 MAR 16	AUTO FLIGHT - FLIGHT MANAGEMENT GUIDANCE AND ENVELOPE COMPUTER (FMGC) - INSTALL HONEYWELL PDB FOR A320NEOPW POST-EIS
	Applicable to: MSN 06720-09063			
E	P15825		22 MAR 17	NAVIGATION - AIR DATA - Install and define reversible Back-Up Speed Scale function
	Applicable to: MSN 07618-09063			
E	P15863		22 MAR 17	ENGINE FUEL AND CONTROL - FULL AUTHORITY DIGITAL ENGINE CONTROL (FADEC) SYSTEM - INTRODUCE FCS2.6 FADEC ON SA NEO PW
	Applicable to: MSN 06720-09063			
E	P15872	22-1593 01 22-1594 00	22 MAR 17	AUTO-FLIGHT - FLIGHT AUGMENTATION COMPUTER (FAC) - INSTALL FAC CAA06
	Applicable to: MSN 05923-09063			
E	P15874	22-1568 03	03 JAN 17	AUTO FLIGHT - GENERAL - Introduce CAT2/CAT3 Autoland on SA NEO Family
	Applicable to: MSN 06720-06952, 07001-09063			
E	P15897		06 DEC 16	ENGINE - HIGH PRESSURE COMPRESSOR (HPC) ASSEMBLY - NEO PW - ADD CBN COATING ON HPC
	Applicable to: MSN 06720, 06772, 06829, 06904-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P15967		24 OCT 16	ENGINE - GENERAL - DEFINE, INSTALL AND ACTIVATE DUAL COOLING ON NEO PW ENGINES
	Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192, 07329-09063			
E	P15983	73-1111 00	06 DEC 16	ENGINE FUEL AND CONTROL - FUNCTIONAL INTERFACES - Install EIU software S3.1 on NEO A/C
	Applicable to: MSN 06720-09063			
E	P15991	31-1490 00 31-1492 00	07 JUN 16	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC H2-F9C STANDARD
	Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063			
E	P15992	31-1490 00 31-1492 00	10 AUG 16	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC H2-F9D
	Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063			
E	P15993	31-1499 00	20 NOV 17	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC H2-F9E
	Applicable to: MSN 06720-09063			
E	P15994	73-1108 00	24 OCT 16	ENGINE FUEL AND CONTROL - FULL AUTHORITY DIGITAL ENGINE CONTROL (FADEC) SYSTEM - INTRODUCE FCS3.1 FADEC ON NEO PW
	Applicable to: MSN 06720-09063			
E	P15997	73-1109 01	06 DEC 16	ENGINE FUEL AND CONTROL-FUNCTIONAL INTERFACES-Install A429 links between MMR/clock and EIU to acquire time for cooling computed by FADEC on NEO A/C
	Applicable to: MSN 06720-09063			
E	P1631	34-1278 04	20 AUG 10	NAVIGATION - MODIFY GPWC WARNINGS
	Applicable to: MSN 01920-09063			
	P1669		20 AUG 10	AIR CONDITIONING-AVIONICS VENTILATION ADD A NON RETURN VALVE AT AIR INLET
	Applicable to: ALL			
	P1752		20 AUG 10	HYDRAULICS-MODIFICATION OF ELECTRICAL ROUTING OF GREEN LEAKAGE MEASUREMENT ELECTROVALVE CONTROL
	Applicable to: ALL			
	P1850		20 AUG 10	FLIGHT CONTROLS-ELAC SYSTEM-EFCS ELAC -SOFTWARE L62
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P1872		04 MAY 15	AIR CONDITIONING-INSTALLATION OF CIRCUIT BREAKER FOR REAR CARGO COMPARTMENT VALVE SUPPLY
	Applicable to: MSN 01767-02097, 02121-02139, 02204-02334, 02388, 02443, 02609-02649, 02804, 03071, 04314, 04393-04397, 05158			
	P1875		26 AUG 15	AIR CONDITIONING-ESSENTIAL DC SUPPLY FOR REAR CARGO COMPARTMENT HEATING CONTROLER
	Applicable to: MSN 01767, 01957-02097, 02121-02139, 02275-02334, 02388, 02443, 02609-02649, 03071, 04314, 04393-04397, 05158			
	P1883		20 AUG 10	FLIGHT CONTROLS-FCDC L 40
	Applicable to: ALL			
	P1906		15 FEB 16	ENGINES FUEL AND CONTROL-EIU FOR CFMI POWERPLANT (SOFTWARE VERSION 11)
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
E	P1970	23-1653 00	20 AUG 10	COMMUNICATIONS-INSTALL HF1 IN EMERGENCY CONFIG. (ETOPS)
	Applicable to: MSN 01767-02334, 02388-02584, 02649-09063			
E	P20095		12 FEB 18	COMMUNICATIONS - COCKPIT VOICE RECORDER - Install new L3COM CVR to remove Larsen Noise during CVR test
	Applicable to: MSN 07892-09063			
E	P20189	73-1113 00	03 JAN 17	ENGINE FUEL AND CONTROL - FUNCTIONAL INTERFACES - Install EIU S3.2
	Applicable to: MSN 06720-09063			
E	P20249		28 MAR 18	AUTO FLIGHT - GENERAL - deactivate ROPS function
	Applicable to: MSN 08414-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
E	P20268		20 NOV 17	NAVIGATION - AIR DATA/INERTIAL REFERENCE SYSTEM - INSTALL MAGVAR 2015 ON HONEYWELL ADIRU BLOCK III
	Applicable to: MSN 08158-09063			
E	P20300	73-1120 00	16 AUG 17	ENGINE FUEL AND CONTROL - FUNCTIONAL INTERFACES - Install EIU S3.3
	Applicable to: MSN 06720-09063			
E	P20305	73-1122 00	17 OCT 17	ENGINE FUEL AND CONTROL - FADEC SYSTEM - INTRODUCE FCS4.2 FADEC SOFTWARE ON NEO PW
	Applicable to: MSN 06720-09063			
N	P20327		21 JAN 19	COMMUNICATIONS - COCKPIT VOICE RECORDER - CVR TEST PANEL - ADD PLUG XLR5
	Applicable to: MSN 09063			
E	P20351	73-1121 00	15 MAY 17	ENGINE FUEL AND CONTROL - FULL AUTHORITY DIGITAL ENGINE CONTROL (FADEC) SYSTEM -

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
				INTRODUCE FCS4.0b FADEC SOFTWARE ON NEO PW
	Applicable to: MSN 06720-09063			
E	P20374		22 MAY 18	EQUIPMENT/FURNISHINGS - COCKPIT - New C/B arrangement for ST8 for 120VU and 49VU
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	P20375		22 MAY 18	INDICATING/RECORDING SYSTEMS - ELECTRONIC INSTRUMENT SYSTEM (EIS) - install EIS2 STANDARD S14
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	P20385	22-1605 00	15 JAN 18	AUTO FLIGHT - FMGC - INSTALL FG PI16 ASSOCIATED WITH HONEYWELL FM H2C
	Applicable to: MSN 06720-06860, 06904-06914, 06952-07033, 07192, 07329-08168, 08218-09063			
	P2040		20 AUG 10	OXYGENE-COCKPIT-MODIFY LP VALVE
	Applicable to: ALL			
E	P20427		31 DEC 18	FLIGHT CONTROLS - ELEVATOR AILERON COMPUTER SYSTEM (ELAC) - INSTALL ELAC L102 STANDARD WITH DATA LOADING CAPABILITY
	Applicable to: MSN 08587, 08655, 08710, 08768, 09063			
E	P20429		18 JUN 18	AUTO-FLIGHT - FLIGHT AUGMENTATION COMPUTER (FAC) - INSTALL FAC CAA09
	Applicable to: MSN 08414-09063			
E	P20441		13 MAR 18	NAVIGATION - WEATHER RADAR SYSTEM - RE-INSTALL SINGLE MANUAL HONEYWELL WEATHER RADAR WITH DUAL PROVISION (ANTI-MOD)
	Applicable to: MSN 08414-09063			
E	P20442		13 MAR 18	NAVIGATION - WEATHER RADAR SYSTEM RE-INSTALL SINGLE MANUAL ROCKWELL COLLINS WEATHER RADAR WITH DUAL PROVISION (ANTI-MOD)
	Applicable to: MSN 08414-09063			
E	P20444		13 MAR 18	NAVIGATION - WEATHER RADAR SYSTEM - RE-INSTALL SINGLE MANUAL COLLINS WXR CONFIGURATION WITH SINGLE PROVISIONS
	Applicable to: MSN 08414-09063			
E	P20466		22 MAY 18	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC H2-F10
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P20496	75-1005 00	15 MAY 17	AIR - GENERAL - REDESIGN BUFFER AIR SOLENOID TO INCREASE MARGIN TO SPEC REQUIREMENTS ON NEO PW
	Applicable to: MSN 06720-09063			
E	P20664		22 MAY 18	INDICATING/RECORDING SYSTEMS -ELECTRONIC INSTRUMENT SYSTEM (EIS) - INTRODUCE EIS2 STANDARD S15
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	P20717	73-1123 00	14 MAY 18	ENGINE FUEL AND CONTROL - FUNCTIONAL INTERFACES - Install EIU S4.0
	Applicable to: MSN 06720-09063			
E	P20903	73-1128 01	22 MAY 18	ENGINE FUEL AND CONTROL - FADEC SYSTEM - INTRODUCE FCS4.4 FADEC SOFTWARE WITH ASSOCIATED HARDWARE ON NEO PW
	Applicable to: MSN 06720-09063			
E	P21030		15 OCT 18	ENGINE FUEL AND CONTROL - FUNCTIONAL INTERFACES - Introduce preboost capability for APU Honeywell 131-9A with PW1100G engines
	Applicable to: MSN 08768-09045			
	P2196		20 AUG 10	BATCH OF MINOR IMPROVEMENTS OF SERIES A/C DESIGN (AS ZONE) FROM A/C N 268
	Applicable to: ALL			
	P2205		20 AUG 10	FIRE PROTECTION - REPLACE ENGINE/APU FIRE PANEL
	Applicable to: ALL			
	P2218		20 AUG 10	NAVIGATION - TCAS II COMPLETE PROVISIONS
	Applicable to: ALL			
	P2223		20 AUG 10	NAVIGATION - INSTALLATION OF GPWC MARK V WITH INTERFACE WITH CFDS
	Applicable to: ALL			
	P2294		15 FEB 16	ENGINE FUEL AND CONTROL - CFM 56 POWERPLANT EIU VERSION 12
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
	P2316		20 AUG 10	AUTOFLIGHT - ACTIVATE WINDSHEAR FUNCTION
	Applicable to: ALL			
	P2493		20 AUG 10	COCKPIT - INSTALL A340 TYPE PILOT SEATS
	Applicable to: ALL			
	P2546		20 AUG 10	INDICATING/RECORDING SYSTEMS - INSTRUMENTS - DEFINE SDAC STANDARD FOR A321 COF A
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P2547		04 MAY 15	INDICATING/RECORDING SYSTEMS - INSTRUMENTS - DEFINE DMC STANDARD FOR A321 COF A
	Applicable to: ALL			
	P2588		20 AUG 10	OXYGEN - COCKPIT - REPLACE BASIC AIR LIQUIDE PBE BY DRAEGER
	Applicable to: ALL			
E	P2590		20 AUG 10	NAVIGATION - INSTALL A TCAS II COLLISION AVOIDANCE SYSTEM
	Applicable to: MSN 01767-02121, 02138, 02195-02204, 02388, 02443-02457, 02609-02626, 02670, 02804-02914, 03138, 03618-09063			
	P2650	30-1048 32	15 FEB 17	ICE AND RAIN DETECTION - DUAL ADVISORY - ICE DETECTION SYSTEM INSTALLATION
	Applicable to: MSN 01767, 02584-02649, 04314, 04393-04397			
E	P2859		20 AUG 10	NAVIGATION - INSTALL A TCAS II COLLISION AVOIDANCE SYSTEM (HONEYWELL)
	Applicable to: MSN 02135, 02139, 02275-02334, 02737, 03071, 03264-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063			
	P2878		04 MAY 15	INDICATING RECORDING SYSTEM - SDAC - DEFINE A PIN PROGRAM FOR REAR C.C. VENTILATION
	Applicable to: MSN 01767-02097, 02121-02139, 02204-02334, 02388, 02443, 02609-02649, 02804, 03071, 04314, 04393-04397, 05158			
E	P2960	00-1016 70	20 AUG 10	CERTIFICATION DOCUMENTS - GENERAL - CERTIFICATION FOR TAKING OFF WITH 15 KNOT TAILWING
	Applicable to: MSN 01767, 01957-02097, 02121-02195, 02388-02482, 02609-03138, 03308, 03357-05155, 05190-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
	P2963		20 AUG 10	AIR CONDITIONING - IMPROVE CABIN PRESSURIZATION CONTROL ON 25VU -
	Applicable to: ALL			
	P3004		20 AUG 10	LIGHTS-COCKPIT LIGHTING-IMPROVE COCKPIT LIGHTING
	Applicable to: ALL			
	P3011		20 AUG 10	FMS - FMS CROSS LOAD
	Applicable to: ALL			
	P3044		20 AUG 10	NAVIGATION -ADAPT SHELVES FOR INSTALLATION OF 4MCUADIRS -
	Applicable to: ALL			
	P3102		20 AUG 10	AUTO FLIGHT - FCU-CPIP1 STANDARD
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P3105		15 FEB 16	ENGINE FUEL AND CONTROL - CFM 56 - EIU VERSION 13
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
E	P3106		20 AUG 10	ENGINE FUEL AND CONTROL - IAE V2500 - EIU VERSION 4
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	P3112		09 NOV 15	NAVIGATION - INSTALLATION OF TCAS II COLLINS SYSTEM
	Applicable to: MSN 02359, 02405, 02482-02584, 02649, 02712			
	P3202		20 AUG 10	AUTOFLIGHT - FCU - CPIP 2 STANDARD M10
	Applicable to: ALL			
	P3204		15 FEB 16	AUTO FLIGHT - FMGC - A320/A321 STANDARD WITH SOFTWARE OPTIONS + 400 KILOWORDS DATA BASE OPTION + ACARS HARDWARE PROVISION (B1 CFM VERSION)
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
E	P3208		20 AUG 10	AUTO FLIGHT - FMGC - A320/A321 - STANDARD WITH SOFTWARE OPTIONS + 400 KWORDS DATA BASE OPTION + ACARS HARDWARE (B1 IAE VERSION)
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063			
	P3259		28 MAR 18	LANDING GEAR - BRAKING - IMPROVE BRAKE DUAL DISTRIBUTION VALVE
	Applicable to: ALL			
E	P3341		22 MAY 18	LANDING GEAR - MLG - INSTALL MESSIER BUGATTI/ BF GOODRICH WHEELS AND CARBON BRAKES
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	P3348		20 AUG 10	LAND CAT III CAPABILITY TEST - CAT III CAPABILITY EXTENSION FOR IAE ENGINES
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	P3365		20 AUG 10	ICE PROTECTION - ICING INDICATOR ILLUMINATION
	Applicable to: ALL			
	P3379		20 AUG 10	INDICATING/RECORDING SYSTEMS - GENERAL - DEFINE PIN PROGRAMMING FOR STD VERSIONS
	Applicable to: ALL			
	P3401		04 MAY 15	AUTOFLIGHT - FCU - DELETE "EXPEDITE" FUNCTION FROM FCU
	Applicable to: MSN 02204, 02443, 02670, 02804, 03264, 03330			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P3420		22 MAR 16	A320/321 ENERGY MANAGEMENT FUNCTIONS - ACTIVATION BY PIN PROGRAMMING FOR IAE AND CFM ENGINES
	Applicable to: ALL			
	P3510		20 AUG 10	NAVIGATION - ADIRS - IMPROVED STANDARD OF A320 ADIRU
	Applicable to: ALL			
	P3511		20 AUG 10	AUTO FLIGHT - FLIGHT AUGMENTATION - AFS COMPUTER A320/A321 FAC CFM/IAE
	Applicable to: ALL			
	P3524		20 AUG 10	ELECTRICAL GENERATION - APU GENERATOR NEW STANDARD
	Applicable to: ALL			
	P3560		28 MAR 18	AUTO FLIGHT - FMGC - PROVIDE TIME CONSTRAINT AND TEN CHARACTERS RTE IDENT FUNCTIONS
	Applicable to: ALL			
	P3565		28 MAR 18	NAVIGATION - INSTALLATION OF COLLINS TCAS II (-320) UPGRADED WITH CHANGE 6.04A
	Applicable to: MSN 02359, 02405, 02482-02584, 02649, 02712			
	P3588		20 AUG 10	LANDING GEAR - A320/A321 TWIN WHEELS BSCU STANDARD 7 (70B VERSION)
	Applicable to: ALL			
	P3594		20 AUG 10	INDICATING/RECORDING SYSTEMS - ELECTRICAL CLOCK - INSTALLATION OF A CLOCK SMITHS TYPE 2610
	Applicable to: ALL			
	P3660		20 AUG 10	FLIGHT CONTROLS - EFCS EQUIPMENT - MODIFY SEC STANDARD FOR A320 AND A321
	Applicable to: ALL			
	P3686		20 AUG 10	AUTO FLIGHT: FLIGHT AUGMENTATION COMPUTER INTRODUCE FAC POST CDN ON A320/321.
	Applicable to: ALL			
E	P3693		25 NOV 11	AUTOFLIGHT -FMGC-A320/321-STANDARD FOR A321 IAE CAT III
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063			
	P3694		15 FEB 16	AUTO FLIGHT-FMGC-A320/321-FG STANDARD FOR A321 CFM CAT III
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P3704		20 AUG 10	ENGINE FUEL AND CONTROL -FUNCTIONAL INTERFACES- INTRODUCE A NEW EIU VERSION 5 ON IAE V2500 ENGINES
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	P3737		28 MAR 18	ENGINE FUEL AND CONTROL-FUNCTIONAL INTERFACES- INTRODUCE A NEW EIU VERSION 14 ON CFM56 ENGINES
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
	P3752		28 MAR 18	NAVIGATION- SWITCHING AND INDICATING-INSTALL RMI/VOR/DME SEXTANT WITH SOFTWARE MODIFICATION.
	Applicable to: ALL			
	P3790		20 AUG 10	NAVIGATIOIN-AIRS-IMPROVED STANDARD OF HONEYWELL 4 MCU ADIRU
	Applicable to: ALL			
	P3830		20 AUG 10	FLIGHT CONTROLS-PARTIAL LIFT DUMPING FUNCTION ACTIVATION
	Applicable to: ALL			
	P3878		20 AUG 10	FLIGHT CONTROL-ELAC SYSTEM-INSTALL ELAC 69J
	Applicable to: ALL			
E	P3924		20 AUG 10	LANDING GEAR-WHEELS AND BRAKES-INSTALL NEW MESSIER BUGATTI CARBON BRAKES (SEPCARB III)
	Applicable to: MSN 01767-02334, 02388, 02443, 02584-06336, 08877-08896, 08905-09045			
E	P3955		07 APR 11	NACELLES/PYLONS-IAE/CFM-ADAPT PYLON PRIMARY STRUCTURE FOR A321 GROWTH VERSION
	Applicable to: MSN 01767-06336			
E	P3956		17 MAY 16	ATA 2900 HYDRAULIC POWER-GENERAL INSTALL AN HYDRAULIC SHUT-OFF VALVE ON THE IAE THRUST REVERSER SYSTEM
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	P3957		17 MAY 16	ATA 2900 HYDRAULIC POWER-GENERAL INSTALL AN HYDRAULIC SHUT-OFF VALVE ON THE CFM THRUST REVERSER SYSTEM
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
	P3964		20 AUG 10	NAVIGATION-WEATHER RADAR SYSTEM-NEW SEXTANT ATC/TCAS CONTROL PANEL -SFE WITH FULL TIME AND ABOVE BELOW FUNCTIONS
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P4023		17 MAY 16	GENERAL - HIGH ALTITUDE CERTIFICATION UP TO 14.500 FT
	Applicable to: MSN 03750			
	P4054		20 AUG 10	AUTOFLIGHT-FCU-INSTALL M11 STANDARD
	Applicable to: ALL			
	P4055		04 MAY 15	AUTOFLIGHT-FCU-INSTALL M11 STANDARD WITH EXPEDITE FUNCTION DELETED
	Applicable to: MSN 02204, 02443, 02670, 02804, 03264, 03330			
	P4079		28 MAR 18	AUTO-FLIGHT -GENERAL (A320/A321/A320) - FMGC - PROVIDE ACARS AND PRINTER INTERFACES IN FMS (CFM VERSION)
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
E	P4080		28 MAR 18	AUTO-FLIGHT/GENERAL(A319/A320/A321) FLIGHT MANAGEMENT AND GUIDANCE COMPUTER(FMGC).PROVIDE ACARS AND PRINTER INTERFACES IN FMS (IAE VERSION)
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063			
	P4087		20 AUG 10	NAVIGATION-ADIRS-INSTALL HONEYWELL ADIRS PROVIDING THE GPS PRIMARY NAVIGATION CAPABILITY
	Applicable to: ALL			
E	P4089		20 AUG 10	AUTO-FLIGHT - FMGC - REDUCE VAPP FOR A320 CFM/IAE
	Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
	P4121		20 AUG 10	EXHAUST - THRUST REVERSER CONTROL AND INDICATING -ACTIVATE ADDITIONAL THRUST REVERSER LOCK CONTROL
	Applicable to: ALL			
E	P4149		20 AUG 10	ENGINE FUEL AND CONTROL - CONTROLLING -INSTALL A NEW E.E.C. SOFTWARE SCN 10A ON IAE V2500-A5 P/N 2A3210
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	P4151		20 AUG 10	INDICATING/RECORDING SYSTEMS - UP AND DOWN DATA LOADING SYSTEM - INSTALL A "PORTABLE DATA LOADER" CONNECTOR AND DISK STOWAGE.
	Applicable to: ALL			
	P4155		20 AUG 10	AUTOFLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER - ACTIVATION OF ACARS

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
				AND PRINTER INTERFACES IN F.M.S (CFM ENGINES)
	Applicable to: ALL			
	P4170	27-1113 12	20 AUG 10	FLIGHT CONTROLS - FCDC - PROVIDE A VISUAL INDICATION FOR SIMULTANEOUS SIDE STICK ACTION
	Applicable to: ALL			
	P4191		20 AUG 10	NAVIGATION AND COMMUNICATIONS REPLACE BFE EQUIPMENT BY SFE EQUIPMENT
	Applicable to: ALL			
	P4205		20 AUG 10	AUTOFLIGHT - FMGC - ACTIVATE PRINTER INTERFACE IN FMS (CFM AND IAE ENGINES)
	Applicable to: ALL			
	P4230		15 FEB 16	POWER PLANT-GENERAL INTRODUCTION OF CFM56-5B/P
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
	P4234		20 AUG 10	ICE AND RAIN PROTECTION-WINDSHIELD RAIN PROTECTION DESACTIVATION OF RAIN REPELLENT SYSTEM.
	Applicable to: ALL			
	P4271		20 AUG 10	NAVIGATION - RMI - INSTALLATION OF VOR/ADF/DDRMI (SEXTANT) P/N 63543-253-2
	Applicable to: MSN 01957-02139, 02275-02334, 02443, 02649-02670, 03071, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190			
	P4281		15 FEB 16	ENGINE FUEL AND CONTROL-CONTROLLING INTRODUCE OF A NEW ECU SOFTWARE STANDARD 5BE-1 FOR CFM56-5B SAC ENGINES
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
	P4287	31-1113 31 31-1264 04	20 AUG 10	INDICATING-RECORDING SYSTEM FWC DEFINE OEB REMINDER NEW FUNCTION IN FWC
	Applicable to: ALL			
	P4308		04 MAY 15	NAVIGATION - BENDIX WEATHER RADAR SYSTEM - ACTIVATION OF PREDICTIVE WINDSHEAR FUNCTION
	Applicable to: MSN 01767-01920, 02195-02204, 02388, 02443, 02609-02626, 02670, 02908-02914, 03138			
	P4319		20 AUG 10	AUTO FLIGHT/FCU DEFINE FD ENGAGEMENT IN CROSSED BARS AT GO AROUND
	Applicable to: ALL			
	P4320		20 AUG 10	AUTO FLIGHT - ACTIVATE GLOBAL SPEED PROTECTION AND FD DISENGAGEMENT UPON SPEED CONDITIONS
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P4354		20 AUG 10	ENGINE FUEL AND CONTROL-CONTROLLING INSTALL A NEW EEC SOFTWARE SCN 10B ON V2500-A5
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	P4378		17 MAY 16	CERTIFICATION - GENERAL - CERTIFICATION FOR HIGH ALTITUDE AIRPORT OPERATION
	Applicable to: MSN 03750			
	P4395		15 OCT 18	INDICATING/RECORDING SYSTEMS.EIS.UNITS OF UNITS OF INDICATION "RUNWAY LENGHTS"IN FEET.
	Applicable to: MSN 02135, 02139			
	P4417		28 MAR 18	ELECTRICAL POWER - IMPROVE DESIGN OF TRU INSTALLATION ON A/C TO AVOID TRANSFORMER RECTIFIER MISBEHAVIOUR
	Applicable to: ALL			
	P4419		09 NOV 15	NAVIGATION - ADIRS - INSTALL HONEYWELL ADIRU 4 MCU STANDARD WITH OPTIMIZED HARDWARE P/N "AD09"
	Applicable to: ALL			
	P4425		09 NOV 15	NAVIGATION-ADIRS-INSTALL HONEYWELL ADIRU 4 MCU STANDARD, CAPABLE OF A319 IAE AIRCRAFT
	Applicable to: ALL			
E	P4456		20 AUG 10	ENGINE FUEL AND CONTROL-FADEC SYSTEM INSTALL EEC SOFTWARE SCN 11 P/N 2A3250 ON V2500-A5
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	P4495		20 AUG 10	INDICATING/RECORDING SYSTEMS- DISPLAY MANAGEMENT COMPUTER (DMC) DEFINE DMC V32 STANDARD
	Applicable to: ALL			
	P4497		20 AUG 10	DOORS-EMERGENCY ESCAPE SLIDE RELEASE AND OVERPRESSURE WARNING SYSTEMS-MODIFY CONTROL LOGIC OF THE OVERPRESSURE WARING SYSTEM
	Applicable to: ALL			
	P4502		20 AUG 10	INFORMATION SYSTEMS - ATIMS - INSTALL ATSU COMPUTER FOR PRE-FANS CONFIGURATION
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P4528		15 FEB 16	ENGINE FUEL AND CONTROL -CONTROLLING- INTRODUCE AN ECU SOFTWARE STD 5BH FOR CFM56-5B SAC ENGINES.
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
	P4539		20 AUG 10	AUTO FLIGHT-GENERAL/FLIGHT CONTROL UNIT- DEFINE AND INSTALL SEXTANT MODULAR FCU
	Applicable to: ALL			
E	P4576		20 AUG 10	LANDING GEAR-GENERAL WHEELS AND BRAKES EQUIPMENT COST REDUCTION ELECTRICAL ALTERNATE BRAKING
	Applicable to: MSN 02443-02457, 02584-09063			
E	P4613		22 MAR 17	COMMUNICATIONS - HF SYSTEM - INSTALL ONE ALLIED SIGNAL HF VOICE SYSTEM
	Applicable to: MSN 01767-02121, 02138, 02195-02204, 02388, 02443-02457, 02670, 02804-03138, 04491, 04532, 04645, 05120, 05158, 05218			
E	P4642		10 OCT 14	NAVIGATION - WETAHER RADAR SYSTEM - ACTIVATE DUAL PREDICTIVE WINDSHEAR FUNCTION
	Applicable to: MSN 01957-02121, 02138, 02457, 02804, 04314, 04393-04397, 04491, 04532, 04645, 05120, 05158, 05218, 08414-09063			
	P4647	34-1152 16	20 AUG 10	NAVIGATION - WEATHER RADAR SYSTEM - COLLINS DUAL PWS ACTIVATOR
	Applicable to: MSN 02584, 02649-04954, 06772, 06829, 06904, 06946, 07083-07192			
	P4654		20 AUG 10	COCKPIT - PROTECTIVE BREATHING EQUIPMENT (PBE) AIR LIQUIDE - SFE
	Applicable to: MSN 02584, 02649, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336			
E	P4663		22 MAY 18	AUTOFLIGHT-FMGC-DEFINE AND INSTALL FMGC B546CCM0102 FOR A319 TC IAE ENGINES (CAPABLE GPS/ACARS FCTS).
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
	P4664	31-1281 02	28 MAR 18	INDICATING/RECORDING SYSTEM - SYSTEM DATA ACQUISITION CONCENTRATOR (SDAC) - DEFINE AND INSTALL A NEW SDAC
	Applicable to: ALL			
E	P4682		10 OCT 14	NAVIGATION - WEATHER RADAR SYSTEM - ALLIED SIGNAL CONFIGURATION WITH ALLIED SIGNAL FULL PROVISION FOR THE SECOND TRANSCEIVER
	Applicable to: MSN 01767-02121, 02138, 02195-02204, 02388, 02443-02457, 02609-02626, 02670, 02804-02914, 03138, 04314, 04393-04397, 04491, 04532, 04645, 05120, 05158, 05218, 08414-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P4697		15 FEB 17	NAVIGATION - INSTALL SEXTANT ATC/TCAS CONTROL PANEL P/N C124-02-AA01
	Applicable to: MSN 02584, 04314, 04393-04397			
	P4705		28 MAR 18	NAVIGATION-VOR/MARKER-INSTALLATION OF 2 VOR/ MARKER RECEIVERS 900 COLLINS P/N 822-0297-020
	Applicable to: ALL			
E	P4706		22 MAR 16	NAVIGATION - ADF - INSTALLATION OF 1 ADF QUANTUM LINE P/N 066-50014-0202
	Applicable to: MSN 01767-02121, 02138, 02195-02204, 02388, 02443-02457, 02609-02670, 02737-03138, 04491, 04532, 04645, 05120, 05218			
E	P4709	00-1043 63	20 AUG 10	LANDING WITH A 15 KNOT TAILWIND
	Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02388-02482, 02609-03138, 03308, 03357-05094, 05155, 05190-09063			
E	P4710	00-1016 70	22 MAY 18	TAKE OFF WITH A 15 KNOT TAILWIND.
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	P4727		28 MAR 18	NAVIGATION - VOR - INSTALLATION OF VOR RECEIVERS ALLIED SIGNAL QUANTUM LINE P/N 066-50012-0202
	Applicable to: MSN 01767-02121, 02138, 02195-02204, 02388, 02443-02457, 02609-02670, 02804-03138, 04491, 04532, 04645, 05120, 05218			
	P4763		17 NOV 15	NAVIGATION - WEATHER RADAR SYSTEM - COLLINS SINGLE PWS CONFIGURATION
	Applicable to: MSN 02359, 02405, 02482			
E	P4766	34-1152 16	07 OCT 11	NAVIGATION - SINGLE PWS - COLLINS SINGLE PWS ACTIVATION
	Applicable to: MSN 02135, 02139, 02275-02334, 02584, 04965-09063			
E	P4770		20 AUG 10	NAVIGATION - WEATHER RADAR SYSTEM. INSTALL FULL PROVISION FOR THE SECOND TRANSCEIVER.
	Applicable to: MSN 01767-04954, 05120, 05158, 05218, 06772, 06829, 06904, 06946, 07083-07192, 08414-09063			
	P4773	34-1153 28	26 AUG 15	NAVIGATION - INSTALL DUAL COLLINS ADF 700 - P/N 622-5222-020
	Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275-02334, 02443, 02609-02670, 02737, 02908-03071, 03750			
	P4786		26 AUG 15	COCKPIT PROTECTIVE BREATHING EQUIPMENT (PBE)-SCOTT AVIATION
	Applicable to: MSN 01957-02121, 02138, 02195, 02275-02334, 02609-02626, 02908-03138			
	P4789		20 AUG 10	NAVIGATION-MMR-INSTALLATION OF SEXTANT MULTICI-MODE RECEIVERS PROVIDING ILS (FM IMMUNE) AND GPS PRIMARY FUNCTION
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P4801		20 AUG 10	ELECTRICAL POWER - GENERATION SYSTEM - DEFINE AND INSTALL ON A320 FAMILY NEW ELECTRICAL GENERATION CONCEPT (WIRING/EQUIPMENT)
	Applicable to: MSN 01957-02195, 02275-02334, 02388, 02443-09063			
E	P4808		20 AUG 10	LANDING GEAR - GENERAL - WHEELS AND BRAKES - EQUIPMENT COST REDUCTION BSCU REDESIGN
	Applicable to: MSN 02108-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
	P4859		22 MAR 16	NAVIGATION - ADF - INSTALL AN ADF 900 RECEIVER P/N 822-0299-020
	Applicable to: ALL			
	P4867		22 MAR 17	NAVIGATION - EGPWS - INSTL. NEW SPECIFICATION INSTALLATION OF EGPWC (NEW SPECIFICATION)
	Applicable to: ALL			
E	P4880		20 AUG 10	AUTOFLIGHT - FMGC - DEFINE AND INSTALL FMGC B546CCM0103 FOR A319 AUTOLAND IAE ENGINES (CAPABLE OF GPS/ACARS FUNCTION)
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			
	P4885		20 AUG 10	NAVIGATION - EGPWS - ACTIVATION OF ENHANCED FUNCTIONS OF THE EGPWS
	Applicable to: ALL			
	P4916		20 AUG 10	FLIGHT CONTROL - GENERAL - ELAC-SYSTEM - INSTALL ELAC COMPATIBLE A320/321/319 (EM2 PROGRAM)
	Applicable to: ALL			
	P4954		15 FEB 16	AUTO FLIGHT - FMGC - DEFINE AND INSTALL FMGC B546CAM0102 FOR A319 AUTOLAND CFM ENGINES (CAPABLE OF GPS/ACARS FUNCTION)
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
	P4956		17 MAY 16	COCKPIT PROTECTIVE BREATHING EQUIPMENT (PBE) PURITAN BENNETT
	Applicable to: MSN 02443-02457, 02670-02737, 03264, 03330, 03750, 04314, 04393-04397			
	P4965		28 MAR 18	INDICATING/RECORDING SYSTEM : FWC - DEFINE AND INSTALL FWC WITH FULL SOFTWARE ON OBRM (EM2 PROGRAM)
	Applicable to: ALL			
	P4977	31-1115 12 31-1264 04	20 AUG 10	INDICATING/RECORDING SYSTEMS - FWC - PROVIDE NEW SYNTHETIC VOICE "DUAL INPUT"
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P4983		20 AUG 10	AUTO FLIGHT - FLIGHT AUGMENTATION - DEFINE FAC STANDARD B0513
	Applicable to: ALL			
E	P4985		20 AUG 10	ENGINE FUEL AND CONTROL - CONTROLLING FADEC SYSTEM -V2500-A5 - INSTALL EEC SOFTWARE SCN 11/P P/N 2A2383
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	P5020		26 AUG 15	NAVIGATION - ATC - INSTALL GABLES ATC/TCAS CONTROL PANEL P/N G6990-40
	Applicable to: MSN 02275-02359, 02405, 02457-02482, 02609-02626			
E	P5066		28 MAR 18	PNEUMATIC-ENGINE BLEED AIR SYSTEM-INTRODUCE AN IMPROVED DEFINITION OF TLT
	Applicable to: MSN 01767-06336			
	P5071		20 AUG 10	ICE AND RAIN PROTECTION-WINDSHIELD RAIN PROTECTIONREACTIVATE RAIN REPELLENT SYSTEM WITH FLUID COMPATIBLE WITH OZONE PROTECTION RULES
	Applicable to: ALL			
E	P5088		28 MAR 18	NAVIGATION - SENSORS - INSTALL ROSEMOUNT ANGLE OF ATTACK SENSOR
	Applicable to: MSN 01920, 02204-02334, 02457, 02609-02626, 02804, 03138, 04314, 04393-04399, 04438, 04491, 04532, 04645, 05120, 05218			
	P5138		20 AUG 10	FLIGHT CONTROLS-GENERAL-ELAC SYSTEM- INSTALL ELAC STANDARD L80
	Applicable to: ALL			
	P5168		20 AUG 10	NAVIGATION-MMR-INSTALLATION OF COLLINS MULTI-MODE RECEIVERS PROVIDING ILS (FM IMMUNE) AND GPS PRIMARY FUNCTION
	Applicable to: ALL			
E	P5180		20 AUG 10	AUTOFLIGHT - FMGC-IAE ENGINES - DEFINE AND INSTALLFMGC B54CCM0104 (FA817 STANDARD) CAPABLE OF GPS/ACARS FUNCTION
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063			
	P5201		15 FEB 17	NAVIGATION-ATC/TCAS-INSTALL SEXTANT ATC/TCAS CONTROL UNIT P/N C12402AA02
	Applicable to: MSN 02584, 04314, 04393-04397			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P5206		20 AUG 10	ENGINE FUEL AND CONTROL - CONTROLLING - FADEC SYSTEM IAE V2500-A5 - INSTALL EEC SOFTWARE SCN12
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	P5224		04 MAY 15	NAVIGATION - EGPWS - INTRODUCE OPTIONAL AURAL WARNINGS FOR EGPWS
	Applicable to: MSN 02204, 02359, 02405, 02482			
	P5228		17 MAY 16	INDICATING/RECORDING SYSTEM-FWC-ACTIVATE THE HI ALT SET" RIGH MEMO FOR HIGH ALTITUDE AIRPORT OPERATION
	Applicable to: MSN 03750			
	P5239		20 AUG 10	NAVIGATION-ATC MODE "S"-INSTALL ATC/TCAS CONTROL UNIT P/N C12240B02
	Applicable to: ALL			
E	P5241		20 AUG 10	NAVIGATION-WEATHER RADAR SYSTEMS-INSTALL COLLINS SINGLE WITH PROVISION FOR THE SECOND SYSTEM
	Applicable to: MSN 02135, 02139, 02275-02334, 02584, 02649-09063			
E	P5253		20 AUG 10	NAVIGATION ADIRS REMOVE ADIRS CDU
	Applicable to: MSN 03618-09063			
	P5314		20 AUG 10	AUTO FLIGHT - GENERAL - MULTIPURPOSE CONTROL AND DISPLAY UNIT (MCDU) - INSTALL MCDU HONEYWELL 2ND GENERATION P/N : 4077880-980
	Applicable to: ALL			
	P5429		15 FEB 16	ENGINE FUEL AND CONTROL - GENERAL FADEC SYSTEM A320/CFM56-5B - INTRODUCE ECU SOFTWARE STANDARD 5BI
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
	P5451		20 AUG 10	ELECTRICAL POWER - GENERAL AC & DC MAIN DISTRIBUTION - INSTALL A/C AND DC SHEDDABLE BUSBARS
	Applicable to: ALL			
	P5459		20 AUG 10	POWER PLANT - GENERAL - ADD RELAY LOGIC FOR CONTROL PACK CLOSURE AT ENGINE START
	Applicable to: ALL			
	P5462		17 NOV 15	NAVIGATION - TCAS - INSTALL COLLINS TCAS II TTR921P/N 822-1293-320 WITH COLLINS ATC TPR720 OR TPR900
	Applicable to: MSN 02359, 02405, 02482			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P5465		20 AUG 10	INDICATING/RECORDING SYSTEMS - CLOCKS - INSTALL AIR PRECISION CLOCK P/N APE5100 CAPABLE OF GPS TIME
	Applicable to: ALL			
	P5486	22-1104 05 22-1139 16 22-1353 25	20 AUG 10	AUTO FLIGHT - MULTIPURPOSE CONTROL AND DISPLAY UNIT (MCDU) - INSTALL MCDU SEXTANT 2ND GENERATION P/N C19266AA01
	Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			
	P5518	32-1336 01	20 AUG 10	LANDING GEAR - GENERAL - NORMAL BRAKING - INTRODUCE STD 8 BSCU TWIN VERSION
	Applicable to: ALL			
	P5567		20 AUG 10	INDICATING/RECORDING SYSTEM - DMC - DEFINE DMC V40 STANDARD
	Applicable to: ALL			
E	P5577		20 AUG 10	ENGINE FUEL AND CONTROL - GENERAL - INSTALL A V2500-A5 ENGINE WITH DATA ENTRY PLUG CONFIGURATION FOR 30 SECONDS EXTRA CRANK SELECTION
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	P5583		20 AUG 10	NAVIGATION - ADIRS - REDUCED VERTICAL SEPARATION MINIMUM (RVSM) USING ADR 1 AND ADR 2 ONLY (A319/A320/A321 APPLICABLE)
	Applicable to: ALL			
E	P5586	32-1235 24	22 MAR 16	LANDING GEAR - BRAKE COOLING - INSTALL UNIVERSAL BRAKE COOLING FAN ON ALL AIRCRAFT FAMILIES
	Applicable to: MSN 01767-01920, 02108, 02195-02334, 02388, 02443-02457, 02584-09063			
	P5588		17 NOV 15	OXYGEN - FLIGHT CREW PORTABLE DEVICES - INSTALL A PURITAN BENNET PROTECTIVE BREATHING EQUIPMENT IN FRONT OF PANEL 120VU
	Applicable to: MSN 02359, 02405, 02482			
	P5591		28 MAR 18	NAVIGATION - MMR - INSTALL SEXTANT MMR (WITH ADIRUHNW) PROVIDING ILS (FM IMMUNE) AND GPS PRIMARY FUNCTION (HYBRID)
	Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02359-02405, 02482, 02804, 03071, 03308, 03357-03618, 03782-04312, 04328-04384, 04433, 04481-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-05313			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P5613		09 NOV 15	NAVIGATION - TCAS - INSTALL COLLINS TCAS TTR921 WITH COLLINS ATC TPR901
	Applicable to: MSN 02584, 02649, 02712			
	P5622		15 FEB 17	AUTO FLIGHT - MCDU - INSTALL AN MCDU 2ND GENERATION HONEYWELL FMS (MCDU WITH A340 KEYBOARD)
	Applicable to: MSN 02584-02626, 02737			
E	P5638	34-1261 12	20 AUG 10	NAVIGATION - STANDBY DATA : ALTITUDE AND HEADING -INSTALL ISIS (INTEGRATED STANDBY INSTRUMENT SYSTEM) - SERIAL SOLUTION -
	Applicable to: MSN 01957-02097, 02121, 02138, 02204-02334, 02443-02457, 02584, 02649-09063			
E	P5669		20 AUG 10	NAVIGATION - TCAS - INSTALL ALLIED SIGNAL TCAS COMPUTER P/N 066-50000-2220 (WITH CHANGE 7.0) (BFE)
	Applicable to: MSN 01767-02121, 02138, 02195-02204, 02388, 02443-02457, 02609-02626, 02670, 02804-02914, 03138, 03618-09063			
	P5685		17 MAY 16	COMMUNICATIONS - AUDIO MANAGEMENT - INSTALL SATCOM AMU AND ACP
	Applicable to: MSN 02737, 03750, 04314, 04393-04397			
	P5687		17 MAY 16	COM AERO-I COLLINS COCKPIT VOICE FUNCTION
	Applicable to: MSN 02737, 03750			
E	P5698		10 OCT 14	NAVIGATION - WEATHER RADAR SYSTEM - INSTALL ALLIED SIGNAL WEATHER RADAR TRANSCEIVER P/N 066-50008-0405
	Applicable to: MSN 01767-02121, 02138, 02195-02204, 02388, 02443-02457, 02609-02626, 02670, 02804-02914, 03138, 04314, 04393-04397, 04491, 04532, 04645, 05120, 05158, 05218, 08414-09063			
	P5706	31-1197 00 31-1257 01	20 AUG 10	INDICATING/RECORDING SYSTEMS- FLIGHT WARNING COMPUTER (FWC) INSTALL FWC STD H2/E3
	Applicable to: ALL			
E	P5711		28 MAR 18	PNEUMATIC - ENGINE BLEED AIR SYSTEM - INSTALL TLT P/N 341E030000
	Applicable to: MSN 01767-06336			
	P5726		07 APR 11	NAVIGATION - MMR - INSTALL SEXTANT MMR PROVIDING ILS (FM IMMUNE) P/N TLS755-01-0101B
	Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02359-02405, 02482, 02804, 03071, 03308, 03357-03618, 03782-04312, 04328-04384, 04433, 04481-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-05313			
E	P5768		20 AUG 10	ELECTRICAL POWER - AC EMERGENCY GENERATION - ACTIVATE ON A320 SAME ELECTRICAL EMERG. CONFIGURATION THAN A321
	Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P5769	30-1054 00	26 AUG 15	ICE AND RAIN PROTECTION-WINDSHIELD RAIN PROTECTION-DEACTIVATE THE RAIN REPELLENT SYSTEM COMPATIBLE WITH OZONE PROTECTION RULES
	Applicable to: MSN 01767, 02275-02359, 02405, 02482			
	P5834	34-1444 01	28 MAR 18	NAVIGATION - SENSORS - INSTALL MODIFIED SEXTANT ANGLE OF ATTACK SENSORS P/N C16291AA
	Applicable to: ALL			
	P5895		20 AUG 10	NAVIGATION-GPWS-INSTALL EGPWS P/N-206-206 & INHIBIT AUTOMATIC DEACTIVATION OF ENHANCED FUNCTIONS.
	Applicable to: ALL			
	P5905		17 MAY 16	COMMUNICATIONS - SATCOM SYSTEM - INSTALL A COLLINSAERO I SATCOM AVIONIC (6 CHANNELS)
	Applicable to: MSN 02737, 03750			
	P5981	30-1048 32	15 FEB 17	ICE AND RAIN PROTECTION - GENERAL - ICE DETECTION INSTALL ICE DETECTOR P/N 0871DP4
	Applicable to: MSN 01767, 02584-02649, 04314, 04393-04397			
	P6027		10 OCT 14	NAVIGATION - WEATHER RADAR SYSTEM - REINSTALL A SINGLE WEATHER RADAR CONFIGURATION
	Applicable to: MSN 01767-02121, 02138, 02195-02204, 02359-02482, 02609-02626, 04532, 04645			
E	P6030	24-1128 09	16 AUG 17	ELECTRICAL POWER - AC GENERATION - INSTALL ELECTRICAL OUTLETS IN COCKPIT
	Applicable to: MSN 01767-01920, 02108, 02135, 02139, 02275-02388, 02443-02457, 02584-02670, 02804-09063			
	P6054		20 AUG 10	NAVIGATION - MMR - SEXTANT MMR - ACTIVATE GPS PRIMARY FUNCTION (HYBRID) (WITH HONEYWELL OR LITTON ADIRU)
	Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02359-02405, 02482, 02804, 03071, 03308, 03357-03618, 03782-04312, 04328-04384, 04433, 04481-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-05313			
	P6071		26 AUG 15	INDICATING/RECORDING SYSTEMS - DMC - DISPLAY THE ALTITUDE IN METRES ON THE PRIMARY FLIGHT DISPLAY (PFD)
	Applicable to: MSN 01920-02121, 02138, 02275-02334, 02457, 02609-02649, 03071, 04294, 04433, 04510			
	P6125		09 NOV 15	NAVIGATION - ADIRU - INSTALL HNWL ADIRU 4 MCU AD11 (NEW HARD) WITH 4 TRIMS OF ANEMO CORRECTION LAWS POSSIBILITIES AND MAGVAR TABLES UPDATED
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P6142		20 AUG 10	NAVIGATION -STANDBY BY DATA-ATTITUDE AND HEADING-COMPLETE PROVISIONS FOR ISIS ELECTRICAL SUPPLY
	Applicable to: MSN 01920-02097, 02121-02139, 02204-02334, 02388, 02443-02457, 02584, 02649-09063			
	P6146		20 AUG 10	INDICATING/RECORDING SYSTEM - FWC - INTRODUCE "F/CTL FLAP LVR NOT ZERO" RED WARNING
	Applicable to: MSN 01767-05262			
	P6167		15 JAN 18	NAVIGATION - TCAS - INSTALL HONEYWELL 2000 TCAS COMPUTER P/N 751-7900-10003 (WITH CHANGE 7.0)
	Applicable to: MSN 02737			
	P6183		20 AUG 10	NAVIGATION - MMR - REMOVE COLLINS MMR PROVIDING ILS (FM IMMUNE) AND GPS PRIMARY FUNCTION
	Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02359-02405, 02482, 02804, 03071, 03308, 03357-03618, 03782-04312, 04328-04384, 04433, 04481-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-05313			
	P6201		20 AUG 10	GENERAL-FLIGHT ENVIRONMENTAL ENVELOPE-EXTENSION TO 12100 M
	Applicable to: ALL			
	P6283		17 MAY 16	CERTIFICATION DOCUMENTS - GENERAL - CERTIFY LANDING OPERATIONS AT SANTOS DUMONT AIRPORT
	Applicable to: MSN 02737, 03750			
E	P6314		20 AUG 10	AUTO FLIGHT - DEFINE "GUIDED RADAR APPROACH WITH AUTOPILOT ENGAGED" PROCEDURE (MUH 250 FT)
	Applicable to: MSN 01767-02097, 02121, 02138, 02204, 02388, 02443-02457, 02584-02670, 02804-02914, 03264-04312, 04328-04384, 04399-09063			
E	P6316		20 AUG 10	NAVIGATION - TCAS - INSTALL HONEYWELL COMPUTER TCAS 2000 WITH CHANGE 7.0
	Applicable to: MSN 02135, 02139, 02275-02334, 03071, 03264-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063			
E	P6319		04 MAY 15	COMMUNICATIONS - AUDIO MANAGEMENT - INSTALL TEAM DIGITAL AMU P/N 4031-SA-01
	Applicable to: MSN 02097-09063			
	P6375		20 AUG 10	LANDING GEAR-PARKING/ULTIMATE EMERGENCY BRAKING -INSTALL A PRESSURE SWITCH (PARKING BRAKE SYSTEM IMPROVEMENT
	Applicable to: ALL			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P6380		22 MAY 18	ELECTRICAL POWER-GALLEY SUPPLY- INSTALL A RELAY FOR GALLEY SHEDDING IN A SINGLE GENERATOR CONFIGURATION
	Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063			
E	P6538		28 MAR 18	INDICATING/RECORDING SYSTEMS - FWC - IMPROVE FWC TO COMPLY WITH NEW EMM BSCS WARNINGS AND ECAM INDICATIONS
	Applicable to: MSN 02443-02457, 02584-09063			
	P6544		20 AUG 10	INDICATING RECORDING SYSTEM - FWC ACTIVATE SPECIFIC FWC PROCEDURE
	Applicable to: ALL			
E	P6578		20 AUG 10	INDICATING/RECORDING SYSTEMS - ELECTRONIC INSTRUMENT SYSTEM INSTALL DMC, DU AND DISKETTES FOR EIS2
	Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063			
	P6588		20 AUG 10	INFORMATION SYSTEM - ATIMS IMPROVE ATSU AIRCRAFT INTERFACE SOFTWARE TO UPDATE SERVICE PROVIDERS LIST AND MANAGEMEN
	Applicable to: ALL			
	P6589		20 AUG 10	INDICATING/RECORDING SYSTEMS - CFDIU INTRODUCE CFDIU STANDARD 9B
	Applicable to: ALL			
ER	P6630	00-1058 97 01-1004 34	20 AUG 10	CERTIFICATION DOCUMENTS - GENERAL - CERTIFY AIRCRAFT FOR OPERATION ON RUNWAYS LESS THAN 45 M WIDTH
	Applicable to: MSN 01767-02388, 02457, 02584-02626, 02712-02737, 03071-05155, 05190-09063			
	P6634	31-1281 02	28 MAR 18	INDICATING/RECORDING SYSTEM - SDAC - INSTALL NEW STANDARD SDAC TO CORRECT TRIGGERING OF SPURIOUS ECAM AMBER CAUTION
	Applicable to: ALL			
E	P6687		20 AUG 10	COMMUNICATION - RADIO MANAGAMENT INTRODUCE NEW RMP STANDARD 2 P/N C12848AB02
	Applicable to: MSN 02097-09063			
	P6688		07 APR 11	COMMUNICATIONS - RADIO MANAGEMENT INSTALL A THIRD RADIO MANAGEMENT PANEL
	Applicable to: MSN 02097, 02121-02139, 02204-02443, 02482, 02609-02670, 02737-02804, 03071-04216, 04312-04397, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			
E	P6703	22-1079 08 22-1102 02 22-1226 04	20 AUG 10	AUTO FLIGHT - FLIGHT AUGMENTATION COMPUTER INSTALL NEW FAC SOFTWARE STANDARD P/N B397BAM0515

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
		22-1461 12		
	Applicable to: MSN 01767-02139, 02204-02457, 02584-09063			
	P6766		15 FEB 16	NAVIGATION - ILS (MMR) - INSTALL HONEYWELL MMR PROVIDING ILS (FM IMMUNE) AND GPS PRIMARY FUNCTIONS (HYBRID ARCHITECTURE)
	Applicable to: MSN 02443-02457, 02670, 02908-02914, 03138, 04491, 05158			
	P6777		07 APR 11	INFORMATION SYSTEM - ATIMS UPGRADE ATSU HARDWARE FOR NEW ARINC 429 I/O BOARD
	Applicable to: ALL			
	P6801	31-1197 00 31-1257 01	20 AUG 10	INDICATING RECORDING SYSTEM - FWC INSTALL FWC STANDARD H2E4
	Applicable to: ALL			
	P6832		20 AUG 10	INFORMATION SYSTEMS - ATIMS - DEFINE AND INSTALL NEW SOFTWARE ATSU A/C INTERFACE UPGRADED
	Applicable to: ALL			
	P6901	27-1160 01	20 AUG 10	FLIGHT CONTROLS - ELAC SYSTEM - INTRODUCE ELAC SOFTWARE "L90" CAPABLE OF A318
	Applicable to: ALL			
E	P6911		20 AUG 10	INDICATING/RECORDING SYSTEM : FROM FWC-F1 PIN-PROGRAMMING FOR IMPROVING THE MONITORING ABOUT THE NORMAL BRAKING SYSTEM
	Applicable to: MSN 02443-02457, 02584-09063			
E	P6954	22-1102 02 22-1226 04 22-1461 12	20 AUG 10	AUTO FLIGHT - FLIGHT AUGMENTATION COMPUTER (FAC SYSTEM) - INTRODUCE FAC SOFTWARE "BAM0516" CAPABLE OF A318
	Applicable to: MSN 01767-02139, 02204-02457, 02584-09063			
E	P6985	34-1332 01	02 NOV 15	NAVIGATION - ADIRS - INSTALL HONEYWELL ADIRU 4MCU CAPABLE OF A318 A/C
	Applicable to: MSN 01920, 02108, 02443-02457, 02609-02712, 02804-09063			
E	P6986		20 AUG 10	AUTO FLIGHT - FMGC INSTALL FMGC P/N B546CCM0105 (IAE GPS/ACARS)
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063			
	P6987		15 FEB 16	AUTO FLIGHT - FMGC INSTALL FMGC P/N B546CAM0103 (CFM GPS/ACARS)
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
E	P7000		28 MAR 18	LANDING GEAR - STEERING SUPPLY THE NOSE WHEEL STEERING WITH YELLOW HYDRAULIC POWER IN PLACE OF GREEN HYDRAULIC PO
	Applicable to: MSN 02443-02457, 02584-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P7004	31-1286 01	26 AUG 15	INDICATING/RECORDING SYSTEM - DMC - INSTALL DMC V50 STANDARD
	Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482			
	P7005	32-1336 01	20 AUG 10	LANDING GEAR - NORMAL BRAKING - INTRODUCE STD 9 BSCU (TWIN VERSION)
	Applicable to: ALL			
	P7009		28 MAR 18	COMMUNICATION - AUDIO MANAGEMENT INSTALL A DIGITAL SATCOM AMU P/N AMU4031L*01
	Applicable to: MSN 02737, 03750, 04314, 04393-04397			
	P7062		17 MAY 16	OXYGEN - CREW OXYGEN - INSTALL ALTERNATIVE 115CU FT FLIGHT CREW OXYGEN CYLINDER COMPOSITE - SCOTT P/N 897940-15
	Applicable to: MSN 01767, 02135, 02139, 02584			
E	P7092		20 AUG 10	INDICATING/RECORDING SYSTEM - EIS - ACTIVATE FUEL FLOW/DELTA ISA FUNCTION BY PIN PROGRAMMING ON DMC
	Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063			
	P7125	31-1197 00 31-1257 01	20 AUG 10	INDICATING/RECORDING SYSTEMS - FWC - INSTALL FWC STANDARD H2 F1 ON A318 PW
	Applicable to: ALL			
	P7148		20 AUG 10	COMMUNICATIONS - HF SYSTEM - ACTIVATE DATA LINK FUNCTION FOR HFDR 1
	Applicable to: MSN 02649, 03071, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336			
	P7175		20 AUG 10	ELECTRICAL POWER - GENERAL - INSTALL A COMMERCIAL SHEDDING PUSH-BUTTON SWITCH IN COCKPIT
	Applicable to: ALL			
E	P7185	34-1278 04	12 JUN 17	NAVIGATION - EGPWS INSTALL ENHANCED GPWS P/N 965-1676-001
	Applicable to: MSN 01920-09063			
E	P7186	34-1345 02	20 AUG 10	NAVIGATION - EGPWS ACTIVATE PEAKS MODE OF EGPWS IN CONJUNCTION WITH THE TERRAIN DISPLAY
	Applicable to: MSN 01920, 02097-02388, 02443-09063			
E	P7187	34-1351 03	20 AUG 10	NAVIGATION - EGPWS ACTIVATE GEOMETRIC ALTITUDE FUNCTION IN THE EGPWS
	Applicable to: MSN 01920, 02097-09063			
E	P7188	34-1345 02	20 AUG 10	NAVIGATION - EGPWS ACTIVATE OBSTACLE OPTION ON THE EGPWS
	Applicable to: MSN 01920, 02097-02388, 02443-02712, 02804-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P7218	22-1089 10	22 MAR 16	AUTOFLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC) DEVELOP FMS 2ND GENERATION HONEYWELL STEP1
	Applicable to: ALL			
	P7247		20 AUG 10	FLIGHT CONTROLS - ELAC SYSTEM - INSTALL ELAC STANDARD L81
	Applicable to: ALL			
	P7268		20 AUG 10	NAVIGATION - ADIRU RESTORE RVSM 3 CIRCUITS CAPABILITIES - SERIAL SOLUTION
	Applicable to: ALL			
E	P7278	31A1198 01	20 AUG 10	INDICATING RECORDING SYSTEM - EIS2 INSTALL EIS2 SOFTWARE CAPABLE OF A318 A/C
	Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063			
E	P7300	24-1128 09	16 AUG 17	ELECTRICAL POWER - AC GENERATION - INSTALL ELECTRICAL OUTLETS IN COCKPIT 4MM AND 4.8MM DIA. PLUGS
	Applicable to: MSN 01920, 02108, 02135, 02139, 02275-02388, 02443-02457, 02584-02670, 02804-09063			
	P7372	22-1499 06 22-1587 02	20 AUG 10	AUTOFLIGHT - FMGC DEFINE AND INSTALL FMGC IAE C13043BA01 THALES (EQUIPPED WITH "FMS2" THALES/SMITH)
	Applicable to: MSN 02097, 02121-02204, 02359, 02405-02443, 02482, 02908-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			
	P7373		19 JUL 16	AUTOFLIGHT - FMGC DEFINE AND INSTALL FMGC CFM C13043AA01 THALES (EQUIPPED WITH "FMS2" THALES/SMITH)
	Applicable to: MSN 02712, 03138, 04294, 04314, 04393-04438, 04510			
E	P7397	34-1332 01	02 NOV 15	NAVIGATION - ADIRS INSTALL HONEYWELL ADIRU 4MCU CAPABLE OF A318
	Applicable to: MSN 01920, 02108, 02443, 02609-02712, 02804, 02914-09063			
	P7402		17 NOV 15	NAVIGATION - TCAS - INSTALL NEW COLLINS TCAS TTR921 P/N 822-1293-321 WITH COLLINS ATC TPR720 OR TPR900
	Applicable to: MSN 02359, 02405, 02482			
E	P7407		15 JUN 15	COMMUNICATION - RADIO MANAGEMENT INSTALL RMP STANDARD 3 WITH MLS AND GLS FUNCTION CAPABILITY
	Applicable to: MSN 06720-09063			
E	P7424	34-1260 23 34-1383 10	22 MAR 16	NAVIGATION - ATC - INSTALL L3-COM ATC XS950 INCORPORATING EUROPEAN MODE S REGULATIONS
	Applicable to: MSN 01957-02097, 02121-02139, 02275-02334, 03071-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P7425	34-1259 64	22 MAR 16	NAVIGATION - ATC - INSTALL HONEYWELL ATC TRA67A INCORPORATING EUROPEAN MODE S REGULATIONS
	Applicable to: MSN 01767-02121, 02138, 02195-02204, 02388-09063			
E	P7455		20 AUG 10	ELECTRICAL POWER - GENERAL IN FLIGHT ENTERTAINMENT (IFE) POWER SUPPLY ON SHEDDABLE BUSBARS CONTROLED BY "GALY & CAB" SW
	Applicable to: MSN 01920-09063			
	P7519	22-1089 10	15 FEB 16	AUTOFLIGHT - FMGC - INSTALL FMGC CFM C13042AA01 (EQUIPPED WITH FMS2 HONEYWELL)
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
E	P7520		20 AUG 10	AUTOFLIGHT - FMGC - INSTALL FMGC IAE C13042BA01 (EQUIPPED WITH FMS2 HONEYWELL)
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063			
	P7567		14 MAY 18	NAVIGATION - ATC INSTALL REMOTE ATC BOX
	Applicable to: MSN 02097, 02121, 02138			
	P7585	34-1265 71	13 APR 16	NAVIGATION - ATC - INSTALL COLLINS ATC MODE S TPR901 INCORPORATING ELEMENTARY AND ENHANCED SURVEILLANCE
	Applicable to: MSN 02359, 02584, 02649, 02712-02737, 03750			
E	P7605		28 MAR 18	INDICATING RECORDING SYSTEM - SDAC INSTALL WIRING PROVISIONS FOR SDAC H2E1A PIN PROGRAMMING.
	Applicable to: MSN 01920-09063			
	P7613		15 FEB 17	AUTO-FLIGHT - FMGC - ACTIVATE MORA DISPLAY ON ND
	Applicable to: MSN 02584, 04294, 04314, 04393-04397, 04433, 04510			
	P7635	27-1160 01	20 AUG 10	FLIGHT CONTROLS - ELAC SYSTEM INTRODUCE ELAC SOTWARE L82
	Applicable to: ALL			
	P7666	22-1116 04 22-1499 06 22-1587 02	22 MAR 16	AUTO FLIGHT - FMGC DEVELOP FMS 2ND GENERATION THALES/SMITH REV 1 STANDARD
	Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			
	P7707		24 SEP 18	AUTOFLIGHT - FMGC RE-INSTALL FMS1 IAE P/N B546CCM0105 (ANTI MOD 31897) (IAE GPS+ACARS)
	Applicable to: MSN 01957			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P7721		15 JUN 15	LANDING GEAR - WHEELS AND BRAKES REMOVE THE TEMPORARY REVISIONS 5.02.00/23 AND 5.03.00/23 ON FLIGHT MANAL
	Applicable to: MSN 02359, 02405, 02457-02482, 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-08864, 08901			
E	P7790	22-1123 08	20 AUG 10	AUTO FLIGHT FLIGHT MANAGEMENT AND GUIDANCE SYSTEM ACTIVATE FMA ENHANCEMENT FUNCTION
	Applicable to: MSN 01767, 01957-09063			
	P7810	32-1254 00 32-1336 01	28 MAR 18	LANDING GEAR / NORMAL BRAKING / INSTALL BSCU 9.1
	Applicable to: MSN 01767-02097, 02121			
E	P7876	73-1075 01	20 AUG 10	ENGINE FUEL AND CONTROL - CONTROLLING INTRODUCE EEC SOFTWARE STANDARD "SCN17" ON V2500-A5 ENGINES
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	P7919	73-1077 03	15 FEB 16	ENGINE FUEL AND CONTROL - FADEC SYSTEM - INTRODUCE NEW FADEC SOFTWARE "5BK" ON SAC CFM56-5B ENGINES
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
	P7929	34-1348 02 34-1416 01	20 AUG 10	NAVIGATION - WEATHER RADAR SYSTEM INSTALL COLLINS DUAL CONTROL PANEL TO ACTIVATE MULTISCAN FUNCTION
	Applicable to: MSN 01957-02097, 02121, 02138, 02334, 02584, 02649, 02737, 03071, 03264-04312, 04328-04384, 04399-04488, 04506-04518, 04535-04637, 04752-04954, 06772, 06829, 06904, 06946, 07083-07192			
	P7976		15 JAN 18	COMMUNICATION - AUDIO MANAGEMENT REMOVE "LS" FUNCTIONS ACP (ANTI MOD 32526)
	Applicable to: MSN 02737, 03750, 04314, 04393-04397			
	P7977		19 JUL 16	AUTO FLIGHT - FMGC INSTALL FMGC CFM C13043AA02 THALES (EQUIPPED WITH FMS2 THALES/SMITH)
	Applicable to: MSN 02712, 03138, 04294, 04314, 04393-04438, 04510			
	P8014		19 JUL 16	AUTO FLIGHT - FMGC RE-INSTALL FMGC2 CFM P/N C13042AA01 (ANTI MOD 32222)
	Applicable to: MSN 02712, 03138, 04294, 04314, 04393-04438, 04510			
	P8015	22-1499 06 22-1587 02	20 AUG 10	AUTO FLIGHT - FMGC RE-INSTALL FMGC2 IAE P/N C13042BA01 (ANTI MOD 32160)
	Applicable to: MSN 02443, 03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P8025	34-1538 34	09 NOV 15	NAVIGATION - TCAS INSTALL ROCKWELL/COLLINS TCAS TTR921 (P/N 822-1293-322)
	Applicable to: MSN 02359, 02405, 02482-02584, 02649, 02712			
E	P8043		28 MAR 18	POWER PLANT - ELECTRICAL HARNESS - IAE INTRODUCE SOURIAU POWER CONNECTOR ON IDG HARNESS (NACELLE SIDE)
	Applicable to: MSN 02108-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
E	P8050		28 MAR 18	NAVIGATION - VOR/MARKER INSTALL NEW IMPROVED VOR/MARKER HONEYWELL
	Applicable to: MSN 02204, 02388, 02443-02457, 02609-02670, 02804-03138, 04491, 04532, 04645, 05120, 05218			
	P8069	73-1080 01	17 MAY 16	ENGINE FUEL AND CONTROL - FADEC SYSTEM INTRODUCE NEW ECU SOFTWARE STANDARD "5BL" FOR CFM56-5B ENGINES CAPABLE OF A318 CFM A/C
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
E	P8076	32-1335 00	20 AUG 10	LANDING GEAR NORMAL BRAKING INSTALL BSCU STD L4.5
	Applicable to: MSN 02108-09063			
	P8175		20 AUG 10	INDICATING/RECORDING SYSTEMS - SDAC - ACTIVATE IAS DISCREPANCY MONITORING BY PIN PROGRAMMING
	Applicable to: MSN 02388, 02443-02457, 02584-05262			
	P8176		07 APR 11	INDICATING/RECORDING SYSTEMS - SDAC - ACTIVATE DUAL PITOT MONITORING BY PIN PROGRAMMING
	Applicable to: MSN 02388, 02443-02457, 02584-05262			
E	P8194	34-1550 02	20 AUG 10	NAVIGATION - ADIRS ACTIVATE ALIGNMENT IMPROVEMENT FUNCTION ON ADIRU
	Applicable to: MSN 01957-02097, 02121-02195, 02405, 02482, 03071-03138, 03750, 04008-09063			
E	P8232	31-1266 02 31-1290 01	20 AUG 10	INDICATING/RECORDING SYSTEMS - FWC - INTRODUCE IAS DISCREPANCY AND DUAL PITOT MONITORING ON FWC H2F1
	Applicable to: MSN 01767-02138, 02195-09063			
	P8233	34-1316 07	15 FEB 16	NAVIGATION - WEATHER RADAR SYSTEM - IINSTALL HONEYWELL DUAL CONTROL UNIT CAPABLE OF AUTO-TILT FUNCTION
	Applicable to: MSN 01957-02097, 02121, 02138, 02609-02626, 03138, 05158			
	P8243	00-1230 00	17 MAY 16	CERTIFICATION DOCUMENTS / EXTEND OPERATING FLIGHT ENVELOPE TO MINUS 2000FT PRESSURE ALTITUDE
	Applicable to: MSN 01767, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P8256	22-1102 02 22-1226 04 22-1461 12	20 AUG 10	AUTO FLIGHT FLIGHT AUGMENTATION COMPUTER INSTALL FAC STANDARD BAM0617 FOR A318 EIS
	Applicable to: MSN 01767-02139, 02204-02457, 02584-09063			
	P8274	31-1197 00 31-1257 01	20 AUG 10	INDICATING RECORDING SYSTEM FWC INSTALL FWC STANDARD H2F2
	Applicable to: ALL			
E	P8303		20 AUG 10	NAVIGATION DDRMI REMOVE DDRMI VOR/ADF/DME INDICATORS
	Applicable to: MSN 03264-09063			
	P8310		17 NOV 15	NAVIGATION - GPWS RE-INSTALL EGPWS P/N -206-206 (ANTI-MOD 31374+26935+21391)
	Applicable to: MSN 02359, 02405, 02482			
	P8315		28 MAR 18	COMMUNICATION - AUDIO MANAGEMENT RE-INSTALL TEAM ANALOGIQUE AMU (ANTI MOD 31296)
	Applicable to: MSN 02737, 03750, 04314, 04393-04397			
	P8376		20 AUG 10	NAVIGATION - STANDBY DATA - ATTITUDE AND HEADING - REPLACE THALES ISIS BY THE THREE CONVENTIONAL STANDBY INSTRUMENTS (SB ONLY)
	Applicable to: MSN 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04954			
	P8440	32-1291 01	15 JUN 15	LANDING GEAR - WHEELS AND BRAKES INTRODUCE GOODRICH DURACARB CARBON BRAKES WITH ANTI - OXYDAN "M1"
	Applicable to: MSN 02359, 02405, 02482, 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-08864, 08901			
	P8454	34-1312 08	20 AUG 10	NAVIGATION - T2CAS - INSTALL ACSS TRAFFIC & TERRAIN COLLISION AVOIDANCE SYSTEM (T2CAS)
	Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03264-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336			
	P8483	22-1171 02	19 JUL 16	AUTO FLIGHT - FMGC - INSTALL A NEW FMS2 THALES SMITH S3 STANDARD ON CFM A/C
	Applicable to: MSN 02712, 03138, 04294, 04314, 04393-04438, 04510			
	P8486	22-1146 00 22-1499 06 22-1587 02	20 AUG 10	AUTO-FLIGHT - FMGC - INSTALL FMGC IAE C13043BA02 (STD S2I9) THALES (EQUIPED WITH FMS2 THALES/SMITH)
	Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02908-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P8521	73-1082 01	20 AUG 10	ENGINE FUEL AND CONTROL - CONTROLLING INTRODUCE NEW EEC SOFTWARE "SCN18" ON V2500-A5 IAE ENGINES
	Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
E	P8540	00-1262 00	20 AUG 10	CERTIFICATION - GENERAL - CERTIFY HIGH ALTITUDE OPERATION UP TO 12000 FT WITH CONVENTIONAL LANDING GEARS
	Applicable to: MSN 02443, 02670, 02908-02914, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336, 06744-06829, 06904, 06946, 07053-09063			
E	P8564	31-1331 01	20 AUG 10	INDICATING/RECORDING SYSTEM EIS ACTIVATE ENGINE AVAIL DISPLAY
	Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02584, 02737, 03071, 03750-09063			
E	P8572		11 JAN 13	AUTO-FLIGHT - FAC - DEFINE NEW PIN PROGAM-MING FOR WEIGHT AND CG COMPUTATION BASED ON FMS REFERENCES
	Applicable to: MSN 05437-09063			
	P8625		19 JUL 16	AUTO-FLIGHT - FMGC - INSTALL NEW FMGC STANDARD S2C11 ON CFM ENGINES
	Applicable to: MSN 02712, 03138, 04294, 04314, 04393-04438, 04510			
E	P8626		07 OCT 11	NAVIGATION - STANDBY DATA (ISIS) - INSTALL ISIS STANDARD VA01 WITH CORRECTION OF "OUT OF ORDER" MESSAGE & "NEW IMU STANDARD"
	Applicable to: MSN 03264, 03330, 03618-09063			
E	P8671	31A1220 01	20 AUG 10	INDICATING RECORDING SYSTEM EIS INSTALL DMC SOFTWARE EIS2 S4-2 TO CORRECT TEMPORARY LOSS OF ALL EIS2 IMAGES
	Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063			
	P8679	22-1172 01 22-1499 06 22-1587 02	20 AUG 10	AUTO-FLIGHT - FMGC2G - INSTALL FMS2 THALES "S3" ASSOCIATED TO FG "I9" ON IAE ENGINES
	Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02908-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			
	P8708	22-1168 01	17 MAY 16	AUTOFLIGHT - FMGC INSTALL FMS2 HONEYWELL P1C11 ON A/C FITTED WITH CFMI PPS
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P8710	34-1348 02 34-1416 01	20 AUG 10	NAVIGATION - WEATHER RADAR SYSTEM - INSTALL COLLINS TRANSCEIVER FULLY COMPLIANT WITH MULTISCAN FUNCTION
	Applicable to: MSN 01957-02097, 02121, 02138, 02334, 02584, 02649, 02737, 03071, 03264-04312, 04328-04384, 04399-04488, 04506-04518, 04535-04637, 04752-04954, 06772, 06829, 06904, 06946, 07083-07192			
E	P8751	34-1345 02	20 AUG 10	NAVIGATION - EGPWS - INSTALL AN EGPWC CAPABLE OF PEAKS/OBSTACLE FUNCTIONS WITH EIS1 & OF USING GPS LATERAL POSITION
	Applicable to: MSN 01920, 02108, 02135, 02139-02388, 02443-02712, 02804-09063			
	P8757		28 MAR 18	ENGINE FUEL AND CONTROL - GENERAL INTRODUCE HMU P13 ON CFM56-5A/5B ENGINES
	Applicable to: MSN 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
	P8770		19 JUL 16	NAVIGATION T2CAS ACTIVATE OPTIONAL AURAL WARNINGS FOR T2CAS (FA
	Applicable to: MSN 04314, 04393-04399, 04438			
E	P8799	34-1352 01	20 AUG 10	NAVIGATION - EGPWS - INSTALL AN EGPWC CAPABLE OF PEAKS/OBSTACLE FUNCTIONS WITH EIS1 & OF USING GPS LATERAL POSITION
	Applicable to: MSN 02135, 02139, 02204, 02388, 02443-02457, 02584-02712, 02908-09063			
E	P8800	71-1034 02	28 MAR 18	POWER PLANT - ELECTRICAL HARNESS - INTRODUCE AN ADJUSTABLE BRACKET ON THE EARTH FOR V2500 ENGINES
	Applicable to: MSN 02135, 02139-02334, 02443-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	P8802		22 MAR 17	INDICATING/RECORDING SYSTEM - FWC RE-INSTALL FWC STANDARD H2E4 (ANTI-MOD 33374 + 31283)
	Applicable to: MSN 02405, 02482			
E	P8850	36-1057 01	20 AUG 10	PNEUMATIC - ENGINE BLEED AIR SUPPLY - INTRODUCE BMC STD 9 CAPABLE OF A318 PW
	Applicable to: MSN 02135, 02139-02195, 02275-02334, 02457, 02712, 03071, 03264-09063			
E	P8863		20 AUG 10	INDICATING/RECORDING SYSTEM FWC ACQUISITION INTERFACE CONNECT FWC TO RPWS TO PREVENT DOOR OPENING WITH RESIDUAL CABIN PRESSURE
	Applicable to: MSN 02584-09063			
E	P8866		20 AUG 10	LANDING GEAR NORMAL BRAKING INSTALL BSCU STD L4.8 (EM2)
	Applicable to: MSN 02609-09063			
E	P9034		20 AUG 10	NAVIGATION - GPWS - GROUND PROXIMITY WARNING SYSTEM (GPWS) DEACTIVATE

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
				GEOMETRIC ALTITUDE FUNCTION (ANTI MOD 31426)
	Applicable to: MSN 02405, 02482, 03071, 03264-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063			
E	P9038		20 AUG 10	AUTO FLIGHT MCDU INSTALL LCD MCDU HONEYWELL
	Applicable to: MSN 03071-09063			
E	P9050	34-1312 08 34-1370 01 34-1561 07	20 AUG 10	NAVIGATION T2CAS ACTIVATE AUTOMATIC DEACTIVATION OF T2CAS-TAWS
	Applicable to: MSN 01957-02097, 02121, 02138, 03071-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063			
E	P9051	34-1312 08 34-1370 01 34-1561 07	20 AUG 10	NAVIGATION T2CAS ACTIVATE ALTERNATE LATERAL POSITION FOR T2CAS-
	Applicable to: MSN 01957-02097, 02121, 02138, 03071-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063			
	P9057		22 MAR 16	OXYGEN - PORTABLE OXYGEN - INSTALL AN AIR LIQUIDE PROTECTIVE BREASING EQUIPMENT (PBE) P/N 15-40F-11 IN PLACE OF BASIC EQUIPMENT IN THE COCKPIT
	Applicable to: MSN 02584, 02649, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336			
	P9107	31-1267 03 31-1300 02	20 AUG 10	INDICATING/RECORDING SYSTEM FLIGHT WARNING COMPUTER - FWC - INSTALL FWC STANDARD H2 F3
	Applicable to: ALL			
E	P9126	22-1203 02	20 AUG 10	AUTOFLIGHT - FMGC INSTALL FMGC IAE / PW STD P1I10 (WITH FMS2 HONEYWELL) ON A/C FITTED WITH IAE AND PW PPS
	Applicable to: MSN 02108, 02275-02334, 02443-02457, 02609-02670, 02737-02804, 03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063			
E	P9138	29-1126 03	28 MAR 18	HYDRAULIC POWER - POWER TRANSFER - ACTIVATE THE POWER TRANSFER UNIT (PTU) INHIBITION LOGIC ON SA A/C
	Applicable to: MSN 02584-02626, 02670-02804, 02914-09063			
E	P9171	34-1397 05	20 AUG 10	NAVIGATION - ADIRS INTRODUCE AIR DATA MONITORING FUNCTION
	Applicable to: MSN 01957-02097, 02121, 02138, 02670, 02804, 03071-03138, 03357-03618, 03782-04216, 04312-04397, 04481-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P9196	34-1335 02	07 OCT 11	NAVIGATION - STANDBY DATA (ISIS) INSTALL ISIS STD WB01 WITH CORRECTION OF "OUT OF ORDER" MESSAGE
	Applicable to: MSN 01957-02097, 02121, 02138, 02204-02334, 02443-02457, 02584, 02649-09063			
ER	P9207	34-1369 02 34-1377 71	10 OCT 14	NAVIGATION - ATC / MODE S - CERTIFY EHS FUNCTION
	Applicable to: MSN 01767-02195, 02275-02388, 02443-02457, 02584-02626, 02670-02712, 02804-02908, 03071, 03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 05120, 05218			
E	P9225		20 AUG 10	INDICATING / RECORDING SYSTEM : ELECTRONIC INSTRUMENT SYSTEM (EIS) - INSTALL DISPLAY MANAGEMENT COMPUTER SOFTWARE EIS2 S6-1
	Applicable to: MSN 03071-09063			
	P9332	34-1350 02	10 AUG 16	NAVIGATION - ADIRU - INSTALL NORTHROP GRUMAN ADIRU P/N 465020-0303-0316
	Applicable to: MSN 01767, 01957-02097, 02121-02405, 02482, 03264, 03330, 04294, 04433, 04510			
E	P9333	34-1356 02	09 NOV 15	NAVIGATION - AIR DATA/INERTIAL REFERENCE SYSTEM - INSTALL HONEYWELL ADIRU P/N HG2030-AE23
	Applicable to: MSN 01920, 02108, 02443, 02609-02649, 02712, 02914-09063			
	P9355		10 OCT 14	NAVIGATION - WEATHER RADAR SYSTEM - REMOVE WXR TRANSCEIVER COLLINS "-623" AND DEACTIVATE (ANTI MOD 32740 AND 26560)
	Applicable to: MSN 02670, 02804-02914, 03138, 04314, 04393-04397, 04491, 04532, 04645			
	P9457		15 OCT 18	COMMUNICATIONS - SATELLITE COMMUNICATIONS - INSTALL AND ACTIVATE COLLINS AERO H+ SATCOM SRT 2100 (IN THE E/BAY)
	Applicable to: MSN 04314, 04393-04397			
	P9485	46-1018 20	17 OCT 17	INFORMATION SYSTEMS - GENERAL CERTIFY FANS B CONFIGURATIONS (OVERALL MODIFICATION)
	Applicable to: MSN 02275, 02359-02388, 02609-02649, 03138, 04294, 04433, 04510			
E	P9486	46-1032 03 46-1040 16 46-1075 07	15 FEB 16	INFORMATION SYSTEM - ATIMS - INSTALL NEW ATSU HARDWARE A10
	Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158, 06904, 06946, 07083-07192, 07504-09063			
	P9489	46-1033 05 46-1040 16 46-1075 07	17 OCT 17	INFORMATION SYSTEM - ATIMS - INSTALL SOFTWARE-ATSU ATC FANS B APPLICATIONS
	Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P9496	73-1088 01	20 AUG 10	ENGINE FUEL AND CONTROL - FADEC SYSTEM INTRODUCE EEC SOFTWARE 'SCN19' STANDARD ON V2500-A5 IAE ENGINES
	Applicable to: MSN 01957-02195, 02275-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	P9508		20 AUG 10	INDICATING/RECORDING SYSTEMS - SDAC - ACQUISITION/INTERFACE CONFIGURATION CABIN FOR NO PED FLIGHTS
	Applicable to: MSN 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336			
E	P9522		20 AUG 10	AUTO FLIGHT - MCDU ACTIVATE BACK UP NAV FUNCTION
	Applicable to: MSN 03618-09063			
	P9552	73-1086 00	17 MAY 16	ENGINE FUEL AND CONTROL - FADEC SYSTEM INSTALL "5BM" STANDARD ECU SOFTWARE FOR CFM 56-5B ENGINES
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510			
	P9580		15 OCT 18	COMMUNICATION - SATELLITE COMMUNICATION - ACTIVATE COCKPIT VOICE FOR ROCKWELL COLLINS AERO H+ SATCOM
	Applicable to: MSN 04314, 04393-04397			
E	P9594	36-1062 05	07 APR 11	PNEUMATIC LEAK DETECTION ACTIVATE PYLON LEAK DETECTION MONITORING
	Applicable to: MSN 02135, 02139-02195, 03071, 04008-09063			
	P9625	34-1365 01	07 APR 11	NAVIGATION TRAFFIC AND TERRAIN COLLISION AVOIDANCE SYSTEM(T2CAS) - INSTALL T2CAS STD 2(-11111)
	Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03264-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336			
	P9652	22-1205 02	19 JUL 16	AUTO-FLIGHT FMGC INSTALL FMS2 THALES S4 (REV2+) STD ON CFM A/C
	Applicable to: MSN 02712, 03138, 04294, 04314, 04393-04438, 04510			
E	P9654		30 MAY 12	NAVIGATION EGPWS RE-INSTALL EGPWS P/N 965-1676-001 (ANTI-MOD 34634)
	Applicable to: MSN 03071, 03264-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063			
E	P9655	32-1335 00	07 APR 11	LANDING GEAR NORMAL BRAKING INSTALL BSCU SOFTWARE STD "L4.9" (EM2)
	Applicable to: MSN 02195, 02457, 02712, 02908-02914, 03308-03357, 03618-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
E	P9661		22 MAR 16	COMMUNICATIONS - CVR - DEACTIVATE " CVR BULK ERASE FACILITY "
	Applicable to: MSN 02908-02914, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063			
	P9822	22-1246 02 22-1499 06 22-1587 02	20 AUG 10	AUTO FLIGHT - FMGC - INSTALL FMGC STANDARD S4I11 ON IAE & PW A/C
	Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02908-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			
E	P9823	22-1244 02	20 AUG 10	AUTO-FLIGHT - FMGC - INSTALL FMGC STANDARD P1I11 ON IAE & PW A/C
	Applicable to: MSN 02108, 02275-02334, 02443-02457, 02609-02670, 02737-02804, 03497-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063			
E	P9824	31-1276 02	20 AUG 10	INDICATING / RECORDING SYSTEMS NSTALL DISPLAY MANAGEMENT COMPUTER SOFTWARE EIS2 S7 ELECTRONIC INSTRUMENT SYSTEM
	Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063			
E	P9867		20 AUG 10	NAVIGATION - GPWS - DEACTIVATE PEAKS AND OBSTACLE FUNCTIONS ON THE EGPWS (ANTI MODS 31367/P7186 AND 31375/P
	Applicable to: MSN 03071, 03264-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063			
	P9873		17 MAY 16	POWER PLANT - GENERAL INTRODUCE CFM56-5BX/3 ENGINE (SAC) "TECH INSERTION PROGRAM"
	Applicable to: MSN 03750, 04294, 04314, 04393-04438, 04510			
	P9884		28 MAR 18	ENGINE INDICATING-ENGINE VIBRATION INDICATING SYSTEM-INTRODUCE IAE EVMU HARDWARE TO ACCOMODATE N1 PROBE NOISY SIGNAL.
	Applicable to: MSN 02737			
E	P9885		28 MAR 18	ENGINE INDICATING-N1 ROTATIONAL SPEED INDICATING SYSTEM-INSTALL IAE N1 SPEED HARNESS WITH HIGHER RESISTANCE
	Applicable to: MSN 02804-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
E	P9891	31-1281 02	28 MAR 18	INDICATING RECORDING SYSTEM SDAC INSTALL SDAC STANDARD H2-E2
	Applicable to: MSN 01767, 01957-02097, 02121-02204, 02609-02626, 02712, 03071-09063			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	P9892		20 AUG 10	AUTO FLIGHT - FMGC - INSTALL FMS2 THALES S4 (REV2+) STD ON IAE AND PW A/C ASSOCIATED WITH FG I10
	Applicable to: MSN 03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336			
E	P9894	22-1294 02	03 JUL 12	AUTO FLIGHT - FLIGHT AUGMENTATION COMPUTER - INTRODUCE TAIL STRIKE INDICATION ON PFD FOR A320 & A321 A/C
	Applicable to: MSN 02135, 02139, 02609-02626, 03071, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 05120, 05158, 05218, 05259-09063			
E	P9895	22-1294 02	30 MAY 12	AUTO FLIGHT - FLIGHT AUGMENTATION COMPUTER - INTRODUCE TAIL STRIKE "PITCH-PITCH" CALL-OUT FOR A320 & A321 AIRCRAFT
	Applicable to: MSN 02135, 02139, 02609-02626, 03071, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 05120, 05158, 05218, 05259-09063			
	P9902		07 OCT 11	NAVIGATION - WEATHER RADAR SYSTEM - INSTALL COLLINS WXR MULTISCAN WRT -2100 P/N 822-1710-213
	Applicable to: MSN 04294, 04433, 04510, 04762-04954, 06772, 06829, 06904, 06946, 07083-07192			
	P9907		08 NOV 17	INDICATING RECORDING SYSTEM FLIGHT WARNING COMPUTER (FWC) INSTALL FWC STANDARD H2-F4
	Applicable to: MSN 04294, 04314, 04393-04397			
E	P9920	00-1182 05	10 OCT 14	GENERAL - TECHNICAL DOCUMENTATION EXTENSION OF FLEX TEMPERATURE - UPDATE FM & FCOM DOCUMENTATION
	Applicable to: MSN 01957-02097, 02121, 02138, 03071, 04491, 04532, 04645, 05120, 05218			
E	P9964	34-1412 06	06 DEC 16	NAVIGATION - EGPWS INSTALL EGPWS STANDARD -003
	Applicable to: MSN 02108, 02135, 02139-02204, 02334-02359, 02457, 02584-02626, 02908-02914, 06720-09063			
E	P9978	34-1418 69	13 NOV 12	NAVIGATION - ATC/MODE S (SELECT) CERTIFY ADS-B OUT CAPABILITY THROUGH EXTENDED SQUITTER 1090 MHZ
	Applicable to: MSN 01920, 02135, 02139-02195, 02457, 02584-02626, 02670-02712, 02908-03071, 03357-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-08492, 08527-08557			
	00-1008 07		04 MAY 15	GENERAL - ENGINES - EXTEND FLIGHT ENVELOPE (9200FT) FOR IAE V2500 ENGINES (WITHOUT THRUST BUMP).
	Applicable to: MSN 02204			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	00-1016 70		31 DEC 18	CERTIFICATION - CERTIFY TAKE-OFF OPERATIONS WITH 15 KNOTS TAILWIND
	Applicable to: MSN 01957-02097, 02121-02195, 02388-02482, 02609-02626, 02670-02712, 02804-02914, 03138, 04314, 04393-04397, 04491			
	00-1020 15		17 MAY 16	GENERAL - CFM ENGINES - MANUAL OPERATIONS FOR HIGH ALTITUDE AIRPORTS (PRESSURE ALTITUDE LIMIT 9200 FT).
	Applicable to: MSN 03750			
	00-1024 07		17 MAY 16	GENERAL - AUTO FLIGHT - INTRODUCE EXTENDED CAT III B AUTOMATIC LANDING CAPABILITY (FOR CFM ENGINES).
	Applicable to: MSN 03750			
E	00-1043 63		14 JAN 19	CERTIFICATION - CERTIFY LANDING OPERATIONS WITH 15 KNOTS TAILWIND.
	Applicable to: MSN 01957-02097, 02121, 02138, 02388-02482, 02609-02626, 02670-02712, 02804-02914, 03138, 04314, 04393-04397, 04491, 04532, 04645, 05218			
	00-1058 97		12 FEB 18	GENERAL - CERTIFICATION DOCUMENTS - CERTIFY AIRCRAFT FOR OPERATION ON RUNWAYS LESS THAN 45 METER WIDTH.
	Applicable to: MSN 01767-02139, 02204-02359, 03138-03264, 03330			
	00-1069 38		13 MAR 18	GENERAL - DESIGN WEIGHTS - INCREASE FROM WV008 (MTOW 73.5T / MLW 64.5T / MZFW 61.0T) TO WV012 (MTOW 77.0T / MLW 66.0T / MZFW 62.5T)
	Applicable to: MSN 02457, 03308			
	00-1143 15		28 MAR 18	GENERAL - DESIGN WEIGHT - INCREASE DESIGN WEIGHT FROM WV008 (MTOW 73.5T/MLW 64.5T/MZFW 61T) TO WV016 (MTOW 73.5T/MLW 66T/MZFW 62.5T)
	Applicable to: MSN 01920-02097, 02121, 02204, 02405-02443, 02482-02584, 02649, 02804			
	00-1179 08		12 FEB 18	CERTIFICATION - OPERATIONS ON RUNWAY WITH SLOPE BETWEEN 2 AND 3 PERCENT
	Applicable to: MSN 02443, 02670, 02908-02914			
	00-1182 05		14 MAY 18	GENERAL - CERTIFICATION DOCUMENTS - CERTIFY FLEXIBLE TEMPERATURE EXTENSION
	Applicable to: MSN 01957-02097, 02121, 02138			
	00-1204 09		06 DEC 16	GENERAL - DESIGN WEIGHTS - OPERATE WITH DUAL OPERATIONAL WEIGHTS (MTOW 77T/73.5T - MLW 66T - MZFW 62.5T)
	Applicable to: MSN 02457, 05158			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	00-1230 00		12 FEB 18	CERTIFICATION DOCUMENTS - GENERAL - EXTEND OPERATING FLIGHT ENVELOPE TO MINUS 2000FT PRESSURE ALTITUDE.
	Applicable to: MSN 01767			
	00-1262 00		12 FEB 18	CERTIFICATION - GENERAL - CERTIFY HIGH ALTITUDE OPERATION UP TO 12000 FT WITH CONVENTIONAL LANDING GEARS
	Applicable to: MSN 06744, 06799-06819			
	00-1263 00		12 FEB 18	GENERAL - CERTIFICATION - NEO PW - HIGH ALTITUDE OPERATIONS UP TO 9200 FT
	Applicable to: MSN 06744, 06799-06819			
N	01-1004 34		21 JAN 19	GENERAL - CERTIFY AIRCRAFT FOR OPERATION ON RUNWAYS LESS THAN 45M WIDTH
	Applicable to: MSN 02195, 02388, 02584-02626, 02712, 03071			
	03-1072 06		15 OCT 18	DESIGN WEIGHTS - INCREASE FROM WV008 (MTOW 73.5T MLW 64.5T MZFW 61T) TO WV012 (MTOW 77T MLW 66T MZFW 62.5T)
	Applicable to: MSN 05437-05460, 05476-05577, 05712-05727, 05829, 05952			
	21-1160 00		12 FEB 18	AIR CONDITIONING - PACK TEMPERATURE CONTROL - INSTALL AIR CONDITIONING CONTROLLER P/N 1803B0000-02
	Applicable to: MSN 02584-02609			
	21-1170 03		14 SEP 18	AIR CONDITIONING - AFT CARGO COMPARTMENT HEATING - AFT CARGO HEATING SYSTEM DEACTIVATION
	Applicable to: MSN 01957-02097, 02388			
	21-1243 00		14 SEP 18	AIR CONDITIONING - CARGO COMPARTMENT - AFT CARGO VENTILATION SYSTEM DEACTIVATION
	Applicable to: MSN 01957-02097, 02388			
	22-1079 08		12 FEB 18	AUTO FLIGHT - FLIGHT AUGMENTATION COMPUTER - INSTALL NEW FAC SOFTWARE STANDARD PN B397BAM0515.
	Applicable to: MSN 01767			
	22-1089 10		12 FEB 18	AUTOFLIGHT - FMGC - INSTALL HONEYWELL FMS2 WITH CFM ENGINES
	Applicable to: MSN 01767			
	22-1097 28		04 JUL 18	DE-ACTIVATE "GUIDED RADAR APPROACH WITH AUTOPILOT ENGAGED" PROCEDURE (MUH 250 FT).
	Applicable to: MSN 03264, 03330			
	22-1102 02		18 JUN 18	AUTO FLIGHT - FLIGHT AUGMENTATION COMPUTER - INSTALL FAC STANDARD BAM0617.
	Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02405			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	22-1104 05		24 SEP 18	AUTO FLIGHT - MCDU - INSTALL THALES MCDU PN C19266AA01 COMPATIBLE WITH FMS2
	Applicable to: MSN 01957			
	22-1116 04		24 SEP 18	AUTOFLIGHT - FMGC - INSTALL NEW THALES/SMITH FMS2 (REV 01) C13043BA01 WITH IAE ENGINES
	Applicable to: MSN 01957			
	22-1123 08		12 FEB 18	AUTO FLIGHT - FMGC - ACTIVATE FLIGHT MODE ANNUNCIATOR ENHANCEMENT FUNCTION.
	Applicable to: MSN 01767, 01957			
	22-1139 16		28 MAR 18	AUTO FLIGHT - MCDU - INSTALL THALES MCDU PN C19266AA01 COMPATIBLE WITH FMS2
	Applicable to: MSN 02443			
	22-1146 00		14 MAY 18	AUTO FLIGHT - FMGC - INTRODUCE FMS2 THALES REV 1+ (S2) ASSOCIATED TO FG STD I9 ON IAE ENGINES.
	Applicable to: MSN 01957-02097, 02121-02139			
	22-1168 01		12 FEB 18	AUTO FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC) - INSTALL FMS2 HONEYWELL P1C11 ON A/C WITH CFMI PPS.
	Applicable to: MSN 01767-01920			
	22-1171 02		12 FEB 18	AUTO FLIGHT - FMGC - INSTALL A NEW FMS2 THALES SMITHS S3 STANDARD ON CFM A/C.
	Applicable to: MSN 02712			
	22-1172 01		12 FEB 18	AUTO FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER- INSTALL FMS2 THALES "S3" ASSOCIATED TO FG "I9" : IAE ENGINES.
	Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405, 02482, 02908-02914			
	22-1203 02		12 FEB 18	AUTOFLIGHT - FMGC - INSTALL FMGC IAE STD P1I10 (WITH FMS2 HONEYWELL) ON A/C FITTED WITH IAE POWERPLANTS.
	Applicable to: MSN 02108, 02275-02334, 02443-02457, 02609-02670, 02737-02804			
	22-1205 02		12 FEB 18	AUTO FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC) - INSTALL FMS2 THALES S4 (REV2+) STD ON CFM A/C.
	Applicable to: MSN 02712			
	22-1206 01		04 MAY 15	AUTO-FLIGHT-FLIGHT MANAGEMENT AND GUIDANCE COMPUTER(FMGC) - INSTALL FMS2 THALES S4(REV2+) STD ON IAE A/C.
	Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405, 02482, 02908-02914			
	22-1226 04		18 JUN 18	AUTO FLIGHT - FLIGHT AUGMENTATION (FAC) INTRODUCE FAC SOFTWARE STD "BAM0619".
	Applicable to: MSN 01767-02139, 02204-02359, 02405			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	22-1244 02		12 FEB 18	AUTO-FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC) - INSTALL FMGC STD P1I11 ON IAE AND PW ENGINED A/C.
	Applicable to: MSN 02108, 02275-02334, 02443-02457, 02609-02670, 02737-02804			
	22-1246 02		12 FEB 18	AUTO FLIGHT - FMGC - INSTALL FMGC STANDARD S4I11 ON IAE AND PW A/C.
	Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405, 02482, 02908-03071, 03264-03541			
	22-1247 01		12 FEB 18	AUTO-FLIGHT - FMGC - INSTALL FMGC THALES S4C12 ON CFM A/C.
	Applicable to: MSN 02712, 03138			
	22-1248 01		12 FEB 18	AUTO-FLIGHT - FMGC - INSTALL FMGC HNWL STD P1C12 ON CFM A/C.
	Applicable to: MSN 01767-01920, 02388, 02584			
	22-1266 03		12 FEB 18	AUTO-FLIGHT - FMGC - INSTALL HONEYWELL PERFORMANCE DATABASE RELEASE 1A (PS4087592-901).
	Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02443-02457, 02584-02670, 02737-02804			
	22-1269 05		15 FEB 16	AUTO FLIGHT - FMGC - INSTALL FMGC HWL H2C12 (RELEASE 1A) ON CFM A/C.
	Applicable to: MSN 01767-01920, 02388, 02584, 03750			
	22-1270 04		07 FEB 18	AUTO FLIGHT - FMGC - INSTALL FMGC HWL H2I11 (RELEASE 1A) ON IAE AND PW A/C.
	Applicable to: MSN 02108, 02275-02334, 02457, 02609-02670, 02737-02804			
	22-1276 03		12 FEB 18	AUTO FLIGHT - FMGC - INSTALL THALES PERFORMANCE DATABASE RELEASE 1A (P/N G2831AAA02).
	Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405, 02482, 02712, 02908-03618, 03782-03943			
	22-1289 01		12 FEB 18	AUTO FLIGHT - GENERAL - REMOVE AFM LIMITATION ON NON-PRECISION APPROACHES WITH ONE ENGINE OUT ON A320/A318 A/C.
	Applicable to: MSN 01767-02359, 02405, 02457-02908, 03071-03138, 03357-03943			
	22-1294 02		12 FEB 18	AUTO-FLIGHT - FLIGHT AUGMENTATION - INTRODUCE TAIL STRIKE INDICATION ON PFD AND PITCH PITCH CALL-OUT ON LANDING
	Applicable to: MSN 02135, 02139, 02609-02626, 03071			
	22-1296 06		12 FEB 18	AUTO-FLIGHT - FMGC - ACTIVATE MOD NAV GO AROUND ON FMGC
	Applicable to: MSN 01767, 01957-02195, 02275-02443, 02482-02626, 02670, 02737-02908, 03071-03138, 03308, 03357-04156			
	22-1315 05		12 FEB 18	AUTO FLIGHT- FLIGHT MANAGEMENT SYSTEM - ACTIVATE NO AP DISCONNECTION BELOW

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
				MDA/MDH UNTIL MISSED APPROACH POINT AND ACTIVATE BARO RADIO SETTING FUNCTION.
	Applicable to: MSN 01767-02405, 02457-04488, 04506-04518, 04535-04637, 04752-04954			
	22-1319 13		28 MAR 18	AUTO FLIGHT- FLIGHT MANAGEMENT SYSTEM - ACTIVATE NO AP DISCONNECTION BELOW MDA/MDH UNTIL MISSED APPROACH POINT AND ACTIVATE BARO RADIO SETTING FUNCTION.
	Applicable to: MSN 02443			
	22-1353 25		15 OCT 18	MCDU - INSTALL THALES MCDU PN C19266EA01 COMPATIBLE WITH FMS2
	Applicable to: MSN 02737			
	22-1359 05		18 JUN 18	AUTO-FLIGHT-FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC)-INSTALL FMGC HONEYWELL H2C13 ON CFM A/C
	Applicable to: MSN 01767-01920, 02388, 02584, 03750			
	22-1360 02		12 FEB 18	AUTO-FLIGHT-FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC)-INSTALL FMGC THALES S6C13 ON CFM A/C
	Applicable to: MSN 02712, 03138, 04294, 04314, 04399-04438, 04510			
	22-1361 03		12 FEB 18	AUTOFLIGHT - FMGC - INSTALL FMS THALES RELEASE 1A S6 (WITH FG I11) ON IAE&PW A/C
	Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405, 02482, 02908-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04954			
	22-1362 03		19 JUL 16	AUTOFLIGHT-FMGC-INSTALL FMS THALES RELEASE 1A S6 (WITH FG C12) ON CFM A/C
	Applicable to: MSN 02712, 03138, 04294, 04314, 04393-04438, 04510			
E	22-1375 00		28 JUL 15	AUTO FLIGHT - FLIGHT AUGMENTATION COMPUTER (FAC) - INTRODUCE FAC SOFTWARE STANDARD BAM0621 (ROPS FUNCTION).
	Applicable to: MSN 01767-02139, 02204-02457, 02584, 02626-02712, 02804-03264, 03330-04294, 04314-04510, 04532-04552, 04609-05080, 05092-05158, 05218-05411			
E	22-1379 01		12 FEB 18	AUTO FLIGHT - FMGC - INSTALL FMGC H2I12 HONEYWELL ON IAE/PW AIRCRAFT
	Applicable to: MSN 02108, 02275-02334, 02457, 02609-02670, 02804, 04491, 04532, 04645, 05120, 05218			
	22-1461 12		12 FEB 18	AUTO FLIGHT - FLIGHT AUGMENTATION COMPUTER (FAC) - INSTALL FAC B623 (SHARKLET PROJECT)
	Applicable to: MSN 02626			
	22-1462 02		19 JUL 16	AUTOFLIGHT - FMGC - INSTALL FMS THALES RELEASE 1A S7A (WITH FG C13) ON CFM A/C
	Applicable to: MSN 02712, 03138, 04294, 04314, 04399-04438, 04510			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	22-1463 02		18 JUN 18	AUTO FLIGHT - FMGC - INSTALL FMS THALES RELEASE 1A STANDARD S7A (WITH FG I12) ON IAE/PW AIRCRAFT
	Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405, 02482, 02908-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-05898			
	22-1476 00		12 FEB 18	AUTO FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC) - INSTALL FMGC S7API12 ON IAE A/C
	Applicable to: MSN 05923-06036			
E	22-1480 03		18 JUN 18	AUTO FLIGHT-FLIGHT AUGMENTATION (FAC) DEFINE STOP RUDDER INPUT WARNING FUNCTION ON AIRCRAFT
	Applicable to: MSN 01767-02139, 02204-02405, 02457, 02584-02712, 02804-04156, 04294, 04314-04506, 04518-04532, 04552, 04609-05036, 05090-05094, 05155-05230, 05259, 05291, 05313-06036			
	22-1499 06		18 APR 18	FMGC - CHANGE FROM HONEYWELL PEGASUS TO THALES/SMITHS (S7AI12) FOR IAE ENGINES
	Applicable to: MSN 02443			
	22-1523 02		28 MAR 18	AUTO FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC) - INSTALL FMGC HONEYWELL H2CC14 ON CFM A/C
	Applicable to: MSN 01767-01920, 02388, 02584, 03750			
	22-1536 10		31 DEC 18	FMGC - ACTIVATE FMS2 R1A FUNCTIONS PACKAGE
	Applicable to: MSN 02737			
	22-1544 00		15 MAY 17	AUTO FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC) - INSTALL FMGC S7A I15 THALES ON IAE A/C
	Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02908-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04888, 04954-05094, 05155-05190, 05230-05898			
	22-1545 00		15 MAY 17	AUTO FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC) - INSTALL FMGC S7AC14 THALES ON CFM A/C
	Applicable to: MSN 02712, 03138, 04294, 04314, 04399-04438, 04510			
E	22-1547 00		12 FEB 18	FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC) - INSTALL FMGC H2CI15 HONEYWELL ON IAE AND PW ENGINE
	Applicable to: MSN 02108, 02275-02334, 02457, 02609-02670, 02737-02804, 04491, 04532, 04645, 05120, 05218			
E	22-1553 00		24 OCT 16	AUTO FLIGHT - FLIGHT AUGMENTATION COMPUTER (FAC) - INTRODUCE FAC B624 (ROPS AND SHARKLET)
	Applicable to: MSN 01767-02139, 02204-02457, 02626-03264, 03330-04384, 04399-05898			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	22-1554 01		13 MAR 18	AUTO-FLIGHT - FLIGHT AUGMENTATION COMPUTER (FAC) - INSTALL FAC CAA03 STANDARD
	Applicable to: MSN 05923-06336			
	22-1568 03		13 MAR 18	AUTO FLIGHT - GENERAL - INTRODUCE AUTOLAND ON A320 NEO AND A321 NEO
	Applicable to: MSN 06720-06868, 06914, 06952, 07001-07053, 07252-07510			
	22-1575 00		12 FEB 18	AUTO FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC) - INTRODUCE FG PI15 ASSOCIATED TO HONEYWELL FM H2C ON A320 NEO AIRCRAFT EQUIPPED WITH PW ENGINES
	Applicable to: MSN 06720-06868, 06914, 06952-07053, 07252-07510			
	22-1587 02		18 JUN 18	AUTO FLIGHT - FMGC - CHANGE FROM HONEYWELL PEGASUS TO THALES STANDARD S7A-I15
	Applicable to: MSN 02737			
	22-1590 01		31 DEC 18	FLIGHT MANAGEMENT - INTRODUCE FM THALES S7B ASSOCIATED TO FG 2G C14 (CFM ENGINES)
	Applicable to: MSN 04314			
	22-1591 00		12 FEB 18	AUTO FLIGHT - FLIGHT MANAGEMENT - INTRODUCE FM THALES S7B ASSOCIATED TO FG 2G I15 (IAE/PW ENGINES)
	Applicable to: MSN 02135, 02139-02195, 02359, 02908-03071, 03330-03457, 03541-03618, 03782-03863, 04008-04156, 04328, 04488, 04506, 04518, 04535-04614, 04637, 04757-04888, 04954-05094, 05155-05190, 05230-05259, 05291-05807, 05893			
	22-1593 01		12 FEB 18	AUTO-FLIGHT - FAC - INSTALL FAC CAA06 FOR CEO AIRCRAFT
	Applicable to: MSN 05923-06336			
	22-1594 00		12 FEB 18	AUTO-FLIGHT - FAC - INSTALL FAC CAA06 FOR NEO AIRCRAFT
	Applicable to: MSN 06720-06868, 06914, 06952-07053, 07252-07396			
	22-1605 00		14 SEP 18	AUTO FLIGHT - FMGC - INSTALL FG PI16 ASSOCIATED WITH HONEYWELL FM H2C FOR NEO AIRCRAFT FITTED WITH PW ENGINES
	Applicable to: MSN 06720-06860, 06904-06914, 06952-07033, 07192, 07329-08168			
	22-1608 00		18 JUN 18	AUTO FLIGHT - FMGC - INSTALL FG PI16 ASSOCIATED WITH THALES FM S7B ON CEO AIRCRAFT
	Applicable to: MSN 05923-06336			
	22-1618 00		12 FEB 18	AUTO FLIGHT - FLIGHT MANAGEMENT AND GUIDANCE COMPUTER (FMGC) - ACTIVATE SOFT GO AROUND FUNCTION FOR NEO
	Applicable to: MSN 06720-08101			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	23-1208 14		24 SEP 18	COMMUNICATIONS - ANTI HIJACK CAMERA MONITORING - CDSS INSTALLATION OF UNITS
	Applicable to: MSN 01957			
	23-1214 10		12 FEB 18	COMMUNICATIONS - EMERGENCY ALERTING SYSTEM - INSTALLATION OF AN EMERGENCY ALERTING SYSTEM
	Applicable to: MSN 02204			
	23-1248 00		22 MAR 17	COMMUNICATIONS - ANTI HIJACK CAMERA MONITORING - MODIFY HINGE ASSEMBLY FOR CDSS LCD/SYSTEM CONTROLLER
	Applicable to: MSN 01957-02121, 02138			
	23-1277 13		12 FEB 18	COMMUNICATIONS - ANTI HIJACK CAMERA MONITORING - INSTALL UNITS FOR A COCKPIT DOOR SURVEILLANCE SYSTEM (CDSS)
	Applicable to: MSN 01767-01920			
	23-1293 02		12 FEB 18	COMMUNICATIONS - MISCELLANEOUS EMERGENCY EQUIPMENT - INSTALL AN EMERGENCY LOCATOR TRANSMITTER (ELT) PN S1821502-02 AND THE ASSOCIATED CONTROL PANEL
	Applicable to: MSN 02649			
	23-1333 04		28 MAR 18	COMMUNICATIONS - AUDIO MANAGEMENT - MODIFY AMU POWER SUPPLY TO COPE WITH DC ESSENTIAL BUS LOSS
	Applicable to: MSN 02097, 02121, 02138, 02584, 02649, 03071-03138			
	23-1373 03		12 FEB 18	COMMUNICATIONS - ANTI HIJACK CAMERA MONITORING - INSTALL UNITS FOR A COCKPIT DOOR SURVEILLANCE SYSTEM (CDSS)
	Applicable to: MSN 02275-02334			
	23-1473 09		31 DEC 18	COMMUNICATIONS - ANTI HIJACK CAMERA MONITORING - INSTALL UNITS FOR A COCKPIT DOOR SURVEILLANCE SYSTEM (CDSS)
	Applicable to: MSN 02139			
	23-1485 16		12 FEB 18	COMMUNICATIONS - PASSENGER ADDRESS SYSTEM - MODIFY EMERGENCY POWER SUPPLY
	Applicable to: MSN 01767			
	23-1544 06		31 DEC 18	COMMUNICATION - CABIN INTERCOMMUNICATION DATA SYSTEM - INTRODUCE MODIFIED DIRECTOR POWER SUPPLY PRINCIPLE
	Applicable to: MSN 01767			
	23-1653 00		12 FEB 18	COMMUNICATIONS - HF SYSTEM - INSTALL SINGLE HFDR SYSTEM ROCKWELL-COLLINS 900
	Applicable to: MSN 02405, 02482			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	23-1654 00		12 FEB 18	COMMUNICATIONS - HF SYSTEM - INSTALL FULL PROVISIONS FOR DUAL HF SYSTEM
	Applicable to: MSN 02405, 02482			
	24-1120 04		12 FEB 18	ELECTRICAL POWER - AC ESSENTIAL GENERATION SWITCHING - INSTALL AUTO SWITCHING SYSTEM FOR AC AND DC ESS BUS.
	Applicable to: MSN 01767-03071			
	24-1128 09		12 FEB 18	ELECTRICAL POWER - AC GENERATION - INSTALL ELECTRICAL OUTLETS IN COCKPIT
	Applicable to: MSN 02275-02388, 02584			
	25-1305 06		12 FEB 18	EQUIPMENT/FURNISHINGS - PASSENGER COMPARTMENT - INTRODUCE A MODIFIED INTRUSION AND PENETRATION RESISTANT COCKPIT DOOR
	Applicable to: MSN 01767			
	25-1400 17		14 MAY 18	EQUIPMENT/FURNISHINGS - CURTAINS AND PARTITIONS - INSTALL A DEADBOLT IN THE REINFORCED COCKPIT DOOR
	Applicable to: MSN 01957-02097, 02121, 02138			
	25-1444 02		04 MAY 15	EQUIPMENT/FURNISHINGS - CURTAINS AND PARTITIONS - INTRODUCE PPTC FOR COCKPIT DOOR STRIKE PROTECTION
	Applicable to: MSN 01767-02482			
	25-1789 05		12 FEB 18	EQUIPMENT / FURNISHINGS - CURTAINS AND PARTITIONS - INSTALL DEADBOLT IN THE REINFORCED COCKPIT DOOR
	Applicable to: MSN 02737			
	25-1B78 00		17 MAY 16	EQUIPMENT / FURNISHINGS - LAVATORIES - REPLACE CHEMICAL BY GASEOUS OXYGEN CONTAINER IN LAVATORIES
	Applicable to: MSN 02737, 03750			
	25-1BBR 00		31 DEC 18	EQUIPMENT / FURNISHINGS - LAVATORIES - REPLACE CHEMICAL BY GASEOUS OXYGEN BOXES IN LAVATORIES
	Applicable to: MSN 04314			
	27-1113 12		12 FEB 18	FLIGHT CONTROLS - FCDC SYSTEM - PROVIDE A VISUAL INDICATION FOR SIMULTANEOUS SIDE STICK ACTION.
	Applicable to: MSN 01767, 02135, 02139, 02359			
	27-1160 01		12 FEB 18	FLIGHT CONTROLS - ELAC SYSTEM - INSTALL ELAC L91 SOFTWARE.
	Applicable to: MSN 01767-02482			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	27-1182 04		12 FEB 18	FLIGHT CONTROL - ELAC SYSTEM - INTRODUCE ELAC L93 SOFTWARE STANDARD.
	Applicable to: MSN 01767-03943			
	27-1183 03		12 FEB 18	FLIGHT CONTROL - ELAC - ACTIVATE HIGH ALTITUDE UPSETS VMO/MMO OVERSHOOT PROTECTION FUNCTION ON ELAC
	Applicable to: MSN 01767, 02275-02334, 02457, 02584-02649, 02712, 02914, 03138-03457, 03541, 03750-03943			
	27-1219 02		12 FEB 18	SPOILER AND ELEVATOR COMPUTER - INSTALL SEC 121 HARDWARE B'
	Applicable to: MSN 04813-05365			
	27-1230 01		06 MAR 14	SPOILER AND ELEVATOR COMPUTER (SEC) - INSTALL SEC 123 HARDWARE B
	Applicable to: MSN 01767-03618, 03782-04384, 04394-04438			
E	27-1234 01		07 FEB 18	FLIGHT CONTROL - ELEVATOR AILERON COMPUTER SYSTEM (ELAC)-INSTALL L97 STANDARD ON ELAC B WITH DATA LOADING CAPABILITY
	Applicable to: MSN 04314, 04393-04438, 04491, 04510, 04532, 04645, 04947-05155, 05190-05829			
	27-1238 00		18 JUN 18	FLIGHT CONTROLS - ELAC - INSTALL L97 STANDARD ON ELAC B WITHOUT DATALOADING CAPABILITY
	Applicable to: MSN 01767-04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04888			
E	27-1243 01		07 FEB 18	FLIGHT CONTROLS - ELEVATOR AILERON COMPUTER SYSTEM (ELAC) - INSTALL ELAC B L97+ WITH DATA LOADING CAPABILITY
	Applicable to: MSN 04314, 04393-04438, 04491, 04510, 04532, 04645, 04947-06336			
	27-1244 00		04 JUL 18	FLIGHT CONTROLS - ELEVATOR AILERON COMPUTER SYSTEM (ELAC) - INSTALL ELAC B L97+ WITHOUT DATALOADING
	Applicable to: MSN 01767-04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04888			
	27-1251 01		12 FEB 18	FLIGHT CONTROLS - ELEVATOR AILERON COMPUTER SYSTEM (ELAC) - INSTALL SOFTWARE STANDARD L98 ON ELAC B WITH DATA LOADING CAPABILITY
	Applicable to: MSN 04399, 04438, 04491, 04510, 04532, 04645, 04947, 04965-05080, 05120-05155, 05190, 05230-05262, 05298-05507, 05577, 05676-05807, 05898, 05992-06010, 06208-06287, 06336			
	27-1252 01		28 MAR 18	FLIGHT CONTROLS - SPOILER AND ELEVATOR COMPUTER (SEC) - INSTALL STANDARD SEC C 126
	Applicable to: MSN 05712-06336			
	27-1255 01		03 JAN 17	FLIGHT CONTROLS - ELEVATOR AILERON COMPUTER SYSTEM (ELAC) - INSTALL SOFTWARE

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
				STANDARD L98 ON ELAC B WITHOUT DATA LOADING CAPABILITY
	Applicable to: MSN 01767, 02275-02334, 02388, 02457, 02649, 02712, 02908-02914, 03264, 03330-03497, 03750-04216, 04312, 04328-04384, 04481-04488, 04518, 04535, 04603-04637, 04752-04818			
E	27-1257 01		04 JUL 18	FLIGHT CONTROLS - SPOILER AND ELEVATOR COMPUTER (SEC) - INSPECTION OF SEC CONFIGURATION FOR OEB-50 CANCELLATION FOR AIRCRAFT PRE MOD No. 39429P11174
	Applicable to: MSN 01767-05683			
	27-1263 00		04 JUL 18	FLIGHT CONTROLS - ELEVATOR AILERON COMPUTER SYSTEM (ELAC) - INSTALL SOFTWARE STANDARD L99 ON ELAC B WITH DATALOADING CAPABILITY
	Applicable to: MSN 04399, 04438, 04491, 04510, 04532, 04645, 04947, 04965-05080, 05120-05155, 05190, 05230-05262, 05298-05507, 05577, 05676-05807, 05898, 05992-06010, 06208-06287, 06336			
	27-1264 00		28 MAR 18	FLIGHT CONTROLS - ELEVATOR AILERON COMPUTER SYSTEM (ELAC) - INSTALL SOFTWARE STANDARD L99 ON ELAC B WITHOUT DATALOADING CAPABILITY
	Applicable to: MSN 01767, 02275-02334, 02457, 02649, 02712, 02908-02914, 03264, 03357, 03457-03497, 03863-04216, 04312, 04384, 04481-04488, 04518, 04535, 04603-04637, 04752, 04762, 04818			
	28-1106 03		12 FEB 18	FUEL - MANUAL MAGNETIC INDICATORS - ATTITUDE MONITOR DELETION
	Applicable to: MSN 01920-01957			
	28-1150 01		12 FEB 18	FUEL - QUANTITY INDICATION - REMOVE FUEL LEAK DETECTION FUNCTION ASSOCIATED WITH FQIC 13-10 (ANTI-MOD FOR MOD 32650)
	Applicable to: MSN 02457, 02649, 02712-02737			
	28-1159 00		28 MAR 18	FUEL - MAIN FUEL PUMP SYSTEM - FUEL PUMPS - APPLY CORRECT TORQUE AND SCREW LOCKING ON GAS RETURN OUTLET BOLTS
	Applicable to: MSN 01767-02914			
	28-1214 02		12 FEB 18	FUEL - QUANTITY INDICATING - ACTIVATE FUEL LEAK DETECTION WARNING SYSTEM
	Applicable to: MSN 02804			
	28-1215 00		15 JAN 18	FUEL - QUANTITY INDICATING - INTRODUCE NEW STANDARD OF FQIC
	Applicable to: MSN 02135, 02195, 02405, 04314, 04393-04397			
	28-1216 01		04 JUL 18	FUEL - TANK LEVEL SENSING - ACTIVATE FUEL OVERFLOW CAUTION ON A318/319/320
	Applicable to: MSN 03138			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	28-1242 01		08 NOV 17	FUEL - FUEL RECIRCULATION - ESTABLISH MISSING GROUND CONNECTION TO INHIBIT RECIRCULATION
	Applicable to: MSN 06208-06336			
	28-1245 00		12 FEB 18	FUEL - QUANTITY INDICATING - INTRODUCE FUEL QUANTITY INDICATING COMPUTER (FQIC) 30320-0203 SOFTWARE FOR A320 NEO AIRCRAFT
	Applicable to: MSN 06720-06868, 06914, 06952-07053, 07252-07396			
	29-1126 03		28 MAR 18	HYDRAULIC POWER - POWER TRANSFER - ACTIVATE THE POWER TRANSFER UNIT (PTU) INHIBITION LOGIC ON SA A/C
	Applicable to: MSN 02584-02626, 02670-02804, 02914-04156			
	29-1135 01		12 FEB 18	HYDRAULIC POWER - GENERAL - IMPROVE HYDRAULIC PIPES INSTALLATION IN MLG BAY AT FR42
	Applicable to: MSN 01767-02097, 02121-02195, 02275-02334, 02388, 02457, 02584-02649, 02712, 02914			
	29-1156 01		28 MAR 18	HYDRAULIC POWER - POWER TRANSFER - INTRODUCE OPTIMIZED PTU INHIBITION LOGIC
	Applicable to: MSN 01957-02097, 02121-02195, 02275-02388			
	29-1174 00		12 FEB 18	HYDRAULIC POWER - GENERAL - EXTEND ENVIRONMENTAL OPERATION ENVELOPE TO ISA +40 DEG C
	Applicable to: MSN 06799			
	30-1048 32		23 JUL 18	ICE AND RAIN PROTECTION - ICE DETECTION - DUAL ADVISORY ICE DETECTION SYSTEM INSTALLATION
	Applicable to: MSN 01767, 02649			
	30-1054 00		12 FEB 18	ICE AND RAIN PROTECTION - WINDSHIELD RAIN PROTECTION - DEACTIVATION OF RAIN REPELLENT SYSTEM
	Applicable to: MSN 01767			
	31-1113 31		12 FEB 18	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) - ACTIVATION OF OEB REMINDER FUNCTION.
	Applicable to: MSN 02737			
	31-1115 12		12 FEB 18	INDICATING/RECORDING SYSTEMS - FWC - PROVIDE NEW SYNTHETIC VOICE "DUAL INPUTS".
	Applicable to: MSN 02359			
	31-1197 00		14 MAY 18	INDICATING RECORDING SYSTEM - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC STANDARD H2F2.
	Applicable to: MSN 01957-02097, 02121, 02138			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	31-1211 33		16 AUG 17	USE METRIC UNITS IN PLACE OF US UNITS
	Applicable to: MSN 02405, 02482			
	31-1257 01		12 FEB 18	INDICATING RECORDING SYSTEM - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC STANDARD H2-F2.
	Applicable to: MSN 01767-01920, 02108, 02135, 02139-02359			
	31-1264 04		04 MAY 15	INDICATING RECORDING SYSTEM - ACTIVATION OF FWC HARD PIN PROGRAMMED FUNCTIONS.
	Applicable to: MSN 01767-02388, 02443-02457, 02584-03138			
	31-1266 02		12 FEB 18	INDICATING/RECORDING SYSTEMS - SDAC - ACTIVATION OF HARD PIN PROGRAMMED FONCTIONS.
	Applicable to: MSN 01767-02138, 02195-02359			
	31-1267 03		12 FEB 18	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC STANDARD H2F3.
	Applicable to: MSN 01767-01920, 02108, 02135, 02139-02359, 02405-02443, 02482-02914			
	31-1276 02		12 FEB 18	INDICATING/RECORDING SYSTEMS - ELECTRONIC INSTRUMENT SYSTEM(EIS) - INSTALL DISPLAY MANAGEMENT COMPUTER SOFTWARE EIS2 S7
	Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-02914			
	31-1281 02		28 MAR 18	INDICATING RECORDING SYSTEM - SYSTEM DATA ACQUISITION CONCENTRATOR (SDAC) - INSTALL SDAC STANDARD H2-E2.
	Applicable to: MSN 01767, 01957-02097, 02121-02204, 02609-02626, 02712			
	31-1286 01		04 MAY 15	INDICATING/RECORDING SYSTEMS - DMC - INTRODUCE DMC EIS1 V60 STANDARD.
	Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482			
	31-1290 01		12 FEB 18	INDICATING/RECORDING SYSTEMS - FWC/SDAC - REPLACE FWC STD H2-E4 BY FWC STD H2-F2 AND ACTIVATE HARD PIN PROGRAMMED FUNCTIONS.
	Applicable to: MSN 02405, 02482			
	31-1300 02		12 FEB 18	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC STANDARD H2-F3P.
	Applicable to: MSN 01767-02914			
	31-1313 04		14 MAY 18	INDICATING/RECORDING SYSTEMS - DFDRS - QAR REMOVAL.
	Applicable to: MSN 01957-02097, 02121, 02138, 03071			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	31-1331 01		12 FEB 18	INDICATING/RECORDING SYSTEM - ELECTRONIC INSTRUMENT SYSTEM (EIS)- ACTIVATE ENGINE AVAIL DISPLAY.
	Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02584, 02737, 03071			
	31-1334 04		12 FEB 18	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC STANDARD H2-F5
	Applicable to: MSN 01767-02626, 02670-04312, 04328-04384, 04399-04438			
	31-1352 00		12 FEB 18	INDICATING/RECORDING SYSTEMS - FWC - ACQUISITION/INTERFACE ACTIVATE MONITORING OF ATC/XPDR
	Applicable to: MSN 03357-03618, 03782-04216, 04312, 04328-04384			
	31-1372 10		15 OCT 18	INDICATING/RECORDING SYSTEM - EIS - INSTALL EIS2 SOFTWARE S9
	Applicable to: MSN 04314, 04393-04397			
	31-1373 00		12 FEB 18	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC STANDARD H2-F6
	Applicable to: MSN 01767-02097, 02121-02138, 02195-02204, 02388-02626, 02670-05411			
	31-1374 01		28 MAR 18	INDICATING RECORDING SYSTEMS-SYSTEM DATA ACQUISITION CONCENTRATOR - INSTALL SDAC H2-E3.
	Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02204, 02609-02626, 02712, 03138, 03308, 03357-03541, 03750, 03863-04113, 04216, 04312, 04384, 04481-04491, 04532, 04552-04947, 04965			
E	31-1414 03		12 FEB 18	INDICATING RECORDING SYSTEMS - FWC - INTRODUCE FWC STANDARD H2-F7
	Applicable to: MSN 01767-05411			
	31-1415 00		12 FEB 18	INDICATING/RECORDING SYSTEMS - ELECTRONIC INSTRUMENT SYSTEM (EIS) - INTRODUCE NEW EIS2 STANDARD S10
	Applicable to: MSN 05476-05577			
E	31-1433 01		18 JUN 18	INDICATING/RECORDING SYSTEMS - ELECTRONIC INSTRUMENT SYSTEM (EIS) - INTRODUCE EIS2 STANDARD S11
	Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02649-02737, 02908-03264, 03330-04216, 04312, 04328-04384, 04394-04399, 04438-04506, 04518-05952			
	31-1450 01		14 MAY 18	INDICATING/RECORDING SYSTEMS - SDAC ACQUISITION/INTERFACE - INSTALL SDAC STANDARD H2-E4
	Applicable to: MSN 01957-02097, 02121, 02138, 04491, 04532, 04645			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	31-1481 01		14 JAN 19	INDICATING/RECORDING SYSTEM - DMC - INTRODUCE EIS2 S13-2 STANDARD FOR NEO CONFIGURATION
	Applicable to: MSN 06744, 06799-06819, 06860			
E	31-1482 02		14 JAN 19	INDICATING/RECORDING SYSTEM - DMC - INTRODUCE EIS2 S13-2 STANDARD FOR CEO CONFIGURATION
	Applicable to: MSN 01957, 02135, 02139, 02443, 02649, 02712, 02908-03071, 03264, 03330-04113, 04216, 04312, 04328-04384, 04399, 04438-04506, 04518, 04552-04757, 04888-04947, 04965-05092, 05120-05190, 05230-05259, 05291-05313, 05437-05460, 05476-05537, 05676-05683, 05727, 05829-05952, 06010-06208, 06275-06287			
	31-1490 00		12 FEB 18	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC H2-F9D FOR NEO AIRCRAFT
	Applicable to: MSN 06720-06744, 06799-06819, 06849-06868, 06952-07053			
E	31-1492 00		18 JUN 18	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC H2-F9D FOR CEO AIRCRAFT
	Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336			
	31-1499 00		12 FEB 18	INDICATING/RECORDING SYSTEMS - FLIGHT WARNING COMPUTER (FWC) - INSTALL FWC H2-F9E FOR NEO AIRCRAFT
	Applicable to: MSN 06720-07961			
	31A1198 01		24 SEP 18	INDICATING/RECORDING SYSTEM - EIS2 - INSTALL MODIFIED S4 EIS2 SOFTWARE.
	Applicable to: MSN 01957			
	31A1220 01		14 MAY 18	INDICATING / RECORDING SYSTEMS - ELECTRONIC INSTRUMENT SYSTEM (EIS) - INSTALL DISPLAY MANAGEMENT COMPUTER SOFTWARE EIS2 S4-2.
	Applicable to: MSN 01957-02097, 02121-02139			
	32-1107 00		28 MAR 18	LANDING GEAR - NLG SHOCK ABSORBER - IMPROVEMENT OF CENTER ROD GUIDE
	Applicable to: ALL			
	32-1151 56		04 JUL 18	LANDING GEAR - BRAKE COOLING - REMOVE BRAKE COOLING FANS FROM SAFRAN LS (EX MESSIER-BUGATTI) OR UTAS (EX GOODRICH) WHEELS
	Applicable to: MSN 02359			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	32-1235 24		12 FEB 18	LANDING GEAR - BRAKE COOLING - INTRODUCE UNIVERSAL BRAKE COOLING FAN.
	Applicable to: MSN 02275-02334			
	32-1244 74		14 SEP 18	LANDING GEAR - WHEELS AND BRAKES - REPLACE UTAS (EX GOODRICH) WHEELS AND BRAKES BY SAFRAN LS (EX MESSIER-BUGATTI) WHEELS AND BRAKES
	Applicable to: MSN 02359			
	32-1254 00		28 MAR 18	LANDING GEAR - NORMAL BRAKING - INSTALL BSCU 9.1.
	Applicable to: MSN 01767			
	32-1283 35		22 MAR 16	LANDING GEAR - BRAKE COOLING - INSTALL BRAKE COOLING FANS ON MESSIER WHEELS
	Applicable to: MSN 02359			
	32-1291 01		12 FEB 18	LANDING GEAR - WHEELS AND BRAKES INTRODUCE GOODRICH DURACARB CARBON BRAKES WITH ANTI - OXIDANT "M1".
	Applicable to: MSN 02359			
	32-1305 00		04 MAY 15	LANDING GEAR - NORMAL BRAKING - INSTALL BSCU STD L4.8 (EM2).
	Applicable to: MSN 02108, 02135-02584			
	32-1327 01		12 FEB 18	LANDING GEAR - WHEELS AND BRAKES - INTRODUCE REDESIGNED MESSIER-BUGATTI SEPCARB BRAKES ON MLG.
	Applicable to: MSN 02275			
	32-1335 00		12 FEB 18	LANDING GEAR - NORMAL BRAKING - INSTALL BSCU SOFTWARE STD "L4.9".
	Applicable to: MSN 02195, 02457, 02712, 02908-02914			
	32-1336 01		12 FEB 18	LANDING GEAR - NORMAL BRAKING - INSTALL BSCU STD 10 BY SB ONLY.
	Applicable to: MSN 01767-02097, 02121			
	32-1343 01		28 MAR 18	LANDING GEAR - NORMAL BRAKING - REINSTALL BSCU SOFTWARE STD "L4.8" (EMM)
	Applicable to: MSN 02712, 03308-03357			
	32-1350 00		28 MAR 18	LANDING GEAR - NORMAL BRAKING - INSTALL BSCU SOFTWARE STD L4.9B (EMM).
	Applicable to: MSN 02108, 02135-03541			
N	32-1354 16		21 JAN 19	TPIS - REMOVE TPIS FROM SAFRAN LS (EX MESSIER-BUGATTI) WHEELS
	Applicable to: MSN 02609-02626			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	32-1381 01		12 FEB 18	LANDING GEAR - PARKING/ULTIMATE EMERGENCY BRAKING - ACTIVATE PARKING BRAKE MONITORING FUNCTION ON SA A/C.
	Applicable to: MSN 02609-02626			
E	32-1407 01		15 JAN 18	LANDING GEAR - NORMAL EXTENSION AND RETRACTION - MODIFY THE MLG DOOR ACTUATOR DAMPING MECHANISM
	Applicable to: MSN 01767-05577			
E	32-1432 01		12 FEB 18	LANDING GEAR - NORMAL BRAKING - INSTALL BSCU SOFTWARE STANDARD L4.10
	Applicable to: MSN 01767-01920, 02108, 02135, 02139-02275, 02359-02388, 02457, 02649, 03071, 03414, 03541-03750, 04008-04156, 04399, 04438-04488, 04506, 04532, 04552-04762, 04818-04947, 04965, 05036-05090, 05094-05158, 05230-05231, 05298, 05476, 05641-05676, 05727-05744, 05893-05898, 05952-06336			
	32-1442 00		12 FEB 18	LANDING GEAR - NORMAL BRAKING - INTRODUCE NEW BSCU SOFTWARE STANDARD (L4.10)
	Applicable to: MSN 06720-06744, 06799-06819, 06849-06868, 06952, 07001			
	32A1293 00		28 MAR 18	LANDING GEAR - STEERING - INSTALL NWS ELECTRICAL BOX WITH NEW MICRO-SWITCH AND IMPROVED SEALING
	Applicable to: MSN 01920-02097, 02121-02138, 02204-02388			
	33-1057 03		12 FEB 18	LIGHTS - INSTRUMENT AND PANEL INTEGRAL LIGHTING - ENSURE EMERGENCY LIGHTING FOR STAND-BY INSTRUMENTS.
	Applicable to: MSN 01767-01957, 02108, 02135, 02139, 02359-02405, 02482, 02609-02626			
	34-1033 47		13 MAR 18	AIR DATA - PROVIDE QNH/QFE BARO SETTING
	Applicable to: MSN 01767, 02649			
	34-1152 16		12 FEB 18	NAVIGATION - WEATHER RADAR SYSTEM - ACTIVATE COLLINS PREDICTIVE WINDSHEAR SYSTEM.
	Applicable to: MSN 02584			
	34-1153 28		13 MAR 18	ADF - INSTALL A SECOND ADF RECEIVER
	Applicable to: MSN 01767, 02649			
	34-1235 12		18 JUN 18	ADF - REMOVE THE ADF2 RECEIVER.
	Applicable to: MSN 02443, 02670			
	34-1259 64		12 FEB 18	NAVIGATION-ATC/MODE S-INSTALL HONEYWELL ATC TRANSPONDERS TRA-67A INCORPORATING EUROPEAN MODE S REGULATIONS.
	Applicable to: MSN 01767-02121, 02138, 02195			
	34-1260 23		15 OCT 18	NAVIGATION- ATC/MODE S - INSTALL L3-COM ATC XS950 INCORPORATING EUROPEAN MODE S REGULATIONS.
	Applicable to: MSN 02135, 02139			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	34-1261 12		24 SEP 18	NAVIGATION-STANDBY DATA : ALTITUDE AND HEADING - INSTALL INTEGRATED STANDBY INSTRUMENT SYSTEM (ISIS)
	Applicable to: MSN 01957			
	34-1265 71		12 FEB 18	NAVIGATION- ATC/MODE S- INSTALL COLLINS ATC TPR901 INCORPORATING EUROPEAN MODE S REGULATIONS.
	Applicable to: MSN 02359			
	34-1278 04		12 FEB 18	NAVIGATION - GPWS - INSTALL ENHANCED GPWS PN 965-1676-001.
	Applicable to: MSN 01920-01957			
	34-1312 08		14 MAY 18	NAVIGATION - T2CAS - INSTALL ACSS TRAFFIC AND TERRAIN COLLISION AVOIDANCE SYSTEM (T2CAS) FOR AIRCRAFT WITH EGPWS BASIS
	Applicable to: MSN 01957-02097, 02121, 02138			
	34-1316 07		14 MAY 18	NAVIGATION - WEATHER RADAR - INSTALL THE WXR SYSTEM WITH PWS AND ACTIVATION OF AUTO-TILT FUNCTION
	Applicable to: MSN 01957-02097, 02121, 02138			
	34-1321 02		14 MAY 18	NAVIGATION - ATC/MODE S - DEACTIVATE RATC FUNCTION
	Applicable to: MSN 02097, 02121, 02138			
	34-1332 01		12 FEB 18	ADIRS - INTRODUCE HONEYWELL ADIRU 4 MCU P/N HG2030AE22.
	Applicable to: MSN 01920, 02108, 02443, 02609-02626, 02712, 02914			
	34-1335 02		12 FEB 18	NAVIGATION - STANDBY DATA : INTEGRATED STANDBY INSTRUMENT SYSTEM (ISIS) - INSTALL ISIS STD WB01.
	Applicable to: MSN 01957-02097, 02121, 02138, 02204-02334, 02443-02457			
	34-1345 02		12 FEB 18	NAVIGATION - EGPWS - INSTALL EGPWS CAPABLE OF USING THE GPS LATERAL POSITION AND ACTIVATION OF PEAKS AND OBSTACLES FUNCTIONS.
	Applicable to: MSN 01920, 02108, 02135, 02139-02388, 02443-02712, 02804			
	34-1348 02		12 FEB 18	NAVIGATION - WEATHER RADAR SYSTEM - INSTALL NEW COLLINS TRANSCEIVER FULLY COMPLIANT WITH MULTISCAN FUNCTION
	Applicable to: MSN 02334, 02584			
	34-1350 02		12 FEB 18	NAVIGATION - ADIRU - INSTALL NORTHROP GRUMMAN ADIRU P/N 465020-0303-0316.
	Applicable to: MSN 01767, 01957-02097, 02121-02405, 02482			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	34-1351 03		23 JUL 18	NAVIGATION - EGPWS - ACTIVATE GEOMETRIC ALTITUDE FUNCTION IN THE EGPWS.
	Applicable to: MSN 01920, 02108, 02135, 02139-02359			
	34-1352 01		12 FEB 18	NAVIGATION - GPWS - USE LATERAL GPS POSITION WITH AUTOMATIC DESELECTION OF TERRAIN MODES.
	Applicable to: MSN 02135, 02139, 02204, 02388, 02443-02457, 02584-02712			
	34-1356 02		12 FEB 18	ADIRU - INSTALL HONEYWELL ADIRU P/N HG2030-AE23
	Applicable to: MSN 01920, 02108, 02443, 02609-02649, 02712, 02914			
	34-1365 01		12 FEB 18	NAVIGATION - TRAFFIC AND TERRAIN COLLISION AVOIDANCE SYSTEM - INSTALL T2CAS STD 2 (-11111)
	Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03308			
	34-1369 02		12 FEB 18	NAVIGATION - ATC/MODE S (SELECT) - CERTIFY EHS FUNCTION.
	Applicable to: MSN 01767, 01957-02121, 02138, 02275-02334, 02388, 02443-02457, 02584-02626, 02670-02712, 02804-02908, 03071			
	34-1370 01		14 MAY 18	NAVIGATION - T2CAS - ACTIVATE ALTERNATE VERTICAL POSITION AND ALTERNATE LATERAL POSITION (GPS POSITIONS) FOR T2CAS - TAWS.
	Applicable to: MSN 01957-02097, 02121, 02138			
N	34-1377 71		21 JAN 19	ATC/MODE S (SELECT) - CERTIFY EHS FUNCTION.
	Applicable to: MSN 01920, 02135, 02139-02195, 02359			
	34-1378 02		12 JUN 17	NAVIGATION - WEATHER RADAR - DEACTIVATION OF WEATHER RADAR AUTO-TILT FUNCTION
	Applicable to: MSN 01957-02097, 02121, 02138, 03138			
	34-1383 10		28 MAR 18	NAVIGATION - ATC - REPLACE HONEYWELL ATC TRANSPONDER TRA-67A BY ACSS ATC TRANSPONDER XS-950.
	Applicable to: MSN 01957-02097, 02121, 02138, 03138			
	34-1384 02		28 MAR 18	NAVIGATION - MMR - INSTALL COLLINS MMR STANDARD P/N 822-1152-122.
	Applicable to: MSN 02138, 02275-02334, 02584-02649, 02712-02737			
	34-1397 05		12 FEB 18	NAVIGATION - AIR DATA/INERTIAL REFERENCE SYSTEM (ADIRS) - INTRODUCE BACK-UP SPEED SCALE FUNCTION
	Applicable to: MSN 01957-02097, 02121, 02138, 02670, 02804, 03071-03138, 03357-03618, 03782-04216, 04312, 04328-04384			
E	34-1412 06		12 FEB 18	NAVIGATION - EGPWS - INSTALL EGPWC PN 965-1676-003.
	Applicable to: MSN 02108, 02135, 02139-02204, 02334-02359, 02457, 02584-02626, 02908-02914			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	34-1416 01		14 MAY 18	NAVIGATION - WEATHER RADAR SYSTEM - INSTALL NEW COLLINS TRANSCEIVER FULLY COMPLIANT WITH MULTISCAN FUNCTION.
	Applicable to: MSN 01957-02097, 02121, 02138			
	34-1418 69		04 DEC 18	ATC/MODE S (SELECT) - CERTIFY ADS-B OUT CAPABILITY THROUGH EXTENDED SQUITTER 1090 MHZ.
	Applicable to: MSN 01920, 02135, 02139-02195, 02457, 02584-02626, 02670-02712, 02908-03071, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-05313			
	34-1443 03		15 OCT 13	NAVIGATION - WEATHER RADAR SYSTEM - INSTALL COLLINS TRANSCEIVER FULLY COMPLIANT WITH MULTISCAN FUNCTION PN 822-1710-203.
	Applicable to: MSN 01957-02097, 02121, 02138, 02334, 02649, 03071, 03264, 03330-03618, 03782-04216, 04312, 04328-04384, 04399, 04438-04488, 04506, 04518, 04535-04637, 04752-04757			
	34-1444 01		28 MAR 18	NAVIGATION - SENSORS, POWER SUPPLY AND SWITCHING - INSTALL THALES ANGLE OF ATTACK SENSORS P/N C16291AB.
	Applicable to: MSN 01767, 01957-02195, 02359-02405, 02482-02584, 02649-02737, 03071, 03308, 03357-04113			
	34-1466 14		28 MAR 18	NAVIGATION - ATC - INSTALL "ACSS" ATC XS 950 P/N 7517800-10100 COMPLIANT WITH DO-260A
	Applicable to: MSN 03138			
	34-1489 10		12 FEB 18	NAVIGATION - T3CAS - ACTIVATE XPDR FUNCTION
	Applicable to: MSN 03138			
	34-1506 34		12 FEB 18	NAVIGATION - TCAS - INSTALL A NEW HONEYWELL TCAS TPA-100B
	Applicable to: MSN 02457, 02609-02626, 02670, 02804, 02914, 03750, 04491, 04532, 04645, 05120			
	34-1516 00		12 FEB 18	NAVIGATION - TRAFFIC COLLISION AVOIDANCE SYSTEM (TCAS) - INSTALL ACSS T2CAS STANDARD 3 CHANGE 7.0
	Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03264-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05076, 05090-05094			
	34-1521 01		28 MAR 18	NAVIGATION - GENERAL - INSTALL A NEW CONIC PLATE FOR AOA SENSORS AND NEW PROTECTION COVERS IN FLIGHT KIT No 2
	Applicable to: MSN 01957, 02108, 02275, 02359, 03414-03457, 04113, 04603-04637			
	34-1530 05		31 DEC 18	NAVIGATION - WEATHER RADAR SYSTEM - INSTALLATION OF DUAL WEATHER RADAR HONEYWELL RDR-4000 SYSTEM.
	Applicable to: MSN 04394-04397			
	34-1532 32		15 OCT 18	TCAS - INSTALL TCAS 7.1 ACSS
	Applicable to: MSN 02135, 02139			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	34-1533 26		12 FEB 18	NAVIGATION - TCAS - INSTALL A NEW HONEYWELL TCAS TPA100B, BASED ON TPA81A (-2220)
	Applicable to: MSN 01767-01920, 02108, 02195-02204			
	34-1538 34		18 JUN 18	TCAS - INSTALL ROCKWELL COLLINS TCAS CHANGE 7.1 (-332)
	Applicable to: MSN 02359, 02584, 02649, 02712			
	34-1539 36		06 AUG 18	T2CAS - INSTALL ACSS T2CAS CHANGE 7.1
	Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03264-03541, 03943-04113, 04294-04328, 04393-04488, 04506-04518, 04535-04552, 04609-04630, 04752-04947, 04965-05036, 05080-05092			
	34-1550 02		14 JAN 19	ADIRS - ACTIVATE ALIGNMENT IMPROVEMENT FUNCTION ON ADIRU
	Applicable to: MSN 01957-02097, 02121-02195, 02405, 02482			
	34-1561 07		12 FEB 18	NAVIGATION - T/TISS - INSTALL T3CAS STD 1.2
	Applicable to: MSN 03138			
	34-1563 04		24 SEP 18	NAVIGATION - SENSORS / POWER SUPPLY AND SWITCHING - DEFINE STATIC PROBE MONITORING ON GROUND FUNCTION - FWC / SDAC
	Applicable to: MSN 01957			
	34-1564 01		28 MAR 18	NAVIGATION - GENERAL - REPLACE AOA PROBE CONIC PLATE BY FORMER AOA PROBE FLAT PLATE
	Applicable to: MSN 01957, 02108, 02275, 02359, 03414-03457, 04113, 04603-04637, 05036-05411			
E	34-1570 00		11 FEB 15	NAVIGATION - WEATHER RADAR SYSTEM-INSTALL COLLINS WXR CAPABLE MULTISCAN WITH TRANSCEIVER WRT-2100 PN 822-1710-204
	Applicable to: MSN 01957-02097, 02121, 02138, 02584, 02649, 03264, 03330-03618, 03863-04216, 04312, 04384, 04399, 04481, 04552-04614, 04637, 04752-04757			
	34-1571 02		12 FEB 18	WEATHER RADAR SYSTEM - INSTALL COLLINS WXR CAPABLE MULTISCAN WITH TRANSCEIVER WRT-2100 (PN 822-1710-214)
	Applicable to: MSN 02584, 02649, 03453, 04614, 04762-05094, 05155, 05262-05298, 05473, 05507, 05641-05676, 05712, 05744-05807, 05952-06010			
E	34-1610 01		28 MAR 18	NAVIGATION - AOA - INSTALL AOA PROBES IN MIXED CONFIGURATION (THALES FOR CAPTAIN AND FIRST OFFICER AND UTAS ON STANDBY)
	Applicable to: MSN 01920, 02204-02334, 02457, 02609-02626, 02804, 03138, 04314, 04393-04399, 04438, 04491, 04532, 04645, 05120, 05218			
	34-1649 02		12 FEB 18	NAVIGATION - WEATHER RADAR - INSTALL ROCKWELL COLLINS MULTISCAN WXR WITH HAZARD FUNCTION ACTIVATED IN FULL SINGLE CONFIGURATION
	Applicable to: MSN 06720-06744, 06799-06819, 06849-06868, 06914, 06952-07053			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	34-1683 02		14 MAY 18	NAVIGATION - WEATHER RADAR SYSTEM - INSTALL COLLINS WXR WITH HAZARD FUNCTION (P/N822-1710-401) IN DUAL PROVISION CONFIG (SB ONLY)
	Applicable to: MSN 02121, 02138			
	35-1037 00		15 MAY 17	OXYGEN - COCKPIT PROTECTIVE BREATHING EQUIPMENT - REPLACE SCOTT COCKPIT PBE BY DRAEGER PBE
	Applicable to: MSN 03138			
	36-1057 01		12 FEB 18	PNEUMATIC - ENGINE BLEED AIR SUPPLY SYSTEM - INSTALL BMC STD 9 CAPABLE OF A318 PW.
	Applicable to: MSN 02135, 02139-02195, 02275-02334, 02457, 02712, 03071			
	36-1062 05		14 MAY 18	PNEUMATIC - LEAK DETECTION - ACTIVATE PYLON LEAK DETECTION MONITORING
	Applicable to: MSN 02135, 02139-02195, 03071			
	36-1069 00		12 FEB 18	PNEUMATIC - BLEED MONITORING COMPUTER - INTRODUCE NEO BMC SW 4.1
	Applicable to: MSN 06744, 06799-06819, 06860			
	36-1078 00		22 OCT 18	ENGINE BLEED AIR SUPPLY SYSTEM - INTRODUCE NEO BMC SOFTWARE STANDARD 4.3
	Applicable to: MSN 06799, 06849, 06904, 06952, 07053, 07252, 07331, 07931			
	46-1018 20		12 FEB 18	INFORMATION SYSTEMS - ATIMS - FANS B INSTALLATION AND ACTIVATION
	Applicable to: MSN 02275, 02359-02388, 02609-02649, 03138			
	46-1032 03		12 FEB 18	INFORMATION SYSTEMS - ATIMS - INSTALL ATSU CSB5 WITH H/W -A10
	Applicable to: MSN 02649			
	46-1033 05		12 FEB 18	INFORMATION SYSTEMS - ATIMS - INSTALL ATC APPLICATION FOR FANS B CONFIGURATION
	Applicable to: MSN 02649			
	46-1040 16		12 FEB 18	INFORMATION SYSTEMS - ATIMS - INSTALL ATSU CSB5/HW-A10 WITH FANS B APPLICATIONS WITH VDL MODE 2 ACTIVATED
	Applicable to: MSN 02275, 02359-02388, 02609-02626, 03138			
	46-1047 13		12 FEB 18	INFORMATION SYSTEMS - ATIMS - INSTALL ATSU CSB6/HW-A10 WITH FANS B+ APPLICATIONS AND WITH VDL MODE 2 ACTIVATED
	Applicable to: MSN 02275, 02359, 02609-02626, 03138, 04294, 04433, 04510			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	46-1049 21		30 APR 18	INFORMATION SYSTEMS - GENERAL - CERTIFY FANS B+ CONFIGURATION (OVERALL MODIFICATION)
	Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510			
	46-1075 07		18 JUN 18	INFORMATION SYTEMS - ATIMS - INSTALL ATSU CSB6/HW-A10 WITH FANS B+ APPLICATIONS AND WITH VDL MODE 2 ACTIVATED
	Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02388, 02804, 03308			
	46-1077 01		14 MAY 18	INFORMATION - ATIMS - INSTALL ATC623 APPLICATIONS DATALINK RECORDING CAPABLE (FANS B+ OPTION)
	Applicable to: MSN 01957-02097, 02121, 02138			
	46-1095 02		06 DEC 16	INFORMATION SYSTEMS - ATIMS - INSTALL ATSU CSB8 CORRECTIVE STANDARD
	Applicable to: MSN 01767, 01957-02097, 02121, 02138, 04294, 04433, 04510			
	47-1002 08		30 APR 18	INERT GAS SYSTEM - INSTALLATION OF FUEL TANK INERTING SYSTEM (FTIS)
	Applicable to: MSN 02405, 02482			
	47-1026 14		22 OCT 18	INERT GAS SYSTEM - INSTALLATION OF FUEL TANK INERTING SYSTEM (FTIS)
	Applicable to: MSN 04314, 04397			
	49-1029 27		12 FEB 18	AIRBORNE AUXILIARY POWER - GENERAL - INTRODUCE AUXILIARY POWER UNIT APIC APS-3200
	Applicable to: MSN 02195-02204			
	49-1058 13		04 MAY 15	AIRBORNE AUXILIARY POWER - POWER PLANT - REPLACE THE ALLIED SIGNAL APU 131-9(A) WITH AN ALLIED SIGNAL APU GTCP36-300
	Applicable to: MSN 02195-02204			
	49-1067 01		12 FEB 18	AIRBORNE AUXILIARY POWER - CONTROL AND MONITORING - PROCEDURE OF RE-INITIALIZATION OF DATA MEMORY MODULE HONEYWELL FOR 131-9 A].
	Applicable to: MSN 02649			
	49-1069 22		04 DEC 18	AIRBORNE AUXILIARY POWER - POWER PLANT - REPLACE THE APU GTCP 36-300 BY APU HONEYWELL 131-9(A)
	Applicable to: MSN 02359			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	49-1070 00		12 FEB 18	AIRBORNE AUXILIARY POWER-CONTROL AND MONITORING - INTRODUCE ECB SOFTWARE VERSION 06.00.000
	Applicable to: MSN 01957-02097, 02121-02195, 02275-02334, 02609-02626, 02712			
	49-1075 01		12 FEB 18	AIRBORNE AUXILIARY POWER - CONTROL AND MONITORING - INTRODUCE HONEWELL VECB WITH SOFTWARE -04
	Applicable to: MSN 01920, 02204, 02443-02457, 02584, 02670, 02737			
	49-1081 03		10 AUG 16	AIRBORNE AUXILIARY POWER - POWER PLANT - REPLACE APU HONEYWELL 131-9(A) BY APIC APS 3200
	Applicable to: MSN 03264, 03330			
R	49-1082 32		31 DEC 18	- POWER PLANT - REPLACE APU APIC APS 3200 BY HONEYWELL 131-9(A)
	Applicable to: MSN 02204, 02334			
	49-1099 05		12 FEB 18	GENERAL - REPLACE APU HONEYWELL GTCP36-300 BY APU APIC APS3200
	Applicable to: MSN 02405, 02482			
	49-1105 10		12 FEB 18	AIRBORNE AUXILIARY POWER - POWER PLANT - APU CHANGE FROM 131-9 A TO APIC APS 3200
	Applicable to: MSN 02914			
	49-1111 01		17 NOV 15	AIRBORNE AUXILIARY POWER - POWER PLANT - REPLACE APU HONEYWELL 131-9(A) BY APIC APS3200 (P/N4500001B)
	Applicable to: MSN 02359			
	52-1115 04		24 SEP 18	DOORS - COCKPIT DOOR RELEASE SYSTEM - INSTALL ELECTRICAL OVERRIDE SYSTEM UNDER MMEL
	Applicable to: MSN 01957			
	52-1162 02		31 DEC 18	DOORS - EMERGENCY EXIT - REACTIVATE OVERWING EXIT DOORS
	Applicable to: MSN 04314			
	71-1034 02		28 MAR 18	POWER PLANT - ELECTRICAL HARNESS - INSTALL IDG EARTHING BRACKET WITH ADJUSTABLE EARTH STUD POSITION ON V2500 ENGINES.
	Applicable to: MSN 02135, 02139-02334			
	71-1043 06		15 FEB 17	POWER PLANT - GENERAL - DEFINE ENGINE INTERMIX CONFIGURATIONS BETWEEN CFM56-5BX/P, CFM56-5BX, CFM56-5BX/3 AND CFM56-5BX/P TI HPC KIT (SAC ENGINES ONLY).
	Applicable to: MSN 01767, 02388			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	71-1044 00		28 MAR 18	POWER PLANT - ELECTRICAL HARNESS - INSPECTION OF INTEGRATED DRIVE GENERATOR (IDG) FEEDER INSTALLATION.
	Applicable to: MSN 02108, 02359			
	71-1068 01		18 JUN 18	POWER PLANT - FAN COWL DOORS - INTRODUCE NEW FAN COWL DOOR LATCH WITH KEY & FLAG ON CFM56-5A/5B ENGINE.
	Applicable to: MSN 01767-01920, 02388, 02712, 03750, 04314, 04399-04433			
E	71-1069 01		18 JUN 18	POWER PLANT - FAN COWL DOORS - INTRODUCE NEW FAN COWL DOOR LATCH WITH KEY & FLAG ON IAE V2500 ENGINE.
	Applicable to: MSN 01957-02359, 02405-02482, 02649-02670, 02908-03071, 03264, 03330-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336			
	73-1075 01		24 SEP 18	ENGINE FUEL AND CONTROL - CONTROLLING - INTRODUCE EEC SOFTWARE STANDARD "SCN17" ON V2500-A5 ENGINES.
	Applicable to: MSN 01957			
	73-1077 03		12 FEB 18	ENGINE FUEL AND CONTROL - FADEC SYSTEM INTRODUCE NEW FADEC SOFTWARE "5BK" ON SAC CFM56-5B ENGINES
	Applicable to: MSN 01767			
	73-1080 01		12 FEB 18	ENGINE FUEL AND CONTROL - FADEC SYSTEM - INSTALL "5BL" STANDARD ECU SOFTWARE FOR CFM56-5B ENGINES (A318 CAPABLE).
	Applicable to: MSN 01767-01920			
	73-1082 01		12 FEB 18	ENGINE FUEL AND CONTROL - CONTROLLING - INSTALL EEC SOFTWARE "SCN18" ON IAE V2500-A5 ENGINES.
	Applicable to: MSN 01957-02139			
	73-1086 00		12 FEB 18	ENGINE FUEL AND CONTROL - FADEC SYSTEM - INSTALL "5BM" STANDARD ECU SOFTWARE FOR CFM 56-5B ENGINES.
	Applicable to: MSN 01767-01920, 02388, 02584, 02712			
	73-1088 01		12 FEB 18	ENGINE FUEL AND CONTROL - FADEC SYSTEM - INTRODUCE EEC SOFTWARE STANDARD "SCN19" ON IAE V2500-A5 ENGINES.
	Applicable to: MSN 01957-02195, 02275-02359, 02405-02482, 02609-02670, 02737-02804			
	73-1090 00		28 MAR 18	ENGINE FUEL AND CONTROL- FADEC SYSTEM- INTRODUCE 5BQ FADEC SOFTWARE STANDARD ON CFM56-5B ENGINES - CNF CFM 111B.
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138			

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
	73-1095 02		12 FEB 18	ENGINE FUEL AND CONTROL - FADEC SYSTEM - INTRODUCE ECU SOFTWARE STANDARD "5BR" ON CFM56-5B ENGINES.
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750			
	73-1097 00		12 FEB 18	ENGINE FUEL AND CONTROL- FADEC SYSTEM- INTRODUCE EEC SOFTWARE STANDARD SCN21/AA FOR IAE V2500-A5
	Applicable to: MSN 01957-02121, 02138, 02275-02359, 02405, 02457-02482, 02609-02670, 02737, 03308, 03618, 03863-04008, 04156, 04312, 04328-04384, 04481-04506, 04518-04868, 04947			
	73-1100 02		15 FEB 16	ENGINE FUEL AND CONTROL- FADEC SYSTEM- INSTALL ECU SOFTWARE STANDARD 5BS2 ON CFM56-5B ENGINES.
	Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04314, 04393-04438, 04510			
E	73-1104 02		14 MAY 18	ENGINE - FUEL AND CONTROL - FADEC SYSTEM - INTRODUCE SCN22/AB EEC SOFTWARE STANDARD FOR IAE V2500-A5 ENGINES
	Applicable to: MSN 01957-02097, 02121, 02138, 02457, 04491, 04532-04535, 04603, 04645, 04757, 04813, 05027, 05076, 05090, 05259, 05411, 05683, 05807, 06036-06289			
	73-1108 00		12 FEB 18	ENGINE FUEL & CONTROL - FULL AUTHORITY DIGITAL ENGINE CONTROL (FADEC) SYSTEM - INTRODUCE FCS3.1 FADEC ON NEO PW
	Applicable to: MSN 06720-06744, 06799-06819, 06849-06868, 06952-07053			
	73-1109 01		12 FEB 18	ENGINE FUEL AND CONTROL - FUNCTIONAL INTERFACES - INSTALL A429 LINKS BETWEEN MMR/CLOCK AND EIU ON A320NEO AIRCRAFT WITH PW ENGINES
	Applicable to: MSN 06720-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252			
	73-1111 00		12 FEB 18	ENGINE FUEL AND CONTROL - FUNCTIONAL INTERFACES - INSTALL EIU SOFTWARE STD 'S3.1' ON A320NEO AIRCRAFT WITH PW ENGINES
	Applicable to: MSN 06720-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252			
	73-1113 00		12 FEB 18	ENGINE FUEL AND CONTROL - FUNCTIONAL INTERFACES - INSTALL EIU SOFTWARE STD 'S3.2' ON A320 NEO WITH PW ENGINES
	Applicable to: MSN 06720-06868, 06914, 06952-07053, 07252-07396			
	73-1120 00		12 FEB 18	ENGINE FUEL AND CONTROL - FUNCTIONAL INTERFACES - INSTALL EIU SOFTWARE STD 'S3.3'
	Applicable to: MSN 06720-06868, 06914, 06952-07053, 07252-07618			
	73-1121 00		12 FEB 18	ENGINE FUEL AND CONTROL - FADEC SYSTEM - INTRODUCE NEW ELECTRONIC ENGINE CONTROL

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M(1)	CRITERION	Linked SB	Incorp. Date	Title
				(EEC) SOFTWARE STANDARD FCS4.0B ON A320NEO WITH PW1100G-JM ENGINES
	Applicable to: MSN 06720-06868, 06914, 06952-07053, 07252-07396			
	73-1122 00		12 FEB 18	ENGINE FUEL AND CONTROL - FADEC SYSTEM - INTRODUCE NEW FULL AUTHORITY DIGITAL ENGINE CONTROL (FADEC) SOFTWARE STD 'FCS4.2' ON A320NEO WITH PW ENGINES
	Applicable to: MSN 06720-07053, 07252-07618			
	73-1123 00		22 OCT 18	ENGINE FUEL AND CONTROL - FUNCTIONAL INTERFACES - INSTALL EIU SOFTWARE STD 'S4.0'
	Applicable to: MSN 06720-08168			
	73-1128 01		22 MAY 18	ENGINE FUEL AND CONTROL - FADEC SYSTEM - INTRODUCE FCS4.4 EEC SOFTWARE ON NEO P&W ENGINES
	Applicable to: MSN 06720-07961			
	75-1005 00		12 FEB 18	AIR - GENERAL - REDESIGN BUFFER AIR VALVE SOLENOID ON A320NEO WITH PW1100G-JM ENGINES
	Applicable to: MSN 06720-06868, 06914, 06952-07053, 07252-07396			

(1) Evolution code : N=New, R=Revised, E=Effectivity

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GENERAL INFORMATION

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GEN AP/FD TCAS	A	2	Effectivity update: The information no longer applies to MSN 05449.
GEN AP/FD TCAS	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
GEN Backup Navigation Function of the MCDU	A	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN BUSS	A	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
GEN BUSS	A	6	Effectivity update: The information no longer applies to MSN 05449.
GEN CPDLC	A	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Metric Altitude Indications on the PFD	A	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN NAV Mode Automatically Engaged (Armed) at Go-Around	A	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN PWS	A	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN QFE Baro Setting	A	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Soft Go-Around	A	12	Effectivity update: The information no longer applies to MSN 05449.
GEN Soft Go-Around	A	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
GEN 4th Occupant Folding Seat	B	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN 4th Oxygen Mask	B	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN ACT	B	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
GEN 3 ACTs	B	17	Effectivity update: The information now also applies to MSN 09063.
GEN 1 ADF	B	18	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN 2 ADF	B	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN ADS-B OUT	B	20	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN AFT Cargo Heating	B	21	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN AFT Cargo Ventilation	B	22	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Air Conditioning System Controller (ACSC)	B	23	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN AP/FD TCAS	B	24	Effectivity update: The information no longer applies to MSN 05449.
GEN AP/FD TCAS	B	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
GEN Avail Indication During Engine Start	B	26	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Backup Navigation Function of the MCDU	B	27	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Brake Fans	B	28	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Bulk Cargo Door	B	29	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN BUSS	B	30	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Cabin Door 3	B	31	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
GEN Cargo Ventilation System	B	32	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Center Tank Transfer Valves	B	33	Effectivity update: The information no longer applies to MSN 05449.
GEN Center Tank Transfer Valves	B	34	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
GEN Center Fuel Tank Pumps	B	35	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
GEN Center Fuel Tank Pumps	B	36	Effectivity update: The information no longer applies to MSN 05449.
GEN Chemical Oxygen System 15 min	B	37	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN CIDS SDF	B	38	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Cockpit Door Deadbolt	B	39	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Cockpit Fixed Second Oxygen Bottle	B	40	Effectivity update: The information no longer applies to MSN 05449.
GEN Cockpit Fixed Second Oxygen Bottle	B	41	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
GEN Cockpit Foot Warmer	B	42	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Cockpit Power Outlet	B	43	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN CVR ERASE Function	B	44	Effectivity update: The information no longer applies to MSN 05449.
GEN CVR ERASE Function	B	45	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
GEN DDRMI	B	46	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Display of Delta ISA	B	47	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
GEN Dual Ice Detection System	B	48	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN EGPWS	B	49	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Electrical Alternate Braking	B	50	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN ELT sw	B	51	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN EVAC Panel	B	52	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Expedite Function	B	53	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Extended Flex Takeoff	B	54	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
GEN Extended Flex Takeoff	B	55	Effectivity update: The information no longer applies to MSN 05449.
GEN FANS B	B	56	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN FANS B+	B	57	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN FTIS	B	58	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Fuel Leak Detection	B	59	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Fuel Tank Overflow Alert	B	60	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
GEN Fuel Tank Overflow Alert	B	61	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
GEN Galley Bus Automatic Shedding	B	62	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
GEN Galley Bus Automatic Shedding	B	63	Effectivity update: The information now also applies to MSN 09063.
GEN GAPCU	B	64	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Gaseous Oxygen generators in lavatories	B	65	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN HF DATALINK	B	66	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN HF System	B	67	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN HI ALT pb	B	68	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN IRS Alignment Based on GPS Position	B	69	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN ISIS	B	70	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN LAF	B	71	Effectivity update: The information no longer applies to MSN 05449.
GEN LAF	B	72	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
GEN Man-Made Obstacle Function	B	73	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Metric Altitude Indications on the PFD	B	74	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN NAV Mode Automatically Engaged (Armed) in Go-Around	B	75	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Optional Applications	B	76	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
GEN 2 Pairs of Overwing Emergency Exit	B	77	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Parking Brake Monitoring	B	78	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN PWS	B	79	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN QAR	B	80	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN QFE Baro Setting	B	81	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Rain Repellent System	B	82	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN RPCU	B	83	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN SATCOM	B	84	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN SDCU	B	85	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Second Fire Extinguishing Bottle	B	86	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
GEN Second Fire Extinguishing Bottle	B	87	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
GEN Soft Go-Around	B	88	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
GEN Soft Go-Around	B	89	Effectivity update: The information no longer applies to MSN 05449.
GEN T2CAS	B	90	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN T3CAS	B	91	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
GEN Tail Strike Pitch Limit Indicator	B	92	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Temperature Control Panel	B	93	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN TPIS	B	94	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
GEN Weather Hazard Prediction Function	B	95	Effectivity update: The information no longer applies to MSN 05449.
GEN Weather Hazard Prediction Function	B	96	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
GEN Wiper Intermittent Position	B	97	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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AIRCRAFT CONFIGURATION SUMMARY

Ident.: GEN-ACS-00016449.0001001 / 26 JUN 15
Applicable to: ALL

For awareness and for the specified aircraft, the following table provides the flight crew with a list of optional aircraft systems and functions related to flight and aircraft operations.

Ident.: GEN-ACS-00018963.0001001 / 04 MAR 16
Applicable to: ALL

Item	System	Installed
Ident.: GEN-ACS-00015613.0001001 / 23 JUN 15 **Applicable to: MSN 01767, 01957-02121, 02138, 02204-02443, 02482, 02649, 02737-02804, 03138-03330, 03750, 04294, 04399-04438, 04510, 05158**		
ADS-B OUT	SURV	No
Ident.: GEN-ACS-00015613.0002001 / 23 JUN 15 1 **Applicable to: MSN 01920, 02135, 02139-02195, 02457, 02584-02626, 02670-02712, 02908-03071, 03357-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-09063**		
ADS-B OUT	SURV	Yes
Ident.: GEN-ACS-00016448.0001001 / 23 JUN 15 **Applicable to: ALL**		
AP Automatic Disconnection at Minima	AUTO FLT	No
Ident.: GEN-ACS-00015927.0001001 / 26 JUN 15 2 **Applicable to: MSN 01767-06868, 06914, 06952-07053, 07252-07396**		
AP/FD TCAS	AUTO FLT	No
Ident.: GEN-ACS-00015927.0002001 / 26 JUN 15 3 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**		
AP/FD TCAS	AUTO FLT	Yes
Ident.: GEN-ACS-00015892.0002001 / 19 FEB 16 **Applicable to: ALL**		
Automatic FD Bar Engagement	AUTO FLT	Yes
Ident.: GEN-ACS-00016009.0001001 / 23 JUN 15 **Applicable to: MSN 01767-03541**		
Backup Navigation Function of the MCDU	AUTO FLT	No
Ident.: GEN-ACS-00016009.0002001 / 23 JUN 15 4 **Applicable to: MSN 03618-09063**		
Backup Navigation Function of the MCDU	AUTO FLT	Yes

Ident.: GEN-ACS-00016014.0003001 / 20 MAR 17
5 **Applicable to: MSN 07618-09063**

BUSS Reversible	NAV	Yes

Ident.: GEN-ACS-00016014.0001001 / 23 JUN 15
Applicable to: MSN 01767-01920, 02108, 02135, 02139-02649, 02712-02737, 02908-02914, 03264-03330, 03750, 04294, 04399-04438

BUSS	NAV	No

Ident.: GEN-ACS-00016014.0002001 / 23 JUN 15
6 **Applicable to: MSN 01957-02097, 02121, 02138, 02670, 02804, 03071-03138, 03357-03618, 03782-04216, 04312-04397, 04481-07510**

BUSS	NAV	Yes

Ident.: GEN-ACS-00016010.0002001 / 23 JUN 15
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

CPDLC	DATALINK	Yes

Ident.: GEN-ACS-00016010.0001001 / 23 JUN 15
7 **Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02334, 02405-02584, 02670-02737, 02908-03071, 03264, 03330-04216, 04312-04399, 04438-04506, 04518-05155, 05190-09063**

CPDLC	DATALINK	No

Ident.: GEN-ACS-00015917.0001001 / 23 JUN 15
Applicable to: ALL

Derated Takeoff	ENG	No

Ident.: GEN-ACS-00019728.0002001 / 06 JUN 16
Applicable to: ALL

Descent Profile Optimization (DPO)	AUTO FLT	No

Ident.: GEN-ACS-00015912.0001001 / 23 JUN 15
Applicable to: ALL

FLS Function in the FMS	AUTO FLT	No

Ident.: GEN-ACS-00015913.0005001 / 16 NOV 18
Applicable to: ALL

FMS2 Release 1A (including RF leg capability)	AUTO FLT	Yes

Ident.: GEN-ACS-00015899.0001001 / 23 JUN 15
Applicable to: ALL

GLS	AUTO FLT	No

Ident.: GEN-ACS-00015924.0002001 / 23 JUN 15
Applicable to: ALL

GPS	NAV	Yes

Ident.: GEN-ACS-00016553.0002001 / 23 JUN 15
Applicable to: ALL

GPS PRIMARY Function	NAV	Yes

Ident.: GEN-ACS-00022547.0002001 / 30 OCT 18
Applicable to: ALL

HPFD	EIS	No

Ident.: GEN-ACS-00015926.0001001 / 23 JUN 15
8 **Applicable to: MSN 01767, 02135, 02139-02204, 02359-02443, 02482-02584, 02670-02914, 03138-04216, 04312-04399, 04438-04506, 04518-09063**

Metric Altitude Indications on the PFD	EIS	No

Ident.: GEN-ACS-00015926.0002001 / 23 JUN 15
Applicable to: MSN 01920-02121, 02138, 02275-02334, 02457, 02609-02649, 03071, 04294, 04433, 04510

Metric Altitude Indications on the PFD	EIS	Yes

Ident.: GEN-ACS-00015900.0001001 / 23 JUN 15
Applicable to: ALL

MLS	AUTO FLT	No

Ident.: GEN-ACS-00015923.0001001 / 19 FEB 16
Applicable to: MSN 01920, 02204, 02457, 02649, 02712, 02914, 03264, 03330

NAV Mode automatically Engaged (Armed) in Go-Around	AUTO FLT	No

Ident.: GEN-ACS-00015923.0002001 / 19 FEB 16
9 **Applicable to: MSN 01767, 01957-02195, 02275-02443, 02482-02626, 02670, 02737-02908, 03071-03138, 03308, 03357-09063**

NAV Mode automatically Engaged (Armed) in Go-Around	AUTO FLT	Yes

Ident.: GEN-ACS-00016013.0001001 / 23 JUN 15
Applicable to: MSN 02359, 02405, 02482

PWS	SURV	No

Ident.: GEN-ACS-00016013.0002001 / 23 JUN 15
10 **Applicable to: MSN 01767-02334, 02388, 02443-02457, 02584-09063**

PWS	SURV	Yes

Ident.: GEN-ACS-00015920.0001001 / 23 JUN 15
11 **Applicable to: MSN 01920-02097, 02121-02204, 02359-02626, 02670-09063**

QFE BARO Setting	NAV	No

Ident.: GEN-ACS-00015920.0002001 / 23 JUN 15
Applicable to: MSN 01767, 02108, 02275-02334, 02649

QFE BARO Setting	NAV	Yes

Ident.: GEN-ACS-00019573.0001001 / 10 MAY 16
Applicable to: ALL

RAAS	SURV	No

Ident.: GEN-ACS-00015897.0001001 / 23 JUN 15
Applicable to: ALL

RNP AR	AUTO FLT	No

Ident.: GEN-ACS-00016008.0001001 / 23 JUN 15
Applicable to: ALL

ROW/ROPS	SURV	No

Ident.: GEN-ACS-00016015.0001001 / 22 MAR 17
12 **Applicable to: MSN 01767-06336**

Soft Go-Around	ENG	No

Ident.: GEN-ACS-00016015.0002001 / 22 MAR 17
13 **Applicable to: MSN 06720-09063**

Soft Go-Around	ENG	Yes

IF INSTALLED TABLE

Ident.: GEN-IFIT-00016590.0001001 / 23 JUN 15
Applicable to: ALL

The "If Installed Table" provides a list of optional systems and functions of the aircraft.
For most of the optional systems or functions associated with the "if installed" ◁ symbol in the FCOM, the table indicates if the optional systems or functions are installed, or not installed.

Note: *Highly customized options such as cabin installations are not covered in the following table.*

Ident.: GEN-IFIT-00018965.0001001 / 22 MAR 16
Applicable to: ALL

Item	System	Installed

Ident.: GEN-IFIT-00015896.0001001 / 17 MAR 17
14 **Applicable to: MSN 02609-02626, 04294, 04433, 04491, 04510, 04532, 04645, 05120, 05218, 06720-09063**
L13

4th Occupant Folding Seat 4th Occupant Fourth Occupant	EQUIPMENT	No

Ident.: GEN-IFIT-00015896.0002001 / 17 MAR 17
Applicable to: MSN 01767-02584, 02649-04216, 04312-04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336
L13

4th Occupant Folding Seat 4th Occupant Fourth Occupant	EQUIPMENT	Yes

Ident.: GEN-IFIT-00016012.0001001 / 21 MAR 16

15 **Applicable to: MSN 02609-02626, 04294, 04433, 04491, 04510, 04532, 04645, 05120, 05218, 06720-09063**

L13

4th Oxygen Mask Four	OXY	No

Ident.: GEN-IFIT-00016012.0002001 / 21 MAR 16

Applicable to: MSN 01767-02584, 02649-04216, 04312-04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

L13

4th Oxygen Mask Four	OXY	Yes

Ident.: GEN-IFIT-00018779.0002001 / 21 MAR 16

Applicable to: ALL

AC ESS FEED Auto Switching	ELEC	Yes

Ident.: GEN-IFIT-00016516.0001001 / 05 JUN 18

16 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

L13

ACT 1 ACT 2 ACTs 3 ACTs ACT 1 ACT 2 ACT 3 ACT 1 OR 2 ACT 1 OR 2 OR 3 ACT PUMP ACT PUMP LO PR ACT XFR FAULT ACT1 ACT2 ACT3 ACTs Additional center tank	FUEL	No

Ident.: GEN-IFIT-00016516.0004001 / 05 JUN 18

17 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

L13

3 ACTs Capability ACT 1 OR 2 OR 3 ACT 3 ACT PUMP ACT PUMP LO PR ACT XFR FAULT ACT1 ACT2 ACT3 ACTs Additional center tank	FUEL	Yes

Ident.: GEN-IFIT-00020299.0001001 / 13 SEP 16

18 **Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02359-02584, 02670-02712, 02804, 03138-03618, 03782-09063**

L13

1 ADF ADF 1 ADF1	NAV	Yes

Ident.: GEN-IFIT-00020299.0002001 / 13 SEP 16

Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275-02334, 02609-02649, 02737, 02908-03071, 03750

L13

1 ADF ADF 1 ADF1	NAV	No

Ident.: GEN-IFIT-00020300.0001001 / 13 SEP 16

19 **Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02359-02584, 02670-02712, 02804, 03138-03618, 03782-09063**

L13

2 ADFs 2 ADF ADF1 ADF 1 ADF2 ADF 2 ADFs	NAV	No

Ident.: GEN-IFIT-00020300.0002001 / 13 SEP 16
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275-02334, 02609-02649, 02737, 02908-03071, 03750

L13

2 ADFs 2 ADF ADF1 ADF 1 ADF 2 ADF2 ADFs	NAV	Yes

Ident.: GEN-IFIT-00016641.0002001 / 23 JUN 15
20 **Applicable to: MSN 01920, 02135, 02139-02195, 02457, 02584-02626, 02670-02712, 02908-03071, 03357-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-09063**

ADS-B OUT	SURV	Yes

Ident.: GEN-IFIT-00016641.0001001 / 23 JUN 15
Applicable to: MSN 01767, 01957-02121, 02138, 02204-02443, 02482, 02649, 02737-02804, 03138-03330, 03750, 04294, 04399-04438, 04510, 05158

ADS-B OUT	SURV	No

Ident.: GEN-IFIT-00015891.0001001 / 21 MAR 16
21 **Applicable to: MSN 01920-02108, 02195-02204, 02359-02405, 02457-02584, 02670-02914, 03138-04312, 04328-04384, 04399-05155, 05190-09063**

L13

AFT Cargo Heating AFT CRG HOT AIR temperature selector HOT AIR pb AFT CRG HEAT AFT CARGO HEAT AFT CARGO DUCT OVHT AFT Cargo heat controller Cargo Heat Cargo Temperature Regulation CRG HEAT Forward (aft) cargo heat controller HOT AIR	COND	No

Ident.: GEN-IFIT-00015891.0002001 / 21 MAR 16
Applicable to: MSN 01767, 02121-02139, 02275-02334, 02443, 02609-02649, 03071, 04314, 04393-04397, 05158

L13

AFT Cargo Heating AFT CRG HOT AIR temperature selector HOT AIR pb AFT CRG HEAT AFT CARGO HEAT AFT CARGO DUCT OVHT AFT Cargo heat controller Cargo Heat Cargo Temperature Regulation CRG HEAT Forward (aft) cargo heat controller HOT AIR	COND	Yes

Ident.: GEN-IFIT-00015901.0002001 / 21 MAR 16
Applicable to: ALL

L13

AFT Cargo Smoke Detector SMOKE AFT CARGO SMOKE SMOKE AFT CRG DET FAULT AFT CRG DET AFT CARGO SMOKE AFT CRG DET FAULT	FIRE	Yes

Ident.: GEN-IFIT-00015931.0001001 / 21 MAR 16
22 **Applicable to: MSN 01957-02108, 02138, 02195, 02359-02405, 02457-02584, 02670-02737, 02908-02914, 03138-04312, 04328-04384, 04399-05155, 05190-09063**

L13

AFT Cargo Ventilation Cargo Ventilation AFT ISOL VALVE AFT CRG VENT AFT CRG VENT FAULT AFT Cargo isol valves FWD(AFT) CARGO DUCT OVHT FWD(AFT) CRG HEAT FWD(AFT) CRG HEAT FAULT FWD(AFT) CRG ISOL VALVE FWD(AFT) CRG VENT FAULT FWD(AFT) CRG VENT Forward (aft) cargo isolation valves isolation valves	VENT	No

Ident.: GEN-IFIT-00015931.0002001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02121-02135, 02139, 02204-02334, 02443, 02609-02649, 02804, 03071, 04314, 04393-04397, 05158

L13

AFT Cargo Ventilation Cargo Ventilation AFT ISOL VALVE AFT CRG VENT AFT CRG VENT FAULT AFT Cargo isol valves FWD(AFT) CARGO DUCT OVHT FWD(AFT) CRG HEAT FWD(AFT) CRG HEAT FAULT FWD(AFT) CRG ISOL VALVE FWD(AFT) CRG VENT FAULT FWD(AFT) CRG VENT Forward (aft) cargo isolation valves isolation valves	VENT	Yes

Ident.: GEN-IFIT-00016522.0001001 / 23 JUN 15
Applicable to: ALL

Aileron Anti Droop	F/CTL	No

Ident.: GEN-IFIT-00015919.0001001 / 21 MAR 16
Applicable to: MSN 01767-02405, 02482

L13

Air Conditioning System Controller (ACSC) ACSC ACSC 1 ACSC 2 Air Conditioning System Controllers	COND	No

Ident.: GEN-IFIT-00015919.0002001 / 21 MAR 16
23 **Applicable to: MSN 02443-02457, 02584-09063**

L13

Air Conditioning System Controller (ACSC) ACSC ACSC 1 ACSC 2 Air Conditioning System Controllers	COND	Yes

Ident.: GEN-IFIT-00016523.0001001 / 23 JUN 15
24 **Applicable to: MSN 01767-06868, 06914, 06952-07053, 07252-07396**

AP/FD TCAS	AUTO FLT	No

Ident.: GEN-IFIT-00016523.0002001 / 23 JUN 15
25 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

AP/FD TCAS	AUTO FLT	Yes

Ident.: GEN-IFIT-00016640.0001001 / 21 MAR 16
Applicable to: ALL
L13

ATSAW ADS-B IN	SURV	No

Ident.: GEN-IFIT-00016524.0002001 / 23 JUN 15
Applicable to: ALL

Automatic FD Bar Engagement	AUTO FLT	Yes

Ident.: GEN-IFIT-00018780.0001001 / 21 MAR 16
Applicable to: MSN 01920, 02108, 02135, 02139-02482, 02609-02712, 02804-02914, 03138-03618
L13

Avail Indication During Engine Start AVAIL Indication	ENG	No

Ident.: GEN-IFIT-00018780.0002001 / 21 MAR 16
26 **Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02584, 02737, 03071, 03750-09063**
L13

Avail Indication During Engine Start AVAIL Indication	ENG	Yes

Ident.: GEN-IFIT-00016681.0001001 / 21 MAR 16
Applicable to: MSN 01767-03541
L13

Backup Navigation Function of the MCDU BACK UP NAV	AUTO FLT	No

Ident.: GEN-IFIT-00016681.0002001 / 21 MAR 16
27 **Applicable to: MSN 03618-09063**
L13

Backup Navigation Function of the MCDU BACK UP NAV	AUTO FLT	Yes

Ident.: GEN-IFIT-00016525.0002001 / 21 MAR 16
Applicable to: ALL
L13

BARO/RADIO Instead of MDA/MDH/DH BARO BARO/RADIO	NAV	Yes

Ident.: GEN-IFIT-00016526.0002001 / 21 MAR 16

28 **Applicable to: MSN 01767-02121, 02138, 02195-02334, 02388-09063**

L13

Brake Fans Brake cooling fans BRK FAN Brake Fan Brake fans 1, 2, 3 and 4 Brake fans 5, 6, 7 and 8	BRAKE	Yes

Ident.: GEN-IFIT-00016526.0001001 / 21 MAR 16

Applicable to: MSN 02135, 02139, 02359

L13

Brake Fans Brake cooling fans BRK FAN Brake Fan Brake fans 1, 2, 3 and 4 Brake fans 5, 6, 7 and 8	BRAKE	No

Ident.: GEN-IFIT-00015875.0001001 / 21 MAR 16

Applicable to: MSN 04510

L13

Bulk Cargo Door Bulk Cargo Compartment Door Bulk Door	DOORS	No

Ident.: GEN-IFIT-00015875.0002001 / 21 MAR 16

29 **Applicable to: MSN 01767-04506, 04518-09063**

L13

Bulk Cargo Door Bulk Cargo Compartment Door Bulk Door	DOORS	Yes

Ident.: GEN-IFIT-00018781.0001001 / 21 MAR 16

Applicable to: MSN 01767-01920, 02108, 02135, 02139-02649, 02712-02737, 02908-02914, 03264-03330, 03750, 04294, 04399-04438

L13

BUSS Backup Speed/Altitude Scale Backup Speed Scale	NAV	No

Ident.: GEN-IFIT-00018781.0002001 / 21 MAR 16

30 **Applicable to: MSN 01957-02097, 02121, 02138, 02670, 02804, 03071-03138, 03357-03618, 03782-04216, 04312-04397, 04481-09063**

L13

BUSS Backup Speed/Altitude Scale Backup Speed Scale	NAV	Yes

Ident.: GEN-IFIT-00022270.0001001 / 09 MAR 18

31 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

L13

Cabin Door 3 Door 3	DOORS	Yes

Ident.: GEN-IFIT-00021488.0001001 / 17 MAR 17

32 **Applicable to: MSN 01957-02108, 02138, 02195, 02359-02405, 02457-02584, 02670-02737, 02908-02914, 03138-04312, 04328-04384, 04399-05155, 05190-09063**

L13

Cargo ventilation system Cargo isolation valves Extraction fan	VENT	No

Ident.: GEN-IFIT-00021488.0002001 / 17 MAR 17

Applicable to: MSN 01767-01920, 02121-02135, 02139, 02204-02334, 02443, 02609-02649, 02804, 03071, 04314, 04393-04397, 05158

L13

Cargo ventilation system Cargo isolation valves Extraction fan	VENT	Yes

Ident.: GEN-IFIT-00016535.0001001 / 22 MAR 17

33 **Applicable to: MSN 01767-06036**

L13

Center Fuel Tank Transfer Valves Center Tank Transfer Valves L CTR TK XFR valve CTR TK XFR valve R	FUEL	No

Ident.: GEN-IFIT-00016535.0004001 / 22 MAR 17

34 **Applicable to: MSN 06208-09063**

L13

Center Fuel Tank Transfer Valves Center Tank Transfer Valves L CTR TK XFR valve CTR TK XFR valve R	FUEL	Yes

Ident.: GEN-IFIT-00021220.0004001 / 22 MAR 17

35 **Applicable to: MSN 06208-09063**

L13

Center Fuel Tank Pumps CTR TK PUMP 1 CTR TK PUMP 2	FUEL	No

Ident.: GEN-IFIT-00021220.0001001 / 22 MAR 17

36 **Applicable to: MSN 01767-06036**

L13

Center Fuel Tank Pumps CTR TK PUMP 1 CTR TK PUMP 2	FUEL	Yes

Ident.: GEN-IFIT-00015930.0002001 / 21 MAR 16

Applicable to: MSN 04314, 04393-04399, 04438

L13

Chemical Oxygen System 22 min Chemical Oxygen System 22 min	OXY	Yes

Ident.: GEN-IFIT-00015930.0003001 / 21 MAR 16

37 **Applicable to: MSN 01767-04312, 04328-04384, 04433, 04481-09063**

L13

Chemical Oxygen System 15 min Chemical Oxygen System 15 min	OXY	Yes

Ident.: GEN-IFIT-00016625.0001001 / 17 MAR 17

Applicable to: MSN 01767-02405, 02482, 02712

L13

CIDS-SDF CIDS 1 SMOKE DETECT Smoke Detection Function (SDF)	SMOKE	No

Ident.: GEN-IFIT-00016625.0002001 / 17 MAR 17

38 **Applicable to: MSN 02443-02457, 02584-02670, 02737-09063**

L13

CIDS-SDF CIDS 1 SMOKE DETECT Smoke Detection Function (SDF)	SMOKE	Yes

Ident.: GEN-IFIT-00015929.0001001 / 17 MAR 17

Applicable to: MSN 01767-01920, 02108, 02135, 02139-02388, 02649, 02712, 02804, 03071-03138, 03308, 03357-03414, 04314, 04393-04397

L13

Cockpit Door Deadbolt Deadbolt	EQUIPMENT	No

Ident.: GEN-IFIT-00015929.0002001 / 17 MAR 17

39 **Applicable to: MSN 01957-02097, 02121, 02138, 02405-02626, 02670, 02737, 02908-02914, 03264, 03330, 03453-04312, 04328-04384, 04399-09063**

L13

Cockpit Door Deadbolt Deadbolt	EQUIPMENT	Yes

Ident.: GEN-IFIT-00018782.0002001 / 21 MAR 16
Applicable to: ALL

Cockpit Door Escape Panel	DOOR	Yes

Ident.: GEN-IFIT-00016690.0001001 / 21 MAR 16
40 **Applicable to: MSN 01767-06336**
L13

Cockpit Fixed Second Oxygen Bottle Two	OXY	No

Ident.: GEN-IFIT-00016690.0002001 / 21 MAR 16
41 **Applicable to: MSN 06720-09063**
L13

Cockpit Fixed Second Oxygen Bottle Two	OXY	Yes

Ident.: GEN-IFIT-00016612.0001001 / 23 JUN 15
Applicable to: ALL

Cockpit Foot Heater	COND	No

Ident.: GEN-IFIT-00016639.0001001 / 17 MAR 17
42 **Applicable to: MSN 01767-02584, 02649-09063**
L13

Cockpit Foot Warmer Foot Warmer System Foot Warmer ON/OFF Control Switch	EQUIPMENT	No

Ident.: GEN-IFIT-00016639.0002001 / 17 MAR 17
Applicable to: MSN 02609-02626
L13

Cockpit Foot Warmer Foot Warmer System Foot Warmer ON/OFF Control Switch	EQUIPMENT	Yes

Ident.: GEN-IFIT-00021875.0001001 / 25 JUL 17
Applicable to: MSN 01957-02097, 02121, 02138, 02195-02204, 02405, 02482, 02712-02737
L13

Cockpit Power Outlet Power Outlet	EQUIPMENT	No

Ident.: GEN-IFIT-00021875.0002001 / 30 AUG 18
43 **Applicable to: MSN 01767-01920, 02108, 02135, 02139, 02275-02388, 02443-02457, 02584-02670, 02804-09063**
L13

Cockpit Power Outlet Power Outlet	EQUIPMENT	Yes

Ident.: GEN-IFIT-00016614.0002001 / 21 MAR 16
Applicable to: ALL
L13

COMMERCIAL pb COMMERCIAL	ELEC	Yes

Ident.: GEN-IFIT-00016615.0001001 / 23 JUN 15
Applicable to: ALL

CVR Datalink Function	COM	No

Ident.: GEN-IFIT-00016626.0001001 / 04 SEP 18
44 **Applicable to: MSN 01767-02804, 03071-03264, 03330, 03750, 04294, 04314, 04393-04397, 04433, 04491, 04510, 04532, 04645, 05120, 05158, 05218**

CVR ERASE Function	COM	Yes

Ident.: GEN-IFIT-00016626.0002001 / 04 SEP 18
45 **Applicable to: MSN 02908-02914, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063**

CVR ERASE function	COM	No

Ident.: GEN-IFIT-00016647.0001001 / 21 MAR 17
Applicable to: ALL
L13

DC BUS Entertainment TR Entertainment DC BUS Ent DC BUS Entertainment TR Ent TR Ent.	ELEC	No

Ident.: GEN-IFIT-00016527.0001001 / 21 MAR 16
46 **Applicable to: MSN 04294, 04314, 04393-04397, 04433, 04491, 04510, 04532, 04645, 05120, 05218-09063**
L13

DDRMI Digital Distance and Radio Magnetic Indicator	NAV	No

Ident.: GEN-IFIT-00016527.0002001 / 21 MAR 16
Applicable to: MSN 01767-04216, 04312, 04328-04384, 04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190
L13

DDRMI Digital Distance and Radio Magnetic Indicator	NAV	Yes

Ident.: GEN-IFIT-00016528.0001001 / 21 MAR 16
Applicable to: ALL
L13

Derated Takeoff DERATE	ENG	No

Ident.: GEN-IFIT-00019730.0002001 / 06 JUN 16
Applicable to: ALL

L13

Descent Profile Optimization DPO	AUTO FLT	No

Ident.: GEN-IFIT-00016580.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

L13

Display of Delta ISA Delta ISA	EIS	No

Ident.: GEN-IFIT-00016580.0002001 / 21 MAR 16
47 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

L13

Display of Delta ISA Delta ISA	EIS	Yes

Ident.: GEN-IFIT-00016529.0001001 / 23 JUN 15
48 **Applicable to: MSN 01920-02482, 02670-04312, 04328-04384, 04399-09063**

Dual Ice Detection System	ICE	No

Ident.: GEN-IFIT-00016529.0002001 / 23 JUN 15
Applicable to: MSN 01767, 02584-02649, 04314, 04393-04397

Dual Ice Detection System	ICE	Yes

Ident.: GEN-IFIT-00016574.0002001 / 23 JUN 15
Applicable to: ALL

Dual Navigation Lights	LIGHTS	Yes

Ident.: GEN-IFIT-00016628.0001001 / 13 MAR 18
Applicable to: MSN 01957-02097, 02121, 02138, 03071-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06289

EGPWS	SURV	No

Ident.: GEN-IFIT-00016628.0002001 / 13 MAR 18
49 **Applicable to: MSN 01767-01920, 02108, 02135, 02139-02914, 03750, 04491, 04532, 04645, 05120, 05158, 05218, 06336-09063**

EGPWS	SURV	Yes

Ident.: GEN-IFIT-00016530.0001001 / 23 JUN 15
Applicable to: MSN 01767-02405, 02482

Electrical Alternate Braking	L/G	No

Ident.: GEN-IFIT-00016530.0002001 / 23 JUN 15
50 **Applicable to: MSN 02443-02457, 02584-09063**

Electrical Alternate Braking	L/G	Yes

Ident.: GEN-IFIT-00016575.0001001 / 23 JUN 15
Applicable to: MSN 02359, 02405, 02482

ELT sw	COM	No

Ident.: GEN-IFIT-00016575.0002001 / 23 JUN 15
51 **Applicable to: MSN 01767-02334, 02388, 02443-02457, 02584-09063**

ELT sw	COM	Yes

Ident.: GEN-IFIT-00022409.0001001 / 30 AUG 18
Applicable to: ALL

Enhanced RTA	AUTO FLT	No

Ident.: GEN-IFIT-00020758.0001001 / 18 MAY 17
Applicable to: MSN 02359, 02405, 02482

L13

EVAC Panel COMMAND PB (guarded) COMMAND PB Evacuation (EVAC) signalling EVAC HORN HORN SHUT OFF PB CAPT and PURS/CAPT SW	COM	No

Ident.: GEN-IFIT-00020758.0002001 / 18 MAY 17
52 **Applicable to: MSN 01767-02334, 02388, 02443-02457, 02584-09063**

L13

EVAC Panel COMMAND PB (guarded) COMMAND PB Evacuation (EVAC) signalling EVAC HORN HORN SHUT OFF PB CAPT and PURS/CAPT SW	COM	Yes

Ident.: GEN-IFIT-00021713.0002001 / 03 AUG 17
Applicable to: MSN 02204, 02443, 02670, 02804, 03264, 03330

Expedite	AUTO FLT	No

Ident.: GEN-IFIT-00021713.0001001 / 03 AUG 17
53 **Applicable to: MSN 01767-02195, 02275-02405, 02457-02649, 02712-02737, 02908-03138, 03308, 03357-09063**

Expedite	AUTO FLT	Yes

Ident.: GEN-IFIT-00015918.0001001 / 23 JUN 15
54 **Applicable to: MSN 01767-01920, 02108, 02135, 02139-02914, 03138-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-09063**

Extended FLEX Takeoff	ENG	No

Ident.: GEN-IFIT-00015918.0002001 / 23 JUN 15

55 **Applicable to: MSN 01957-02097, 02121, 02138, 03071, 04491, 04532, 04645, 05120, 05218**

Extended FLEX Takeoff	ENG	Yes

Ident.: GEN-IFIT-00016531.0002001 / 21 MAR 16

Applicable to: ALL

L13

External Ice Detector Light ICE IND	ICE	Yes

Ident.: GEN-IFIT-00021527.0001001 / 30 AUG 18

Applicable to: ALL

L13

FANS A+ DCDU ATC MSG pb	FANS	No

Ident.: GEN-IFIT-00022629.0001001 / 20 NOV 18

Applicable to: ALL

L13

FANS A+B DCDU ATC MSG pb	FANS	No

Ident.: GEN-IFIT-00021529.0002001 / 30 AUG 18

Applicable to: MSN 02649

L13

FANS B DCDU ATC MSG pb	FANS	Yes

Ident.: GEN-IFIT-00021529.0001001 / 30 AUG 18

56 **Applicable to: MSN 01767-02626, 02670-09063**

L13

FANS B DCDU ATC MSG pb	FANS	No

Ident.: GEN-IFIT-00021530.0002001 / 30 AUG 18

Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158

L13

FANS B+ DCDU ATC MSG pb	FANS	Yes

Ident.: GEN-IFIT-00021530.0001001 / 30 AUG 18

57 **Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02334, 02405-02584, 02649-02737, 02908-03071, 03264, 03330-04216, 04312-04399, 04438-04506, 04518-05155, 05190-09063**

L13

FANS B+ DCDU ATC MSG pb	FANS	No

Ident.: GEN-IFIT-00022627.0001001 / 20 NOV 18

Applicable to: ALL

L13

FANS C DCDU ATC MSG pb	FANS	No

Ident.: GEN-IFIT-00015909.0001001 / 21 MAR 16

Applicable to: ALL

L13

Fan Speed Controller (FSC) Two Operating Speeds	VENT	No

Ident.: GEN-IFIT-00016629.0003001 / 21 MAR 16

Applicable to: ALL

L13

Fire Extinguishing in the AFT Cargo SMOKE FWD(AFT) CRG BTL 1(2) FAULT Forward (aft) cargo fire extinguishing	FIRE	Yes

Ident.: GEN-IFIT-00016630.0005001 / 21 MAR 16

Applicable to: ALL

L13

Fire Extinguishing in the FWD Cargo SMOKE FWD(AFT) CRG BTL 1(2) FAULT Forward (aft) cargo fire extinguishing	FIRE	Yes

Ident.: GEN-IFIT-00015898.0001001 / 21 MAR 17
Applicable to: ALL

L13

FLS F-G/S F-G/S BASED ON ISA F-G/S-F-LOC F-G/S-LOC F-LOC F-LOC*/F-LOC FLS 1 FLS 2 FLS function NO FLS FOR THIS APPR	AUTO FLT	No

Ident.: GEN-IFIT-00022411.0001001 / 04 SEP 18
Applicable to: ALL

FLS/FINAL APP - Coexistence	AUTO FLT	No

Ident.: GEN-IFIT-00016579.0002001 / 23 JUN 15
Applicable to: ALL

FMS Crossload	AUTO FLT	Yes

Ident.: GEN-IFIT-00015617.0001001 / 23 JUN 15
Applicable to: MSN 01767-02388, 02443-02457, 02584-04312, 04328-04384, 04399-04954

FTIS	FUEL	No

Ident.: GEN-IFIT-00015617.0002001 / 23 JUN 15
58 **Applicable to: MSN 02405, 02482, 04314, 04393-04397, 04965-09063**

FTIS	FUEL	Yes

Ident.: GEN-IFIT-00016532.0001001 / 23 JUN 15
Applicable to: MSN 01767-02359, 02405, 02457-02482, 02649, 02712-02737, 03071-05313

Fuel Leak Detection	FUEL	No

Ident.: GEN-IFIT-00016532.0002001 / 23 JUN 15
59 **Applicable to: MSN 02388, 02443, 02584-02626, 02670, 02804-02914, 05365-09063**

Fuel Leak Detection	FUEL	Yes

Ident.: GEN-IFIT-00016533.0001001 / 23 JUN 15
60 **Applicable to: MSN 01767-03071, 03264-05577, 08557, 08587, 08655, 08710, 08768, 09063**

Fuel Tank Overflow Alert	FUEL	No

Ident.: GEN-IFIT-00016533.0002001 / 23 JUN 15
61 **Applicable to: MSN 03138, 05641-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Fuel Tank Overflow Alert	FUEL	Yes

Ident.: GEN-IFIT-00015893.0001001 / 21 MAR 16
Applicable to: ALL
L13

FWD Cargo Heating Temperature Selector FWD(AFT) CARGO DUCT OVHT FWD(AFT) CRG HEAT FWD(AFT) CRG HEAT FAULT FWD CRG HEAT Cargo Heat Cargo Temperature Regulation CRG HEAT Forward (aft) cargo heat controller HOT AIR Fwd cargo heat controller	COND	No

Ident.: GEN-IFIT-00015925.0002001 / 21 MAR 16
Applicable to: ALL
L13

FWD Cargo Smoke Detector SMOKE FWD CARGO SMOKE FWD CARGO SMOKE SMOKE FWD CRG DET FAULT FWD CRG DET	FIRE	Yes

Ident.: GEN-IFIT-00015932.0001001 / 21 MAR 16
Applicable to: ALL
L13

FWD Cargo Ventilation FWD Cargo Outlet Isolation Valve Cargo Ventilation FWD ISOL Valve FWD CRG VENT FWD CARGO ISOL VALVE Forward (aft) cargo isolation valves isolation valves Fwd cargo isol valves	VENT	No

Ident.: GEN-IFIT-00016617.0001001 / 21 MAR 16
62 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**
L13

Galley Bus Automatic Shedding Galley Load Automatic Shedding	ELEC	No

Ident.: GEN-IFIT-00016617.0002001 / 21 MAR 16

63 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

L13

Galley Bus Automatic Shedding Galley Load Automatic Shedding	ELEC	Yes

Ident.: GEN-IFIT-00016618.0001001 / 21 MAR 16

Applicable to: MSN 01767-01920, 02204, 02359, 02405

L13

GAPCU Ground and Auxiliary Power Control Unit	ELEC	No

Ident.: GEN-IFIT-00016618.0002001 / 21 MAR 16

64 **Applicable to: MSN 01957-02195, 02275-02334, 02388, 02443-09063**

L13

GAPCU Ground and Auxiliary Power Control Unit	ELEC	Yes

Ident.: GEN-IFIT-00019705.0001001 / 13 MAY 16

65 **Applicable to: MSN 01767-02712, 02804-03618, 03782-04312, 04328-09063**

L13

Gaseous Oxygen Generators in lavatories Gaseous Generators	OXY	No

Ident.: GEN-IFIT-00019705.0002001 / 13 MAY 16

Applicable to: MSN 02737, 03750, 04314

L13

Gaseous Oxygen Generators in lavatories Gaseous Generators	OXY	Yes

Ident.: GEN-IFIT-00016534.0001001 / 21 MAR 16

Applicable to: ALL

L13

GLS GLS Autoland GLS1 GLS2	AUTO FLT	No

Ident.: GEN-IFIT-00016649.0002001 / 21 MAR 16

Applicable to: ALL

L13

GPS FM/GPS POS DISAGREE GPS 1(2) FAULT GPS 1 GPS 2 GPS 1+2	NAV	Yes

Ident.: GEN-IFIT-00016650.0002001 / 21 MAR 16
Applicable to: ALL

L13

GPS PRIMARY Function GPS PRIMARY	NAV	Yes

Ident.: GEN-IFIT-00020297.0001001 / 17 MAR 17
Applicable to: ALL

GSM Onboard	COM	No

Ident.: GEN-IFIT-00015911.0001001 / 30 AUG 18
66 **Applicable to: MSN 01767-02626, 02670-02914, 03138-03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 05120, 05158, 05218, 06720-09063**

L13

HF Datalink HF 1(2) DATA FAULT HF DATA LINK	COM	No

Ident.: GEN-IFIT-00015911.0002001 / 30 AUG 18
Applicable to: MSN 02649, 03071, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336

L13

HF Datalink HF 1(2) DATA FAULT HF DATA LINK	COM	Yes

Ident.: GEN-IFIT-00020132.0001001 / 22 MAR 17
Applicable to: MSN 02359

L13

HF System HF HF1 HF2	COM	No

Ident.: GEN-IFIT-00020132.0002001 / 22 MAR 17
67 **Applicable to: MSN 01767-02334, 02388-09063**

L13

HF System HF HF1 HF2	COM	Yes

Ident.: GEN-IFIT-00016644.0001001 / 21 MAR 16

68 **Applicable to: MSN 01767-03618, 03782-09063**

L13

HIALT pb Operation on High Altitude Airfields HI ALT LANDING pb-sw HI ALT LANDING pb-sw	OXY	No

Ident.: GEN-IFIT-00016644.0002001 / 21 MAR 16

Applicable to: MSN 03750

L13

HIALT pb Operation on High Altitude Airfields HI ALT LANDING pb-sw HI ALT LANDING pb-sw	OXY	Yes

Ident.: GEN-IFIT-00018783.0001001 / 21 MAR 16

Applicable to: ALL

HUD	SURV	No

Ident.: GEN-IFIT-00016651.0001001 / 23 JUN 15

Applicable to: MSN 01767-01920, 02108, 02204-02388, 02443-02457, 02584-02914, 03264-03618, 03782-03943

IRS Alignment Based on GPS Position	NAV	No

Ident.: GEN-IFIT-00016651.0002001 / 23 JUN 15

69 **Applicable to: MSN 01957-02097, 02121-02195, 02405, 02482, 03071-03138, 03750, 04008-09063**

IRS Alignment Based on GPS Position	NAV	Yes

Ident.: GEN-IFIT-00015618.0001001 / 23 JUN 15

Applicable to: MSN 01767-01920, 02108, 02135, 02139-02195, 02359-02405, 02482, 02609-02626, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04954

ISIS	NAV	No

Ident.: GEN-IFIT-00015618.0002001 / 23 JUN 15

70 **Applicable to: MSN 01957-02097, 02121, 02138, 02204-02334, 02443-02457, 02584, 02649-03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 04965-09063**

ISIS	NAV	Yes

Ident.: GEN-IFIT-00020693.0001001 / 17 MAR 17

Applicable to: ALL

L13

ITP ATSA ITP ITP TRAFFIC LIST page IN TRAIL PROCEDURE IN TRAIL PROCEDURE page	SURV	No

Ident.: GEN-IFIT-00016594.0002001 / 23 JUN 15

71 **Applicable to: MSN 01767-05411**

LAF	F/CTL	No

Ident.: GEN-IFIT-00016594.0001001 / 23 JUN 15

72 **Applicable to: MSN 05437-09063**

LAF	F/CTL	Yes

Ident.: GEN-IFIT-00016596.0001001 / 21 MAR 16

Applicable to: ALL

L13

LAT DEV SCALE pb L/DEV deviation scale	NAV	No

Ident.: GEN-IFIT-00016600.0001001 / 23 JUN 15

Applicable to: ALL

LOC B/C	AUTO FLT	No

Ident.: GEN-IFIT-00016602.0002001 / 21 MAR 16

Applicable to: ALL

L13

Logo Light LOGO Logo Lights	LIGHTS	Yes

Ident.: GEN-IFIT-00020306.0001001 / 17 MAR 17

73 **Applicable to: MSN 01920, 02108, 02135, 02139-02388, 02443-02712, 02804-02914, 03138, 03750, 04491, 04532, 04645, 05120, 05158, 05218, 06720-09063**

Man-made Obstacle Function	SURV	Yes

Ident.: GEN-IFIT-00020306.0002001 / 17 MAR 17

Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02405, 02737, 03071, 03264-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336

Man-made Obstacle Function	SURV	No

Ident.: GEN-IFIT-00016604.0002001 / 23 JUN 15

Applicable to: ALL

Manual Flush Control	WATER	Yes

Ident.: GEN-IFIT-00016605.0002001 / 21 MAR 16

Applicable to: ALL

Manual Shutoff Valves	WATER	Yes

Ident.: GEN-IFIT-00016688.0001001 / 23 JUN 15

74 **Applicable to: MSN 01767, 02135, 02139-02204, 02359-02443, 02482-02584, 02670-02914, 03138-04216, 04312-04399, 04438-04506, 04518-09063**

Metric Altitude Indications on the PFD	EIS	No

Ident.: GEN-IFIT-00016688.0002001 / 23 JUN 15
Applicable to: MSN 01920-02121, 02138, 02275-02334, 02457, 02609-02649, 03071, 04294, 04433, 04510

Metric Altitude Indications on the PFD	EIS	Yes

Ident.: GEN-IFIT-00016536.0001001 / 21 MAR 16
Applicable to: ALL
L13

MLS MLS1 MLS2	AUTO FLT	No

Ident.: GEN-IFIT-00016603.0001001 / 23 JUN 15
Applicable to: MSN 01920, 02204, 02457, 02649, 02712, 02914, 03264, 03330

NAV Mode automatically Engaged (Armed) in Go-Around	AUTO FLT	No

Ident.: GEN-IFIT-00016603.0002001 / 23 JUN 15
75 **Applicable to: MSN 01767, 01957-02195, 02275-02443, 02482-02626, 02670, 02737-02908, 03071-03138, 03308, 03357-09063**

NAV Mode automatically Engaged (Armed) in Go-Around	AUTO FLT	Yes

Ident.: GEN-IFIT-00016645.0002001 / 23 JUN 15
Applicable to: ALL

OEB Reminder	EIS	Yes

Ident.: GEN-IFIT-00021528.0004001 / 30 AUG 18
Applicable to: MSN 01957-02097, 02121, 02138
L13

Optional Applications: OCL DCL D-ATIS	FANS	Yes

Ident.: GEN-IFIT-00021528.0001001 / 30 AUG 18
76 **Applicable to: MSN 01767-01920, 02108, 02135, 02139-09063**
L13

Optional Applications: DCL OCL D-ATIS	FANS	No

Ident.: GEN-IFIT-00016597.0002001 / 21 MAR 16
Applicable to: MSN 04393-04397
L13

1 Pair of Overwing Emergency Exit Overwing Escape Route FWD EMER EXIT	DOORS	Yes

Ident.: GEN-IFIT-00016597.0003001 / 21 MAR 16

77 **Applicable to: MSN 01767-04384, 04399-09063**

L13

2 Pairs of Overwing Emergency Exit Overwing Escape Route FWD EMER EXIT	DOORS	Yes

Ident.: GEN-IFIT-00016538.0001001 / 21 MAR 16

Applicable to: MSN 01767-02584, 02649-04438

L13

Parking Brake Monitoring PARK BRK FAULT	BRAKE	No

Ident.: GEN-IFIT-00016538.0002001 / 21 MAR 16

78 **Applicable to: MSN 02609-02626, 04481-09063**

L13

Parking Brake Monitoring PARK BRK FAULT	BRAKE	Yes

Ident.: GEN-IFIT-00021553.0002001 / 17 MAR 17

Applicable to: ALL

Predictive GPWS	SURV	Yes

Ident.: GEN-IFIT-00016608.0002001 / 22 MAR 16

Applicable to: ALL

L13

Printer Function in FMS PRINT FUNCTION PRINTER NOT AVAILABLE	AUTO FLT	Yes

Ident.: GEN-IFIT-00016609.0002001 / 21 MAR 16

Applicable to: ALL

Push to Level Off	AUTO FLT	Yes

Ident.: GEN-IFIT-00016648.0001001 / 17 MAR 17

Applicable to: MSN 02359, 02405, 02482

L13

PWS Windshear DET WINDSHEAR DETECTION PRED W/S DETFAULT W/S AHEAD WINDSHEAR AHEAD Windshear PRED W/S DET predictive windshear system PWS SCAN	SURV	No

Ident.: GEN-IFIT-00016648.0002001 / 17 MAR 17

79 **Applicable to: MSN 01767-02334, 02388, 02443-02457, 02584-09063**

L13

PWS Windshear DET WINDSHEAR DETECTION PRED W/S DET FAULT W/S AHEAD WINDSHEAR AHEAD Windshear PRED W/S DET predictive windshear system PWS SCAN	SURV	Yes

Ident.: GEN-IFIT-00016695.0001001 / 23 JUN 15

80 **Applicable to: MSN 01767, 01957-09063**

QAR	RECORDING	No

Ident.: GEN-IFIT-00016695.0002001 / 23 JUN 15

Applicable to: MSN 01920

QAR	RECORDING	Yes

Ident.: GEN-IFIT-00016643.0001001 / 21 MAR 16

81 **Applicable to: MSN 01920-02097, 02121-02204, 02359-02626, 02670-09063**

L13

QFE BARO Setting QFE OPTION	NAV	No

Ident.: GEN-IFIT-00016643.0002001 / 21 MAR 16

Applicable to: MSN 01767, 02108, 02275-02334, 02649

L13

QFE BARO Setting QFE OPTION	NAV	Yes

Ident.: GEN-IFIT-00016610.0001001 / 23 JUN 15

Applicable to: ALL

RAAS	SURV	No

Ident.: GEN-IFIT-00016539.0001001 / 21 MAR 16

Applicable to: MSN 01767, 02275-02359, 02405, 02482

L13

Rain Repellent System Rain Repellent RAIN RPLNT pb RAIN RPLNT	RAIN	No

Ident.: GEN-IFIT-00016539.0003001 / 21 MAR 16

82 **Applicable to: MSN 01920-02204, 02388, 02443-02457, 02584-09063**

L13

Rain Repellent System Rain Repellent RAIN RPLNT pb RAIN RPLNT	RAIN	Yes

Ident.: GEN-IFIT-00016737.0001001 / 23 JUN 15

Applicable to: ALL

RMP Load Function	COM	No

Ident.: GEN-IFIT-00016581.0001001 / 23 JUN 15

Applicable to: ALL

RNP pb	NAV	No

Ident.: GEN-IFIT-00016582.0001001 / 21 MAR 16

Applicable to: ALL

L13

ROW/ROPS ROW/ROP	SURV	No

Ident.: GEN-IFIT-00016583.0001001 / 23 JUN 15

Applicable to: MSN 01767-02482

RPCU	CAB PR	No

Ident.: GEN-IFIT-00016583.0002001 / 23 JUN 15

83 **Applicable to: MSN 02584-09063**

RPCU	CAB PR	Yes

Ident.: GEN-IFIT-00016642.0001001 / 22 MAR 17

84 **Applicable to: MSN 01767-02712, 02804-03618, 03782-04312, 04328-04384, 04399-09063**

L13

SATCOM SATCOM DATA FAULT SATCOM FAULT Satellite Communications (SATCOM) SATCOM System	COM	No

Ident.: GEN-IFIT-00016642.0002001 / 12 MAR 18

Applicable to: MSN 02737, 03750, 04314, 04393-04397

L13

SATCOM SATCOM DATA FAULT SATCOM FAULT Satellite Communications (SATCOM) SATCOM System	COM	Yes

Ident.: GEN-IFIT-00016646.0001001 / 17 MAR 17

85 **Applicable to: MSN 02443-02457, 02584-02670, 02737-09063**

L13

SDCU Smoke Detection Control Unit SDCU	SMOKE	No

Ident.: GEN-IFIT-00016646.0002001 / 17 MAR 17

Applicable to: MSN 01767-02405, 02482, 02712

L13

SDCU Smoke Detection Control Unit SDCU	SMOKE	Yes

Ident.: GEN-IFIT-00016584.0001001 / 23 JUN 15

86 **Applicable to: MSN 01767, 02108, 02275-02443, 02482-02649, 02712-02737, 02908-02914, 03138-03264, 03330, 03750, 04294, 04314, 04393-04438, 04510, 05158, 06720-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252-08440, 08460-08492, 08737, 08771-09045**

Second Fire Extinguishing Bottle	FIRE	No

Ident.: GEN-IFIT-00016584.0002001 / 23 JUN 15

87 **Applicable to: MSN 01920-02097, 02121-02204, 02457, 02670, 02804, 03071, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05155, 05190-06336, 06772, 06829, 06904, 06946, 07083-07192, 08455-08459, 08511-08710, 08768, 09063**

Second Fire Extinguishing Bottle	FIRE	Yes

Ident.: GEN-IFIT-00018784.0002001 / 04 DEC 17

88 **Applicable to: MSN 06720-09063**

L13

Soft go-around GA SOFT	ENG	Yes

Ident.: GEN-IFIT-00018784.0001001 / 04 DEC 17

89 **Applicable to: MSN 01767-06336**

L13

Soft go-around GA SOFT	ENG	No

Ident.: GEN-IFIT-00018785.0001001 / 21 MAR 16

Applicable to: ALL

L13

Steep Approach Capability STEEP APPR	NAV	No

Ident.: GEN-IFIT-00016586.0001001 / 23 JUN 15

90 **Applicable to: MSN 01767-01920, 02108, 02135, 02139-02914, 03138, 03750, 04491, 04532, 04645, 05120, 05158, 05218, 06720-09063**

T2CAS	SURV	No

Ident.: GEN-IFIT-00016586.0002001 / 23 JUN 15
Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03264-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336

T2CAS	SURV	Yes

Ident.: GEN-IFIT-00016587.0001001 / 23 JUN 15
91 **Applicable to: MSN 01767-03071, 03264-09063**

T3CAS	SURV	No

Ident.: GEN-IFIT-00016587.0002001 / 23 JUN 15
Applicable to: MSN 03138

T3CAS	SURV	Yes

Ident.: GEN-IFIT-00016588.0001001 / 21 MAR 17
Applicable to: MSN 01767-02121, 02138, 02195-02584, 02649-02914, 03138-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-05231
L13

Tail Strike Pitch Limit Indicator Tailstrike Pitch Limit Indicator	EIS	No

Ident.: GEN-IFIT-00016588.0002001 / 21 MAR 17
92 **Applicable to: MSN 02135, 02139, 02609-02626, 03071, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 05120, 05158, 05218, 05259-09063**
L13

Tail Strike Pitch Limit Indicator Tailstrike Pitch Limit Indicator	EIS	Yes

Ident.: GEN-IFIT-00018786.0001001 / 21 MAR 16
Applicable to: MSN 01767-02405, 02482

Temperature Control Panel	COND	No

Ident.: GEN-IFIT-00018786.0002001 / 21 MAR 16
93 **Applicable to: MSN 02443-02457, 02584-09063**

Temperature Control Panel	COND	Yes

Ident.: GEN-IFIT-00016541.0001001 / 23 JUN 15
Applicable to: ALL

Thrust Bump	ENG	No

Ident.: GEN-IFIT-00016011.0001001 / 21 MAR 16
94 **Applicable to: MSN 01767-04312, 04328-04384, 04399-09063**
L13

TPIS TYRE LO PR	WHEEL	No

Ident.: GEN-IFIT-00016011.0002001 / 21 MAR 16
Applicable to: MSN 04314, 04393-04397

L13

TPIS TYRE LO PR	WHEEL	Yes

Ident.: GEN-IFIT-00017055.0001001 / 30 AUG 18
95 **Applicable to: MSN 01767-06336**

L13

HZD switch ON Weather Hazard Prediction Function WX+T+H WX+T+HZD	SURV	No

Ident.: GEN-IFIT-00017055.0002001 / 30 AUG 18
96 **Applicable to: MSN 06720-09063**

L13

HZD switch ON Weather Hazard Prediction Function WX+T+H WX+T+HZD	SURV	Yes

Ident.: GEN-IFIT-00020783.0001001 / 20 DEC 16
Applicable to: ALL

Weight and Balance System (WBS)	EIS	No

Ident.: GEN-IFIT-00016543.0001001 / 21 MAR 16
97 **Applicable to: MSN 01767-02584, 02649-09063**

L13

Wiper Intermittent Position Intermittent Sweep Function Intermittent Sweeping	RAIN	No

Ident.: GEN-IFIT-00016543.0002001 / 21 MAR 16
Applicable to: MSN 02609-02626

L13

Wiper Intermittent Position Intermittent Sweep Function Intermittent Sweeping	RAIN	Yes

MAIN FCOM CHANGES

Ident.: GEN-00012867.0001001 / 03 AUG 17
Applicable to: ALL

The purpose of the Main FCOM Changes is to provide operators with general information about the most significant changes that are introduced in the current revision of the manual.

The main FCOM changes are available on the Airbus World portal, under the path: Content Library / Flight Operations / Manuals / Main FCOM - FCTM - MMEL Changes.

In addition, every revised Documentary Unit (DU) has a revision highlight (HL) that:
- Indicates the change(s) made to the DU
- Can be found in the associated "Preliminary Pages – Summary of Highlights" subchapter.

In addition to the Main FCOM Changes, the Modification Operational Impact (MOI) documents available on the Airbus World portal provide the operational impact linked to a MOD number.

FCOM PURPOSE

Ident.: GEN-00012627.0001001 / 17 MAR 17
Applicable to: ALL

FCOM PURPOSE

The Flight Crew Operating Manual (FCOM) is a support documentation for flight crew.

The purpose of the FCOM is to:
- Provide all necessary operating limitations, procedures, performance and system information the flight crew needs to safely and efficiently operate A320 family aircraft during normal, abnormal, and emergency situations
- Serve directly as Flight Crew Operating Manual, or as a basis for Operators to develop their own customized Airline Operations Manual, in accordance with applicable requirements
- Serve as a comprehensive reference guide during initial and refresher flight crew training.

Note: *This manual is not designed:*

- *To teach basic piloting skills*
- *To provide basic piloting techniques applicable to jet aircraft, or information, that are considered as basic airmanship for trained flight crews who are familiar with that type of aircraft and its general handling characteristics.*

The Flight Crew Operating Manual (FCOM) complements the Airplane Flight Manual (AFM).
If the FCOM data differs from the AFM data, the AFM remains the reference.
As a supplement to the FCOM, the FCTM may provide additional information that the flight crew should read in conjunction with the FCOM. For more information, *Refer to FCTM/GI FCTM Purpose*.
For any questions or comments related to this manual, the Operator's Flight Operations Management can contact the Airbus Flight Operations Support & Training Standards department.

FCOM CONTENTS

The FCOM has five sections:

- Aircraft Systems : This section is divided into ATA chapters for each aircraft system. This section includes a specific description of each system and its associated cockpit interfaces.
- Procedures : This section contains the following chapters:
  - Normal Procedures that include the SOP, the SRP, and the Supplementary Procedures
  - Abnormal and Emergency Procedures
  - Special Operations.
- Limitations : This section provides the aircraft and system limitations that the flight crew must know or refer to in operations.
- Operations Engineering Bulletins (OEB)
- Performance : This section includes the aircraft performance for each flight phase.

DOCUMENTARY UNITS

The FCOM is made of Documentary Units (DU). The DU is the smallest part of information with a technical content.
The DUs are listed on a separate "List of Effective Documentary Units" (LEDU). *Refer to the General section*.

Note: 1. DUs can be grouped into Group of DU (GDU)
2. Temporary information may be provided via Temporary DU (TDU).

IDENTIFICATION STRIP

Below the title of the DU, the identification strip provides:

- The list of MSN the DU is applicable to
- For TDU, the reference to the DU impacted by the TDU.

LIST OF EFFECTIVE SECTIONS/SUBSECTIONS (LESS) - PAPER ONLY

Ident.: GEN-00013786.0001001 / 23 JUN 15
Applicable to: ALL

The List of Effective Sections/Subsections (LESS) summarizes all the sections and subsections contained in the FCOM. For each revision, a new LESS is issued when at least one DU of the section/subsection is changed.

The LESS consists of:

- The "M" field that may provide the following evolution code:
  - The "N" letter indicates a new section introduced by the revision
  - The "R" letter indicates a section in which the content has been revised
  - The "E" letter indicates an aircraft validity change within the section
  - The "M" letter indicates a section that have move within the FCOM
- The “Localization” field that allows localizing the section within the manual with the product structure
- The “Subsection title” field
- The “Rev. Date” field that indicated the date at which the section was changed.

LIST OF EFFECTIVE OPERATIONS ENGINEERING BULLETINS (LEOEB)

Ident.: GEN-00013787.0001001 / 17 MAR 17
Applicable to: ALL

Refer to OEB-GEN OEB Content and Management

LIST OF EFFECTIVE DOCUMENTARY UNITS (LEDU) - PAPER ONLY

Ident.: GEN-00013789.0001001 / 23 MAR 11
Applicable to: ALL

For each revision, a new List of Effective Documentary Units (LEDU) is issued at the section level. The LEDU provides information about the DU localization, applicability, identification and issue date.

The LEDU consists of:

- The "M" field that may provide the following Evolution Code:
  - The "N" letter indicates a new DU introduced by the revision
  - The "R" letter indicates a revised DU: The content of the DU is updated by the revision. A vertical line in the margin of the DU locates the modified part
  - The "E" letter indicates an aircraft validity change for the DU: The list of MSNs for which the DU is effective has been changed compared to the previous LEDU, by addition or deletion of one or several MSN
- The “Localization” field that allows localizing the DU in the manual with the product structure of the manual
- The "T" field (Temporary Information) that contains a cross if the associated DU is a TDU
- The "DU title" that provides the title of the DU
- The “DU identification” that identifies the DU with its own unique identification number or the GDU with its own unique code.
- The “DU date” that indicates when the DU has been released

- The DU criteria which lists the technical or operational criteria for which the DU and solution is applicable to.
- The “Applicable to” which provides the list of aircraft this DU and solution is applicable to
- The “Impacted by TDU” which is the identification of the TDU superseding the DU

LIST OF EFFECTIVE TEMPORARY DOCUMENTARY UNITS (LETDU) - PAPER ONLY

Ident.: GEN-00013803.0001001 / 23 JUN 15
Applicable to: ALL

The List of Effective Temporary Documentary Units (LETDU) provides a summary of the Temporary DU impacting the section.

The LETDU consists of:

- The "M" field that may provide the following Evolution Code:
  - The "N" letter indicates a new TDU introduced by the revision
  - The "R" letter indicates a revised TDU: The content of the TDU is updated by the revision. A vertical line in the margin of the TDU locates the modified part
  - The "E" letter indicates an aircraft validity change for the TDU: The list of MSNs the TDU is applicable to has been changed compared to the previous LETDU, by addition or deletion of one or several MSN
- The “Localization” field that allows localizing the TDU in the manual with the product structure of the manual
- The “TDU Title” that provides the title of the TDU
- The “TDU identification” that identifies the TDU with its identification number with its own unique code
- The “TDU date” that indicates when the TDU has been released
- The TDU criteria which lists the technical or operational criteria, the it is applicable to
- The “Applicable to” which provides the list of aircraft this TDU is applicable to
- The “Impacted DU” which is the Identification of DU superseded by the TDU
- The “Reason for issue” of the TDU

Note: *1. TDU is displayed on a yellow background*
2. within the QRH the TDU replaces the impacted DU

AIRCRAFT ALLOCATION TABLE (AAT) - PAPER ONLY

Ident.: GEN-00013804.0001001 / 23 JUN 15
Applicable to: ALL

The Aircraft Allocation Table (AAT) provides a view of the fleet covered in the FCOM. For each aircraft, the AAT provides its MSN, its registration number and the model.

LIST OF MODIFICATIONS (LOM) - PAPER ONLY

Ident.: GEN-00013805.0001001 / 23 JUN 15
Applicable to: ALL

The List of Modifications (LOM) lists the criteria (Modification Proposal (MP) or Service Bulletins (SB)) which the installation on the aircraft affects the FCOM.

Note: *Each MP has one or more associated MODs. The MP/MOD correlation is available in AirN@v / Engineering.*

The LOM also indicates:
- The title of the criteria
- The date of incorporation of the criteria in the FCOM
- The list of aircraft that have the criteria
- The "M" field that may indicate the following evolution code
  - The "E" letter indicates an aircraft validity change of the criteria. The list of aircraft to which the criteria applies has changed compared to the previous FCOM revision, by addition or deletion of one or several aircraft.
  - The "N" letter indicates new criteria added by this FCOM revision
  - The "R" letter indicates a change in the criteria title or associated SB

FCOM USE AND ORGANIZATION

Ident.: GEN-00012688.0001001 / 21 MAR 16
Applicable to: ALL

DEFINITIONS OF WARNINGS, CAUTIONS AND NOTES

The following are the official definitions of warnings, cautions and notes taken directly from the JAR25/CS-25 and applicable to Airbus flight operation documentation:

WARNING	An operating procedure, technique, etc. that may result in personal injury or loss of life if not followed.
CAUTION	An operating procedure, technique, etc. that may result in damage to equipment if not followed.
NOTE	An operating procedure, technique, etc. considered essential to emphasize. Information contained in notes may also be safety related.

INFORMATION TYPE AND LAYERS

The FCOM has technical information that may be used for:
- Flight crew operations in flight, or on ground
- Airlines operations on ground
- Training.

To take the above-noted objectives into account, the FCOM is organized in three layers as follows:
- Layer 1: "Need to know"
  Layer 1 presents information that is necessary in the cockpit.
- Layer 2: "Nice to know"
  Layer 2 presents information that is used as a reference, in order to fully understand the logic of the aircraft and pilot interfaces.
- Layer 3: Detailed information
  Layer 3 provides more detailed explanations, that are not necessarily needed in flight.

Note: *For paper only, the following examples show the visual characteristics of each kind of layer*

EXAMPLE	- Text in layer 1 Layer 1 is the default layer. No symbology when not following layer 2 or layer 3 information.

L2

EXAMPLE	- Text in layer 2

L3

EXAMPLE	- Text in layer 3

L1

EXAMPLE	- Text in layer 1 (as this text follows a text in layer 2 or 3, symbology "L1")

OPTIONAL EQUIPMENT

The legend ◁ (if installed) indicates that a paragraph or an illustration is applicable only if the related optional equipment is installed.

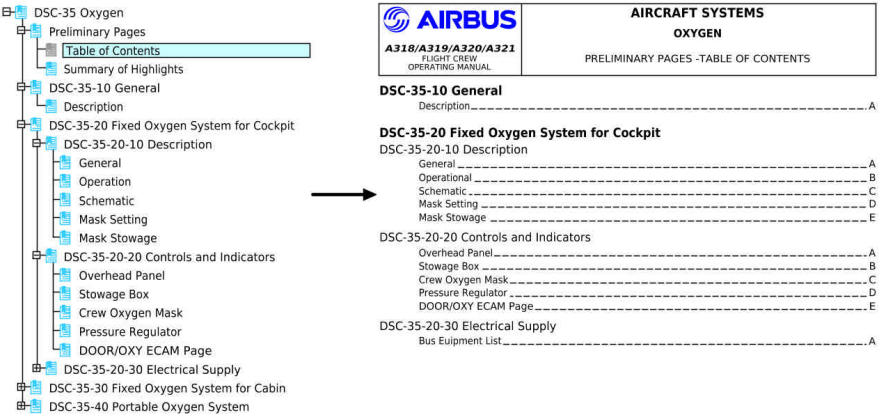
FCOM FORMAT AND STYLE INFORMATION - PAPER ONLY

Ident.: GEN-00013793.0001001 / 21 MAR 16
Applicable to: ALL

TABLE OF CONTENTS

Each TOC entry has an alphabetical index that identifies this TOC entry within its subsection. The manual user can easily find a TOC entry content within the manual thanks to this alphabetical

index and the subsection identification. Both are indicated in the TOC and both cross-refer to the paper page footer (see the TOC indexing part below).



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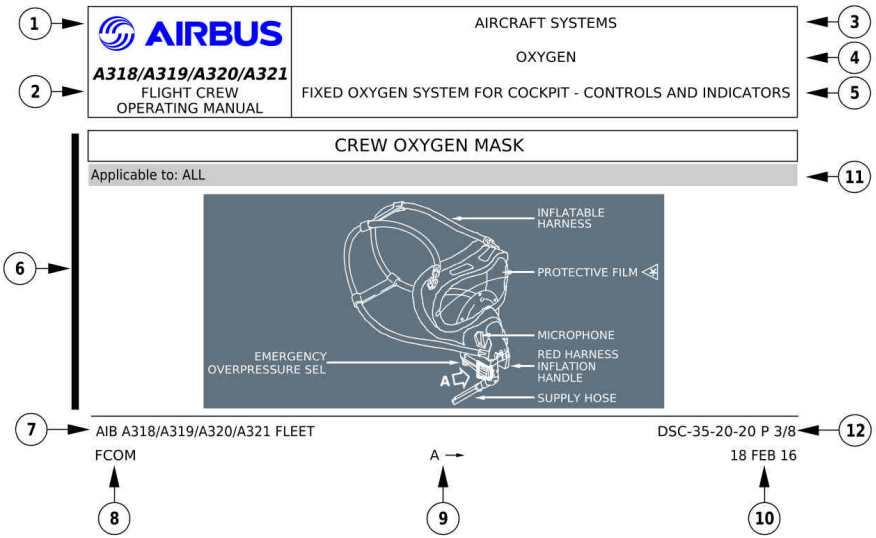

1. Airline logo
2. Aircraft types and manual
3. Level 2 chapter (PSL level 2 : GEN, DSC, PRO, LIM, OEB, PER)
4. Level 3 chapter
5. Level 4 chapter
6. Revision mark
7. Key product (document identification and aircraft designation)
8. Key product (manual code)
9. Page index
10. Last evolution date
11. Identification strip (list of impacted aircraft)
12. PSL path

REVISION MARK

In the paper format, a vertical bar in the margin of the DU identifies the modified part. Each vertical bar has a numerical index that refers to the associated reason of the change in the Summary of Highlight.
This Summary of Highlight lists all the changes and associated reasons of the change (if necessary) that the revision has introduced.

TOC INDEXING

In the paper page footer, the TOC indexing is of the following type:

A	:	The paper page contains the whole "A" TOC entry content
A to B	:	The paper page contains the whole "A" and "B" TOC entries contents
A →	:	The "A" TOC entry content starts on this paper page and continues on the following paper page
← A	:	The "A" TOC entry content starts on a previous paper page and finishes on this paper page
← A →	:	The "A" TOC entry content starts on a previous paper page and continues on the following paper page
A to C→	:	The paper page contains the whole "A" and "B" TOC entries contents but the "C" TOC entry content starts on this paper page and continues on the following paper page

← A to C : The paper page contains the whole "B" and "C" TOC entries contents but the "A" TOC entry content starts on a previous paper page and finishes on this paper page

← A to C → : The paper page contains the whole "B" TOC entry content but the "A" TOC entry content starts on a previous paper page and finishes on this paper page and the "C" TOC entry content starts on this paper page and continues on the following paper page

Note:
1. *The indexes follow the alphabetical order: A, B, C, ..., Z, AA, AB, AC, ..., AZ, BA, BB, BC, ...*
2. *For each subsection, the index starts again from A.*
3. *When a TOC entry content continues on the following paper page, the text "Continued on the following page" is also indicated.*

FCOM REVISIONS

Ident.: GEN-00012634.0001001 / 24 OCT 14
Applicable to: ALL

FCOM REVISION

FCOM revisions are issued to add, update, or revise information. The Operator determines the revision periodicity.
When necessary, a revision may be issued in between the defined periodicity (e.g. need for urgent update).
A vertical bar appears to the left of all revised parts of the manual.

TEMPORARY INFORMATION

Some FCOM sections may need a temporary update (e.g. to explain a system behavior that will be modified by a future standard). In such cases, the applicable FCOM section is updated with a Temporary Documentary Unit (TDU).
Information contained in the TDU is highlighted in the manual and the initial content of the FCOM remains available for consultation and comparison and is highlighted (identification strip) as being impacted by the TDU.
A List of Effective Documentary Units (LEDU) is provided in the FCOM

OPERATIONS ENGINEERING BULLETINS

Operations Engineering Bulletins (OEB) are issued, when it is necessary, to rapidly transmit technical and procedural information.
The OEB chapter provides a list of all applicable OEBs.

ABBREVIATIONS

Ident.: GEN-00012598.0001001 / 28 SEP 18
Applicable to: ALL

A

Abbreviation	Term
A>B	A is greater than B
A≥B	A is greater than or equal to B
A<B	A is less than B
A≤B	A is less than or equal to B
A/BRK	Autobrake
A/C	Aircraft
A/P	Autopilot
AP	Autopilot
A/S	Airspeed
A/SKID	Anti-skid
A/THR	Auto Thrust
AA	Airworthiness Authorities
AAL	Above Aerodrome Level
AAT	Aircraft Allocation Table
AB	Abort
ABCU	Alternate Braking Control Unit
ABN	Abnormal
ABV	Above
AC	Alternating Current
ACARS	ARINC Communication Addressing and Reporting System
ACAS	Airborne Collision Avoidance System
ACCEL	Acceleration
ACC	Active Clearance Control
ACCU	Accumulator
ACP	Audio Control Panel
ACS	Aircraft Configuration Summary
ACSC	Air Conditioning System Controller
ACT	Additional Center Tank
ADC	Air Data Computer
ADF	Automatic Direction Finder
ADIRS	Air Data Inertial Reference System
ADIRU	Air Data Inertial Reference Unit
ADM	Air Data Module
ADR	Air Data Reference
ADS-B	Automatic Dependent Surveillance - Broadcast
ADS-C	Automatic Dependent Surveillance - Contract

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Abbreviation	Term
ADV	Advisory
AEVC	Avionic Equipment Ventilation Controller
AFM	Airplane Flight Manual
AFMC	Auxiliary Fuel Management Computer
AFMS	Auxiliary Fuel Management System
AFS	Auto Flight System
AGL	Above Ground Level
AIDS	Aircraft Integrated Data System
AIL	Aileron
AIME	Autonomous Integrity Monitoring Extrapolation
AIP	Attendant Indication Panel
AIU	Audio Interface Unit
ALT	Altitude
ALTN	Alternate
AMC	Acceptable Means of Compliance
AMI	Airline Modifiable Information
AMU	Audio Management Unit
ANT	Antenna
AOA	Angle of Attack
AOC	Airline Operational Control
APP	Approach
APPR	Approach
APPU	Asymmetry Position Pick-off Unit
APU	Auxiliary Power Unit
AR	Authorization Required
ARINC	Aeronautical Radio Incorporated
ARN	Aircraft Registration Number
ARP	Aerospace Recommended Practice
ARPT	Airport
ASAP	As Soon As Possible
ASD	Accelerate Stop Distance
ASI	Air Speed Indicator
ASP	Audio Selector Panel
ATC	Air Traffic Control
ATM	Air Traffic Management
ATN	Aeronautical Telecommunications Network
ATE	Automatic Test Equipment
ATIS	Automatic Terminal Information System
ATS	Auto Thrust System
ATSAW	Airborne Traffic Situational Awareness

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Abbreviation	Term
ATSU	Air Traffic Service Unit
ATT	Attitude
AUTO	Automatic
AVNCS	Avionics
AWY	Airway

B

Abbreviation	Term
B/C	Back Course
BACV	Buffer Air Check Valve
BARO	Barometric
BASOV	Buffer Air Shut Off Valve
BAT	Battery
BCL	Battery Charge Limiter
BCDS	Bite Centralized Data System
BCU	Backup Control Unit
BDDV	Brake Dual Distribution Valve
BITE	Built-In Test Equipment
BIU	BITE Interface Unit
BFE	Buyer Furnished Equipment
BFO	Beat Frequency Oscillator
BMC	Bleed Monitoring Computer
BNR	Binary
BRG	Bearing
BRK	Brake
BRT	Bright
BSCU	Braking Steering Control Unit
BTC	Bus Tie Contactor
BTL	Bottle
BTS	Bleed Temperature Sensor
BUS	Busbar
BUSS	Back Up Speed Scale

C

Abbreviation	Term
C/B	Circuit Breaker
CB	Circuit Breaker
C/L	Checklist
CL	Checklist
CAB	Cabin

Continued on the following page

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Abbreviation	Term
CAPT	Captain, Capture
CAS	Calibrated Airspeed
CAT	Category
CBMS	Circuit Breaker Monitoring System
CCD	Cursor Control Device
CDL	Configuration Deviation List
CDLS	Cockpit Door Locking System
CDSS	Cockpit Door Surveillance System
CDU	Control Display Unit
CF	Cost of Fuel
CFDIU	Centralized Fault Display Interface Unit
CFDS	Centralized Fault Display System
CFP	Computerized Flight Plan
CG	Center of Gravity
CHAN	Channel
CHG	Change
CHK	Check
CI	Cost Index
CIDS	Cabin Intercommunication Data System
CIDS-SDF	Cabin Intercommunication Data System - Smoke Detection Function
CKPT	Cockpit
CIS	Commonwealth of Independent States
CLB	Climb
CLR	Clear
CLSD	Closed
CM1(2)	Crewmember 1 (left seat) or 2 (right seat)
CM1	Crewmember 1 (left seat)
CM2	Crewmember 2 (right seat)
CMPTR	Computer
CMS	Constant Mach Segment
CMS	Centralized Maintenance System
CNSU	Cabin Network Server Unit
CO	Company
CO RTE	Company Route
COND	Conditioning
CONF	Configuration
CONT	Continuous
CP	Control Panel
CPC	Cabin Pressure Controller
CPCU	Cabin Pressure Controller Unit

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Abbreviation	Term
CPDLC	Controller-Pilot Data Link Communication
CRC	Continuous Repetitive Chime
CRG	Cargo
CRS	Course
CRT	Cathode Ray Tube
CRZ	Cruise
CSAS	Conditioned Service Air System
CSCU	Cargo Smoke Control Unit
CSD	Constant Speed Drive
CSM/G	Constant Speed Motor/Generator
CSTR	Constraint
CT	Cost of Time
CTL	Control
CTL PNL	Control Panel
CTR	Center
CVR	Cockpit Voice Recorder

D

Abbreviation	Term
DA	Drift Angle
DAC	Digital to Analog Converter
DAC	Double Annular Combustor
DAR	Digital AIDS Recorder
DC	Direct Current
DCDU	Datalink Control and Display Unit
DCL	Digital Cabin Logbook
DDRMI	Digital Distance and Radio Magnetic Indicator
DECEL	Deceleration
DES	Descent
DEST	Destination
DET	Detection, Detector
DEV	Deviation
DFA	Delayed Flap Approach
DFDR	Digital Flight Data Recorder
DH	Decision Height
DIR	Direction
DIR TO	Direct To
DISC	Disconnect
DISCH	Discharge
DIST	Distance

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Abbreviation	Term
DITS	Digital Information Transfer System
DIV	Diverter
DMC	Display Management Computer
DME	Distance Measuring Equipment
DMU	Data Management Unit (Aids)
DN	Down
DPO	Descent Profile Optimization
DSDL	Dedicated Serial Data Link
DTG	Distance To Go
DTO	Derated Takeoff
DU	Display Unit
DU	Documentary Unit

E

Abbreviation	Term
EWD	Engine/Warning Display
ECAM	Electronic Centralized Aircraft Monitoring
ECAS	Emergency Cockpit Alerting System
ECB	Electronic Control Box (APU)
ECM	Engine Condition Monitoring
ECON	Economic
ECP	ECAM Control Panel
ECS	Environmental Control System
ECU	Engine Control Unit
EDP	Engine-Driven Pump
EEC	Electronic Engine Computer
EFB	Electronic Flight Bag
EFCS	Electronic Flight Control System
EFIS	Electronic Flight Instruments System
EFF	Electronic Flight Folder
EFOB	Estimated Fuel On Board
EGPWS	Enhanced Ground Proximity Warning System
EGT	Exhaust Gas Temperature
EIS	Electronic Instruments System
EIU	Engine Interface Unit
ELAC	Elevator Aileron Computer
ELEC	Electrics
ELT	Emergency Locator Transmitter
ELEV	Elevator
ELV	Elevation

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Abbreviation	Term
EMER	Emergency
EMER GEN	Emergency Generator
ENG	Engine
EO	Engine-Out
EOSID	Engine-Out Standard Instrument Departure
EPE	Estimated Position Error (equal to EPU)
EPR	Engine Pressure Ratio
EPU	Emergency Power Unit
EPU	Estimated Position Uncertainty (equal to EPE)
EQPT	Equipment
EROPS	Extended Range Operation
ESS	Essential
EST	Estimated
ETA	Estimated Time of Arrival
ETE	Estimated Time Enroute
ETOPS	Extended Twin Operations
ETP	Equal Time Point
EVMU	Engine Vibration Monitoring Unit
E/WD	Engine/Warning Display
EXP	Expedite
EXT PWR	External Power
EXTN	Extension

F

Abbreviation	Term
F	Fuel
FAA	Federal Aviation Administration
FAP	Forward Attendant Panel
F/C	Flight Crew
F/O	First Officer
FO	First Officer
FAC	Flight Augmentation Computer
FADEC	Full Authority Digital Engine Control System
FAF	Final Approach Fix
FANS	Future Air Navigation System
FAP	Flight Attendant Panel
FAR	Federal Aviation Regulations
FAV	Fan Air Valve
FCDC	Flight Control Data Concentrator
FCMS	Fuel Control and Monitoring System

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Abbreviation	Term
FCOM	Flight Crew Operating Manual
FCTM	Flight Crew Techniques Manual
FCU	Flight Control Unit
FD	Flight Director
FDGJ	Fan Drive Gear System
FDIMU	Flight Data Interface and Management Unit
FDIU	Flight Data Interface Unit
FDU	Fire Detection Unit
FEP	Final End Point
FF	Fuel Flow
FG	Flight Guidance
FGC	Flight Guidance Computer
F-G/S	FLS Glide Slope
FIDS	Fault Isolation and Detection System
FL	Flight Level
FLEX	Flexible
FLHV	Fuel Lower Heating Value
F-LOC	FLS Localizer
FLP	Flap
FLS	FMS Landing System
FLSCU	Fuel Level Sensing Control Unit
FLT	Flight
F/CTL	Flight Control
FLT CTL	Flight Control
FLXTO	Flexible Takeoff
FM	Flight Management
FMA	Flight Mode Annunciator
FMGC	Flight Management and Guidance Computer
FMGS	Flight Management and Guidance System
FMS	Flight Management System
FMV	Fuel Metering Valve
FNL	Final
FOB	Fuel On Board
FOHE	Fuel Oil Heat Exchanger
FOM	Figure Of Merit
FPA	Flight Path Angle
F-PLN	Flight Plan
FPD	Flight Path Director
FPPU	Feedback Position Pick-off Unit
FPV	Flight Path Vector

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Abbreviation	Term
FQ	Fuel Quantity
FQI	Fuel Quantity Indication
FQIC	Fuel Quantity Indication Computer
FQU	Fuel Quantity Unit
FREQ	Frequency
FRT	Front
FRV	Fuel Return Valve
FTIS	Fuel Tank Inerting System
FU	Fuel Used
FWC	Flight Warning Computer
FWD	Forward
FWS	Flight Warning System

G

Abbreviation	Term
G/S	Glideslope
GA	Go-Around
GAPCU	Ground and Auxiliary Power Control Unit
GBAS	Ground Based Augmentation System
GCU	Generator Control Unit
GDU	Group of Documentary Unit
GEN	Generator
GES	Ground Earth Station
GLC	Generator Line Contactor
GLS	GBAS Landing System
GLS	GNSS Landing System
GMT	Greenwich Mean Time
GND	Ground
GND TEMP	Ground Temperature
GNSS	Global Navigation Satellite System
GPCU	Ground Power Control Unit
GPIRS	Global Positioning and Inertial Reference System
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
GRND	Ground
GRP	Geographic Reference Point
GRVTY	Gravity
GS	Ground Speed
GSM	Global System for Mobile Communication
GW	Gross Weight

H

Abbreviation	Term
HC	Harness Connector
HCU	Hydraulic Control Unit
HDG	Heading
HDG/S	Heading Selected
HDL	Handle
HF	High Frequency
HI	High
HLD	Hold
HM	Holding Pattern with a Manual Termination
HMU	Hydrau-Mechanical Unit
HMS	Heat Management System
HP	High Pressure
HPA	Hectopascal
HPC	High Pressure Compressor
HPFD	Harmonized Primary Flight Display
HPSOV	High Pressure Shut-off Valve
HPT	High Pressure Turbine
HPV	High Pressure Valve
HUD	Head Up Display
HUDC	Head Up Display Computer
HYD	Hydraulic

I

Abbreviation	Term
I/O	Inputs/Outputs
I/P	Input or Intercept Profile
IAF	Initial Approach Fix
IAS	Indicated Airspeed
IATA	International Air Transport Association
ICAO	International Air Transport Organization
IDENT	Identification
IDG	Integrated Drive Generator
IFE	In Flight Entertainment
IFPC	Integrated Fuel Pump and Control
IFR	Instrument Flight Rules
IGGS	Inert Gas Generation System
IGN	Ignition
INHIB	Inhibited
ILS	Instrument Landing System

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Abbreviation	Term
IM	Inner Marker
IMC	Instrument Meteorological Conditions
IMM	Immediate
INB	Inbound
INBO	Inboard
INCREM	Increment
IND	Indicator
INIT	Initialization
INOP	Inoperative
INR	Inner
INST	Instrument
INTCPT	Intercept
INV	Inverter
IP	Intermediate Pressure
IPC	Intermediate Pressure Check valve
IPPU	Instrumentation Position Pick-off Unit
IR	Inertial Reference
IRS	Inertial Reference System
ISA	International Standard Atmosphere
ISDU	Initial System Display Unit
ISIS	Integrated Standby Instrument System
ISOL	Isolation
ISPSS	In-Seat Power Supply System
ISPSU	In-Seat Power Supply Unit
ITP	In-Trail Procedure

J

Abbreviation	Term
JAA	Joint Aviation Authorities
JAR	Joint Aviation Requirements

K

Abbreviation	Term

L

Abbreviation	Term
L/G	Landing Gear
LAF	Load Alleviation Function
LAT	Lateral
LAT	Latitude

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Abbreviation	Term
LAT REV	Lateral Revision
LAV	Lavatory
LCD	Liquid Crystal Display
LCN	Load Classification Number
LDA	Landing Distance Available
	Localizer Directional Aid
L DEV	Lateral Deviation
LDG	Landing
LDS	Laptop Docking Station
LED	Light Emitting Diode
LEDU	List of Effective Documentary Units
LEOEB	List of Effective Operations Engineering Bulletins
LESS	List of Effective Section/Subsections
LF	Low Frequency
LGCIU	Landing Gear Control Interface Unit
LGPIU	Landing Gear Position Indicator Unit
LH	Left-Hand
LIM	Limitation
LIS	Localizer Inertial Smoothing
LK	Lock
LL	Latitude/Longitude
LLS	Left-Line Select key
LO	Low
LOC	Localizer
LONG	Longitude
LP	Low Pressure
LPC	Low Pressure Compressor
LPT	Low Pressure Turbine
LRRA	Low Range Radio Altimeter
LRU	Line Replaceable Unit
LS	Loudspeaker
LSK	Line Select Key
LT	Light
LTS	Load and Trim Sheet
LVL	Level
LVL/CH	Level Change
LVR	Lever
LW	Landing Weight

M

Abbreviation	Term
MABH	Minimum Approach Break-off Height
MAC	Mean Aerodynamic Chord
MAG	Magnetic
MAG DEC	Magnetic Declination
MAG VAR	Magnetic Variation
MAINT	Maintenance
MAN	Manual
MAP	Missed Approach Point
MAX	Maximum
MAX CLB	Maximum Climb
MAX DES	Maximum Descent
MAX END	Maximum Endurance
MC	Master Caution
MCDU	Multipurpose Control and Display Unit
MCT	Maximum Continuous Thrust
MCU	Modular Concept Unit
MDA	Minimum Descent Altitude
MDDU	Multifunction Disk Drive Unit
MDH	Minimum Descent Height
MECH	Mechanic
MEA	Minimum En Route Altitude
MED	Medium
MEL	Minimum Equipment List
MFA	Memorized Fault Annunciator
MGB	Main Gearbox
MIN	Minimum
MKR	Marker
MLA	Maneuver Load Alleviation
MLG	Main Landing Gear
MLS	Microwave Landing System
MLW	Maximum Landing Weight
MM	Middle Marker
MMEL	Master Minimum Equipment List
MMO	Maximum Operating Mach
MMR	Multi Mode Receiver
MN	Mach number
MORA	Minimum Off Route Altitude
MP	Modification Proposal
MRIU	Maintenance and Recording Interface Unit

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Abbreviation	Term
MRP	Map Reference Point
MSA	Minimum Safe Altitude
MSG	Message
MSL	Mean Sea Level
MSU	Mode Selector Unit
MTBF	Mean Time Between Failure
MTC	Modulated Turbine Cooling
MTOW	Maximum Takeoff Weight
MZFW	Maximum Zero Fuel Weight

N

Abbreviation	Term
N/A	Not Applicable
NA	Not Applicable
N1	Low Pressure Rotor Speed (in %)
N2	High Pressure Rotor Speed (in %)
NACA	National Advisory Committee for Aeronautics
NAI	Engine Nacelle Anti-Ice
NAV	Navigation
NAVAID	Navigation Aid
NCD	Non Computed Data
ND	Navigation Display
NDB	Non Directional Beacon
NLG	Nose Landing Gear
NORM	Normal
NPA	Non Precision Approach
NW	Nosewheel
NWS	Nosewheel Steering

O

Abbreviation	Term
O/P	Output
OANS	On-board Airport Navigation System
OAT	Outside Air Temperature
OBRM	On Board Replaceable Module
OEB	Operations Engineering Bulletin
OFF/R	Off Reset
OFST	Offset
OIS	Onboard Information System
OIT	Onboard Information Terminal

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Abbreviation	Term
OLB	OPS Library Browser
OM	Outer Marker
OP	Open
OPP	Opposite
OPS	Operations
OPT	Optimum
OUTB	Outbound
OUTR	Outer
OVBD	Overboard
OVHD	Overhead
OVHT	Overheat
OVRD	Override
OVSPD	Overspeed
OXY	Oxygen

P

Abbreviation	Term
P/N	Part Number
PN	Part Number
PA	Passenger Address
P-ALT	Profile Altitude
PAX	Passenger
PAR	Precision Approach Radar
PBCS	Performance-Based Communication and Surveillance
PBE	Portable Breathing Equipment
PBN	Performance Based Navigation
P-CLB	Profile Climb
PCU	Power Control Unit
P-DES	Profile Descent
PDB	Performance Data Base
PDU	Pilot Display Unit
PED	Portable Electronic Device
PERF	Performance
PES	Passenger Entertainment System
PF	Pilot Flying
PFC	Porous Friction Course
PFD	Primary Flight Display
PHC	Probes Heat Computer
P-MACH	Profile Mach
PM	Pilot Monitoring

Continued on the following page

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Abbreviation	Term
PNL	Panel
POB	Pressure Off Brake
POS	Position
PPOS	Present Position
PPU	Position Pick-off Unit
PR	Pressure
PRED	Prediction
PRESS	Pressure, Pressurization
PROC	Procedure
PROC T	Procedure Turn
PROF	Profile
PROG	Progress
PROTEC	Protection
P-SPEED	Profile Speed
PSL	Product Structure Level
PSU	Passenger Service Unit
PT	Point
PTR	Printer
PTT	Push To Talk
PTU	Power Transfer Unit (Hydraulic)
PVI	Paravisual Indicator
PWR	Power
PWS	Predictive Windshear System

Q

Abbreviation	Term
QAR	Quick Access Recorder
QFE	Field Elevation Atmosphere Pressure
QFU	Runway Heading
QNE	Sea Level Standard Atmosphere Pressure (1013 hPa)
QNH	Sea Level Atmosphere Pressure
QRH	Quick Reference Handbook
QT	Quart (US)
QTY	Quantity

R

Abbreviation	Term
R/I	Radio/Inertial
RA	Radio Altimeter, Resolution Advisory
RAAS	Runway Awareness and Advisory System

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Abbreviation	Term
RACC	Rotor Active Clearance Control
RAD	Radio
RAIM	Receiver Autonomous Integrity Monitoring
RAT	Ram Air Turbine
RATC	Remote ATC Box
RCAM	Runway Condition Assessment Matrix
RCDR	Recorder
RCL	Recall
RCP	Required Communication Performance
RCVR	Receiver
REAC	Reactive
REC	Recommended
RED	Reduction
REG	Regulation
REL	Release
REV	Reverse
RH	Right-Hand
RLD	Required Landing Distance
RLSK	Right Line Select Key
RMI	Radio Magnetic Indicator
RMP	Radio Management Panel
RNAV	Area Navigation
RNG	Range
RNP	Required Navigation Performance
ROP	Runway Overrun Protection
ROPS	Runway Overrun Prevention System
ROW	Runway Overrun Warning
RPCU	Residual Pressure Control Unit
RPM	Revolution Per Minute
RPTG	Repeating
RQRD	Required
RSP	Required Surveillance Performance
RSV	Reserves
RSVR	Reservoir
RTA	Required Time of Arrival
RTE	Route
RTL	Rudder Travel Limit
RTO	Rejected Takeoff
RTOW	Regulatory Takeoff Weight
RUD	Rudder

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Abbreviation	Term
RVSM	Reduced Vertical Separation Minimum
RWY	Runway

S

Abbreviation	Term
S	South
S/C	Step Climb
S/D	Step Descent
S/D	Shut Down
S/F	Slats/Flaps
S/N	Serial Number
SN	Serial Number
SAAAR	Special Aircrew and Aircraft Authorization Required
SAC	Single Annular Chamber
SAT	Static Air Temperature
SATCOM	Satellite Communication
SBAS	Satellite Based Augmentation System
SC	Single Chime
SCP	Software Control Panel
SD	System Display
SDAC	System Data Acquisition Concentrator
SDCU	Smoke Detection Control Unit
SDF	Smoke Detection Function, Simplified Directional Facility
SEC	Spoiler Elevator Computer
SEL	Selector
SFCC	Slat/Flap Control Computer
SFE	Seller-Furnished Equipment
SID	Standard Instrument Departure
SIM	Simulation
SLT	Slat
SOP	Standard Operating Procedure
SPD	Speed
SPD LIM	Speed Limit
SPLR	Spoiler
SRS	Speed Reference System
STAR	Standard Terminal Arrival Route
STAT	Static
STAT INV	Static Inverter
STBY	Standby
STD	Standard

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Abbreviation	Term
STEER	Steering
STRG	Steering
STS	Status
SWTG	Switching
SYNC	Synchronize
SYS	System

T

Abbreviation	Term
T.O	Takeoff
T/O	Takeoff
TO	Takeoff
T/C	Top of Climb
T/D	Top of Descent
TA	Traffic Advisory
TAC	Taxiing Aid Camera
TACAN	Tactical Air Navigation
TACT	Tactical
TAS	True Air Speed
TAT	Total Air Temperature
TAU	Time to intercept
TAWS	Terrain Awareness and Warning System
TBC	To Be Confirmed
TBD	To Be Determined
T2CAS	Traffic and Terrain Collision Avoidance System
T3CAS	Traffic and Terrain Collision Avoidance System
TCA	Turbine Cooling Air
TCAS	Traffic Alert and Collision Avoidance System
TCC	Turbine Case Cooling
TCM	Thrust Control Malfunction
TDU	Temporary Documentary Unit
TEMP	Temperature
TFTS	Terrestrial Flight Telephon System
TGT	Target
THR	Thrust
THS	Trimmable Horizontal Stabilizer
THSA	Trimmable Horizontal Stabilizer Actuator
TK	Tank
TK	Track angle
TKE	Track Angle Error

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Abbreviation	Term
TLA	Throttle Lever Angle
TLU	Travel Limitation Unit
TMR	Timer
TOC	Table of Contents
TOD	Takeoff Distance
TOGA	Takeoff - Go-Around
TOGW	Takeoff Gross Weight
TOR	Takeoff Run
TOS	Takeoff Surveillance
TOW	Takeoff Weight
T-P	Turn Point
TPIS	Tire Pressure Indicating System
TR	Transformer Rectifier
T-R	Transmitter-Receiver
TRANS	Transition
TRK	Track
TROPO	Tropopause
TRU	Transformer Rectifier Unit
TRV	Travel
TSM	Trouble Shooting Manual
TTG	Time to Go
TVMC	Minimum Control Speed Temperature
TWY	Taxiway

U

Abbreviation	Term
UFD	Unit Fault Data
ULB	Underwater Locator Beacon
UNLK	Unlock
UP	Up, Upper
USB	Universal Serial Bus
UTC	Universal Coordinated Time

V

Abbreviation	Term
V/S	Vertical Speed
V1	Decision Speed
V2	Takeoff Safety Speed
VAPP	Approach Speed
VBV	Variable Bypass Valve

Continued on the following page

Continued from the previous page

Abbreviation	Term
VC	Calibrated airspeed
VDEV	Vertical Deviation
VEL	Velocity
VERT	Vertical
VERT REV	Vertical Revisor
VFE	Maximum Speed for each Flap configuration
VFEN	VFE Next
VFTO	Final Takeoff Speed
VHF	Very High Frequency
VHV	Very High Voltage
VIB	Vibration
VIP	Vertical Intersection Point
VLE	Maximum Landing Gear Extended Speed
VLS	Lowest Selectable Speed
VLV	Valve
VM	Maneuvering Speed
VMAX	Maximum Allowable Speed
VMC	Visual Meteorological Conditions
VMCA	Minimum Control Speed in the Air
VMCG	Minimum Control Speed on Ground
VMCL	Minimum Control Speed at Landing
VMIN	Minimum Operating Speed
VMO	Maximum Operating Speed
VMU	Minimum Unstick Speed
VOR	VHF Omnidirectional Range
VOR-D	VOR-DME
VR	Rotation Speed
VREF	Landing Reference Speed
VSC	Vacuum System Controller
VSI	Vertical Speed Indicator
VSV	Variable Stator Vane
VU	Visual Unit

W

Abbreviation	Term
W/S	Wind Shear
WAI	Wing Anti-Ice
WARN	Warning
WBm	Weight and Balance Manual
WBS	Weight and Balance System

Continued on the following page

Continued from the previous page

Abbreviation	Term
WBS	Weight and Balance System
WD	Warning Display
WGD	Windshield Guidance Display
WHC	Window Heat Computer
WNDW	Window
WPT	Waypoint
WSHLD	Windshield
WT	Weight
WTB	Wing Tip Brake
WXR	Weather Radar

X

Abbreviation	Term
XBLD	Crossbleed
XCVR	Transceiver
XFR	Transfer
XMTR	Transmitter
XPDR	Transponder
XTK	Crosstrack Error

Y

Abbreviation	Term

Z

Abbreviation	Term
ZFCG	Zero Fuel Center of Gravity
ZFW	Zero Fuel Weight
ZFWCG	Zero Fuel Weight Center of Gravity field
Zp	Pressure Altitude

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AIRCRAFT SYSTEMS

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DSC-20 Aircraft General

DSC-21 Air Conditioning / Pressurization / Ventilation

DSC-22_10 Auto Flight - General

DSC-22_20 Auto Flight - Flight Management

DSC-22_30 Auto Flight - Flight Guidance

DSC-22_40 Auto Flight - Flight Augmentation

DSC-22_45 Auto Flight - AOC Functions

DSC-22_46 Auto Flight - Print Interface

DSC-23 Communications

DSC-24 Electrical

DSC-25 Equipment

DSC-26 Fire Protection

DSC-27 Flight Controls

DSC-28 Fuel

DSC-29 Hydraulic

DSC-30 Ice and Rain Protection

DSC-31 Indicating/Recording Systems

DSC-32 Landing Gear

DSC-33 Lights

DSC-34-NAV Navigation

Continued on the following page

Continued from the previous page

DSC-34-SURV Surveillance

DSC-35 Oxygen

DSC-36 Pneumatic

DSC-38 Water / Waste

DSC-45 Maintenance System

DSC-46 Information Systems

DSC-49 APU

DSC-52 Doors

DSC-56 Cockpit Windows

DSC-70 Engines

M	Localization	DU Title	DU identification	DU date

No Temporary Documentary Unit

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AIRCRAFT SYSTEMS

AIRCRAFT GENERAL

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DSC-20-10 Overview

General....A
Engines....B
Cockpit....C
Cabin....D
Cargo....E

DSC-20-20 Description

General Arrangement....A
Principal Dimensions....B
Unpressurized Compartments....C
Antenna Locations....D
Ground Service Connections and Panels....E

DSC-20-30 Ground Handling

Taxiing....A
180 degrees Turn on Runway....B

DSC-20-40 Ground Clearance Diagram

Ground Clearance Diagram....A

DSC-20-50 Landing Geometry

ILS/GLS ◁✻ /MLS ◁✻ Final Approach and Landing Geometry....A
Minimum Visual Ground Segments (Flare Phase)....B

DSC-20-60 Visual Ground Geometry

Visual Ground Geometry....A

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Localization Title	Toc Index	ID	Reason
DSC-20-10 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-20-10 General	A	2	Effectivity update: The information now also applies to MSN 09063.
DSC-20-10 Cockpit	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-20-20 Principal Dimensions	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-20-20 Principal Dimensions	B	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-20-20 Principal Dimensions	B	3	Effectivity update: The information now also applies to MSN 09063.
DSC-20-20 Ground Service Connections and Panels	E	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-20-20 Ground Service Connections and Panels	E	5	Effectivity update: The information now also applies to MSN 09063.
DSC-20-30 Taxiing	A	1	Effectivity update: The information now also applies to MSN 09063.
DSC-20-30 Taxiing	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-20-30 Taxiing	A	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-20-30 180 degrees Turn on Runway	B	4	Effectivity update: The information now also applies to MSN 09063.
DSC-20-30 180 degrees Turn on Runway	B	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-20-40 Ground Clearance Diagram	A	1	Effectivity update: The information now also applies to MSN 09063.
DSC-20-40 Ground Clearance Diagram	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-20-40 Ground Clearance Diagram	A	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-20-50 ILS/GLS ◁ /MLS ◁ Final Approach and Landing Geometry	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-20-50	A	2	Effectivity update: The information now also applies to MSN 09063.

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Continued from the previous page

Localization Title	Toc Index	ID	Reason
ILS/GLS ⋘ /MLS ⋘ Final Approach and Landing Geometry			
DSC-20-50 Minimum Visual Ground Segments (Flare Phase)	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-20-50 Minimum Visual Ground Segments (Flare Phase)	B	4	Effectivity update: The information now also applies to MSN 09063.

GENERAL

Ident.: DSC-20-10-00000284.0001001 / 22 MAR 16

1 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The A320 is a subsonic, medium-range, civil transport aircraft.

GENERAL

Ident.: DSC-20-10-00000284.0002001 / 13 DEC 10

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The A321 is a subsonic, medium-range, civil transport aircraft.

ENGINES

Ident.: DSC-20-10-00000285.0001001 / 13 DEC 10

Applicable to: ALL

The aircraft has two high bypass turbofan engines mounted under the wings.

COCKPIT

Ident.: DSC-20-10-00000286.0001001 / 13 DEC 10

3 **Applicable to: MSN 02609-02626, 04294, 04433, 04491, 04510, 04532, 04645, 05120, 05218, 06720-09063**

The cockpit is designed for a two-member crew. It also has a place for 1 observer.

COCKPIT

Ident.: DSC-20-10-00000286.0002001 / 13 DEC 10

Applicable to: MSN 01767-02584, 02649-04216, 04312-04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The cockpit is designed for a two-member crew. It also has a place for 2 observers.

CABIN

Ident.: DSC-20-10-00000287.0007001 / 05 FEB 15

Applicable to: ALL

The passenger seating layout may vary, depending on operating requirements.

CARGO

Ident.: DSC-20-10-00000289.0001001 / 13 DEC 10

Applicable to: ALL

Two cargo compartments are under the cabin floor.

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GENERAL ARRANGEMENT

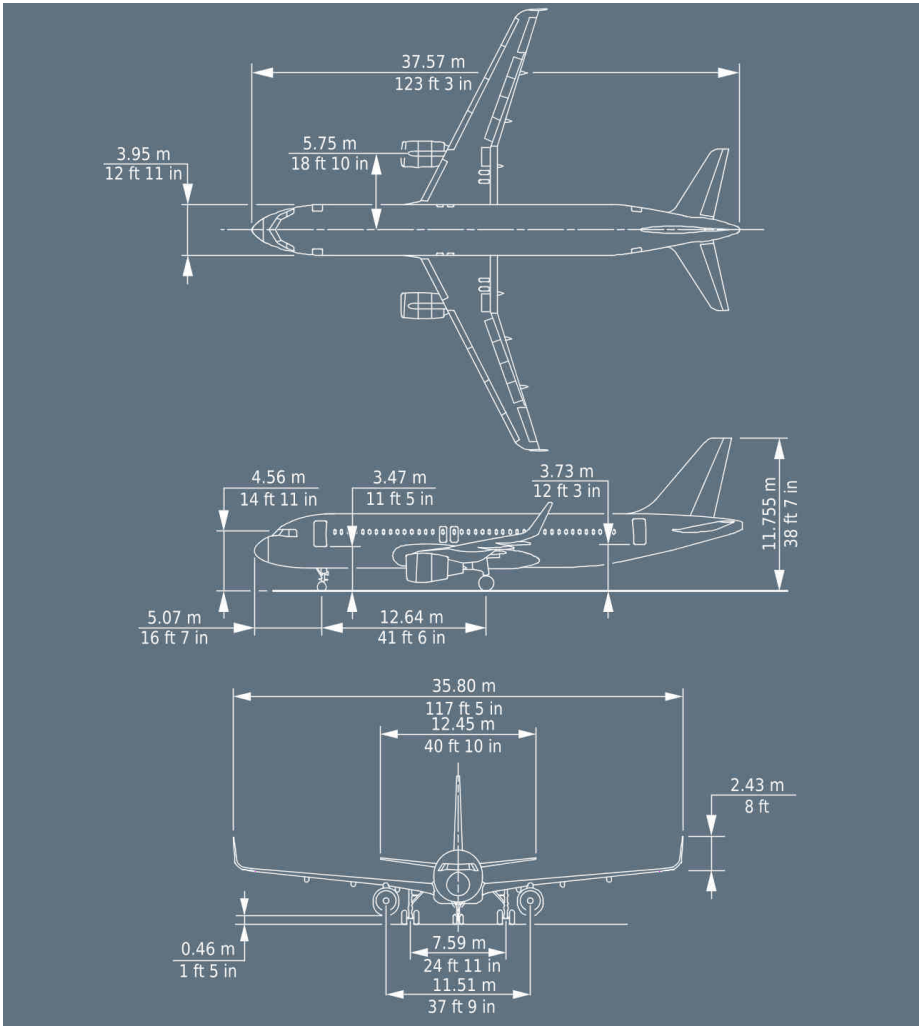
Ident.: DSC-20-20-00000290.0001001 / 21 MAR 16
Applicable to: ALL

This subchapter gives the principal aircraft dimensions, location of unpressurized areas, antennas, ground service connections, and ground maneuvering characteristics.

PRINCIPAL DIMENSIONS

Ident.: DSC-20-20-00000291.0024001 / 25 JUL 16

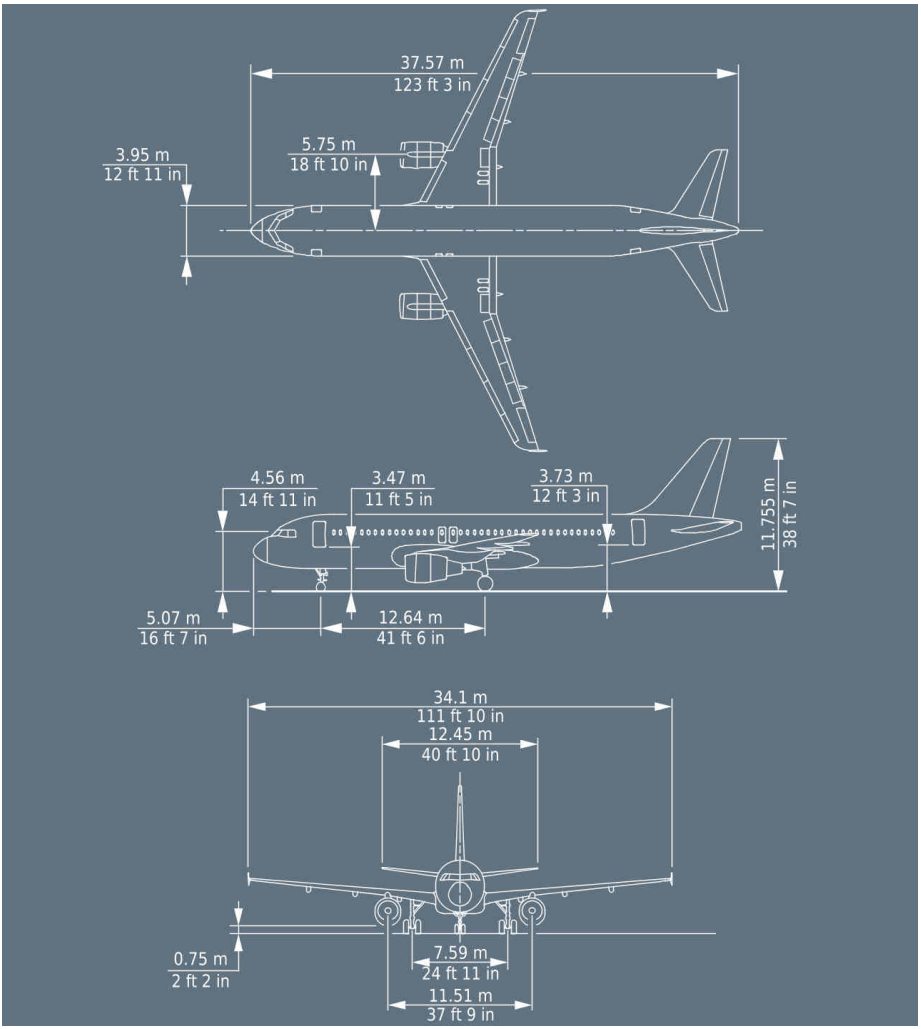
1 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



PRINCIPAL DIMENSIONS

Ident.: DSC-20-20-00000291.0014001 / 13 MAY 16

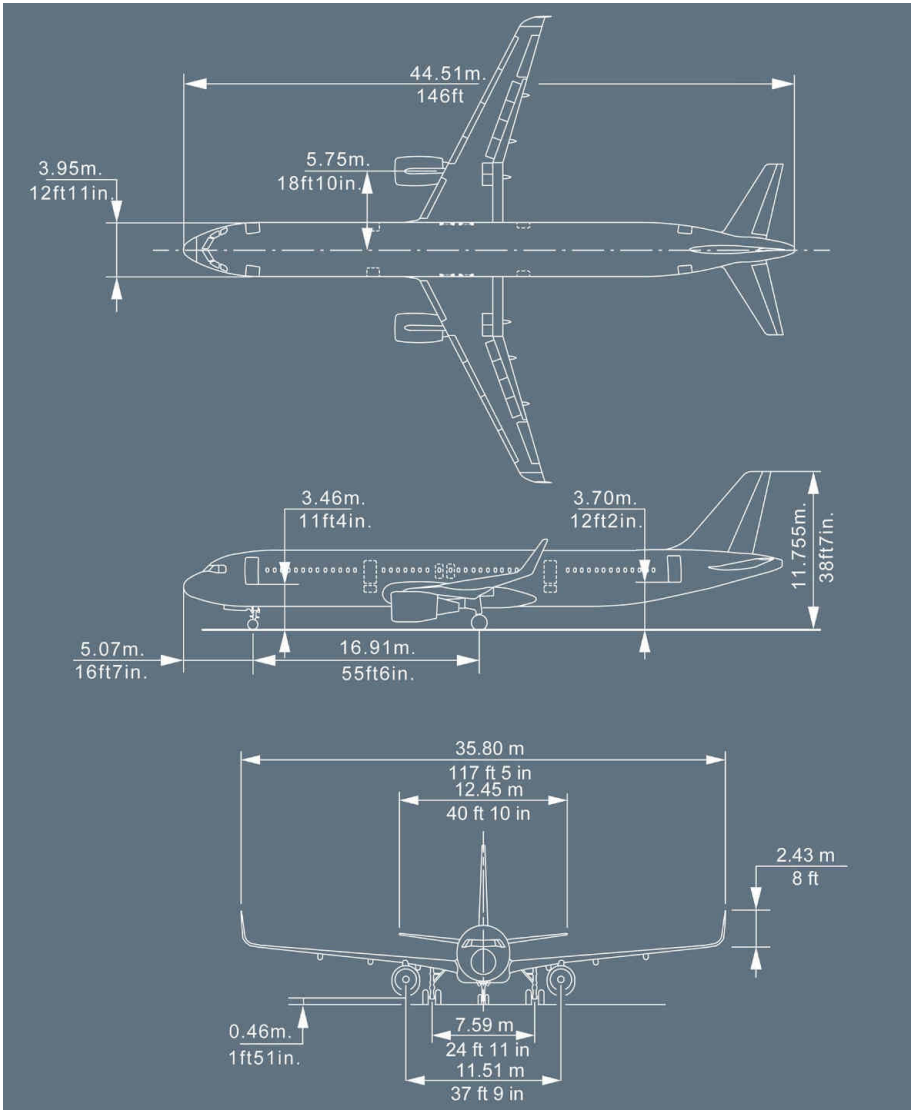
[2] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**



PRINCIPAL DIMENSIONS

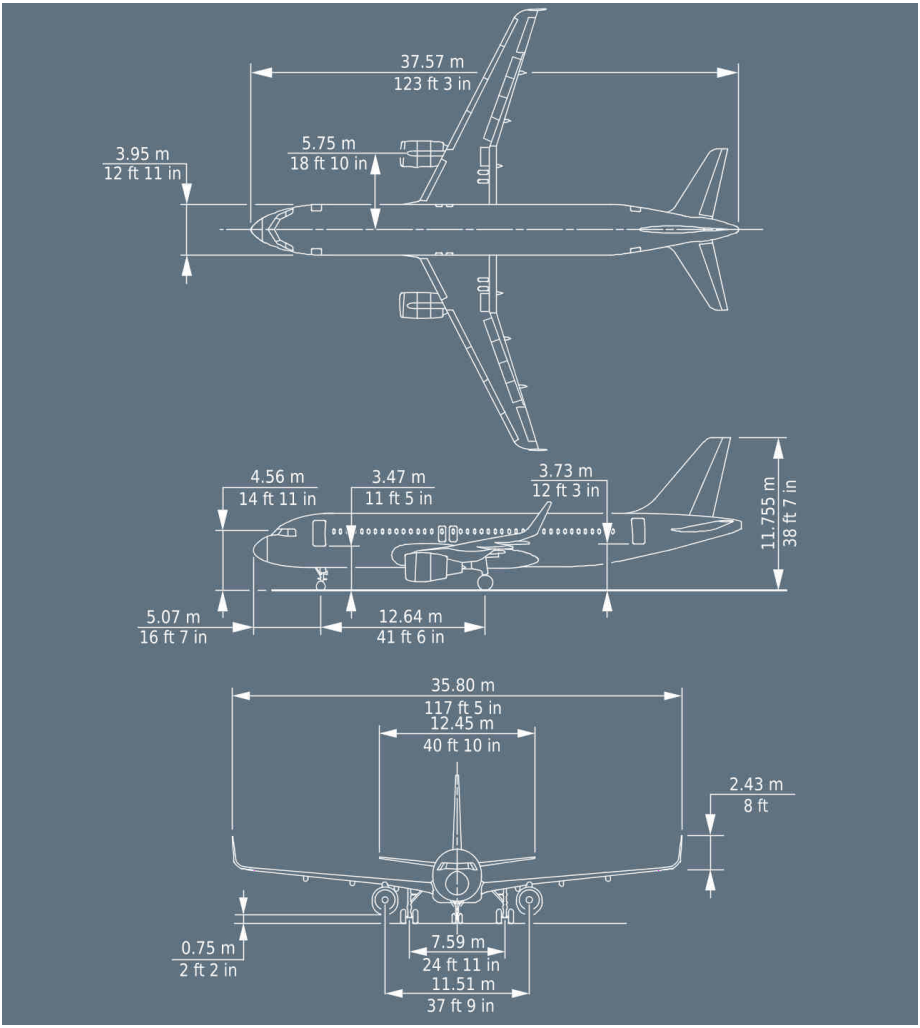
Ident.: DSC-20-20-00000291.0026001 / 06 APR 18

[3] Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063



PRINCIPAL DIMENSIONS

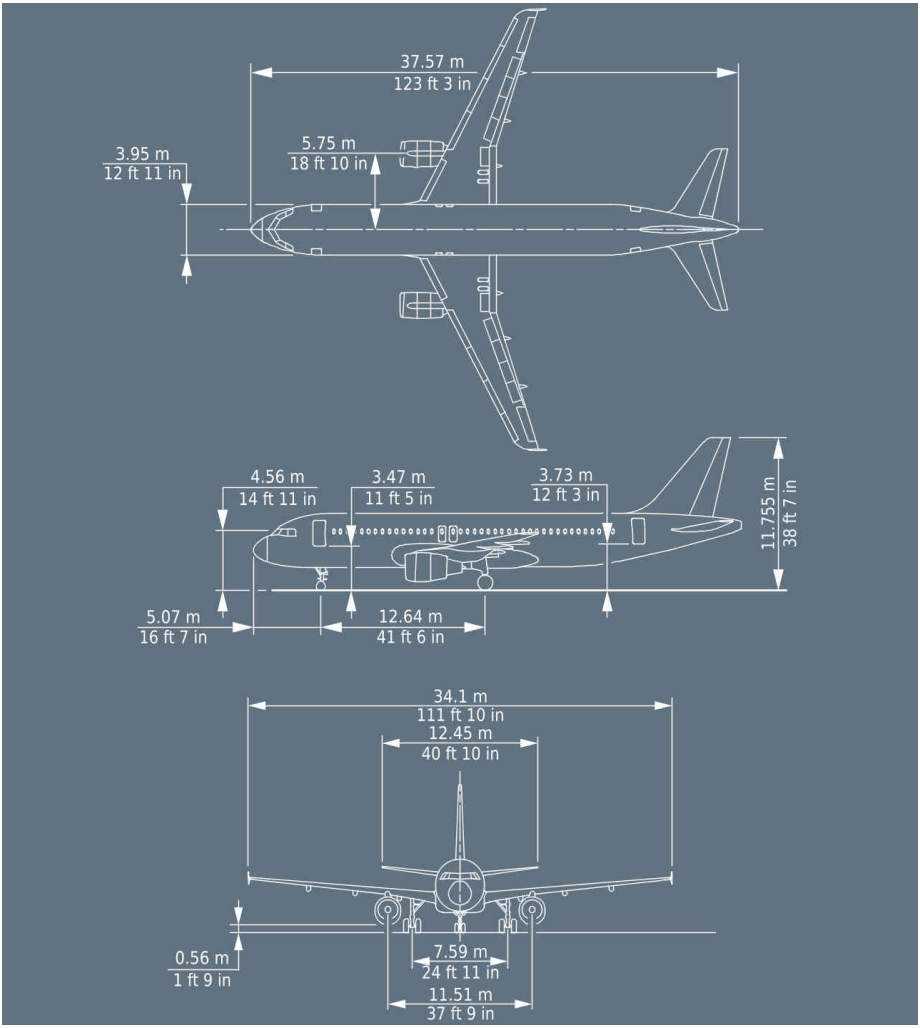
Ident.: DSC-20-20-00000291.0025001 / 13 MAY 16
Applicable to: MSN 05437-06336



PRINCIPAL DIMENSIONS

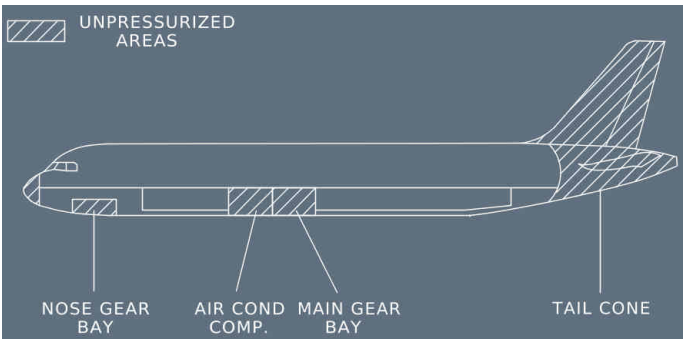
Ident.: DSC-20-20-00000291.0001001 / 22 MAY 12

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510



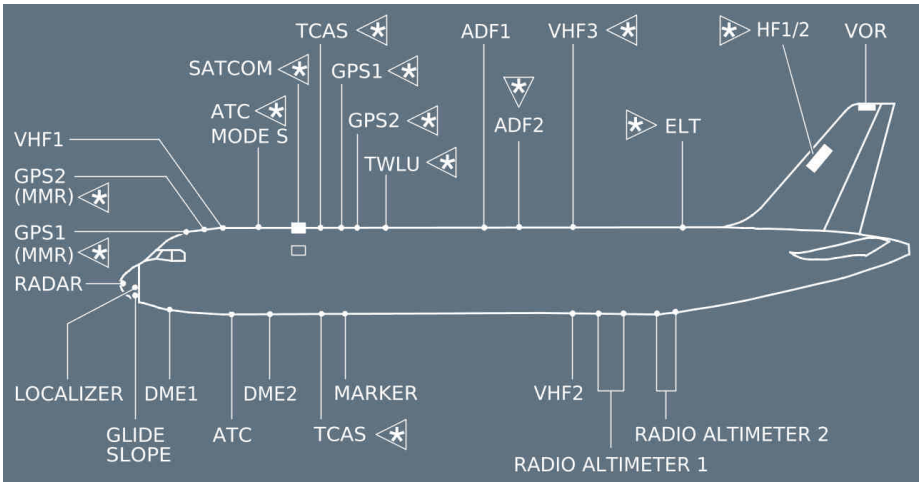
UNPRESSURIZED COMPARTMENTS

Ident.: DSC-20-20-00000292.0001001 / 21 MAR 16
Applicable to: ALL



ANTENNA LOCATIONS

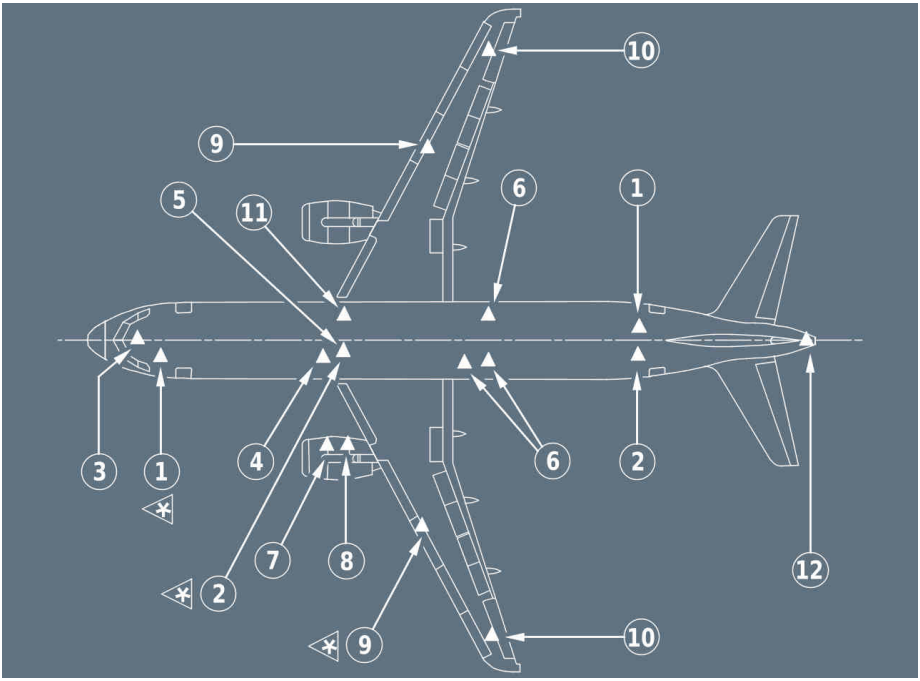
Ident.: DSC-20-20-00000293.0001001 / 28 JUL 14
Applicable to: ALL



GROUND SERVICE CONNECTIONS AND PANELS

Ident.: DSC-20-20-00000295.0001001 / 09 OCT 12

4 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



(1) Toilet servicing

(2) Water filling and/or draining

(3) Electrical ground power receptacle

(4) LP ground air supply connector

(5) HP ground air supply connector

(6) Hydraulic

(7) IDG oil filling

(8) Engine oil filling

(9) Refueling/defueling

(10) Gravity filling panels

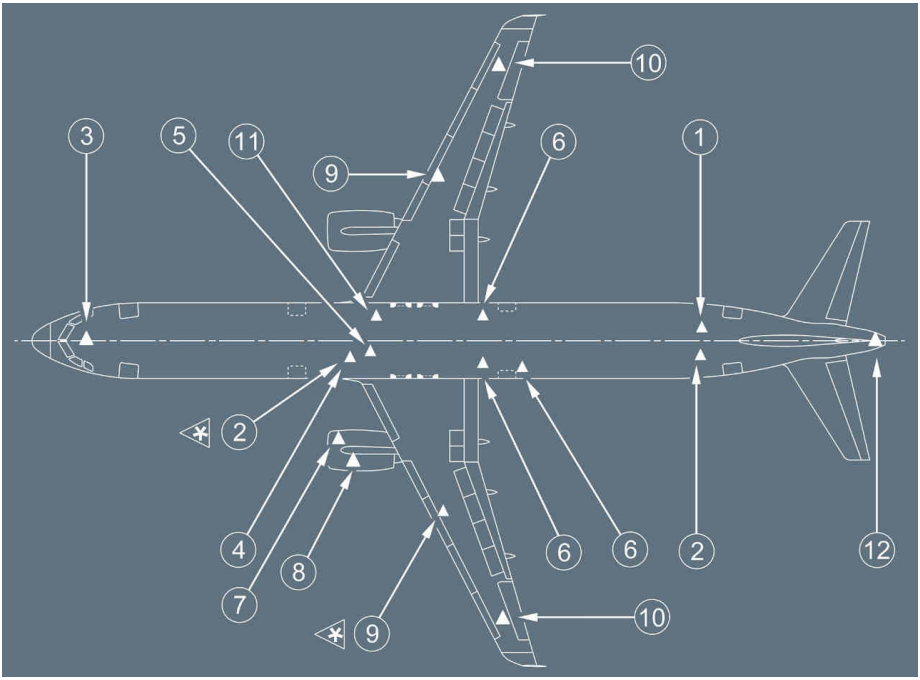
(11) Refueling/defueling panel

(12) APU oil filling

GROUND SERVICE CONNECTIONS AND PANELS

Ident.: DSC-20-20-00000295.0002001 / 06 APR 18

5 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



(1) Toilet servicing

(2) Water filling and/or draining

(3) Electrical ground power receptacle

(4) LP ground air supply connector

(5) HP ground air supply connector

(6) Hydraulic

(7) IDG oil filling

(8) Engine oil filling

(9) Refueling/defueling

(10) Gravity filling panels

(11) Refueling/defueling panel

(12) APU oil filling

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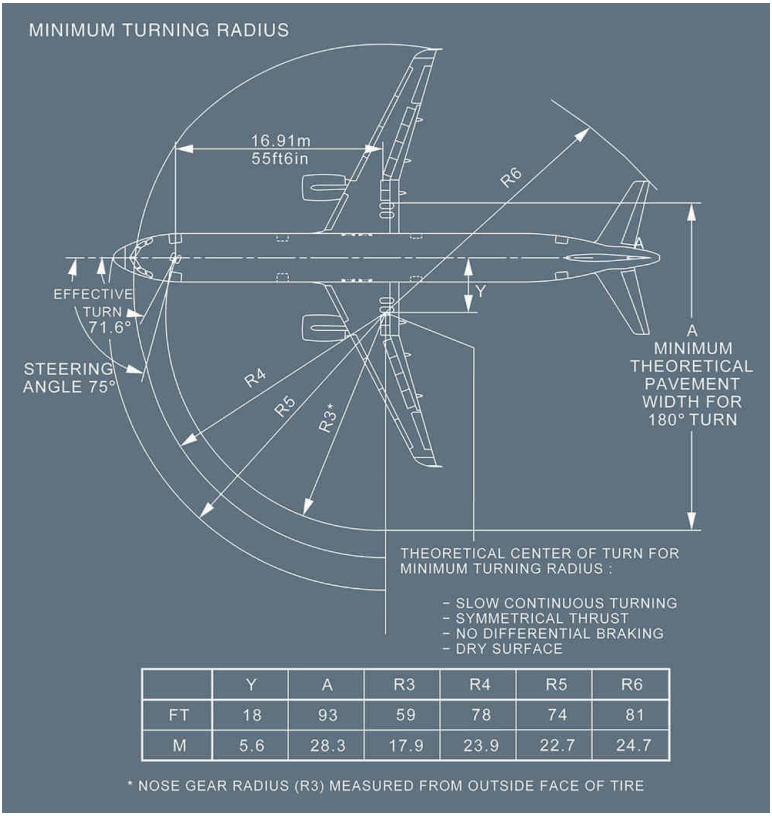
TAXIING

Ident.: DSC-20-30-00000294.0010001 / 06 APR 18

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



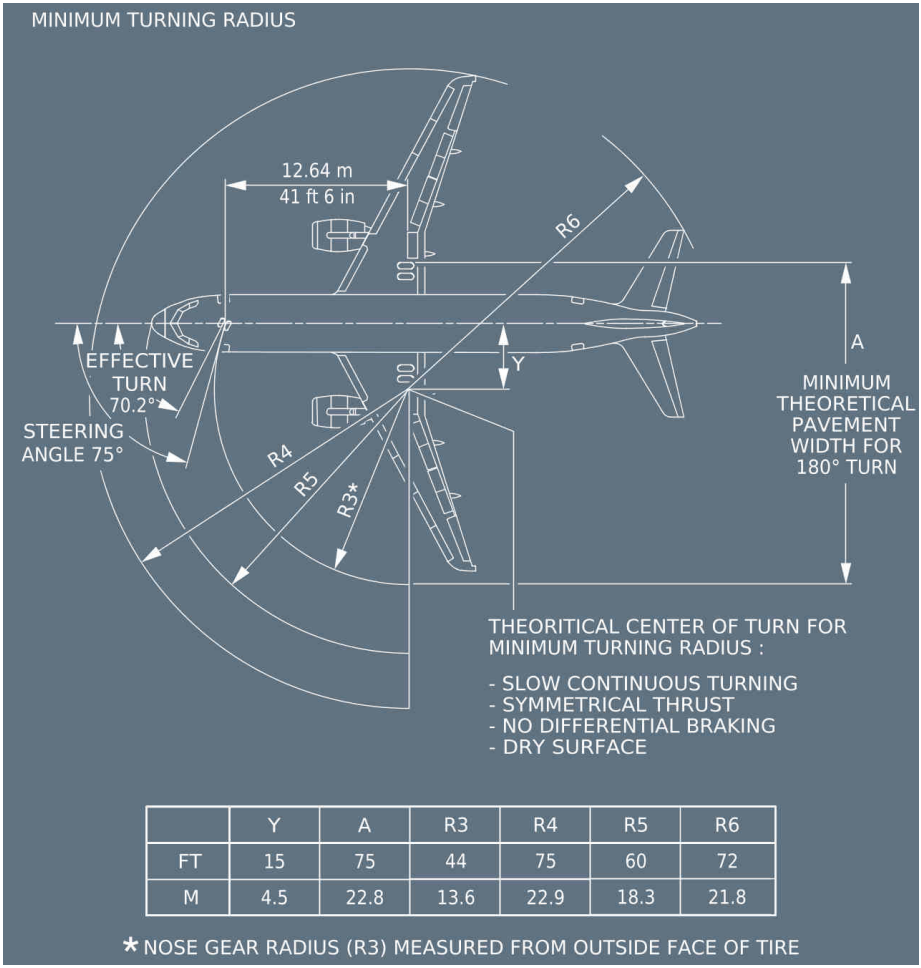
	Y	A	R3	R4	R5	R6
FT	18	93	59	78	74	81
M	5.6	28.3	17.9	23.9	22.7	24.7

* NOSE GEAR RADIUS (R3) MEASURED FROM OUTSIDE FACE OF TIRE

TAXIING

Ident.: DSC-20-30-00000294.0007001 / 01 JUN 17

[2] **Applicable to: MSN 05437-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



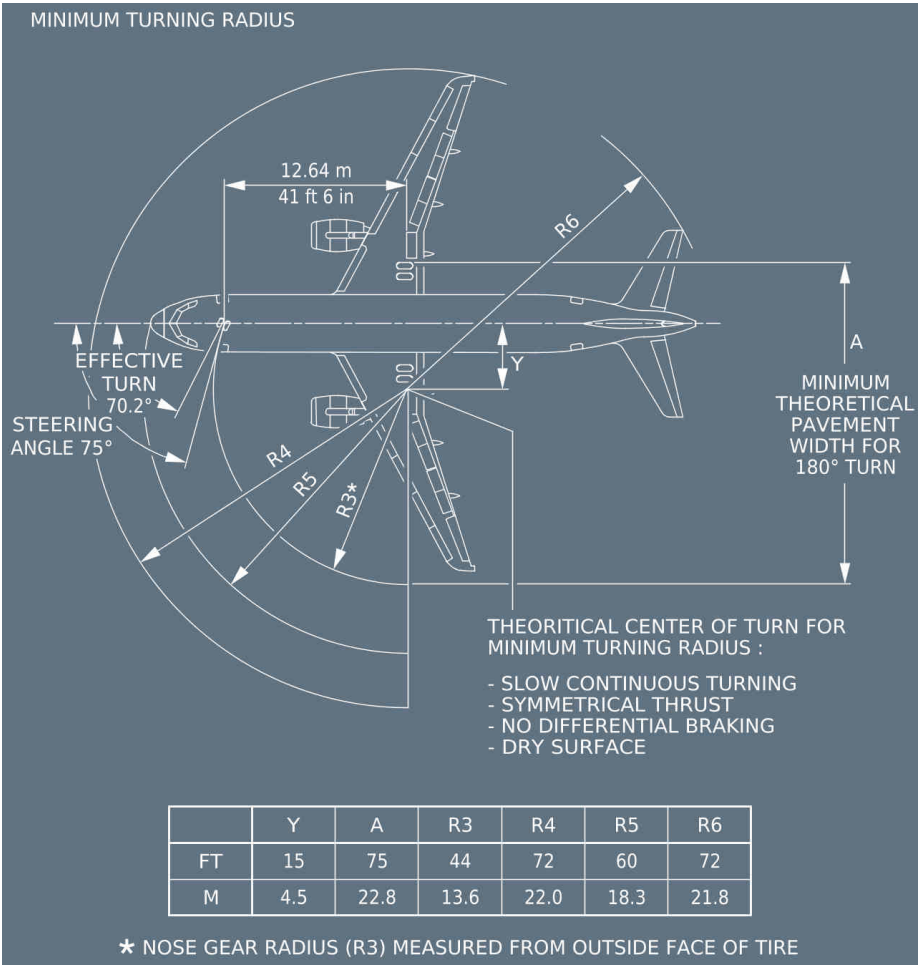
	Y	A	R3	R4	R5	R6
FT	15	75	44	75	60	72
M	4.5	22.8	13.6	22.9	18.3	21.8

* NOSE GEAR RADIUS (R3) MEASURED FROM OUTSIDE FACE OF TIRE

TAXIING

Ident.: DSC-20-30-00000294.0002001 / 01 JUN 17

[3] **Applicable to: MSN 01767-05411**



	Y	A	R3	R4	R5	R6
FT	15	75	44	72	60	72
M	4.5	22.8	13.6	22.0	18.3	21.8

* NOSE GEAR RADIUS (R3) MEASURED FROM OUTSIDE FACE OF TIRE

180 DEGREES TURN ON RUNWAY

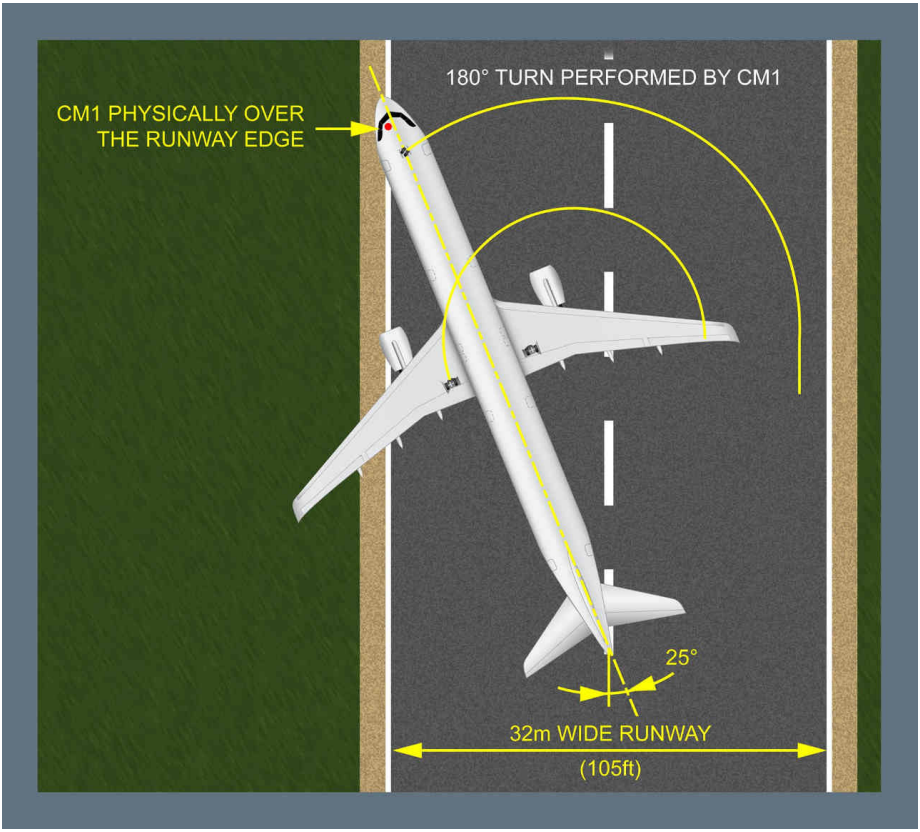
Ident.: DSC-20-30-00021674.0002001 / 06 APR 18

[4] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

With the recommended 180 ° turn technique, on dry runway, the approximate turn width is 30 m (99 ft) without margin.

Note: *The flight crew should consider additional margin when the runway is wet or contaminated.*

For more information about the 180 ° Turn Technique, *Refer to FCTM/PR-NP-SOP-100 180 degrees Turn on Runway*.



180 DEGREES TURN ON RUNWAY

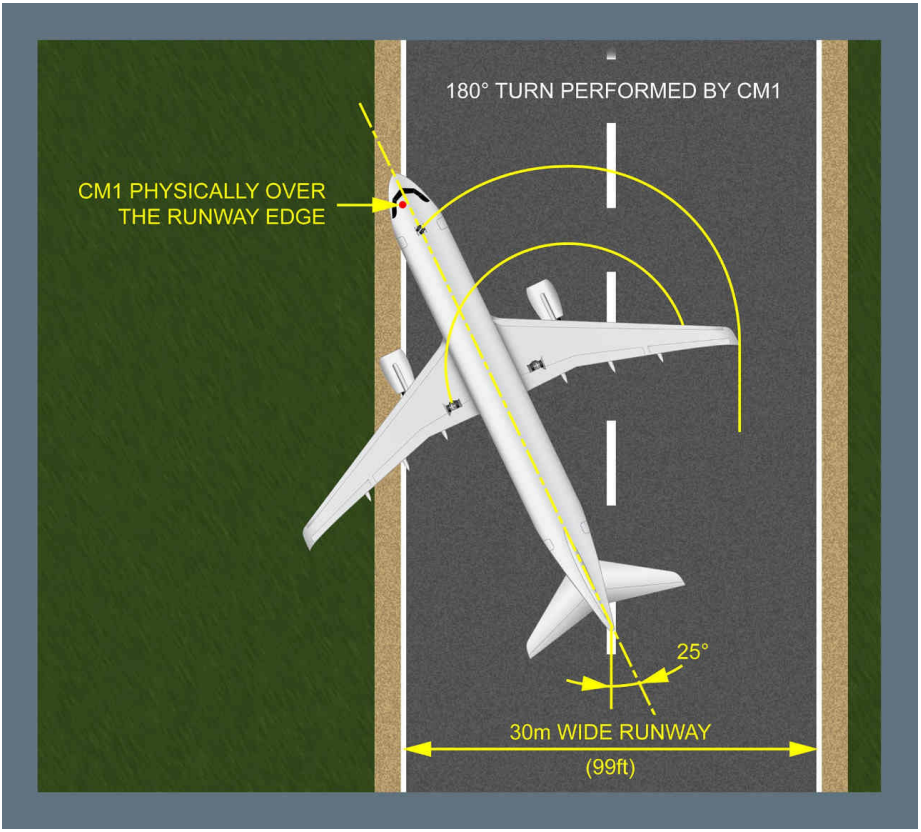
Ident.: DSC-20-30-00021674.0001001 / 06 JUN 17

[5] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

With the recommended 180 ° turn technique, on dry runway, the approximate turn width is 24 m (79 ft) without margin.

Note: *The flight crew should consider additional margin when the runway is wet or contaminated.*

For more information about the 180 ° Turn Technique, *Refer to FCTM/PR-NP-SOP-100 180 degrees Turn on Runway*.



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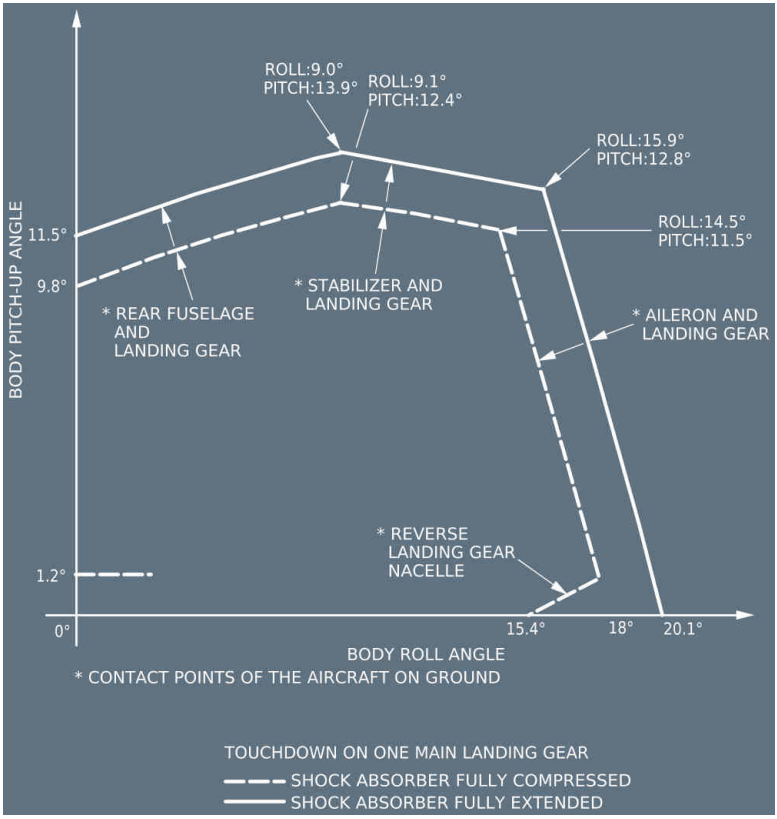
GROUND CLEARANCE DIAGRAM

Ident.: DSC-20-40-00018435.0010001 / 20 DEC 16

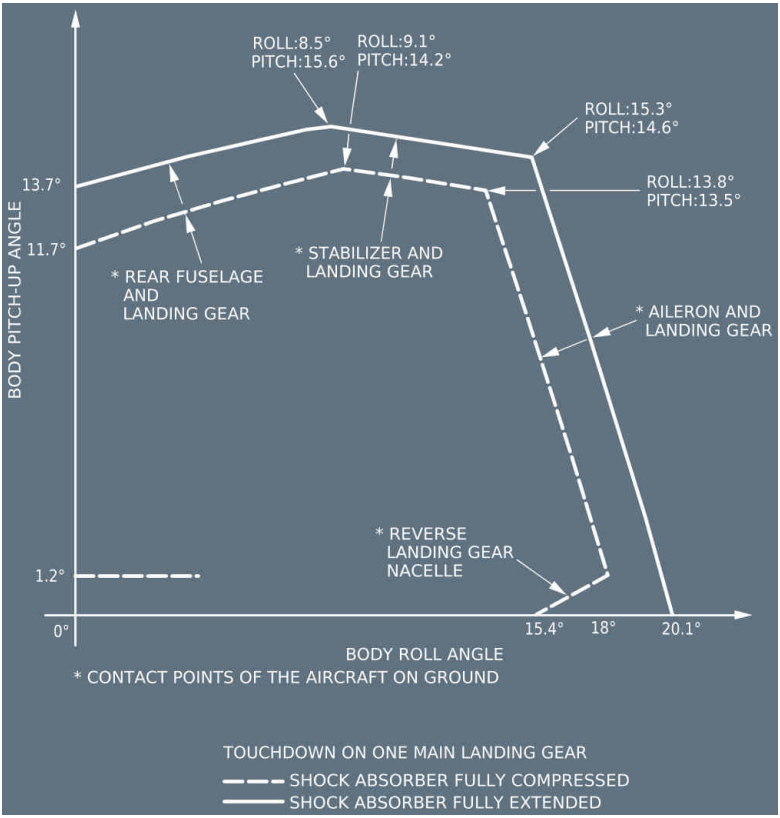
[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



GROUND CLEARANCE DIAGRAM

Ident.: DSC-20-40-00018435.0006001 / 20 DEC 16

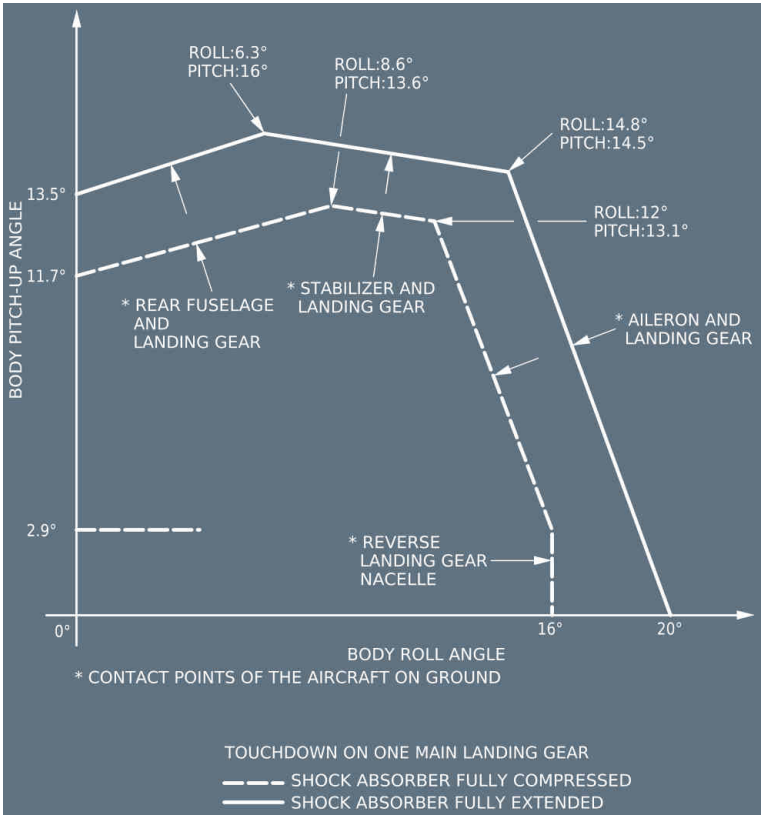
[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



GROUND CLEARANCE DIAGRAM

Ident.: DSC-20-40-00018435.0001001 / 19 JAN 16

[3] **Applicable to: MSN 01767-06336**



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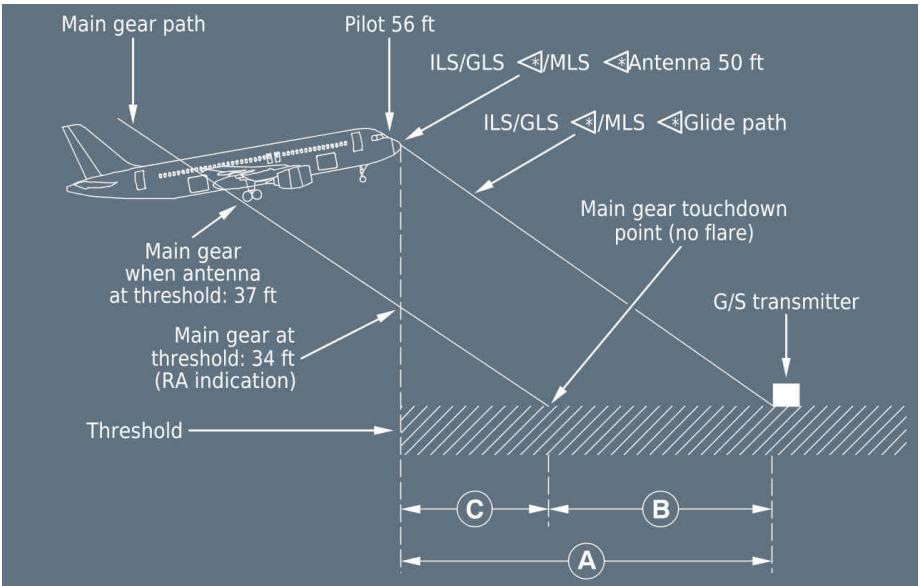
ILS/GLS ◁ /MLS ◁ FINAL APPROACH AND LANDING GEOMETRY

Ident.: DSC-20-50-00019878.0001001 / 22 FEB 17

1 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

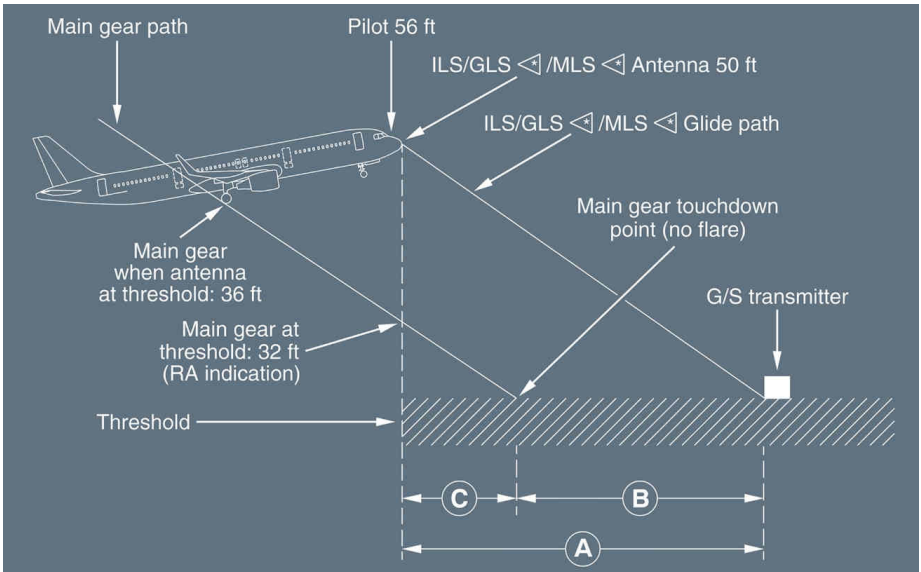


CONDITIONS :	GLIDE PATH (°)	A	B	TOUCHDOWN POINT C
– FLAPS FULL – ILS ANTENNA AT 50 ft AT THRESHOLD	2°5	348 m 1145 ft	112 m 366 ft	236 m 779 ft
– FLAPS FULL – NO FLARE – PITCH ANGLE : 4°	3°	291 m 954 ft	93 m 306 ft	198 m 648 ft

ILS/GLS ◁ /MLS ◁ FINAL APPROACH AND LANDING GEOMETRY

Ident.: DSC-20-50-00019878.0005001 / 06 APR 18

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

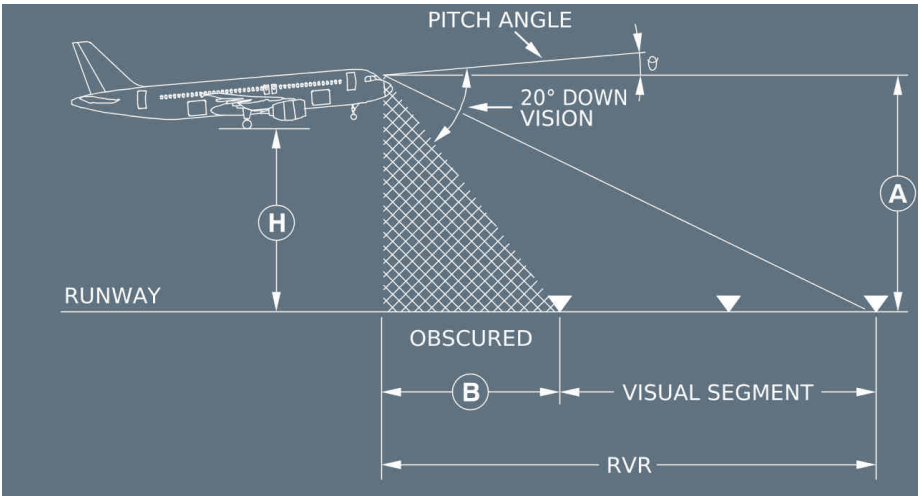


CONDITIONS :	PITCH ANGLE	GLIDE PATH (°)	A	B	TOUCHDOWN POINT C
– FLAPS FULL – ILS ANTENNA AT 50 ft AT THRESHOLD	3°5	2°5	349 m 1145 ft	119 m 389 ft	230 m 756 ft
– NO FLARE	3°9	3°	291 m 954 ft	105 m 345 ft	186 m 609 ft

MINIMUM VISUAL GROUND SEGMENTS (FLARE PHASE)

Ident.: DSC-20-50-00019879.0001001 / 22 FEB 17

3 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



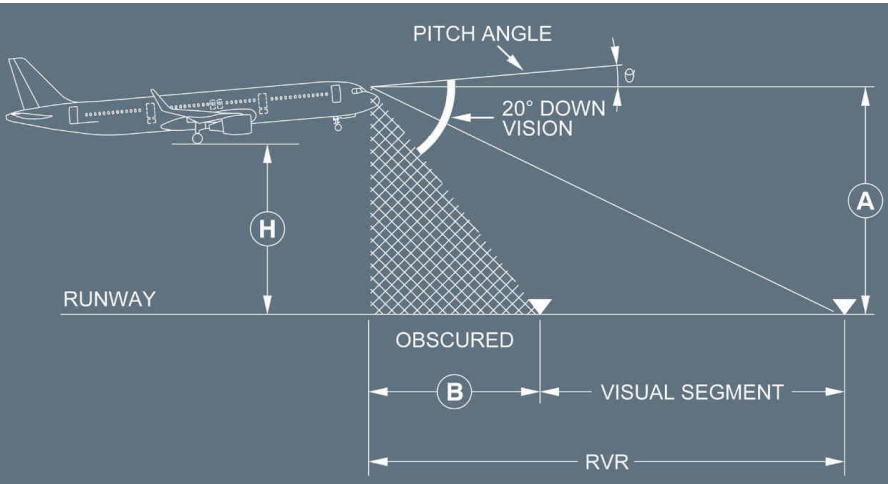
	CAT III		CAT II
H	15 ft (ϑ = 5.4°)	50 ft (ϑ = 4.7°)	100 ft (ϑ = 4.7°)
VISUAL SEGMENT	60 m (197 ft)		120 m (394 ft)
A	36 ft	71 ft	121 ft
OBSCURED B	43 m (140 ft)	79 m (259 ft)	134 m (442 ft)
MINIMUM RVR	103 m (337 ft)	139 m (456 ft)	254 m (836 ft)

Note: This drawing illustrates that, for a CAT III landing (60 m minimum visual segment), the minimum Runway Visual Range (RVR) is 103 m at 15 ft.

MINIMUM VISUAL GROUND SEGMENTS (FLARE PHASE)

Ident.: DSC-20-50-00019879.0005001 / 06 APR 18

[4] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

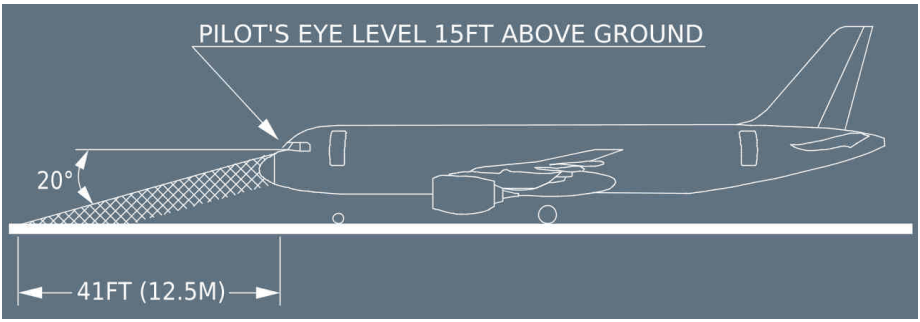


	CAT III		CAT II
H	15 ft (θ = 4.5°)	50 ft (θ = 4.1°)	100 ft (θ = 4.1°)
VISUAL SEGMENT	60 m (197 ft)		120 m (394 ft)
A	36 ft	71 ft	121 ft
OBSCURED B	40 m (132 ft)	76 m (249 ft)	130 m (425 ft)
MINIMUM RVR	100 m (329 ft)	136 m (446 ft)	250 m (819 ft)

Note: This drawing illustrates that, for a CAT III landing (60 m minimum visual segment), the minimum Runway Visual Range (RVR) is 100 m at 15 ft.

VISUAL GROUND GEOMETRY

Ident.: DSC-20-60-00010294.0001001 / 22 MAY 12
Applicable to: ALL



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AIRCRAFT SYSTEMS

AIR CONDITIONING / PRESSURIZATION / VENTILATION

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DSC-21-10 Air Conditioning

DSC-21-10-10 General

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Pack Schematic (Simplified)....B
Pack Flow Control Valve....C
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Mixer Unit....E
Hot-Air Pressure-Regulating Valve....F
Trim Air Valves....G

DSC-21-10-30 Temperature and Flow Regulation

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Zone Controller....C
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DSC-21-10-40 System Operation under Failure Condition

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Air Conditioning System Controllers ◁ ....D
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ECAM CAB PRESS Page....D
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DSC-21-30 Ventilation

DSC-21-30-10 General

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DSC-21-40-30 Controls and Indicators
Overhead Panel....A

DSC-21-40-35 ECAM Cond Page
ECAM COND Page....A

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Localization Title	Toc Index	ID	Reason
DSC-21-10-10 Architecture	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-21-10-10 Architecture	B	2	Effectivity update: The information now also applies to MSN 09063.
DSC-21-10-20 Pack Schematic (Simplified)	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-21-10-20 Pack Schematic (Simplified)	B	2	Effectivity update: The information now also applies to MSN 09063.
DSC-21-10-20 Hot-Air Pressure-Regulating Valve	F	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-21-10-30 Air Conditioning System Controllers	E	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-21-10-40 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-21-10-40 Air Cycle Machine Failure	E	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-21-10-50 Controls on Overhead Panel	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-21-10-50 Controls on Overhead Panel	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-21-10-50 ECAM BLEED Page	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-21-10-50 ECAM COND Page	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-21-10-50 ECAM Cruise Page	E	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-21-10-50 Engine Warning Display	F	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-21-20-40 ECAM CAB PRESS Page	B	1	Effectivity update: The information now also applies to MSN 09063.
DSC-21-20-40 ECAM CAB PRESS Page	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-21-20-40 ECAM Cruise Page	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-21-20-40 ECAM DOOR/OXY Page	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-21-30-60 ECAM CAB PRESS Page	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

GENERAL

Ident.: DSC-21-10-10-00017767.0001001 / 21 MAR 16
Applicable to: ALL

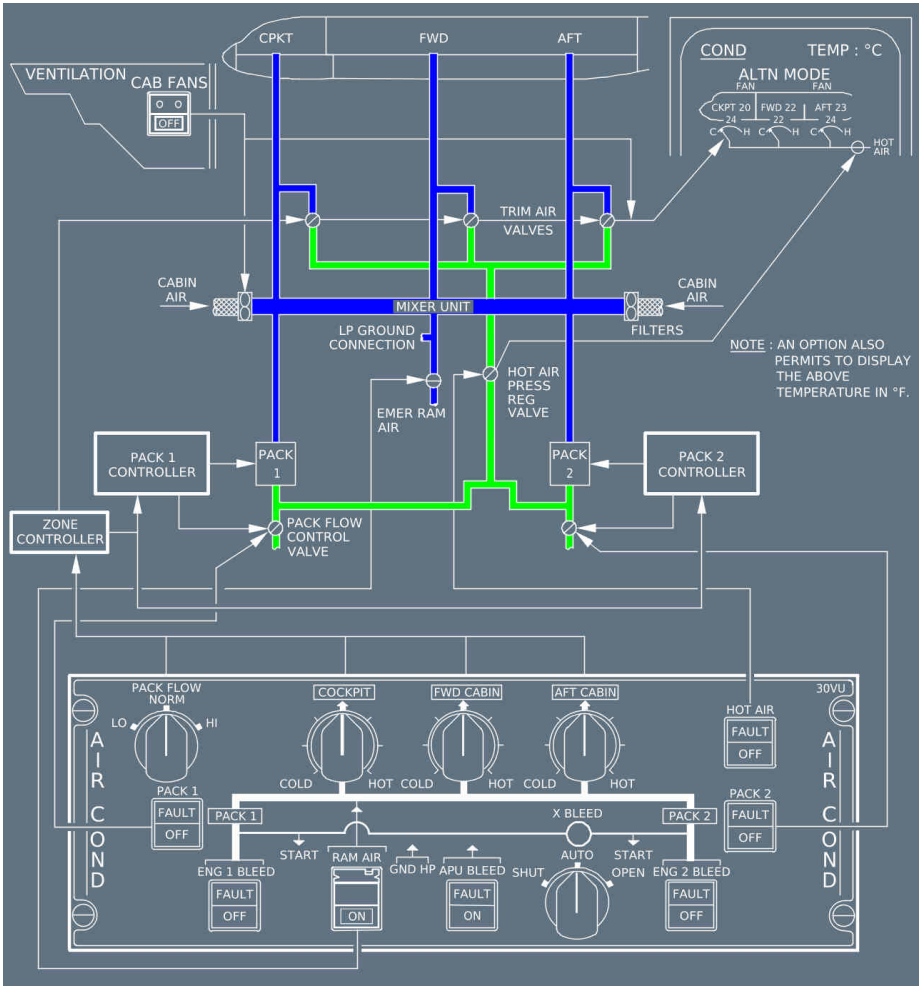
The air conditioning system is fully automatic.
It provides continuous air renewal and maintains a constant, selected temperature in the following three zones : COCKPIT, FWD CABIN, AFT CABIN. These three zones are independently controlled.

Air is supplied by the pneumatic system, via:
- Two pack flow control valves,
- Two packs,
- The mixing unit, which mixes the air that comes from the cabin and the packs.

Air is then distributed to the cockpit and the cabin.
In an emergency, a ram air inlet can provide ambient air to the mixing unit.
The temperature in the flight deck and in the cabin can be selected from the cockpit's AIR COND panel. Temperature regulation of the temperature is ensured by a zone controller and two pack controllers, or two Air Conditioning System Controller (ACSC) ◁ .
Temperature regulation is optimized via the hot air pressure regulating valve, and the trim air valves that add hot air, tapped upstream of the packs, to the air coming from the mixing unit.
A temperature control panel ◁ is also available on the Forward Attendant Panel (FAP). During cruise, the cabin crew can modify each cabin zone temperature that is selected from the cockpit, with a limited authority of ± 2.5 °C. (± 4.5 °F).
Low-pressure air is supplied to the mixing unit by a ground connection.

ARCHITECTURE

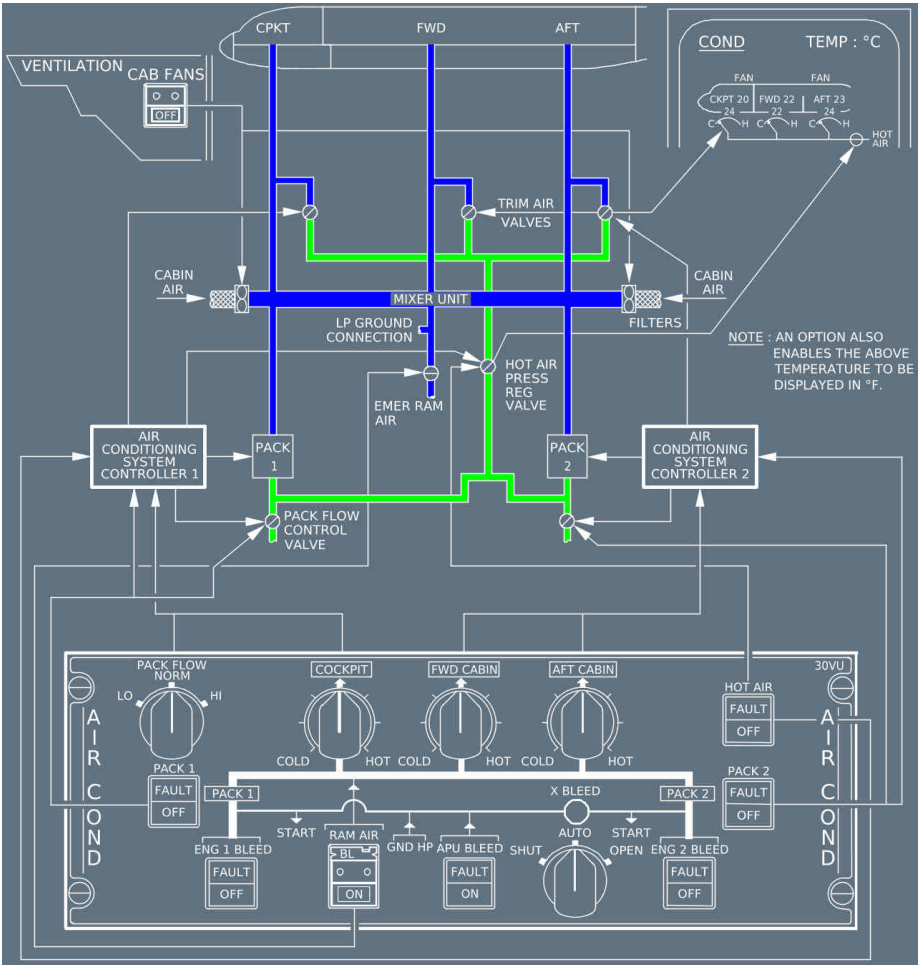
Ident.: DSC-21-10-10-00000297.0001001 / 22 MAY 12
Applicable to: MSN 01767-02405, 02482



ARCHITECTURE

Ident.: DSC-21-10-10-00000297.0003001 / 22 MAY 12

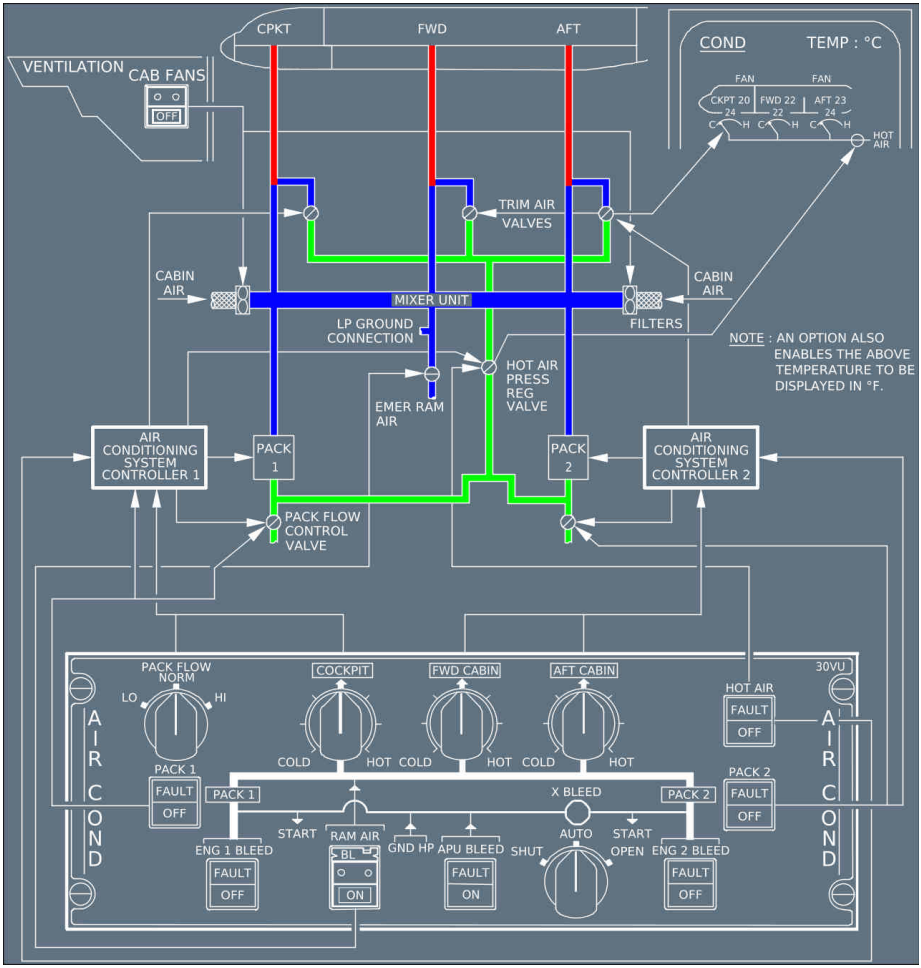
[1] **Applicable to: MSN 02443-02457, 02584-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



ARCHITECTURE

Ident.: DSC-21-10-10-00000297.0015001 / 20 DEC 16

[2] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



AIR CONDITIONING PACK

Ident.: DSC-21-10-20-00017768.0001001 / 21 MAR 16
Applicable to: ALL

The two packs operate automatically and independently of each other. Pack operation is controlled by signals coming from the pack controller or the Air Conditioning System Controller (ACSC) .

Warm pre-conditioned bleed air enters the cooling path via the pack flow control valve, and is ducted to the primary heat exchanger.

Then, the cooled bleed air enters the compressor section of the air-cycle machine and is compressed to a higher pressure and temperature.

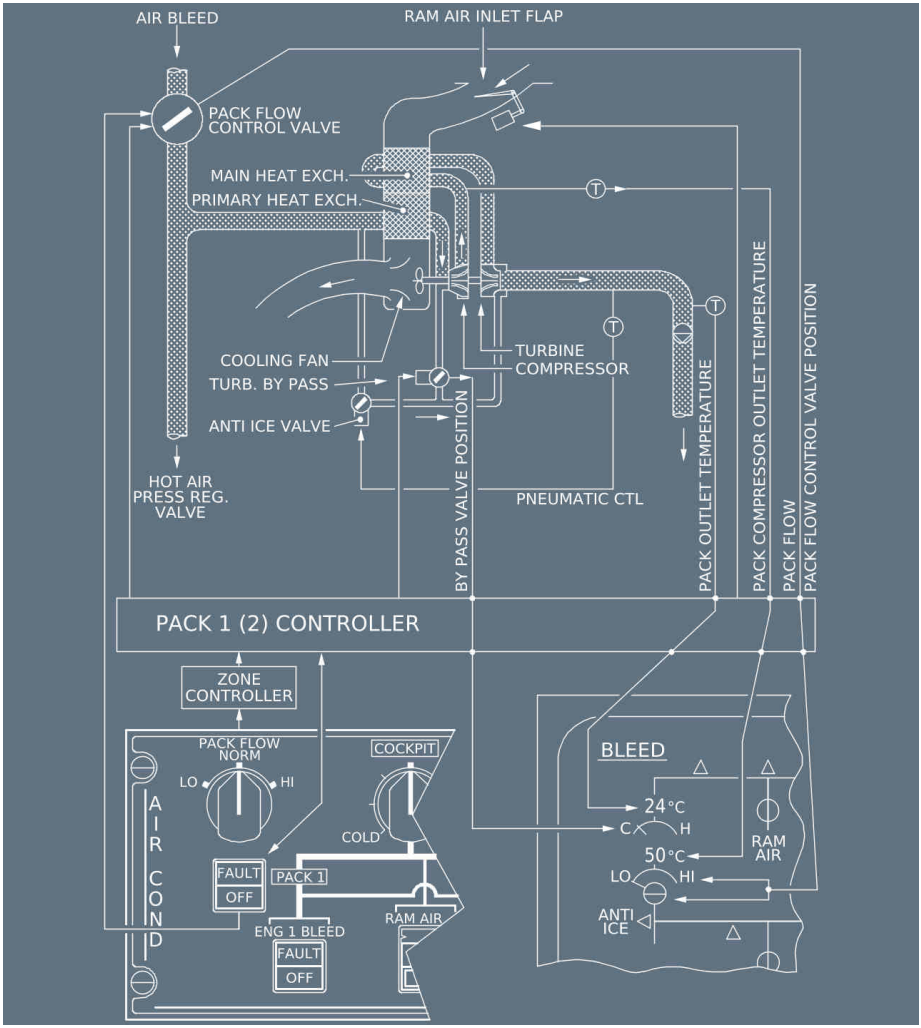
It is cooled again in the main heat exchanger and enters the turbine section, where it expands and, in expanding, generates power to drive the compressor and cooling air fan.

The removal of energy during this process reduces air temperature, resulting in very low air temperature at turbine discharge.

L3 A water separator system dries the air before it enters the turbine section.

PACK SCHEMATIC (SIMPLIFIED)

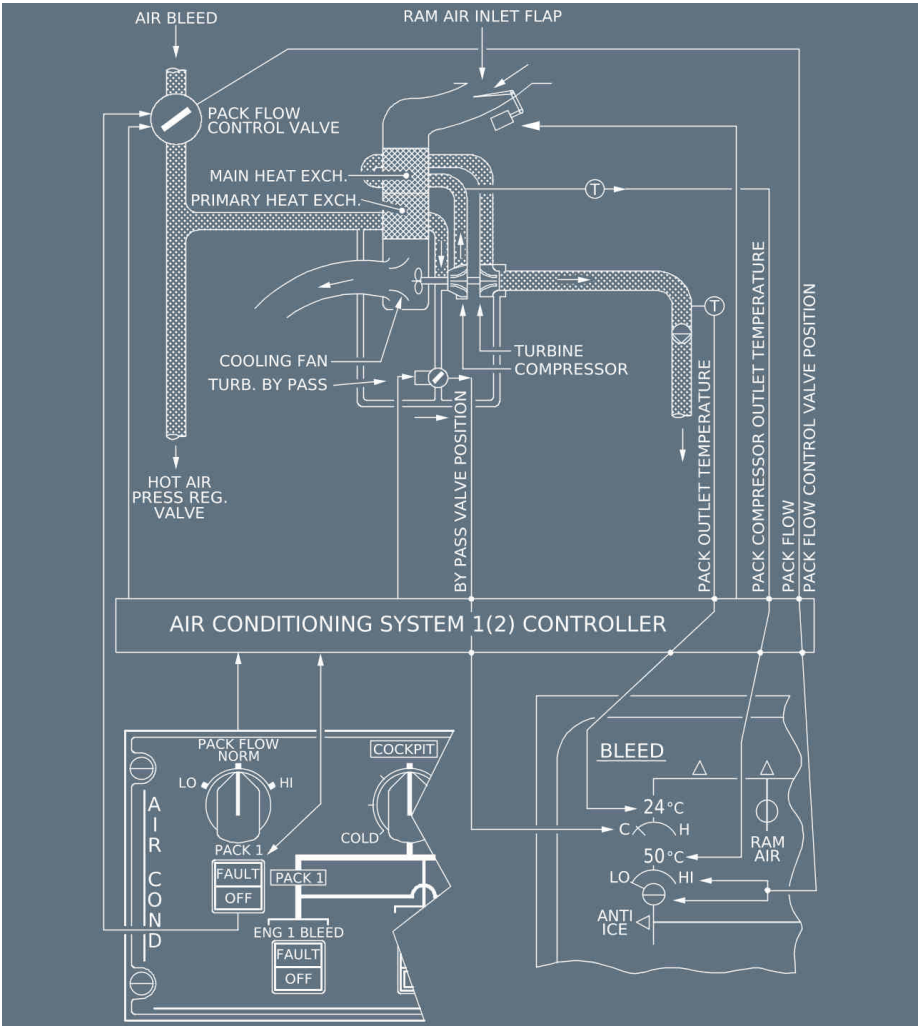
Ident.: DSC-21-10-20-00000299.0003001 / 22 MAY 12
Applicable to: MSN 01767-02405, 02482



PACK SCHEMATIC (SIMPLIFIED)

Ident.: DSC-21-10-20-00000299.0008001 / 22 MAY 12

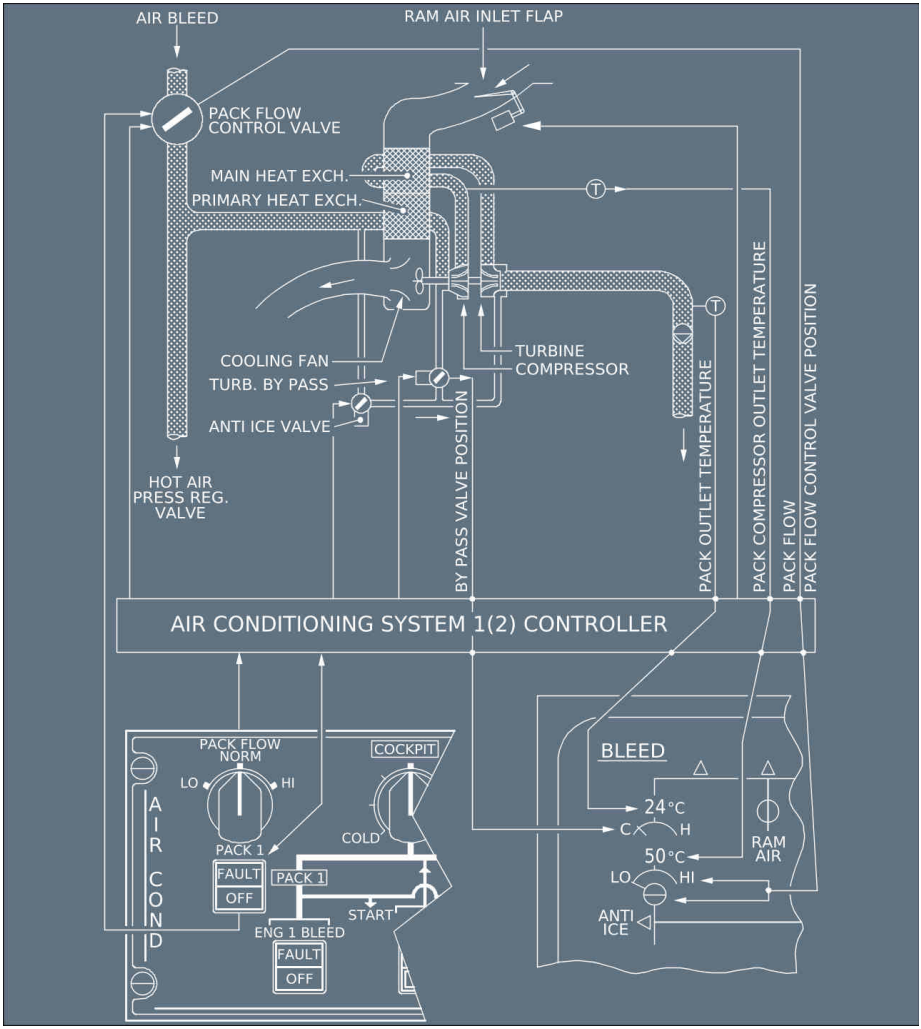
[1] **Applicable to: MSN 02443-02457, 02584-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



PACK SCHEMATIC (SIMPLIFIED)

Ident.: DSC-21-10-20-00000299.0013001 / 20 DEC 16

[2] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



PACK FLOW CONTROL VALVE

Ident.: DSC-21-10-20-00017769.0001001 / 24 AUG 18
Applicable to: ALL

This valve is pneumatically-operated and electrically-controlled. It regulates the air flow in accordance with signals received from the pack controllers or the ACSC .
In the absence of air pressure, a spring keeps the valve closed.
The valve closes automatically in case of pack overheat (on ground only), engine start, or operation of the fire or ditching pushbutton. The valve is controlled from the AIR COND panel.

EMERGENCY RAM AIR

Ident.: DSC-21-10-20-00000301.0001001 / 20 DEC 16
Applicable to: ALL

An emergency ram air inlet ventilates the cockpit and cabin to remove smoke, or if both packs fail.
The emergency ram air inlet valve is controlled by the RAM AIR pushbutton on the AIR COND panel.
This pushbutton opens the ram air valve, provided that ditching is not selected.
When the RAM AIR pushbutton is ON : The outflow valve opens about 50 %, provided that it is under automatic control and ΔP is less than 1 PSI. The outflow valve does not automatically open if it is under manual control, even if ΔP is less than 1 PSI. If ΔP is greater than 1 PSI, the check valve located downstream the ram air door will not open, even if the ram air door has been selected open. No airflow will then be supplied.

MIXER UNIT

Ident.: DSC-21-10-20-00000302.0001001 / 21 MAR 16
Applicable to: ALL

This unit mixes cold fresh air from the packs with the cabin air being recirculated through recirculation fans. The mixer unit is also connected to the emergency ram air inlet and the low pressure ground inlets.

HOT-AIR PRESSURE-REGULATING VALVE

Ident.: DSC-21-10-20-00000303.0002001 / 15 FEB 11
Applicable to: MSN 01767-02405, 02482

This valve regulates the pressure of hot air, tapped upstream of the packs.
It is pneumatically-operated and electrically-controlled from the HOT AIR pushbutton on the AIR COND panel. In the absence of air, a spring keeps the valve closed.

The valve closes automatically, if:
- The duct overheats, or
- The cockpit trim air valve fails, or
- Both cabin trim air valves fail.

The hot-air pressure-regulating valve remains operative, even if either the forward or aft cabin trim air valve fails.

HOT-AIR PRESSURE-REGULATING VALVE

Ident.: DSC-21-10-20-00000303.0003001 / 15 FEB 11

3 **Applicable to: MSN 02443-02457, 02584-09063**

In the absence of air, a spring keeps the valve closed. This pneumatically-operated and electrically-controlled valve regulates hot air pressure, which is tapped upstream of the packs. The air conditioning system controller 1 regulates this valve. This valve closes upon pressing the HOT AIR pushbutton on the AIR COND panel, or when both lanes of one air conditioning system controller fail.

The valve closes automatically, if:
- The duct overheats, or
- The cockpit trim air valve fails, or
- Both cabin trim air valves fail.

The hot-air pressure-regulating valve remains operative, even if either the forward or aft cabin trim air valve fails.

TRIM AIR VALVES

Ident.: DSC-21-10-20-00017771.0001001 / 21 MAR 16

Applicable to: ALL

These valves are electrically-controlled by the zone controller or the ACSC ◁ . A trim air valve, associated with each zone, adjusts the temperature by adding hot air.
The cockpit trim air valve is controlled by the ACSC 1 ◁ , and the cabin trim air valves are controlled by the ACSC 2 ◁ .

GENERAL

Ident.: DSC-21-10-30-00017772.0001001 / 21 MAR 16
Applicable to: ALL

Temperature regulation is automatic and controlled by one zone controller and two pack controllers, or the ACSC ◁ .

PACK CONTROLLER

Ident.: DSC-21-10-30-00000306.0002001 / 15 FEB 11
Applicable to: MSN 01767-02405, 02482

Each pack controller regulates the temperature of its associated pack, in accordance with a demand signal from the zone controller, by modulating the bypass valve and the ram air inlet flaps.
The ram air inlet flaps close during takeoff and landing to avoid ingestion of foreign matter.

Note: *During takeoff, the ram air inlet flaps close when TO power is set and the main landing gear struts are compressed.*
During landing they close as soon as the main landing gear struts are compressed, as long as speed is at or above 70 kt.
They open 20 s after the speed drops below 70 kt.

The pack controllers also regulate flow by modulating the associated pack flow control valve.

ZONE CONTROLLER

Ident.: DSC-21-10-30-00000307.0001001 / 18 MAR 11
Applicable to: MSN 01767-02405, 02482

PACK FLOW CONTROL

The crew can use the PACK FLOW pushbutton to adjust the pack flow for the number of passengers and for external conditions.

Whatever the crew selects, the system delivers higher flow for any of the following circumstances:
- In single-pack operation,
- When the APU is supplying bleed air.

The system delivers normal flow if the crew selects LO flow and the temperature demand cannot be satisfied.

ENGINE PRESSURE DEMAND

When the cooling demand in one zone cannot be satisfied, if the bleed pressure is too low, the zone controller sends a pressure demand signal to both Engine Interface Units (EIU) to increase the minimum idle and to raise the bleed pressure.

APU FLOW DEMAND

When the APU bleed valve is open, the zone controller signals the APU's Electronic Control Box (ECB) to increase the APU flow output when any zone temperature demand cannot be satisfied.

TEMPERATURE REGULATION

Ident.: DSC-21-10-30-00017773.0001001 / 21 MAR 16
Applicable to: ALL

Temperature regulation is achieved by the zone controller or the ACSC ◁ .
The zone controller regulates the temperature of the two cabin zones and the cockpit. The ACSC 2 ◁ regulates the temperature of the two cabin zones, and the ACSC 1 ◁ regulates the cockpit temperature.

BASIC TEMPERATURE REGULATION

The flight crew uses the temperature selectors on the air conditioning panel to select the reference temperatures. The zone controller or the ACSC ◁ computes a temperature demand from the selected temperature and the actual temperature. The reference temperatures are then fine tuned for each cabin zone through the temperature control panel ◁ installed on the FAP.

The actual temperature is measured by sensors:
- In the cockpit, for the cockpit zone;
- In the lavatory extraction circuit and galley ventilation system, for the cabin.

A signal corresponding to the lowest demanded zone temperature goes to the pack controller or the ACSC ◁ , which then make both packs supply the required outlet temperature.

OPTIMIZED TEMPERATURE REGULATION

The zone controller or the ACSC ◁ optimizes temperature by acting on the trim air valves.
The temperature selection range is from 18 °C (64 °F) to 30 °C (86 °F).

AIR CONDITIONING SYSTEM CONTROLLERS

Ident.: DSC-21-10-30-00017775.0001001 / 20 DEC 16
1 **Applicable to: MSN 02443-02457, 02584-09063**

Each air conditioning system controller regulates the temperature of its associated pack, by modulating the bypass valve and the ram air inlet flap.
The ram air inlet flap closes during takeoff and landing to avoid the ingestion of foreign matter.

Note: *During takeoff, the ram air inlet flap closes when takeoff power is set, and the main landing gear struts are compressed.*
During landing, it closes as soon as the main landing gear struts are compressed, as long as speed is at or above 70 kt.
It opens 20 s after the speed drops below 70 kt.

The air conditioning system controllers also regulate flow by modulating the associated pack flow control valve.

PACK FLOW CONTROL

The flight crew can use the PACK FLOW selector to adjust the pack flow for the number of passengers and for external conditions.

Whatever the crew selects, the system delivers higher flow for any of the following circumstances:
- In single-pack operation,
- When the APU is supplying bleed air.

The system delivers normal flow if the flight crew selects LO flow and the temperature demand cannot be satisfied.

ENGINE PRESSURE DEMAND

When the cooling demand in one zone cannot be satisfied, if the bleed pressure is too low, the air conditioning system controller sends a pressure demand signal to both Engine Interface Units (EIU) to increase the minimum idle and to raise the bleed pressure.

APU FLOW DEMAND

When the APU bleed valve is open, the air conditioning system controller signals the APU's Electronic Control Box (ECB) to increase the APU flow output when any zone temperature demand cannot be satisfied.

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GENERAL

Ident.: DSC-21-10-40-00000309.0001001 / 15 FEB 11
Applicable to: MSN 01767-02405, 02482

Each controller consists of a primary channel that is normally in control and a secondary channel that acts as a backup if the primary channel fails.

GENERAL

Ident.: DSC-21-10-40-00000309.0002001 / 21 MAR 16
1 **Applicable to: MSN 02443-02457, 02584-09063**

Each controller is comprised of two lanes. One lane controls the system, the other takes over full control, in case of an active lane failure.

ZONE CONTROLLER

Ident.: DSC-21-10-40-00000310.0001001 / 15 FEB 11
Applicable to: MSN 01767-02405, 02482

PRIMARY CHANNEL FAILURE

The secondary channel operates as backup.
The flow setting function and optimized temperature regulation are not available. HOT AIR and TRIM AIR valves close.
The zones are controlled to 24 °C (76 °F) (backup regulation). Pack 1 controls the cockpit temperature. Pack 2 controls the FWD and AFT cabin temperatures.
ALTN MODE appears on the ECAM (Electronic Centralized Aircraft Monitoring) COND page.

SECONDARY CHANNEL FAILURE

This has no effect on zone temperature regulation.
Backup mode is lost.

PRIMARY AND SECONDARY CHANNEL FAILURE

Optimized and backup temperature regulation is lost.
The packs deliver a fixed temperature: 20 °C (68 °F) for pack 1, 10 °C (50 °F) for pack 2. The failure removes all information from the ECAM COND page, which then displays PACK REG.

PACK CONTROLLERS

Ident.: DSC-21-10-40-00000311.0001001 / 15 FEB 11
Applicable to: MSN 01767-02405, 02482

PRIMARY CHANNEL FAILURE

The secondary computer operates as a backup.

Regulation is not optimized.
Pack flow is fixed at the previous setting.

SECONDARY CHANNEL FAILURE

This failure has no effect on pack regulation. Backup mode is lost.
ECAM signals related to the corresponding pack are lost.

PRIMARY AND SECONDARY CHANNEL FAILURE

As a backup, corresponding pack outlet temperature is controlled by the anti-ice valve and is stabilized to a temperature between 5 °C (41 °F) and 30 °C (86 °F) in a maximum of 6 min.
ECAM signals, related to the corresponding pack, are lost.

AIR CONDITIONING SYSTEM CONTROLLERS ⋖

Ident.: DSC-21-10-40-00018747.0001001 / 21 MAR 16
Applicable to: ALL

ONE LANE FAILURE

No effect, as the second lane takes over.

BOTH LANES FAILURE

The related pack is lost, and the hot air pressure-regulating valve and associated trim air valves close.

AIR CYCLE MACHINE FAILURE

Ident.: DSC-21-10-40-00000312.0002001 / 15 FEB 11
Applicable to: MSN 01767-02405, 02482

If the Air Cycle Machine (ACM) fails (compressor/turbine seizure), the affected pack may be operated in heat exchanger cooling mode.
Warm pre-conditioned bleed air enters the cooling path via the pack valve and goes to the primary heat exchanger. Then, the main part of the cooled air goes directly downstream of ACM turbine through the bypass valve, and the rest goes through the failed ACM.
The ACM seizure reduces the pack flow.

As for normal pack operation:
- The pack controller regulates temperature, in accordance with zone controller demand, by modulating the bypass valve and the ram air inlet flap.
- The zone controller regulates the hot air flow through the hot air valves to optimize cockpit/cabin temperature regulation. Hot air flow is lower than in normal pack operation, because pack flow is reduced.

AIR CYCLE MACHINE FAILURE

Ident.: DSC-21-10-40-00000312.0003001 / 21 MAR 16

[2] **Applicable to: MSN 02443-02457, 02584-09063**

If the Air Cycle Machine (ACM) fails (compressor/turbine seizure), the affected pack may be operated in heat exchanger cooling mode.
Warm pre-conditioned bleed air enters the cooling path via the pack valve and goes to the primary heat exchanger. Then, the main part of the cooled air goes directly downstream of ACM turbine through the bypass valve, and the rest goes through the failed ACM.
The ACM seizure reduces the pack flow.

As for normal pack operation :

- The air conditioning system controller regulates temperature by modulating the bypass valve and the ram air inlet flap.
- The air conditioning system controller regulates the hot air flow through the trim air valves to optimize cockpit/cabin temperature regulation. Hot air flow is lower than in normal pack operation, because pack flow is reduced.

HOT AIR PRESSURE REGULATING VALVE FAILURE

Ident.: DSC-21-10-40-00000313.0001001 / 21 MAR 16
Applicable to: ALL

Failed open : No effect.

Failed closed : Optimized regulation is lost. Trim air valves are driven to the fully closed position. Pack 1 controls the cockpit temperature to the selected value and pack 2 controls the cabin temperature (FWD and AFT) to the mean value of the selected temperatures.

TRIM AIR VALVE FAILURE

Ident.: DSC-21-10-40-00000314.0001001 / 21 MAR 16
Applicable to: ALL

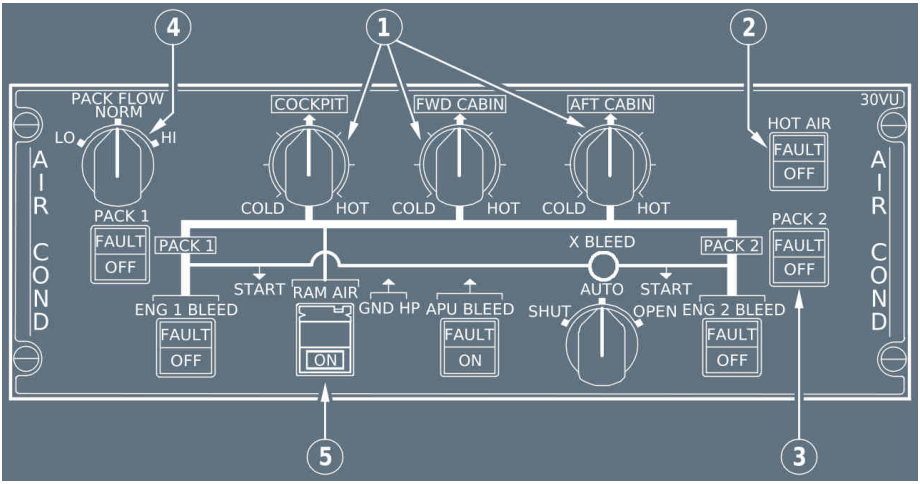
Optimized temperature regulation of the corresponding zone is lost.

Intentionally left blank

CONTROLS ON OVERHEAD PANEL

Ident.: DSC-21-10-50-00000315.0002001 / 20 DEC 16

[1] **Applicable to: MSN 01767-06336**



(1) Zone temperature selector

- 12 o'clock position: 24 °C (76 °F)
- COLD position: 18 °C (64 °F)
- HOT position: 30 °C (86 °F).

(2) HOT AIR pb

ON : The valve regulates hot air pressure.

OFF : The valve closes, and the trim air valves close.
The FAULT circuit is reset.

FAULT : The FAULT light comes on amber, along with an associated ECAM caution, when duct overheat is detected. The fault circuit detects an overheat when the duct temperature reaches 88 °C (190 °F) once.
The valve and trim air valves close automatically.
The FAULT light goes off when the temperature drops below 70 °C (158 °F), and the flight crew selects OFF.

(3) PACK pb-sw

ON : The pack flow control valve is automatically-controlled.

It opens, except in the following cases:
- Upstream pressure below minimum
- Compressor outlet overheat
- Engine start sequence:

1. If the crossbleed valve is closed, the valve located on the starting engine side immediately closes, when the MODE selector is set to IGN (or CRK)
2. It remains closed on the starting engine side (provided the crossbleed valve is closed) when:
   - The MASTER sw is set to ON (or MAN START pb is set to ON)
   - The start valve is open
   - N2 < 50 %.

   Note: If the crossbleed valve is open at engine start, both pack flow control valves close.
3. On ground, reopening of the valves is delayed for 30 s to avoid a supplementary pack closure cycle during second engine start.

- FIRE pb, of the engine on the related side, is pressed
- Ditching is selected.

OFF : The pack flow control valve closes.

FAULT lt : Comes on amber, and a caution appears on the ECAM, if the pack flow control valve position disagrees with the selected position, or in the case of compressor outlet overheat or pack outlet overheat.

(4) PACK FLOW selector

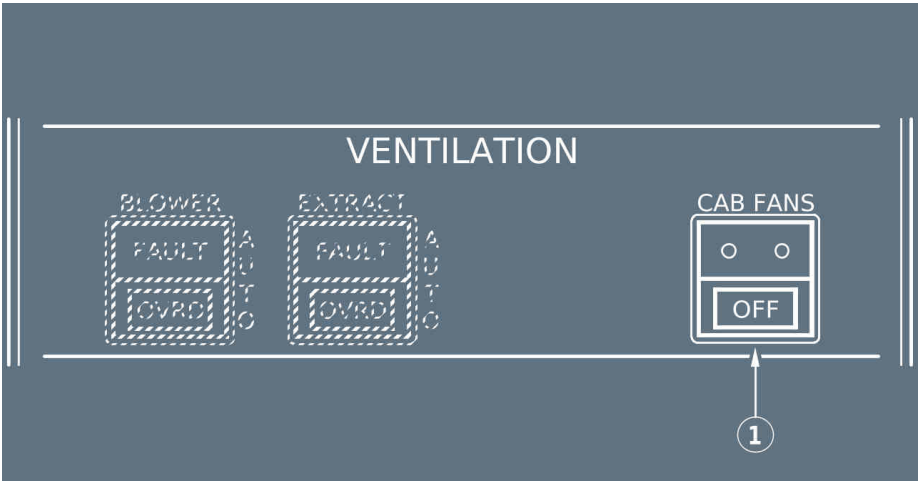
- Permits the selection of pack valve flow, according to the number of passengers and ambient conditions (smoke removal, hot or wet conditions)
  LO (80 %) – NORM (100 %) – HI (120 %)
- Manual selection is irrelevant in single pack operation, or with APU bleed supply. In these cases, HI is automatically selected
- If LO is selected, the pack flow can be automatically selected up to 100 % when the cooling demand cannot be satisfied.

(5) RAM AIR pb (guarded)

ON : The ON light comes on white.

If the DITCHING pb, on the CABIN PRESS panel, is in normal position:
- The emergency ram air inlet opens
- If $\Delta p \geq 1$ PSI: The outflow valve control remains normal. No emergency ram air flows in
- If $\Delta p < 1$ PSI: The outflow valve opens to about 50 % when under automatic control. It does not automatically open when it is under manual control. Emergency ram airflow is directly supplied to the mixer unit.

OFF: The emergency ram air inlet closes.



(1) CAB FAN pb

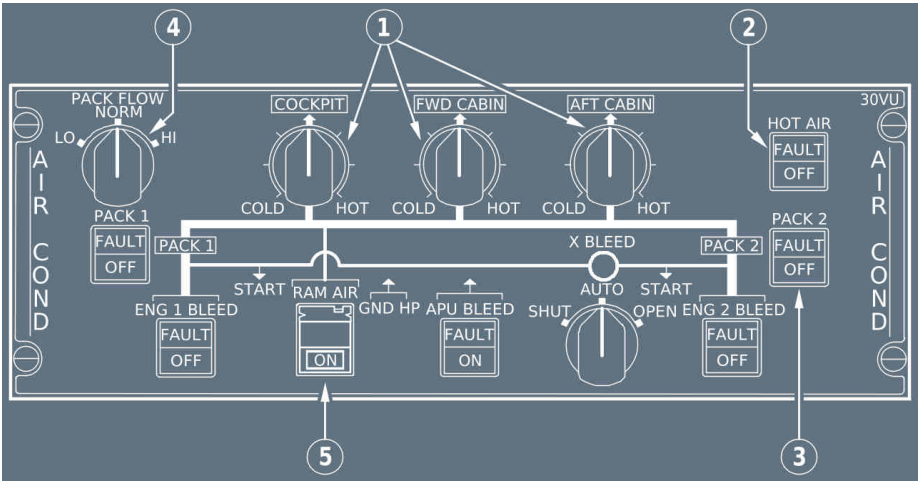
ON : The two cabin fans are on.

OFF: The two cabin fans are off.

CONTROLS ON OVERHEAD PANEL

Ident.: DSC-21-10-50-00000315.0018001 / 25 JAN 17

[2] **Applicable to: MSN 06720-09063**



(1) Zone temperature selector

- 12 o'clock position: 24 °C (76 °F)
- COLD position: 18 °C (64 °F)
- HOT position: 30 °C (86 °F).

(2) HOT AIR pb

ON : The valve regulates hot air pressure.

OFF : The valve closes, and the trim air valves close.
The FAULT circuit is reset.

FAULT : The FAULT light comes on amber, along with an associated ECAM caution, when duct overheat is detected. The fault circuit detects an overheat when the duct temperature reaches 88 °C (190 °F) once.
The valve and trim air valves close automatically.
The FAULT light goes off when the temperature drops below 70 °C (158 °F), and the flight crew selects OFF.

(3) PACK pb-sw

ON : The pack flow control valve is automatically-controlled.
PACKS appears on the Engine Warning Display when the thrust levers are in the TOGA or FLX/MCT detent.

It opens, except in the following cases:
- Upstream pressure below minimum
- Compressor outlet overheat
- Engine start sequence:

1. If the crossbleed valve is closed, the valve located on the starting engine side immediately closes, when the MODE selector is set to IGN (or CRK)
2. It remains closed on the starting engine side (provided the crossbleed valve is closed) when:

   - The MASTER sw is set to ON (or MAN START pb is set to ON)
   - The start valve is open
   - N2 < 50 %.

   Note: *If the crossbleed valve is open at engine start, both pack flow control valves close.*

3. On ground, reopening of the valves is delayed for 60 s to avoid a supplementary pack closure cycle during second engine start.

- FIRE pb, of the engine on the related side, is pressed
- Ditching is selected.

OFF : The pack flow control valve closes.

FAULT lt : Comes on amber, and a caution appears on the ECAM, if the pack flow control valve position disagrees with the selected position, or in the case of compressor outlet overheat or pack outlet overheat.

(4) PACK FLOW selector

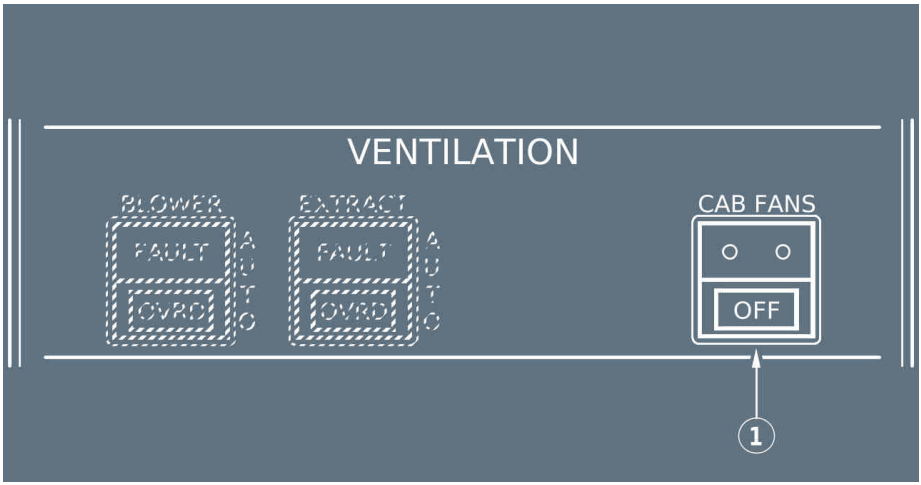
- Permits the selection of pack valve flow, according to the number of passengers and ambient conditions (smoke removal, hot or wet conditions)
  LO (80 %) – NORM (100 %) – HI (120 %)
- Manual selection is irrelevant in single pack operation, or with APU bleed supply. In these cases, HI is automatically selected
- If LO is selected, the pack flow can be automatically selected up to 100 % when the cooling demand cannot be satisfied.

(5) RAM AIR pb (guarded)

ON : The ON light comes on white.

If the DITCHING pb, on the CABIN PRESS panel, is in normal position:
- The emergency ram air inlet opens
- If $\Delta p \geq 1$ PSI: The outflow valve control remains normal. No emergency ram air flows in
- If $\Delta p < 1$ PSI: The outflow valve opens to about 50 % when under automatic control. It does not automatically open when it is under manual control. Emergency ram airflow is directly supplied to the mixer unit.

OFF: The emergency ram air inlet closes.



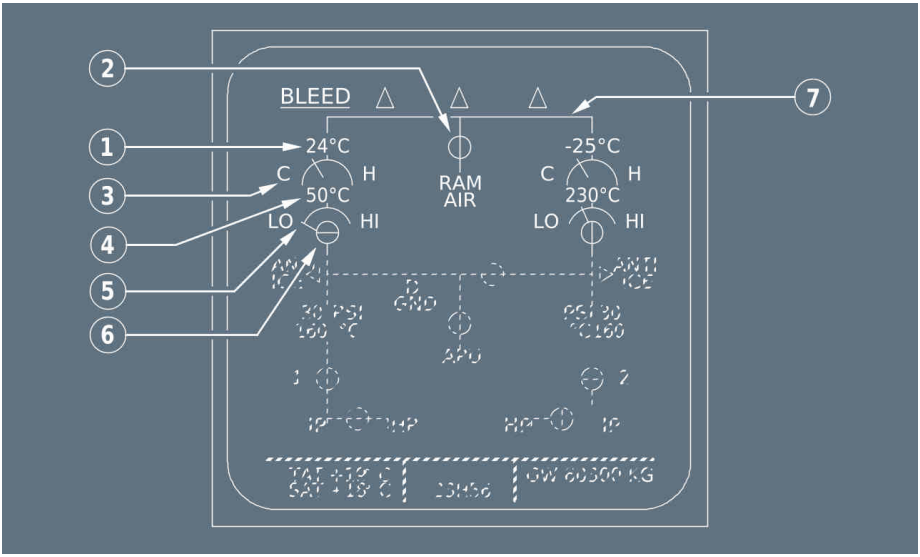
(1) CAB FAN pb

ON : The two cabin fans are on.

OFF: The two cabin fans are off.

ECAM BLEED PAGE

Ident.: DSC-21-10-50-00000316.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) Pack outlet temperature
It appears in green. It becomes amber, if the temperature is higher than 90 °C.

(2) PACK RAM AIR inlet

Crossline – Green: The flap is normally closed.

In transit – Amber: The flap is partially open

Inline – Amber: The flap is fully open on ground.

Inline – Green: The flap is fully open in flight.

(3) Pack turbine bypass valve position
Indication is green.

C = Cold – Valve closed

H = Hot – Valve open.

(4) Pack compressor outlet temperature
It appears in green. It becomes amber, if the temperature is higher than 230 °C.

(5) Pack flow
It appears in green. It becomes amber, if the pack flow control valve is closed.

Note: The pack flow indication can be up to 30 % below the actual flow rate.

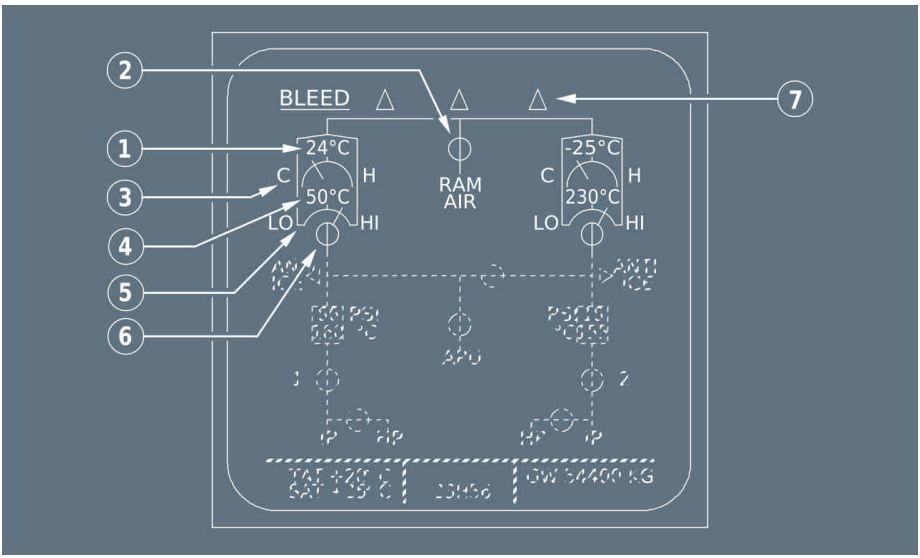
(6) Pack flow control valve

Inline - Green	:	Open.
Inline - Amber	:	Open, and disagrees with the control position.
Crossline - Green	:	Fully closed.
Crossline - Amber	:	Fully closed, and disagrees with the control position.

(7) User Indication
It appears in green. It becomes amber, in flight, when RAM AIR flap is not fully open, and both pack flow control valves are closed .

ECAM BLEED PAGE

Ident.: DSC-21-10-50-00000316.0002001 / 21 MAR 16
Applicable to: MSN 01957-02097, 02121-02139, 02388



(1) Pack outlet temperature
It appears in green. It becomes amber, if the temperature is higher than 90 °C.

(2) PACK RAM AIR inlet

Crossline – Green: The flap is normally closed.

In transit – Amber: The flap is partially open

Inline – Amber: The flap is fully open on ground.

Inline – Green: The flap is fully open in flight.

(3) Pack turbine bypass valve position
Indication is green.

C = Cold – Valve closed

H = Hot – Valve open.

(4) Pack compressor outlet temperature
It appears in green. It becomes amber, if the temperature is higher than 230 °C.

(5) Pack flow
It appears in green. It becomes amber, if the pack flow control valve is closed.

Note: The pack flow indication can be up to 30 % below the actual flow rate.

(6) Pack flow control valve

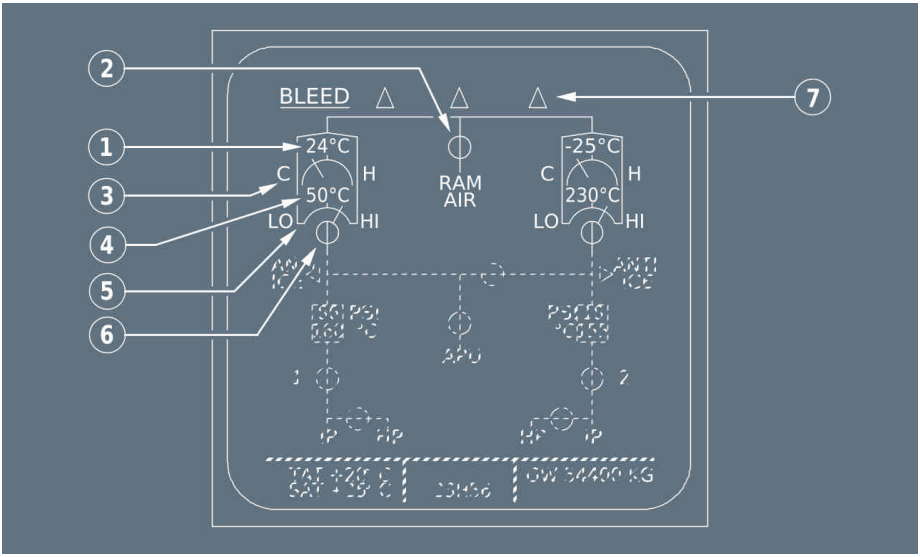
Inline - Green	:	Open.
Inline - Amber	:	Open, and disagrees with the control position.
Crossline - Green	:	Fully closed.
Crossline - Amber	:	Fully closed, and disagrees with the control position.

(7) User Indication
It appears in green. It becomes amber, in flight, when RAM AIR flap is not fully open, and both pack flow control valves are closed .

ECAM BLEED PAGE

Ident.: DSC-21-10-50-00000316.0003001 / 21 MAR 16

[3] **Applicable to: MSN 02443-02457, 02584-09063**



(1) Pack outlet temperature
It appears in green. It becomes amber, if the temperature is higher than 90 °C.

(2) PACK RAM AIR inlet

Crossline: – Green : The flap is normally closed.

In transit : – Amber : The flap is partially open

Inline – Amber : The flap is fully open on ground.

Inline – Green : The flap is fully open in flight.

(3) Pack turbine bypass valve position
Indication is green.

C = Cold – Valve closed

H = Hot – Valve open.

(4) Pack compressor outlet temperature
It appears in green. It becomes amber, if the temperature is higher than 260 °C.

(5) Pack flow
It appears in green. It becomes amber, if the pack flow control valve is closed.

Note: The pack flow indication can be up to 30 % below the actual flow rate.

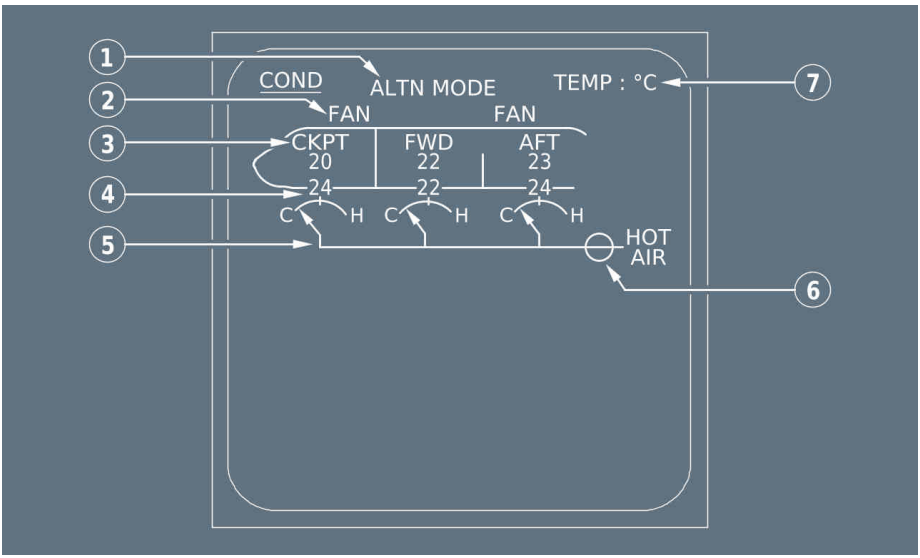
(6) Pack flow control valve

Inline - Green	:	Open.
Inline - Amber	:	Open, and disagrees with the control position.
Crossline - Green	:	Fully closed.
Crossline - Amber	:	Fully closed, and disagrees with the control position.

(7) User Indication
It appears in green. It becomes amber, in flight, when RAM AIR flap is not fully open, and both pack flow control valves are closed .

ECAM COND PAGE

Ident.: DSC-21-10-50-00000317.0001001 / 09 OCT 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) Zone controller fault indication

ALTN MODE : Primary zone controller fault (green).

PACK REG : Zone controller fault (basic regulation by packs only) (green).

No indication : Zone controller normal operation.

(2) Cabin FAN fault indication

It appears in amber, if the recirculation fan is detected as faulty.

(3) Zone temperature indication

It is in green.

(4) Zone duct temperature

It appears in green, and becomes amber at 80 °C (176 °F).

(5) Zone trim air valve position indication

The arrow is green. It is replaced by amber crosses (“XX”) if the valve fails.

C = Cold valve fully closed.

H = Hot valve fully open.

(6) Hot air pressure regulating valve

In line - Green : The valve is open.

In line - Amber : The valve is not closed; disagrees with the control position.

Crossline - Green : The valve is fully closed, and the pushbutton is at auto.

Crossline - Amber : The valve is closed, and pushbutton is OFF, or the valve disagree is closed.

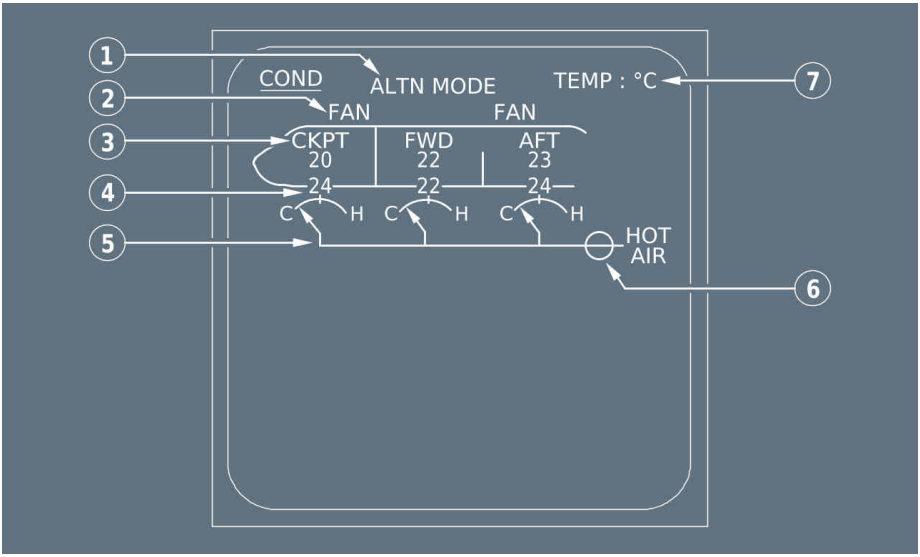
(7) TEMP

Unit of measure (°C or °F) is indicated in cyan.

Note: When the hot air valve is closed, a spurious FWD CRG HEAT message may appear in the INOP SYS list, even if the system remains operative.

ECAM COND PAGE

Ident.: DSC-21-10-50-00000317.0003001 / 09 OCT 12
Applicable to: MSN 01957-02097, 02121-02139, 02388



(1) Zone controller fault indication

ALTN MODE : Primary zone controller fault (green).

PACK REG : Zone controller fault (basic regulation by packs only) (green).

No indication : Zone controller normal operation.

(2) Cabin FAN fault indication

It appears in amber, if the recirculation fan is detected as faulty.

(3) Zone temperature indication

It is in green.

(4) Zone duct temperature

It appears in green, and becomes amber at 80 °C (176 °F).

(5) Zone trim air valve position indication

The arrow is green. It is replaced by amber crosses (“XX”) if the valve fails.

C = Cold valve fully closed.

H = Hot valve fully open.

(6) Hot air pressure regulating valve

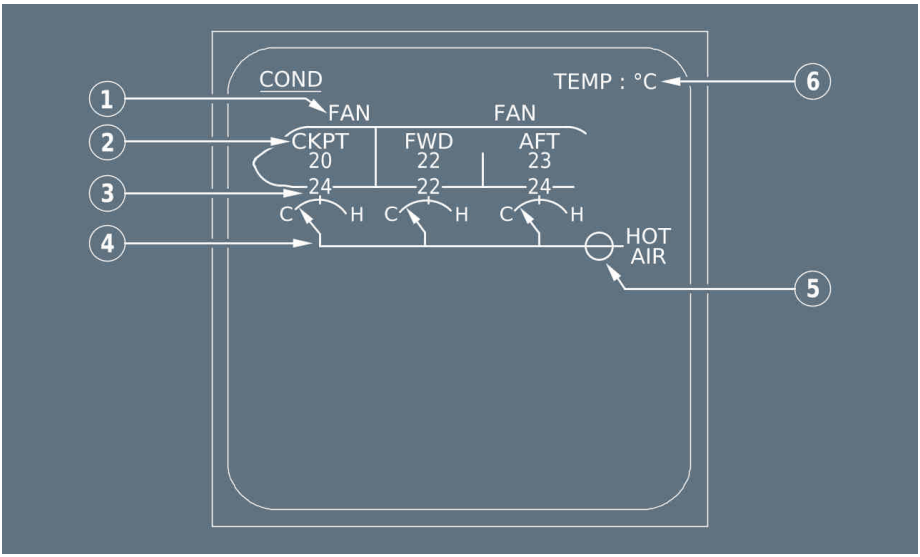
In line - Green	:	The valve is open.
In line - Amber	:	The valve is not closed; disagrees with the control position.
Crossline - Green	:	The valve is fully closed, and the pushbutton is at auto.
Crossline - Amber	:	The valve is closed, and pushbutton is OFF, or the valve disagree is closed.

(7) TEMP
Unit of measure (°C or °F) is indicated in cyan.

ECAM COND PAGE

Ident.: DSC-21-10-50-00000317.0004001 / 09 OCT 12

4 **Applicable to: MSN 02443-02457, 02584-09063**



(1) Cabin FAN fault indication
It appears in amber, if the recirculation fan is detected as faulty.

(2) Zone temperature
It is in green.

(3) Zone duct temperature
It appears in green, and becomes amber at 80 °C (176 °F).

(4) Zone trim air valve position

The arrow is green. It is replaced by amber crosses ("XX") if the valve fails.

C = Cold valve fully closed.

H = Hot valve fully open.

(5) Hot air pressure regulating valve

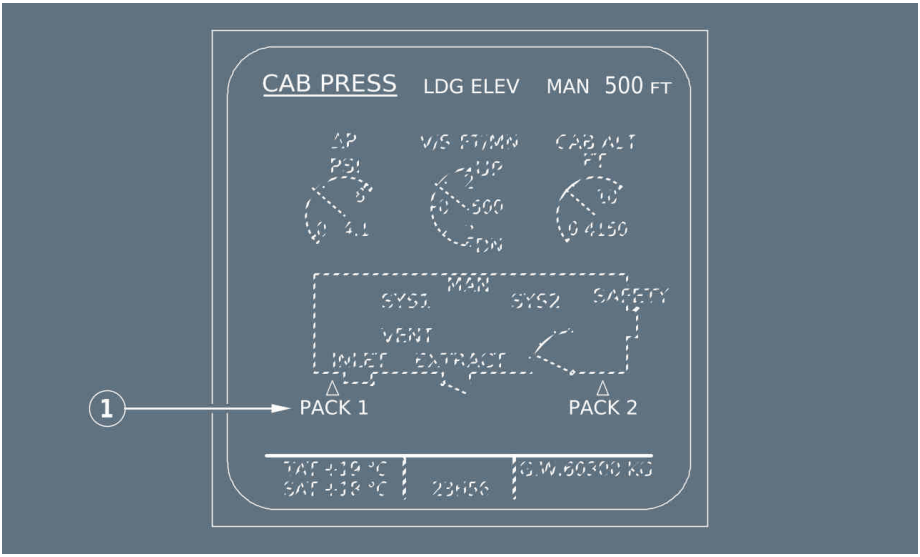
In line - Green	:	Valve is normally open.
In line - Amber	:	Valve is abnormally open (disagrees with control position).
Crossline - Green	:	Valve is normally fully closed.
Crossline - Amber	:	Valve is closed and pushbutton OFF, or valve position disagrees with control position.

(6) TEMP

Unit of measure (°C or °F) is indicated in cyan.

ECAM CAB PRESS PAGE

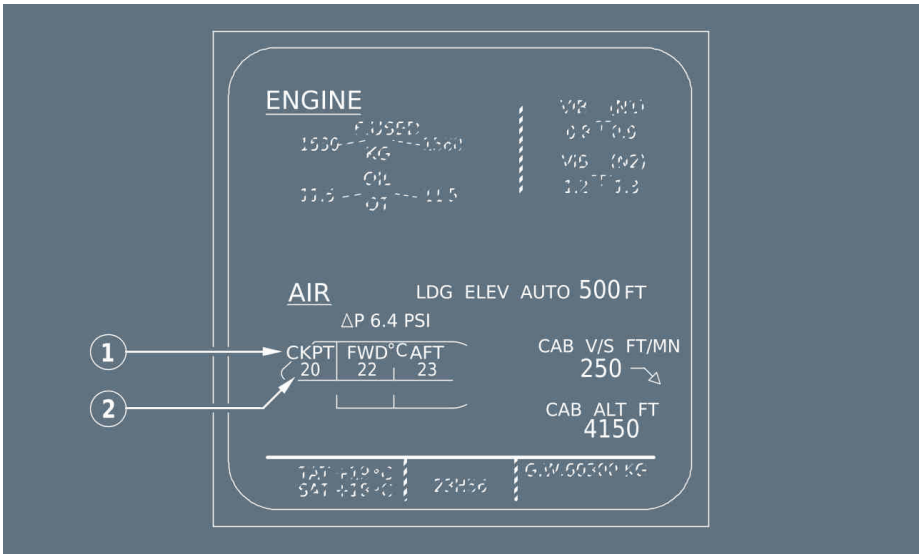
Ident.: DSC-21-10-50-00000318.0001001 / 09 OCT 12
Applicable to: ALL



(1) PACK indication
Triangle normally green, PACK 1(2) indication normally white. Both become amber when pack flow control valve is closed with associated engine running.

ECAM CRUISE PAGE

Ident.: DSC-21-10-50-00000319.0001001 / 09 OCT 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



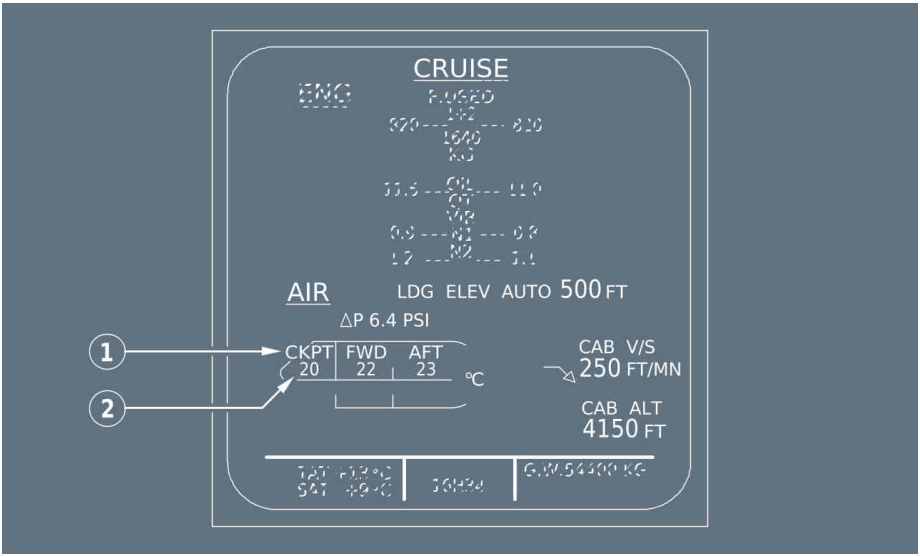
(1) Zone indication
This field also displays the temperature scale in use (°C or °F).

(2) Zone temperature

ECAM CRUISE PAGE

Ident.: DSC-21-10-50-00000319.0002001 / 09 OCT 12

[5] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



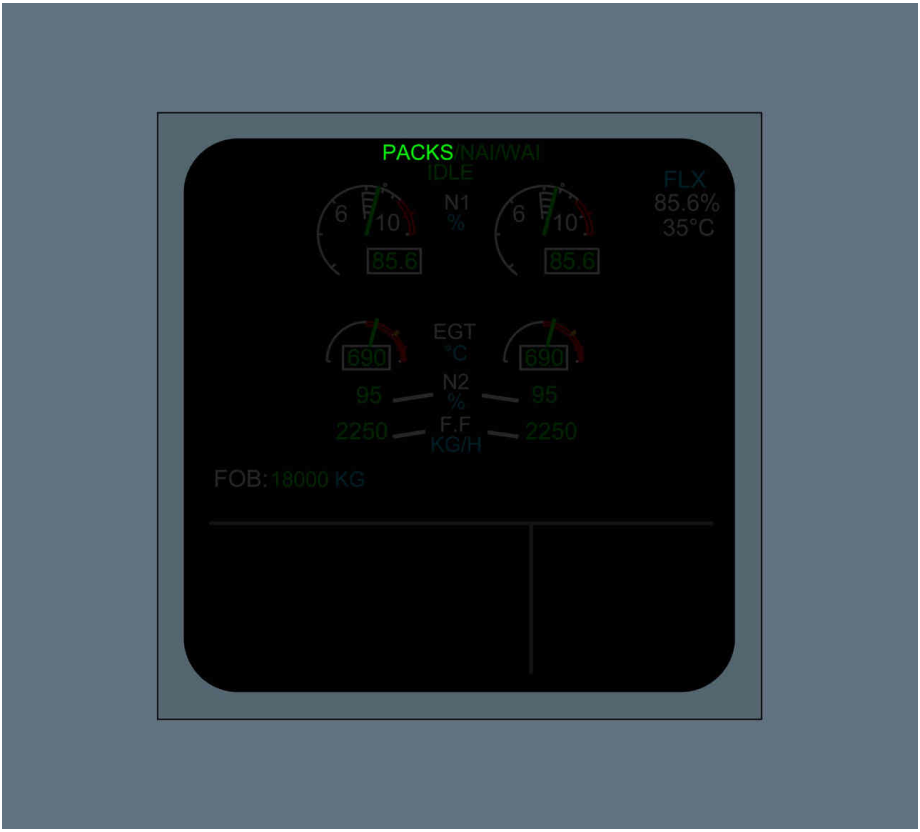
(1) Zone indication
This field also displays the temperature scale in use (°C or °F).

(2) Zone temperature

ENGINE WARNING DISPLAY

Ident.: DSC-21-10-50-00015934.0001001 / 06 SEP 16

6 **Applicable to: MSN 06720-09063**



For more information, *Refer to DSC-70-90-40 Bleed Air Configuration*

PACKS status

For more information, *Refer to DSC-70-90-40 Bleed Air Configuration*

MEMO DISPLAY

Ident.: DSC-21-10-50-00016760.0001001 / 21 MAR 16
Applicable to: ALL

RAM AIR ON : This memo appears in green, if the RAM AIR pb-sw is ON.

Intentionally left blank

GENERAL

Ident.: DSC-21-20-10-00017903.0001001 / 21 MAR 16
Applicable to: ALL

The cabin pressurization system has four general functions:

- Ground function : Fully opens the outflow valve on ground
- Prepressurization : During takeoff, increases cabin pressure to avoid a surge in cabin pressure during rotation
- Pressurization in flight : Adjusts cabin altitude, and rate of change to provide passengers with a comfortable flight
- Depressurization : After touchdown, gradually releases residual cabin overpressure before the ground function fully opens the outflow valve.

The system consists of:

- Two Cabin Pressure Controllers (CPC)
- One Residual Pressure Control Unit (RPCU ◁)
- One outflow valve, with an actuator that incorporates three motors (two for automatic operation, one for manual operation)
- One control panel
- Two safety valves.

Any one of the three independent electric motors may power the outflow valve.
Normally, one of the two cabin pressure controllers operates the outflow valve by means of its associated automatic motor.
In case of ditching, an override switch on the control panel allows the flight crew to close the outflow valve and all valves below the flotation line.
The flight crew can set the system to operate automatically, semi-automatically, or manually.
In normal operation, cabin pressurization is fully automatic.

AUTOMATIC OPERATION

Ident.: DSC-21-20-10-00000323.0001001 / 21 MAR 16
Applicable to: ALL

The flight crew monitors the operation of the system, but does nothing to control it. Air pressure in the cabin follows external schedules that the system receives as signals from the Flight Management and Guidance System (FMGS).
When FMGS data is not available for automatic pressurization, the crew only needs to select the landing field elevation.
The pressurization system then uses the manually-selected landing field elevation for internal schedules.

MANUAL OPERATION

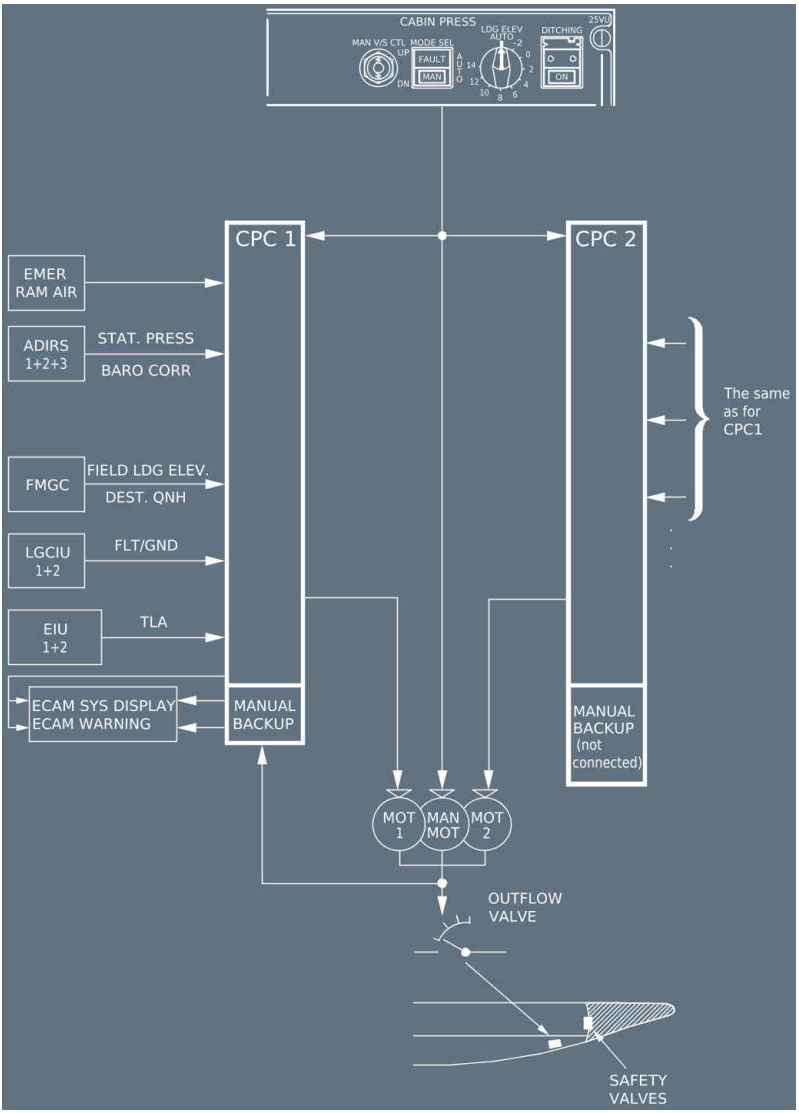
Ident.: DSC-21-20-10-00000324.0001001 / 21 MAR 16
Applicable to: ALL

In manual mode, the flight crew controls the cabin altitude via the manual motor of the outflow valves, by operating controls on the pressurization control panel.

SCHEMATICS

Ident.: DSC-21-20-10-00000325.0002001 / 21 MAR 16

Applicable to: ALL



CABIN PRESSURE CONTROLLERS

Ident.: DSC-21-20-20-00000326.0001001 / 21 MAR 16
Applicable to: ALL

Two identical, independent, digital controllers automatically control the system, by maintaining the proper cabin pressure. They receive signals from the Air Data Inertial Reference System (ADIRS), the Flight Management and Guidance Computer (FMGC), the Engine Interface Unit (EIU), and the Landing Gear Control Interface Unit (LGCIU).
When the system is in automatic or semi-automatic mode, one controller is active, the other is on standby.
The controllers also generate signals for the Electronic Centralized Aircraft Monitoring (ECAM).
For operation in manual mode, each controller has a backup section, which is powered by an independent power supply in the controller N°1 position. This section also has a pressure sensor that generates the cabin altitude and pressure signal for the ECAM, when MAN mode is selected.
The controllers communicate with each other via a cross-channel link.

OUTFLOW VALVE

Ident.: DSC-21-20-20-00000327.0001001 / 21 MAR 16
Applicable to: ALL

The outflow valve is on the right-hand side of fuselage, behind the aft cargo compartment and below the flotation line.
The outflow valve assembly consists of a flush, skin-mounted, rectangular frame, carrying inward and outward opening flaps linked to the actuator. The actuator contains the drives of the two automatic motors and the manual motor. Either of two automatic motors operates the valve in automatic mode, and the manual motor operates it in manual mode.
In automatic mode, the operating controller signals the position of the valve to the ECAM.
In manual mode, the backup section of the N° 1 controller signals the position of the valve to the ECAM.

Note: *When the RAM AIR pushbutton is ON, and Δp is below 1 PSI, the system drives the outflow valve about 50 % open if it is under automatic control. If the system is under manual control, the outflow valve does not automatically open, even if Δp is below 1 PSI.*

SAFETY VALVES

Ident.: DSC-21-20-20-00000328.0001001 / 21 MAR 16
Applicable to: ALL

Two independent pneumatic safety valves prevent cabin pressure from going too high (8.6 PSI above ambient) or too low (1 PSI below ambient).
They are located on the rear pressure bulkhead, above the flotation line.

RESIDUAL PRESSURE CONTROL UNIT (RPCU ⋖)

Ident.: DSC-21-20-20-00017788.0001001 / 21 MAR 16
Applicable to: ALL

The RPCU automatically depressurizes the aircraft in case of abnormal residual pressure on ground.
It automatically opens the outflow valve, when:

- The outflow valve is not fully open, and
- Both CPCs are failed, or manual mode is selected, and
- The aircraft is on ground, and
- All engines are shutdown, or all ADIRS indicate an airspeed below 100 kt.

AUTOMATIC PRESSURE CONTROL MODE

Ident.: DSC-21-20-30-00000329.0001001 / 04 DEC 18
Applicable to: ALL

GENERAL

- Two identical, independent, automatic systems (each consisting of a controller and its associated motors) control cabin pressure.
  Either system controls the single outflow valve.
  Only one controller operates at a time.

  An automatic transfer occurs:
  - 70 s after each landing.
  - If the operating system fails.

- The controller automatically controls the cabin pressure. It limits the cabin pressure to approximately 8 000 ft maximum during CRUISE mode and is optimized to support high airfield operations up to a pressure of 14 100 ft during ground, climb and descent phases.
- The controller normally uses the landing elevation and the QNH from the FMGC, and the pressure altitude from ADIRS.
  If FMGC data are not available, the controller uses the captain BARO Reference from the ADIRS and the LDG ELEV selection.
- Pressurization is assumed through the following modes:

GROUND (GN)

Before takeoff, and 55 s after landing, the outflow valve fully opens to ensure that there is no residual cabin pressure. At touchdown, any remaining cabin pressure is released at a cabin vertical speed of 500 ft/min.

TAKEOFF (TO)

To avoid a pressure surge at rotation, the controller pre-pressurizes the aircraft at a rate of 400 ft/min, until the ΔP reaches 0.1 PSI. At liftoff, the controller initiates the climb phase.

CLIMB (CL)

During climb, the cabin altitude varies according to a fixed pre-programmed law that takes into account the aircraft's actual rate of climb.

CRUISE (CR)

During cruise, the controller maintains cabin altitude at the level-off value, or at the landing field elevation, whichever is higher, but the cabin altitude target is limited to a maximum of approximately 8 000 ft.

DESCENT (DE)

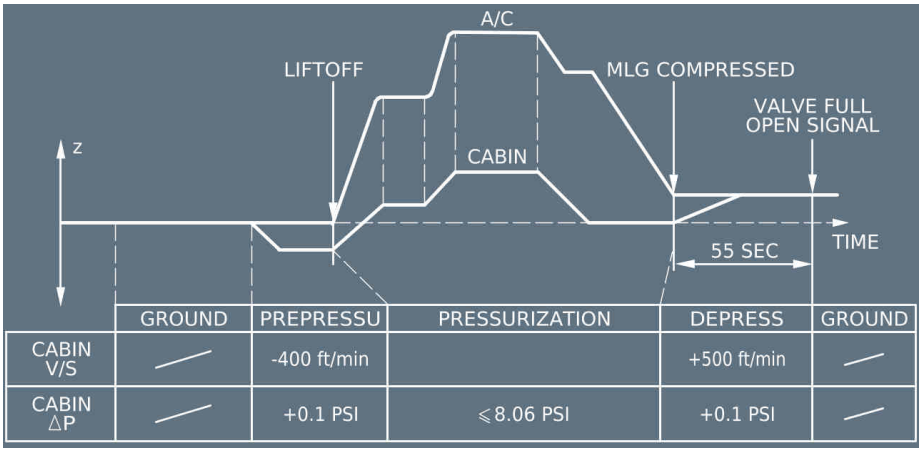
During descent, the controller maintains a cabin rate of descent, such that the cabin pressure is equal to the landing field pressure +0.1 PSI, shortly before landing.
The maximum descent rate is 750 ft/min.

ABORT (AB)

If the aircraft does not climb after takeoff, the abort mode prevents the cabin altitude from climbing.
Cabin pressure is set back to the takeoff altitude +0.1 PSI.

PRESSURIZATION FLIGHT PROFILE

Ident.: DSC-21-20-30-00000331.0001001 / 08 SEP 15
Applicable to: ALL



	GROUND	PREPRESSU	PRESSURIZATION	DEPRESS	GROUND
CABIN V/S		-400 ft/min		+500 ft/min	
CABIN △P		+0.1 PSI	⩽8.06 PSI	+0.1 PSI	

MANUAL PRESSURE CONTROL MODE

Ident.: DSC-21-20-30-00000332.0001001 / 21 MAR 16
Applicable to: ALL

If both automatic systems fail, the flight crew may use the CABIN PRESS control panel to take over manual control of cabin pressurization.

- Release the MODE SEL pushbutton to select MAN, and
- Push the MAN V/S CTL switch UP or DN to increase or decrease cabin altitude.

The first of these actions cuts off power to the AUTO motors, and enables the MAN motor to control the outflow valve.

Note: *1. Due to the slow operation of the outflow valves in manual mode, and the limited resolution of the outflow valves' position on the ECAM, the visual ECAM indication of a change in the outflow valves' position can take up to 5 s.*

2. As the pressurization system is manually-controlled, the outflow valve does not open automatically at touchdown.

DITCHING

Ident.: DSC-21-20-30-00017789.0001001 / 21 MAR 16
Applicable to: ALL

To prepare for ditching, the flight crew must press the DITCHING pb on the CABIN PRESS control panel to close the outflow valve, the emergency ram air inlet, the avionics ventilation inlet and extract valves, the pack flow control valves, and the FWD cargo outlet isolation valve ⋖ .

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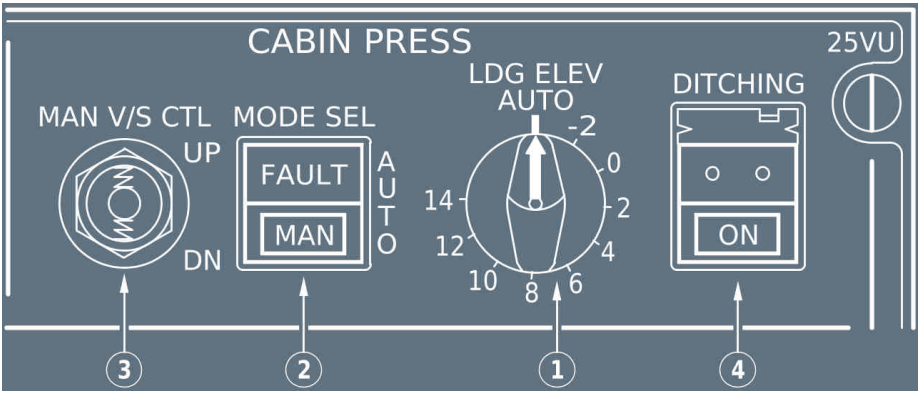
OVERHEAD PANEL

Ident.: DSC-21-20-00000334.0003001 / 07 MAY 13
Applicable to: ALL



(1) LDG ELEV knob

AUTO : The pressurization system uses the FMGS data to construct an optimized pressure schedule.
To exit the AUTO position, pull out and turn the selector.

Other positions : The pressurization schedule does not use the landing elevation from the FMGS, but instead uses the landing elevation selected with this knob (from -2 000 to +14 000 ft) as its reference.

Note: The LDG ELEV knob scale is only given as an indication; refer to the ECAM information for accurate adjustment.

(2) MODE SEL pb

AUTO : Automatic mode is operating. One of the two systems controls the outflow valve.

MAN : This legend appears in white, and FAULT does not come on. The flight crew then uses the MAN V/S CTL selector to control the outflow valve.

Note: Switching the MODE SEL pb to MAN, for at least 10 s, then returning it to AUTO will select the other system.

FAULT lt : This legend appears in amber and the ECAM caution light comes on only when both automatic systems are faulty.

Note: The pilot may notice a variation in the CAB ALT indication on the ECAM PRESS page, when the system switches from the cabin pressure control AUTO mode to MAN mode, due to the reduced resolution of the backup pressure sensor.

(3) MAN V/S CTL toggle switch

The switch, springloaded to neutral controls the outflow valve position through operation of the MAN motor, when the MODE SEL pb is in the MAN position.

UP : The valve moves towards the open position.

DN : The valve moves towards the closed position.

Note: To target precise cabin vertical speed rate, only short inputs should be applied on the toggle switch.

(4) DITCHING guarded pushbutton

Normal : The system functions normally.

ON : The operating system sends a “close” signal to the outflow valve, emergency ram air inlet, avionics ventilation inlet and extract valves, pack flow control valves.

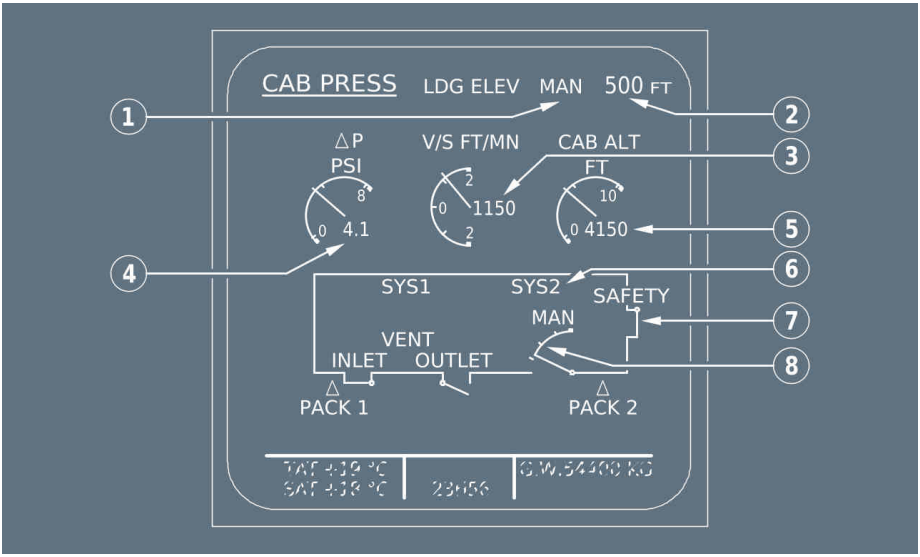
Note: The outflow valve will not close automatically, if it is under manual control.

CAUTION	If the ditching pb is set to ON, with the low pressure ground cart connected and all doors closed, a differential pressure will build up.

ECAM CAB PRESS PAGE

Ident.: DSC-21-20-40-00000335.0003001 / 30 MAR 18

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



(1) LDG ELEV AUTO/MAN

- LDG ELEV AUTO: appears in green when the LDG ELEV selector is in AUTO.
- LDG ELEV MAN: appears in green when the LDG ELEV selector is not in AUTO.

Neither appears when the indications from SDAC are not valid.

(2) Landing elevation
The landing elevation selected either automatically by the FMGS or manually by the pilot appears in green (but not when the MODE SEL pushbutton switch is in MAN).

(3) V/S FT/MIN (cabin vertical speed)
The analog and digital presentations appear in green when V/S is in the normal range.
The digital presentation pulses when V/S > 1 750 ft/min (resets at 1 650 ft/min).

(4) ΔP PSI (cabin differential pressure)
The analog and digital presentations appear in green when ΔP is in the normal range.
They appear in amber when ΔP ≤ –0.4 PSI or ≥ 8.5 PSI.
The digital presentation pulses if Δp > 1.5 PSI (resets at 1 PSI) during flight phase 7. (*Refer to DSC-31-15 Flight Phases*).

(5) CAB ALT FT (cabin altitude)
The analog and digital presentations appear in green, in normal range.
They appear in red if the cabin altitude goes above 9 550 ft.
The digital presentation pulses if the cabin altitude is at or above 8 800 ft (resets at 8 600 ft).

(6) Active system indication (SYS 1 or SYS 2 or MAN)
SYS 1 or SYS 2 appears in green when active and in amber when faulty. When either system is inactive, its title does not appear.
MAN appears in green when the MODE SEL switch is in MAN.

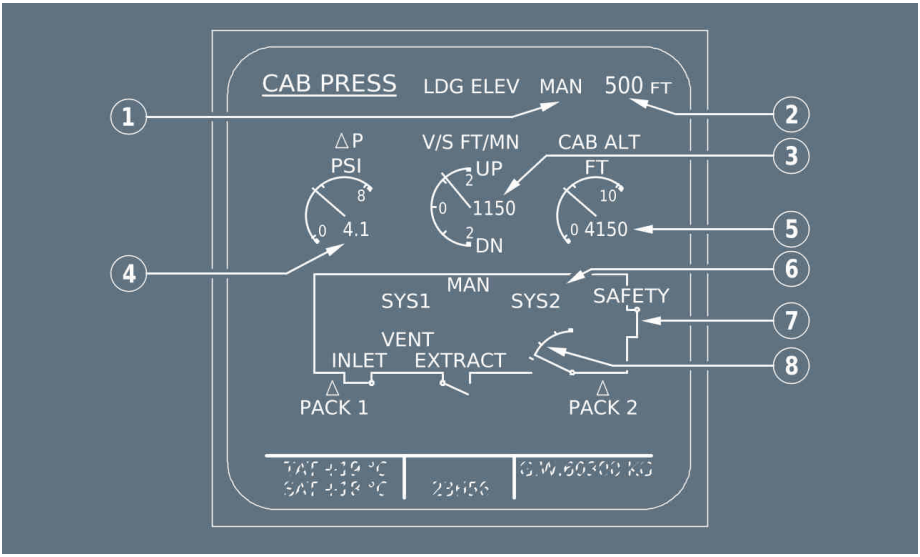
(7) Safety valve position
SAFETY appears in white and the diagram in green when both safety valves are fully closed.
SAFETY and the diagram appear in amber when either valve is not closed.

Note: The safety valve opens when the cabin differential pressure is between 8.2 and 8.9 PSI. The range is due to the reduced accuracy of ΔP measurements (in MAN mode), combined with the decrease in cabin differential pressure that occurs immediately after the safety valves open.

(8) Outflow valve position
The diagram is green when the valve is operating normally.
In automatic mode, the diagram becomes amber when the valve opens more than 95 % during flight.

ECAM CAB PRESS PAGE

Ident.: DSC-21-20-40-00000335.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) LDG ELEV AUTO/MAN

- LDG ELEV AUTO: appears in green when the LDG ELEV selector is in AUTO.
- LDG ELEV MAN: appears in green when the LDG ELEV selector is not in AUTO.

Neither appears when the MODE SEL pushbutton switch is in MAN.

(2) Landing elevation
The landing elevation selected either automatically by the FMGS or manually by the pilot appears in green (but not when the MODE SEL pushbutton switch is in MAN).

(3) V/S FT/MIN (cabin vertical speed)
The analog and digital presentations appear in green when V/S is in the normal range. They appear in amber when V/S ≥ 2 000 ft/min.
The digital presentation pulses when V/S > 1 800 ft/min (resets at 1 600 ft/min).

(4) ΔP PSI (cabin differential pressure)
The analog and digital presentations appear in green when ΔP is in the normal range. They appear in amber when ΔP ≤ –0.4 PSI or ≥ 8.5 PSI.

The digital presentation pulses if Δp > 1.5 PSI (resets at 1 PSI) during flight phase 7. (*Refer to DSC-31-15 Flight Phases*).

(5) CAB ALT FT (cabin altitude)
The analog and digital presentations appear in green, in normal range.
They appear in red if the cabin altitude goes above 9 550 ft.
The digital presentation pulses if the cabin altitude is at or above 8 800 ft (resets at 8 600 ft).

(6) Active system indication (SYS 1 or SYS 2 or MAN)
SYS 1 or SYS 2 appears in green when active and in amber when faulty. When either system is inactive, its title does not appear.
MAN appears in green when the MODE SEL switch is in MAN.

(7) Safety valve position
SAFETY appears in white and the diagram in green when both safety valves are fully closed.
SAFETY and the diagram appear in amber when either valve is not closed.

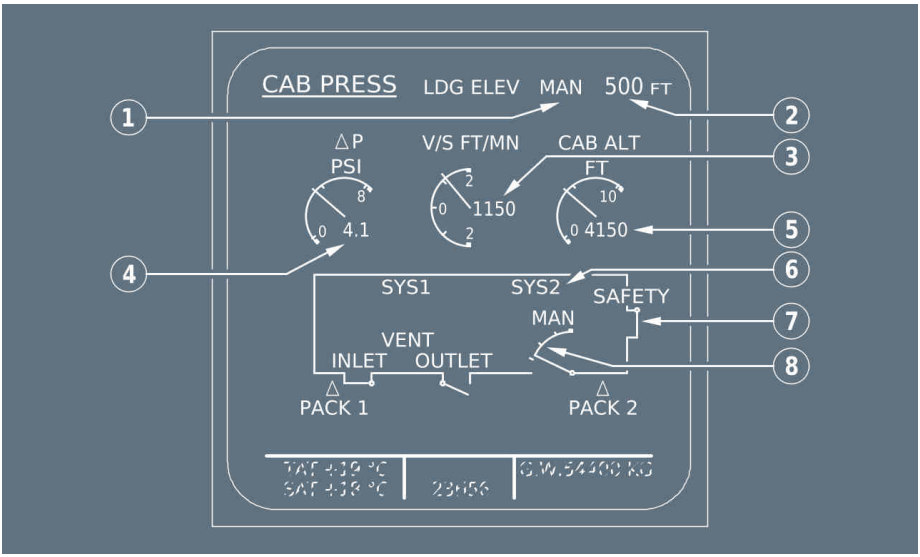
Note: The safety valve opens when the cabin differential pressure is between 8.2 and 8.9 PSI. The range is due to the reduced accuracy of ΔP measurements (in MAN mode), combined with the decrease in cabin differential pressure that occurs immediately after the safety valves open.

(8) Outflow valve position
The diagram is green when the valve is operating normally.
The diagram becomes amber when the valve opens more than 95 % during flight.

ECAM CAB PRESS PAGE

Ident.: DSC-21-20-40-00000335.0002001 / 21 MAR 16

[2] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



(1) LDG ELEV AUTO/MAN

- LDG ELEV AUTO: appears in green when the LDG ELEV selector is in AUTO.
- LDG ELEV MAN: appears in green when the LDG ELEV selector is not in AUTO.

Neither appears when the indications from SDAC are not valid.

(2) Landing elevation
The landing elevation selected either automatically by the FMGS or manually by the pilot appears in green (but not when the MODE SEL pushbutton switch is in MAN).

(3) V/S FT/MIN (cabin vertical speed)
The analog and digital presentations appear in green when V/S is in the normal range.
The digital presentation pulses when V/S > 1 750 ft/min (resets at 1 650 ft/min).

(4) ΔP PSI (cabin differential pressure)
The analog and digital presentations appear in green when ΔP is in the normal range.
They appear in amber when ΔP ≤ –0.4 PSI or ≥ 8.5 PSI.

The digital presentation pulses if Δp > 1.5 PSI (resets at 1 PSI) during flight phase 7. (*Refer to DSC-31-15 Flight Phases*).

(5) CAB ALT FT (cabin altitude)
The analog and digital presentations appear in green, in normal range.
They appear in red if the cabin altitude goes above 9 550 ft.
The digital presentation pulses if the cabin altitude is at or above 8 800 ft (resets at 8 600 ft).

(6) Active system indication (SYS 1 or SYS 2 or MAN)
SYS 1 or SYS 2 appears in green when active and in amber when faulty. When either system is inactive, its title does not appear.
MAN appears in green when the MODE SEL switch is in MAN.

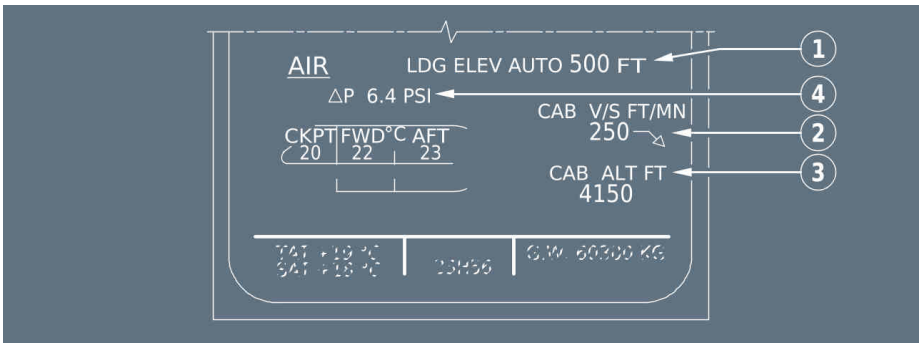
(7) Safety valve position
SAFETY appears in white and the diagram in green when both safety valves are fully closed.
SAFETY and the diagram appear in amber when either valve is not closed.

Note: The safety valve opens when the cabin differential pressure is between 8.2 and 8.9 PSI. The range is due to the reduced accuracy of ΔP measurements (in MAN mode), combined with the decrease in cabin differential pressure that occurs immediately after the safety valves open.

(8) Outflow valve position
The diagram is green when the valve is operating normally.
The diagram becomes amber when the valve opens more than 95 % during flight.

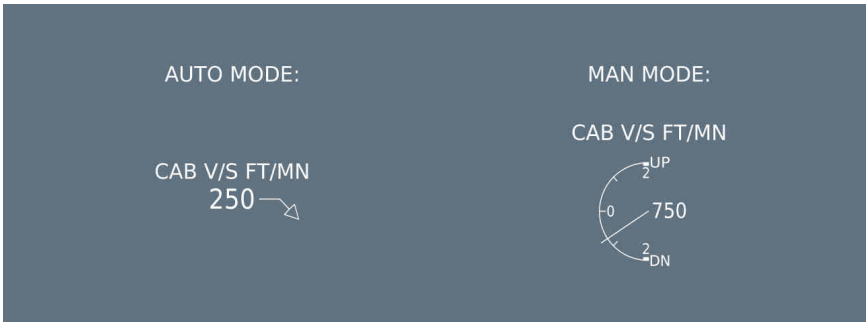
ECAM CRUISE PAGE

Ident.: DSC-21-20-40-00000336.0001001 / 09 OCT 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) LDG ELEV AUTO/MAN
Identifical to the CAB PRESS page.

(2) CAB V/S FT/MIN (cabin vertical speed)
Green, in normal range.
Amber, when out of normal range : V/S ≥ 2 000 ft/min
Pulses, when the V/S > 1 800 ft/min (resets at 1 600 ft/min).



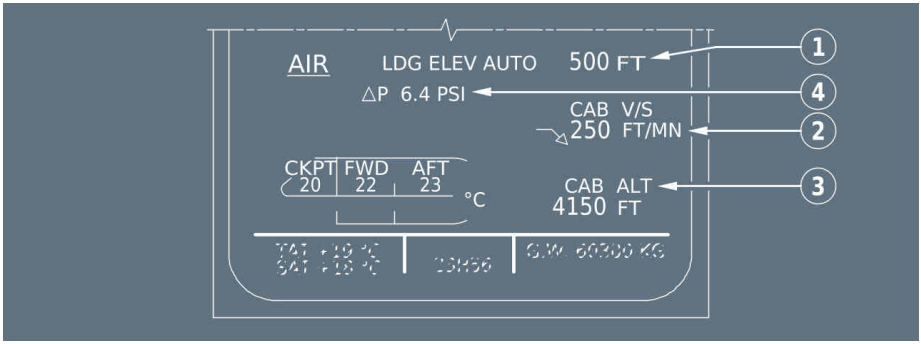
(3) CAB ALT FT (cabin altitude)
Green, in normal range.
Red, for excessive cabin altitude : ≥ 9 550 ft.
Pulses for cabin altitude at, or above, 8 800 ft (resets at 8 600 ft).

(4) ΔP indication
It is normally green.
It becomes amber, when out of normal range Δp ≤ -0.4 PSI or ≥ 8.5 PSI.

ECAM CRUISE PAGE

Ident.: DSC-21-20-40-00000336.0002001 / 09 OCT 12

[3] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



(1) LDG ELEV AUTO/MAN
Identifical to the CAB PRESS page

(2) CAB V/S FT/MIN (cabin vertical speed)
Green, in normal range.
Pulses, when the V/S > 1 750 ft/min (resets at 1 650 ft/min).

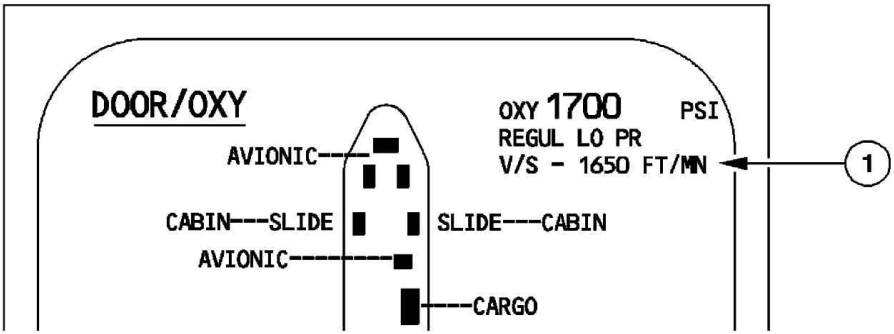
(3) CAB ALT FT (cabin altitude)
Green, in normal range.
Red, for excessive cabin altitude : ≥ 9 550 ft.
Pulses for cabin altitude at, or above, 8 800 ft (resets at 8 600 ft).

(4) ΔP indication
It is normally green. Pulses green when CAB ΔP ≥ 1.5 PSI before landing.

It becomes amber, when out of normal range $\Delta p \leq -0.4$ PSI or ≥ 8.5 PSI.

ECAM DOOR/OXY PAGE

Ident.: DSC-21-20-40-00000337.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) V/S (cabin vertical speed)

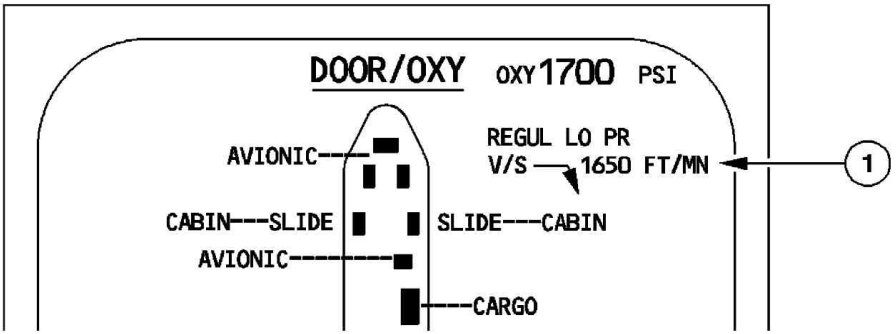
This number only appears during flight phases 5, 6 and 7. (*Refer to DSC-31-15 Flight Phases* for flight phase definitions).

- It is normally green.
- It becomes amber, when the V/S is greater than 2 000 ft/min, or less than -2 000 ft/min.

ECAM DOOR/OXY PAGE

Ident.: DSC-21-20-40-00000337.0003001 / 21 MAR 16

4 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



(1) V/S (cabin vertical speed)

This number only appears during flight phases 5, 6 and 7. (*Refer to DSC-31-15 Flight Phases* for flight phase definitions).

- It is normally green.
- It pulses, when the V/S is greater than 1 750 ft/min and stops pulsing, when less than 1 650 ft/min.
- It becomes amber, when the V/S is greater than 2 000 ft/min, or less than -2 000 ft/min.

MEMO DISPLAY

Ident.: DSC-21-20-40-00016761.0001001 / 21 MAR 16

Applicable to: ALL

MAN LDG ELEV : This memo appears in green, if the LDG ELEV knob is not in the AUTO position.

GENERAL

Ident.: DSC-21-30-10-00017790.0001001 / 21 MAR 16
Applicable to: ALL

The ventilation system includes ventilation for:

- The avionics, controlled by the Avionics Equipment Ventilation Controller (AEVC),
- The batteries,
- The lavatories and galleys.

Note: *For more information about cargo ventilation , Refer to DSC-21-40-10 General.*

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GENERAL

Ident.: DSC-21-30-20-00000341.0001001 / 24 FEB 11
Applicable to: ALL

The avionics ventilation system is fully automatic.
It cools the electrical and electronic components in the avionics compartment and on the flight deck, including the instrument and circuit breaker panels. It uses two electric fans to force the circulation of cooling air.
Whatever the configuration of the avionics ventilation system is, a part of the avionics ventilation air is sucked from the cockpit through the different cockpit panels.

MAIN COMPONENTS

Ident.: DSC-21-30-20-00017791.0001001 / 21 MAR 16
Applicable to: ALL

FANS

Two electric fans continuously circulate air around the avionics equipment, when the aircraft is electrically supplied.
The Fan Speed Controller (FSC) ◁ controls the avionics ventilation fan speed as a function of temperature::

1. High speed when the ventilation air temperature is above +40 °C (104 °F)
2. Low speed when the ventilation air temperature is below +35 °C (95 °F)

SKIN AIR INLET AND OUTLET VALVES

These valves admit air from outside the aircraft and evacuate hot air from the avionics equipment.

SKIN EXCHANGE INLET AND OUTLET BYPASS VALVES

These valves enable air to circulate between the avionics bay and the space under the cargo compartment floor.

AIR CONDITIONING INLET VALVE

This valve opens to enable the air conditioning circuit to supply fresh air to the avionics bay.

SKIN EXCHANGE ISOLATION VALVE

This valve connects or isolates the skin heat exchanger.

AVIONICS EQUIPMENT VENTILATION CONTROLLER (AEVC)

The AEVC controls the operation of all fans and valves in the avionics ventilation system.

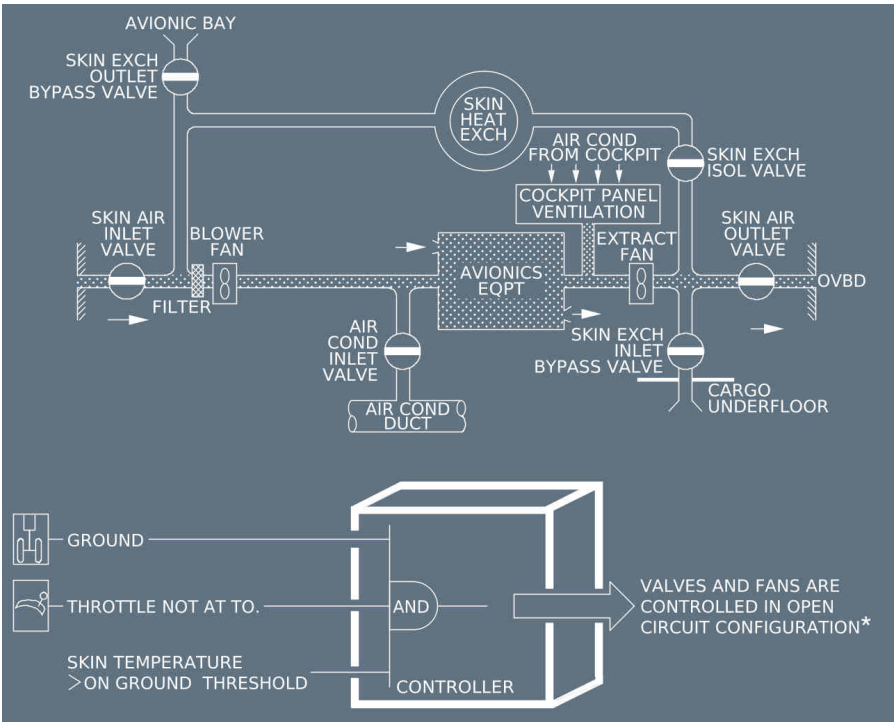
NORMAL OPERATION, OPEN-CIRCUIT CONFIGURATION

Ident.: DSC-21-30-20-00000343.0001001 / 16 APR 14
Applicable to: ALL

GROUND OPERATIONS

The open-circuit configuration operates when skin temperature is above the on-ground threshold.

On-ground threshold = +12 °C (53 °F), temperature increasing, or
+9 °C (48 °F), temperature decreasing.



(*)

Note: *In some cases, the opening of the skin air valves can be delayed even if the skin temperature is above the on-ground thresholds: This is to avoid condensation phenomenon when the temperature inside the avionic compartment is too cold.*

NORMAL OPERATION, CLOSE-CIRCUIT CONFIGURATION

Ident.: DSC-21-30-20-00000345.0001001 / 09 OCT 12
Applicable to: ALL

FLIGHT OPERATIONS

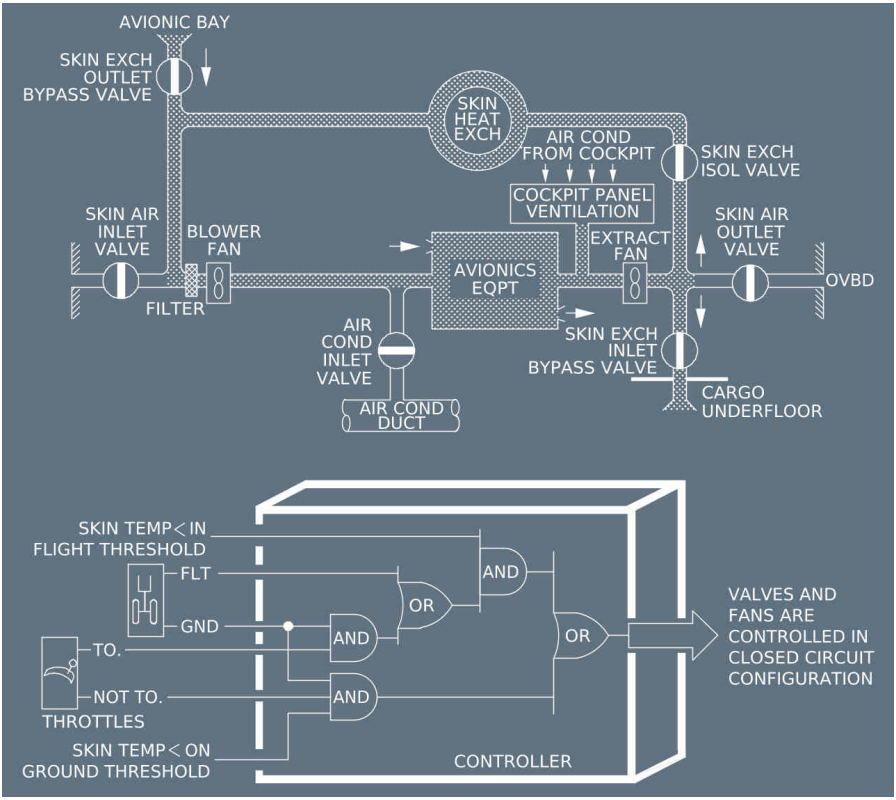
The close-circuit configuration operates when skin temperature is beneath the in-flight threshold.

In flight threshold = +35 °C (95 °F), temperature increasing, or
+32 °C (90 °F), temperature decreasing.

GROUND OPERATIONS

The close-circuit configuration operates when skin temperature is beneath the on-ground threshold.

On ground threshold = +12 °C (53 °F), temperature increasing, or
+9 °C (48 °F), temperature decreasing.



NORMAL OPERATION, INTERMEDIATE CONFIGURATION

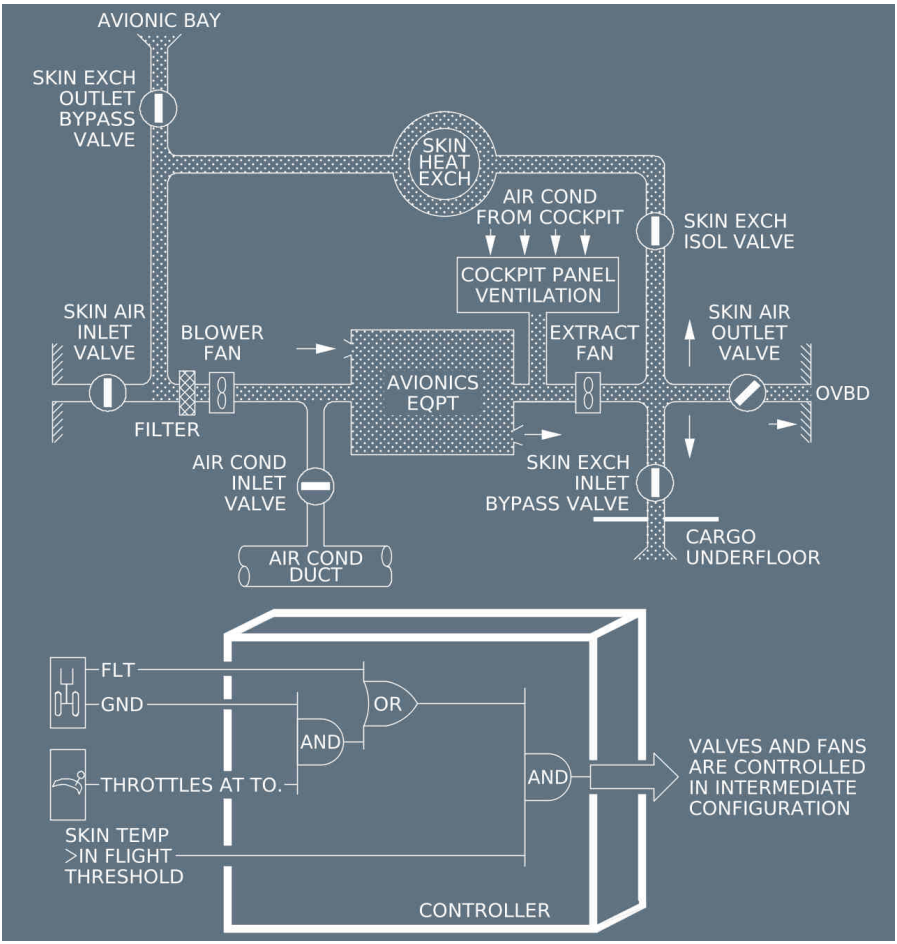
Ident.: DSC-21-30-20-00000344.0001001 / 09 OCT 12
Applicable to: ALL

FLIGHT OPERATIONS

The intermediate configuration operates when skin temperature is above the in-flight threshold.

In flight threshold = +35 °C (95 °F), temperature increasing, or
+32 °C (90 °F), temperature decreasing.

Note: *The measuring range of the skin temperature sensed is between -50 °C and 80 °C. Outside of this range, the AEVC sets the avionics ventilation configuration to the intermediate configuration (partially open) until the temperature is within the operation range again.*



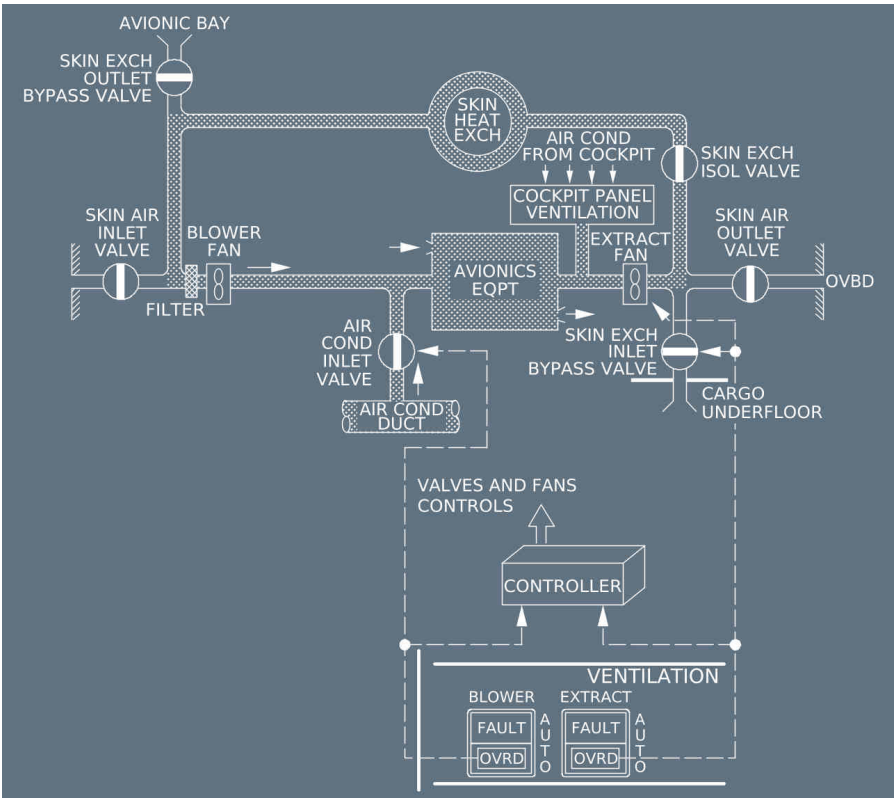
ABNORMAL OPERATION

Applicable to: ALL

Ident.: DSC-21-30-20-A-00000346.0001001 / 20 JAN 15

BLOWER FAULT OR EXTRACT FAULT ALERT

When the BLOWER or the EXTRACT pushbutton switch is set at the OVRD (override) position, the system is in closed-circuit configuration and adds air from the air conditioning system to the ventilation air.

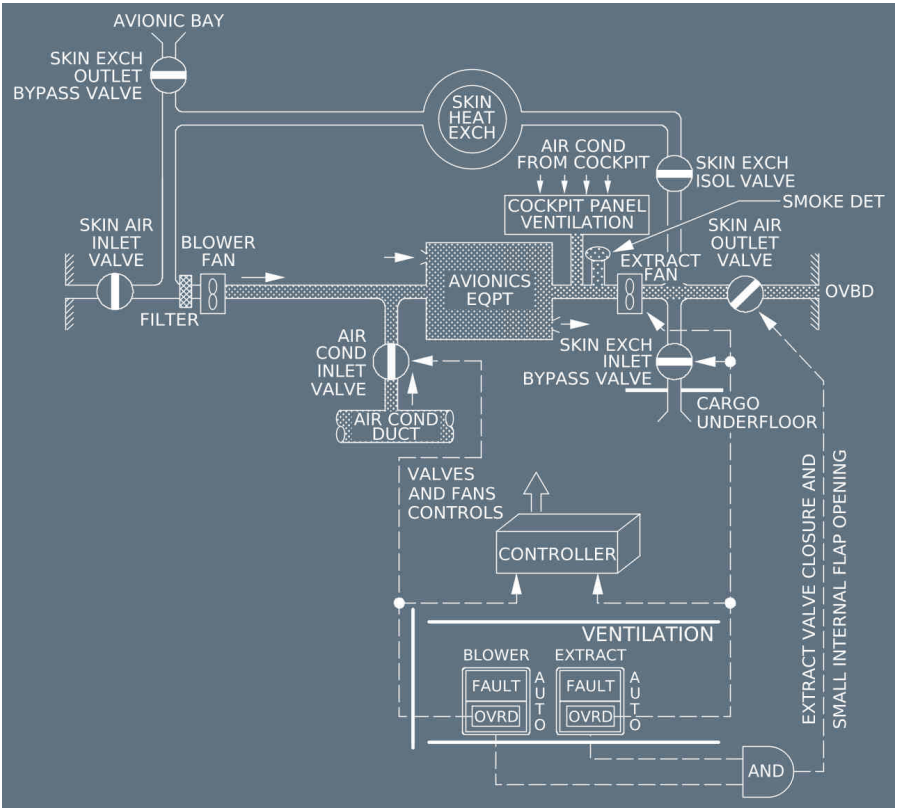


When the BLOWER pushbutton switch is set at OVRD, the blower fan is stopped and the extract fan continues to run.
When the EXTRACT pushbutton switch is set at OVRD, the extract fan is controlled directly from the pushbutton. Both fans continue to run.

Ident.: DSC-21-30-20-A-00000347.0001001 / 09 OCT 12

SMOKE CONFIGURATION

When the smoke detector detects smoke in the avionics ventilation air the BLOWER and the EXTRACT FAULT lights come on.
When both the BLOWER and the EXTRACT pushbuttons are set to the OVRD position, the air conditioning system supplies cooling air, which is then exhausted overboard. The blower fan stops.



Ident.: DSC-21-30-20-A-00000348.0001001 / 21 MAR 16

CONTROLLER FAILURE

The system goes to the same configuration as above, except that the skin exchange isolation valve stays open.

The inlet valve and the skin exchange inlet bypass valve remain in the position they were in before the failure occurred.
The extract fan keeps running.

BATTERY VENTILATION

Ident.: DSC-21-30-40-00000350.0001001 / 21 MAR 16
Applicable to: ALL

A venturi in the skin of the aircraft draws air from the space around the batteries and vents it overboard. The resulting airflow ventilates the batteries.

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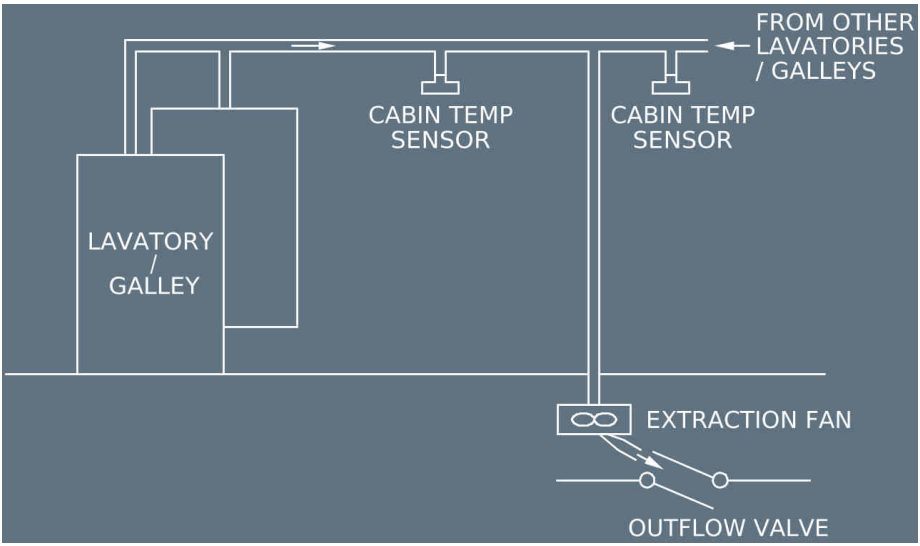
LAVATORY AND GALLEY

Ident.: DSC-21-30-50-00000351.0001001 / 09 OCT 12
Applicable to: ALL

An extraction fan draws ambient cabin air through the lavatories and galleys and exhausts it near the outflow valve.
The extraction fan runs continually when electric power is available.



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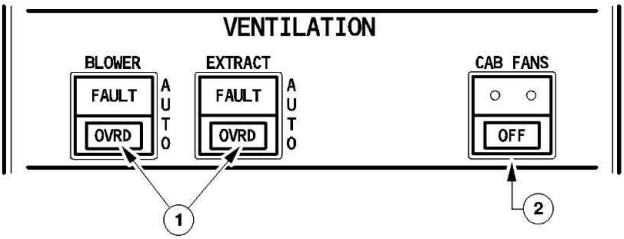
OVERHEAD PANEL

Ident.: DSC-21-30-60-00000352.0001001 / 24 FEB 11
Applicable to: ALL



(1) BLOWER pb-sw and EXTRACT pb-sw

AUTO: : When both pushbutton switches are on AUTO:
- On the ground before the application of TO power, the ventilation system is in open circuit configuration (closed configuration when the skin temperature is below the ground threshold).
- On the ground after the application of TO power, and in flight, the ventilation system is in closed circuit configuration.

OVRD: : When either pushbutton switch is on OVRD:
- The system goes to closed circuit configuration.
- Air from the air conditioning system is added to ventilation air. (The blower fan stops if the BLOWER pushbutton switch is in the OVRD position).

When both pushbutton switches are on OVRD:
- Air flows from the air conditioning system and then overboard.
- The extract fan continues to run.

FAULT : Lights up amber (and ECAM activates)

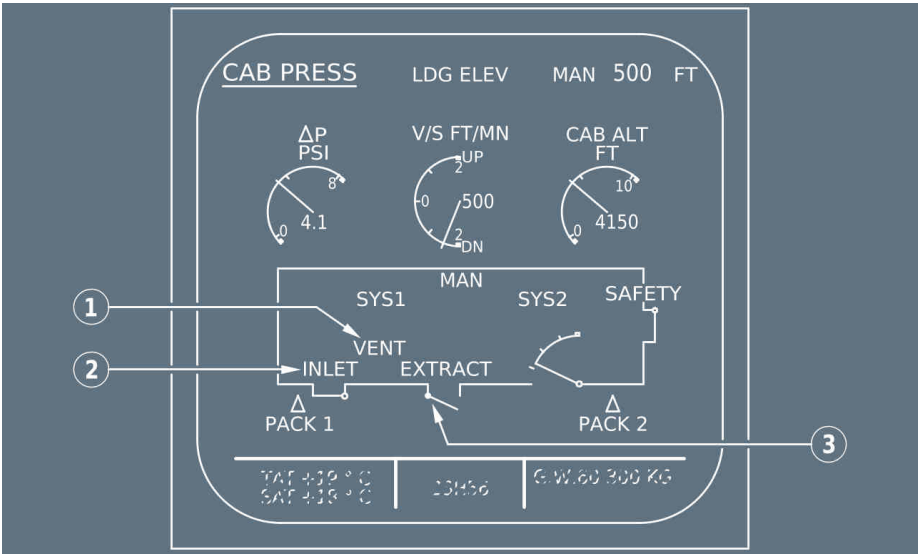
It:
- in the blower switch, if :
  - blowing pressure is low (See *)
  - duct overheats (See *)
  - computer power supply fails
  - smoke warning is activated
- in the extract switch, if :
  - extract pressure is low (See *)
  - computer power supply fails
  - smoke warning is activated.

* If the warning occurs on the ground when the engines are stopped, the external horn sounds.

(2) *Refer to DSC-21-10-50 Controls on Overhead Panel*

ECAM CAB PRESS PAGE

Ident.: DSC-21-30-60-00000353.0001001 / 03 APR 13
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) VENT
This normally appears in white. It becomes amber, if there is a BLOWER FAULT, EXTRACT FAULT, or AVNCS SYS FAULT.

(2) INLET and EXTRACT Indications
Normally white. The corresponding indication becomes amber, in case of a BLOWER FAULT or EXTRACT FAULT.

(3) INLET and EXTRACT Valve Diagrams

This indicates that the valve is fully closed.
It is normally green, but is amber if there is a disagreement.

This indicates that the valve is fully open.
It is normally green, but is amber if there is a disagreement.

NOTE: Because of the accuracy of the temperature sensors, on the ground the closed or open indication may become amber when the temperature is close to the valve opening or closing threshold.

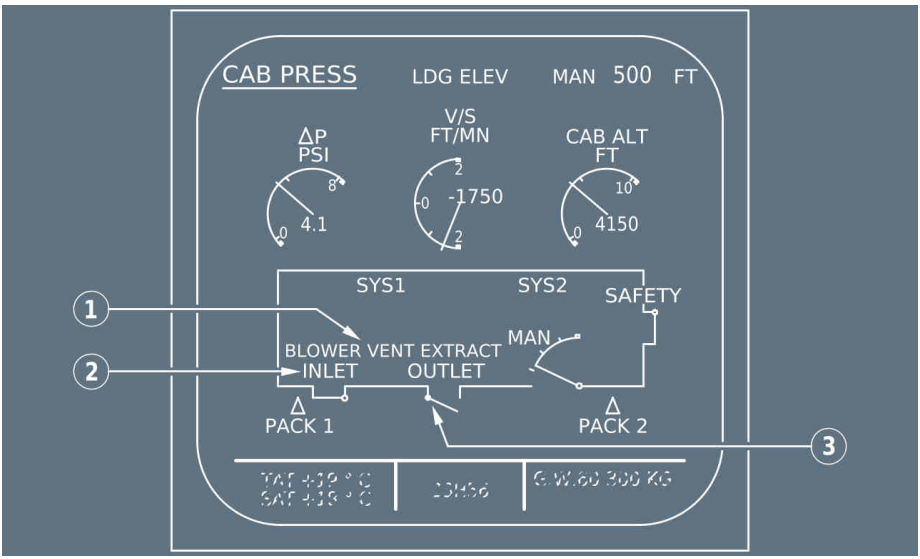
This indicates that the inlet valve is in transit (inlet valve only).
It is amber.

This indicates that the outlet valve is partially open (the outlet valve is closed but a small internal flap is open).

XX
If the valve position is not available or the received status for the valve is inconsistent, XX appears in amber.

ECAM CAB PRESS PAGE

Ident.: DSC-21-30-60-00000353.0003001 / 03 APR 13
Applicable to: MSN 02388, 02584-02626, 02804, 03308, 04294, 04314, 04393, 04433, 04510



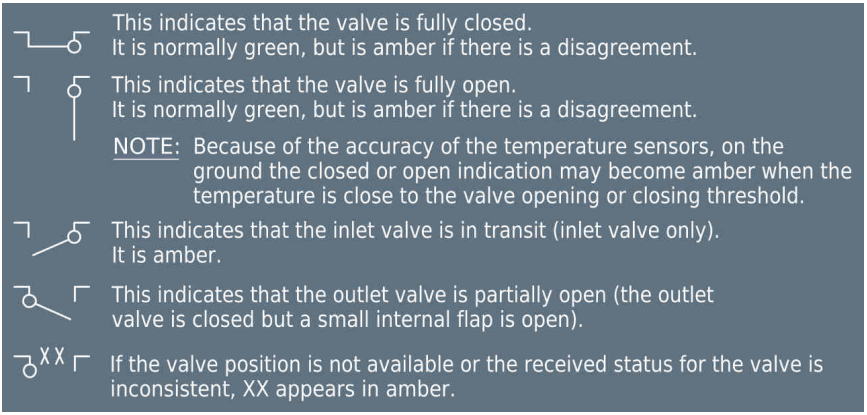
(1) BLOWER, VENT and EXTRACT Indications

VENT message normally appears in white. It becomes amber, if there is a BLOWER FAULT, EXTRACT FAULT, or AVNCS SYS FAULT.
BLOWER message appears in amber if there is a BLOWER FAULT.
EXTRACT message appears in amber if there is an EXTRACT FAULT.

(2) INLET and OUTLET Indications

Normally white. The corresponding indication becomes amber, when the inlet valve or the outlet valve is failed.

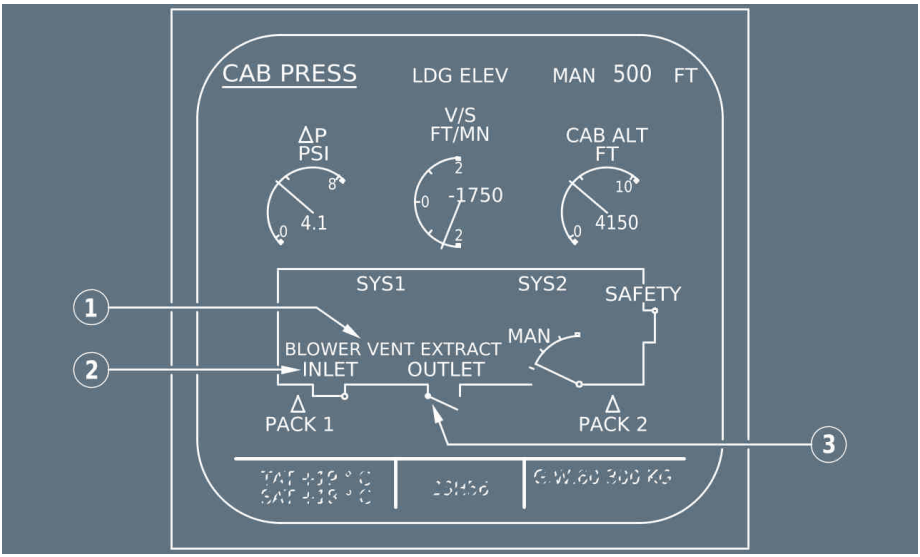
(3) INLET and OUTLET Valve Diagrams



ECAM CAB PRESS PAGE

Ident.: DSC-21-30-60-00000353.0006001 / 03 APR 13

[1] **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02649-02737, 02908-03264, 03330-04216, 04312, 04328-04384, 04394-04399, 04438-04506, 04518-09063**



(1) BLOWER, VENT and EXTRACT Indications
VENT message normally appears in white. It becomes amber, if there is a BLOWER FAULT, EXTRACT FAULT, or AVNCS SYS FAULT.
BLOWER message appears in amber if there is a BLOWER FAULT.
EXTRACT message appears in amber if there is an EXTRACT FAULT.

(2) INLET and OUTLET Indications
Normally white. The corresponding indication becomes amber, when the inlet valve or the outlet valve is failed.

(3) INLET and OUTLET Valve Diagrams

This indicates that the valve is fully closed.
It is normally green, but is amber if there is a disagreement.

This indicates that the valve is fully open.
It is normally green, but is amber if there is a disagreement.

This indicates that the inlet valve is in transit (inlet valve only).
It is amber.

This indicates that the outlet valve is partially open (the outlet valve is closed but a small internal flap is open).

If the valve position is not available or the received status for the valve is inconsistent, XX appears in amber.

GENERAL

Ident.: DSC-21-40-10-00017795.0001001 / 21 MAR 16
Applicable to: ALL

CARGO VENTILATION

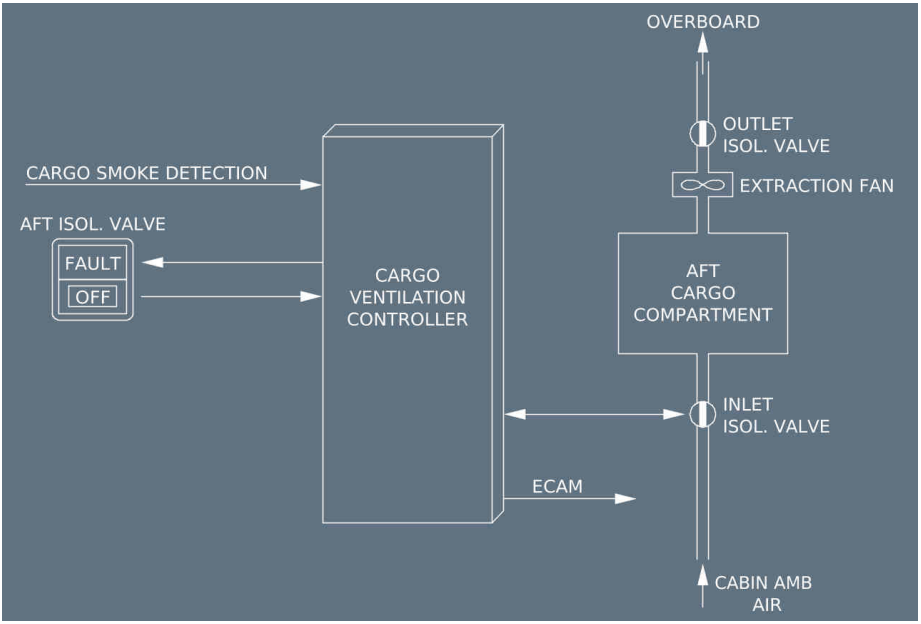
An extraction fan draws air from forward cargo compartment or aft cargo compartment, and exhausts it overboard. Air from the cabin replaces the exhausted air, thus ventilating the cargo compartments.

CARGO TEMPERATURE REGULATION

The system can mix hot bleed air with the air coming from the cabin, therefore giving the flight crew control of the temperature in the forward or aft cargo compartment.

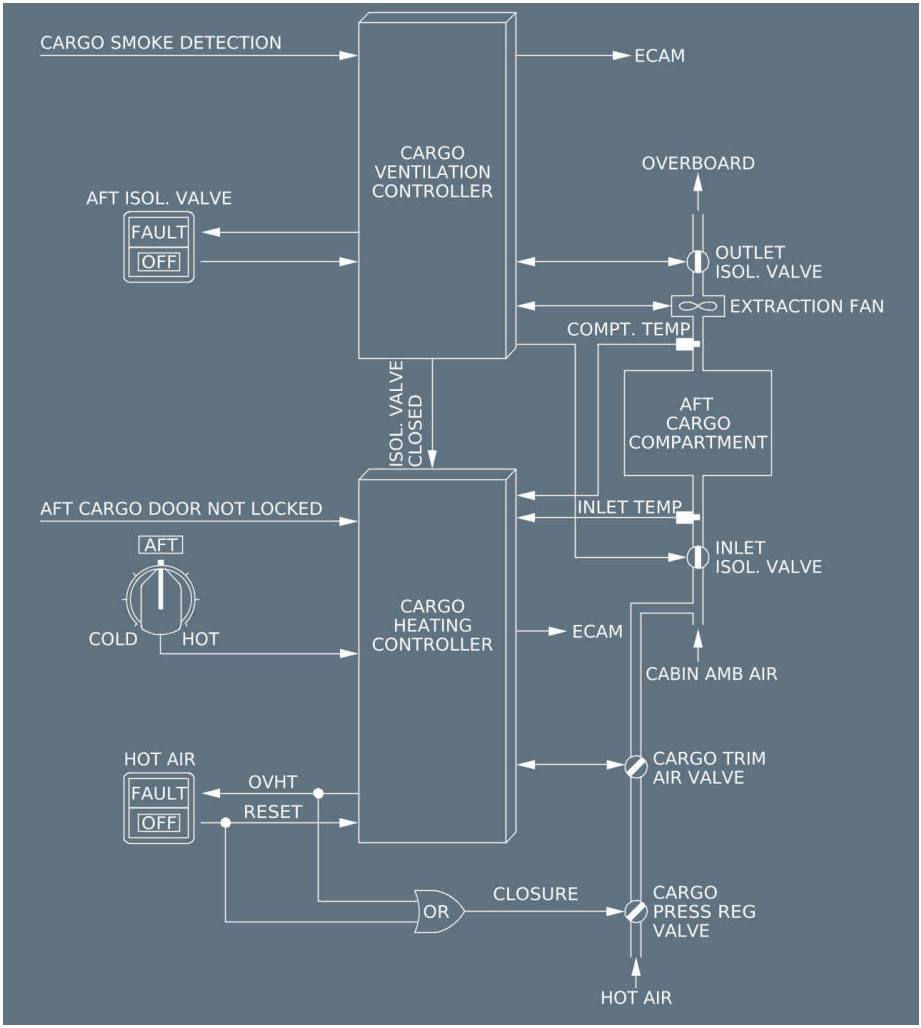
SCHEMATIC

Ident.: DSC-21-40-10-00000357.0002001 / 22 MAY 12
Applicable to: MSN 01920, 02204, 02804



SCHEMATIC

Ident.: DSC-21-40-10-00000357.0004001 / 22 MAY 12
Applicable to: MSN 01767, 02121-02135, 02139, 02275-02334, 02443, 02609-02649, 03071, 04314, 04393-04397, 05158



FWD CARGO VENTILATION

Ident.: DSC-21-40-20-00017796.0001001 / 21 MAR 16
Applicable to: ALL

Air from the cabin goes via the inlet isolation valve to the forward cargo compartment, driven either by an extraction fan or by differential pressure in flight. A skin-mounted venturi discharges the air overboard via the outlet isolation valve. The cargo ventilation controller controls the operation of the inlet and outlet isolation valves and the extraction fan.

The ventilation system operates in two modes:
- On the ground or when $\Delta P \leq 1$ PSI in flight, the controller opens the isolation valves, then starts the extraction fan
- In flight when $\Delta P > 1$ PSI, the controller stops the fan, and differential pressure maintains the ventilation.

The controller closes the isolation valves and stops the extraction fan when:
- The flight crew sets the FWD ISOL VALVE pb-sw to OFF, or
- The forward cargo smoke detection unit detects smoke.

The outlet valve closes and the extraction fan stops when the flight crew sets the DITCHING pb-sw to ON.

AFT CARGO VENTILATION

Ident.: DSC-21-40-20-00017797.0001001 / 21 MAR 16
Applicable to: ALL

Air from the cabin goes via the inlet isolation valve to the aft cargo compartment, driven by an extraction fan. Air is controlled by the outlet isolation valve and then goes outboard through the outflow valve.
The cargo ventilation controller controls the operation of the inlet and outlet isolation valves and the extraction fan.
When the isolation valves are fully open, the extraction fan operates continuously when the aircraft is on the ground and during flight.

The controller closes the isolation valves and stops the extraction fan when:
- The flight crew sets the AFT ISOL VALVE pb-sw to OFF, or
- The aft cargo smoke detection unit detects smoke.

AFT CARGO HEATING

Ident.: DSC-21-40-20-00017798.0001001 / 21 MAR 16
Applicable to: ALL

The ventilation system for the aft cargo compartment uses hot engine bleed air (upstream of the packs), mixing it with the ambient cabin air that flows through the cargo compartment.
The cargo regulating valve regulates the pressure of this hot air supply, and the trim air valve, which is modulated electrically by the controller, controls the flow.
The cargo pressure regulating valve is pneumatically operated and electrically controlled from the HOT AIR pb on the CARGO HEAT panel.
The hot air is controlled by the cargo trim air valve which is modulated electrically by the controller.
The hot air is then mixed with air from the cabin and supplied to the cargo compartment through the ventilation inlet isolation valve.
According to the temperature selector demand, the controller regulates the amount of hot air added by the trim air valve, until the desired temperature is reached.
If the inlet temperature exceeds 70 °C, the controller closes the trim air valve.
If the inlet temperature exceeds 88 °C, the controller interprets this as a duct overheat and closes the pressure regulating valve. This valve then remains closed until the flight crew resets the system by pressing the HOT AIR pb — which it cannot do until the temperature drops below 70 °C.

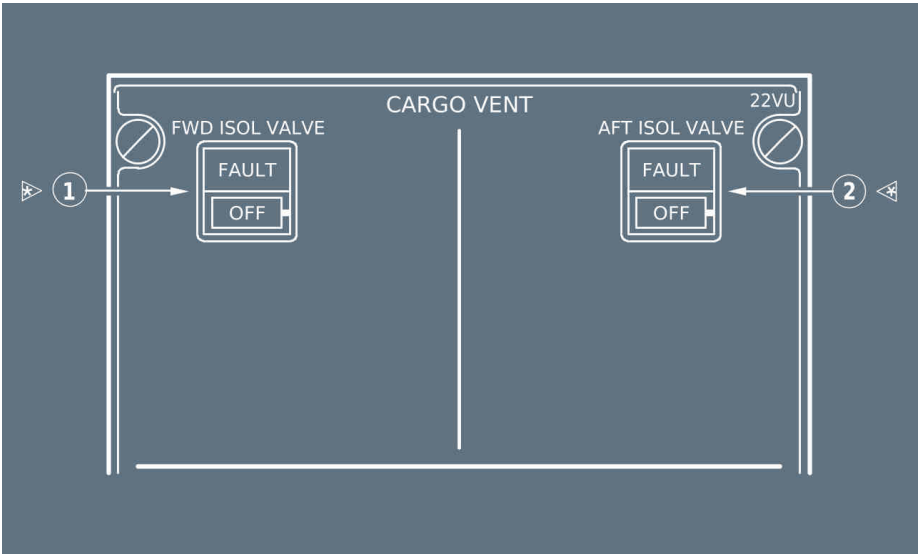
FWD CARGO HEATING

Ident.: DSC-21-40-20-00017799.0001001 / 21 MAR 16
Applicable to: ALL

The ventilation system for the forward cargo compartment uses hot engine bleed air, which is also used for cockpit and cabin temperature control, mixing it with the ambient cabin air that flows through the cargo compartment.
The cockpit and cabin hot air pressure regulating valve regulates the pressure of this hot air supply, and the cargo trim air valve, which is modulated electrically by the controller, controls the flow.
The hot air mixes with air from the cabin as it supplied to the cargo compartment through the ventilation inlet isolation valve.
The controller regulates the amount of hot air added by the trim air valve to get the desired temperature, per the temperature selector.
If the inlet temperature exceeds 70 °C, the controller closes the trim air valve. If the inlet temperature reaches 88 °C, the controller interprets this as a duct overhead and closes the pressure regulating valve. This valve then remains closed until the flight crew resets the system by pressing the HOT AIR pb - which it cannot do until the temperature drops below 70 °C.

OVERHEAD PANEL

Ident.: DSC-21-40-30-00017800.0001001 / 20 MAR 17
Applicable to: MSN 01920, 02204, 02804



(1) FWD ISOL VALVE pb-sw

The switch controls the forward isolation valves and the extraction fan.

Auto : The inlet and outlet isolation valves open, extraction fan runs if there is no smoke detected in the fwd cargo bay.

OFF : The inlet and outlet isolation valves and the trim air valve close, the extraction fan stops.

FAULT lt : The light, associated with the ECAM caution, comes on amber when either inlet or outlet valve is not in the selected position.

(2) AFT ISOL VALVE pb-sw

The switch controls the isolation valves and the extraction fan.

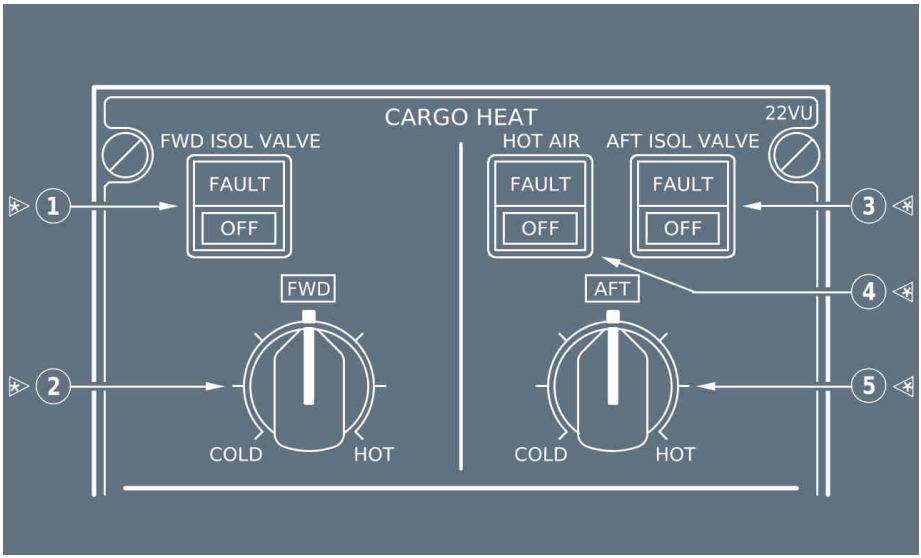
Auto : The inlet and outlet isolation valves open, extraction fan runs if there is no smoke detected in the aft cargo bay.

OFF : The inlet and outlet isolation valves and the trim air valve close, the extraction fan stops.

FAULT lt : The light, associated with the ECAM caution, comes on amber when either inlet or outlet valve is not in the selected position.

OVERHEAD PANEL

Ident.: DSC-21-40-30-00017800.0006001 / 20 MAR 17
Applicable to: MSN 01767, 02121-02135, 02139, 02275-02334, 02443, 02609-02649, 03071, 04314, 04393-04397, 05158



(1) FWD ISOL VALVE pb-sw

The switch controls the forward isolation valves and the extraction fan.

Auto : The inlet and outlet isolation valves open, extraction fan runs if there is no smoke detected in the fwd cargo bay.

OFF : The inlet and outlet isolation valves and the trim air valve close, the extraction fan stops.

FAULT lt : The light, associated with the ECAM caution, comes on amber when either inlet or outlet valve is not in the selected position.

(2) FWD temperature selector

- COLD position : Approximately 5 °C (41 °F)
- HOT position : Approximately 26 °C (79 °F)
- Middle position : Approximately 15 °C (59 °F).

Note: The cargo compartment temperature may vary, depending on external factors (flight duration, outside temperature...).

(3) AFT ISOL VALVE pb-sw

The switch controls the isolation valves and the extraction fan.

Auto : The inlet and outlet isolation valves open, extraction fan runs if there is no smoke detected in the aft cargo bay.

OFF : The inlet and outlet isolation valves and the trim air valve close, the extraction fan stops.

FAULT lt : The light, associated with the ECAM caution, comes on amber when either inlet or outlet valve is not in the selected position.

(4) HOT AIR pb

Auto : The pressure regulating valve regulates the hot air pressure.

OFF : The pressure regulating valves and the trim air valve close. The fault circuit is reset.

FAULT lt : The amber light and ECAM caution come on, when a duct overheat is detected (88 °C – 190 °F).
The light goes out, when the temperature drops below 70 °C (158 °F), and OFF is selected. Then, if the pushbutton is set to on, the system resets.

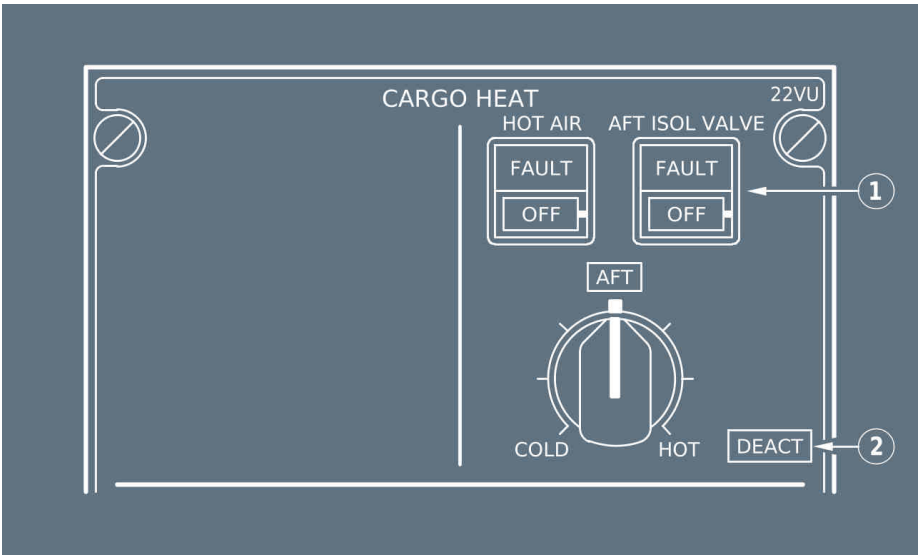
(5) AFT temperature selector

- COLD position : Approximately 5 °C (41 °F)
- HOT position : Approximately 26 °C (79 °F)
- Middle position : Approximately 15 °C (59 °F).

Note: *1. The cargo compartment temperature may vary, depending on external factors (flight duration, outside temperature...).*
2. The actual bulk cargo compartment temperature may be 10 °C (18 °F) lower than the selected temperature.

OVERHEAD PANEL

Ident.: DSC-21-40-30-00017800.0012001 / 21 MAR 16
Applicable to: MSN 01957-02097, 02138, 02388



(1) AFT ISOL VALVE pb-sw
The switch controls the aft isolation valves and the extraction fan.

Auto : The inlet and outlet isolation valves open, extraction fan runs if there is no smoke detected in the aft cargo bay.

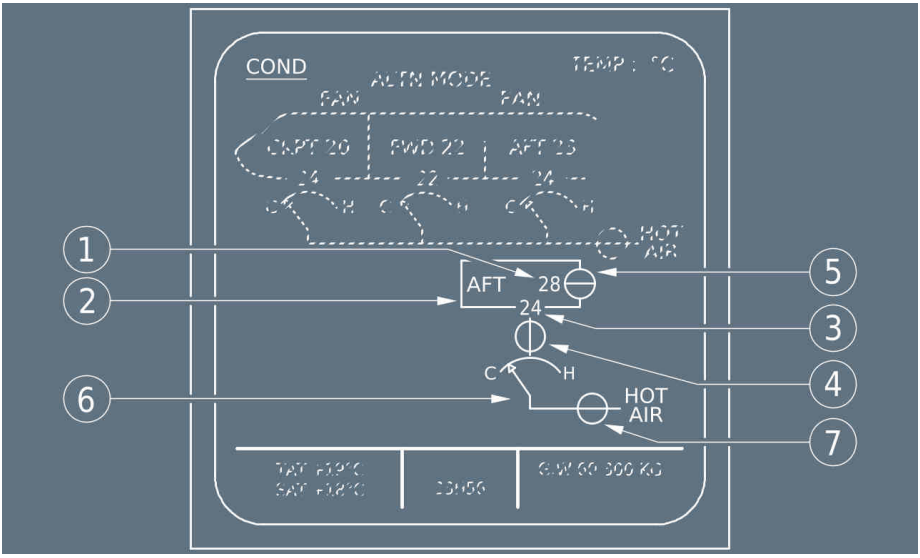
OFF : The inlet and outlet isolation valves and the trim air valve close, the extraction fan stops.

FAULT lt : The light, associated with the ECAM caution, comes on amber when either inlet or outlet valve is not in the selected position.

(2) DEACT label
This label indicates that the aft cargo heating system is deactivated.

ECAM COND PAGE

Ident.: DSC-21-40-35-00006005.0003001 / 22 MAY 12
Applicable to: MSN 01767, 02121-02135, 02139, 02275-02334, 02443, 02609-02649, 03071, 04314, 04393-04397, 05158



(1) Cargo compartment temperature
This indication is green.

(2) Zone indication
It is white.

(3) Duct inlet temperature
This is normally green, it becomes amber when T ≥ 80 °C.

(4) Inlet isolation valve

In line – Green	:	Valve is open.
Crossline – Amber	:	Valve is closed.

(5) Outlet isolation valve

Crossline – Green	:	Valve is open.
In line – Amber	:	Valve is closed.

(6) Trim air valve

H - Hot (Green) : Valve is open.

C - Cold (Green) : Valve is closed.

(7) Hot air pressure regulating valve

In line and green : valve is open.

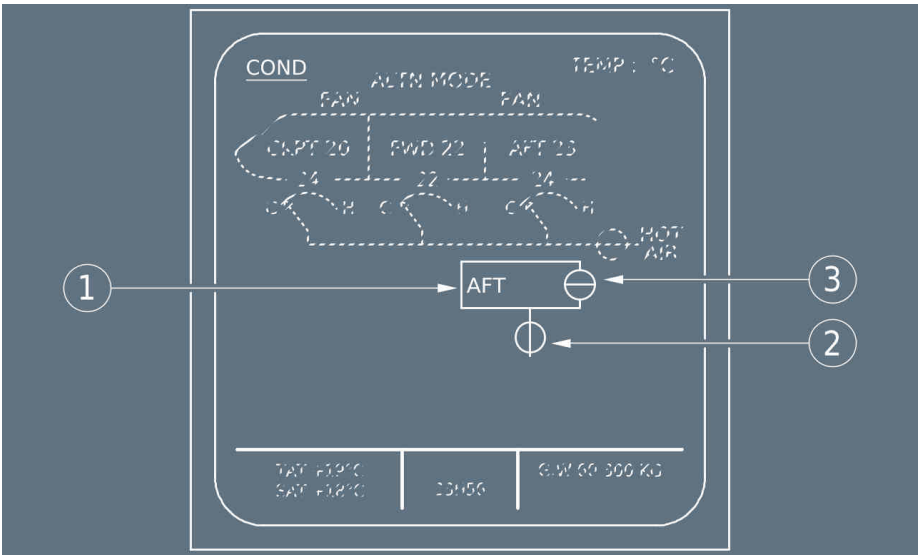
In line and amber : valve failed open.

Cross line and green : valve normally closed with the pushbutton in ON position.

Cross line and amber : valve is closed and the pushbutton in OFF position.

ECAM COND PAGE

Ident.: DSC-21-40-35-00006005.0002001 / 22 MAY 12
Applicable to: MSN 01920, 02204, 02804



(1) Zone indication

It is white.

(2) Inlet isolation valve

In line – Green : Valve is open.

Crossline – Amber : Valve is closed.

(3) Outlet isolation valve

Crossline – Green : Valve is open.

In line – Amber : Valve is closed.

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AIRCRAFT SYSTEMS

AUTO FLIGHT - GENERAL

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DSC-22_10-10 Description

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Other Speeds....A

Localization Title	Toc Index	ID	Reason
DSC-22_10-10 FMGC Standard	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_10-10 FMGC Standard	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_10-10 Flight Management Guidance Computer (FMGC)	E	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-10 Multipurpose Control and Display Unit (MCDU)	F	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-30 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-30 Independent Mode	C	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-30 Single Mode	D	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-30 Back Up Navigation Mode	E	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-40-10 MCDU - MCDU Interface	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-40-10 MCDU - General	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-40-10 MCDU - Keyboard	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-40-10 MCDU - Annunciators (On the Side of the Keyboard)	A	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-40-10 MCDU - Annunciators (On the Top of the Keyboard)	A	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
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Localization Title	Toc Index	ID	Reason
DSC-22_10-40-10 MCDU - Colors	A	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-40-10 MCDU - Screen Prompts	A	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-40-10 MCDU - MCDU Function Keys	A	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-40-20 Vertical Control Area	F	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-40-40 Approach Phase	C	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-40-50 Flight Plan Display Colors	E	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_10-50-20 Characteristic Speeds	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-22_10-50-20 Characteristic Speeds	A	2	Effectivity update: The information now also applies to MSN 09063.
DSC-22_10-50-20 Characteristic Speeds	A	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_10-50-50 Other Speeds	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-22_10-50-50 Other Speeds	A	2	Effectivity update: The information now also applies to MSN 09063.

FMGC STANDARD

Ident.: DSC-22_10-10-00022442.0043001 / 03 SEP 18
Applicable to: MSN 01767-01920, 02388, 02584, 03750

The aircraft is equipped with FMS2 HONEYWELL Release 1A H2C and FG C14.

FMGC STANDARD

Ident.: DSC-22_10-10-00022442.0055001 / 03 SEP 18
1 **Applicable to: MSN 02108, 02275-02334, 02457, 02609-02670, 02737-02804, 04491, 04532, 04645, 05120, 05218**

The aircraft is equipped with FMS2 HONEYWELL Release 1A H2C and FG I15.

FMGC STANDARD

Ident.: DSC-22_10-10-00022442.0022001 / 03 SEP 18
Applicable to: MSN 06868, 06946, 07053-07083, 07252, 08206

The aircraft is equipped with FMS2 HONEYWELL Release 1A H2C and FG PI15.

FMGC STANDARD

Ident.: DSC-22_10-10-00022442.0062001 / 03 SEP 18
2 **Applicable to: MSN 06720-06860, 06904-06914, 06952-07033, 07192, 07329-08168, 08218-09063**

The aircraft is equipped with FMS2 HONEYWELL Release 1A H2C and FG PI16.

FMGC STANDARD

Ident.: DSC-22_10-10-00022442.0015001 / 03 SEP 18
Applicable to: MSN 04393-04397

The aircraft is equipped with FMS2 THALES Release 1A S6 and FG C12.

FMGC STANDARD

Ident.: DSC-22_10-10-00022442.0053001 / 03 SEP 18
Applicable to: MSN 02712, 03138, 04294, 04399-04438, 04510

The aircraft is equipped with FMS2 THALES Release 1A S7A and FG C14.

FMGC STANDARD

Ident.: DSC-22_10-10-00022442.0037001 / 03 SEP 18
Applicable to: MSN 04947

The aircraft is equipped with FMS2 THALES Release 1A S7A and FG I12.

FMGC STANDARD

Ident.: DSC-22_10-10-00022442.0017001 / 03 SEP 18
Applicable to: MSN 01957-02097, 02121, 02138, 02204, 02405-02443, 02482, 03264-03308, 03497, 03943, 04216, 04312, 04384, 04481, 04630, 04752, 05262, 05829, 05898

The aircraft is equipped with FMS2 THALES Release 1A S7A and FG I15.

FMGC STANDARD

Ident.: DSC-22_10-10-00022442.0075001 / 03 SEP 18
Applicable to: MSN 05923-06036

The aircraft is equipped with FMS2 THALES Release 1A S7A and FG PI12.

FMGC STANDARD

Ident.: DSC-22_10-10-00022442.0058001 / 03 SEP 18
Applicable to: MSN 04314

The aircraft is equipped with FMS2 THALES Release 1A S7B and FG C14.

FMGC STANDARD

Ident.: DSC-22_10-10-00022442.0099001 / 03 SEP 18
Applicable to: MSN 02135, 02139-02195, 02359, 02908-03071, 03330-03457, 03541-03618, 03782-03863, 04008-04156, 04328, 04488, 04506, 04518, 04535-04614, 04637, 04757-04888, 04954-05094, 05155-05190, 05230-05259, 05291-05807, 05893

The aircraft is equipped with FMS2 THALES Release 1A S7B and FG I15.

FMGC STANDARD

Ident.: DSC-22_10-10-00022442.0117001 / 03 SEP 18
Applicable to: MSN 06208-06336

The aircraft is equipped with FMS2 THALES Release 1A S7B and FG PI16.

PREAMBLE

Ident.: DSC-22_10-10-00010067.0001001 / 17 AUG 10
Applicable to: ALL

This section gives a general description of the Auto Flight System and its functions:

- Architecture
- Function description
- Basic principle of systems:
  - Reversion
  - Protection
  - Managed and selected guidance modes.

- Mode information
- Display characteristics
- Operational principles
- Flight crew interface (MCDU pages)
- Degraded modes of operations.

DESCRIPTION

Ident.: DSC-22_10-10-00010068.0001001 / 17 AUG 10
Applicable to: ALL

The Flight Management Guidance System (FMGS) contains the following units:
- Two Flight Management Guidance Computers (FMGC)
- Two Multipurpose Control and Display Units (MCDU) (third MCDU optional)
- One Flight Control Unit (FCU)
- Two Flight Augmentation Computers (FAC).

GENERAL PHILOSOPHY

Ident.: DSC-22_10-10-00010069.0001001 / 17 AUG 10
Applicable to: ALL

The Flight Management and Guidance System (FMGS) provides predictions of flight time, mileage, speed, economy profiles and altitude.
It reduces cockpit workload, improves efficiency, and eliminates many routine operations generally performed by the flight crew.

The Flight Management Guidance System (FMGS) operates as follows:
- During cockpit preparation the flight crew uses the Multipurpose Control and Display Unit (MCDU) to insert a preplanned route from origin to destination. This route includes SID, EN ROUTE, WAYPOINTS, STAR, APPROACH, MISSED APPR, and ALTN route as available from the navigation database.
- Subsequently the system defines a vertical profile and a speed profile, taking into account ATC requirements and performance criteria.

Either FMGC performs all operations, if one FMGC fails.
The FMGS computes the aircraft position continually, using stored aircraft performance data and navigation data. Therefore it can steer the aircraft along a preplanned route and vertical and speed profiles. This type of guidance is said to be “managed”.
If the flight crew wants to modify any flight parameter (SPD, V/S, HDG, etc.) temporarily, they may do so by using the various Flight Control Unit (FCU) selectors. The FMGS then guides the aircraft to the target value of this parameter that they have selected. This type of guidance is said to be “selected”.

The two available types of guidance, then, are:
- Managed guidance guides the aircraft along the preplanned route and the vertical and speed/Mach profile. (The FMGS computes the target values of the various flight parameters).
- Selected guidance guides the aircraft to the target values of the various flight parameters the flight crew selects by using the FCU selectors.

Selected guidance always has priority over managed guidance.

FLIGHT MANAGEMENT GUIDANCE COMPUTER (FMGC)

Ident.: DSC-22_10-10-00010073.0002001 / 17 AUG 10

3 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

Each FMGC is divided into two main parts:
- The Flight Management (FM) part controls the following functions:
  - Navigation and management of navigation radios
  - Management of flight planning
  - Prediction and optimization of performance
  - Display management.
- The Flight Guidance (FG) part performs the following functions:
  - Autopilot (AP) command
  - Flight Director (FD) command
  - Autothrust (A/THR) command.

Each FMGC has its own set of databases. The individual databases can be independently loaded into their respective FMGC, or independently copied from one FMGC to the other.

Each FMGC contains these main databases:
1. The Navigation database (2.8 Mbytes) contains standard navigation data: Navaids, waypoints, airways, enroute information, holding patterns, airports, runways, procedures (SIDs, STARs, etc.), company routes, alternates.
   The airline updates this part every 28 days, and is responsible for defining, acquiring, updating, loading, and using this data. The updating operation takes 20 min to complete or 5 min if cross loaded from the opposite FMGC.
2. The Airline Modifiable Information (AMI), also described as the FM Airline Configuration file, contains:
   - Airline policy values: THR RED altitude, ACC altitude, EO ACC altitude, PERF factor, IDLE factor.
   - Fuel policy values: Fuel for taxi, % of route reserve, maximum and minimum values of route reserve, etc.
   - AOC functions customization.

3. The Aircraft Performance database includes the Engine model, Aerodynamical model, and Performance model. The airline cannot modify this database.
4. The Magnetic Variation database.
5. Each FMGC contains elements stored by the flight crew that enable them to create 20 waypoints, 10 runways, 20 navaids, and 5 routes.

FLIGHT MANAGEMENT GUIDANCE COMPUTER (FMGC)

Ident.: DSC-22_10-10-00010073.0004001 / 17 AUG 10
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Each FMGC is divided into two main parts:

- The Flight Management (FM) part controls the following functions:
  - Navigation and management of navigation radios
  - Management of flight planning
  - Prediction and optimization of performance
  - Display management.
- The Flight Guidance (FG) part performs the following functions:
  - Autopilot (AP) command
  - Flight Director (FD) command
  - Autothrust (A/THR) command.

Each FMGC has its own set of databases. The individual databases can be independently loaded into their respective FMGC, or independently copied from one FMGC to the other.

Each FMGC contains these main databases:

1. The Navigation database (5 Mbytes) contains standard navigation data: Navaids, waypoints, airways, enroute information, holding patterns, airports, runways, procedures (SIDs, STARs, etc.), company routes, alternates.
   The airline updates this part every 28 days, and is responsible for defining, acquiring, updating, loading, and using this data. The updating operation takes 20 min to complete or 5 min if cross loaded from the opposite FMGC.
2. The Airline Modifiable Information (AMI), also described as the FM Airline Configuration file, contains:
   - Airline policy values: THR RED altitude, ACC altitude, EO ACC altitude, PERF factor, IDLE factor.
   - Fuel policy values: Fuel for taxi, % of route reserve, maximum and minimum values of route reserve, etc.
   - AOC functions customization.
3. The Aircraft Performance database includes the Engine model, Aerodynamical model, and Performance model. The airline cannot modify this database.

4. The Magnetic Variation database.
5. Each FMGC contains elements stored by the flight crew that enable them to create 20 waypoints, 10 runways, 20 navaids, and 5 routes.

MULTIPURPOSE CONTROL AND DISPLAY UNIT (MCDU)

Ident.: DSC-22_10-10-00010074.0001001 / 17 AUG 10
Applicable to: MSN 01767-03541

Two MCDUs are installed on the pedestal for flight crew loading and display of data. The use of the MCDU allows the flight crew to interface with the FMGC by selection of a flight plan for lateral and vertical trajectories and speed profiles. The flight crew may also modify selected navigation or performance data and specific functions of Flight Management (revised flight plan, engine-out, secondary flight plan, etc.). Additional data from peripherals (Centralized Fault Display System (CFDS), ARINC Communication Addressing and Reporting System (ACARS), Air Traffic Service Unit (ATSU)...) can also be displayed. Data that is entered into the MCDU that is illogical or beyond the aircraft capabilities will either be disregarded or will generate an advisory message.

MULTIPURPOSE CONTROL AND DISPLAY UNIT (MCDU)

Ident.: DSC-22_10-10-00010074.0002001 / 17 AUG 10
Applicable to: MSN 03618-09063

Two MCDUs are installed on the pedestal for flight crew loading and display of data. The use of the MCDU allows the flight crew to interface with the FMGC by selection of a flight plan for lateral and vertical trajectories and speed profiles. The flight crew may also modify selected navigation or performance data and specific functions of Flight Management (revised flight plan, engine-out, secondary flight plan, etc.). Additional data from peripherals (Centralized Fault Display System (CFDS), ARINC Communication Addressing and Reporting System (ACARS), Air Traffic Service Unit (ATSU)...) can also be displayed. Data that is entered into the MCDU that is illogical or beyond the aircraft capabilities will either be disregarded or will generate an advisory message.
The MCDUs allow the activation of the back–up navigation in the case of a dual FM Failure.

FLIGHT CONTROL UNIT (FCU)

Ident.: DSC-22_10-10-00010075.0001001 / 17 AUG 10
Applicable to: ALL

The FCU located on the glareshield, is the short-term interface between the flight crew and the FMGC. It is used to select any flight parameters or modify those selected in the MCDU. The autopilots and autothrust functions may be engaged or disengaged. Different guidance modes can be selected to change various targets (speed, heading, track, altitude, flight path angle, vertical speed).

FLIGHT AUGMENTATION COMPUTER (FAC)

Ident.: DSC-22_10-10-00010076.0001001 / 17 AUG 10
Applicable to: ALL

The FAC controls rudder, rudder trim and yaw damper inputs. It computes data for the flight envelope and speed functions. The FAC also provides warning for low-energy and windshear detection if these functions are installed.

OTHER FLIGHT CREW INTERFACES

Applicable to: ALL

Ident.: DSC-22_10-10-A-00010077.0001001 / 23 JUN 15

THRUST LEVERS

The thrust levers are the main interface between the Flight Management Guidance Computer (FMGC), the Full Authority Digital Engine Control System (FADEC), and the flight crew.

The thrust levers:
- Arm the autothrust at takeoff, when FLX or TOGA is selected
- Limit the maximum thrust by their position when autothrust is active
- Disconnect the autothrust system when the flight crew sets them to IDLE
- Command the thrust manually when autothrust is not active
- Engage the common modes (takeoff or go-around) when TOGA (or FLX for takeoff) is set
- Set the autothrust to the active mode when they are between IDLE and CL detent (MCT in engine out).

Ident.: DSC-22_10-10-A-00010078.0001001 / 17 AUG 10

ELECTRONIC FLIGHT INSTRUMENTS (EFIS)

Two Primary Flight Displays (PFD) and Navigation Displays (ND) provide the flight crew with full-time flight guidance, navigation and system advisory information for all flight phases. An EFIS control panel is located at each end of the glareshield and is used to control both Primary and Navigation Displays. This panel includes controls to select various modes within the PFD. A selector allows the barometric altimeter setting to be displayed on the PFD. Various distance ranges can be selected on the ND, and two switches allow either the left or right VOR/ADF bearing pointers to be displayed on the ND.

Ident.: DSC-22_10-10-A-00010079.0001001 / 17 AUG 10

PRIMARY FLIGHT DISPLAYS

The PFDs combine several conventional flight instrument indications on one color display panel, for centralized reference of flight data.

This centralized color display includes:
- Flight Director attitude guidance targets
- Armed and engaged modes
- Navigation and instrument approach information
- Altimeter setting
- Barometric altitude
- System messages.

Ident.: DSC-22_10-10-A-00010080.0002001 / 17 AUG 10

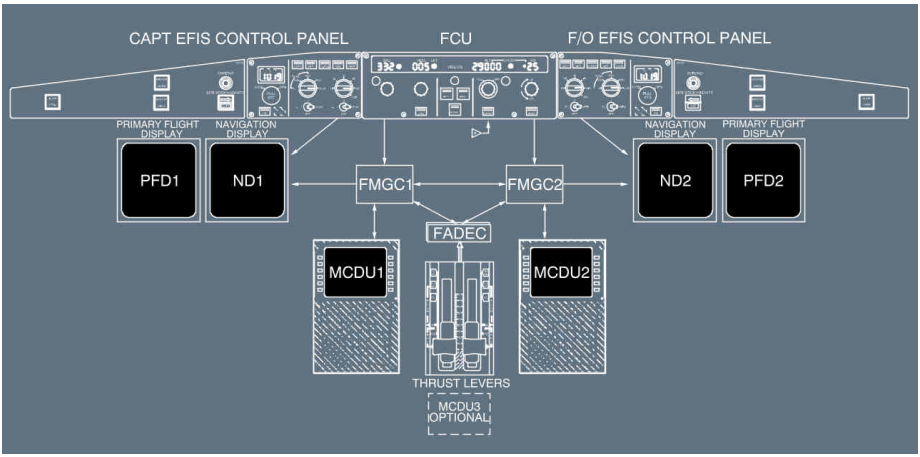
NAVIGATION DISPLAYS

Five different color navigation compass displays can be selected:
- ARC (map mode)
- ROSE NAV (map mode)
- ROSE VOR
- ROSE LS
- PLAN.

Information displayed on these modes uses the aircraft's position as a reference point for the flight plan navigation data (lateral and vertical information).

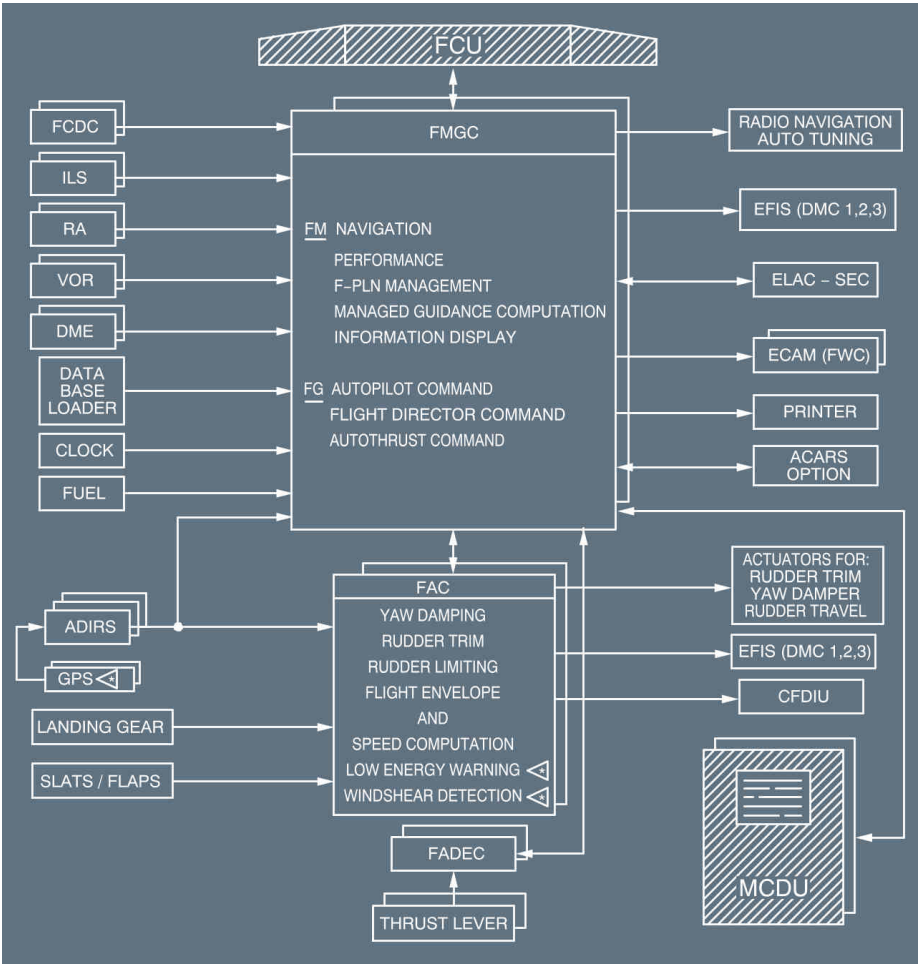
FLIGHT CREW INTERFACE WITH FMGC

Ident.: DSC-22_10-10-00010082.0001001 / 14 MAY 12
Applicable to: ALL



SYSTEM INTERFACE DIAGRAM

Ident.: DSC-22_10-20-00010084.0001001 / 01 OCT 12
Applicable to: ALL



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GENERAL

Ident.: DSC-22_10-30-00010085.0001001 / 17 AUG 10
Applicable to: MSN 01767-03541

The FMGS has three modes of operation:
- Dual mode (the normal mode)
- Independent mode. Each FMGC being controlled by its associated MCDU
- Single mode (using one FMGC only).

GENERAL

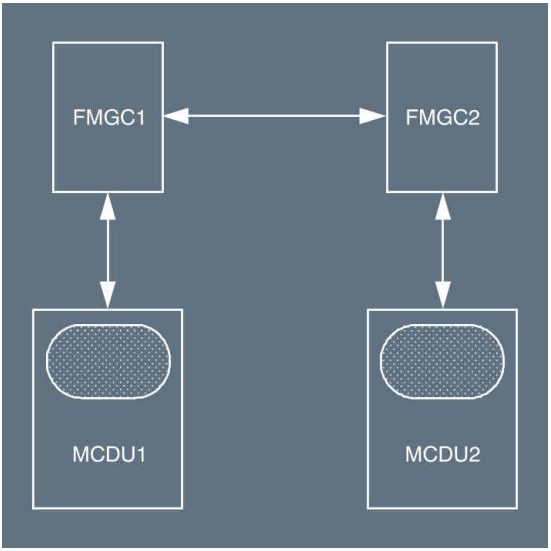
Ident.: DSC-22_10-30-00010085.0002001 / 17 AUG 10
1 **Applicable to: MSN 03618-09063**

The FMGS has four modes of operation:
- Dual mode (the normal mode)
- Independent mode. Each FMGC being controlled by its associated MCDU
- Single mode (using one FMGC only)
- Back–up navigation mode.

DUAL MODE

Ident.: DSC-22_10-30-00010086.0001001 / 01 OCT 12
Applicable to: ALL

This is the normal mode. The two FMGCs are synchronized: each performs its own computations and exchanges data with the other through a crosstalk bus.
One FMGC is the master, the other the slave, so that some data in the slave FMGC comes from the master.
All data inserted into any MCDU is transferred to both FMGCs and to all peripherals.



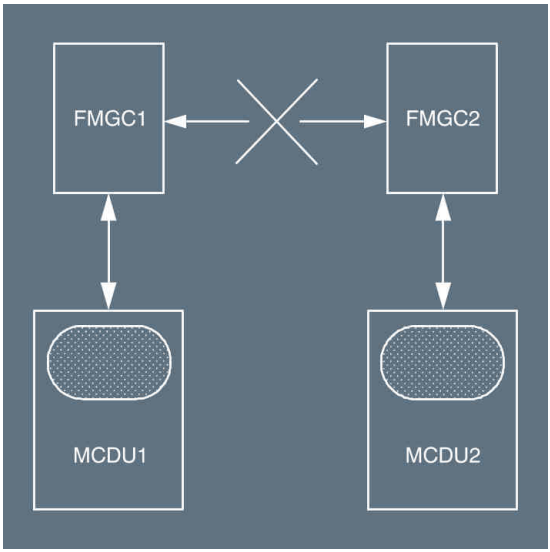
MASTER FMGC LOGIC

- If one autopilot (AP) is engaged, the related FMGC is master:
  - It uses the onside FD for guidance
  - It controls the A/THR
  - It controls the FMA 1 and 2.
- If two APs are engaged, FMGC1 is master.
- If no AP is engaged, and
  - The FD1 pb is on, then FMGC1 is master
  - The FD1 pb is off, and FD2 pb on then FMGC2 is master.
- If no AP/FD is engaged, A/THR is controlled by FMGC1.

INDEPENDENT MODE

Ident.: DSC-22_10-30-00010087.0001001 / 01 OCT 12

2 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**



The system automatically selects this degraded mode under specific abnormal conditions (e.g. different database validity on both FMGCs).
Both FMGCs work independently and are linked only to peripherals on their own sides of the flight deck (“onside” peripherals).
When this occurs, the “INDEPENDENT OPERATION” message is displayed on both MCDU scratchpads.
Each MCDU transmits data it receives from its onside FMGC. It affects only the onside EFIS (Electronic Flight Instrument System) and RMP (Radio Management Panel).
On the POS MONITOR page (and GPS MONITOR page ◁✻), FMGS position (and GPS position ◁✻) from the opposite FMGC is not displayed.
On the RAD NAV page (and PROG page, if the FMGS GPS is not installed), navaids tuned on the opposite MCDU are not displayed. Corresponding fields are blank.

PROCEDURES ON GROUND

- **If each FMGC is loaded with a different database,** the FMGS will only operate in independent mode.

CHECK the database number and validity.
CROSSLOAD ◁ the database to restore the dual operation.

Crossload function is available on ground only (in preflight or done phase), when an independent operation is detected.

PROCEDURES IN FLIGHT

DO NOT SWITCH the navigation databases.
MAKE the same entries on both MCDUs to have both AP/FDs similar orders.

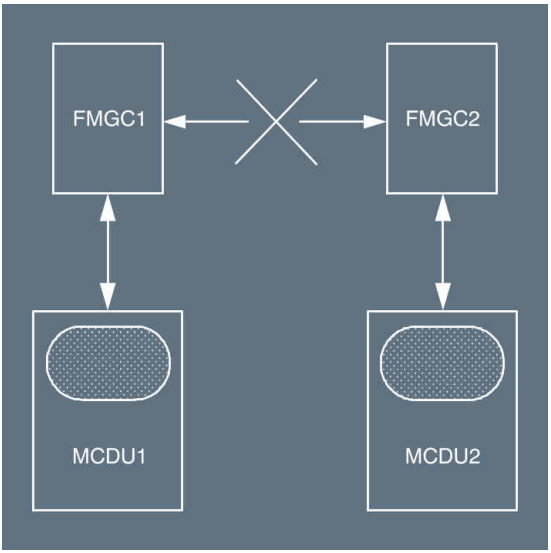
Both FGs being valid, 2 APs may be engaged for CAT II or CAT III operations.

- **In the event of a go-around and when the second AP is disconnected:**
  ENSURE that the FMGC in command has correct flight plan orders and an updated nav database.

  Airbus does not recommend pulling one FMGC circuit breaker to force the system to operate in SINGLE mode.

INDEPENDENT MODE

Ident.: DSC-22_10-30-00010087.0002001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336



The system automatically selects this degraded mode under specific abnormal conditions (e.g. different database validity on both FMGCs).
Both FMGCs work independently and are linked only to peripherals on their own sides of the flight deck ("onside" peripherals).
When this occurs, the "INDEPENDENT OPERATION" message is displayed on both MCDU scratchpads. "IND" annunciator on top of the MCDU is lit.
Each MCDU transmits data it receives from its onside FMGC. It affects only the onside EFIS (Electronic Flight Instrument System) and RMP (Radio Management Panel).
On the POS MONITOR page (and GPS MONITOR page ◁), FMGS position (and GPS position ◁) from the opposite FMGC is not displayed.
On the RAD NAV page, navaids tuned on the opposite MCDU are not displayed. Corresponding fields are blank.

PROCEDURES ON GROUND

- **If each FMGC is loaded with a different database,** the FMGS will only operate in independent mode.

  CHECK the database number and validity.
  CROSSLOAD the database to restore the dual operation.

  Crossload function is available on ground only (in preflight or done phase), when an independent operation is detected.

PROCEDURES IN FLIGHT

DO NOT SWITCH the navigation databases.
MAKE the same entries on both MCDUs to have both AP/FDs similar orders.

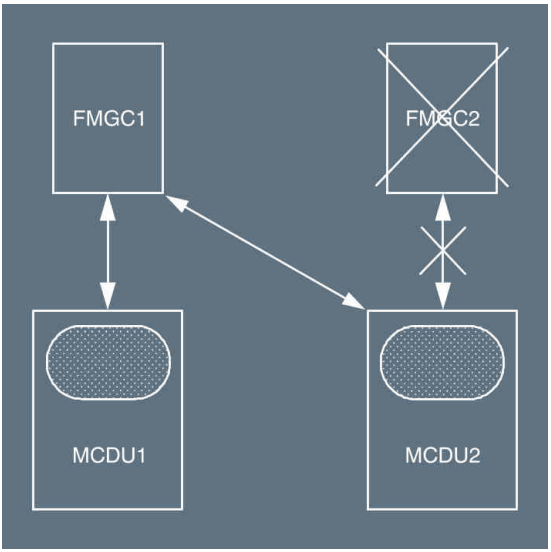
Both FGs being valid, 2 APs may be engaged for CAT II or CAT III operations.

- **In the event of a go-around and when the second AP is disconnected:**
  ENSURE that the FMGC in command has correct flight plan orders and an updated nav database.

  Airbus does not recommend pulling one FMGC circuit breaker to force the system to operate in SINGLE mode.

SINGLE MODE

Ident.: DSC-22_10-30-00010088.0001001 / 01 OCT 12
Applicable to: MSN 01767-01920, 02108, 02275-02334



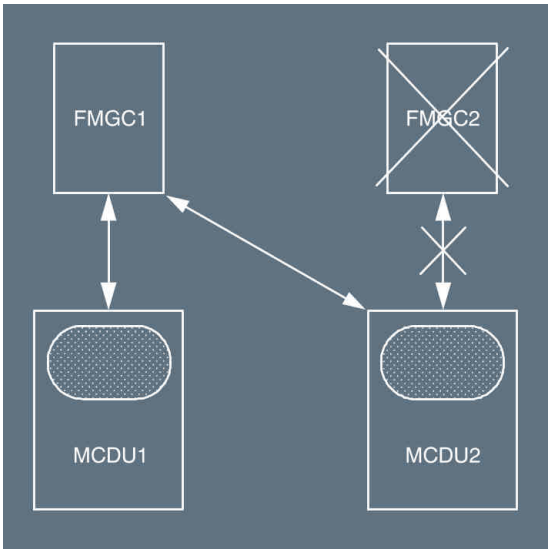
The system automatically selects this degraded mode when one FMGC fails.
When this occurs, the failed FMGC displays “OPP FMGC IN PROCESS” in white on the MCDU scratchpad.
The corresponding ND displays the “SELECT OFFSIDE RNG/MODE” amber message.
Both POS MONITOR pages display the same position (operative FMGC position).
Both FDs are driven by the same FMGC. Any entry on either MCDU is sent to the operative FMGC.

PROCEDURES

- **If a transient failure triggers a single mode of operation:**
  DO NOT USE the MCDU(s) until the PLEASE WAIT message is suppressed.
  SET both NDs on the same range and mode to display the same information from the operative FMGC.
  When convenient, RESET the failed FMGC. (*Refer to DSC-22_20-90-10 Manual FMGC Reset - General*).

SINGLE MODE

Ident.: DSC-22_10-30-00010088.0002001 / 01 OCT 12
Applicable to: MSN 02195-02204, 02359, 02405, 02482



The system automatically selects this degraded mode when one FMGC fails.
When this occurs, the MCDU on the side of the failed FMGC reverts to MCDU MENU page, and a prompt to connect the MCDU on the opposite FMGC is displayed. When this prompt is pressed, the "OPP FMGC IN PROCESS" message is displayed in white on the MCDU scratchpad.
The corresponding ND displays the “SELECT OFFSIDE RNG/MODE” amber message.
Both POS MONITOR pages display the same position (operative FMGC position).
Both FDs are driven by the same FMGC. Any entry on either MCDU is sent to the operative FMGC.

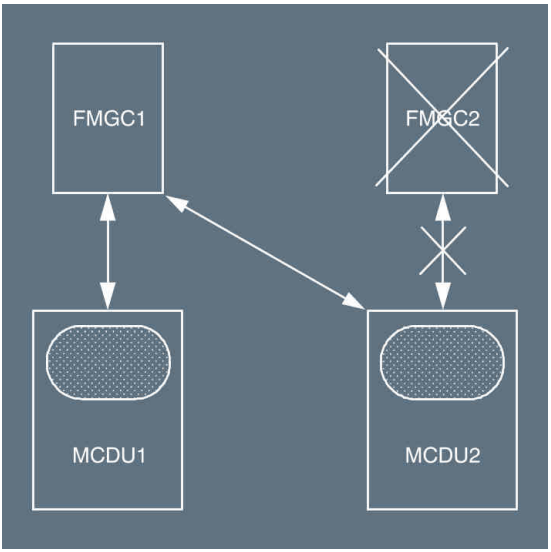
PROCEDURES

- **If a transient failure triggers a single mode of operation:**
  DO NOT USE the MCDU(s) until the PLEASE WAIT message is suppressed.
  SET both NDs on the same range and mode to display the same information from the operative FMGC.
  When convenient, RESET the failed FMGC. (*Refer to DSC-22_20-90-10 Manual FMGC Reset - General*).

SINGLE MODE

Ident.: DSC-22_10-30-00010088.0004001 / 01 OCT 12

3 **Applicable to: MSN 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**



The system automatically selects this degraded mode when one FMGC fails.
When this occurs, the failed FMGC displays “OPP FMGC IN PROCESS” in white on the MCDU scratchpad.

On the ND usually associated with the failed FM:
- If the NDs are not both in the same mode or range, the associated ND displays "MAP NOT AVAIL" and "SET OFFSIDE RNG/MODE".
- If the NDs are in the same mode and range, the associated ND displays the "OFFSIDE FM CONTROL" amber message.

Both POS MONITOR pages display the same position (operative FMGC position).
Both FDs are driven by the same FMGC. Any entry on either MCDU is sent to the operative FMGC.

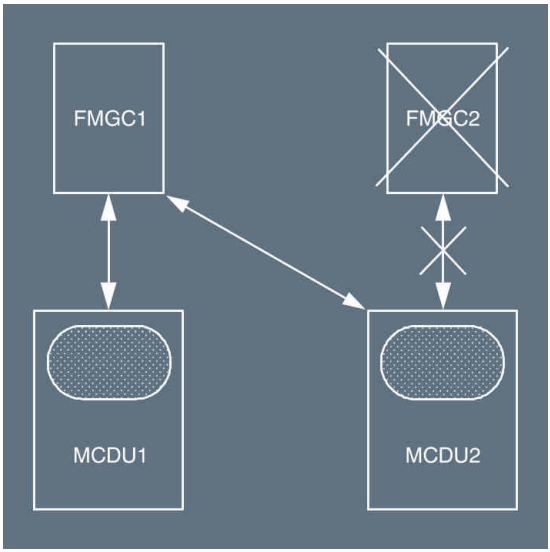
PROCEDURES

- **If a transient failure triggers a single mode of operation:**
  DO NOT USE the MCDU(s) until the PLEASE WAIT message is suppressed.
  SET both NDs on the same range and mode to display the same information from the operative FMGC.

When convenient, RESET the failed FMGC. (*Refer to DSC-22_20-90-10 Manual FMGC Reset - General*).

SINGLE MODE

Ident.: DSC-22_10-30-00010088.0016001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02139, 02443, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336



The system automatically selects this degraded mode when one FMGC fails.
When this occurs, the MCDU on the side of the failed FMGC reverts to MCDU MENU page, and a prompt to connect the MCDU on the opposite FMGC is displayed. When this prompt is pressed, the "OPP FMGC IN PROCESS" message is displayed in white on the MCDU scratchpad.

On the ND usually associated with the failed FM:
- If the NDs are not both in the same mode or range, the associated ND displays "MAP NOT AVAIL" and "SET OFFSIDE RNG/MODE".
- If the NDs are in the same mode and range, the associated ND displays the "OFFSIDE FM CONTROL" amber message.

Both POS MONITOR pages display the same position (operative FMGC position).
Both FDs are driven by the same FMGC. Any entry on either MCDU is sent to the operative FMGC.

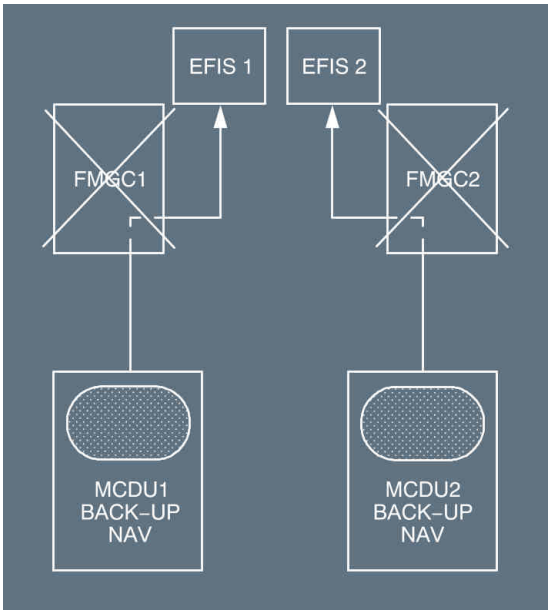
PROCEDURES

- **If a transient failure triggers a single mode of operation:**
  DO NOT USE the MCDU(s) until the PLEASE WAIT message is suppressed.
  SET both NDs on the same range and mode to display the same information from the operative FMGC.
  When convenient, RESET the failed FMGC. (*Refer to DSC-22_20-90-10 Manual FMGC Reset - General*).

BACK UP NAVIGATION MODE

Ident.: DSC-22_10-30-00010089.0001001 / 01 OCT 12

[4] **Applicable to: MSN 03618-09063**



The flight crew selects on the MCDU MENU page this degraded mode when both FMGCs fail. They recover the navigation function through the MCDU and IRS/GPS ◁ .
The MCDU continuously memorizes the active flight plan in its memory.

If both FMGCs fail, the back up navigation provides the following functions:
- Flight Planning
- Aircraft position using onside IRS, IRS3, or GPIRS position (if GPS ◁)
- F-PLN display on ND

- No AP/FD NAV mode
- Limited lateral revision
- F-PLN automatic sequencing.

Intentionally left blank

GENERAL

Ident.: DSC-22_10-40-05-00010083.0001001 / 17 AUG 10
Applicable to: ALL

The flight management system displays navigation, performance and guidance information on the:

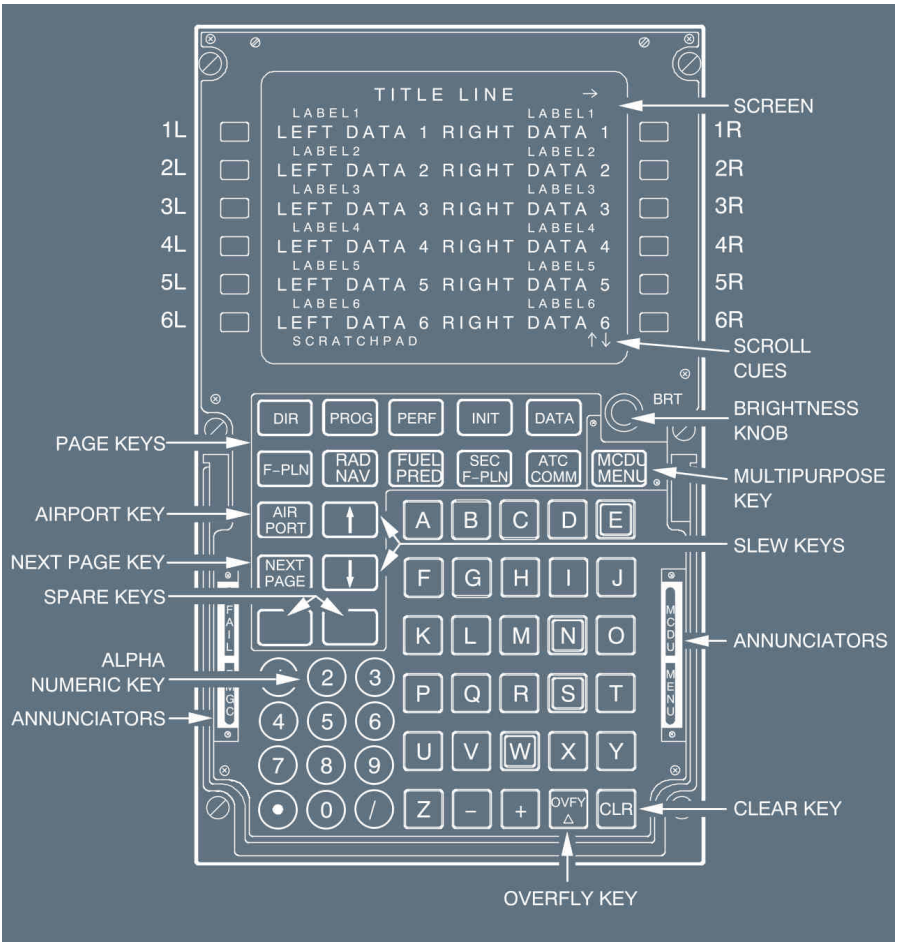
- Multipurpose Control and Display Unit (MCDU)
- Navigation Display (ND) of the Electronic Flight Instrument System (EFIS)
- Primary Flight Display (PFD) of the EFIS.

Intentionally left blank

MCDU

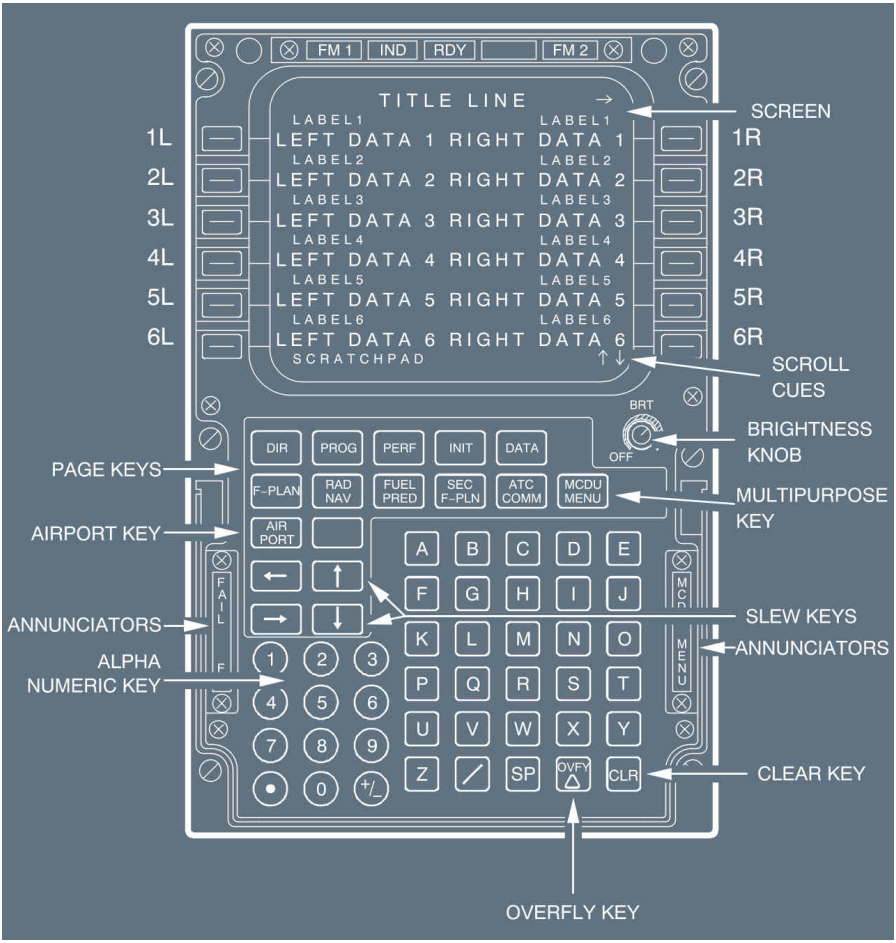
Ident.: DSC-22_10-40-10-A-00010090.0002001 / 14 MAY 12
Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02649-02670, 02804

MCDU INTERFACE



Ident.: DSC-22_10-40-10-A-00010090.0008001 / 14 MAY 12
Applicable to: MSN 02584-02626

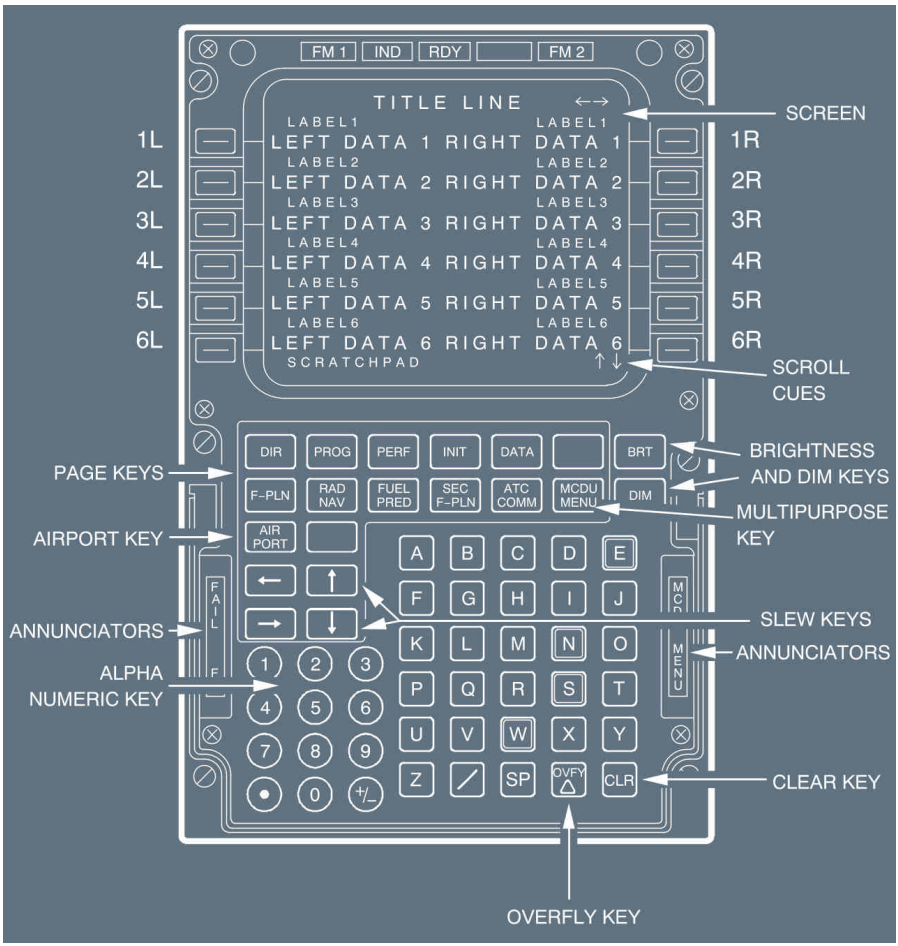
MCDU INTERFACE



Ident.: DSC-22_10-40-10-A-00010090.0003001 / 14 MAY 12

[1] **Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712-02737, 02908-09063**

MCDU INTERFACE



Ident.: DSC-22_10-40-10-A-00010091.0001001 / 17 AUG 10
Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02804

GENERAL

The Multipurpose Control and Display Unit (MCDU) is a cathode ray tube that generates 14 lines of 24 characters each, including:

- A title line that gives the name of the current page in large letters
- Six label lines, each of which names the data displayed just below it (on the data field line)
- Six data field lines that display computed data or data inserted by the flight crew
- The scratchpad line that displays:
  - Specific messages
  - Information the flight crew has entered by means of the number and letter keys and which can then be moved to one of the data fields.

Ident.: DSC-22_10-40-10-A-00010091.0002001 / 13 DEC 12
2 **Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712-02737, 02908-09063**

GENERAL

The Multipurpose Control and Display Unit (MCDU) has a Liquid Crystal Display (LCD) with 14 lines of 24 characters each, including:

- A title line that gives the name of the current page in large letters
- Six label lines, each of which names the data displayed just below it (on the data field line)
- Six data field lines that display computed data or data inserted by the flight crew
- The scratchpad line that displays:
  - Specific messages
  - Information the flight crew has entered by means of the number and letter keys and which can then be moved to one of the data fields.

Ident.: DSC-22_10-40-10-A-00010092.0001001 / 17 AUG 10
Applicable to: ALL

LINE SELECT KEYS

There is a column of Line Select Keys (LSKs) on each side of the screen.

The flight crew uses these keys to:

- Move a parameter they have entered in the scratchpad to the appropriate line on the main screen
- Call up a specific function page indicated by a prompt displayed on the adjacent line
- Call up lateral or vertical revision pages from the flight plan page.

Ident.: DSC-22_10-40-10-A-00010093.0001001 / 17 AUG 10
Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02649-02670, 02804

KEYBOARD

The keyboard includes:

- Function and Page keys — Call up functions and pages the flight crew uses for flight management functions and computations.
  - ↑ ↓ (or SLEW) keys — Move a page up or down to display portions that are off the screen.
  - NEXT PAGE key — Moves to the next page of a multi-page element. An arrow in the top right corner indicates that another page is available.
  - AIRPORT key — Calls up the flight plan page that contains the next airport along the current flight plan. Successive pushes on the key show the alternate airport, the origin airport (before takeoff), and the next airport again.
- Number and letter keys allow the flight crew to insert data in the scratchpad so that they can use a line select key to enter it in the main display.
- Two keys have special functions:
  - CLR (clear) key — Erases material (messages or inserted data) from the scratchpad or from certain areas of displayed pages.
  - OVFY (overfly) key — Allows the aircraft to overfly a selected waypoint.

Ident.: DSC-22_10-40-10-A-00010093.0002001 / 17 AUG 10
[3] **Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482-02626, 02712-02737, 02908-09063**

KEYBOARD

The keyboard includes:

- Function and Page keys — Call up functions and pages the flight crew uses for flight management functions and computations.
  - ↑ ↓ (or SLEW) keys — Move a page up or down to display portions that are off the screen.
  - ← → keys — Moves to the next page of a multi-page element. An arrow in the top right corner indicates that another page is available.
  - AIRPORT key — Calls up the flight plan page that contains the next airport along the current flight plan. Successive pushes on the key show the alternate airport, the origin airport (before takeoff), and the next airport again.
- Number and letter keys allow the flight crew to insert data in the scratchpad so that they can use a line select key to enter it in the main display.
- Three keys have special functions:
  - CLR (clear) key — Erases material (messages or inserted data) from the scratchpad or from certain areas of displayed pages.
  - OVFY (overfly) key — Allows the aircraft to overfly a selected waypoint.
  - SP (space) key — Allows to insert a space in specific message.

Ident.: DSC-22_10-40-10-A-00010094.0001001 / 17 AUG 10
Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02649-02670, 02804

ANNUNCIATORS (ON THE SIDE OF THE KEYBOARD)

FAIL (amber)	Indicates that the Multipurpose Control and Display Unit (MCDU) has failed.
MCDU MENU (white)	Indicates that the flight crew should call up a peripheral linked to the MCDU (such as ACARS, ATSU or CFDS).
FMGC (white)	Comes on while the flight crew is using the MCDU to display peripherals. This light tells the flight crew that the FMGC has an important message to deliver. The flight crew accesses the message by pressing the MCDU MENU key and the line select key adjacent to the FMGC prompt.

Ident.: DSC-22_10-40-10-A-00010094.0002001 / 17 AUG 10
4 **Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482-02626, 02712-02737, 02908-09063**

ANNUNCIATORS (ON THE SIDE OF THE KEYBOARD)

FAIL (amber)	Indicates that the Multipurpose Control and Display Unit (MCDU) has failed.
MCDU MENU (white)	Indicates that the flight crew should call up a peripheral linked to the MCDU (such as ACARS, ATSU or CFDS).
FM (white)	Comes on while the flight crew is using the MCDU to display peripherals. This light tells the flight crew that the FMGC has an important message to deliver. The flight crew accesses the message by pressing the MCDU MENU key and the line select key adjacent to the FMGC prompt.

Ident.: DSC-22_10-40-10-A-00010757.0001001 / 17 AUG 10
Applicable to: MSN 02584-02626

ANNUNCIATORS (ON THE TOP OF THE KEYBOARD)

FM 1 and FM 2 (amber)	The onside FM is failed
IND (amber)	The onside FM detects an independent mode of operation while both FM are healthly.
RDY (green)	MCDU has passed its power up test after its BRT knob was turned to OFF.

Ident.: DSC-22_10-40-10-A-00010757.0002001 / 17 AUG 10
5 **Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712-02737, 02908-09063**

ANNUNCIATORS (ON THE TOP OF THE KEYBOARD)

FM 1 and FM 2 (amber)	The onside FM is failed

IND (amber)	The onside FM detects an independent mode of operation while both FM are healthly.
RDY (green)	MCDU has passed its power up test after it was turned off using its DIM key.

Ident.: DSC-22_10-40-10-A-00010750.0001001 / 17 AUG 10
6 **Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712-02737, 02908-09063**

BRT AND DIM KEYS

Control the light intensity of the entire MCDU. MCDU power up is performed with the BRT key and MCDU shut down is performed with the DIM key.

Ident.: DSC-22_10-40-10-A-00010095.0001001 / 17 AUG 10
Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02804

BRT knob

Controls the light intensity of the entire MCDU.

Ident.: DSC-22_10-40-10-A-00010097.0001001 / 17 AUG 10
Applicable to: ALL

DATA ENTRY

The flight crew enters data by typing it into the scratchpad on the MCDU. Next, pressing the line select key (LSK) will load the data from the scratchpad into the desired field. An error message displays if the data is out of range or not formatted correctly. To correct data, the flight crew may clear the message with the clear (CLR) key and then retype the message into the scratchpad. Pressing the CLR key when the scratchpad is empty displays “CLR”. To clear data from a field, select CLR from the scratchpad to the data field to be cleared.

Ident.: DSC-22_10-40-10-A-00010098.0001001 / 17 AUG 10
Applicable to: ALL

MCDU ENTRY FORMAT

The flight crew enters information into the MCDU at the bottom line of the scratchpad. When data has lead zeros, they may be omitted if desired. For example a three-digit wind direction of 060 may be typed as 60. The display will still show 060. To enter an altitude below 1 000 ft, the lead zero must be added as 0400 for 400 ft. This differentiates the altitude from a flight level.
To enter a double data entry such a speed/altitude, the separating slash must be used. If entering only the first part of a double entry, omit the slash. To enter only the second part of a double entry, a leading slash must be used i.e. /0400.

Ident.: DSC-22_10-40-10-A-00010099.0001001 / 17 AUG 10
Applicable to: ALL

MESSAGES

The scratchpad displays various messages for flight crew information. Theses messages are prioritized by importance to the flight crew as either amber or white.

Amber messages are:
- Navigation messages
- Data entry messages
- EFIS repeat messages.

Amber messages are categorized into two types:
- Type 1 message that is a direct result of a flight crew action. Type 1 messages are displayed immediately in the scratchpad ahead of other messages.
- Type 2 messages inform the flight crew of a given situation or request a specific action. Stored in “last in”, “first out” message queue that holds maximum of 5 messages.
  Type 2 messages are displayed in the scratchpad only if there are no Type 1 messages or other data and will remain until all the messages have been viewed and cleared with the CLR key.

White messages are advisory only.

Ident.: DSC-22_10-40-10-A-00010101.0001001 / 17 AUG 10
Applicable to: ALL

CHARACTERS

Small and large fonts are displayed according to the following rules:
- The title line and the scratchpad are displayed in large font
- Datafields are usually displayed in large font
- Label lines are displayed in small font
- Flight crew entries and modifiable data are displayed in large font
- Defaulted/computed and non modifiable data are displayed in small font.

Ident.: DSC-22_10-40-10-A-00010102.0001001 / 17 AUG 10

7 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

COLORS

DATA	MCDU COLOR
TITLES, COMMENTS, <, >, ↑ ↓, ← →, DASHES, MINOR MESSAGES	WHITE
- MODIFIABLE DATA - SELECTABLE DATA - BRACKETS	BLUE
- NON MODIFIABLE DATA - ACTIVE DATA	GREEN
- MANDATORY DATA (BOXES) - FLIGHT CREW ACTION REQUIRED - IMPORTANT MESSAGES - MISSED CONSTRAINT	AMBER
- CONSTRAINTS - MAX ALTITUDE	MAGENTA
PRIMARY F-PLN	GREEN WAYPOINTS, WHITE LEGS
TEMPORARY F-PLN	YELLOW WAYPOINTS, WHITE LEGS
SECONDARY F-PLN	WHITE WAYPOINTS AND LEGS
MISSED APPROACH (not active)	BLUE WAYPOINTS, WHITE LEGS
ALTERNATE F-PLN (not active)	BLUE WAYPOINTS, WHITE LEGS
OFFSET	GREEN WAYPOINTS, WHITE LEGS, OFST DISPLAYED IN THE TITLE OF THE F-PLN PAGE
TUNED NAVAID	BLUE
"TO" WAYPOINT AND DESTINATION	WHITE

Ident.: DSC-22_10-40-10-A-00010102.0002001 / 23 JUN 15

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

COLORS

DATA	MCDU COLOR
TITLES, COMMENTS, <, >, ↑ ↓, ← →, DASHES, MINOR MESSAGES	WHITE
- MODIFIABLE DATA - SELECTABLE DATA - BRACKETS	BLUE

Continued on the following page

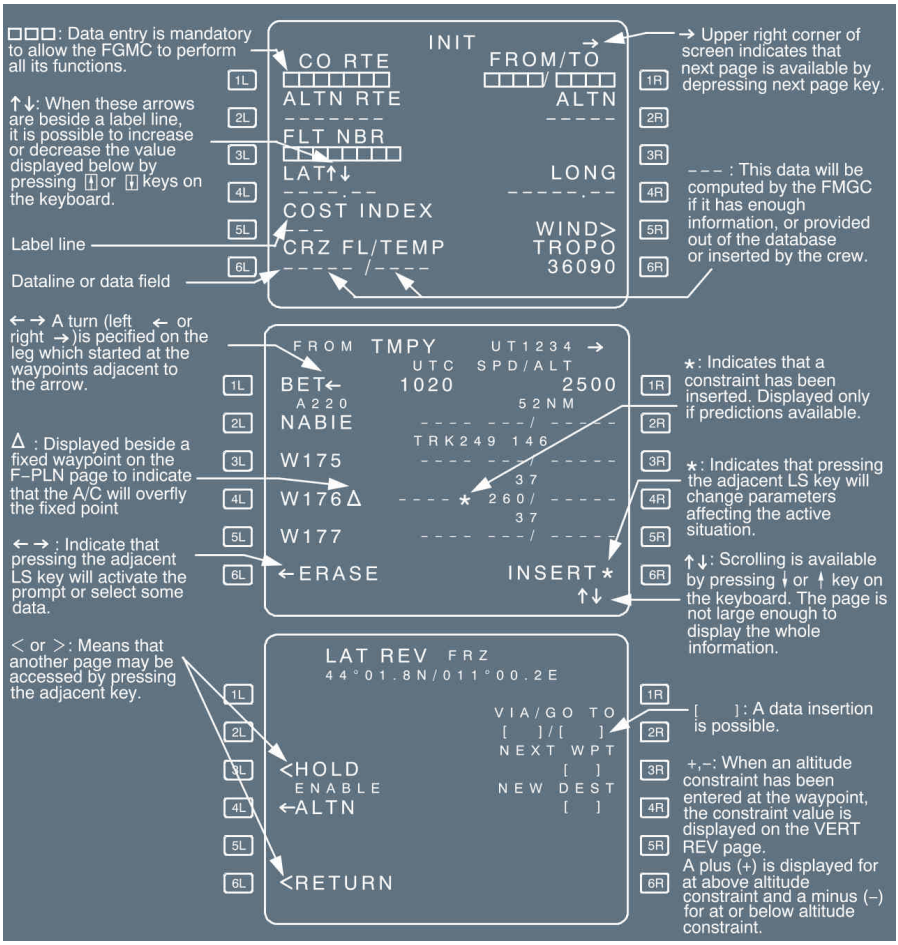
Continued from the previous page

DATA	MCDU COLOR
- NON MODIFIABLE DATA - ACTIVE DATA	GREEN
- MANDATORY DATA (BOXES) - FLIGHT CREW ACTION REQUIRED - IMPORTANT MESSAGES - MISSED CONSTRAINT	AMBER
- CONSTRAINTS - MAX ALTITUDE	MAGENTA
PRIMARY F-PLN	GREEN WAYPOINTS, WHITE LEGS
TEMPORARY F-PLN	YELLOW WAYPOINTS, WHITE LEGS
SECONDARY F-PLN	WHITE WAYPOINTS AND LEGS
MISSED APPROACH (not active), INCLUDING IN TMPY F-PLN	BLUE WAYPOINTS, WHITE LEGS
ALTERNATE F-PLN (not active), INCLUDING IN TMPY F-PLN	BLUE WAYPOINTS, WHITE LEGS
OFFSET	GREEN WAYPOINTS, WHITE LEGS, OFST DISPLAYED IN THE TITLE OF THE F-PLN PAGE
TUNED NAVAID	BLUE
"TO" WAYPOINT AND DESTINATION	WHITE

Ident.: DSC-22_10-40-10-A-00010103.0001001 / 14 MAY 12

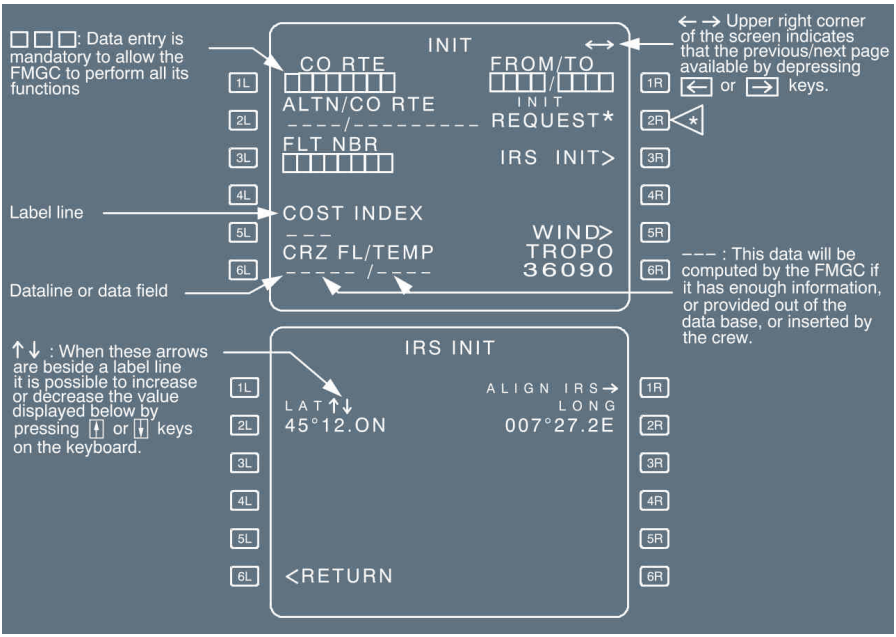
8 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

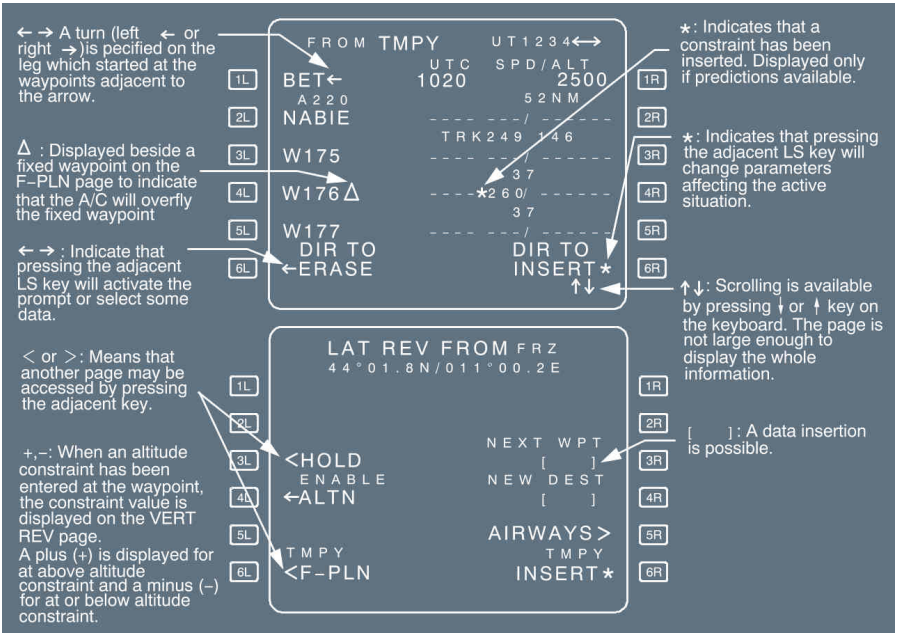
SCREEN PROMPTS



Ident.: DSC-22_10-40-10-A-00010103.0003001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

SCREEN PROMPTS





Ident.: DSC-22_10-40-10-A-00010104.0002001 / 23 JUN 15

9 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

MCDU FUNCTION KEYS

The function keys on the Multipurpose Control and Display Units allow the flight crew to call up MCDU pages quickly.
The following is a summary of the purpose of each key:

DIR — Calls up the DIR TO page, and enables the flight crew to proceed directly from the present position to any waypoint, entered manually or selected in the active flight plan.

PROG — Calls up the progress page corresponding to the phase of the active flight plan that is in progress.
This page displays navigation information and active data such as the optimum and maximum recommended cruise flight levels. It enables the flight crew to update the FMGS position and to obtain a bearing and distance to any location.

PERF	Calls up the performance pages, that display the optimum speed or Mach number for each phase. The flight crew can amend these pages. The first page to be displayed is the one corresponding to the current flight phase (except for preflight and done phases). The flight crew can then use the appropriate 6L or 6R LSK to call up pages corresponding to future flight phases.
INIT	Calls up the flight plan initialization A page, which also gives the flight crew access to the B page. The flight crew uses the INIT pages to initialize Flight Management for the flight. The flight crew uses the INIT A page primarily to insert his flight plan and to align the inertial reference system. The flight crew uses the INIT B page to insert aircraft weight, fuel on board, CG and various fuel requirements. The FMGS uses this data to compute predictions and fuel planning parameters. The flight crew has access to the INIT A page only in the preflight phase. INIT B page (not accessible after engine start) is called up by pressing the "NEXT PAGE" key.
DATA	Calls up the data index page. This gives the flight crew access to various reference pages that show aircraft position, aircraft status, runways, waypoints, navaids, routes, and data stored by the flight crew.
F-PLN	Calls up the flight plan A and B pages, which contain a leg-by-leg description of the active primary flight plan. The flight crew can use the slewing keys to review the entire active flight plan. They can make all lateral and vertical revisions to the flight plan through these pages, using the left LSKs for lateral revision and the right keys for vertical revision.
RAD NAV	Calls up the radio navigation page. This page displays the Radio Navaids tuned automatically or manually through the FMGC.
FUEL PRED	Calls up the fuel prediction page. Once the engines are started, this page displays the fuel predicted to be remaining at the destination and the alternate, as well as fuel management data.
SEC F-PLN	Calls up the index page for the secondary flight plan. The flight crew can use this page to call up the secondary flight plan and all the functions related to it (copying, deleting, reviewing, activating, and the INIT and PERF pages).
ATC COMM	Calls up the ATC applications (not activated).

MCDU MENU — Calls up the MCDU MENU page, which displays the subsystems currently addressed via the MCDU. The key next to the name of a subsystem enables the flight crew to select that subsystem.
When the MCDU MENU annunciator lights up, the flight crew should press the MCDU MENU key. The menu will have [REQ] displayed next to the name of the subsystem that requires attention.

Ident.: DSC-22_10-40-10-A-00010104.0009001 / 23 JUN 15
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712-02737, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

MCDU FUNCTION KEYS

The function keys on the Multipurpose Control and Display Units allow the flight crew to call up MCDU pages quickly.
The following is a summary of the purpose of each key:

DIR — Calls up the DIR TO page, and enables the flight crew to proceed directly from the present position to any waypoint, entered manually or selected in the active flight plan.

PROG — Calls up the progress page corresponding to the phase of the active flight plan that is in progress.
This page displays navigation information and active data such as the optimum and maximum recommended cruise flight levels. It enables the flight crew to update the FMGS position and to obtain a bearing and distance to any location.

PERF — Calls up the performance pages, that display the optimum speed or Mach number for each phase. The flight crew can amend these pages. The first page to be displayed is the one corresponding to the current flight phase (except for preflight and done phases).
The flight crew can then use the appropriate 6L or 6R LSK to call up pages corresponding to future flight phases.

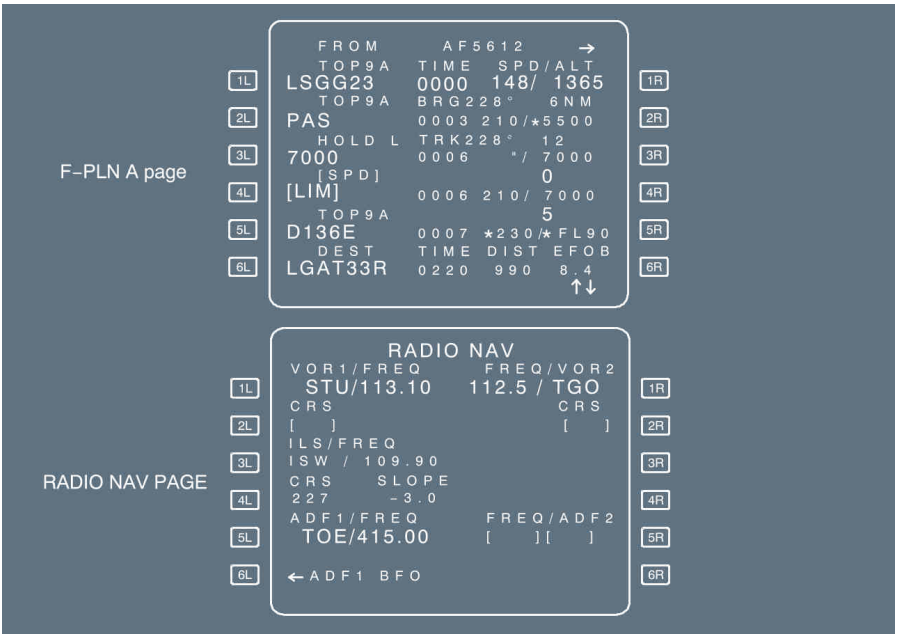
INIT	Calls up the flight plan initialization (INIT) A page, that also gives access to the INIT B page and the IRS INIT page. The flight crew uses the INIT pages to initialize the Flight Management System for the flight. The flight crew uses the INIT A page to initialize the flight plan, set the departure and arrival airports, and the main flight parameters (for example, cruise FL, Cost Index). The IRS INIT page enables the alignment of the Inertial Reference System (IRS). The flight crew then uses the INIT B page to insert the aircraft weight, block fuel, Center of Gravity (CG), and other fuel requirements. The FMGS uses this data to compute predictions and other fuel planning parameters. The INIT A page is accessed in pre-flight phase to initialize the flight plan. It can also be accessed in flight. The IRS INIT page is accessed via the “IRS INIT” prompt on the INIT A page. The INIT B page is accessed from the INIT A page, by pressing the “←” or “→” scroll keys. It can only be accessed in the pre-flight phase; pressing the scroll keys in flight will revert to the FUEL PRED page.
DATA	Calls up the data index page. This gives the flight crew access to various reference pages that show aircraft position, aircraft status, runways, waypoints, navaids, routes, and data stored by the flight crew.
F-PLN	Calls up the flight plan A and B pages, which contain a leg-by-leg description of the active primary flight plan. The flight crew can use the slewing keys to review the entire active flight plan. They can make all lateral and vertical revisions to the flight plan through these pages, using the left LSKs for lateral revision and the right keys for vertical revision.
RAD NAV	Calls up the radio navigation page. This page displays the Radio Navaids tuned automatically or manually through the FMGC.
FUEL PRED	Calls up the fuel prediction page. Once the engines are started, this page displays the fuel predicted to be remaining at the destination and the alternate, as well as fuel management data.
SEC F-PLN	Calls up the index page for the secondary flight plan. The flight crew can use this page to call up the secondary flight plan and all the functions related to it (copying, deleting, reviewing, activating, and the INIT and PERF pages).
ATC COMM	Calls up the ATC applications (not activated).

MCDU MENU Calls up the MCDU MENU page, which displays the subsystems currently addressed via the MCDU. The key next to the name of a subsystem enables the flight crew to select that subsystem.
When the MCDU MENU annunciator lights up, the flight crew should press the MCDU MENU key. The menu will have [REQ] displayed next to the name of the subsystem that requires attention.

Ident.: DSC-22_10-40-10-A-00010107.0005001 / 01 OCT 12
Applicable to: ALL

MCDU DISPLAY

The MCDUs display:
- Position and accuracy information
- Tuned navaids
- Lateral and vertical flight plans (waypoints, pseudo waypoints, constraints)
- Predictions (SPD, TIME, ALT, WIND)
- Fuel predictions and fuel management information (estimated fuel on board, extra fuel)
- Performance data.



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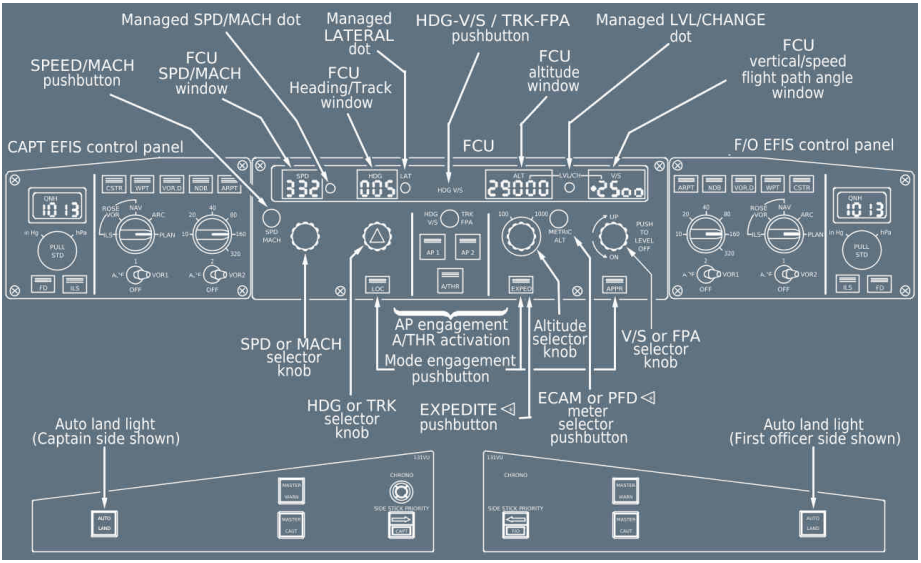
FCU

Ident.: DSC-22_10-40-20-00010112.0003001 / 03 AUG 17
Applicable to: ALL

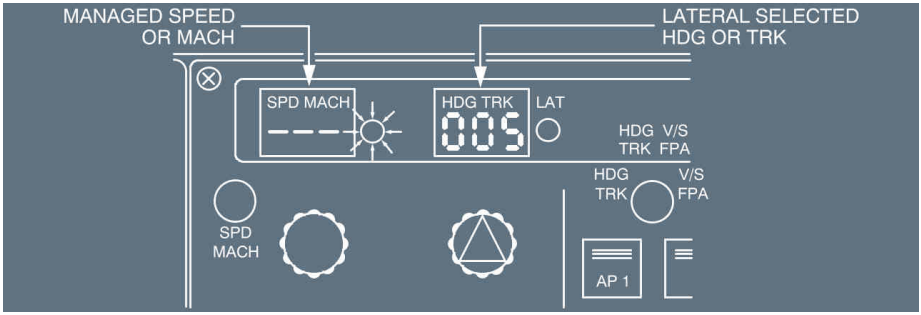
The Flight Control Unit (FCU) is located on the glareshield and is constituted of three control panels: One for the automatic flight controls and two for the Electronic Flight Instrument System (EFIS). The FCU has two channels, each of which can independently command the central control panel. If one channel fails, the other channel can control all the functions.



FCU PHILOSOPHY

Ident.: DSC-22_10-40-20-00010113.0002001 / 14 MAY 12
Applicable to: ALL

The flight crew can use two types of guidance to control the aircraft in auto flight. One type is managed by the Flight Management Guidance System (FMGS). The other uses target quantities which are manually entered by the flight crew.
When the aircraft uses target quantities from the FMGS (managed guidance), the FCU windows display dashes and the white dots next to those windows light up. When the aircraft uses target quantities, entered by the flight crew (selected guidance), the windows display the selected numbers and the white dots do not light up.



Note: *The altitude window always displays an altitude selected by the flight crew (never dashes).*

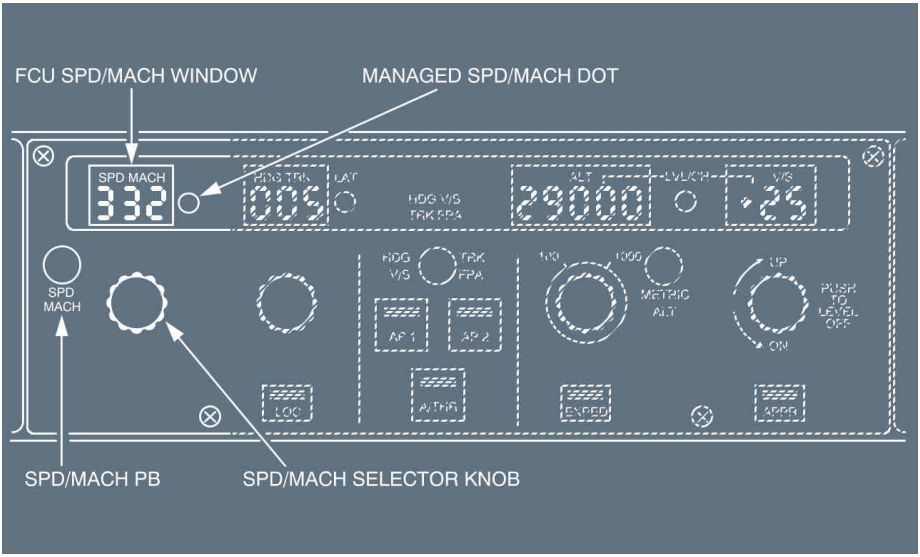
The FCU has four knobs:
- SPD-MACH
- HDG-TRK
- ALT
- V/S-FPA.

The knobs can be rotated, pushed in, and pulled out:
- In order to arm or engage managed guidance for a given mode, the flight crew pushes in the associated knob. If, for example, they push in the HDG knob, they engage or arms the NAV mode.
- In order to engage a selected guidance mode, the flight crew turns the knob to set the desired value, then pulls the knob out to engage the mode with a target value equal to the selected value.

Note: *In managed guidance (lateral, vertical guidance or managed speed), the corresponding window is dashed. Turning a knob without pulling it, displays a value that is the sum of the current target and the turn action value. The display remains 45 s on the HDG/TRK and V/S windows and 10 s on the SPD/MACH window before the dashes reappear. This rule does not apply to the ALT knob/window.*

SPEED/MACH CONTROL AREA

Ident.: DSC-22_10-40-20-00010114.0002001 / 14 MAY 12
Applicable to: ALL



SPD/MACH knob

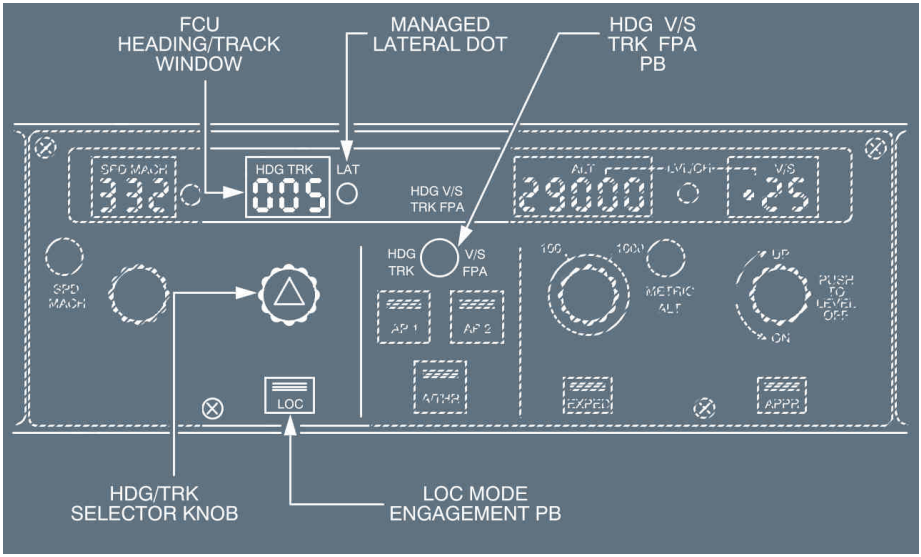
Display range: between 100 and 399 kt for speed, between 0.10 and 0.99 for Mach number. One rotation of the knob corresponds to approximately 32 kt or M 0.32.

SPD/MACH pb

Pushing this pushbutton changes the SPD target to the corresponding MACH target and vice versa.

LATERAL CONTROL AREA

Ident.: DSC-22_10-40-20-00010115.0007001 / 14 MAY 12
Applicable to: ALL



HDG/TRK knob

Display range: between 0 ° and 359 °.
One rotation of the knob corresponds to 32 ° (1 ° per click).

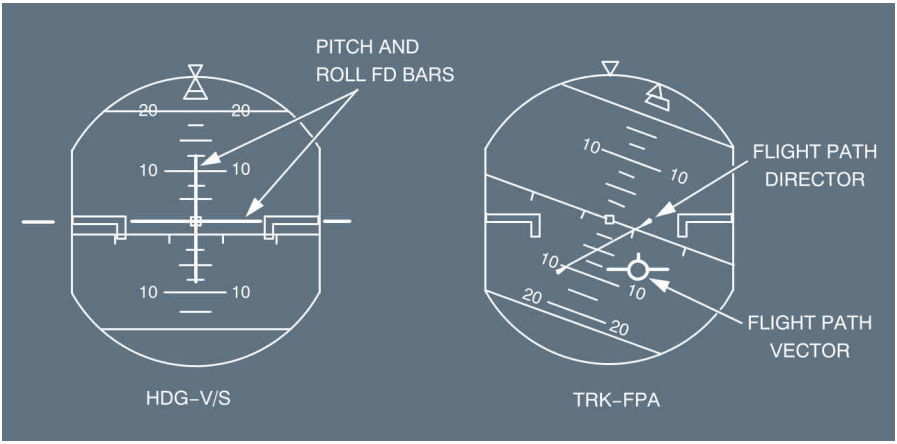
LOC pb

Pushing this pushbutton arms, engages, or disengages the LOC mode.

HDG V/S – TRK FPA pb

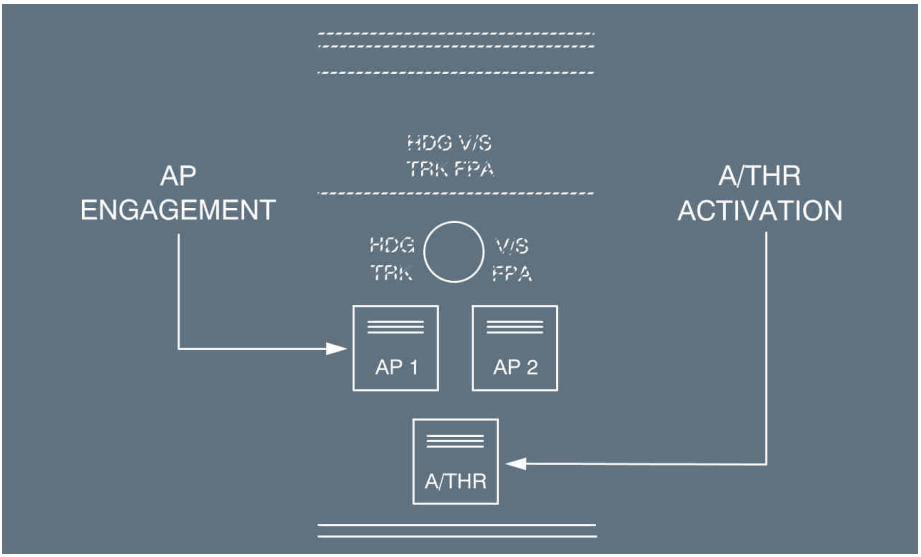
The flight crew uses this pushbutton to select HDG (associated with V/S) or TRK (associated with FPA). Pushing it:

- Displays the Flight Path Vector (FPV) on the Primary Flight Display (PFD) or deletes it.
- On the PFD, changes the FD crossbar display (with the aircraft attitude as its reference) to the aircraft Flight Path Director (with the flight path vector as its reference) and vice versa.
- Changes heading reference into track reference in the HDG/TRK window and vice versa.
- Changes vertical speed reference target into flight path angle reference target in the V/S-FPA window and vice versa.



AP-A/THR CONTROL AREA

Ident.: DSC-22_10-40-20-00010116.0001001 / 14 MAY 12
Applicable to: ALL



AP1 pb AND AP2 pb

The flight crew uses these pushbuttons to engage or disengage the autopilots. The buttons illuminate green when the autopilot is engaged.

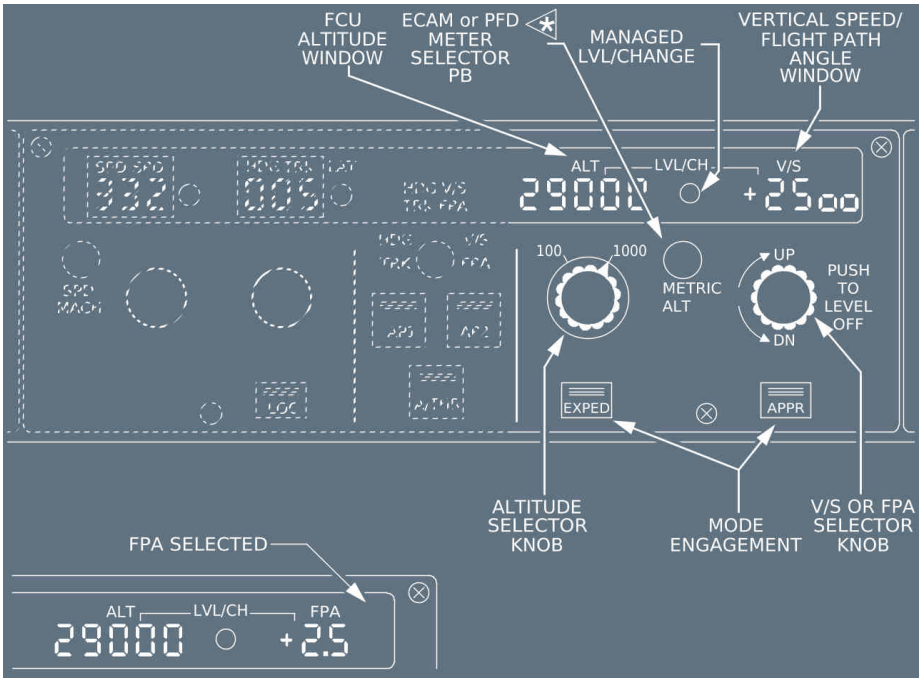
A/THR pb

The flight crew uses this pushbutton to arm, activate, or disconnect the autothrust (A/THR). This button illuminates green if the A/THR is armed or active.

VERTICAL CONTROL AREA

Ident.: DSC-22_10-40-20-00010117.0006001 / 22 MAY 12

1 **Applicable to: MSN 01767-02195, 02275-02405, 02457-02649, 02712-02737, 02908-03138, 03308, 03357-09063**



The FCU altitude window always displays a target value selected by the flight crew. It never displays dashes.

Altitude knob (INNER AND OUTER)

Display range: 100 to 49 000 ft

- The outer knob has two positions: 100 and 1000
- The inner knob sets the altitude in the FCU window in increments of 100 or 1 000 ft, depending upon the position of the outer knob.

EXPED pb

This pushbutton is used to engage the expedite mode. *Refer to DSC-22_30-70-90 General*.

METRIC ALT pb

This pushbutton is used to display the FCU altitude target in meters on the ECAM, or the current altitude and FCU/FM altitude target in meters on the PFD .

V/S or FPA knob

Range (V/S) : –6 000 to +6 000 ft/min
2 clicks = 100 ft/min
If the flight crew turns the knob slowly, each click equals 100 ft/min.

Range (FPA) : –9.9 ° to +9.9 °
1 click = 0.1 °

The flight crew turns this knob to set the value of the vertical speed (V/S) or flight path angle (FPA) to be displayed in the V/S or FPA window (They choose which, V/S or FPA, is to be displayed by pushing the HDG V/S - TRK FPA pb).

One rotation of the knob corresponds to 32 clicks. One complete rotation sets:
FPA = 3.2 °
V/S = 1 600 ft/min

When the flight crew pushes in the V/S or FPA knob, the system commands an immediate level-off by engaging the V/S or FPA mode with a target of zero. The flight mode annunciator (FMA) then displays "V/S = 0" in green when V/S or FPA is nulled. If the flight crew now turns the knob to put in a new setting for V/S or FPA, the aircraft changes flight path accordingly.

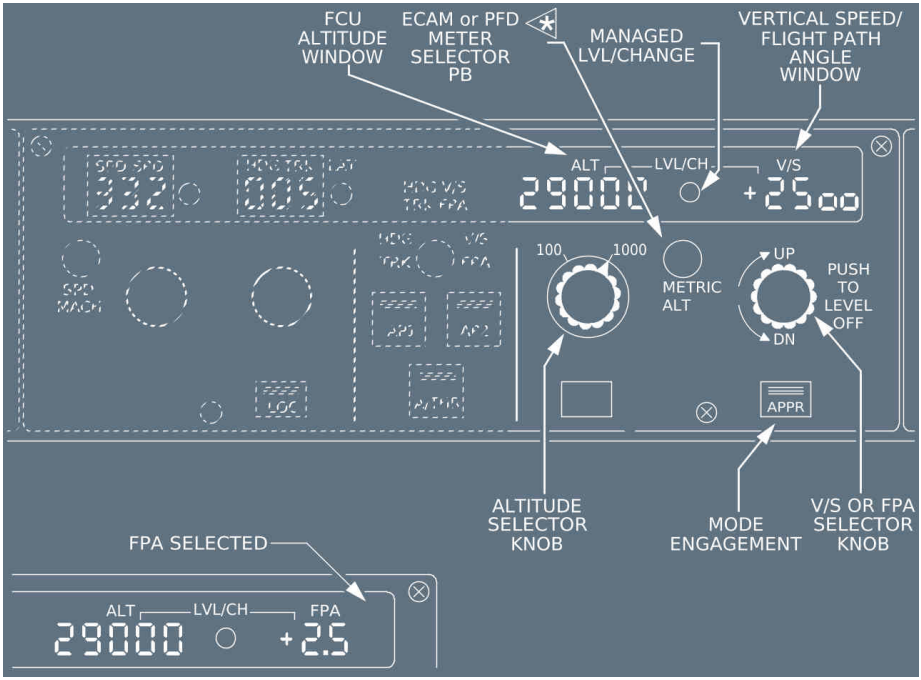
APPR pb

This pushbutton arms, disarms, engages, or disengages the approach modes:

- LOC and G/S modes, if an ILS approach is selected in the active F-PLN.
- APP NAV-FINAL modes, if a non precision approach is selected in the active F-PLN.

VERTICAL CONTROL AREA

Ident.: DSC-22_10-40-20-00010117.0012001 / 22 MAY 12
Applicable to: MSN 02204, 02443, 02670, 02804, 03264, 03330



The FCU altitude window always displays a target value selected by the flight crew. It never displays dashes.

Altitude knob (INNER AND OUTER)

Display range: 100 to 49 000 ft

- The outer knob has two positions: 100 and 1000
- The inner knob sets the altitude in the FCU window in increments of 100 or 1 000 ft, depending upon the position of the outer knob.

METRIC ALT pb

This pushbutton is used to display the FCU altitude target in meters on the ECAM, or the current altitude and FCU/FM altitude target in meters on the PFD .

V/S or FPA knob

Range (V/S) : –6 000 to +6 000 ft/min
2 clicks = 100 ft/min
If the flight crew turns the knob slowly, each click equals 100 ft/min.

Range (FPA) : –9.9 ° to +9.9 °
1 click = 0.1 °

The flight crew turns this knob to set the value of the vertical speed (V/S) or flight path angle (FPA) to be displayed in the V/S or FPA window (They choose which, V/S or FPA, is to be displayed by pushing the HDG V/S - TRK FPA pb).

One rotation of the knob corresponds to 32 clicks. One complete rotation sets:
FPA = 3.2 °
V/S = 1 600 ft/min

When the flight crew pushes in the V/S or FPA knob, the system commands an immediate level-off by engaging the V/S or FPA mode with a target of zero. The flight mode annunciator (FMA) then displays "V/S = 0" in green when V/S or FPA is nulled. If the flight crew now turns the knob to put in a new setting for V/S or FPA, the aircraft changes flight path accordingly.

APPR pb

This pushbutton arms, disarms, engages, or disengages the approach modes:
- LOC and G/S modes, if an ILS approach is selected in the active F-PLN.
- APP NAV-FINAL modes, if a non precision approach is selected in the active F-PLN.

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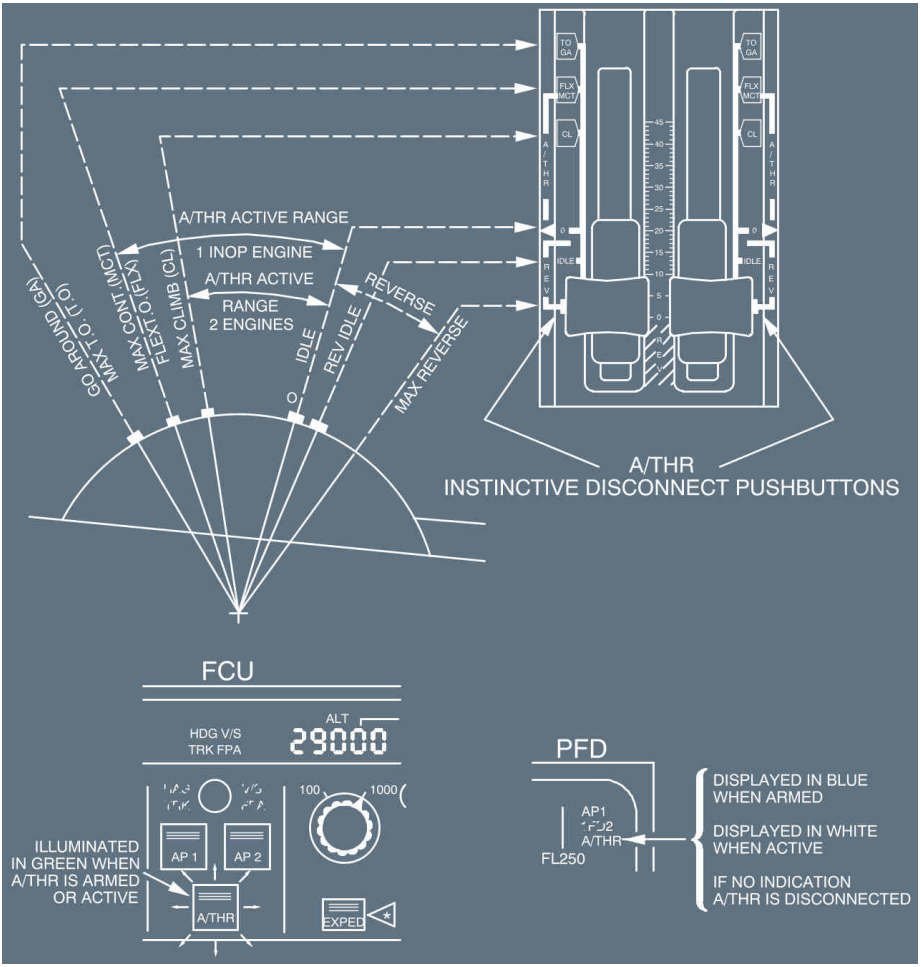
THRUST LEVERS

Ident.: DSC-22_10-40-30-00010119.0001001 / 14 MAY 12
Applicable to: ALL



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PFD

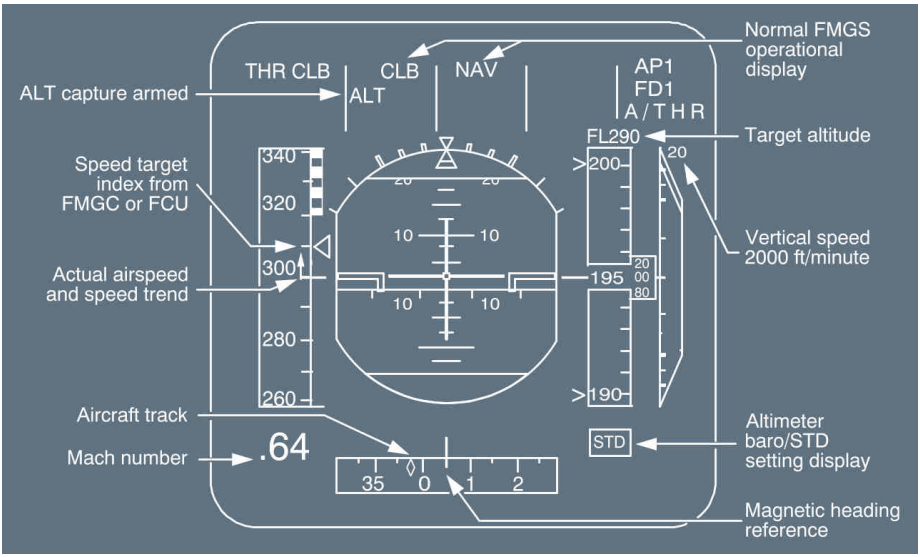
Ident.: DSC-22_10-40-40-00010677.0001001 / 17 AUG 10
Applicable to: ALL

The Flight Management and Guidance System generates the following information to the EFIS Primary Flight Display:

- Armed and engaged modes on the Flight Mode Annunciator (FMA)
- FMGS guidance targets (SPD, ALT, HDG)
- Vertical deviation from descent profile
- Messages
- Navigation information.

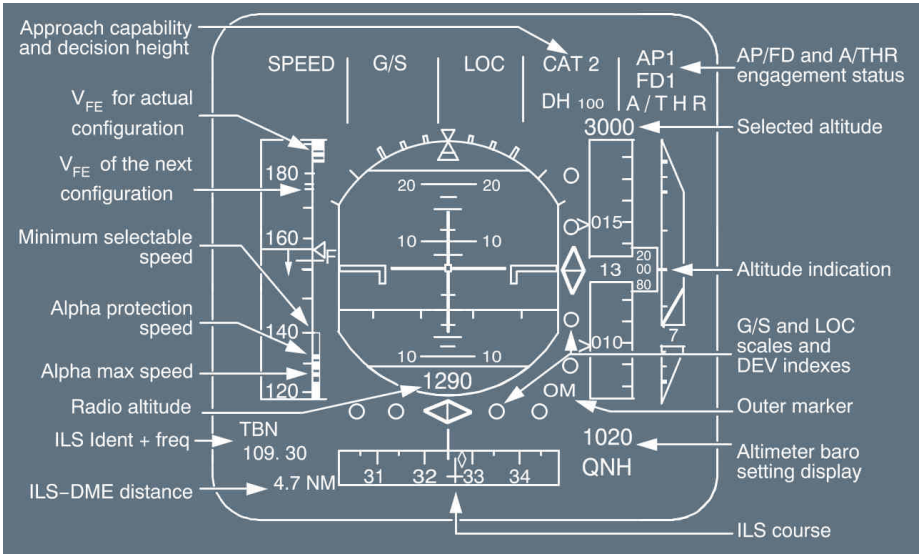
CLIMB PHASE

Ident.: DSC-22_10-40-40-00010121.0002001 / 14 MAY 12
Applicable to: ALL



APPROACH PHASE

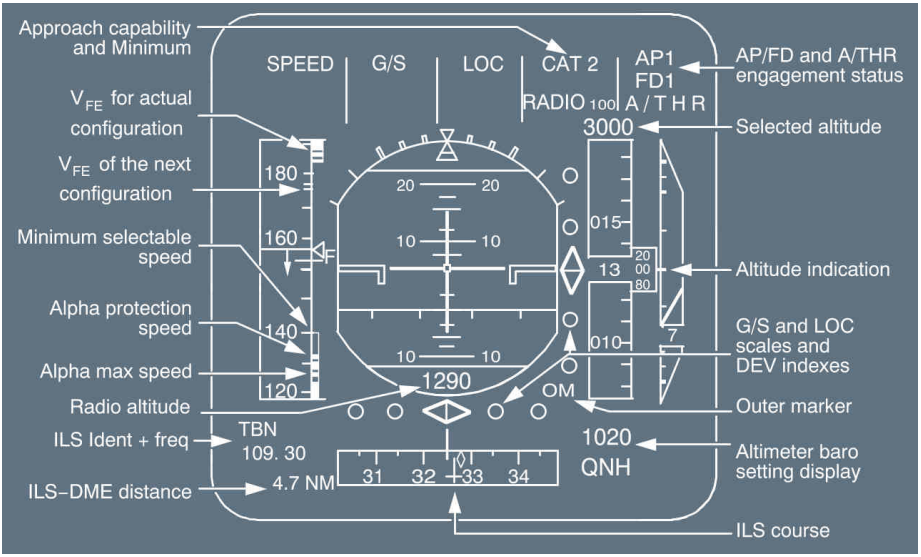
Ident.: DSC-22_10-40-40-00010122.0002001 / 14 MAY 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



APPROACH PHASE

Ident.: DSC-22_10-40-40-00010122.0013001 / 14 MAY 12

[1] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



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ND

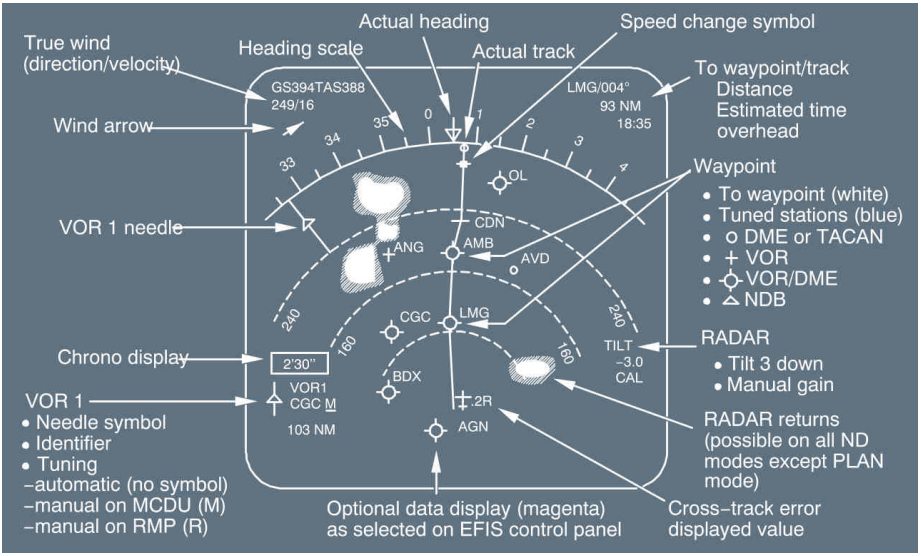
Ident.: DSC-22_10-40-50-00010123.0001001 / 17 AUG 10
Applicable to: ALL

The FMGS generates the following information, displayed on the EFIS Navigation Displays:

- Flight plan (active secondary, temporary, dashed)
- Aircraft position and lateral deviation from the flight plan
- Pseudo-waypoints along the flight plan
- Raw data from tuned Navaids and type of selected approach
- Various display options (waypoints, Navaids, NDBs, airports, constraints)
- Wind information and various messages.

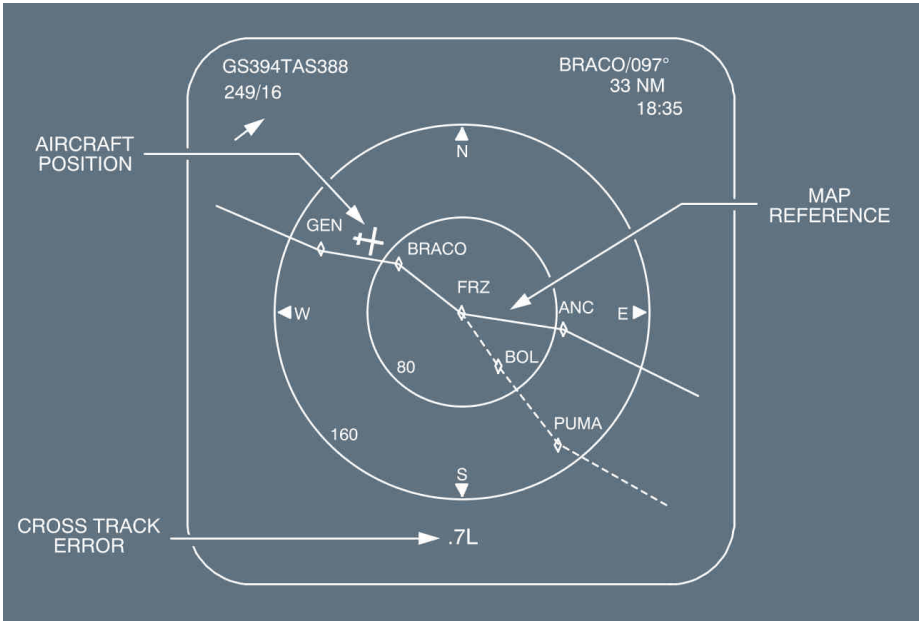
ARC MODE

Ident.: DSC-22_10-40-50-00010124.0001001 / 14 MAY 12
Applicable to: ALL



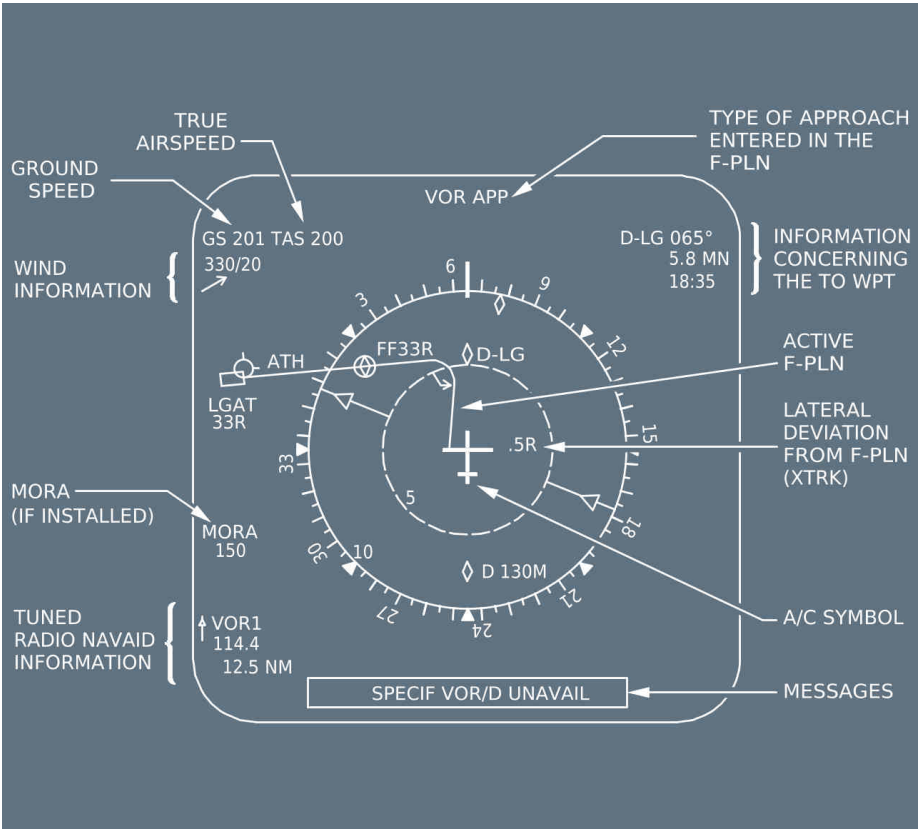
PLAN MODE

Ident.: DSC-22_10-40-50-00010125.0001001 / 01 OCT 12
Applicable to: ALL



ROSE MODES

Ident.: DSC-22_10-40-50-00010126.0022001 / 09 MAR 15
Applicable to: ALL



FLIGHT PLAN DISPLAY COLORS

Ident.: DSC-22_10-40-50-00010127.0001001 / 17 AUG 10

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

F-PLN	Color
Primary Flight Plan	- Managed mode: Steady green - Selected mode: Dashed green
Track line	Steady green
Alternate flight plan	Dashed blue
Missed approach	Steady blue
Offset flight plan	Steady green (Original flight plan: Dashed green)
Temporary flight plan	Dashed yellow
Engine-out SID (not inserted)	Steady yellow
Secondary flight plan	Steady dimmed white

FLIGHT PLAN DISPLAY COLORS

Ident.: DSC-22_10-40-50-00010127.0002001 / 17 AUG 10

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

F-PLN	Color
Primary Flight Plan	- Managed mode: Steady green - Selected mode: Dashed green
Track line	Steady green
Alternate flight plan	Dashed blue
Missed approach	Steady blue
Offset flight plan	Steady green (Original flight plan: Dashed green)
Temporary flight plan	Dashed yellow
Engine-out SID (not inserted)	Steady yellow
Secondary flight plan	Steady dimmed white
Abeam/Radial	Dashed blue

GENERAL

Ident.: DSC-22_10-50-10-00020369.0001001 / 17 MAR 17
Applicable to: ALL

This chapter shows the speed symbols and definitions.
The source of the computation is also given, when applicable.

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CHARACTERISTIC SPEEDS

Ident.: DSC-22_10-50-20-00020370.0004001 / 17 MAR 17

[1] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The characteristic speeds displayed on the PFD are computed by the Flight Augmentation Computer (FAC), according to the FMS weight data (for PFD/MCDU display consistency and accuracy purposes).
VLS (of normal landing configuration: CONF 3 or FULL), F, S and Green Dot speeds are also displayed on the MCDU TAKEOFF and/or APPR pages.
The speeds displayed by the MCDU are computed by the FMS, based on the aircraft gross weight (which is computed according to the entered ZFW and the FOB), or the predicted gross weight (for approach or go-around).

VS : Stalling speed.
Not displayed.
For a conventional aircraft, the reference stall speed, VSmin, is based on a load factor that is less than 1 g. This gives a stall speed that is lower than the stall speed at 1 g. All operating speeds are expressed as functions of this speed (for example, VREF = 1.3 VSmin).
Because aircraft of the A320 family have a low-speed protection feature (alpha limit) that the flight crew cannot override, Airworthiness Authorities have reconsidered the definition of stall speed for these aircraft.
All the operating speeds must be referenced to a speed that can be demonstrated by flight tests. This speed is designated VS1g.

Airworthiness Authorities have agreed that a factor of 0.94 represents the relationship between VS1g for aircraft of the A320 family and VSmin for conventional aircraft types. As a result, Authorities allow aircraft of the A320 family to use the following factors :
V2 = 1.2 × 0.94 VS1g = 1.13 VS1g
VREF = 1.3 × 0.94 VS1g = 1.23 VS1g

These speeds are identical to those that the conventional 94 % rule would have defined for these aircraft. The A318, A319, A320 and A321 have exactly the same maneuver margin that a conventional aircraft would have at its reference speeds.
The FCOM uses VS for VS1g.

VLS : Lowest Selectable Speed.
Represented by the top of an amber strip along the airspeed scale on the PFD.
Computed by the FAC, based on FMS, and corresponds to 1.13 VS during takeoff, or following a touch and go.
Becomes 1.23 VS, after retraction of one step of flaps.
Becomes 1.28 VS, when in clean configuration.

Note: *If in CONF 0 VLS were 1.23 VS (instead of 1.28 VS), the alpha protection strip would hit the VLS strip on the PFD.*

Above 20 000 ft, VLS is corrected for Mach effect to maintain a buffet margin of 0.2 g.
In addition, VLS increases when the speedbrakes are extended.
In landing configurations (CONF 3 and FULL) VLS is always equal to, or greater than, VMCL.

F : Minimum speed at which the flaps may be retracted at takeoff.
In approach, used as a target speed when the aircraft is in CONF 2 or CONF 3.
Represented by "F" on the PFD speed scale. Equal to 1.26 VS of CONF 1 + F, and limited to a minimum of 1.1 VMCA and VMCL + 15 kt.

S : Minimum speed at which the slats may be retracted at takeoff.
In approach, used as a target speed when the aircraft is in CONF 1.
Represented by "S" on the PFD airspeed scale.
Equal to 1.23 VS of clean configuration, and limited to a minimum of VMCL + 20 kt.

O : Green dot speed.
Engine-out operating speed in clean configuration.
(Best lift-to-drag ratio speed).
Also corresponds to the final takeoff speed.
Represented by a green dot on the PFD scale.
Below 20 000 ft equal to 2 × weight (tons) +85
Above 20 000 ft, add 1 kt per 1 000 ft

CHARACTERISTIC SPEEDS

Ident.: DSC-22_10-50-20-00020370.0007001 / 17 MAR 17

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The characteristic speeds displayed on the PFD are computed by the Flight Augmentation Computer (FAC), according to the FMS weight data (for PFD/MCDU display consistency and accuracy purposes), and aerodynamic data as a backup.
VLS (of normal landing configuration: CONF 3 or FULL), F, S, and Green Dot speeds are also displayed on the MCDU TAKEOFF and/or APPR pages.

The speeds displayed by the MCDU are computed by the FMS, based on the aircraft gross weight (which is computed according to the entered ZFW and the FOB), or the predicted gross weight (for approach or go-around).

VS : Stalling speed.
Not displayed.
For a conventional aircraft, the reference stall speed, VSmin, is based on a load factor that is less than 1 g. This gives a stall speed that is lower than the stall speed at 1 g. All operating speeds are expressed as functions of this speed (for example, VREF = 1.3 VSmin).
Because aircraft of the A320 family have a low-speed protection feature (alpha limit) that the flight crew cannot override, Airworthiness Authorities have reconsidered the definition of stall speed for these aircraft.
All the operating speeds must be referenced to a speed that can be demonstrated by flight tests. This speed is designated VS1g.

Airworthiness Authorities have agreed that a factor of 0.94 represents the relationship between VS1g for aircraft of the A320 family and VSmin for conventional aircraft types. As a result, Authorities allow aircraft of the A320 family to use the following factors:
- V2 = 1.2 × 0.94 VS1g = 1.13 VS1g
- VREF = 1.3 × 0.94 VS1g = 1.23 VS1g

These speeds are identical to those that the conventional 94 % rule would have defined for these aircraft. The A318, A319, A320, and A321 have exactly the same maneuver margin that a conventional aircraft would have at its reference speeds.
The FCOM uses VS for VS1g.

VLS : Lowest Selectable Speed.
Represented by the top of an amber strip along the airspeed scale on the PFD.
Computed by the FAC based on FMS weight data, and on aerodynamic data as a backup, and corresponds to 1.13 VS during takeoff or following a touch and go.
Becomes 1.23 VS, after retraction of one step of flaps.
Becomes 1.28 VS, when in clean configuration.

Note: *If in CONF 0 VLS were 1.23 VS (instead of 1.28 VS), the alpha protection strip would hit the VLS strip on the PFD.*

Above 20 000 ft, VLS is corrected for Mach effect to maintain a buffet margin of 0.2 g.
In addition, VLS increases when the speedbrakes are extended.

F : Minimum speed at which the flaps may be retracted at takeoff.
In approach, used as a target speed when the aircraft is in CONF 2 or CONF 3.
Represented by “F” on the PFD speed scale. Equal to about 1.22 VS of CONF 1 + F.

S : Minimum speed at which the slats may be retracted at takeoff.
In approach, used as a target speed when the aircraft is in CONF 1.
Represented by “S” on the PFD airspeed scale.
Equal to about 1.23 VS of clean configuration.

O : Green dot speed.
Engine-out operating speed in clean configuration.
(Best lift-to-drag ratio speed).
Also corresponds to the final takeoff speed.
Represented by a green dot on the PFD scale.
Below 20 000 ft equal to 1.5 × weight (tons) +110
Above 20 000 ft, add 1 kt per 1 000 ft

CHARACTERISTIC SPEEDS

Ident.: DSC-22_10-50-20-00020370.0006001 / 17 MAR 17
Applicable to: MSN 05437-06336

The characteristic speeds displayed on the PFD are computed by the Flight Augmentation Computer (FAC), according to the FMS weight data (for PFD/MCDU display consistency and accuracy purposes), and aerodynamic data as a backup.
VLS (of normal landing configuration: CONF 3 or FULL), F, S, and Green Dot speeds are also displayed on the MCDU TAKEOFF and/or APPR pages.
The speeds displayed by the MCDU are computed by the FMS, based on the aircraft gross weight (which is computed according to the entered ZFW and the FOB), or the predicted gross weight (for approach or go-around).

VS : Stalling speed.
Not displayed.
For a conventional aircraft, the reference stall speed, VSmin, is based on a load factor that is less than 1 g. This gives a stall speed that is lower than the stall speed at 1 g. All operating speeds are expressed as functions of this speed (for example, VREF = 1.3 VSmin).
Because aircraft of the A320 family have a low-speed protection feature (alpha limit) that the flight crew cannot override, Airworthiness Authorities have reconsidered the definition of stall speed for these aircraft.
All the operating speeds must be referenced to a speed that can be demonstrated by flight tests. This speed is designated VS1g.

Airworthiness Authorities have agreed that a factor of 0.94 represents the relationship between VS1g for aircraft of the A320 family and VSmin for conventional aircraft types. As a result, Authorities allow aircraft of the A320 family to use the following factors:
- V2 = 1.2 × 0.94 VS1g = 1.13 VS1g
- VREF = 1.3 × 0.94 VS1g = 1.23 VS1g

These speeds are identical to those that the conventional 94 % rule would have defined for these aircraft. The A318, A319, A320, and A321 have exactly the same maneuver margin that a conventional aircraft would have at its reference speeds.
The FCOM uses VS for VS1g.

VLS : Lowest Selectable Speed.
Represented by the top of an amber strip along the airspeed scale on the PFD.
Computed by the FAC based on FMS weight data, and on aerodynamic data as a backup, and corresponds to 1.13 VS during takeoff or following a touch and go.
Becomes 1.23 VS, after retraction of one step of flaps.
Becomes 1.28 VS, when in clean configuration.

Note: *If in CONF 0 VLS were 1.23 VS (instead of 1.28 VS), the alpha protection strip would hit the VLS strip on the PFD.*

Above 20 000 ft, VLS is corrected for Mach effect to maintain a buffet margin of 0.2 g.
In addition, VLS increases when the speedbrakes are extended.

F : Minimum speed at which the flaps may be retracted at takeoff.
In approach, used as a target speed when the aircraft is in CONF 2 or CONF 3.
Represented by “F” on the PFD speed scale. Equal to about 1.23 VS of CONF 1 + F.

S : Minimum speed at which the slats may be retracted at takeoff.
In approach, used as a target speed when the aircraft is in CONF 1.
Represented by “S” on the PFD airspeed scale.
Equal to about 1.29 VS of clean configuration.

O : Green dot speed.
Engine-out operating speed in clean configuration.
(Best lift-to-drag ratio speed).
Also corresponds to the final takeoff speed.
Represented by a green dot on the PFD scale.
Below 20 000 ft equal to 2 × weight (tons) +80
Above 20 000 ft, add 1 kt per 1 000 ft

CHARACTERISTIC SPEEDS

Ident.: DSC-22_10-50-20-00020370.0001001 / 17 MAR 17

3 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

The characteristic speeds displayed on the PFD are computed by the Flight Augmentation Computer (FAC), according to aerodynamic data.
VLS (of normal landing configuration: CONF 3 or FULL), F, S and Green Dot speeds are also displayed on the MCDU TAKEOFF and/or APPR pages.
The speeds displayed by the MCDU are computed by the FMS, based on the aircraft gross weight (which is computed according to the entered ZFW and the FOB), or the predicted gross weight (for approach or go-around).

VS : Stalling speed.
Not displayed.
For a conventional aircraft, the reference stall speed, VSmin, is based on a load factor that is less than 1 g. This gives a stall speed that is lower than the stall speed at 1 g. All operating speeds are expressed as functions of this speed (for example, VREF = 1.3 VSmin).
Because aircraft of the A320 family have a low-speed protection feature (alpha limit) that the flight crew cannot override, Airworthiness Authorities have reconsidered the definition of stall speed for these aircraft.
All the operating speeds must be referenced to a speed that can be demonstrated by flight tests. This speed is designated VS1g.

Airworthiness Authorities have agreed that a factor of 0.94 represents the relationship between VS1g for aircraft of the A320 family and VSmin for conventional aircraft types. As a result, Authorities allow aircraft of the A320 family to use the following factors :
V2 = 1.2 × 0.94 VS1g = 1.13 VS1g
VREF = 1.3 × 0.94 VS1g = 1.23 VS1g

These speeds are identical to those that the conventional 94 % rule would have defined for these aircraft. The A318, A319, A320 and A321 have exactly the same maneuver margin that a conventional aircraft would have at its reference speeds.
The FCOM uses VS for VS1g.

VLS : Lowest Selectable Speed.
Represented by the top of an amber strip along the airspeed scale on the PFD.
Computed by the FAC, based on aerodynamic data, and corresponds to 1.13 VS during takeoff, or following a touch and go.
Becomes 1.23 VS, after retraction of one step of flaps.
Becomes 1.28 VS, when in clean configuration.

Note: *If in CONF 0 VLS were 1.23 VS (instead of 1.28 VS), the alpha protection strip would hit the VLS strip on the PFD.*

Above 20 000 ft, VLS is corrected for Mach effect to maintain a buffet margin of 0.2 g.
In addition, VLS increases when the speedbrakes are extended.

F : Minimum speed at which the flaps may be retracted at takeoff.
In approach, used as a target speed when the aircraft is in CONF 2 or CONF 3.
Represented by “F” on the PFD speed scale. Equal to about 1.23 VS of CONF 1 + F.

S : Minimum speed at which the slats may be retracted at takeoff.
In approach, used as a target speed when the aircraft is in CONF 1.
Represented by “S” on the PFD airspeed scale.
Equal to about 1.29 VS of clean configuration.

O : Green dot speed.
Engine-out operating speed in clean configuration.
(Best lift-to-drag ratio speed).
Also corresponds to the final takeoff speed.
Represented by a green dot on the PFD scale.
Below 20 000 ft equal to 2 × weight (tons) +80
Above 20 000 ft, add 1 kt per 1 000 ft

CHARACTERISTIC SPEEDS

Ident.: DSC-22_10-50-20-00020370.0002001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The characteristic speeds displayed on the PFD are computed by the Flight Augmentation Computer (FAC), according to aerodynamic data.
VLS (of normal landing configuration: CONF 3 or FULL), F, S and Green Dot speeds are also displayed on the MCDU TAKEOFF and/or APPR pages.
The speeds displayed by the MCDU are computed by the FMS, based on the aircraft gross weight (which is computed according to the entered ZFW and the FOB), or the predicted gross weight (for approach or go-around).

VS : Stalling speed.
Not displayed.
For a conventional aircraft, the reference stall speed, VSmin, is based on a load factor that is less than 1 g. This gives a stall speed that is lower than the stall speed at 1 g. All operating speeds are expressed as functions of this speed (for example, VREF = 1.3 VSmin).
Because aircraft of the A320 family have a low-speed protection feature (alpha limit) that the flight crew cannot override, Airworthiness Authorities have reconsidered the definition of stall speed for these aircraft.
All the operating speeds must be referenced to a speed that can be demonstrated by flight tests. This speed is designated VS1g.

Airworthiness Authorities have agreed that a factor of 0.94 represents the relationship between VS1g for aircraft of the A320 family and VSmin for conventional aircraft types. As a result, Authorities allow aircraft of the A320 family to use the following factors :
V2 = 1.2 × 0.94 VS1g = 1.13 VS1g
VREF = 1.3 × 0.94 VS1g = 1.23 VS1g

These speeds are identical to those that the conventional 94 % rule would have defined for these aircraft. The A318, A319, A320 and A321 have exactly the same maneuver margin that a conventional aircraft would have at its reference speeds.
The FCOM uses VS for VS1g.

VLS : Lowest Selectable Speed.
Represented by the top of an amber strip along the airspeed scale on the PFD.
Computed by the FAC, based on aerodynamic data, and corresponds to 1.13 VS during takeoff, or following a touch and go.
Becomes 1.23 VS, after retraction of one step of flaps.
Becomes 1.28 VS, when in clean configuration.

Note: *If in CONF 0 VLS were 1.23 VS (instead of 1.28 VS), the alpha protection strip would hit the VLS strip on the PFD.*

Above 20 000 ft, VLS is corrected for Mach effect to maintain a buffet margin of 0.2 g.
In addition, VLS increases when the speedbrakes are extended.

F : Minimum speed at which the flaps may be retracted at takeoff.
In approach, used as a target speed when the aircraft is in CONF 2 or CONF 3.
Represented by “F” on the PFD speed scale. Equal to about 1.18 VS to 1.22 VS of CONF 1 + F.

S : Minimum speed at which the slats may be retracted at takeoff.
In approach, used as a target speed when the aircraft is in CONF 1.
Represented by “S” on the PFD airspeed scale.
Equal to about 1.22 VS to 1.25 VS of clean configuration.

O : Green dot speed.
Engine-out operating speed in clean configuration.
(Best lift-to-drag ratio speed).
Also corresponds to the final takeoff speed.
Represented by a green dot on the PFD scale.
Below 20 000 ft equal to 2 × weight (tons) +85
Above 20 000 ft, add 1 kt per 1 000 ft

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LIMIT SPEEDS

Ident.: DSC-22_10-50-30-00020383.0001001 / 17 MAR 17
Applicable to: ALL

VA	:	Maximum design maneuvering speed. This corresponds to the maximum structural speed permitted for full control deflection, if alternate or direct law is active.
VMCG	:	Minimum speed, on the ground during takeoff, at which the aircraft can be controlled by only using the primary flight controls, after a sudden failure of the critical engine, the other engine remaining at takeoff thrust.
VMCA	:	Minimum control speed in flight at which the aircraft can be controlled with a maximum bank of 5 °, if one engine fails, the other engine remaining at takeoff thrust (takeoff flap setting, gear retracted).
VMCL	:	Minimum control speed in flight, at which the aircraft can be controlled with a maximum bank of 5 °, if one engine fails, the other engine remaining at takeoff thrust (approach flap setting).
VFE	:	Maximum speed for each flap configuration.
VLE	:	Maximum speed with landing gear extended.
VLO	:	Maximum speed for landing gear operation.
VMO	:	Maximum speed.
VFE NEXT	:	Maximum speed for the next (further extended) flap lever position.

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PROTECTION SPEEDS

Ident.: DSC-22_10-50-40-00020382.0001001 / 17 MAR 17
Applicable to: ALL

Vα PROT, Vα MAX and VSW are computed by the FAC, based on aerodynamic data. They are only used for display on the PFD, and not for flight control protection (the activation of the protections is computed by the ELAC).

Vα PROT : Angle of attack protection speed.
Corresponds to the angle of attack at which the angle of attack protection becomes active.
Represented by the top of a black and amber strip along the PFD speed scale, in normal law.

Vα MAX : Maximum angle of attack speed.
Corresponds to the maximum angle of attack that may be reached in pitch normal law.
Represented by the top of a red strip along the PFD speed scale, in normal law.

VSW : Stall warning speed.
Represented by a red and black strip along the speed scale when the flight control normal law is inoperative.

VMAX : Represented by the bottom of a red and black strip along the speed scale.
Determined by the FAC according to the aircraft configuration.
Is equal to VMO (or speed corresponding to MMO), VLE or VFE.

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OTHER SPEEDS

Ident.: DSC-22_10-50-50-00020384.0004001 / 05 DEC 17

[1] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

V1 : The highest speed, during takeoff, at which the flight crew has a choice between continuing the takeoff or stopping the aircraft.
Represented by "1" on the airspeed scale (or the V1 value when it is off the airspeed scale).
Inserted manually through the MCDU by the flight crew.
Displayed on the MCDU TAKEOFF page.

VR : The speed at which the pilot rotates in order to reach V2 at an altitude of 35 ft at the latest after an engine failure.
Inserted manually through the MCDU by the flight crew.
Displayed on the MCDU TAKEOFF page.

V2 : Takeoff safety speed that the aircraft attains at the latest at an altitude of 35 ft with one engine failed, and maintains during the second segment of the takeoff.
Represented by the SPEED SELECT symbol on the speed scale.
Minimum value equal to 1.13 VS for the corresponding configuration.
Inserted manually through the MCDU by the flight crew.
Displayed on the MCDU TAKEOFF page.

VREF : Reference speed used for normal final approach.
Equal to 1.23 × VS of CONF FULL.
Displayed on the MCDU APPR page, if landing is planned in CONF FULL (VLS CONF FULL).

VAPP : Final approach speed.
Displayed on MCDU APPR page.
Calculated by the FMGCs.
Represents : VAPP = VLS + wind correction
The wind correction is limited to a minimum of 5 kt and a maximum of 15 kt.

The flight crew may modify VAPP through the MCDU.
- During autoland or when A/THR is on or in case of ice accretion or gusty crosswind greater than 20 kt, VAPP must not be lower than VLS +5 kt.

OTHER SPEEDS

Ident.: DSC-22_10-50-50-00020384.0002001 / 05 DEC 17

[2] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

V1 : The highest speed, during takeoff, at which the flight crew has a choice between continuing the takeoff or stopping the aircraft.
Represented by “1” on the airspeed scale (or the V1 value when it is off the airspeed scale).
Inserted manually through the MCDU by the flight crew.
Displayed on the MCDU TAKEOFF page.

VR : The speed at which the pilot rotates in order to reach V2 at an altitude of 35 ft at the latest after an engine failure.
Inserted manually through the MCDU by the flight crew.
Displayed on the MCDU TAKEOFF page.

V2 : Takeoff safety speed that the aircraft attains at the latest at an altitude of 35 ft with one engine failed, and maintains during the second segment of the takeoff.
Represented by the SPEED SELECT symbol on the speed scale.
Minimum value equal to 1.13 VS for the corresponding configuration.
Inserted manually through the MCDU by the flight crew.
Displayed on the MCDU TAKEOFF page.

VREF : Reference speed used for normal final approach.
Equal to 1.23 × VS of CONF FULL.
Displayed on the MCDU APPR page, if landing is planned in CONF FULL (VLS CONF FULL).

VAPP : Final approach speed.
Displayed on MCDU APPR page.
Calculated by the FMGCs.
Represents : VAPP = VLS + wind correction.
The wind correction is limited to a minimum of 5 kt and a maximum of 15 kt.
The flight crew may modify VAPP through the MCDU.

- During autoland or when A/THR is on or in case of ice accretion or gusty crosswing greater than 20 kt, VAPP must not be lower than VLS +5 kt.
- For landing in configuration 3 with ice accretion VAPP must not be lower than VLS +10 kt.

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DSC-22_20-20-10 Position Monitor	F	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-20-20 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-20-20 Estimated Position Uncertainty	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-20-30 DME	D	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-20-30 Manual Tuning	H	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-20-40 Alignment of Inertial Reference System	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-05 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-05 Flight Plan Construction	C	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-05 Flight Plan Capacity	D	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-05 Lateral Revisions	E	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Temporary F-PLN (TMPY)	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Inserting an Airway with "Via" - General	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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DSC-22_20-30-10-15 Inserting an Airway with "Via" - Successive Airway Segments from a Waypoint	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Inserting an Airway with "Via" - The Pilot Wishes to Insert One Airway Segment to an Ending Waypoint	C	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Inserting an Airway with "Via" - Flight Plan Insertion	C	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Inserting a Waypoint - General	D	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Inserting a Waypoint - Waypoint Identification	D	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Inserting a Waypoint - Waypoint Inserted Directly in the Flight Plan	D	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Inserting a Waypoint - Along Track Waypoint Insertion	D	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Inserting a Waypoint - Waypoint Inserted Through the Use of "Next Waypoint"	D	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Inserting a Waypoint - Latitude/Longitude Crossing Waypoint Insertion	D	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Fix Info - General	E	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Fix Info - Inserting a Radial Intercept Waypoint	E	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Fix Info - Inserting a Circle Intercept Waypoint	E	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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DSC-22_20-30-10-15 Fix Info - Inserting an Abeam Intercept Waypoint	E	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Inserting a New Destination	F	17	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Holding Pattern - General	G	18	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Holding Pattern - Hold to Fix (HF)	G	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Holding Pattern - Hold to Altitude (HA)	G	20	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Holding Pattern - Hold with Manual Termination (HM)	G	21	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Holding Pattern - Procedure to Insert a Hold (Hold with Manual Termination)	G	22	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Holding Pattern - Procedure to Delete a Hold (Hold with Manual Termination)	G	23	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Offset - General	H	24	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Offset - Inserting an Offset	H	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Offset - Manual Cancellation of an Offset	H	26	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Alternate Function - General	I	27	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 Alternate Function - Review and Selection of Alternate Airport	I	28	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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DSC-22_20-30-10-15 Enable ALTN	J	29	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 DIR Key (Direct-to-Function) - General	K	30	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 DIR Key (Direct-to-Function) - Procedure for DIR TO Waypoint	K	31	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 DIR Key (Direct-to-Function) - Particular Cases for Use of DIR TO	K	32	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 DIR Key (Direct-to-Function) - Procedure for DIR TO/ABEAM	K	33	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 DIR Key (Direct-to-Function) - Procedure for DIR TO/Intercept	K	34	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 OVFY (Overfly) Key	L	35	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-10-15 "Update at"	M	36	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-20-05 Flight Phases	C	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-20-05 Vertical Revision	D	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-20-05 Vertical Constraints (Speed, Altitude, Time)	E	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-20-25 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-20-25 Required Time of Arrival (RTA) - General	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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DSC-22_20-30-20-25 Required Time of Arrival (RTA) - Entering a Required Time of Arrival	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-20-25 Wind - Temperature - QNH - General	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-20-25 Wind - Temperature - QNH - Entering the Trip Wind and Temperature During F-PLN Initialization	C	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-20-25 Wind - Temperature - QNH - Entering the Wind and Temperature During F-PLN Initialization	C	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-20-25 Wind - Temperature - QNH - Entering the Cruise Winds and Temperatures	C	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-20-25 Wind - Temperature - QNH - Effect of Wind Entries On Optimum Flight Level	C	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-20-25 Wind - Temperature - QNH - Entering the Descent Winds	C	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-20-25 Wind - Temperature - QNH - Entering the Alternate Wind	C	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-20-25 Wind - Temperature - QNH - Entering the Approach Wind Temperature and QNH	C	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-20-25 Constant Mach Segment - General	D	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-30-20-25 Constant Mach Segment - Entering a Constant Mach Segment	D	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-40-10 Optimization	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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DSC-22_20-40-30 Computation of Predictions	C	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-40-30 Predictions Displayed on the Navigation Display	D	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-40-30 Examples of MCDU Predictions	G	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-40-30 Other Computations - Engine-out Case	K	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-45-10	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-45-10 Associated Messages	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 MCDU MENU Page	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 INIT A Page	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Route Selection Page	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 IRS INIT Page	E	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 WIND Pages	F	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 INIT B Page	G	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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DSC-22_20-50-10-25 Fuel Prediction Page	H	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Flight Plan Pages	I	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Lateral Revision Pages	J	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Fix Info Page	K	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Offset Page	L	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Airways Page	M	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Departure Pages	N	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Hold Pages	O	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Direct TO Page	P	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 ARRIVAL Pages	Q	17	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Alternate Page	R	18	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Route Selection Page for Alternate	S	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 VERTICAL REVISION Pages	T	20	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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DSC-22_20-50-10-25 Step ALTS Page	U	21	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 RTA Page	V	22	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Data Index Pages	W	23	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Waypoint/Stored Waypoint/New Waypoint Pages	X	24	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 NAVAID/Stored NAVAID/New NAVAID Pages	Y	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Runways/Stored Runways/New Runway Pages	Z	26	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Route/Stored Route/New Route Pages	AA	27	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Aircraft Status Page	AB	28	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 P/N XLOAD Page	AC	29	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 P/N Status Pages	AD	30	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Duplicate Names Page	AE	31	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Position Monitor Page	AF	32	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Position Monitor and Position Frozen Page	AG	33	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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DSC-22_20-50-10-25 Selected NAVAIDS Page	AH	34	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 IRS Monitor Page	AI	35	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 GPS Monitor Page	AJ	36	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Closest Airports Pages	AK	37	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Equi-Time Point Page	AL	38	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Print Function Pages	AM	39	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 ACARS Function Page	AN	40	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 ACARS Function Page 1	AO	41	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Uplink TO Data REQ Pages	AP	42	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Uplink MAX TO Data Pages	AQ	43	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Uplink FLX TO Data Pages	AR	44	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 ACARS Function Page 2	AS	45	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 PERF Page	AT	46	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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DSC-22_20-50-10-25 PERF Takeoff Page	AU	47	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 PERF Climb Page	AV	48	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 PERF Cruise Page	AW	49	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 PERF Descent Page	AX	50	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 PERF APPR Page	AY	51	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 PERF APPR Page	AY	52	Effectivity update: The information now also applies to MSN 09063.
DSC-22_20-50-10-25 PERF Go Around Page	AZ	53	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 PROG Pages	BA	54	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Predictive GPS Pages	BB	55	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Report Page	BC	56	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Radio NAV Page	BD	57	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Secondary Pages	BE	58	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-10-25 Back Up NAV Pages	BF	59	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-50-20-35 MCDU Message List	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-22_20-50-30 MCDU Data Format List	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-10 MCDU Altitude Predictions - In Flight	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-10 Target Altitude on PFD	C	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-20 Clearing Data Fields	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-30 En Route Diversion with Several Airports Available	C	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-30 Diversion Preparation on the Secondary Flight Plan	E	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-30 Miscellaneous	F	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-30 Execution of the Diversion	G	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-30 Diversion to the Alternate Airport	H	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-40 Flight Management Part	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-40 Engine-Out Conditions	E	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-40 Engine-Out SID - General	F	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-40 Engine-Out SID - Before the Diversion Point	F	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-22_20-60-40 Engine-Out in CLB Phase (above acceleration altitude) - Aircraft is Flying	G	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-40 Engine-Out in Cruise Phase	H	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-40 Engine-Out in Descent Phase	I	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-50 Secondary Flight Plan	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-60 Stored Route Function	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-70 Report Page Access	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-80 Closest Airports	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-90 How to Insert a Time Marker	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-100 Step Climb/Step Descent	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-110 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-110 Estimated Takeoff Time (ETT)	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-120 Equitime Point	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-120 Equitime Point Entry	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-22_20-60-130 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-130 Back Up NAV Selection - FM F-PLN Download in MCDU	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-130 Back Up NAV Selection - Example of Downloaded F-PLN	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-130 Back Up NAV Operation - AP and A/THR	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-130 Back Up NAV Operation - Navigation Monitoring	C	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-130 Back Up NAV Operation - Flight Planning	C	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-130 Back Up NAV Operation - Waypoint Insertion	C	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-130 Back Up NAV Operation - Waypoint Deletion	C	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-130 Back Up NAV Operation - Overfly Insertion/Deletion	C	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-130 Back Up NAV Operation - Direct to a Waypoint	C	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-130 Back Up NAV Operation - CLR Waypoint/Discontinuity	C	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-130 Back Up NAV Operation - Approaches	C	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-130 Back Up NAV Operation - End of Descent	C	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-22_20-60-130 Back Up NAV Operation - Non ILS Approaches	C	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-60-130 Back Up NAV Operation - ILS Approaches	C	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-70 Flight Plan Initialization Through ACARS	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-70 Takeoff Data - Procedure to Insert Uplink Takeoff Data	C	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-70 Wind Data - Request for Wind Data	D	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-70 Wind Data - Procedure to Insert Wind Data	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-80 Print Function	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-80 Print Function Access	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-80 On Ground Before Engine Start	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-80 In Flight	E	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-80 Reaching the Gate After Landing	G	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-85 QNH Use for Aircraft NOT Equipped with QFE Option	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-85 QFE Use for Aircraft NOT Equipped with QFE Option	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-22_20-90-10 Automatic FMGS Reset and Resynchronization - FM Reset	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-90-10 Automatic FMGS Reset and Resynchronization - FM Resynchronization	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-90-10 Automatic FMGS Reset and Resynchronization - FMGC Status During a Reset/Resynchronization	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-90-10 Automatic FMGS Reset and Resynchronization - Single Reset or Dual Reset with Autorecovery	A	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-90-10 Automatic FMGS Reset and Resynchronization - Single Latch	A	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-90-10 Automatic FMGS Reset and Resynchronization - Dual Reset with Loss of Data and Autorecovery	A	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-90-10 Automatic FMGC Reset and Resynchronization - Dual Latch	A	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-90-10 Manual FMGS Reset - General	B	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-100-20 Misalignment Of FMS F-PLN Legs For ILS Approaches	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-100-20 Incorrect Management Of ETA Entry On Predictive GPS Page	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-100-20 Flight Number Erased Upon AOC Flight Plan Uplink	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-100-20 Erroneous Fuel Prediction In The Case Of Descent With Two Altitude Constraints	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-22_20-100-20 Unexpected Switch Of Speed Target When RTA Is Used	E	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-100-20 VOR/DME and VOR/TACAN Not Automatically Tuned	F	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-100-20 Optimum Target Speeds not Updated following the Automatic Deletion of a Step Climb	G	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-100-20 Erroneous Lateral Guidance in NAV Mode with LOC Mode Armed during Approach	H	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-100-20 Undue Reduction of the Speed Target in case of DIR TO/ABEAM while Flying a Constant Mach Segment	I	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-100-20 Loss of Fuel and Time Predictions During Takeoff Data Insertion	J	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-100-20 Erroneous Trajectory during Procedures with a Turn Direction on a Leg with an Altitude Termination	K	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-100-20 Erroneous Vertical Profile during LOC B/C Approaches with a MAP Located Before the Runway Threshold	L	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_20-100-40 Erroneous Predictions	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

GENERAL

Ident.: DSC-22_20-10-00010128.0001001 / 17 AUG 10
Applicable to: ALL

The flight management and guidance system (FMGS) performs navigation functions and lateral and vertical flight planning functions. It also computes performance parameters and guides the aircraft along a preplanned route.

The Flight Management (FM) part controls the following functions:

- Navigation
- Management of flight planning
- Prediction and optimization of performance
- Management of navigation radios
- Management of displays

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NAVIGATION

Ident.: DSC-22_20-20-05-00010129.0001001 / 17 AUG 10
Applicable to: ALL

Essential navigation functions are:

- Computation of position
- Evaluation of position accuracy
- Radio navigation tuning
- Alignment of Inertial Reference System.

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GENERAL

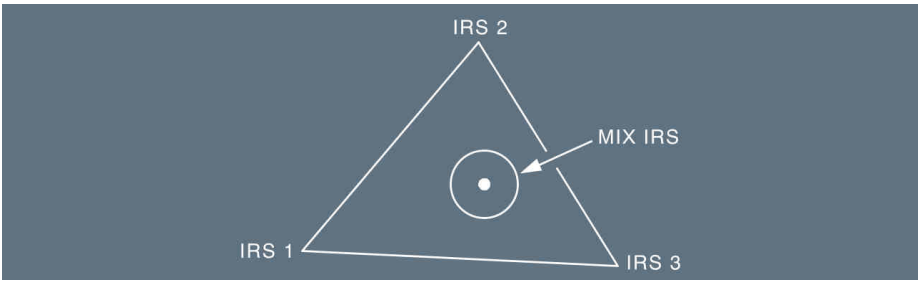
Ident.: DSC-22_20-20-10-00010130.0002001 / 16 MAR 11
Applicable to: ALL

Each FMGC computes its own aircraft position (called the "FM position") from a MIX IRS position and a computed radio position, or a GPS position.
The FMGS selects the most accurate position, considering the estimated accuracy and integrity of each positioning equipment.
GPS/INERTIAL is the basic navigation mode, provided GPS data is valid and successfully tested. Otherwise, navaids plus inertial or inertial only are used. (*Refer to DSC-22_20-20-10 Navigation Modes*).

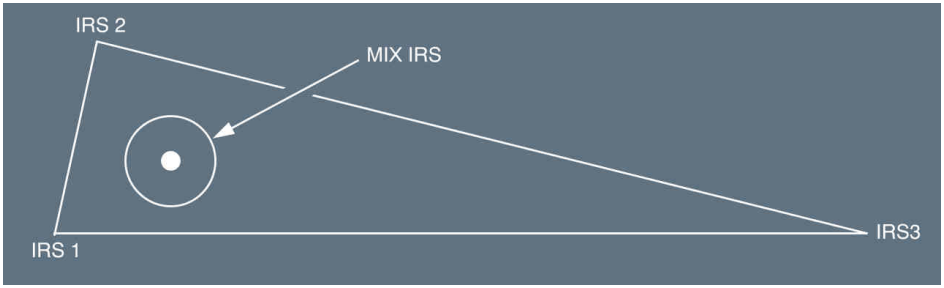
MIX IRS POSITION

Ident.: DSC-22_20-20-10-00010131.0002001 / 01 OCT 12
Applicable to: ALL

Each FMGC receives a position from each of the three IRSs, and computes a mean-weighted average called the “MIX IRS” position:



- If one of the IRSs drifts abnormally, the MIX IRS position uses an algorithm that decreases the influence of the drifting IRS within the MIX IRS position.



- If one of the IRSs fails, each FMGC uses only one IRS (onside IRS or IRS3). Each IRS position and inertial speed are continuously tested. If the test fails, the corresponding IRS is rejected.
- When the "CHECK IRS (1, 2 or 3)/FM POSITION" message appears on the MCDU.

GPS POSITION

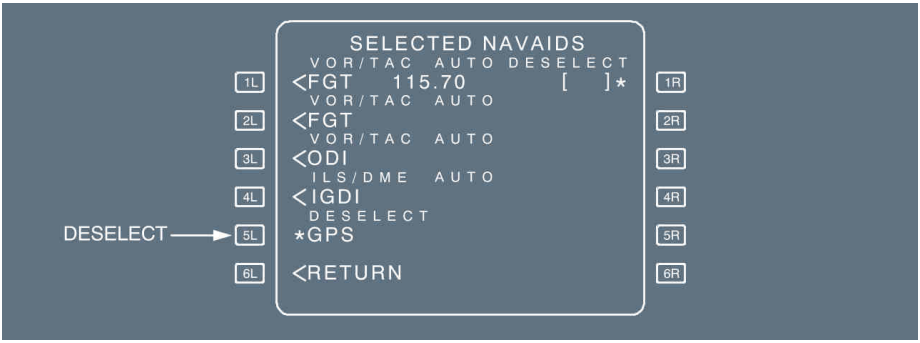
Ident.: DSC-22_20-20-10-00010132.0002001 / 23 JUN 15

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

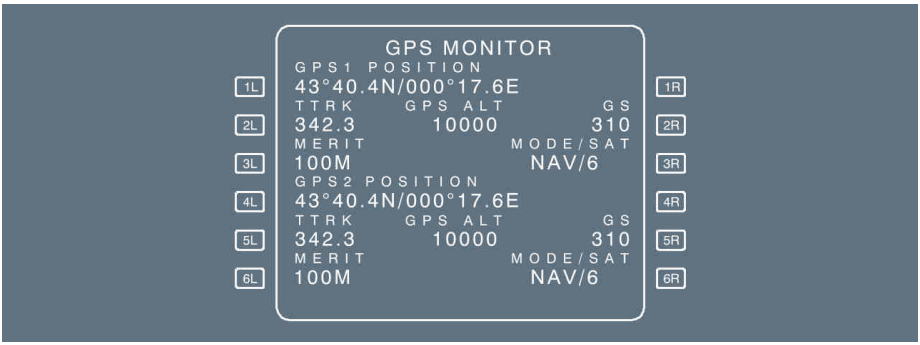
Each IRS computes a mixed IRS/GPS position called the GPIRS position. For this, each IRS can independently select their GPS source in order to maximize the availability of GPS data.
Of the three GPIRS positions that each FMGC receives, the FMS selects one GPIRS position based on a figure of merit and priority.

The FMS uses the following hierarchy to perform the selection:
- Onside GPIRS position
- GPIRS 3
- Opposite GPIRS position.

If the GPIRS data does not comply with an integrity criterion that is based on a Horizontal Integrity Limit (HIL) and on the automatic detection of failed satellites, the FMS rejects the GPS mode and uses the radio position update.
The flight crew can deselect/select the GPS position on the SELECTED NAVAIDS page, if necessary.



Information about the GPS position is displayed on the GPS MONITOR page.



Note: *In nominal case, ADIRU1 selects GPS1 and ADIRU2 selects GPS2. The GPS selection by ADIRU3 depends on the position of the ATT HDG selector switch. If one of the GPS source is rejected by the ADIRUs, all ADIRUs will select the same GPS source. As a result, the data of the GPS that is not selected is dashed on the GPS MONITOR page. The "GPS PRIMARY LOST" message may not be displayed.*

GPS POSITION

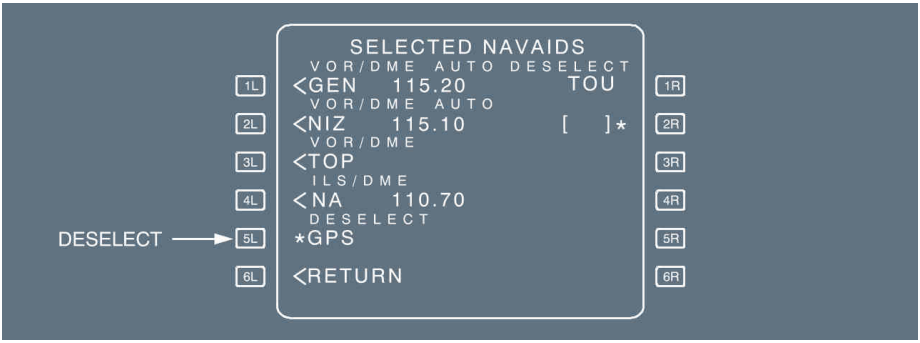
Ident.: DSC-22_20-20-10-00010132.0015001 / 23 JUN 15

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

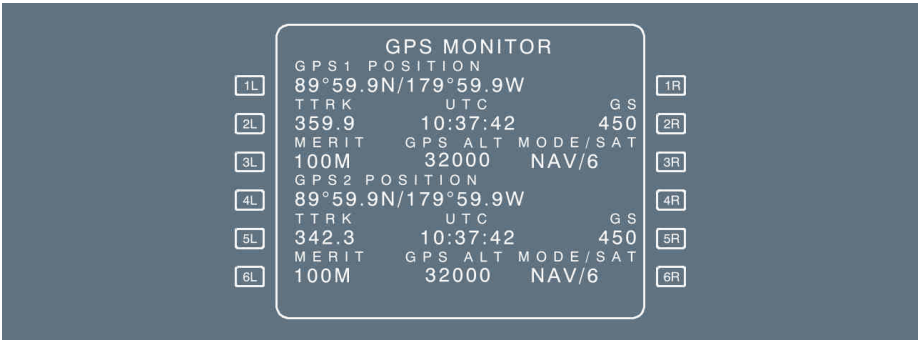
Each IRS computes a mixed IRS/GPS position called the GPIRS position. For this, each IRS can independently select their GPS source in order to maximize the availability of GPS data.
Of the three GPIRS positions that each FMGC receives, the FMS selects one GPIRS position based on a figure of merit and priority.

The FMS uses the following hierarchy to perform the selection:
- Onside GPIRS position
- GPIRS 3
- Opposite GPIRS position.

If the GPIRS data does not comply with an integrity criterion that is based on a Horizontal Integrity Limit (HIL) and on the automatic detection of failed satellites, the FMS rejects the GPS mode and uses the radio position update.
The flight crew can deselect/select the GPS position on the SELECTED NAVAIDS page, if necessary.



Information about the GPS position is displayed on the GPS MONITOR page.



Note: In nominal case, ADIRU1 selects GPS1 and ADIRU2 selects GPS2. The GPS selection by ADIRU3 depends on the position of the ATT HDG selector switch. If one of the GPS source is rejected by the ADIRUs, all ADIRUs will select the same GPS source. As a result, the data of the GPS that is not selected is dashed on the GPS MONITOR page. The "GPS PRIMARY LOST" message may not be displayed.

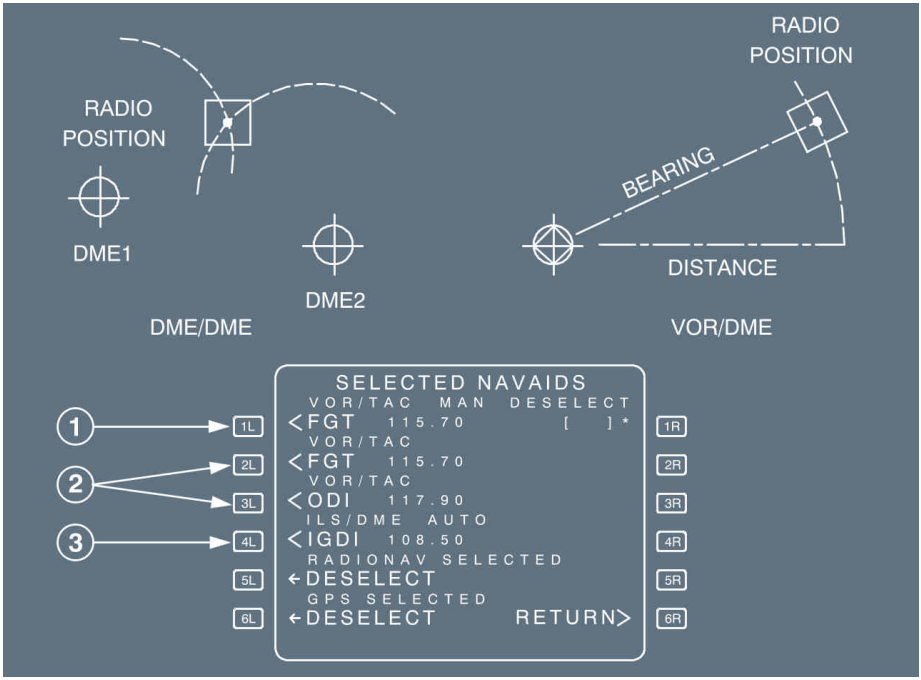
RADIO POSITION

Ident.: DSC-22_20-20-10-00010669.0020001 / 01 OCT 12
Applicable to: ALL

Each FMGC uses onside navaids to compute its own radio position. These navaids are displayed on the SELECTED NAVAIDS page.

The available navaids are:
- DME/DME
- VOR/DME
- LOC
- DME/DME-LOC
- VOR/DME-LOC.

It uses LOC to update the lateral position, using LOC beam during ILS approach.
LOC is also used for quick update, when in GPS/IRS mode.
If one or more navaids fail, each FMGC can use offside navaids to compute the VOR/DME, or the DME/DME radio position.
The radio navaid selection is displayed on the DATA "SELECTED NAVAIDS" page.



(1) VOR/DME selection (auto or manual) for display (onside VOR).

(2) DMEs automatic selection for DME/DME onside radio position.

(3) ILS selection (auto or manual) for LOC update computation.

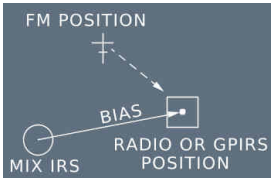
FM POSITION

Ident.: DSC-22_20-20-10-00010135.0017001 / 17 AUG 10
Applicable to: ALL

At flight initialization, each FMGC displays an FM position that is a MIX IRS/GPS position (GPIRS):

- At takeoff, when the FM position is updated to the runway threshold position as stored in the database, possibly corrected by the takeoff shift entered on PERF TO page.
- In flight, the FM position approaches the radio position or the GPS position at a rate depending upon the aircraft altitude.

Note: *The FM position update at takeoff is inhibited when GPS PRIMARY is active.*



BIAS

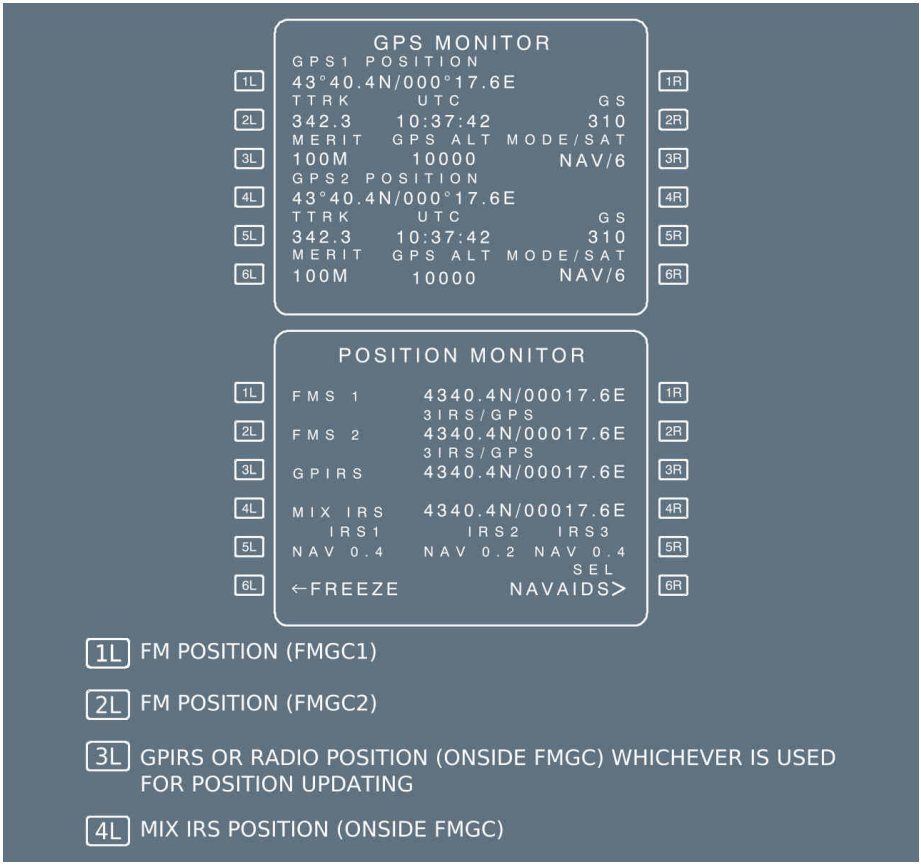
Each FMGC computes a vector from its MIX IRS position to the radio position or GPIRS position. This vector is called the “bias”.
Each FMGC updates its bias continuously as long as a radio position or a GPIRS position is available.
If an FMGC loses its radio/GPIRS position, it memorizes the bias and uses it to compute the FM position, which equals the MIX IRS position plus the bias. Until the radio or the GPIRS position is restored, the bias does not change.
The flight crew can update the FM position manually. This also updates the bias.

POSITION MONITOR

Ident.: DSC-22_20-20-10-00010136.0016001 / 07 MAY 13

2 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

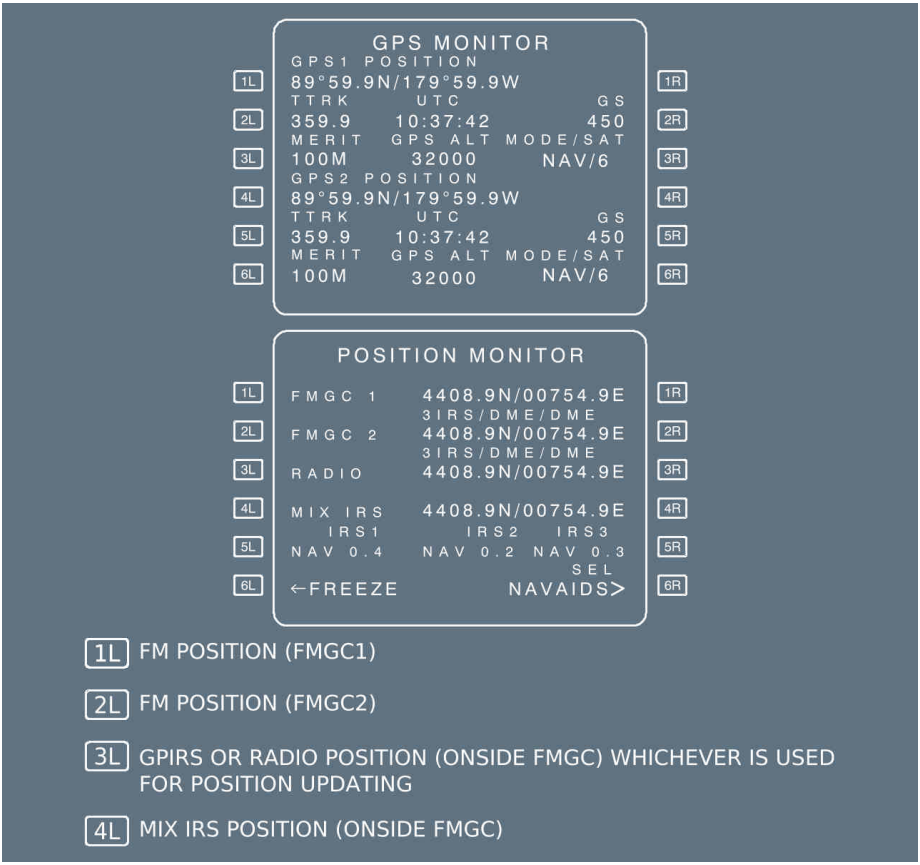
The flight crew may check the position computation using the GPS MONITOR or POSITION MONITOR page.



POSITION MONITOR

Ident.: DSC-22_20-20-10-00010136.0019001 / 07 MAY 13
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The flight crew may check the position computation using the GPS MONITOR or POSITION MONITOR page.



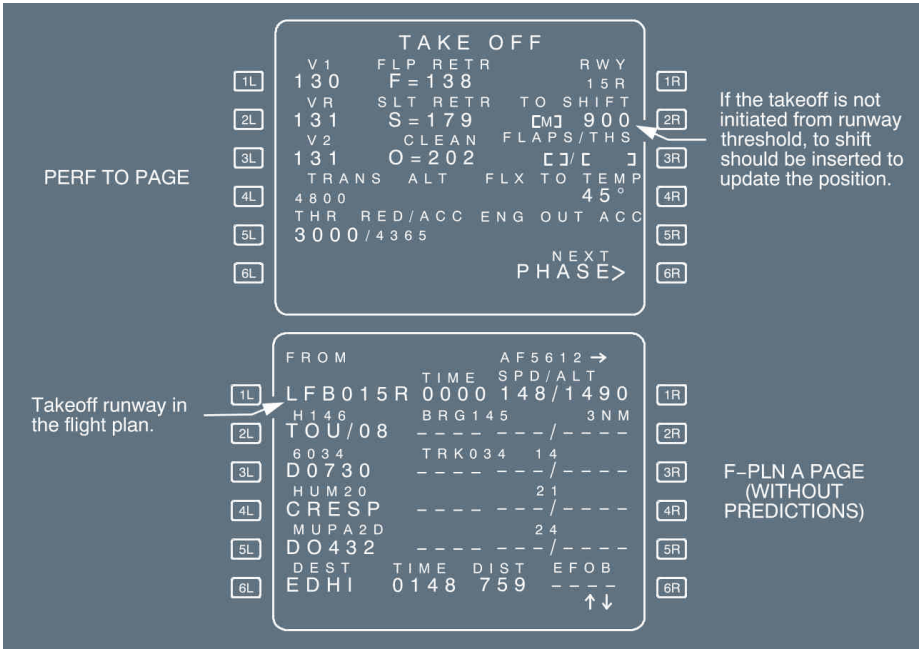
TAKEOFF UPDATE

Ident.: DSC-22_20-20-10-00010137.0017001 / 04 AUG 16
Applicable to: ALL

A takeoff update requires that the takeoff runway be part of the flight plan. This provides the most accurate position update.

If the takeoff run starts at an intersection, enter a takeoff shift on the PERF TO page to refine the takeoff update.

An accurate takeoff update ensures a precise aircraft position during departure.



NAVIGATION MODES

Ident.: DSC-22_20-20-10-00010138.0001001 / 19 JUL 11
Applicable to: ALL

The FMGS updates the FM position via the use of radio navaids or GPS, if available. It can use four different FM navigation modes to make this update.

The decreasing order of priority is:
- IRS-GPS
- IRS-DME/DME
- IRS-VOR/DME
- IRS only.

During ILS approaches, the system performs a temporary lateral update, via one of the following modes:
- IRS-GPS/LOC
- IRS-DME/DME-LOC

- IRS-VOR/DME-LOC
- IRS-LOC.

Intentionally left blank

GENERAL

Ident.: DSC-22_20-20-20-00010448.0023001 / 27 MAY 13

[1] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The FMGS continuously computes an Estimated Position Uncertainty (EPU).
It is an estimate of how much the FM position diverged, and it is a function of the navigation mode that the system uses.

CURRENT NAV MODE	EPU (RATE or THRESHOLD)	REMARK
IRS/GPS	$\sqrt{(FOM^2 + 100^2)}$ (in meters).	FOM = Figure of Merit of GPS. If above 0.28 NM, the FMS rejects the GPS position.
IRS/DME/DME	Moves toward 0.28 NM.	EPU decreases from initial value to 0.28 NM.
IRS/VOR/DME	0.1 NM + 0.05 X DME DIST. Minimum : 0.28 NM.	Dependent on the distance between the aircraft and the VOR/DME.
IRS ONLY	+8 nm/h for the first 30 min. 0 nm/h for the following 60 min. +4 nm/h for the following 30 min. 0 nm/h for the following 60 min. +2 nm/h after.	EPU increases continuously.

Note: After an IRS alignment or at takeoff, the EPU is set to 0.2 NM.

GENERAL

Ident.: DSC-22_20-20-20-00010448.0044001 / 27 MAY 13

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The FMGS continuously computes an Estimated Position Uncertainty (EPU).
It is an estimate of how much the FM position diverged, and it is a function of the navigation mode that the system uses.

CURRENT NAV MODE	EPU (RATE or THRESHOLD)	REMARK
IRS/GPS	0.05 NM.	
IRS/DME/DME	0.27 NM - 0.37 NM.	
IRS/VOR/DME	0.30 NM - 0.42 NM.	Dependent on the distance between the aircraft and the VOR/DME.
IRS ONLY	+6 nm/h for the first 40 min. 0 nm/h for the following 50 min. +4 nm/h for the following 40 min. 0 nm/h for the following 45 min. +2 nm/h after.	EPU increases continuously.

Note: - *After an IRS alignment, the EPU is set at 5 NM.*
- *At takeoff, the EPU is set at 0.2 NM.*

ESTIMATED POSITION UNCERTAINTY

Ident.: DSC-22_20-20-20-00010499.0077001 / 23 JUN 15

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04384, 04399-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

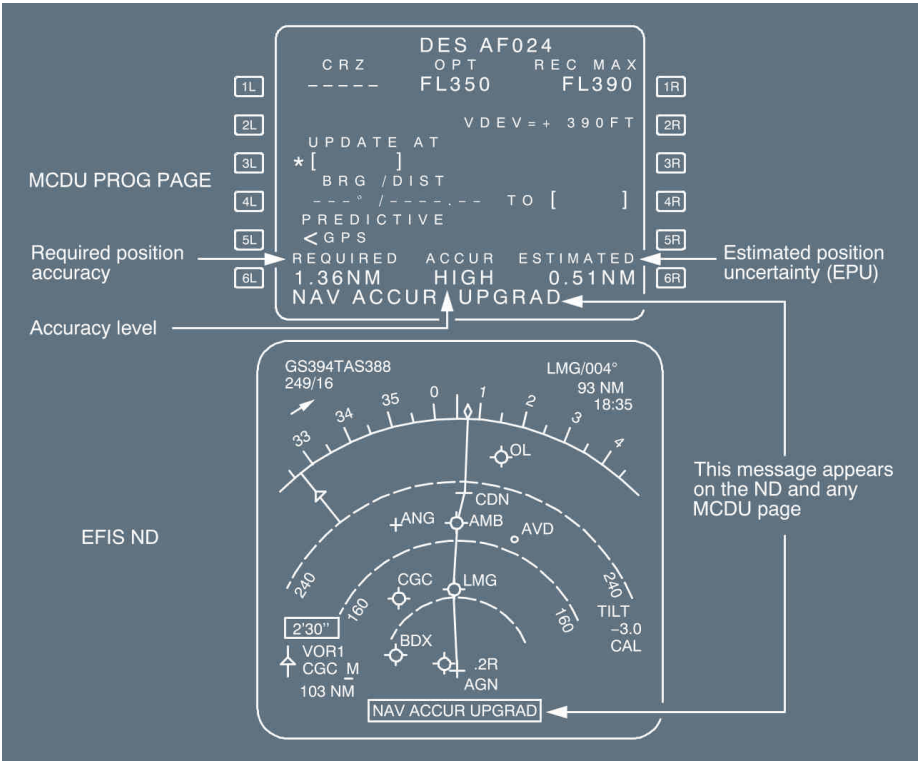
The FMS displays the EPU to the flight crew and compares it with the Required Navigation Performance (RNP):
- If the EPU does not exceed the RNP, accuracy is HIGH
- If the EPU exceeds the RNP, accuracy is LOW.

The RNP is displayed in the REQUIRED field of the PROG page. The displayed RNP is (in a decreasing order of priority):
- The value that the flight crew entered
- The navigation database procedure value
- The system's default value.

When a flight crew enters an RNP that is higher than the published value, one of the following messages is displayed : "PROCEDURE RNP IS XX.XX", or "AREA RNP IS XX.XX". When this occurs, the flight crew should verify the RNP value that was manually entered in the REQUIRED field of the PROG page, and clear or modify it if necessary.
The "AREA RNP IS XX.XX" message is also displayed at the change of flight area if the new RNP (default value) is smaller than the displayed RNP (manually entered).

DEFAULT AREA RNP VALUES	
EN ROUTE	2.0 NM
TERMINAL	1.0 NM
APPROACH	GPS / RNAV(GNSS) 0.3 NM OTHER CASES 0.5 NM

When one FMGC changes the NAV accuracy from LOW to HIGH (or HIGH to LOW), the MCDU and the ND display the "NAV ACCUR UPGRAD" (or DOWNGRAD) message.

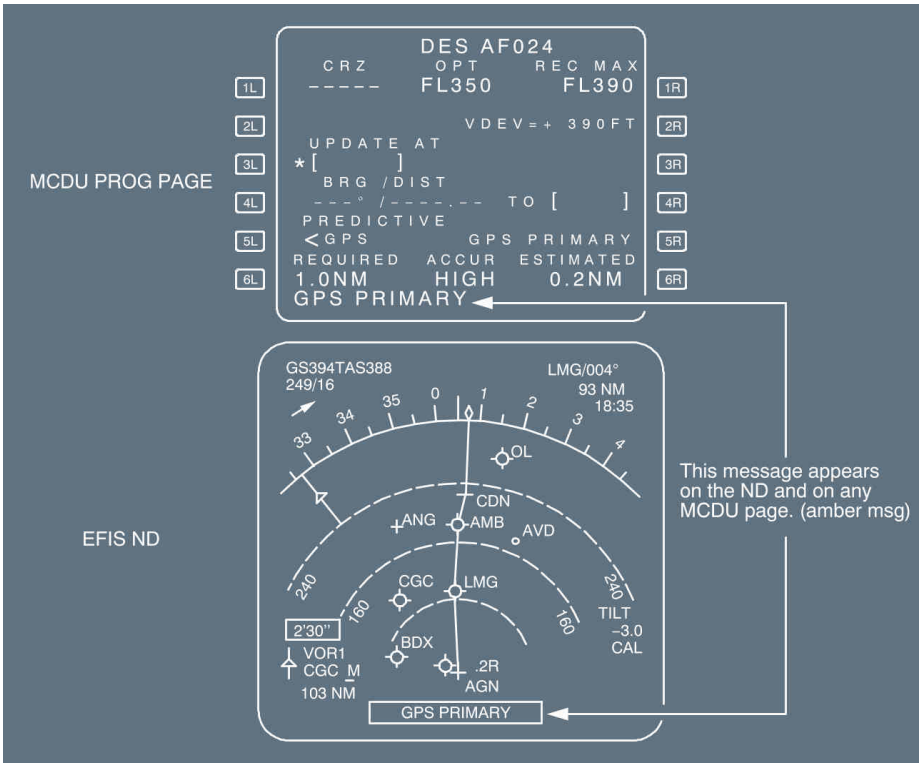


When in IRS/GPS mode, the GPS PRIMARY status combines two different criteria:

- The accuracy criterion previously described (HIGH/LOW accuracy)
- An integrity criterion: This is the capability to detect a failure and provide appropriate warning of it. This criterion indicates the confidence that the flight crew can have in the FMS position.

If the GPS PRIMARY status complies with both criteria, "GPS PRIMARY" is displayed on the MCDU (PROG page, [5R] field and scratchpad) and temporarily on the ND.
If the GPS PRIMARY status no longer complies with one of these criteria (Navigation downgraded or integrity lost), the GPS PRIMARY status is lost and the MCDU and the ND display the "GPS PRIMARY LOST" message. It is possible to clear the scratchpad message on the MCDU, but not on the ND.

CAUTION	"HIGH" or "LOW" on the PROG page indicates the FM position accuracy, based on estimated uncertainty. When GPS PRIMARY mode is lost, the flight crew must periodically check this position accuracy. In GPS PRIMARY mode, the position accuracy is always at HIGH.



When the GPS is manually deselected, the "GPS IS DESELECTED" message is displayed on the MCDU, 80 NM before the T/D or at approach phase transition.

ESTIMATED POSITION UNCERTAINTY

Ident.: DSC-22_20-20-20-00010499.0076001 / 01 OCT 12

[2] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04393-04397, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The FMS displays the EPU to the flight crew and compares it with the Required Navigation Performance (RNP):

- If the EPU does not exceed the RNP, accuracy is HIGH
- If the EPU exceeds the RNP, accuracy is LOW.

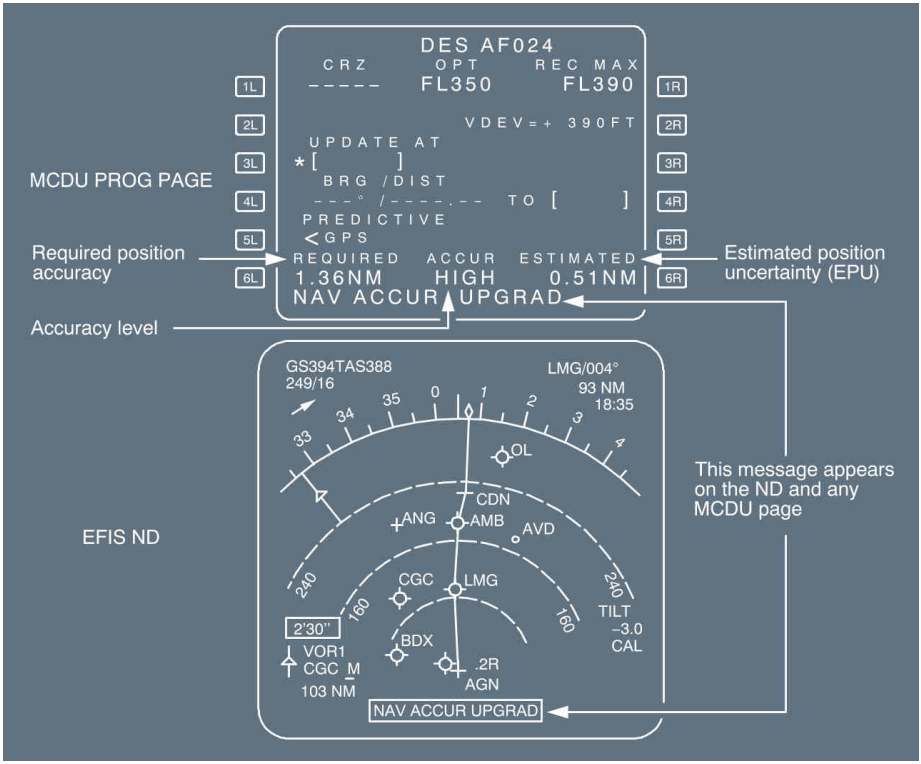
The RNP is displayed in the REQUIRED field of the PROG page. The displayed RNP is (in a decreasing order of priority):

- The value that the flight crew entered
- The navigation database procedure value
- The system's default value.

When a flight crew enters an RNP that is higher than the published value, one of the following messages is displayed : "PROCEDURE RNP IS XX.XX", or "AREA RNP IS XX.XX". When this occurs, the flight crew should verify the RNP value that was manually entered in the REQUIRED field of the PROG page, and clear or modify it if necessary.
The "AREA RNP IS XX.XX" message is also displayed at the change of flight area if the new RNP (default value) is smaller than the displayed RNP (manually entered).

DEFAULT AREA RNP VALUES	
EN ROUTE	2.0 NM
TERMINAL	1.0 NM
APPROACH	GPS 0.3 NM OTHER CASES 0.5 NM

When one FMGC changes the NAV accuracy from LOW to HIGH (or HIGH to LOW), the MCDU and the ND display the "NAV ACCUR UPGRAD" (or DOWNGRAD) message.
These messages are inhibited when the navigation mode is IRS/GPS.

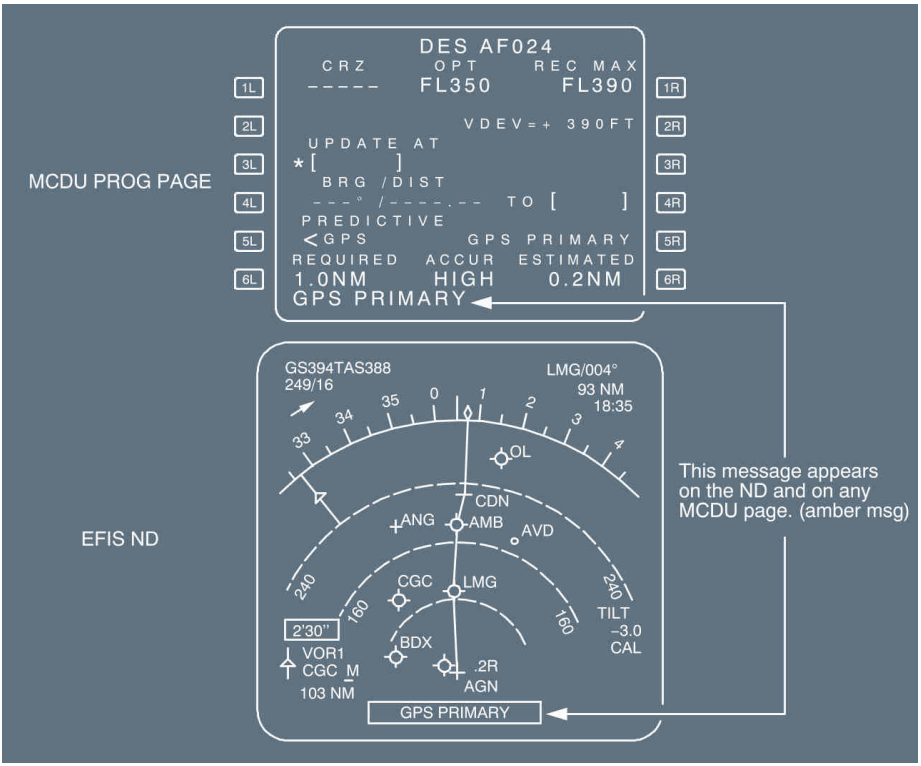


When in IRS/GPS mode, the GPS PRIMARY status combines two different criteria:

- The accuracy criterion previously described (HIGH/LOW accuracy)
- An integrity criterion: This is the capability to detect a failure and provide appropriate warning of it. This criterion indicates the confidence that the flight crew can have in the FMS position.

If the GPS PRIMARY status complies with both criteria, "GPS PRIMARY" is displayed on the MCDU (PROG page, [5R] field and scratchpad) and temporarily on the ND.
If the GPS PRIMARY status no longer complies with one of these criteria (Navigation downgraded or integrity lost), the GPS PRIMARY status is lost and the MCDU and the ND display the "GPS PRIMARY LOST" message. It is possible to clear the scratchpad message on the MCDU, but not on the ND.

CAUTION	"HIGH" or "LOW" on the PROG page indicates the FM position accuracy, based on estimated uncertainty. When GPS PRIMARY mode is lost, the flight crew must periodically check this position accuracy. In GPS PRIMARY mode, the position accuracy is always at HIGH.



When the GPS is manually deselected, the "GPS IS DESELECTED" message is displayed on the MCDU, 80 NM before the T/D or at approach phase transition.

FM/GPS POSITION DISAGREEMENT

Ident.: DSC-22_20-20-20-00010500.0011001 / 17 AUG 10
Applicable to: ALL

When the GPS PRIMARY function is active, and either of the FM positions deviate from the GPS positions 1 or 2 by more than:

- A longitude threshold that depends on the latitude:
  - 0.5' for latitudes below 55°
  - 0.9' for latitudes at or above 55°, and below 70°.
- A latitude threshold of 0.5', regardless of the latitude,

then, the lower ECAM displays the NAV FM/GPS POS DISAGREE amber caution. The master caution light comes on and the single chime sounds.
This amber caution is inhibited during the takeoff phase.
Above 70° of latitude, a longitude difference does not trigger the alarm.

GENERAL

Ident.: DSC-22_20-20-30-00010478.0001001 / 17 AUG 10
Applicable to: ALL

Radio navaids are tuned for two different purposes: Display and computation.

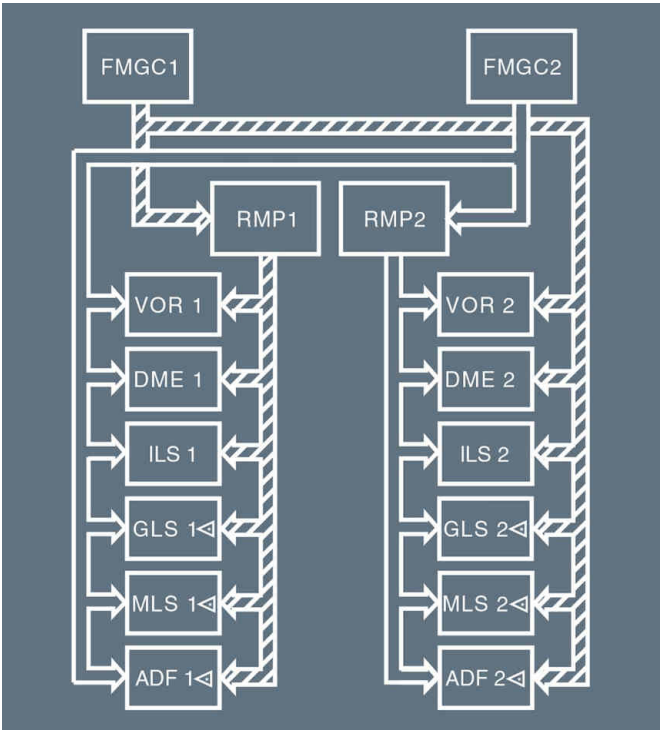
It is possible to perform tuning for display in three different ways:
- Automatic tuning via FMGC software
- Manual tuning via the MCDU RAD NAV page
- Manual tuning via the Radio Management Panel (RMP) if both FMGCs or both MCDUs fail.

The FMGS automatically tunes the radio navaids for computation of the radio position.

Note: *The manual selection of a VOR or VOR/DME may prevent the FMGS from automatically tuning a VOR/DME to compute position. In this case, the related MCDU displays "TUNE BBB FFF.FF" (BBB = ident, FFF.FF = frequency).*

ARCHITECTURE

Ident.: DSC-22_20-20-30-00010479.0001001 / 31 AUG 17
Applicable to: ALL



- In dual mode and independent mode, each FMGC simultaneously tunes the navaids on its own side (one VOR, one DME, one ILS, one GLS ◁, one MLS ◁ and one ADF). In these modes, the flight crew can also manually tune the VOR (and associated DME), ILS, GLS ◁, MLS ◁ and ADF ◁.
- In single mode, the valid FMGC tunes navaids on both sides. The flight crew can also use the RAD NAV page to manually tune both VORs, both ADFs ◁, and the ILS / GLS ◁ / MLS ◁.

Manual tuning has priority over automatic tuning.

Note: *If one receiver fails, both FMGCs use the operative radio receiver to compute the position of the aircraft.*

VOR

Ident.: DSC-22_20-20-30-00010480.0001001 / 17 AUG 10
Applicable to: ALL

Each FMGC may tune only one VOR (manually or automatically).

Automatic tuning complies with the following priorities for tuning the VOR:
1. The specified navaid for the approach
2. The navaid that the flight crew should use to compute the current radio position
3. For display purposes:
   - A navaid specified for the active flight leg
   - The “TO” waypoint (TO WPT), if it is a navaid
   - The “FROM” waypoint (FROM WPT), if it is a navaid
   - A waypoint farther along the flight path, if it is a navaid
   - The navaid closest to the current position of the aircraft.

The scratchpad displays “SPECIFIC VOR-D UNAVAIL”, if the VOR or the VOR/DME that the flight crew requires for tuning is deselected.

DME

Ident.: DSC-22_20-20-30-00010481.0001001 / 17 AUG 10
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Each FMGC automatically uses its five DME frequencies as follows:
- One DME frequency for display. It is possible to tune it manually or automatically.
- Two DME frequencies in DME/DME mode for calculating the radio position of the aircraft. The FMGC automatically tunes these as a function of their best accuracy. The flight crew does not receive any indication that this process is happening.
- One DME frequency automatically tuned for radio position. This occurs in the VOR/DME mode, when the DME/DME is not available and the flight crew complies with the conditions for a VOR/DME update. In this case, the VOR/DME that the flight crew uses for display, is identical to the VOR/DME navaid that the flight crew uses for computation of the radio position.
- One DME frequency is connected to the ILS/DME.

DME

Ident.: DSC-22_20-20-30-00010481.0002001 / 17 AUG 10

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

Each FMGC automatically uses its four DME frequencies as follows:

- One DME frequency for display. It is possible to tune it manually or automatically. This DME frequency is also used for VOR/DME position computation.
- Two DME frequencies in DME/DME mode for calculating the radio position of the aircraft. The FMGC automatically tunes these as a function of their best accuracy. The flight crew does not receive any indication that this process is happening.
- One DME frequency is connected to the ILS/DME.

ADF

Ident.: DSC-22_20-20-30-00010482.0001001 / 17 AUG 10
Applicable to: ALL

The FMGC automatically tunes one ADF, when the flight plan specifies a Non Directional Beacon (NDB) approach and a fix in the approach is the “TO” waypoint.
The scratchpad displays “SPECIFIC NDB UNAVAIL”, if the NDB that the flight crew requires for autotuning is deselected.

ILS

Ident.: DSC-22_20-20-30-00010483.0001001 / 17 AUG 10
Applicable to: ALL

Each FMGC automatically tunes one ILS frequency:

- In the PREFLIGHT or TAKEOFF phase, when the takeoff runway has an associated ILS.
- In the CLIMB, CRUISE, DESCENT, APPROACH, or GO-AROUND phase, when the type of approach in the flight plan is ILS.

The scratchpad displays “RWY/ILS MISMATCH” when the flight crew manually tunes the ILS and the entered frequency does not agree with the ILS or the LOC IDENT/FREQ that the flight crew requests for automatic tuning. The FMGS logic does not enable the flight crew to modify the course of an ILS when its frequency is identical to the ILS selected in the F-PLN.

SELECTION OF NAVAIDS ON MCDU PAGES

Ident.: DSC-22_20-20-30-00010485.0032001 / 31 AUG 17
Applicable to: ALL

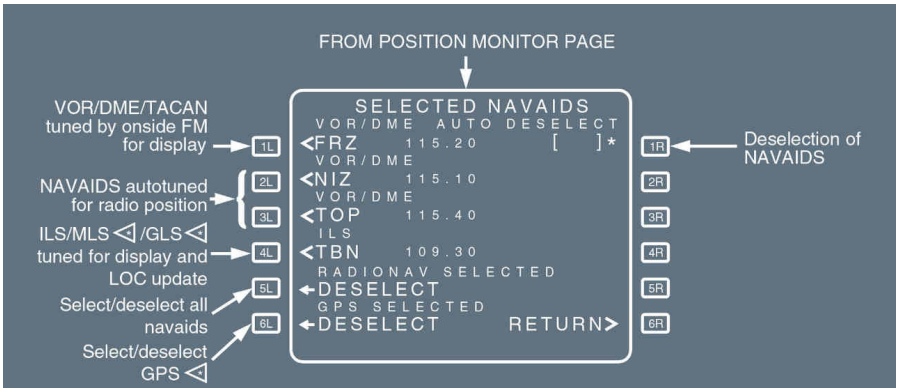
The MCDU displays the navaids tuned by the FMGC on two pages:
- RADIO NAV Page
- SELECTED NAVAIDS Page.

RADIO NAV PAGE

This page shows which navaids have been tuned automatically or manually for display purposes.

SELECTED NAVAIDS PAGE

This page lists the navaids tuned by the onside FMGC. No navaids can be modified on this page. The flight crew may deselect navaids and or GPS for the whole flight.



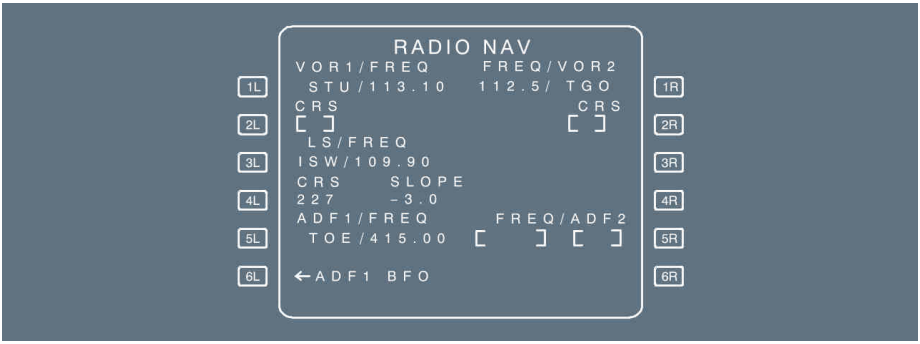
MANUAL TUNING

Ident.: DSC-22_20-20-30-00010486.0002001 / 01 MAR 17

2 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

INSERT the identifier on the RADIO NAV page.

Preferably use the identifier.



Note: The RAD NAV page may differ according to option installed (ADF1, ADF2, xLS).

- **If the MCDU displays "NOT IN DATA BASE":**

  INSERT the frequency.

  DISREGARD the ident that appears in small font on the MCDU.

  When a frequency is entered in the VOR field, the FMGC automatically associates to the tuned frequency the closest navaid identifier with the same frequency, and displays it on the RAD NAV page. This identifier may not correspond to the tuned navaid.

  If the closest navaid, found in the database, is of a different type (e.g. VOR instead of VOR/DME), the flight crew will obtain a partial tuning (e.g. VOR indication instead of VOR/DME indication).

  ENTER the course.

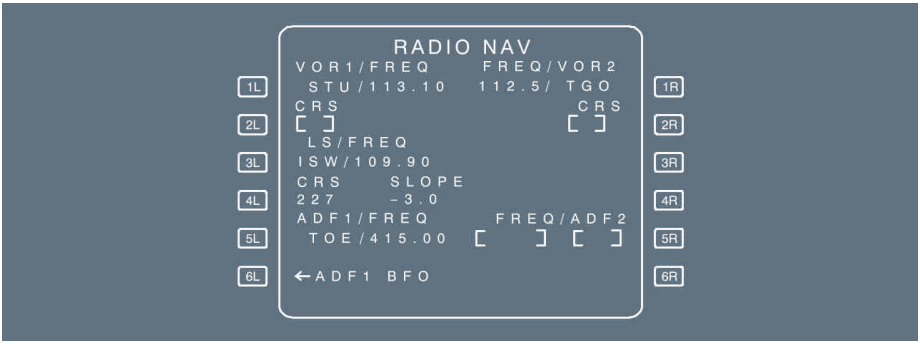
  If the flight crew intends to manually tune an ILS that is not in the Navigation Database or to manually tune an ILS by its frequency (ident not entered), and if they do not enter the course, the flight crew will not be able to arm approach modes.

MANUAL TUNING

Ident.: DSC-22_20-20-30-00010486.0057001 / 01 MAR 17
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

INSERT the identifier on the RADIO NAV page.

Preferably use the identifier.



Note: The RAD NAV page may differ according to option installed (ADF1, ADF2, xLS).

- **If the MCDU displays "NOT IN DATA BASE":**
  INSERT the frequency.
  DISREGARD the ident that appears in small font on the MCDU.
  When a frequency is entered in the VOR field, the FMGC automatically associates to the tuned frequency the closest navaid identifier with the same frequency, and displays it on the RAD NAV page. This identifier may not correspond to the tuned navaid.
  If the closest navaid, found in the database, is of a different type (e.g. VOR instead of VOR/DME), the flight crew will obtain a partial tuning (e.g. VOR indication instead of VOR/DME indication).
  ENTER the course.

NAVAID IDENTIFICATION

Ident.: DSC-22_20-20-30-00010487.0001001 / 31 AUG 17
Applicable to: ALL

CHECK the xLS (ILS or GLS ◁𝅘𝅥𝅮 or MLS ◁𝅘𝅥𝅮) identifier decoded on the PFD, and the VOR or ADF ◁𝅘𝅥𝅮 on the ND.

When the navaid identifier is decoded in agreement with that published, no audio check is necessary. When the decoding is different from the published one, check the audio. Due to morse coding inaccuracy, wrong decoding may sometimes occur.

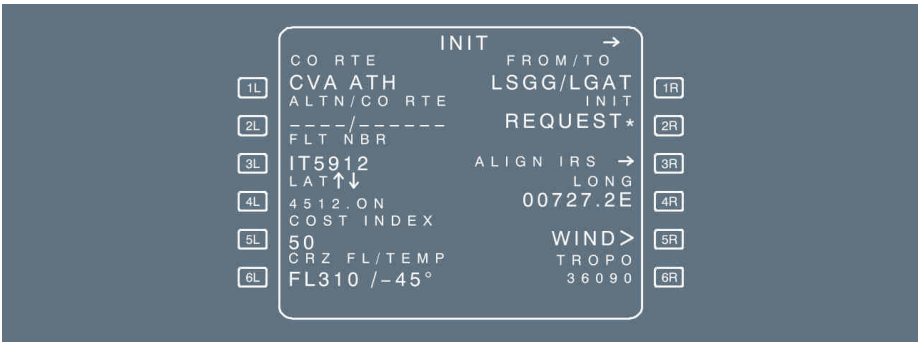
For GLS ◁, the audio signal may be inaudible. However, the GLS ◁ identifier displayed on ND and PFD is raw data. Consequently, for GLS ◁, no audio check is necessary.

Note: When a DME or a TACAN only is selected using either its identifier or its frequency, the NDs do not display the decoded indication.

ALIGNMENT OF INERTIAL REFERENCE SYSTEM

Ident.: DSC-22_20-20-40-00010143.0002001 / 01 OCT 12
Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804

The FMGS uses the reference point coordinates of the departure airport to align the IRS.
It calls these up from the database automatically after the flight crew has entered a company route or an origin-destination city pair and pressed the ALIGN IRS key on the MCDU. The flight crew can adjust these coordinates manually to the gate position. A normal alignment takes 10 min, a fast alignment 30 s.
Fast alignment is used to refine a position when time is limited.



Note: *If "ALIGN" flashes on the ADIRS overhead CDU during the alignment process, it indicates one of the following:*

- *It has detected excessive motion. (It automatically restarts the alignment)*
- *It has detected a disagreement between the position the MCDU has sent to the IRS, and the last memorized IRS position. The flight crew must enter new coordinates in the MCDU, and realign the IRS*
- *It has detected a disagreement between the latitude the MCDU has sent to the IRS, and the latitude the IRS has computed during the alignment*
- *The IRS has not received a position from the MCDU or the ADIRS overhead CDU.*

ALIGNMENT OF INERTIAL REFERENCE SYSTEM

Ident.: DSC-22_20-20-40-00010143.0013001 / 01 OCT 12
1 **Applicable to: MSN 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The FMGS uses the reference point coordinates of the departure airport to align the IRS.
It calls these up from the database automatically after the flight crew has entered a company route or an origin-destination city pair and pressed the ALIGN IRS key on the MCDU. The flight crew can

adjust these coordinates manually to the gate position. A normal alignment takes 10 min, a fast alignment 30 s.
Fast alignment is used to refine a position when time is limited.

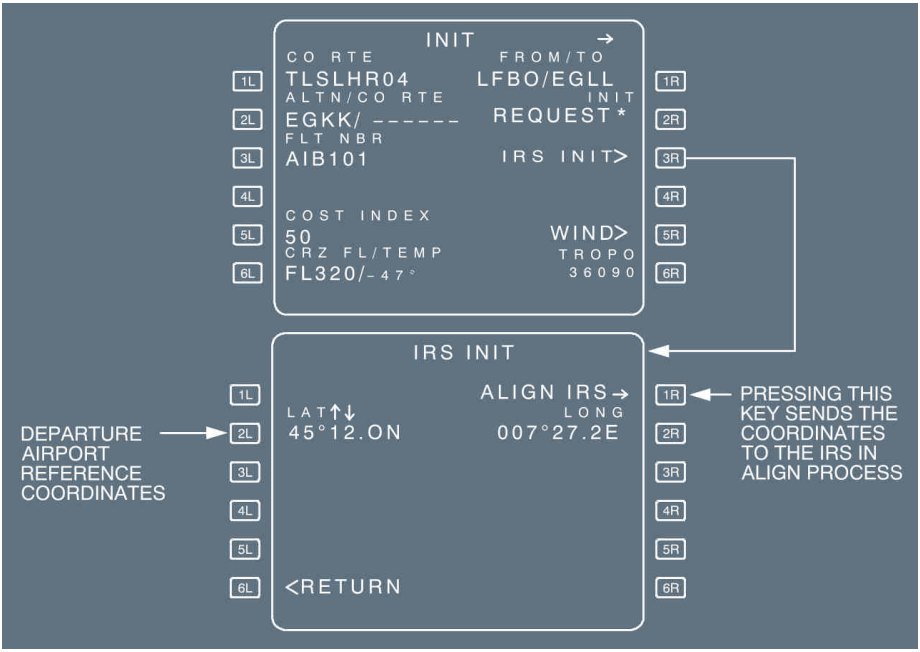
Note: *If the "IRS IN ALIGN" memo flashes on the E/WD during the alignment process, it indicates one of the following:*

- *It has detected excessive motion. (It automatically restarts the alignment)*
- *It has detected a disagreement between the position the MCDU has sent to the IRS, and the last memorized IRS position. The flight crew must enter new coordinates in the MCDU, and realign the IRS*
- *It has detected a disagreement between the latitude the MCDU has sent to the IRS, and the latitude the IRS has computed during the alignment*
- *The IRS has not received a position from the MCDU .*

ALIGNMENT OF INERTIAL REFERENCE SYSTEM

Ident.: DSC-22_20-20-40-00010143.0006001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03541

The flight crew accesses the page dedicated to IRS alignment by pressing the [3R] key.
The FMGS uses the reference point coordinates of the departure airport to align the IRS. The flight crew can manually adjust these coordinates to the gate position. A normal alignment takes 10 min and a fast alignment takes 30 s.
Fast alignment is used to refine a position, when time is limited.



Note: *If "ALIGN" flashes on the ADIRS overhead CDU during the alignment process, it indicates one of the following:*

- *It has detected excessive motion. (It automatically restarts the alignment)*
- *It has detected a disagreement between the position the MCDU has sent to the IRS, and the last memorized IRS position. The flight crew must enter new coordinates in the MCDU, and realign the IRS*
- *It has detected a disagreement between the latitude the MCDU has sent to the IRS, and the latitude the IRS has computed during the alignment*
- *The IRS has not received a position from the MCDU or the ADIRS overhead CDU.*

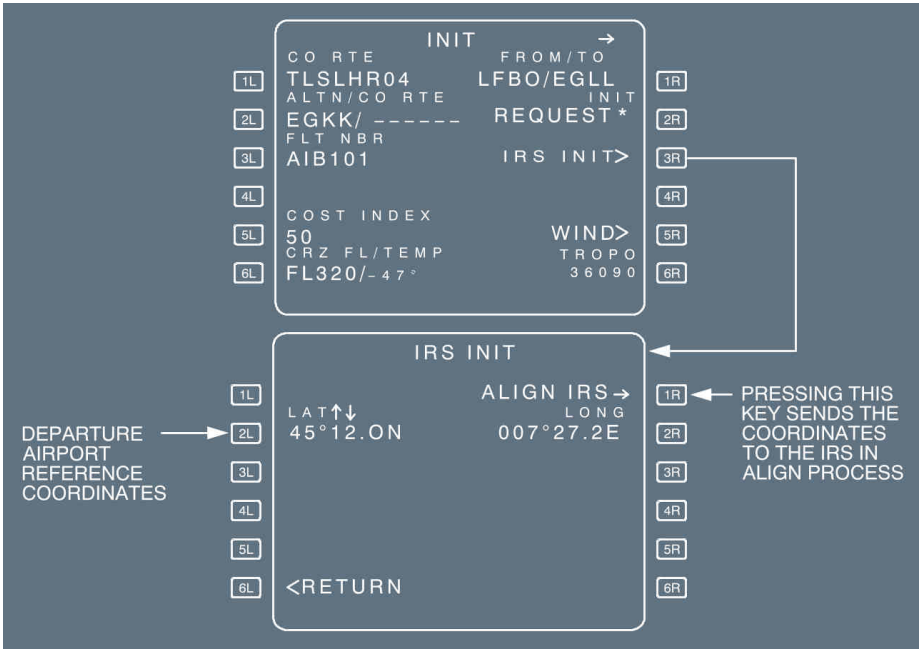
ALIGNMENT OF INERTIAL REFERENCE SYSTEM

Ident.: DSC-22_20-20-40-00010143.0029001 / 01 OCT 12

Applicable to: MSN 03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The flight crew accesses the page dedicated to IRS alignment by pressing the [3R] key.
The FMGS uses the reference point coordinates of the departure airport to align the IRS. The flight crew can manually adjust these coordinates to the gate position. A normal alignment takes 10 min and a fast alignment takes 30 s.

Fast alignment is used to refine a position, when time is limited.



Note: *If the "IRS IN ALIGN" memo flashes on the E/WD during the alignment process, it indicates one of the following:*

- *It has detected excessive motion. (It automatically restarts the alignment)*
- *It has detected a disagreement between the position the MCDU has sent to the IRS, and the last memorized IRS position. The flight crew must enter new coordinates in the MCDU, and realign the IRS*
- *It has detected a disagreement between the latitude the MCDU has sent to the IRS, and the latitude the IRS has computed during the alignment*
- *The IRS has not received a position from the MCDU .*

GENERAL

Ident.: DSC-22_20-20-50-00010410.0001001 / 09 MAR 15
Applicable to: ALL

Overall navigation performance is mainly based on two elements:
- The accuracy of the aircraft position calculation
- The validity of the flight path definition, as extracted from the navigation database.

The level of validation depends on the type of operations. For example, JAA TGL 10 requires that, for Precision RNAV in terminal area, providers and operators implement a quality assurance program for the navigation database, which may include a navigation database validation process. The highest level of validation is required for RNAV approach, with lateral and vertical navigation.
The navigation databases are revised every 28 days (AIRAC cycle). Flights should be conducted with a navigation database that is within its cycle. This should be checked on the AIRCRAFT STATUS MCDU page.

OPERATIONS WITH AN OUTDATED NAVIGATION DATABASE

Ident.: DSC-22_20-20-50-00010411.0001001 / 13 DEC 12
Applicable to: ALL

Airbus recommends flying with an updated navigation database. However, in exceptional circumstances, and for a limited period of time, an aircraft can continue to operate beyond the end date of the database cycle, provided it is approved by the national authorities.

The following precautions need to be considered:
- Prior to flight, identify recent changes on the intended route, with the navigation charts and manuals. Some “strategic” new waypoints, not in the navigation database, may be worth entering as DEFINED WAYPOINT on MCDU.

  Note: *Flying with an outdated database, in an airspace that was recently restructured with numerous new waypoints, should be avoided.*

- Check SID, STAR, and approach procedures of departure, destination and required alternates for recent changes.
  Do not attempt to modify or manually construct terminal instrument procedures or approaches.
- Fly terminal instrument procedures and approaches with managed guidance, that are in the navigation database and that have been checked for accuracy. Otherwise, fly the procedure, or the approach, in selected guidance with conventional radio navaid raw data.

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FLIGHT PLANNING

Ident.: DSC-22_20-30-05-00010492.0002001 / 17 AUG 10
Applicable to: ALL

The flight crew uses the MCDU to insert flight plans into the FMGS:
- A lateral flight plan that defines the intended horizontal flight path
- A vertical flight plan that defines the intended speed and altitude profile for the aircraft to follow while flying the lateral flight plan.

Note: *The flight planning function is available for both the primary and secondary flight plans.*

The FMGS can contain two different flight plans:
- The ACTIVE flight plan, which is the basis for:
  - Lateral and vertical guidance
  - MCDU and ND display
  - Radio navigation autotuning
  - Performance predictions
  - Fuel planning.
- The SECONDARY flight plan which the flight crew may use:
  - When an alternate takeoff runway is probable
  - To plan a diversion
  - To prepare the next flight
  - To compare predictions or evaluations.

Each flight plan is composed of the same elements:
- The primary flight plan, from origin to destination and missed approach
- The alternate flight plan, from destination to alternate destination.

The flight crew enters the flight plan in either of two ways:
- Automatically by selecting a company route. Such a selection will call all the elements of the route out of the database.
- Manually by selecting an ORIGIN/DEST pair, and then selecting all successive waypoints, procedures, and vertical constraints on the MCDU.

The flight crew may then modify the flight plan on the ground or in flight, by making lateral and vertical revisions.

Intentionally left blank

General

GENERAL

Ident.: DSC-22_20-30-10-05-00011075.0002001 / 23 JUN 15

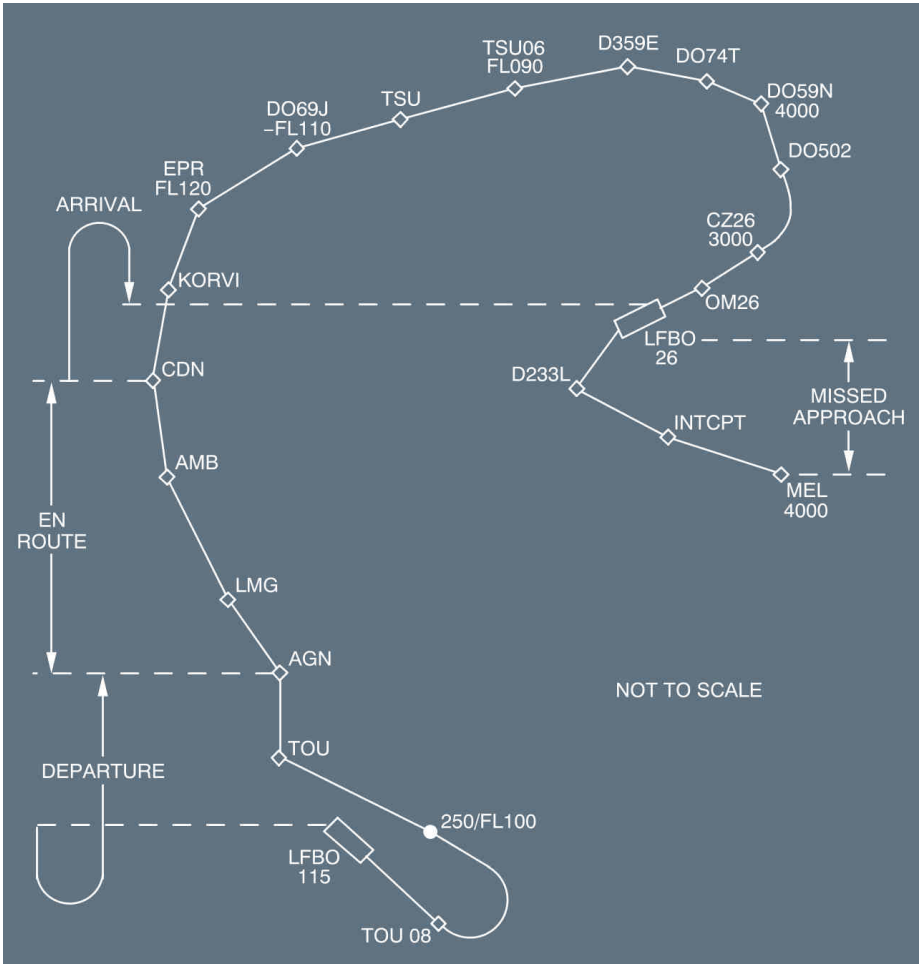
[1] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

To insert the lateral flight plan, the flight crew can use either a company route number or an ICAO four-letter city pair.

The lateral flight plan includes the following elements:

- Departure
  - Takeoff runway
  - SID
  - En route transition.
- En route
  - En route waypoints and airways.
- Arrival
  - En route transition
  - STARs/VIAs
  - Landing runway with selected approach
  - Missed approach.
- Alternate flight plan.

These elements are defined by waypoints and legs between the waypoints.



The FMGC automatically strings the legs in sequence.
The flight plan has a discontinuity if any two waypoints do not have a leg defined between them.
The computer assumes that the aircraft will fly a direct leg between the two waypoints that define the discontinuity.

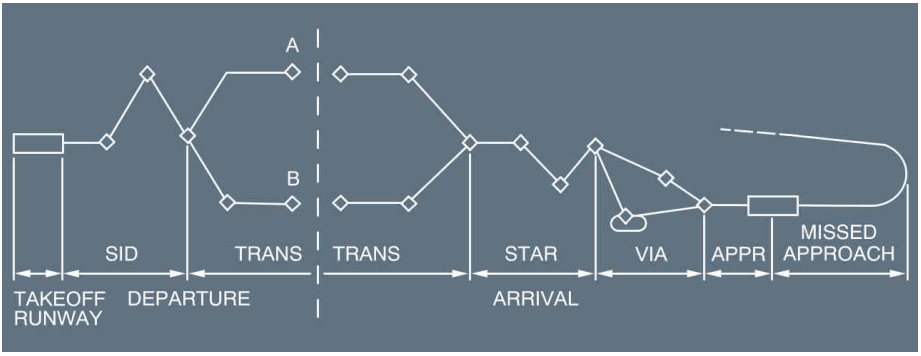
Note: *1. When the aircraft overflies a flight plan discontinuity, the NAV mode automatically reverts to the HDG (TRK) mode.*

2. In HDG/TRK mode, a waypoint is sequenced when it passes behind the aircraft, and the aircraft is less than 7 NM from it, and also when the difference between the track of the aircraft and the track of the leg is less than 90 °.
If the aircraft is flying a discontinuity towards a waypoint, this waypoint is sequenced when the aircraft is less than 5 NM from it.
The same conditions apply in NAV mode, except that no distance to the waypoint is taken into account.

The FMGS automatically strings additional types of legs, when departure or arrival procedures (SID - STAR - TRANS) are defined.

Those strings correspond to specific patterns that are heading or track referenced and are defined in the database, such as:
- DME arc leg
- Holding pattern to a fix, or reverse turn
- Course-to-fix leg
- Radius-to-fix leg
- Heading leg
- MANUAL leg.

The flight crew cannot create these types of legs: They are part of the stored departure/arrival procedures they have selected.
The flight crew can only create direct legs between manually defined geographic points (navaids, airports, waypoints).



Note: *The departure and arrival procedures are defined in the database to minimize the amount of memory required.*

They are divided, as follows:
- *DEPARTURE = SID + EN ROUTE TRANSITION*
- *ARRIVAL = APPR VIA + STAR + EN ROUTE TRANSITION*

The SID is the central common part of the departure procedure, as the STAR is of the arrival procedure. Enroute transitions (TRANS) are the various possible trajectories defined between the last SID point and the first enroute waypoints, and between the last enroute waypoint and the first fix of the STAR. "APPR VIAs" are the possible trajectories, defined between the last STAR point and the first point of the approach.

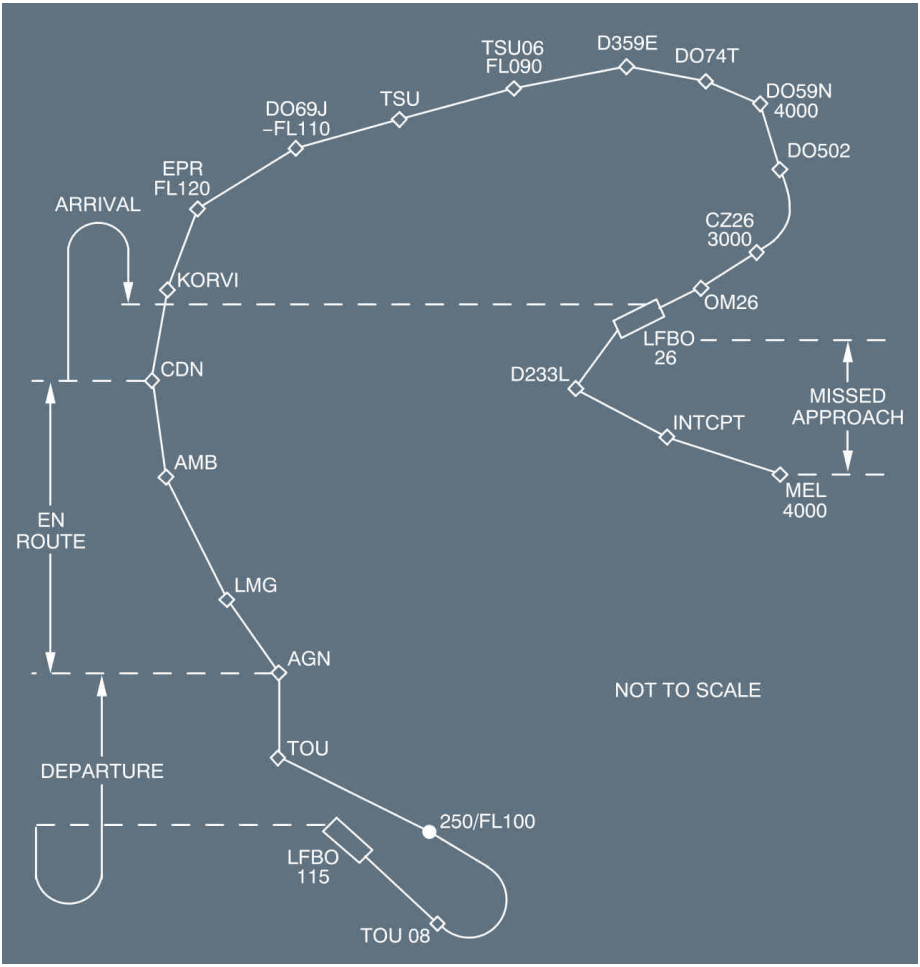
GENERAL

Ident.: DSC-22_20-30-10-05-00011075.0004001 / 23 JUN 15
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

To insert the lateral flight plan, the flight crew can use either a company route number or an ICAO four-letter city pair.

The lateral flight plan includes the following elements:
- Departure
  - Takeoff runway
  - SID
  - En route transition.
- En route
  - En route waypoints and airways.
- Arrival
  - En route transition
  - STARs/VIAs
  - Landing runway with selected approach
  - Missed approach.
- Alternate flight plan.

These elements are defined by waypoints and legs between the waypoints.



The FMGC automatically strings the legs in sequence.
The flight plan has a discontinuity if any two waypoints do not have a leg defined between them.
The computer assumes that the aircraft will fly a direct leg between the two waypoints that define the discontinuity.

Note: 1. *When the aircraft overflies a flight plan discontinuity, the NAV mode automatically reverts to the HDG (TRK) mode.*

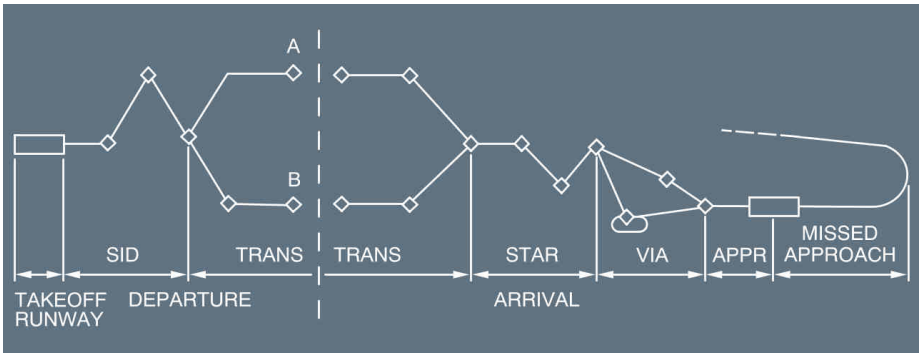
2. *In HDG/TRK mode, a waypoint is sequenced when it passes behind the aircraft, and the aircraft is less than 5 NM from it. In addition, when the waypoint is the Destination Airport (DEST), the sequencing is inhibited, unless the following conditions are fulfilled within the 3 s following the general rules fulfilment:*
   - *The cross-track is less than 0.5 NM*
   - *The difference between the track of the aircraft and the track of the leg is less than 30 °.*

   The same conditions apply in NAV mode, except that no distance to the waypoint is taken into account.

The FMGS automatically strings additional types of legs, when departure or arrival procedures (SID - STAR - TRANS) are defined.

Those strings correspond to specific patterns that are heading or track referenced and are defined in the database, such as:
- DME arc leg
- Holding pattern to a fix, or reverse turn
- Course-to-fix leg
- Radius-to-fix leg
- Heading leg
- MANUAL leg.

The flight crew cannot create these types of legs: They are part of the stored departure/arrival procedures they have selected.
The flight crew can only create direct legs between manually defined geographic points (navaids, airports, waypoints).



Note: *The departure and arrival procedures are defined in the database to minimize the amount of memory required.*

They are divided, as follows:
- *DEPARTURE = SID + EN ROUTE TRANSITION*
- *ARRIVAL = APPR VIA + STAR + EN ROUTE TRANSITION*

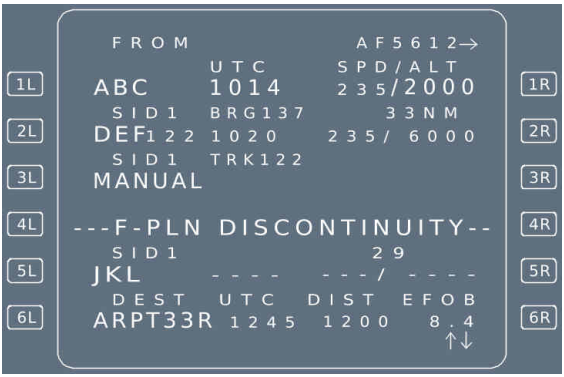
The SID is the central common part of the departure procedure, as the STAR is of the arrival procedure. Enroute transitions (TRANS) are the various possible trajectories defined between the last SID point and the first enroute waypoints, and between the last enroute waypoint and the first fix of the STAR. "APPR VIAs" are the possible trajectories, defined between the last STAR point and the first point of the approach.

MANUAL LEGS

Ident.: DSC-22_20-30-10-05-00010629.0001001 / 17 AUG 10
Applicable to: ALL

A MANUAL leg stays on a constant TRK or HDG and has no termination point. The flight crew cannot insert it into a flight plan manually: it is part of a given procedure such as a SID or a STAR. When the aircraft is flying a MANUAL leg, the NAV mode remains engaged and predictions assume that the aircraft will fly a direct leg from its present position to the next waypoint (DIR TO). When the aircraft is cleared to fly to the next waypoint of the flight plan, the flight crew performs a DIR TO.

Note: *1. In NAV mode, a MANUAL leg is sequenced only by performing a DIR TO.*
2. The use of the descent mode (DES) on a MANUAL leg is not recommended.



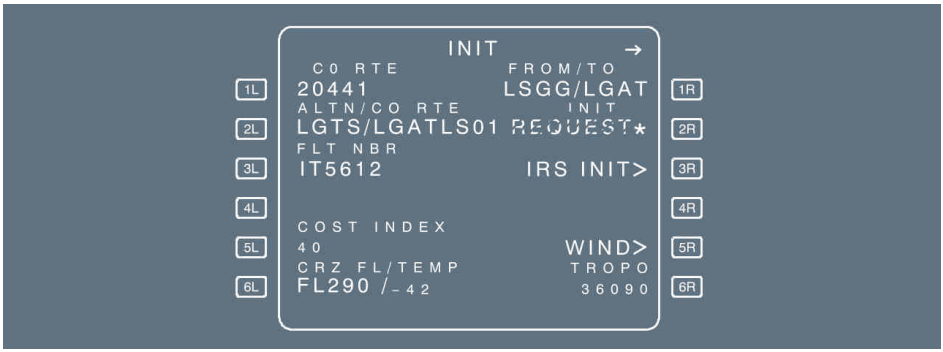
FLIGHT PLAN CONSTRUCTION

Ident.: DSC-22_20-30-10-05-00011076.0032001 / 01 OCT 12

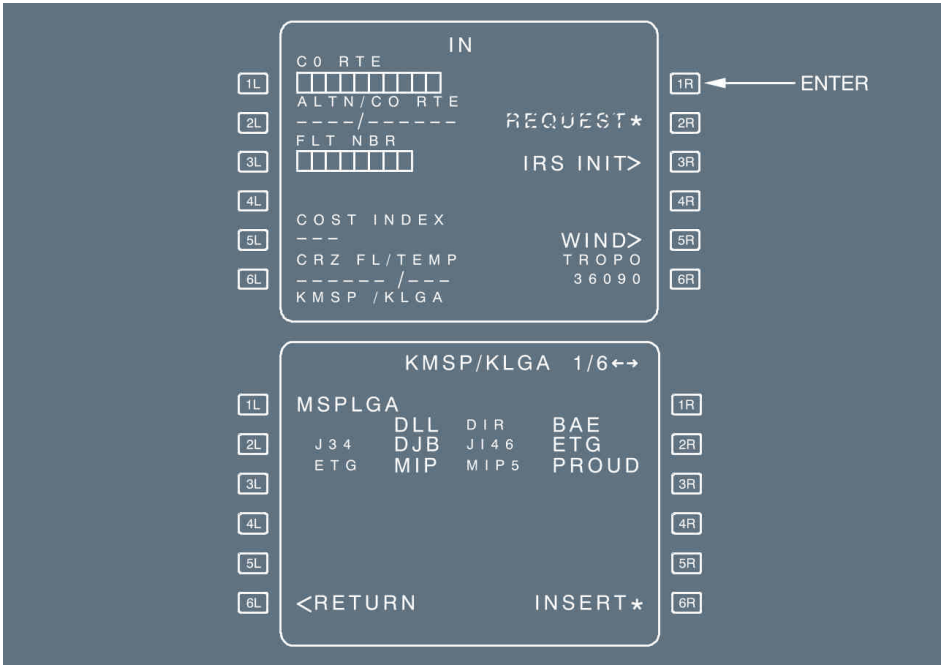
[2] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

There are three ways of defining the route:

1. A company route, that is in the database, and is known by the flight crew.
   The flight crew enters the name of the CO RTE into the [1L] field of the INIT A page. This action enters all the elements of the flight plan. The database usually includes an alternate route associated with the destination.



2. A company route, that is in the database, but the flight crew does not know it is there.
   The flight crew enters a city pair in the [1R] field. The ROUTE SELECTION page automatically appears and enables the flight crew to review all stored routes between the two cities before selecting one of them.



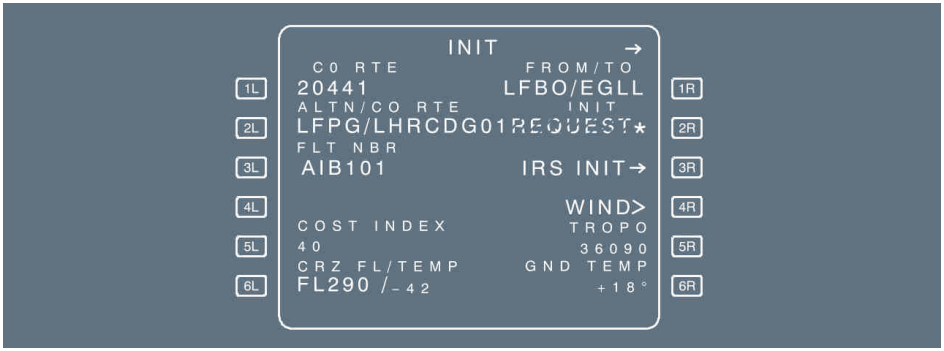
3. There is no company route between the two cities.
   The flight crew enters the city pair in the [1R] field. The ROUTE SELECTION page appears and displays “NONE”.
   The flight crew has to manually construct the entire flight plan.
   For procedure, *Refer to PRO-NOR-SRP-01-10 Flight Plan Initialization - General*.

FLIGHT PLAN CONSTRUCTION

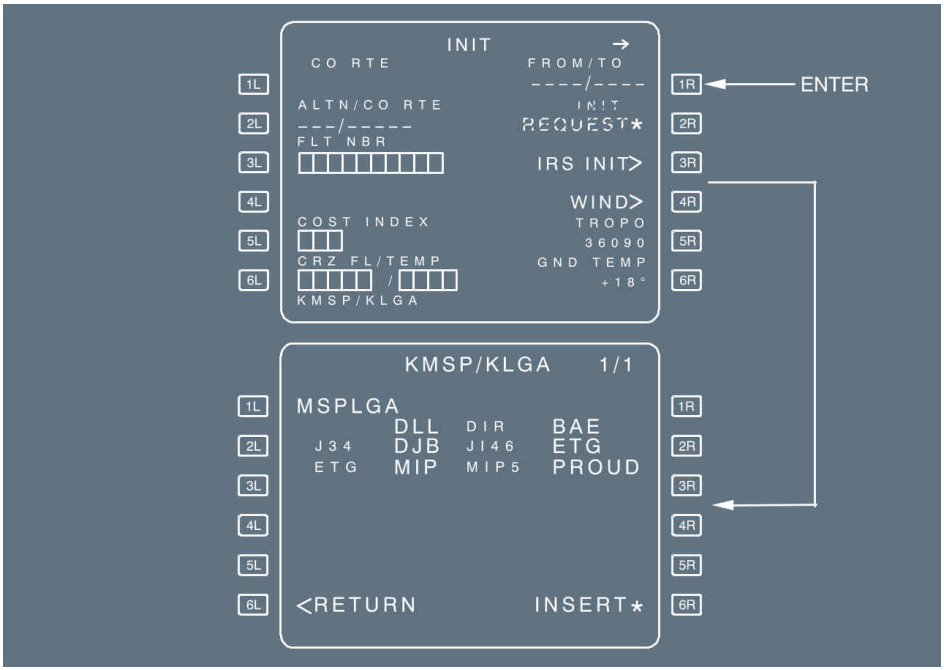
Ident.: DSC-22_20-30-10-05-00011076.0042001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

There are three ways of defining the route:

1. A company route, that is in the database, and is known by the flight crew.
   The flight crew enters the name of the CO RTE into the [1L] field of the INIT A page. This action enters all the elements of the flight plan. The database usually includes an alternate route associated with the destination.



2. A company route, that is in the database, but the flight crew does not know it is there.
   The flight crew enters a city pair in the [1R] field. The ROUTE SELECTION page automatically appears and enables the flight crew to review all stored routes between the two cities before selecting one of them.



3. There is no company route between the two cities.

The flight crew enters the city pair in the [1R] field. "NONE" automatically appears in the CO RTE [1L] field, without automatically displaying the ROUTE SELECTION page.
The flight crew has to manually construct the entire flight plan.
For procedure, *Refer to PRO-NOR-SRP-01-10 Flight Plan Initialization - General*.

FLIGHT PLAN CAPACITY

Ident.: DSC-22_20-30-10-05-00010631.0002001 / 17 AUG 10

[3] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

In terms of flight plan capacity, the FMS takes into account 3 flight plans:
- The active flight plan
- The secondary flight plan
- The temporary flight plan.

Each flight plan can contain up to 200 legs. If a flight plan contains 200 legs, and if the flight crew attempts to perform a lateral revision that increases the number of legs of this flight plan, the FMS rejects the revision and the MCDU displays the “F-PLN FULL” message. For the active and secondary flight plans, the primary parts must contain less than 135 legs, and the alternate parts must contain lesgs than 65 legs.

FLIGHT PLAN CAPACITY

Ident.: DSC-22_20-30-10-05-00010631.0008001 / 17 AUG 10

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

In terms of flight plan capacity, the FMS takes into account 5 elements:
- The primary part of the active flight plan
- The alternate part of the active flight plan
- The primary part of the secondary flight plan
- The alternate part of the secondary flight plan
- The temporary flight plan.

Each element can contain up to 200 legs. If an element contains 200 legs, and if the flight crew attempts to perform a lateral revision that increases the number of legs of this element, the FMS rejects the revision and the MCDU displays the “F-PLN FULL” message.

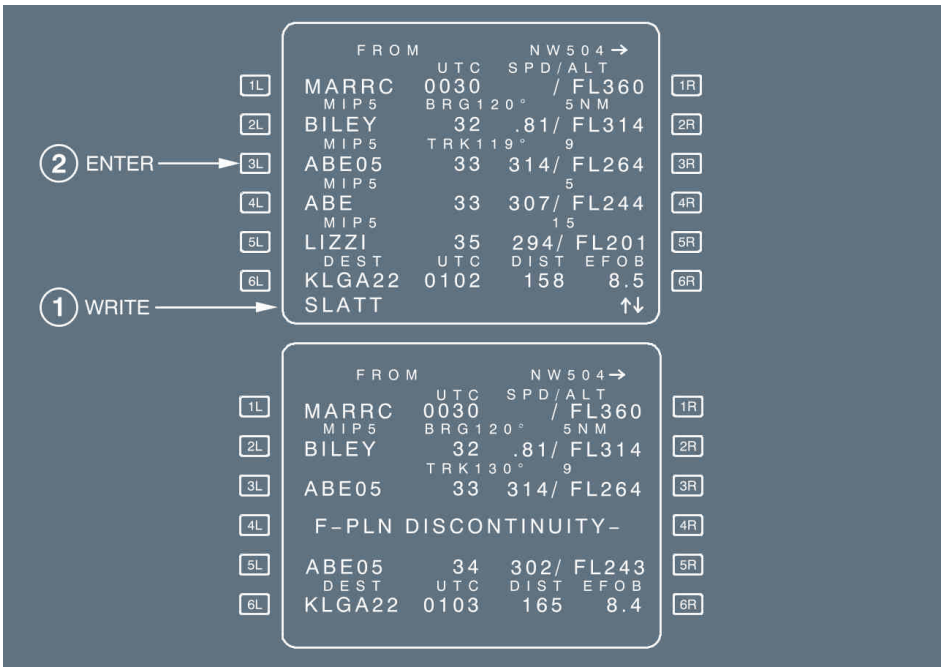
LATERAL REVISIONS

Ident.: DSC-22_20-30-10-05-00010632.0002001 / 07 APR 17

[4] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

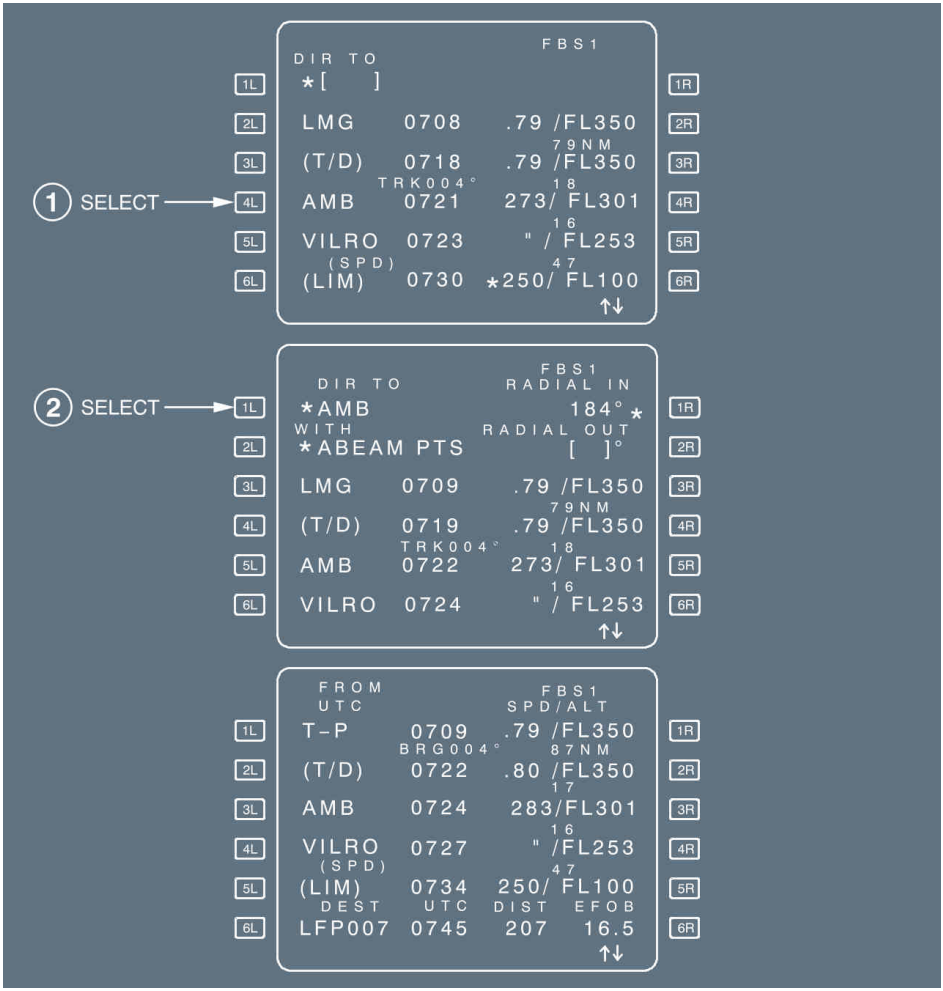
The flight crew can revise the lateral flight plan following two types of revisions:

1. Lateral revisions that have an immediate effect on the active flight plan:
   - The flight crew inserts a new waypoint directly on the F-PLN page, deletes, or changes a waypoint from it:



When the flight crew enters a new waypoint, which does not exist in the flight plan, the following waypoint moves down the flight plan, with a discontinuity shown after the new waypoint.

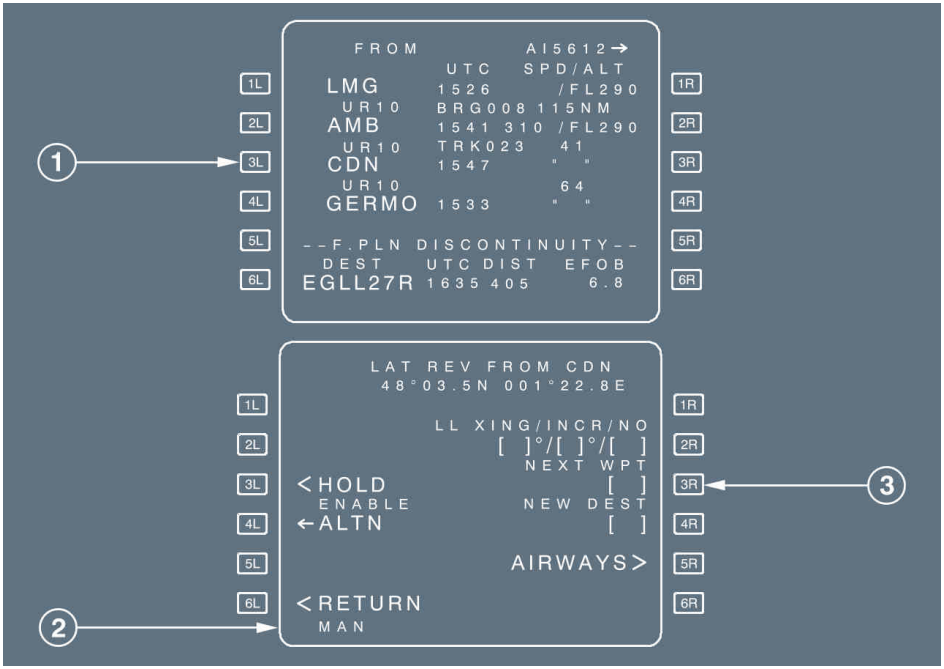
- The flight crew adds a direct leg (DIR TO) from his present position to a selected waypoint: The flight crew can change the “TO” waypoint of the active leg. The DIR TO function gives access to DIR TO, DIR TO ABEAM, or DIR TO/INTERCEPT. The active leg then goes from the present position (T/P) to the waypoint selected or inserted as the new “TO” waypoint.



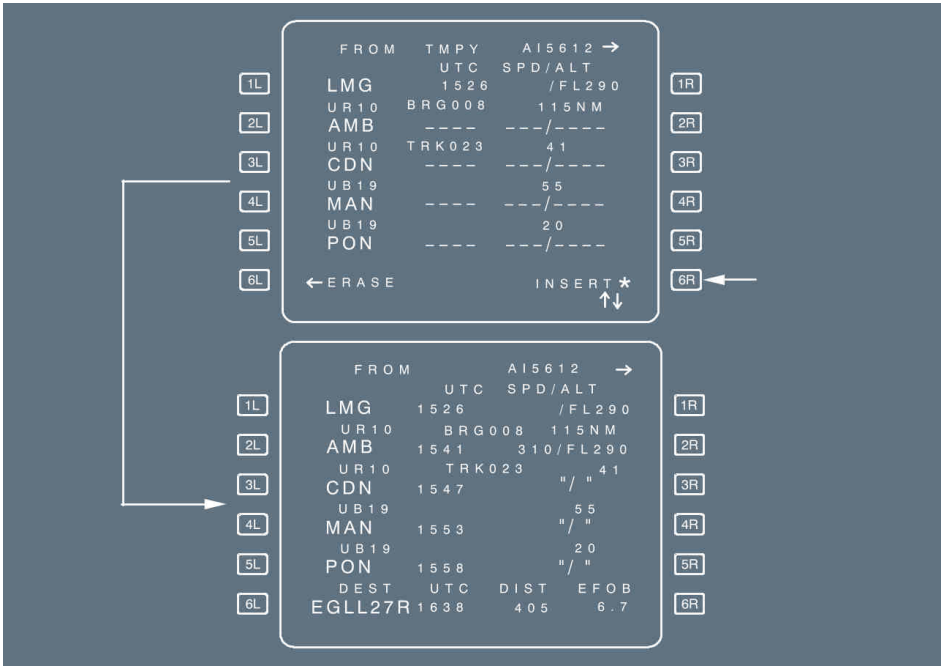
2. Lateral revisions that lead to a temporary flight plan (TMPY) before they take effect:
   The flight crew creates a temporary flight plan, then inserts it as a revision to the active flight plan. The flight crew does this when selecting, deleting, or modifying several waypoints of an airway or procedure at once (SID, STAR, HOLD, TAKEOFF or LANDING RWY). This modification is made on specific “LAT REV” pages from the flight plan page.

Possible revisions are:
- Insert or modify the departure procedure
- Insert or modify the arrival procedure
- Insert a waypoint
- Change the destination
- Insert an airway
- Insert an offset
- Insert a holding pattern
- Select or enable an alternate flight plan
- Fix information.

The purpose of the temporary flight plan is to allow the flight crew to check a revision on the MCDU and on the ND before inserting the changes into the active flight plan. It is a copy of the active flight plan that has been changed according to the flight crew revision. While it is displayed, the aircraft will continue to follow the original active flight plan.
No predictions are computed or displayed on the pages of the temporary flight plan.



A temporary flight plan is displayed for a check and/or new modification. Inserting the temporary revision will modify the active flight plan.



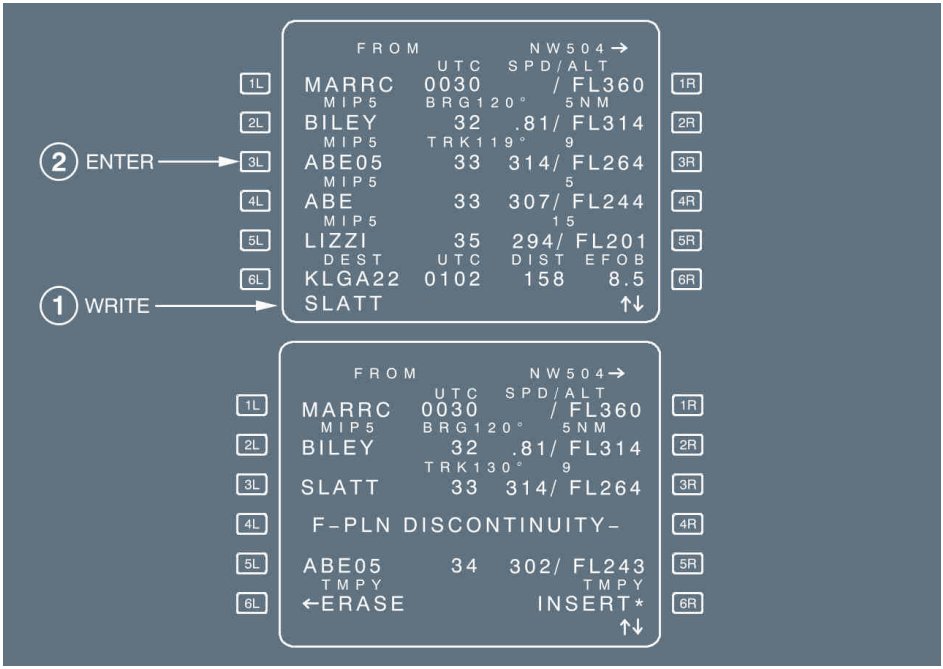
LATERAL REVISIONS

Ident.: DSC-22_20-30-10-05-00010632.0005001 / 23 JUN 15

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The flight crew can revise the lateral flight plan in three ways. All lateral revisions of the F-PLN lead the FMS to create a temporary flight plan (TMPY) before they take effect:

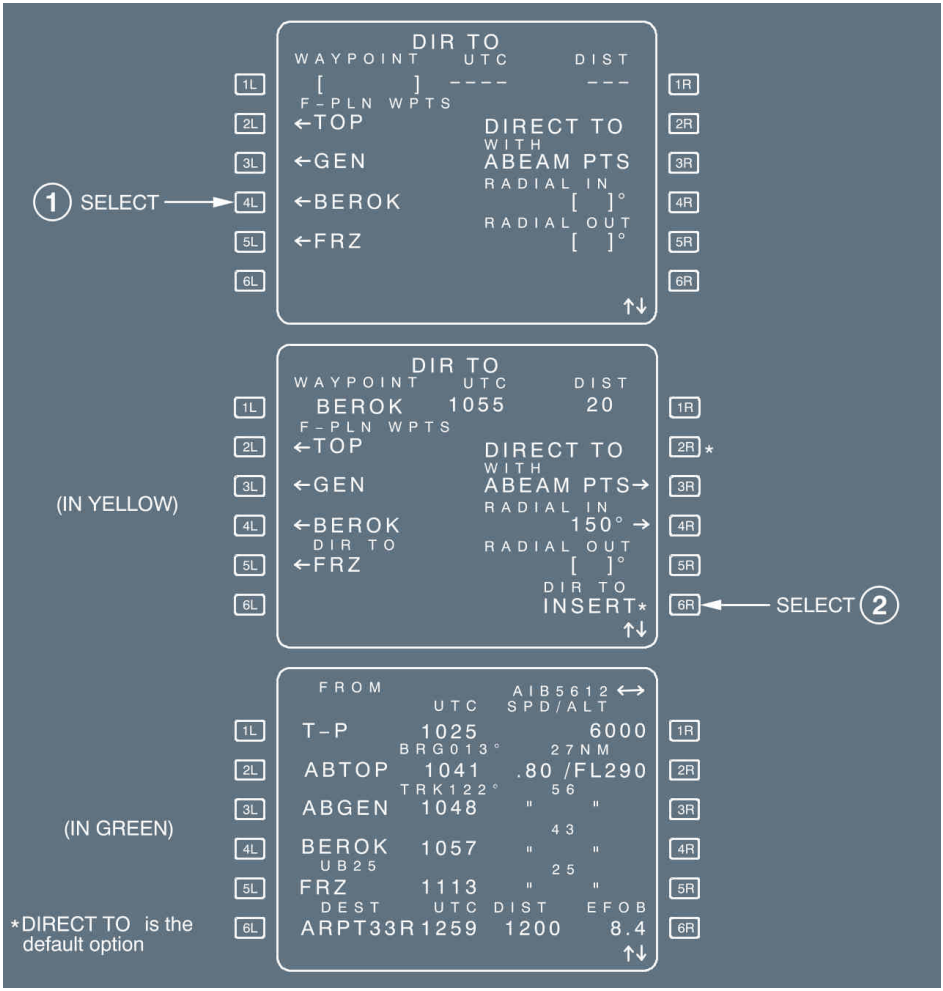
- The flight crew inserts a new waypoint directly on the F-PLN page, deletes, or changes a waypoint from it:



- After inserting a waypoint, a F-PLN discontinuity is inserted between the inserted waypoint and the following one.
- After deleting a waypoint, a F-PLN discontinuity is inserted between the preceding waypoint and the following one.

The flight crew should clear the discontinuity as appropriate, check the temporary F-PLN and insert it in the active F-PLN.

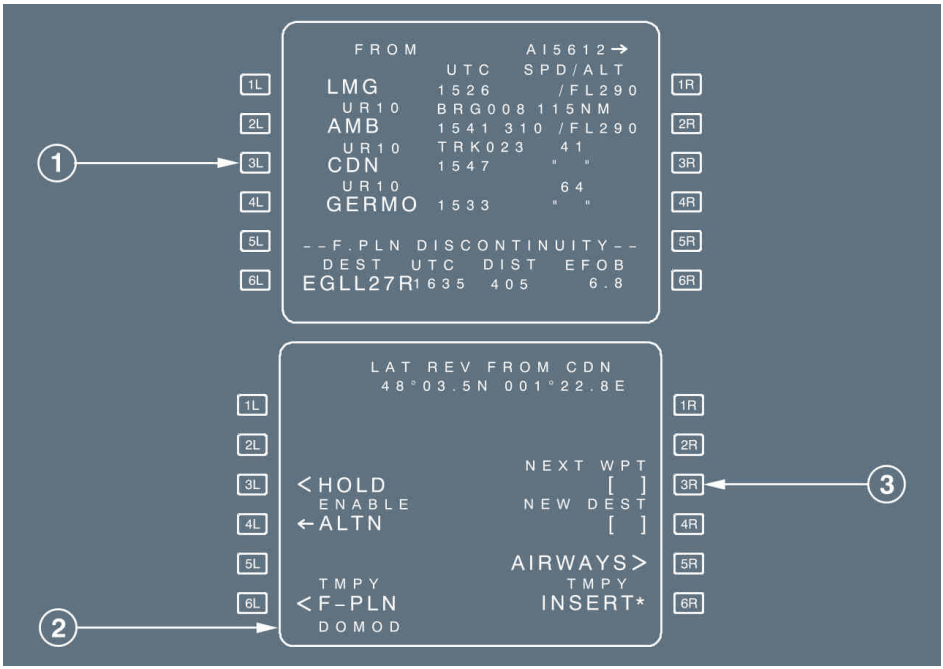
- The flight crew adds a direct leg (DIR TO):



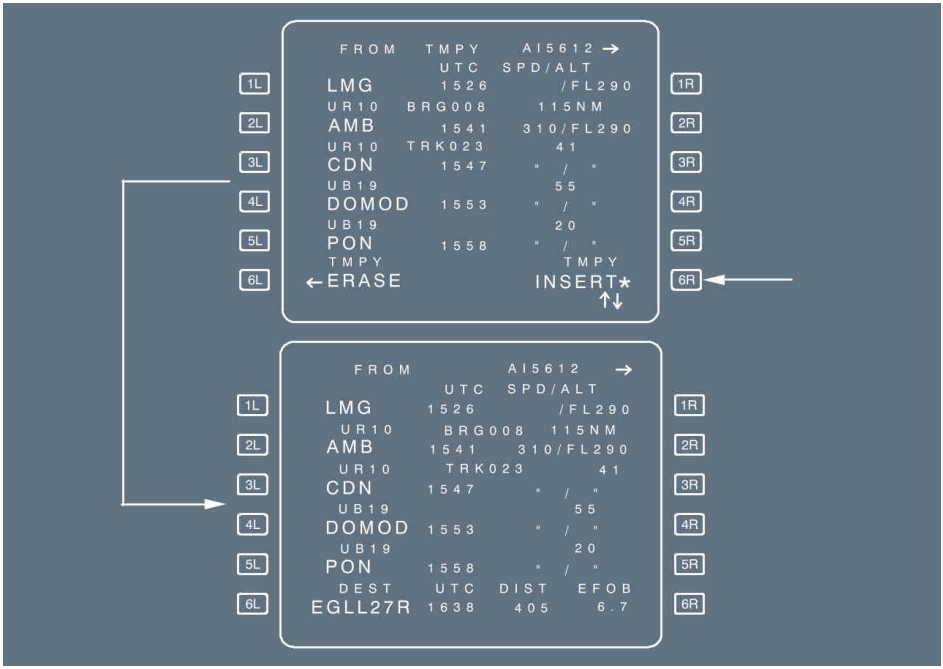
The flight crew can perform a “DIR TO” to a waypoint in the F-PLN. Different options may be used to perform a “DIR TO”: DIRECT TO, DIR TO WITH ABEAM POINTS, RADIAL IN, RADIAL OUT. A single revision DIR TO temporary F-PLN specific to the DIR TO action is automatically created when the waypoint has been selected. After inserting the “DIR TO”, the active leg goes from present position (T/P) to the selected waypoint.

- The flight crew uses the LAT REV function. Possible revisions are:
  - Insert or modify the departure procedure
  - Insert or modify the arrival procedure
  - Insert a waypoint
  - Change the destination
  - Insert an airway
  - Insert an offset
  - Insert a holding pattern
  - Select or enable an alternate flight plan
  - Radial fix information
  - Insert LAT/LONG crosssing waypoint.

  The purpose of the temporary flight plan is to allow the flight crew to check a revision on the MCDU and on the ND before inserting the changes into the active flight plan. It is a copy of the active flight plan that has been changed according to the flight crew revision. While it is displayed, the aircraft will continue to follow the original active flight plan.
  Predictions are computed or displayed on the pages of the temporary flight plan.



A temporary flight plan is displayed for a check and/or new modification. Inserting the temporary revision will modify the active flight plan.



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FMS2 HONEYWELL

GENERAL

Ident.: DSC-22_20-30-10-15-00005067.0001001 / 09 FEB 11

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The lateral revision function allows the pilot to create or modify the following parts of the flight plan:

- Airway
- Waypoint
- New destination
- Holding pattern
- Offset
- Alternate
- Fix information

  Each time the pilot activates one of the above-listed revisions, he accesses a temporary flight plan that enables the modification to be checked before inserting it in the active flight plan. The crew selects these functions by pressing the left keys on F-PLN A or B.
- Direct to and overfly functions are accessed via the MCDU keys. No temporary flight plan is created with these functions.
- “Update at” capability is a specific function that manually updates the FM position. It does not .use a temporary flight plan, but the pilot must confirm its insertion before it is activated.

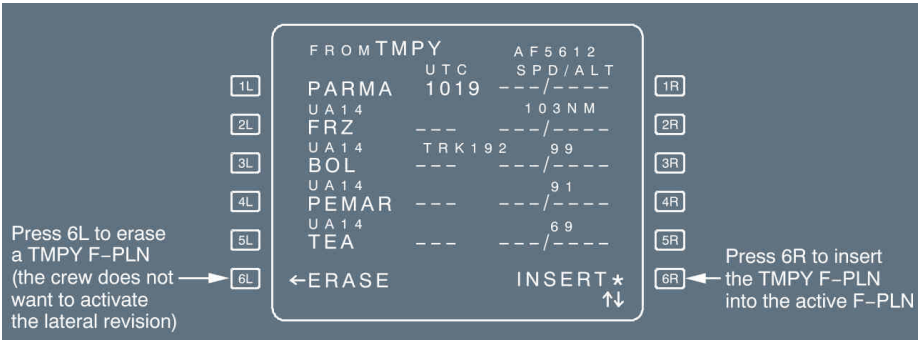
TEMPORARY F-PLN (TMPY)

Ident.: DSC-22_20-30-10-15-00000460.0001001 / 01 OCT 12

2 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

When a pilot makes a lateral revision to the F-PLN, the FMGS creates a temporary flight plan. This is a copy of the active F-PLN, but is corrected by the lateral revision in progress.
The aircraft continues to follow the active F-PLN, until the temporary revision is inserted.
The revision appears in yellow font on both MCDUs and NDs.

- Lateral and vertical revisions cannot be made to a temporary F-PLN.
- Only one temporary F-PLN may be accessed at a time.
- The “DIRECT TO” function, when used, erases a temporary F-PLN.
- When a DIR TO is in process, a temporary revision cannot be displayed on the other MCDU.
- A TMPY F-PLN changes the title of the flight plan pages. (TMPY appears in all titles).
- No predictions are computed for a temporary flight plan (dashes are displayed).



Temporary data is displayed in yellow (ND and MCDU). Once inserted, it becomes active and is displayed in green.

INSERTING AN AIRWAY WITH "VIA"

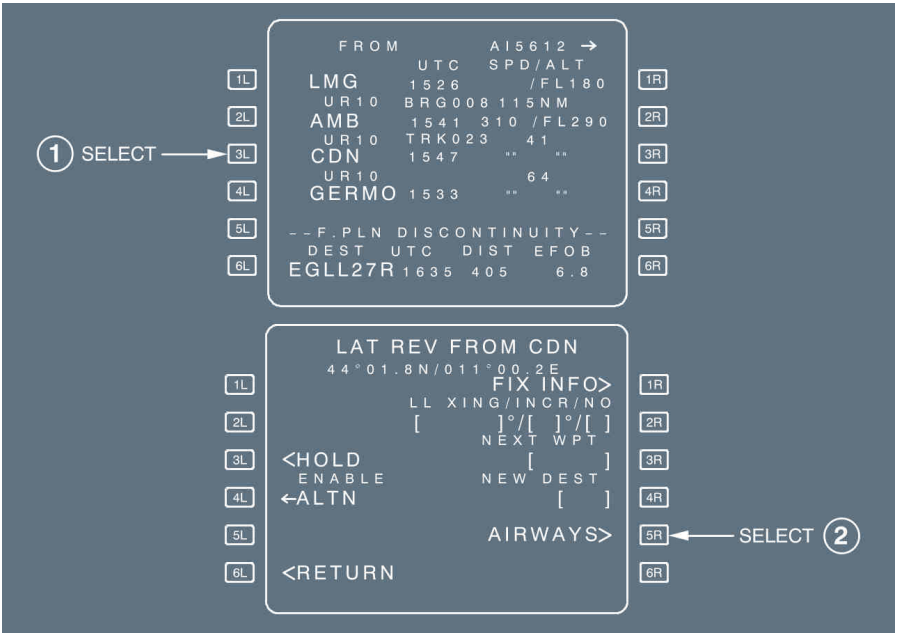
Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063

Ident.: DSC-22_20-30-10-15-E-00012828.0001001 / 14 MAY 12

3

GENERAL

In the active flight plan, the pilot can insert up to 5 successive airway segments, going from a revised waypoint or ending at a given waypoint of the flight plan.



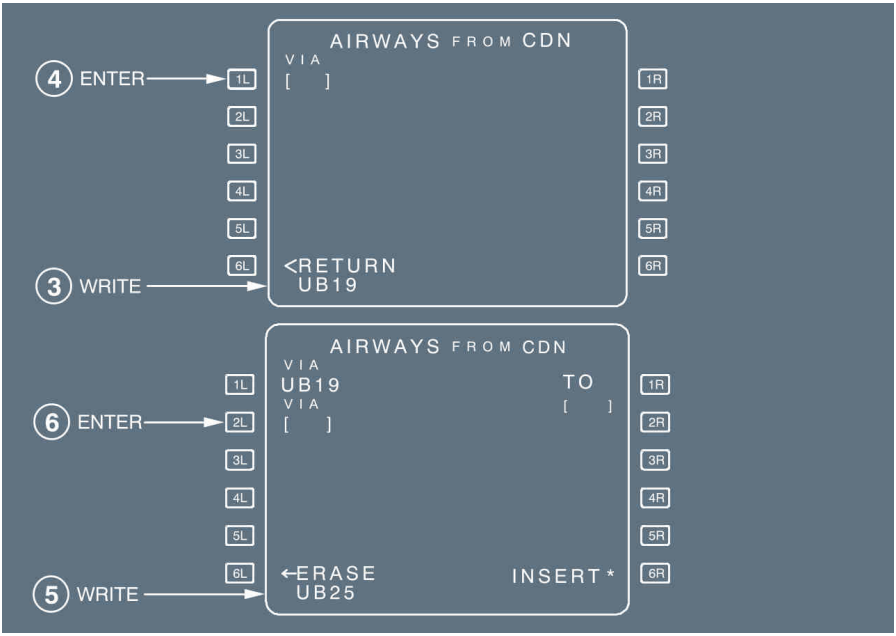
SELECT the revised waypoint (here CDN).
PRESS [5R] to select the airways function.

Ident.: DSC-22_20-30-10-15-E-00012829.0001001 / 14 MAY 12

4

THE PILOT WISHES TO INSERT SUCCESSIVE AIRWAY SEGMENTS FROM A WAYPOINT

e.g. from CDN - Airways UB19 – Airways UB25 – Ending point AAA.

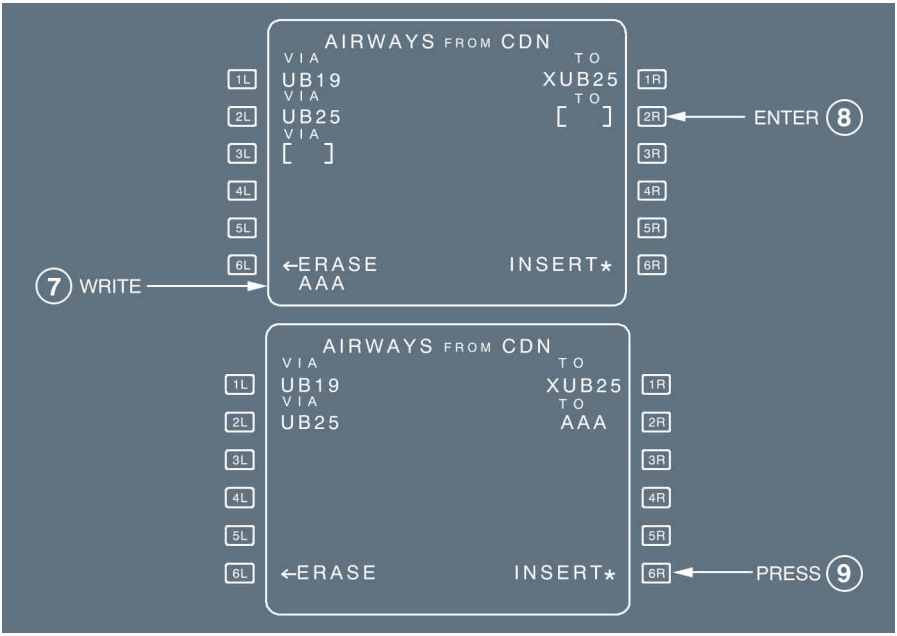


WRITE the first airway in the scratchpad (here UB19).
PRESS [1L] to insert it into the VIA field.
WRITE the second airway in the scratchpad (here UB25).
PRESS [2L] to insert it into the VIA field.

The system automatically determines the first downpath intersection point between the 2 airways.

- If the airways have a common waypoint, the system selects it as the ending point of the first VIA.
- If they have no common waypoint, but have a single intersection, the system creates this intersection as an FM-computed point and displays X followed by the airway IDENT (here XUB25).
- If they have no common waypoint or intersection, the system displays NO INTERSECTION FOUND in the scratchpad.

Once the pilot has entered the required airways (up to 5), he must enter the ending point of the last selected airways:



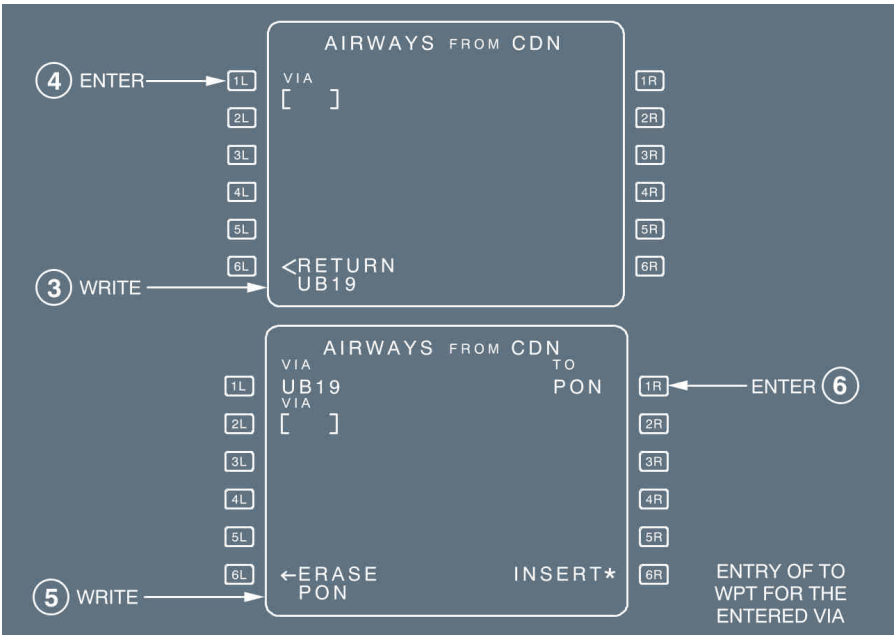
WRITE the ending waypoint in the scratchpad (here AAA).
PRESS [2R] to insert the ending waypoint into the TO field.

Note: *If two waypoints with the same IDENT belong to the same airway, the DUPLICATE NAMES page will not be called up, and the system selects the first one in the database.*

Ident.: DSC-22_20-30-10-15-E-00012830.0001001 / 01 OCT 12

5

THE PILOT WISHES TO INSERT ONE AIRWAY SEGMENT TO AN ENDING WAYPOINT



WRITE the airway IDENT in the scratchpad (here UB19).
PRESS [1L] to insert it into the VIA field.
WRITE the ending waypoint in the scratchpad (here PON).
PRESS [1R] to insert it into the TO field.

Note: - *If the revise waypoint, or the ending waypoint, does not belong to the entered airway, the system displays AWY/WPT MISMATCH in the scratchpad.*
- *If two waypoints with the same IDENT belong to the same airway, the DUPLICATE NAMES page will not be called up and the system selects the first one in the database.*

Ident.: DSC-22_20-30-10-15-E-00012831.0001001 / 09 FEB 11

6

FLIGHT PLAN INSERTION

The flight crew either inserts the flight plan directly from the AIRWAYS page, or from the TMPY F-PLN page. In both cases:

PRESS [6R] to insert the temporary flight plan. Clear flight plan discontinuity, as needed.

INSERTING A WAYPOINT

Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063

Ident.: DSC-22_20-30-10-15-F-00012832.0001001 / 09 FEB 11

7

GENERAL

Waypoints can be inserted in two ways:

- Directly into the flight plan. All modifications go directly into the active flight plan. No temporary flight plan is created.
- By means of a lateral revision at the “NEXT WAYPOINT”, a process that creates a temporary flight plan.

The second method enables the temporary flight plan to be checked before it is inserted.

Ident.: DSC-22_20-30-10-15-F-00012833.0001001 / 09 FEB 11

8

WAYPOINT IDENTIFICATION

The pilot can identify a waypoint by:

- Its identifier (if it is in the navigation database).
- A Latitude/Longitude (LL).
- A Place/Bearing/Distance (PBD). The waypoint is defined by its bearing and distance from a place.
- A Place-Bearing/Place-Bearing (PBX). The waypoint is defined by the interception of 2 radials from 2 places.
- A Place/Distance (PD). The waypoint is defined by a distance from a place, along the F-PLN.

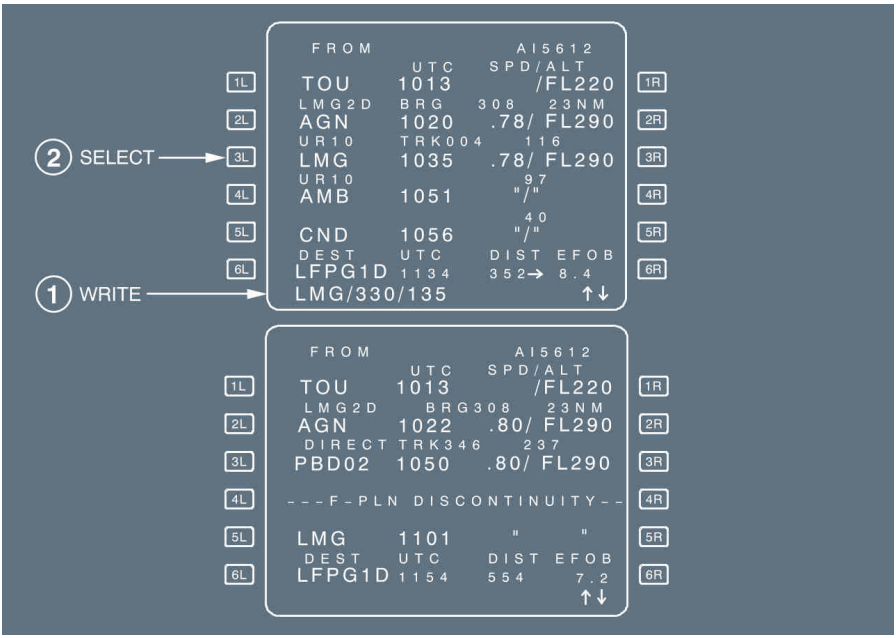
Note: *If a slash or a dash is not entered properly, the MCDU displays a “FORMAT ERROR” message.*

When the Flight Management Guidance System receives a waypoint that is not in the database, it identifies it as LLxx or PBD xx or PBX xx or PD xx (xx is a two-digit number between 01 and 20) and stores it in the stored waypoints file of the database.

Note: *When NAV mode is engaged, the crew cannot modify the “TO” waypoint (active leg) using the waypoint insertion function. If the crew wants to modify it, the DIR TO function will be used.*

9

WAYPOINT INSERTED DIRECTLY IN THE FLIGHT PLAN



WRITE the waypoint identifier or LAT/LONG, Place/Bearing/Distance or Place-Bearing/Place-Bearing into the scratchpad. (Example: Place: LMG, Bearing: 330 °, Distance: 135 NM).
PRESS the appropriate key to enter the waypoint into the flight plan. The rule is that the new waypoint appears next to the pressed key, and the previous waypoint moves down the flight plan path.

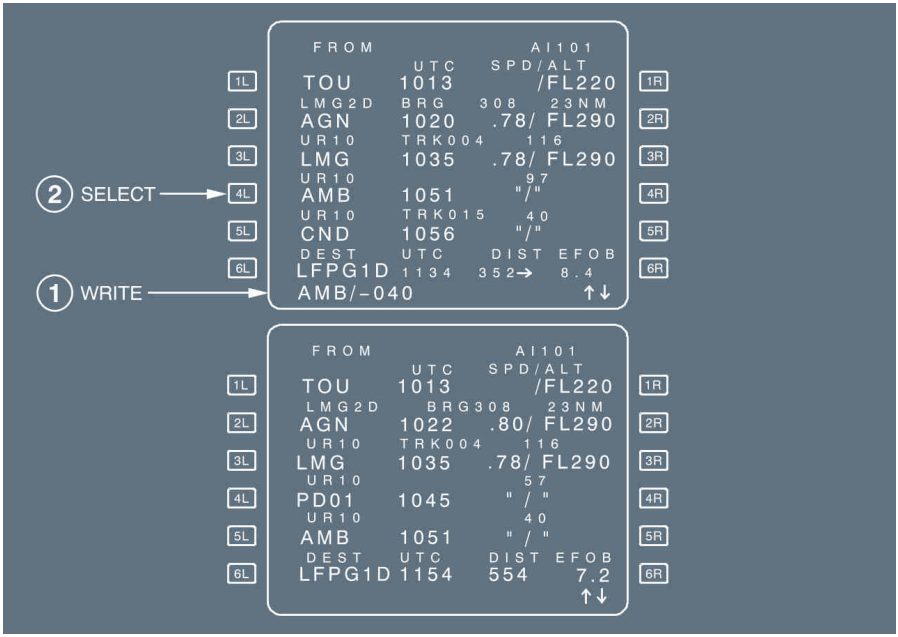
This operation creates a discontinuity between the new waypoint and the previous one.
The new flight plan will have to be cleared of the discontinuity and some waypoints erased.

Ident.: DSC-22_20-30-10-15-F-00012835.0001001 / 01 OCT 12

10

ALONG TRACK WAYPOINT INSERTION

On the F-PLN or STEP ALTS page, the pilot can enter an along track waypoint, defined as a place/distance waypoint.



WRITE the waypoint identifier and distance from this place.

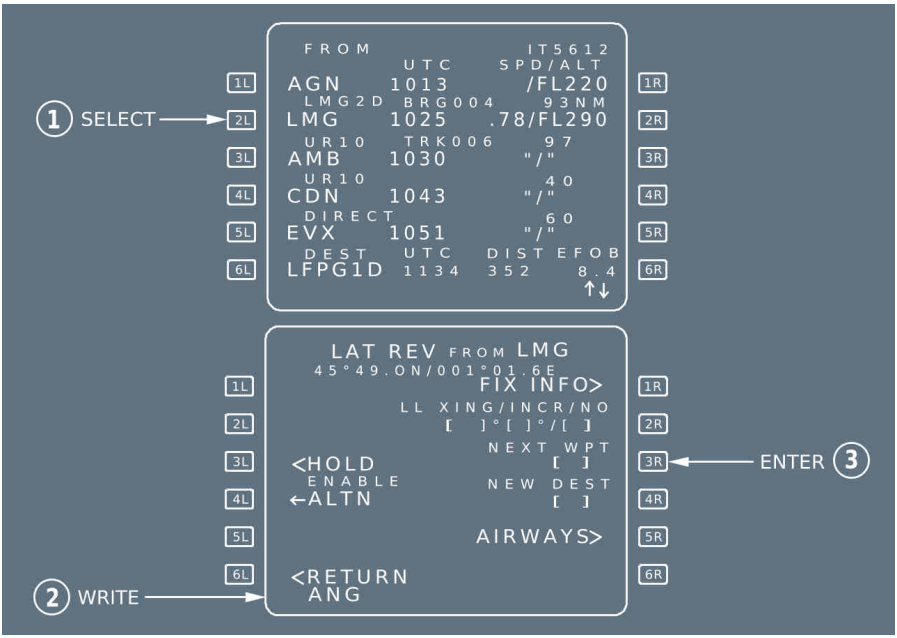
According to the sign of the distance, the crew may define an along track waypoint before or after the revised place. (Example: AMB/-040).

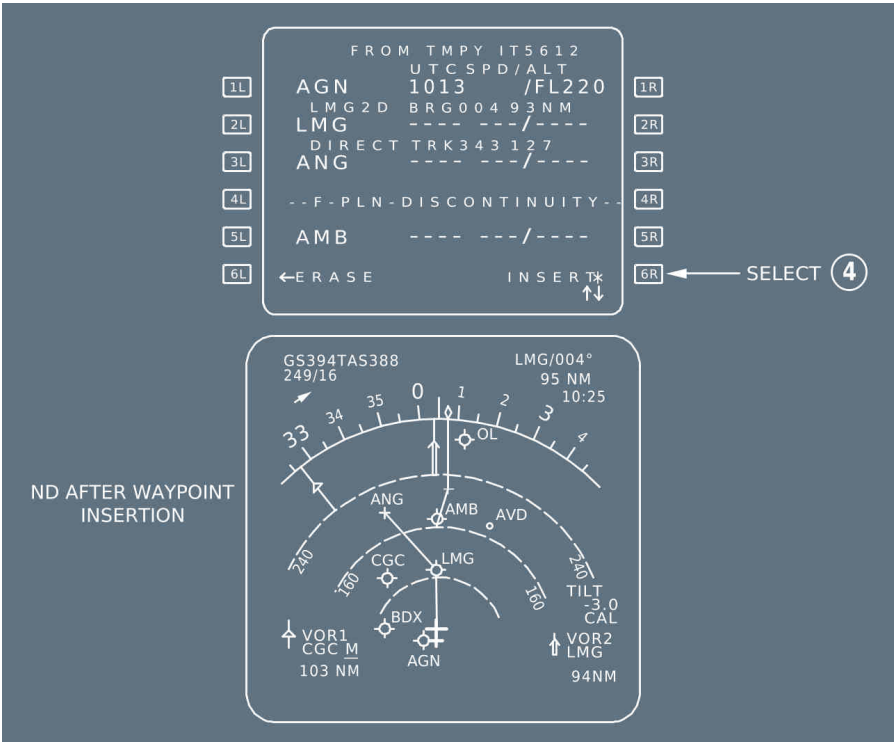
PRESS the appropriate key adjacent to the place identifier. The system automatically positions the waypoint in the flight plan.

This operation does not create any discontinuity.
The system does not accept an along track waypoint entered at the FROM waypoint.

11

WAYPOINT INSERTED THROUGH THE USE OF "NEXT WAYPOINT"





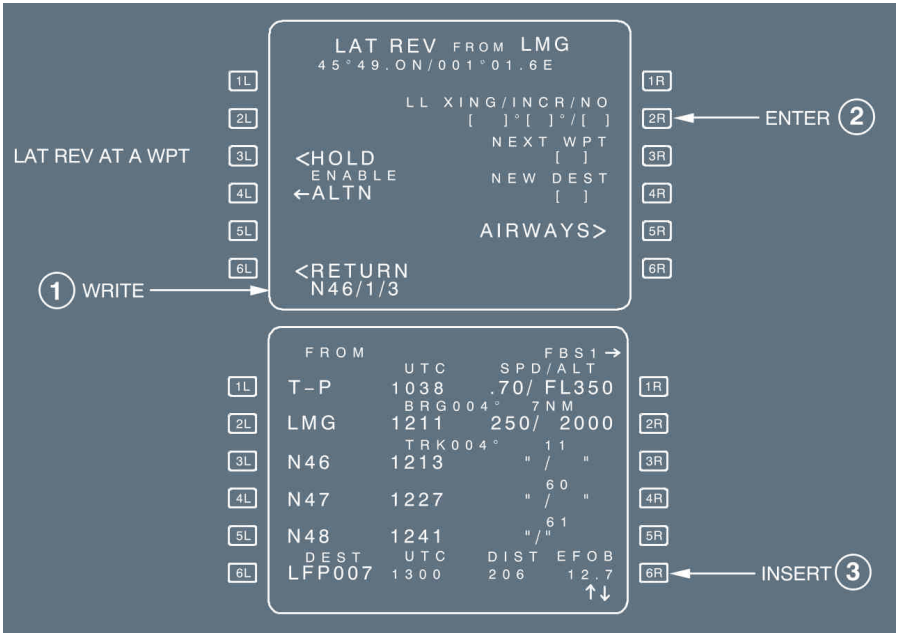
SELECT the lateral revision (LAT REV) function at an appropriate waypoint.
WRITE the waypoint identifier, or LAT/LONG, or Place/Bearing/Distance, or Place-Bearing / Place-Bearing into the scratchpad.
ENTER it in the brackets under NEXT WPT (next waypoint).
INSERT the temporary flight plan by pressing the [6R] key.
CLEAR the F-PLN discontinuity, as appropriate.

Ident.: DSC-22_20-30-10-15-F-00012837.0001001 / 14 MAY 12

12

LATITUDE/LONGITUDE CROSSING WAYPOINT INSERTION

This function allows the insertion of one or several points along the flight-plan beyond the revised waypoint, at fixed latitude or longitude intervals (INCR) from a specified latitude or longitude. These waypoints are not considered as part of the pilot-defined elements. The system deletes them when sequenced.



WRITE the latitude (NXX, XXN, SXX or XXS), the required increment in degrees between the successive waypoints, and the number of required waypoints.

(Example: The pilot wants to obtain 3 points, every degree from latitude N46: He enters N46/1/3).

PRESS [2R] to insert it into the LL XING/INCR/NO field.
PRESS [6R] to insert the new waypoints in the flight plan without discontinuity.
The system does not store these waypoints in the database.

FIX INFO

Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063

Ident.: DSC-22_20-30-10-15-G-00012838.0008001 / 09 FEB 11

13

GENERAL

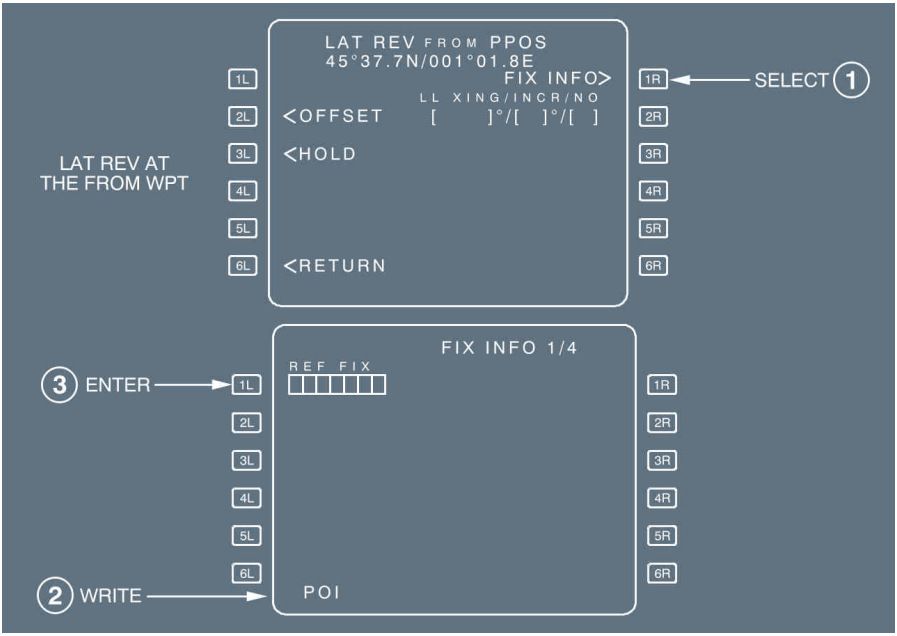
When using the FIX INFO function, the flight crew defines waypoint intersections of the flight plan with radials, circle or abeam associated to a fix.
When the flight crew inserts the intersection points, the system automatically identifies these points, but does not store them in the navigation database.

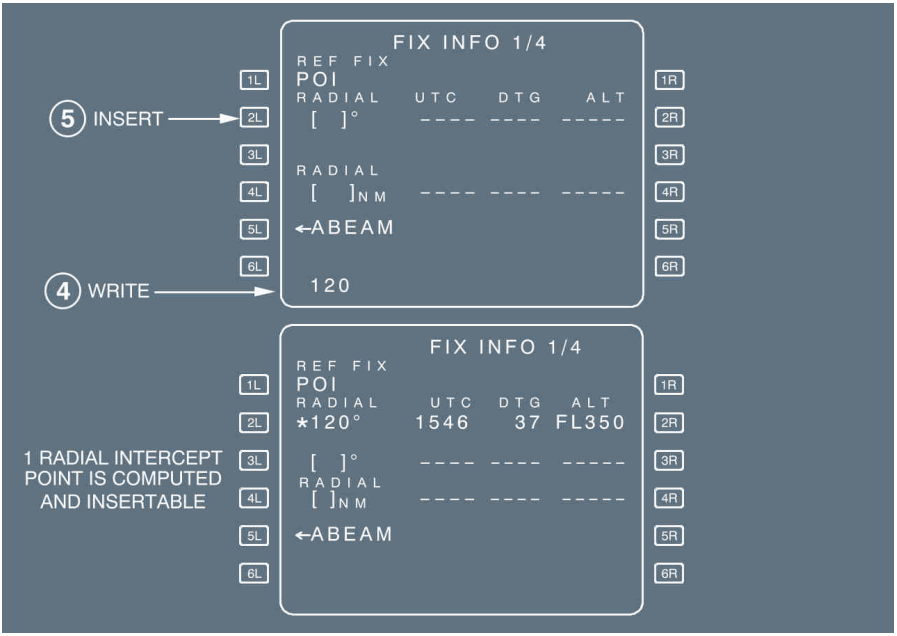
Ident.: DSC-22_20-30-10-15-G-00012839.0008001 / 01 OCT 12

14

INSERTING A RADIAL INTERCEPT WAYPOINT

The flight crew accesses the radial intercept function from the lateral revision page at the origin or “from” waypoint.


LAT REV FROM PPOS
45°37.7N/001°01.8E
FIX INFO>
LL XING/INCR/NO
<OFFSET [ ]°/[ ]°/[ ]
<HOLD
<RETURN
1L
2L
3L
4L
5L
6L
1R
2R
3R
4R
5R
6R
SELECT 1
LAT REV AT
THE FROM WPT
FIX INFO 1/4
REF FIX
3 ENTER
2 WRITE
POI



WRITE the reference fix identifier into the scratchpad (here POI), and ENTER it [1L].

It may be any database or pilot-defined fix.

WRITE the radial into the scratchpad (here 120 °) and ENTER it [2L].

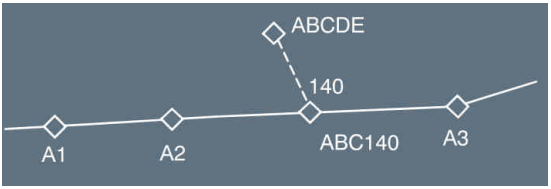
The defined radial appears as a blue dashed line on the ND.

If the radial line intersects the active flight plan, the system computes the time, distance to go, and the altitude at the intersection point.

Up to two radials can be entered.

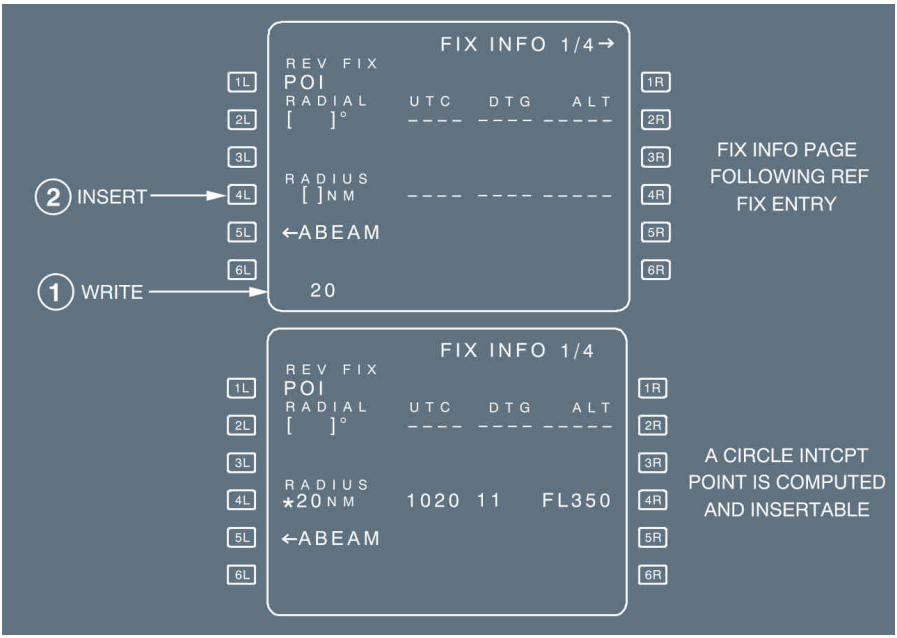
SELECT the required radial to insert the associated waypoint into the flight plan (if needed):

The system automatically assigns its IDENT as the three first characters of the reference fix IDENT, followed by the radial. (Example: ABC 140). The blue dashed line disappears from the ND.



15

INSERTING A CIRCLE INTERCEPT WAYPOINT

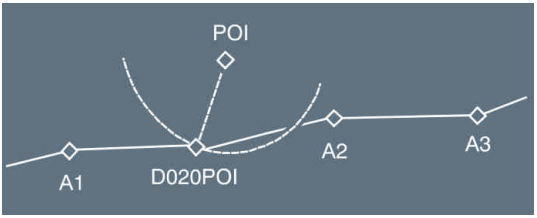


WRITE the reference fix identifier into the scratchpad (here POI), and ENTER it [1L].
WRITE the circle radius in the scratchpad (here 20 NM), and ENTER it [4L]:

The defined circle appears as a blue dashed circle on the ND. If the circle intersects the active flight plan, the system computes the time, along path distance to go and altitude at the first intersection point from the current aircraft position.

SELECT the required radius to insert the associated waypoint into the flight plan (if needed).

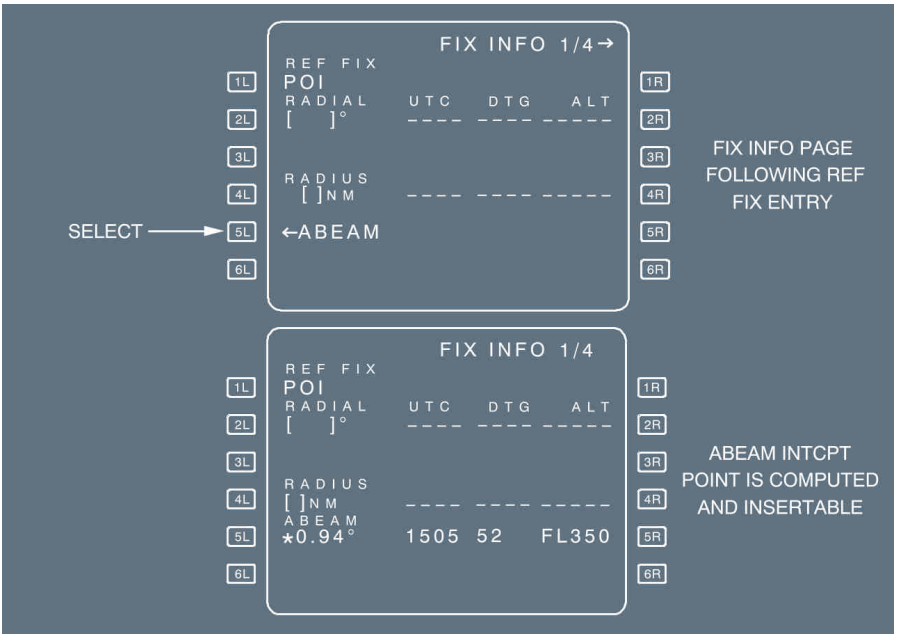
The system automatically assigns its IDENT as a D, followed by the radius, and followed by the three first characters of the reference fix IDENT (example D020 POI). The blue dashed circle disappears from the ND.



Ident.: DSC-22_20-30-10-15-G-00012841.0008001 / 01 OCT 12

16

INSERTING AN ABEAM INTERCEPT WAYPOINT

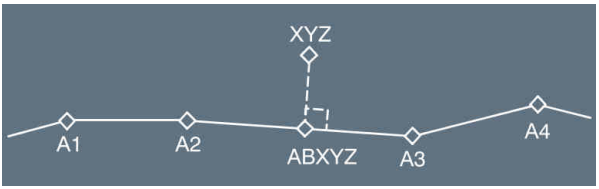


WRITE the reference fix identifier into the scratchpad (here POI), and ENTER it [1L]
SELECT the ABEAM prompt [5L]:

A blue dashed line from the reference fix and perpendicular to the flight plan appears on the ND. The system computes the radial, time, distance to go, altitude and predictions related to the waypoint abeam the reference fix.

SELECT [5L] to insert the abeam intercept waypoint into the flight plan (if needed):

The system automatically assigns its identifier as AB, followed by the first five characters of the reference fix identifier (Example ABXYZ). The blue dashed line disappears from the ND.

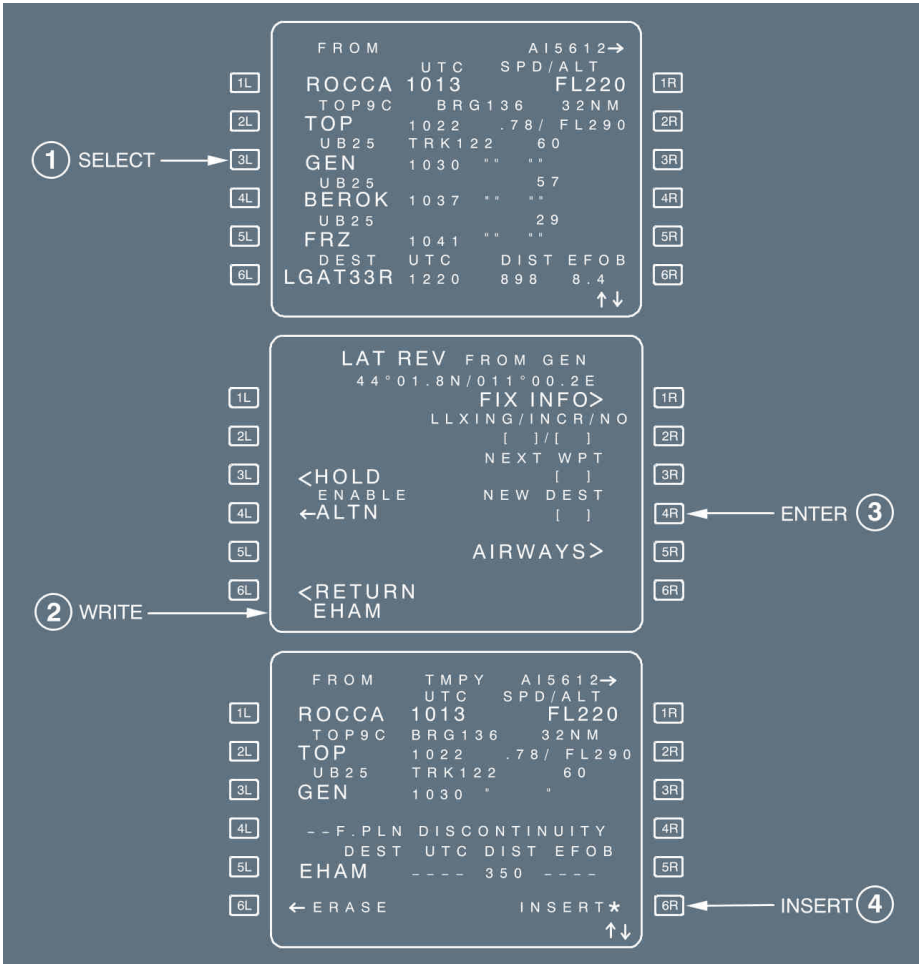


INSERTING A NEW DESTINATION

Ident.: DSC-22_20-30-10-15-00000471.0001001 / 14 MAY 12

17 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The pilot may define a new destination and insert it via the lateral revision page. The pilot may then call up the new destination from any waypoint along the flight plan, except the FROM waypoint, the destination, and the missed-approach waypoint. When the new destination has been inserted, a flight plan discontinuity appears between the revision waypoint and the new destination. All waypoints beyond the revision waypoint (including the previous destination and associated missed approach) are deleted.



SELECT the lateral revision function at an appropriate waypoint.
WRITE the new destination in the scratchpad.
Enter it in the brackets under “NEW DEST”.
INSERT the temporary flight plan ([6R] key), and complete the flight plan to the new destination.

HOLDING PATTERN

Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063

Ident.: DSC-22_20-30-10-15-A-00007222.0001001 / 09 FEB 11

18

GENERAL

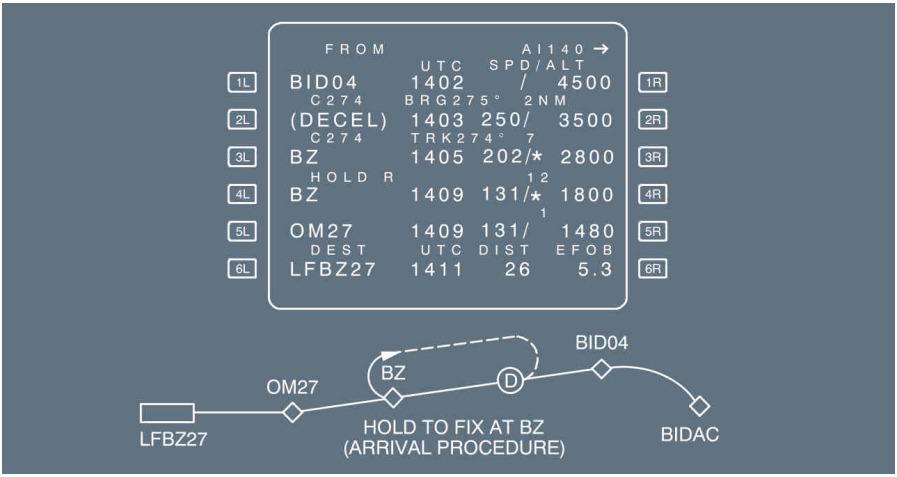
This section describes holding patterns, associated guidance and flight crew procedures.
The Flight Management and Guidance Computer (FMGC) has three types of holding patterns that the pilot can use in a flight plan.

Ident.: DSC-22_20-30-10-15-A-00007163.0001001 / 01 OCT 12

19

HOLD TO FIX (HF)

The holding pattern is always part of an arrival or departure procedure. The aircraft flies it once and then automatically exits the holding pattern at the fix. The predicted speed in the holding pattern is the lowest of the ICAO speed limit, max endurance speed, or any speed constraint. Guidance to the fix in the holding pattern is similar to that on any leg of a flight plan. The HF patterns are part of the navigation database and cannot be created by the crew.



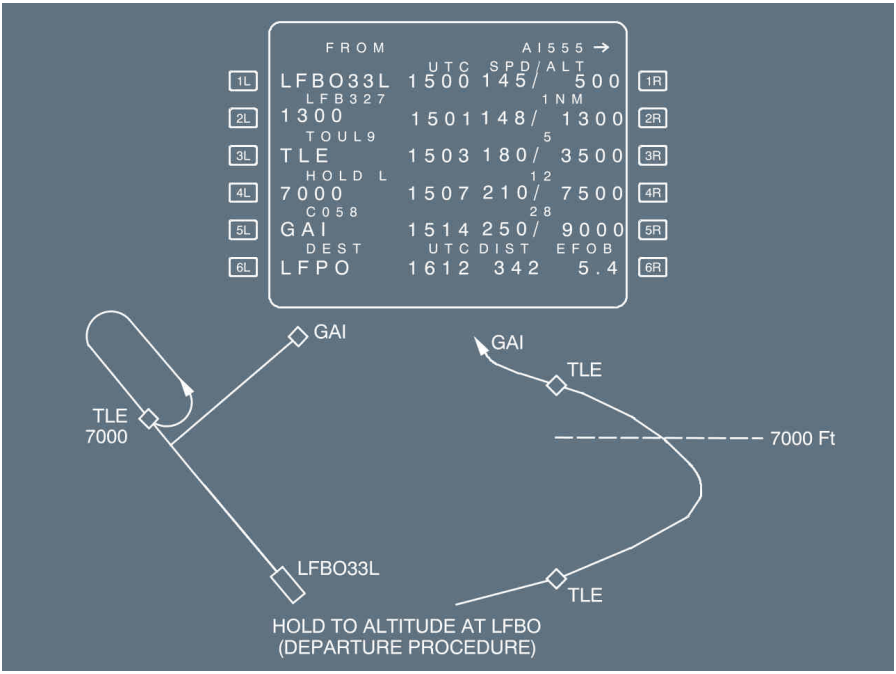
Ident.: DSC-22_20-30-10-15-A-00007182.0001001 / 01 OCT 12

20

HOLD TO ALTITUDE (HA)

The aircraft flies the hold until it reaches the specified altitude. Then, it automatically exits the hold at the fix.

The predicted speed for the holding pattern is the lowest of the ICAO speed limits, the max endurance speed, or any speed constraint.
The size of the holding pattern is a function of the predicted speed.
Guidance in a hold to altitude (HA) is similar to that for any leg of a flight plan.
The HAs are in the navigation database, as part of the arrival or departure procedures, and cannot be created by the crew.



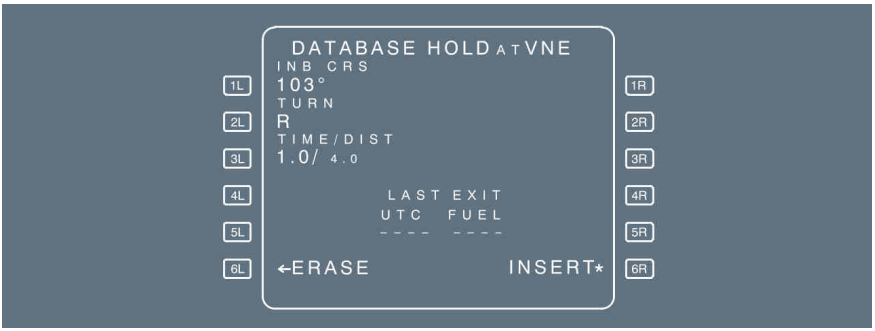
Ident.: DSC-22_20-30-10-15-A-00007206.0013001 / 01 OCT 12

21

HOLD WITH MANUAL TERMINATION (HM)

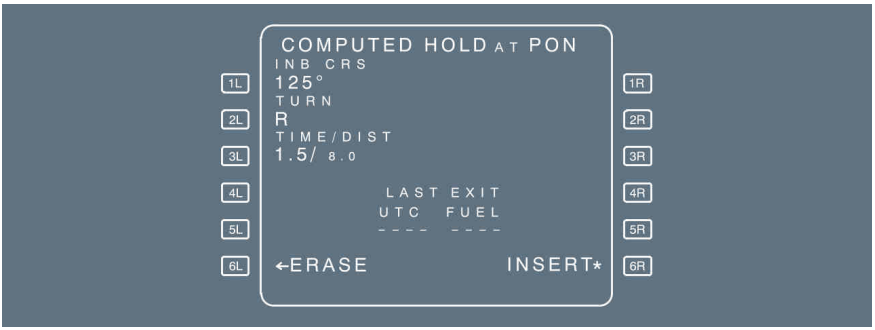
This type of holding pattern may be part of an arrival procedure, or the pilot may enter it at the present position or at any flight plan waypoint.
The pilot will use this type of holding pattern to comply with a defined procedure or a clearance limit, or to meet an operational need (such as losing altitude, holding for weather improvement, or absorbing an ATC delay).
This type of holding pattern is exited according to the pilot's decision, not automatically.
There are 3 types of HM.
All are modifiable.

DATABASE HOLD



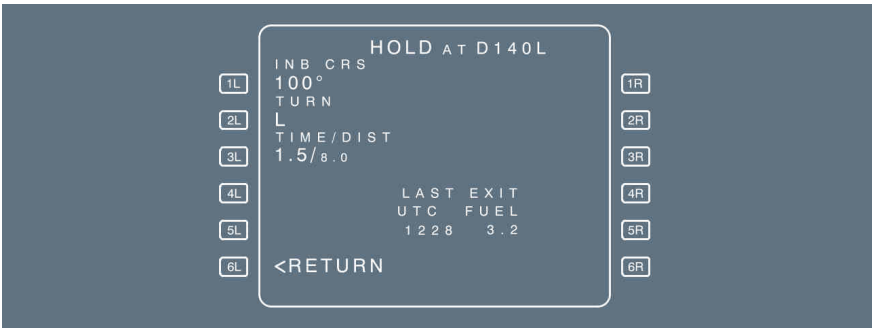
If the holding pattern is part of the database, it is named DATABASE HOLD and all its associated data (inbound course, turn direction, time/distance) are defined in the database. The flight crew can modify this data.

COMPUTED HOLD AT...



If the holding pattern is not in the database, the FMGC designs a holding pattern and proposes it to the pilot. The associated data consists of default values that the pilot can modify.

HOLD AT...

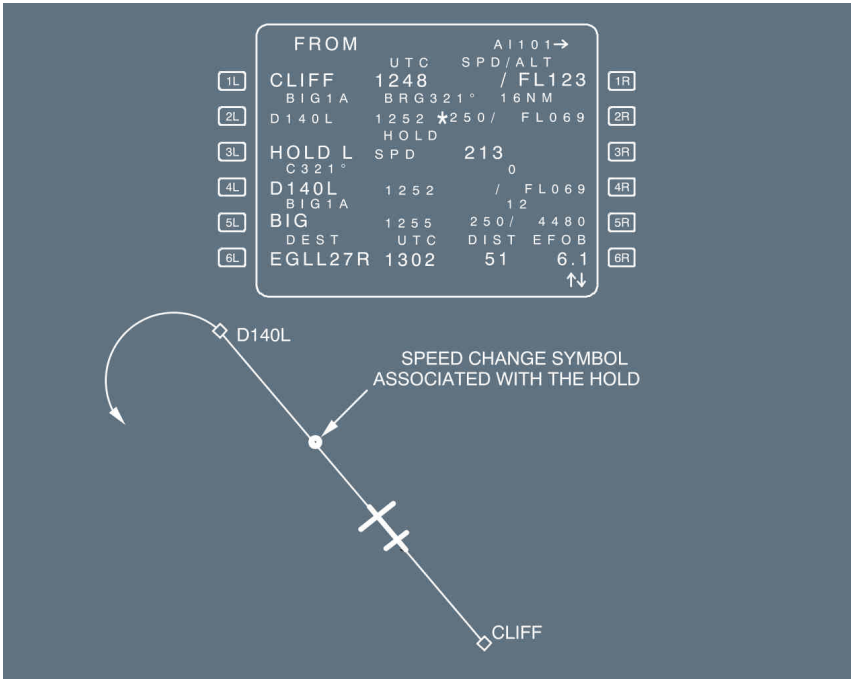


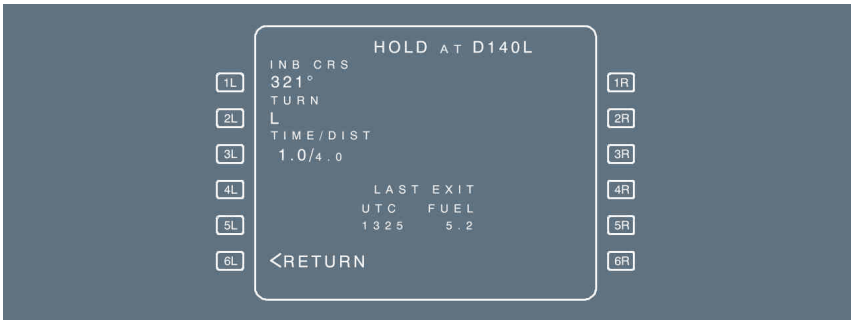
If the pilot inserts into the active flight plan a holding pattern that is manually-corrected from a hold defined by the FMGS, the screen displays a “HOLD AT...” page. The 2R field displays REVERT TO DATABASE or REVERT TO COMPUTED to restore the database data, if necessary.

PREDICTIONS AND GUIDANCE ASSOCIATED WITH A HM HOLDING PATTERN (HOLD WITH MANUAL TERMINATION)

Before deceleration

If an altitude constraint is defined at the hold entry fix, then the FMS duplicates this constraint on the hold exit.
However, different constraints may be inserted at entry and exit fixes.
Although the hold is inserted into the flight plan, the FMGS does not take it into account for predictions until the aircraft enters the hold.
However, if the hold is not deleted by the crew, the FMGS schedules a deceleration point and displays it on the ND.





The FMGS predicts the estimated time and amount of fuel remaining at which the aircraft must exit holding, so as to comply with the fuel policy specified on the fuel prediction page. When the aircraft enters the holding pattern, the FMGS revises all predictions and assumes the aircraft will fly one turn of the holding pattern.
All predictions are revised for one more holding circuit at holding fix overfly.

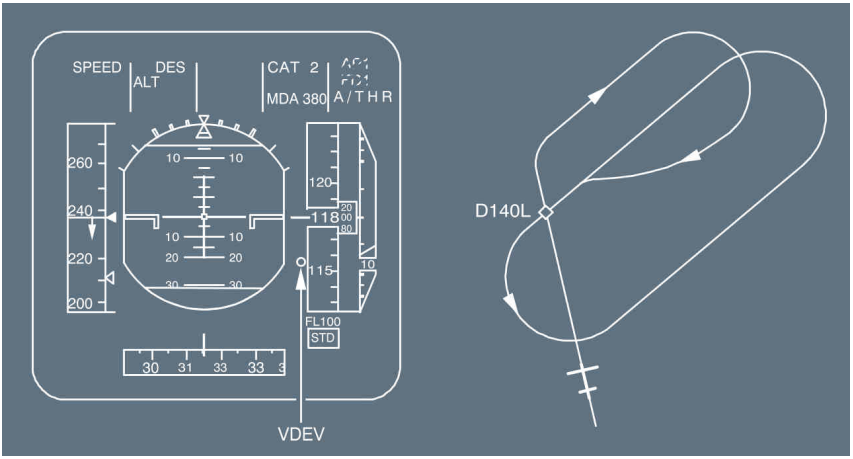
Upon reaching the speed change pseudo waypoint

The FMGS either causes the aircraft to decelerate to the hold speed (if managed speed is active and NAV mode engaged), or displays “SET HOLD SPD” (set hold speed) on the MCDU and primary flight display, if the flight crew had selected a speed target.

The default hold speed is the lowest of the:
- Maximum endurance speed
- ICAO limit holding speed
- Speed constraint (if any).

When no specific speed limit applies, the default hold speed is approximately equal to:
- Green Dot speed on the A318, A319, A320 (CFM) and A321
- Green Dot + 20 kt for altitude lower than 20 000 ft, on the A320 (IAE).
- Green Dot + 5 kt for altitude bigger than 20 000 ft, on the A320 (IAE).

The flight plan predictions for time and fuel do not yet consider that the hold will be flown, however, the navigation display shows the hold entry and holding pattern trajectory.



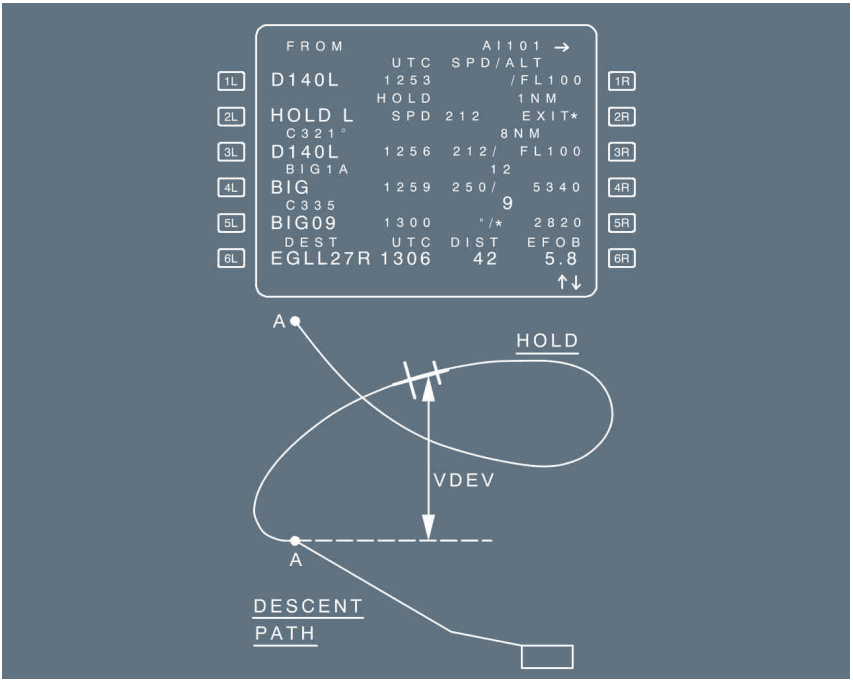
Deceleration receives priority, so that when the aircraft is in descent with the descent mode engaged, it will deviate above the descent path to decelerate. (VDEV becomes positive on the progress page).
The flight plan page displays an immediate exit prompt.
If the flight crew presses the key next to “IMM EXIT” before arriving at the holding fix, the aircraft will not enter the holding pattern, but will resume its phase-related managed-speed profile.

After reaching the hold entry fix

The aircraft enters the hold. The MCDU HOLD page displays the associated holding data:
- The inbound course (INB CRS)
- The TURN direction (L or R)
- The TIME/DIST
- The LAST EXIT time and the associated fuel to reach the alternate airport with no extra fuel.

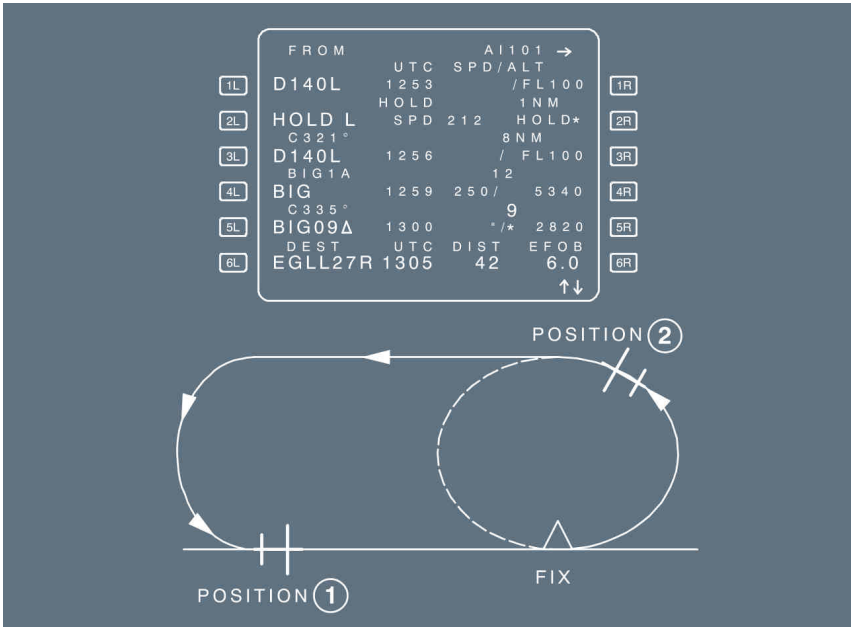
The FMS assumes that the aircraft will fly one turn of the holding pattern, and revises the predictions accordingly.
When the holding pattern is defined by a leg time (and not a leg distance), the system revises the size of the hold as a function of the target speed.

- If managed speed is active, the system uses the predicted holding speed to calculate the size of the holding pattern.
- If the selected speed is active, the system uses the target speed selected by the flight crew at the entry fix sequencing to calculate the size of the holding pattern.
- The VDEV displayed on the primary flight display and the PROG page when the aircraft is flying in the HM (hold pattern with manual termination) is the difference between the aircraft's current altitude and the altitude at which it should be when it reaches the hold exit fix in order to be correctly positioned on the descent path.



With IMM EXIT pressed (aircraft in the holding pattern)

The predictions and guidance assume that the aircraft is immediately returning to the hold fix. Sequencing the hold fix, the aircraft exits the holding pattern and resumes its navigation. The flight plan page displays “RESUME HOLD*” instead of “IMM EXIT*”.



HOLD EXIT PROCEDURE

Position (1) If “IMM EXIT” pressed, the aircraft will exit at the next fix overfly.
Position (2) If “IMM EXIT” pressed, the aircraft will make an immediate turn to the fix where the hold will be exited.

- **If managed speed is active:**

  The computer sets the target speed to the applicable speed of the current phase (for example, speed constraint, ECON speed, or speed limit).
  The computer then bases its predictions on the assumption that the flight will continue on the descent path, if the aircraft is in descent.

- **If DES mode is engaged:**

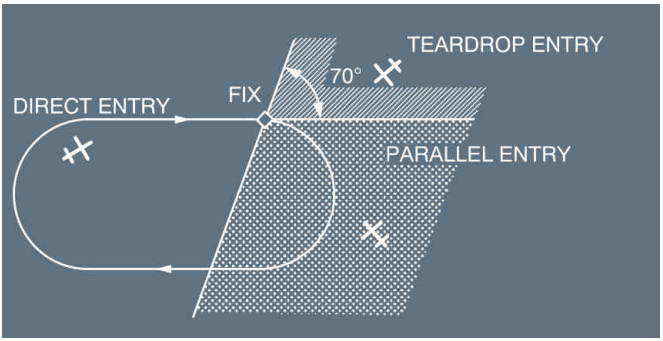
  The following applies:
  - The holding pattern is never included in the descent path computation.
  - The flight crew cannot enter altitude and speed constraints at the hold exit fix. (This is only allowed at the hold entry fix).
  - The vertical guidance in the HM, during the descent phase, calls for a constant -1 000 ft/min. But the computer considers altitude constraints that will take effect farther down the flight path as it calculates vertical guidance and predictions. The system will not allow the aircraft to descend below the next altitude constraint, neither the FCU selected altitude. If the aircraft reaches the next altitude constraint, it will level off and the altitude constraint mode will engage.

With RESUME HOLD pressed

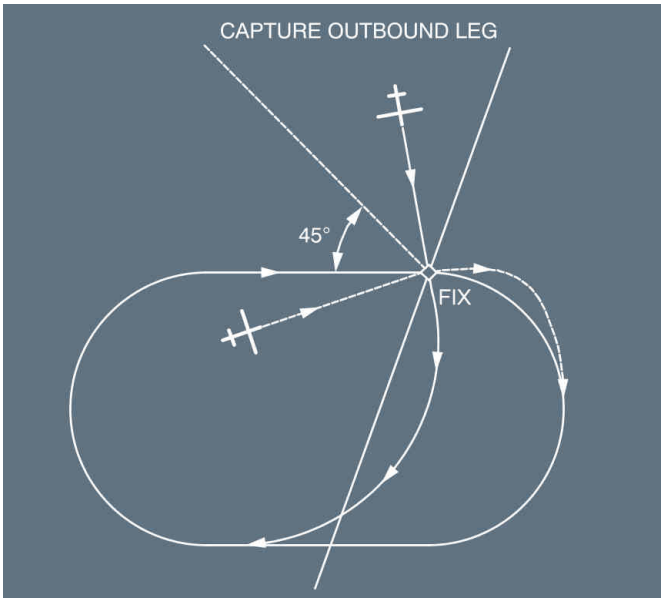
If the flight crew presses the key next to “RESUME HOLD”, the aircraft remains in the holding pattern, and “IMM EXIT” is displayed again.
After that, each time the aircraft flies over the holding fix, the system updates the predictions for one more holding circuit.

HOLDING PATTERN ENTRIES

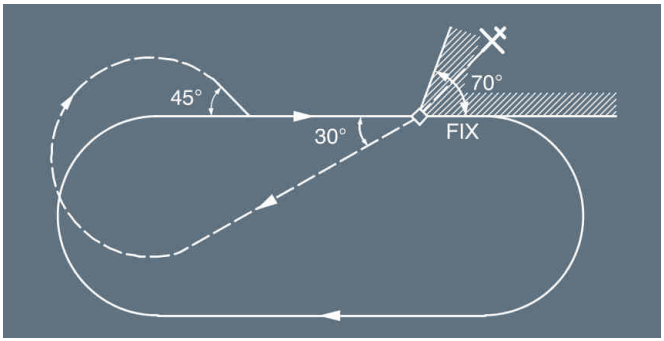
The FMGS offers three types of entry into holding patterns:
1. Direct entry
2. Teardrop entry
3. Parallel entry



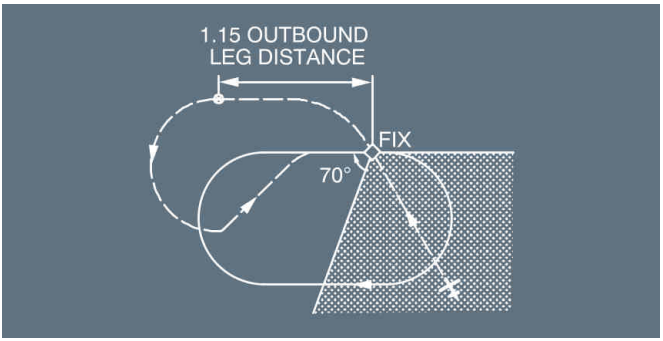
1. The direct entry



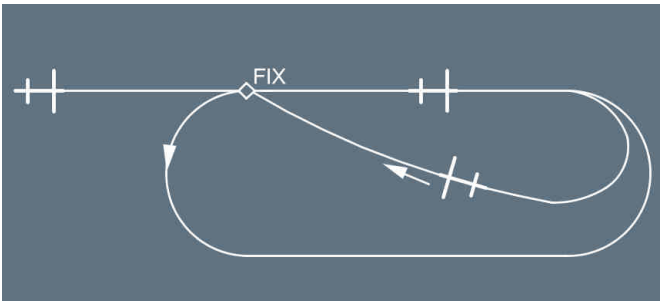
2. The teardrop entry



3. The parallel entry



Note: *If the leg the aircraft is flying toward the holding fix is on a "limit" between a teardrop entry and a parallel entry, the FMGC may compute and display either of the two entries. The pilot should keep this in mind and should not assume that the FMGC is malfunctioning.*
If the flight plan leg toward the hold entry fix is on a course that is the reciprocal of the inbound course of the holding pattern, the aircraft will fly a parallel entry.

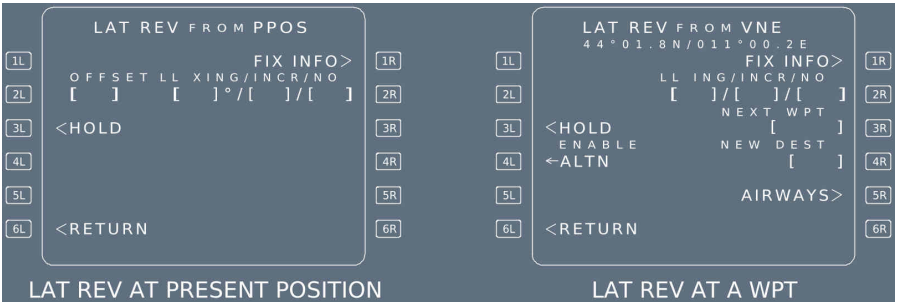


Ident.: DSC-22_20-30-10-15-A-00007220.0001001 / 09 FEB 11

22

PROCEDURE TO INSERT A HOLD (HOLD WITH MANUAL TERMINATION)

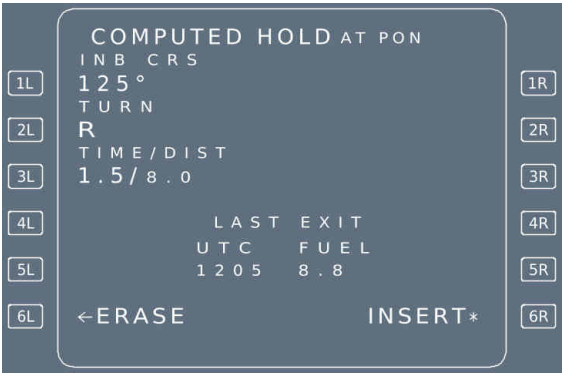
The HOLD prompt allows the flight crew to enter a hold with manual termination (HM), at the revised waypoint or at the present position.
The flight crew accesses the HOLD page from a lateral revision at the present position (PPOS) or at a waypoint.



SELECT lateral revision at present position (PPOS), or an applicable waypoint.
PRESS the HOLD prompt [3L].

A TMPY F-PLN is created and if applicable, the database hold is proposed.
If no database hold is available, the computed hold is proposed.

CHECK and (if necessary) MODIFY the HOLD data.
CHECK the temporary flight plan and INSERT it, if appropriate.



Ident.: DSC-22_20-30-10-15-A-00007219.0001001 / 09 FEB 11

23

PROCEDURE TO DELETE A HOLD (HOLD WITH MANUAL TERMINATION)

CLEAR the HOLD directly in the flight plan, as can be done for a normal waypoint.

OFFSET

Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063

Ident.: DSC-22_20-30-10-15-B-00007230.0009001 / 14 MAY 12

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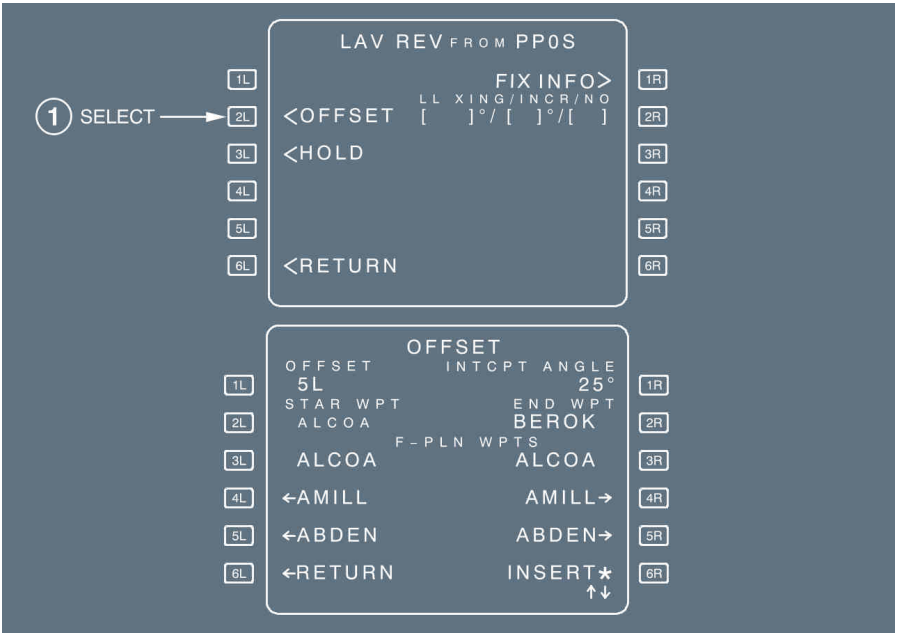
GENERAL

Offset allows the flight crew to define on offset of the active flight plan. The offset can be immediate or deferred to start on a downstream leg. The offset will end by default or at a pre-planned end waypoint. Additionally, the flight crew can specify the intercept angle used for the transitions to and from the offset path.
In most cases, the pilot will use it enroute because of an ATC clearance, or to avoid bad weather expected along the flight plan route.
This page is accessed from LAT REV page at the FROM waypoint or at any waypoint downpath the flight plan, except the destination airport.
After inserting the offset in the flight plan, the flight plan page shows OFST in its title, left or right arrows are displayed on every label line between the start and end waypoints of the offset, and the navigation display shows the offset flight plan with a solid green line and the original flight plan with a dashed green line.

The offset is cleared:
- Automatically (holding pattern, approach), or
- Manually with the clear (CLR) key, or by entering “o” in the offset value field [1L] or by using the delete prompt in the OFFSET page.

Note: *If the pilot enters an OFFSET when the aircraft is too close to the TO waypoint, the FMGS may refuse to accept it, in which case the MCDU displays the “ENTRY OUT OF RANGE” message.*



Ident.: DSC-22_20-30-10-15-B-00007207.0010001 / 01 OCT 12

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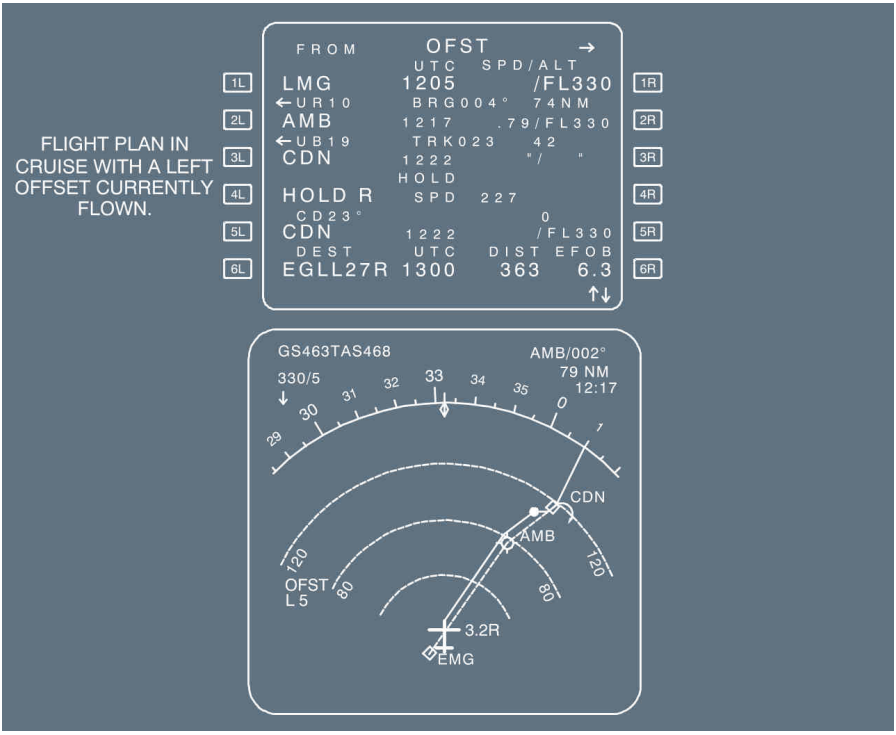
INSERTING AN OFFSET

SELECT LAT REV page at a waypoint.
SELECT OFFSET function by pressing [2L].
WRITE the required offset value and direction (for example, L5 or 5L), and enter it into [1L] field.
CHECK or INSERT the START WPT from the list in [3L] - [5L] fields or manually enter it.
CHECK or ENTER the INTCP ANGLE in [1R] field.
CHECK OR INSERT the END WPT from the list in [3R] - [5R] fields or manually enter it.
PRESS INSERT in [6R] field to activate the OFFSET.



Ident.: DSC-22_20-30-10-15-B-00007218.0009001 / 14 MAY 12

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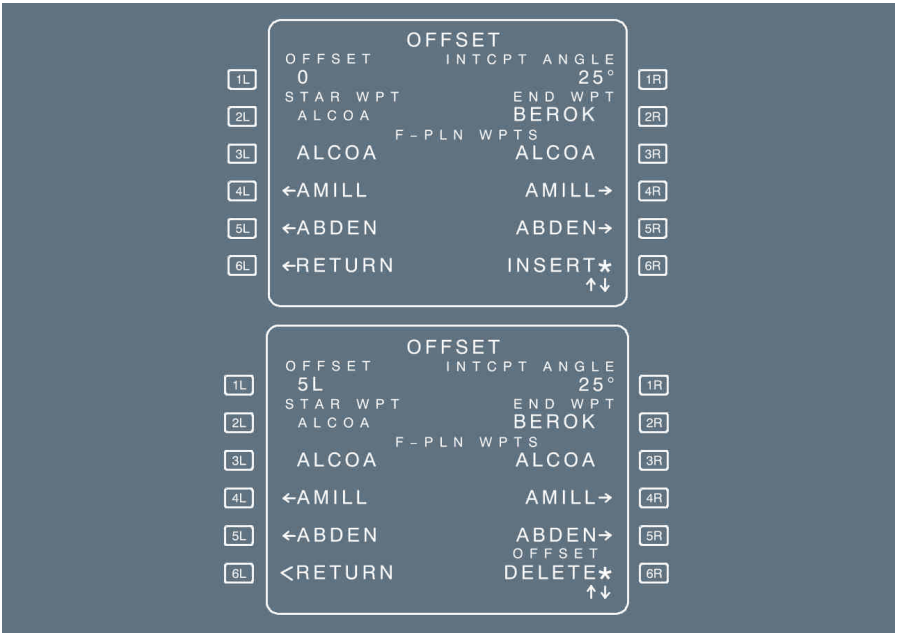
MANUAL CANCELLATION OF AN OFFSET

There are two standard methods for cancelling an offset:

1. SELECT DIR TO a waypoint (the next waypoint, for example).
2. SELECT a Lateral Revision (LAT REV) at FROM WPT.

CLEAR the OFFSET field or enter “0” in the OFFSET value field [1L], and press INSERT* in [6R] to activate the temporary flight plan (cancelling OFFSET), or
PRESS the OFFSET DELETE prompt [6R] to activate the temporary flight plan (cancelling OFFSET).



ALTERNATE FUNCTION

Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063

Ident.: DSC-22_20-30-10-15-C-00007240.0001001 / 09 FEB 11

27

GENERAL

The ALTERNATE FUNCTION performs two actions:

- It reviews and defines alternate airports and inserts them into the flight plan.
- It allows a diversion to be activated through the ENABLE ALTN command.

Ident.: DSC-22_20-30-10-15-C-00007217.0009001 / 23 JUN 15

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REVIEW AND SELECTION OF ALTERNATE AIRPORT

Several alternate airfields may be stored in the database and assigned to a destination. When the pilot selects a company route (CO RTE) (or a city pair), the computer strings the preferred alternate into the active flight plan.

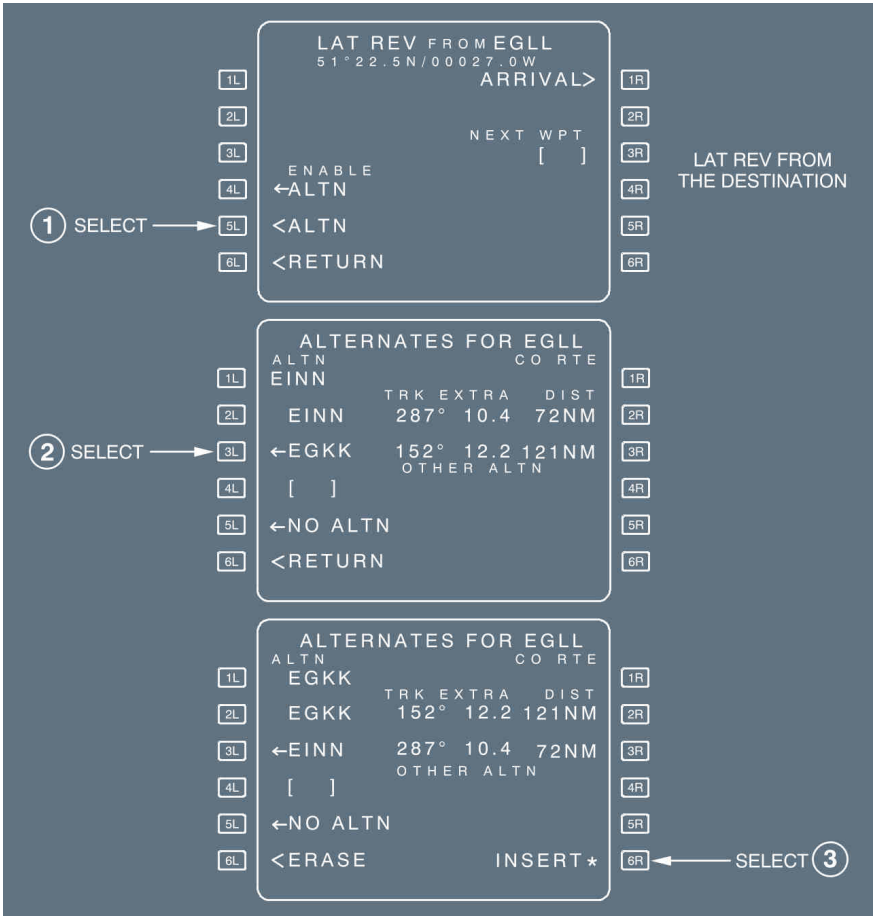
The pilot may review the alternate airports on the ALTN page and, if the one selected is not suitable because of weather or fuel considerations, another alternate may be strung into the active flight plan.
The pilot may define an additional alternate airport into the list, if necessary.
The ALTERNATE page shows the track and distance (airway or direct) between destination and alternate, as well as fuel management data (EXTRA fuel, assuming the associated airfield is the alternate airport). This data will help the pilot change the preferred alternate, if necessary.
Access the ALTERNATE page through the ALTN prompt on the LAT REV page at destination.
Alternate airfields are attached to the destination.

ENTERING NEW ALTERNATE INTO THE F-PLN

If the preferred alternate is unsuitable, proceed as follows:

SELECT F-PLN key on MCDU.
SELECT LAT REV at destination.
SELECT ALTN [5L].
SELECT an AIRFIELD IDENTIFIER.
INSERT the temporary flight plan.

Note: *If weather and destination airfield conditions permit, you may select "NO ALTN". Fuel predictions will be computed without alternate fuel.*



SELECTION OF ANOTHER ALTERNATE

Fuel management information for flight to another alternate airfield may be obtained by selecting the OTHER ALTN field.

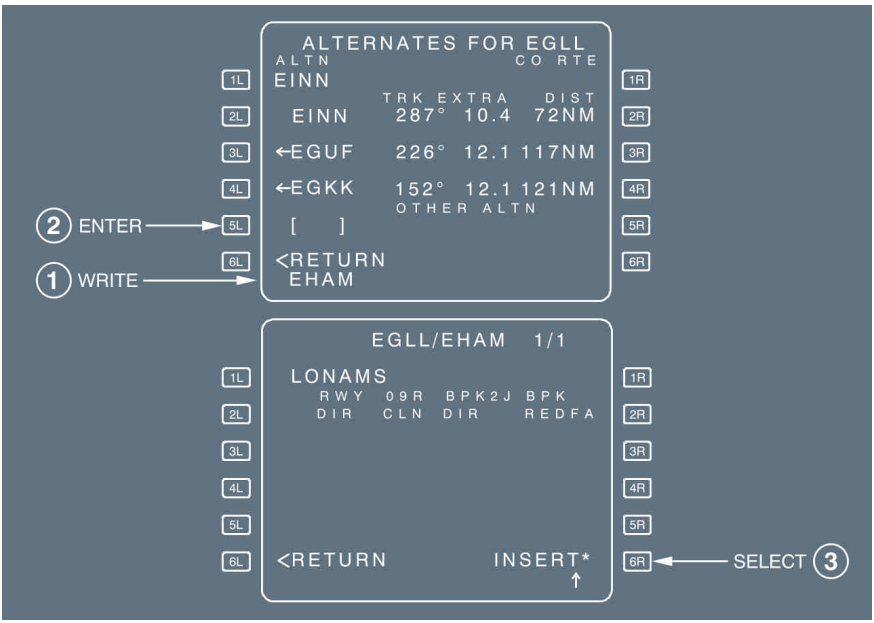
SELECT LAT REV at DESTINATION.
SELECT ALTN [5L].

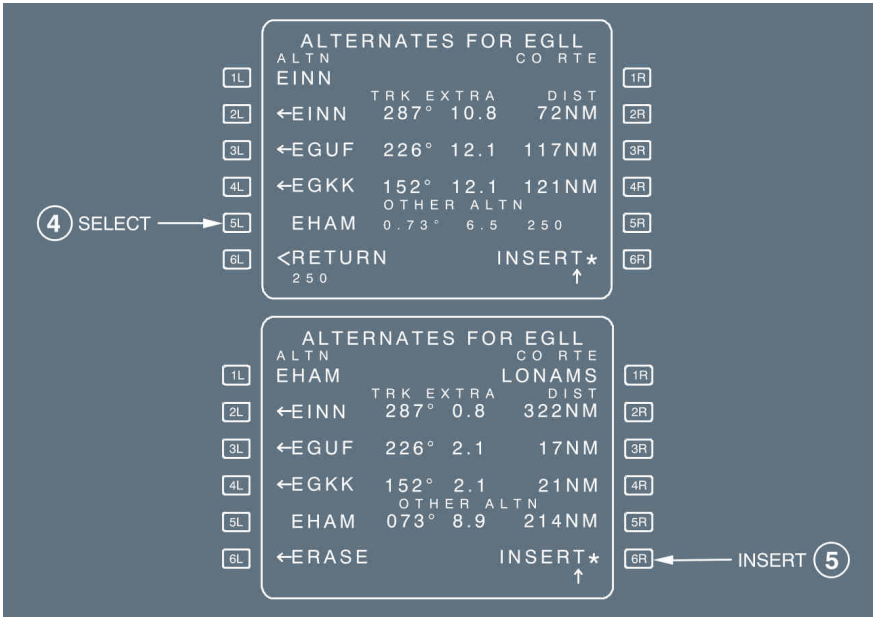
ENTER the airfield identifier in the brackets.

- *If the airfield is not in the database, the NEW RUNWAY page automatically appears.*
- *If the airfield is in the database and there is a company route (CO RTE) to it, the ROUTE SELECTION page automatically appears.*

SELECT the route, as appropriate, or RETURN to the ALTN page.
ENTER the distance in the brackets (if required). XTRA fuel and track (TRK) will appear.
SELECT the other alternate (OTHER ALTN) as a primary alternate if convenient. (EXTRA fuel and DIST revert to AIRWAY distance).
INSERT it, if you want to have it as a primary alternate.

<u>Note:</u>
- *The pilot can always overwrite the "OTHER ALTN". The new "OTHER ALTN" then replaces the previous one, which is lost.*
- *The pilot can select OTHER ALTN as a primary alternate (active flight plan), to replace any alternate on the initial list.*
- *If the pilot selects the other alternate as a primary alternate, and overwrites the OTHER ALTN field by entering a new airport, the first one will remain a primary alternate and the system will memorize a second OTHER ALTN.*





The pilot may enter a distance in the OTHER ALTN field. The system will compute the extra fuel and the track for this distance.

PREDICTED DATA FOR ALTERNATE

Data predictions are based on:

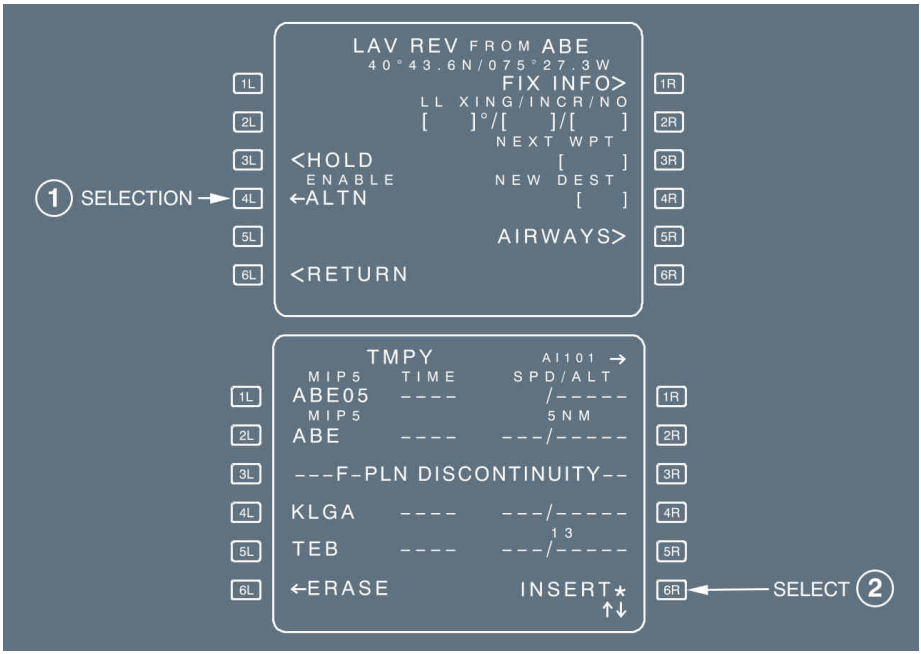
- Aircraft weight being equal to landing weight at primary destination.
- Flight at FL 100 if the alternate F-PLN length is less than 100 NM , at FL 220 if the alternate F-PLN length is comprised between 100 and 200 NM , or else at FL 310.
- Cost index 0.
- Constant wind (as entered in the alternate field of the DES WIND page).
- Constant delta ISA (equal to delta ISA at primary destination).
- The along flight path distance from the destination to the alternate airport. If the flight crew enters an ALTN fuel value, this value is the one taken into account.

ENABLE ALTN

Ident.: DSC-22_20-30-10-15-00000467.0009001 / 01 OCT 12

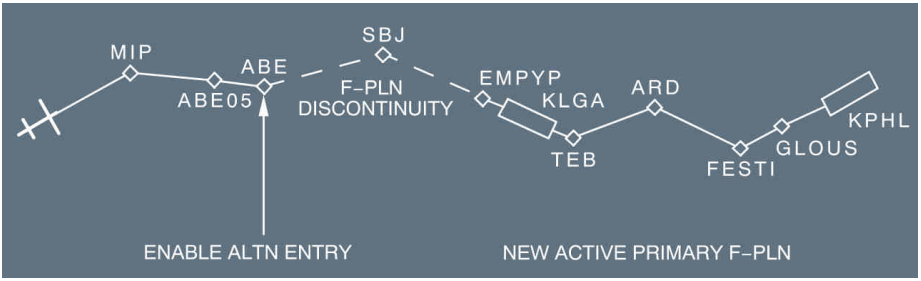
29 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This enables the pilot to initiate a diversion by entering the alternate flight plan just after the revision waypoint (with a discontinuity).
The pilot may have to adjust the resulting flight plan (use “direct to”, or add or suppress waypoints), depending on the circumstances.



TO ACTIVATE THE PRIMARY ALTN:

SELECT a LAT REV at the “TO” waypoint (or at another suitable waypoint).
PRESS the ENABLE ALTN key.
INSERT the temporary flight plan.
ENTER an appropriate waypoint in DIRECT TO and adjust the flight plan.
ADJUST the cost index on the PERF page and the defaulted cruise flight level (CRZ FL) on the PROG page, as required.



When ENABLE ALT is pressed at ABE, a flight plan discontinuity is created from ABE down to destination and the alternate route is linked to the active flight plan.

DIR KEY (DIRECT-TO-FUNCTION)

Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063

Ident.: DSC-22_20-30-10-15-D-00007243.0001001 / 30 MAR 18

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GENERAL

The pilot uses the “Direct To” function to define a direct leg from the present position to any waypoint on the active flight plan or to any waypoint.
The designated waypoint may be entered by its identifier (if it is stored in the database) or by a latitude/longitude, place/bearing/distance, or a place-bearing/place-bearing.

Note: *1. If the autopilot or flight director is in the heading/track or localizer mode, the DIR TO function engages the NAV mode.*
2. A lateral revision of the flight plan obtained with a DIR TO may also affect the vertical profile of the flight plan.

Three functions are available through the DIR TO key:

- The DIR TO defines a direct leg from the present position to a specified waypoint.
  NAV mode engages simultaneously to the DIR TO selection.
  When the pilot uses DIR TO, the present position (PPOS) becomes the “FROM” waypoint and the active flight plan shows it as the T-P (turn point).
- The DIR TO/ABEAM function, defines the abeam waypoints along the direct leg. These waypoints are the projection on the direct leg of the initial F-PLN waypoints located between the aircraft position and the specified waypoint.
  NAV mode engages simultaneously to the DIR TO/ABEAM selection.
- The DIR TO/INTCPT function allows the definition of a specified RADIAL INBOUND or OUTBOUND at an inserted waypoint. The current aircraft track is used to compute the INTCPT point with the specified radial.
  NAV mode is armed simultaneously to the DIR TO/INTCPT selection.

The ND displays the DIR TO leg as a temporary flight plan leg between current aircraft position and specified waypoint. In case of a DIR TO/INTCPT, the leg is not displayed when the angle between the current aircraft track and the intercept radial exceeds 160 °.

Ident.: DSC-22_20-30-10-15-D-00007216.0001001 / 14 MAY 12

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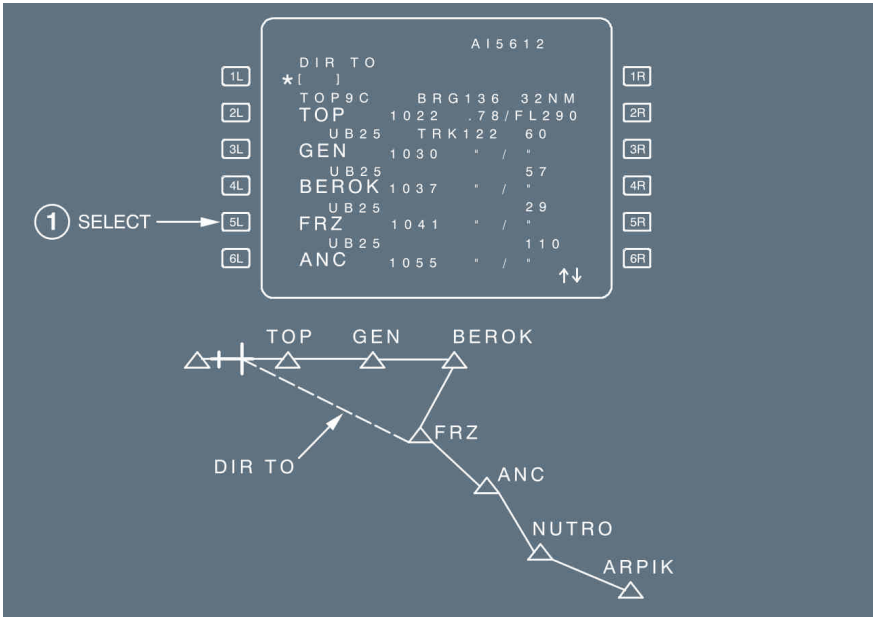
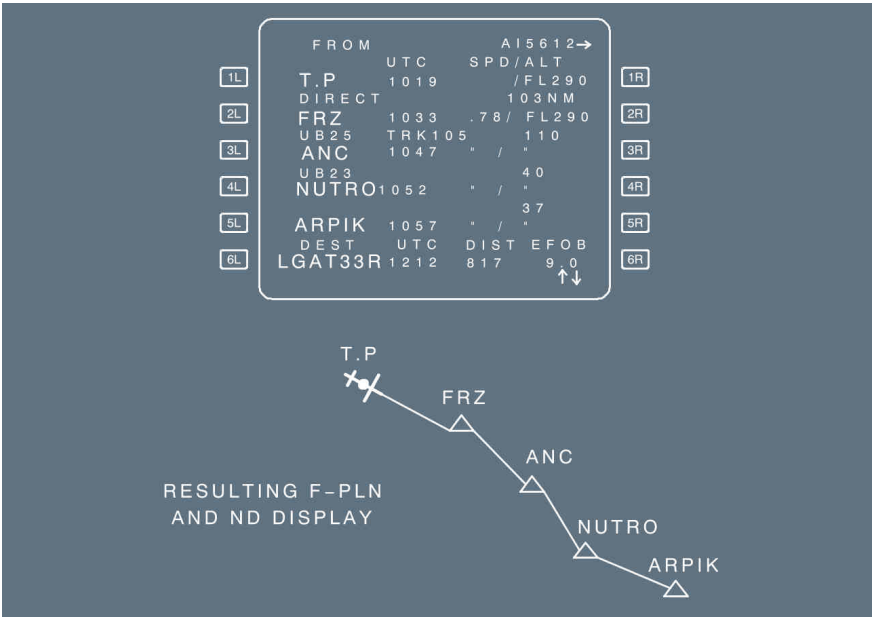
PROCEDURE FOR DIR TO WAYPOINT

CASE 1. THE “TO” WAYPOINT IS IN THE FLIGHT PLAN

Example : DIR TO FRZ

PRESS the DIR key on the MCDU.
PRESS the line select key next to “FRZ”.

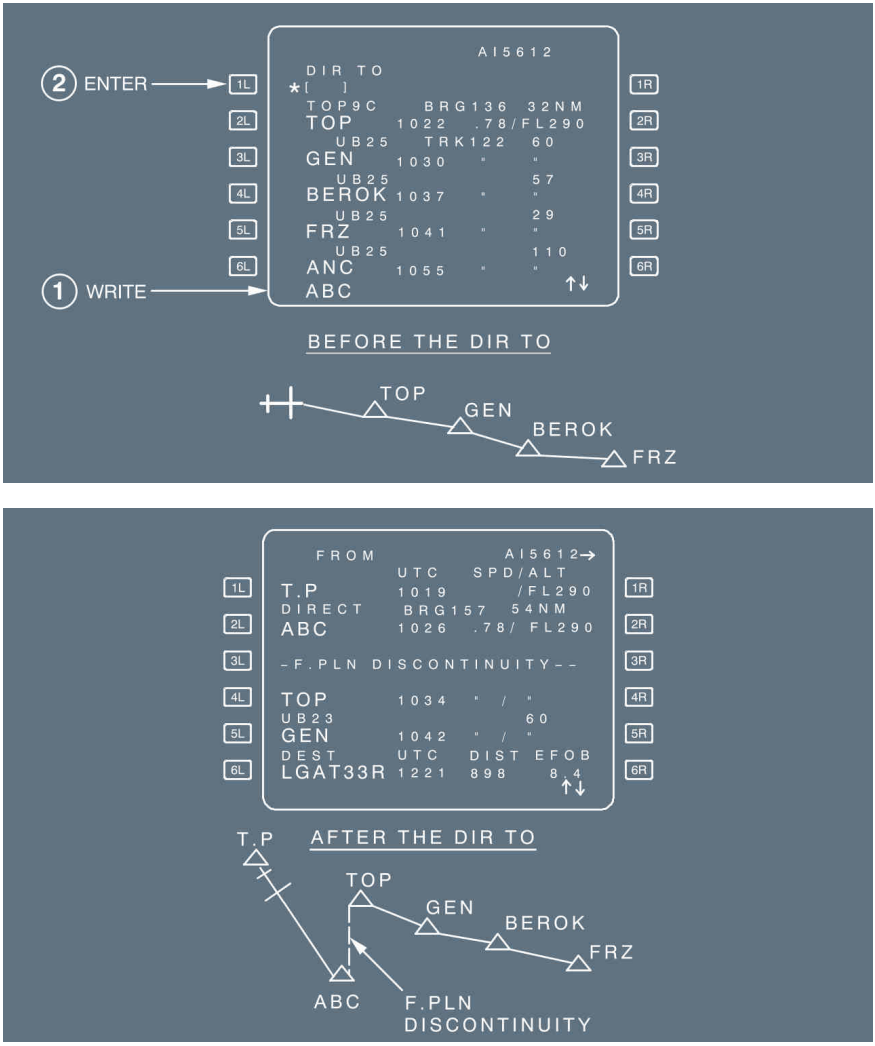

AI5612
DIR TO
*[ ]
TOP9C BRG136 32NM
TOP 1022 .78/FL290
UB25 TRK122 60
GEN 1030 " / "
UB25 57
BEROK 1037 " / "
UB25 29
FRZ 1041 " / "
UB25 110
ANC 1055 " / "
1L
2L
3L
4L
5L
6L
1R
2R
3R
4R
5R
6R
1 SELECT
TOP
GEN
BEROK
FRZ
DIR TO
ANC
NUTRO
ARPIK



CASE 2. THE "TO" WAYPOINT DOES NOT BELONG TO THE FLIGHT PLAN

Example : Direct to ABC (ABC being an ident, LL or PBD or PBX (Place/Bearing-Place/Bearing)

PRESS the DIR key.
WRITE the waypoint identifier (e.g. ABC) into the scratchpad.
PRESS [1 L] to enter "ABC" in the "DIR TO" field.

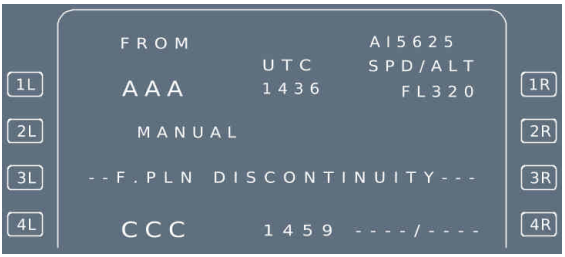


Clear the discontinuity and the waypoints that are not included in the new flight plan.

32

PARTICULAR CASES FOR USE OF DIR TO

- If the pilot is flying a manual leg (part of a SID or STAR), the flight plan page displays “F-PLN DISCONTINUITY”, preceded by “MANUAL” (see below).
  These legs are specific heading or track legs flown with no defined end waypoint.



- When the pilot encounters a flight plan discontinuity, or if a major reset occurs, the flight plan page displays “PPOS - F-PLAN DISCONTINUITY”, and the pilot looses managed guidance in both the lateral and vertical plans.
  The autopilot or flight director reverts to the basic HDG V/S (or TRK FPA) modes. Predictions remain available and are based on the assumption that the aircraft will fly a direct leg from its present position to the next waypoint.

- **In both of these cases, the only way to get back to a standard flight plan is to perform a “DIR TO” to a designated waypoint.**
- Following a DIR TO, the message “MAP PARTLY DISPLAYED” may appear on the NDs, if the new flight plan includes a very long leg (*Refer to DSC-31-45 Flags and Messages Displayed on ND*). When this message comes up, enter an intermediate waypoint to shorten the leg.

Note: During cruise, the DIR TO function is not available as long as uplink wind data, received through ACARS , is not inserted or cancelled on the CRUISE WIND page.

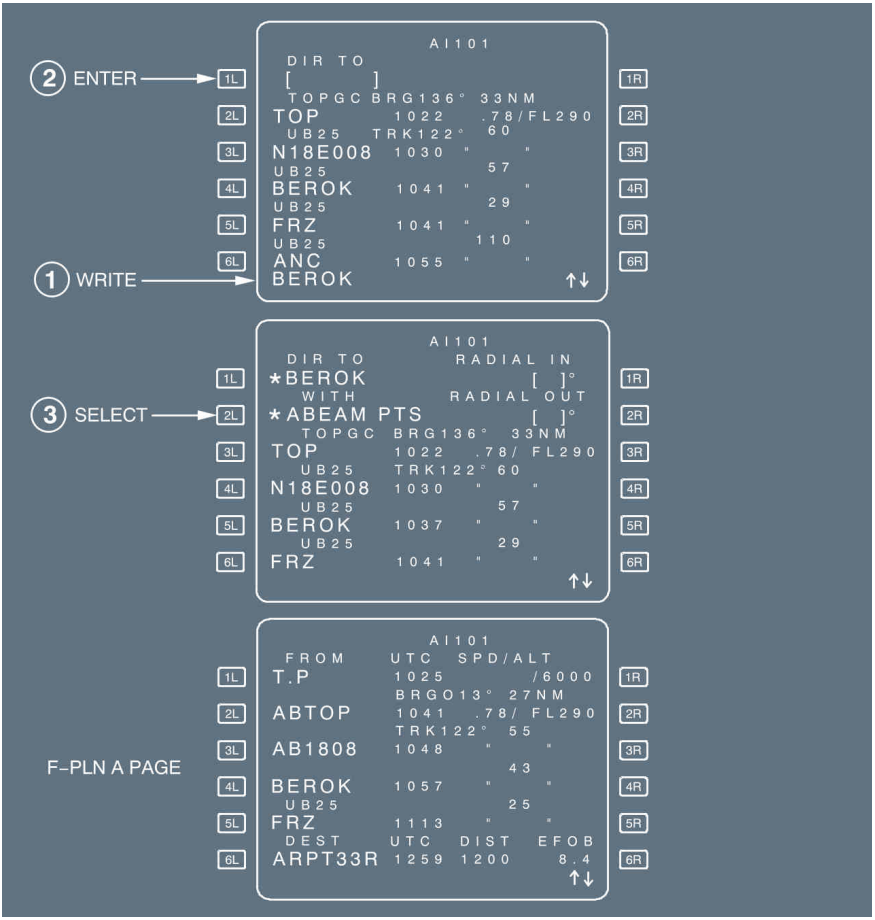
33

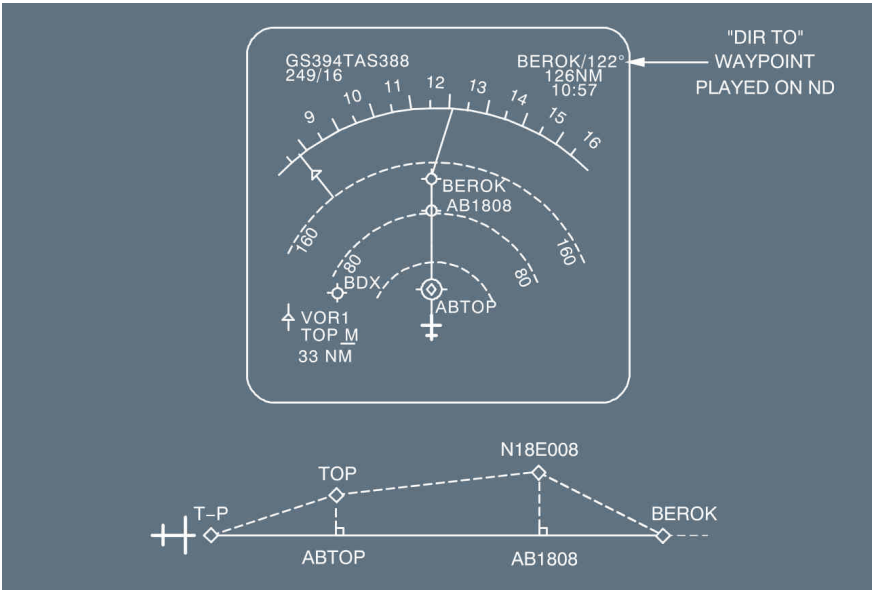
PROCEDURE FOR DIR TO/ABEAM

Example : DIR TO/ABEAM BEROK

PRESS the DIR on the MCDU.
WRITE the waypoint identifier into the scratchpad (Example : BEROK).
PRESS [1 L] to enter the waypoint in the DIR TO field.
SELECT the ABEAM PTS function.

The display reverts to F-PLN A page.





Note: 1. *If, between two waypoints projected on the direct leg, there was a discontinuity in the original flight plan, this discontinuity disappears between the corresponding abeam points on the direct leg.*

2. . *Abeam waypoints computed from latitude/longitude-type waypoints are renamed by the system as "AB XXXXX", where "xxxxx" is an abbreviation in 5 characters, of the latitude and longitude of the initial waypoints.*

Ident.: DSC-22_20-30-10-15-D-00007221.0001001 / 14 MAY 12

34

PROCEDURE FOR DIR TO/INTERCEPT

PRESS the DIR key.
WRITE the waypoint identifier into the scratchpad.
PRESS [1L] to enter the waypoint in the DIR TO field.

In the [1R] and [2R] fields, the MCDU displays the functions radial inbound and radial outbound from the waypoint.
If the waypoint belongs to the flight plan, the system displays the flight plan track as the default inbound radial. The crew can modify it.

WRITE the required in or out radial into the scratchpad.
PRESS [1R] or [2R] to enter the radial in the required field.

The ND displays the entered radial as an amber dotted line : The pilot can still modify it.

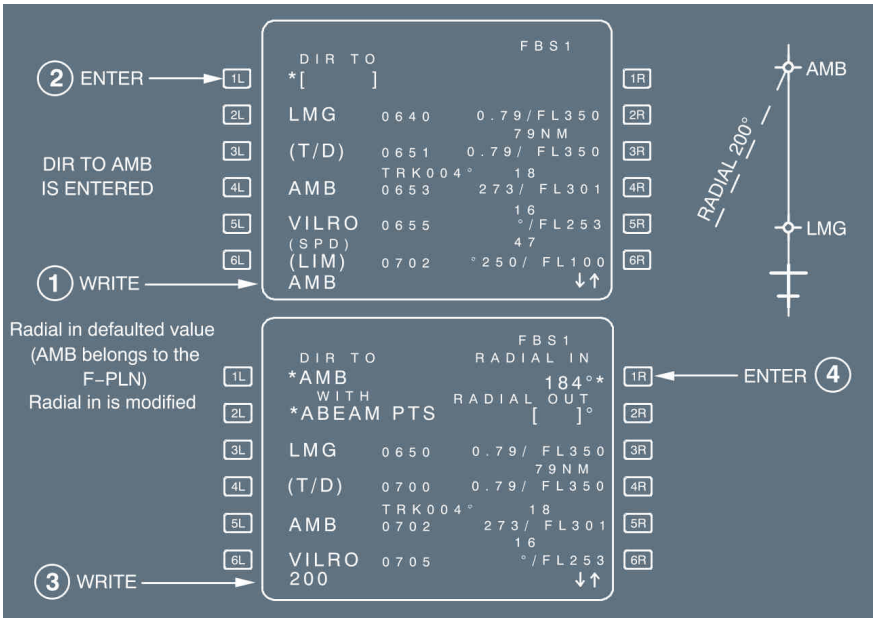
PRESS [1R] or [2R] to confirm the DIR TO/INTERCEPT selection.

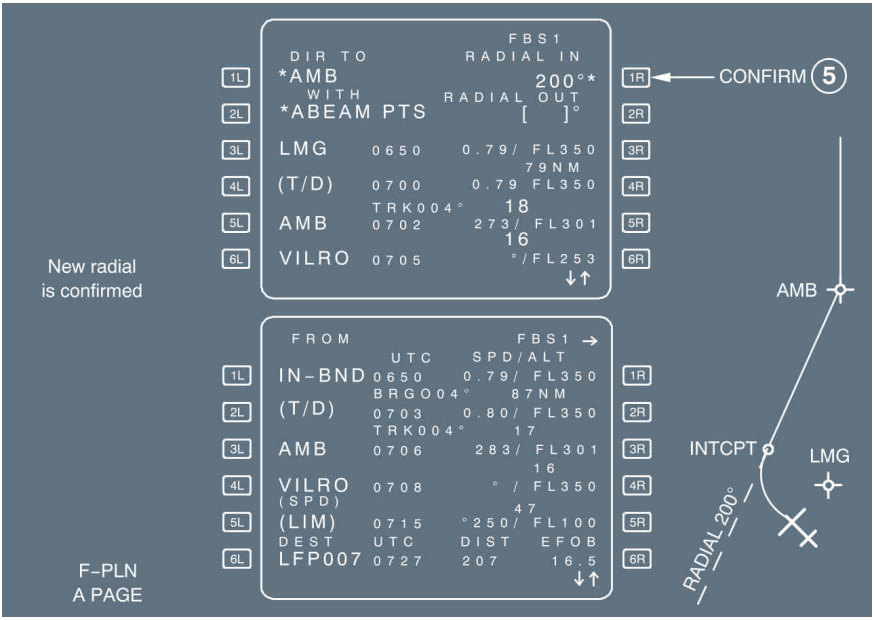
The display reverts to the F-PLN A page, the system arms the NAV mode, and engages the HDG mode. The FROM waypoint is the aircraft position at the time of the DIR TO/INTERCEPT selection. The MCDU indicates it as INBND or OUTBND.

Note:
1. *If the waypoint does not belong to the flight plan, the system strings the DIR TO/INTERCEPT leg to this waypoint, and inserts a discontinuity following the waypoint.*
2. *A DIR TO/INTERCEPT cancels any active offset.*
3. *If the current AP/FD lateral mode is HDG or TRK, NAV becomes armed.*
   If the NAV mode was engaged, NAV becomes armed. FCU HDG or TRK must be used to guide the aircraft.
   The ND displays an intercept point, if the intercept angle is less than 120 °. The system constantly updates it to reflect the current aircraft track and position with respect to the intercept radial. The NAV mode engages when reaching the intercept point.

EXAMPLE: RADIAL INBND

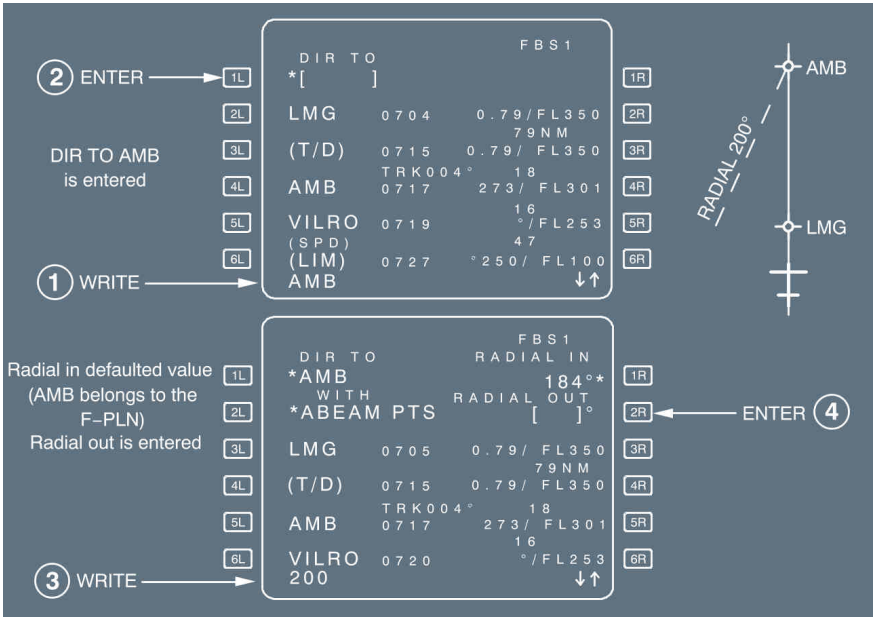
DIR TO AMB - RADIAL 200 ° INBOUND

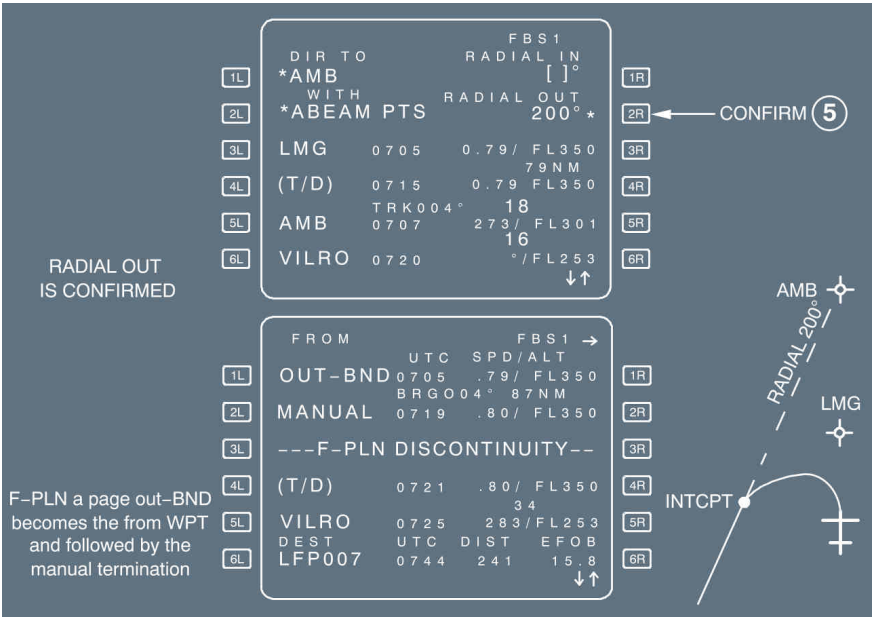




EXAMPLE: RADIAL OUTBND

DIR TO AMB - RADIAL 200 ° OUTBOUND


2 ENTER
1L
DIR TO AMB
is entered
1 WRITE
DIR TO
*[ ]
FBS1
LMG 0704 0.79/FL350 79NM
(T/D) 0715 0.79/ FL350
TRK004° 18
AMB 0717 273/ FL301 16
VILRO 0719 °/FL253 47
(SPD)
(LIM) 0727 °250/ FL100
AMB
1R
2R
3R
4R
5R
6R
AMB
RADIAL 200°
LMG
Radial in defaulted value
(AMB belongs to the
F–PLN)
Radial out is entered
3 WRITE
DIR TO RADIAL IN
AMB 184°
WITH RADIAL OUT
*ABEAM PTS [ ]°
ENTER 4
LMG 0705 0.79/ FL350 79NM
(T/D) 0715 0.79/ FL350
TRK004° 18
AMB 0717 273/ FL301 16
VILRO 0720 °/FL253
200



OVFY (OVERFLY) KEY

Ident.: DSC-22_20-30-10-15-00000469.0001001 / 01 OCT 12

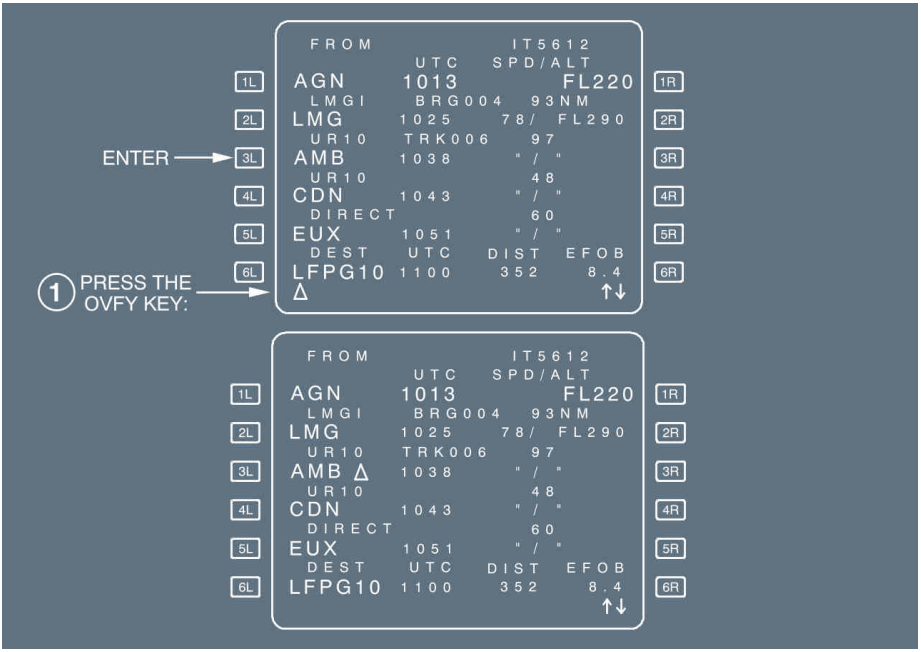
35 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The overfly key programs the Flight Management Guidance Computer to fly over a specific waypoint or NAVAID. To use it:

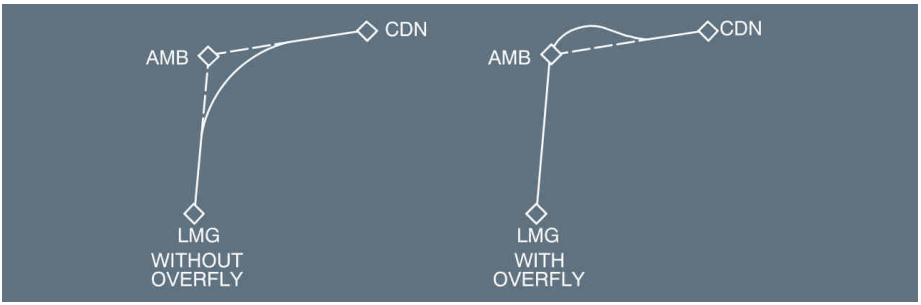
PRESS the “OVFY” key.

A “Δ” appears in the scratchpad.

INSERT it by pressing the key adjacent to the waypoint to be overflown. [3L] in this example.



The pilot cannot cancel the overfly program. If you do not want to fly over the point you have entered, use DIR TO (direct to) the next waypoint or engage the heading mode, whichever is more suitable.



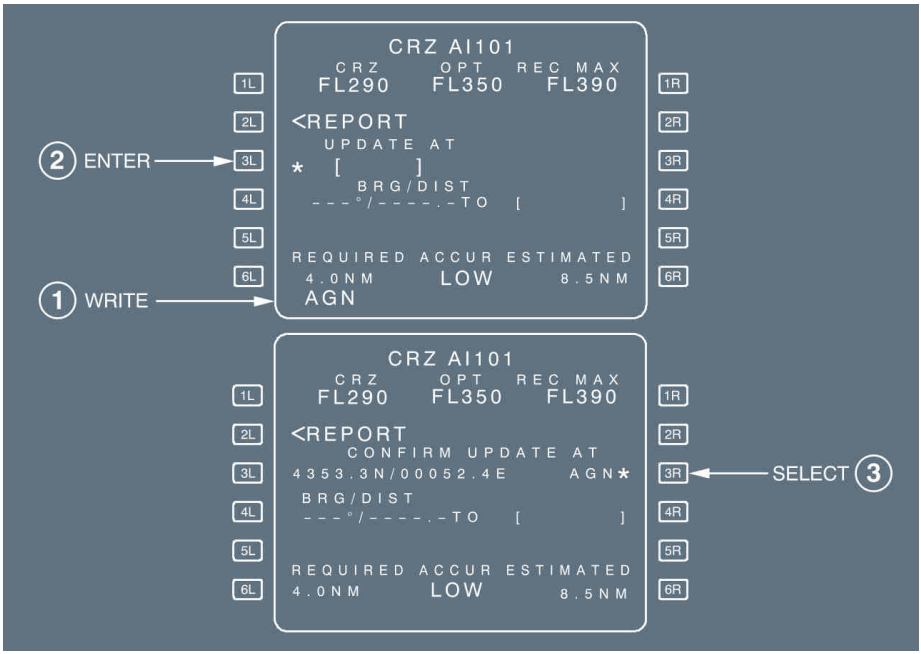
The overfly function allows you to fly over a specific waypoint, and return the aircraft to the great circle track.

"UPDATE AT"

Ident.: DSC-22_20-30-10-15-00000470.0001001 / 01 OCT 12

36 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

To manually change the position computed by the FMGC (FM position and bias), the pilot uses "UPDATE AT" on the progress page.
Use this facility with extreme caution: It is apt to be inaccurate, because it relies on the pilot's estimation of when a designated position has been reached.



WRITE the ident for the NAVAID (or waypoint or airport), or the coordinates, or the PBD or PBX (Place/Bearing-Place/Bearing) at which the update is intended.
PRESS [3L] to enter the ident in the "UPDATE AT" field. The coordinates of the point, along with its identifier (or "ENTRY", if the identifier is not in the database), appear in that field.
PRESS [3R] to activate the update, when you estimate that you are at the position.

Note: The system reinitializes the Estimated Position Error computation when a position update is performed. This may lead to the appearance of a "NAV ACCUR DOWNGRAD" or "NAV ACCUR UPGRAD" message.

If the “UPDATE AT” does not properly take effect, it corrupts the FM position.

- In an area with good radio NAVAID coverage:
  - If the update error is small, subsequent radio position updating will correct the FM position.
  - If the update error is large, the system will reject any radio updating because its internal “reasonableness test” will reject the various NAVAIDs. Thus, the FM position will only be the MIX IRS position corrected by the position bias, determined at the time of the update, and the error will be maintained.
- In an area without proper NAVAID coverage, radio position updating will not be available and the FM position, if incorrect, will remain incorrect until a new manual update is performed.
- Therefore, the pilot should only use “UPDATE AT” in case of a major position problem, such as:
  - On the ground, no flight plan appears on the navigation display and ARC/ROSE NAV mode is selected.
  - A “CHECK IRS/FM POSITION” message appears on the MCDU.
  - A “FM/IR POSITION DISAGREE” message appears on the ECAM.

When GPS PRIMARY is operative, the FM position will always converge towards the GPS position at a rate depending on the aircraft altitude. Therefore, when GPS PRIMARY is operative, an inaccurate “update at” will have a temporary effect on the FM position.

Intentionally left blank

FMS2 Thales

GENERAL

Ident.: DSC-22_20-30-10-18-00005068.0004001 / 17 SEP 13
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04384, 04399-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The lateral revision function enables the pilot to create or modify the following parts of the flight plan :

- Airway
- Waypoint
- New destination
- Holding pattern
- Offset
- Alternate
- Fix information
  Each time the pilot activates one of the above-listed revisions, he accesses a temporary flight plan that enables the modification to be checked before inserting it in the active flight plan. The crew selects these functions by pressing the left keys on F-PLN A or B.
- Direct to and overfly functions are accessed via the MCDU keys. No temporary flight plan is created with these functions.
- “Position Update at” capability is a specific function that manually updates the FM position. It does not use a temporary flight plan, but the pilot must confirm its insertion before it is activated.

GENERAL

Ident.: DSC-22_20-30-10-18-00005068.0002001 / 24 JAN 11
Applicable to: MSN 04393-04397

The lateral revision function enables the pilot to create or modify the following parts of the flight plan :

- Airway
- Waypoint
- New destination
- Holding pattern
- Offset
- Alternate
- Fix information
  Each time the pilot activates one of the above-listed revisions, he accesses a temporary flight plan that enables the modification to be checked before inserting it in the active flight plan. The crew selects these functions by pressing the left keys on F-PLN A or B.

- Direct to and overfly functions are accessed via the MCDU keys. No temporary flight plan is created with these functions.
- “Update at” capability is a specific function that manually updates the FM position. It does not use a temporary flight plan, but the pilot must confirm its insertion before it is activated.

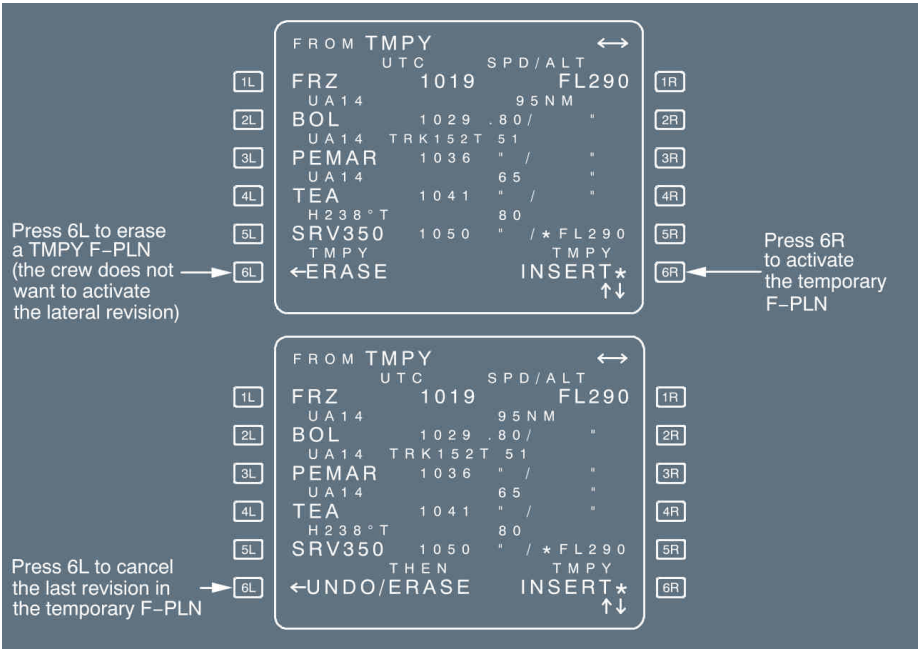
TEMPORARY F-PLN (TMPY)

Ident.: DSC-22_20-30-10-18-00000472.0002001 / 23 JUN 15
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

A temporary F-PLN is created whenever a revision is performed on either of the following pages:
- The F-PLN A or B pages, or
- The LAT REV page, or
- The VERT REV page.

The flight crew can perform several revisions in the same temporary flight plan before inserting it.
The TMPY F-PLN is a copy of the active F-PLN, but is corrected by the lateral or vertical revisions in progress.
The UNDO function is available when there is more than one pending revision in the temporary F-PLN. It can only be used once by the crew to cancel the last revision in the temporary F-PLN.
The temporary F-PLN created subsequently to a DIR TO function can only be modified once.
The aircraft continues to follow the active F-PLN, until the temporary revision is inserted.
The temporary F-PLN is continually sequenced as the active F-PLN, until it diverges from the active F-PLN.
The revision data appears in yellow (except Missed approach and Alternate parts that are displayed in blue) on both MCDUs and NDs.

- Lateral and vertical revisions can be made on a temporary F-PLN
- Only one temporary F-PLN may be accessed at a time
- A TMPY F-PLN cannot be created when a DIR TO is already in process. (The “DIR TO IN PROCESS” message appears on the MCDU).
- A TMPY F-PLN changes the title of the flight plan pages. (TMPY appears in all titles)
- The predictions are continually updated for a temporary flight plan.



Once inserted temporary data becomes active and is displayed in green.
As soon as a TMPY F-PLN is created, "TMPY F-PLN and "TMPY INSERT" are displayed on most pages in [6L] and [6R] fields. "TMPY F-PLN" allows access to temporary flight plan page, and "TMPY INSERT" allows insertion of the TMPY F-PLN.
The temporary flight plan can be inserted from the TMPY F-PLN page or from some other MCDU pages through the TMPY INSERT prompt.
Prior to insertion the flight crew should check the temporary flight plan. This check can be performed through:

- A simple check of parameters entered on the MCDU (e.g. for altitude or speed constraints entries)
- A visual check of the TMPY F-PLN on ND (e.g. for holds and offsets insertions)
- An access to the TMPY F-PLN page and a precise review of all this flight plan (e.g. for departure or arrival entries).

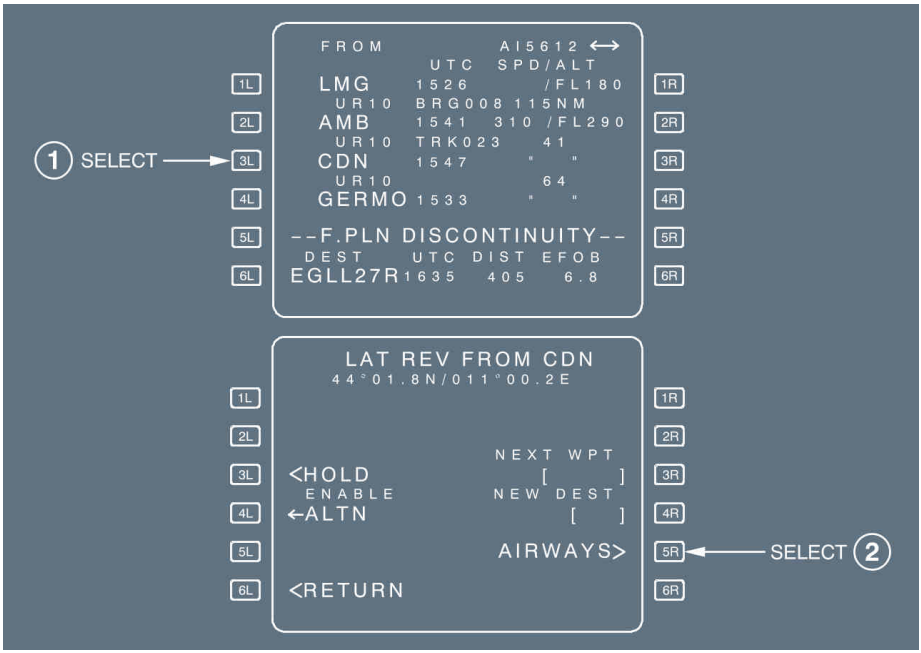
It is up to the flight crew to determine which check is necessary depending on the complexity of the revision and the moment when this revision is performed.

INSERTING AN AIRWAY WITH "VIA"

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Ident.: DSC-22_20-30-10-18-A-00000473.0003001 / 01 OCT 12

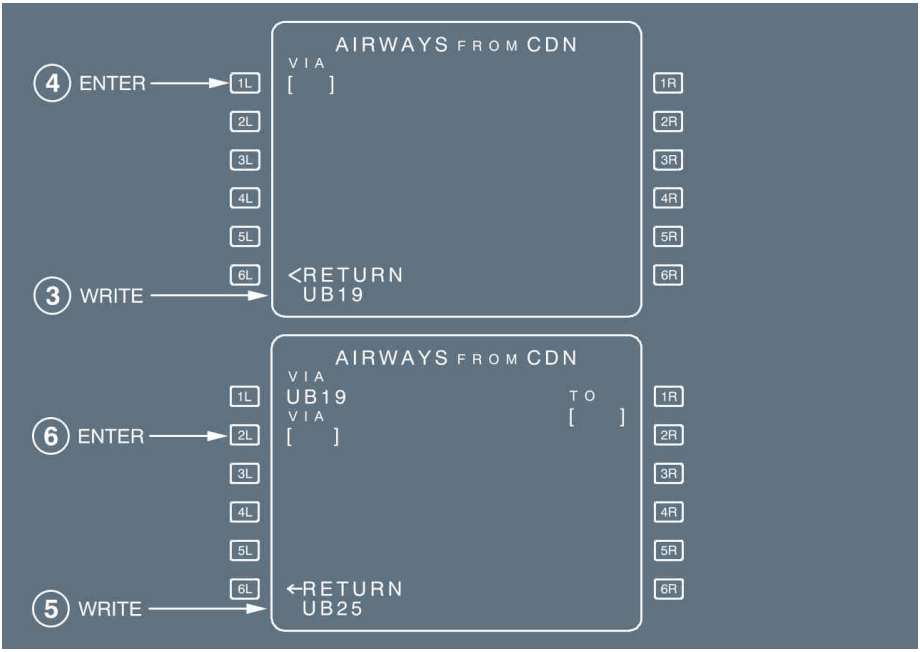
In the active F-PLN, the crew can insert up to 5 successive airway segments, going from a revised waypoint or ending at a given waypoint of the flight plan.



SELECT the revised waypoint (Here: CDN).
PRESS [5R] to select the AIRWAYS prompt.

Ident.: DSC-22_20-30-10-18-A-00009501.0003001 / 01 OCT 12

For example, from CDN - Airways UB19 - Airways UB25 - Ending point AAA.

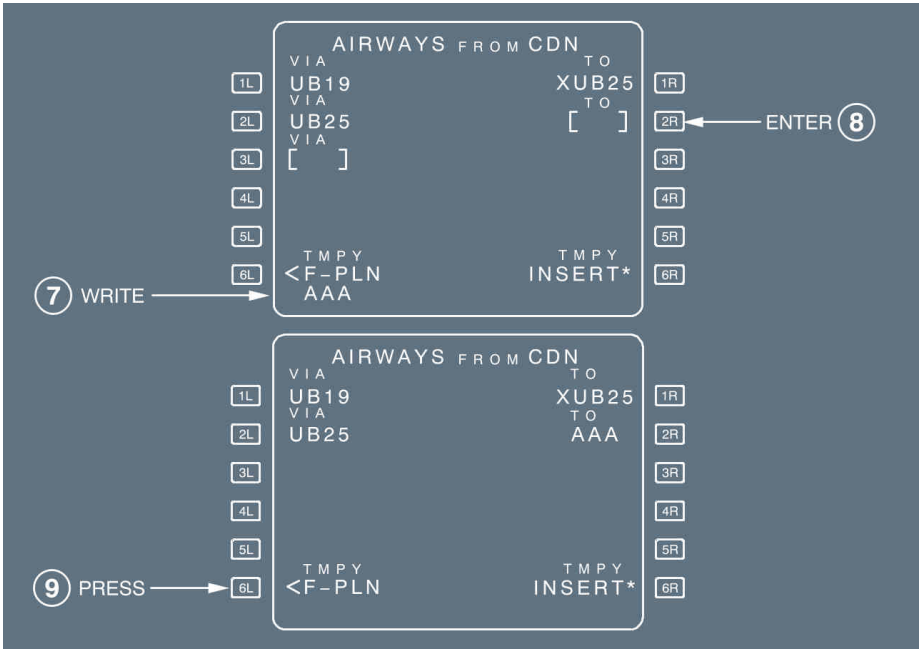


WRITE the first airway ident in the scratchpad (here: "UB19").
PRESS [1L] to insert it into the VIA field.
WRITE the second airway ident in the scratchpad (here: "UB25").
PRESS [2L] to insert it into the VIA field.

The system automatically determines the first downpath intersection point between the two airways.

- If the airways have a common waypoint, the system selects it as the ending point of the first airway.
- If they have no common waypoint, but have a single intersection, the system creates this intersection as an FM-computed point and displays “X”, followed by the second airway’s ident (here XUB25).
- If they have no common waypoint or intersection, the system displays NO INTERSECTION FOUND in the scratchpad.

When the required airways (up to 5) have been entered, the crew enters the ending point of the last selected airway :



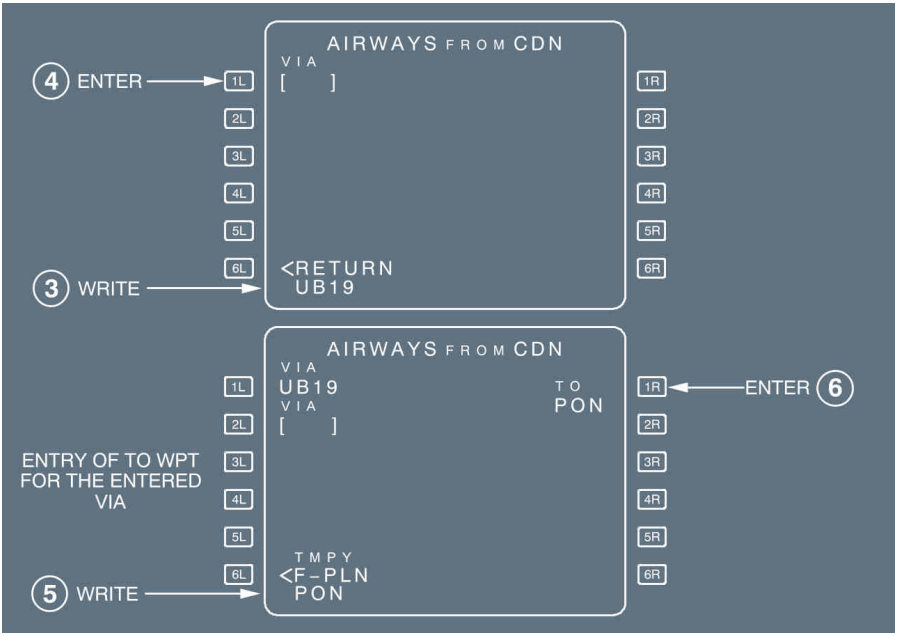
CHECK if autoselection of the intersection point is correct

If not, WRITE the ending waypoint of first airway in the scratchpad and PRESS [2R] to insert it.

WRITE the ending waypoint in the scratchpad (here: "AAA").
PRESS [2R] to insert the ending waypoint into the TO field.
CHECK and INSERT the TMPY F-PLN or continue with next revision.

Ident.: DSC-22_20-30-10-18-A-00009502.0003001 / 01 OCT 12

TO INSERT ONE AIRWAY SEGMENT TO AN ENDING WAYPOINT



WRITE the airway ident in the scratchpad (here UB19).
PRESS [1L] to insert it into the VIA field.
WRITE the ending waypoint in the scratchpad (here PON).
PRESS [1R] to insert it into the TO field.

Note:
- *If the revise waypoint, or the ending waypoint, does not belong to the entered airway, the system displays AWY/WPT MISMATCH in the scratchpad.*
- *If two waypoints with the same ident belong to the same airway, the DUPLICATE NAMES page will not be called up, and the system selects the first one in the database.*

Ident.: DSC-22_20-30-10-18-A-00009503.0003001 / 24 JAN 11

FLIGHT PLAN INSERTION

The flight crew uses the "< TMPY F-PLN" prompt to access and review the TMPY F-PLN.
When the TMPY F-PLN has been checked, and if necessary modified, the crew inserts it.

CHECK and INSERT the TMPY F-PLN, or continue with the next revision

INSERTING A WAYPOINT

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Ident.: DSC-22_20-30-10-18-B-00000474.0007001 / 24 JAN 11

GENERAL

Waypoints can be inserted by means of a lateral revision at the “NEXT WAYPOINT”. This process creates a temporary flight plan. This method enables the temporary flight plan to be checked before it is inserted.

Ident.: DSC-22_20-30-10-18-B-00009504.0001001 / 24 JAN 11

WAYPOINT IDENTIFICATION

The pilot can identify a waypoint by :

- Its identifier (if it is in the navigation database).
- A Latitude/Longitude (LL).
- A Place/Bearing/Distance (PBD). The waypoint is defined by its bearing and distance from a place.
- A Place-Bearing/Place-Bearing (PBX). The waypoint is defined by the interception of 2 radials from 2 places.
- A Place/Distance (PD). The waypoint is defined by a distance from a place, along the F-PLN.

Note: *If a slash or a dash is not entered properly, the MCDU displays a “FORMAT ERROR” message.*

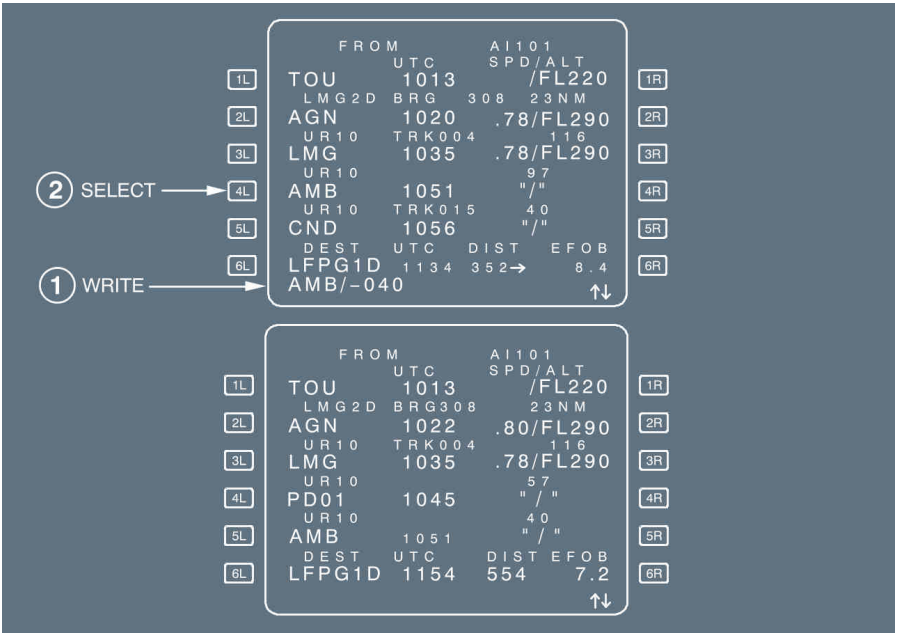
When the Flight Management Guidance System receives a pilot defined waypoint that is not in the database, it identifies it as LLxx, or PBD xx, or PBX xx, or PD xx (xx is a two-digit number between 01 and 20) and stores it in the stored waypoints file of the database.

Note: *When NAV mode is engaged, the crew cannot modify the "TO" waypoint (active leg) using the waypoint insertion function. If the crew wants to modify it, the DIR TO function will be used.*

Ident.: DSC-22_20-30-10-18-B-00009505.0001001 / 14 MAY 12

ALONG TRACK OFFSET WAYPOINT INSERTION

On the F-PLN or STEP ALTS page, the pilot can enter an along track offset waypoint, defined as a place/distance waypoint. This results in the creation of a temporary F-PLN. The function has no effect on the active F-PLN until the temporary F-PLN is inserted.



WRITE the waypoint identifier and the distance from this place.

According to the sign of the distance, the crew may define an along track waypoint before or after the revised place (Example : AMB/-040).

PRESS the appropriate key adjacent to the place identifier. The system automatically positions the waypoint in the flight plan.

This operation does not create any discontinuity.

The system does not accept an along track waypoint entered at the FROM waypoint.

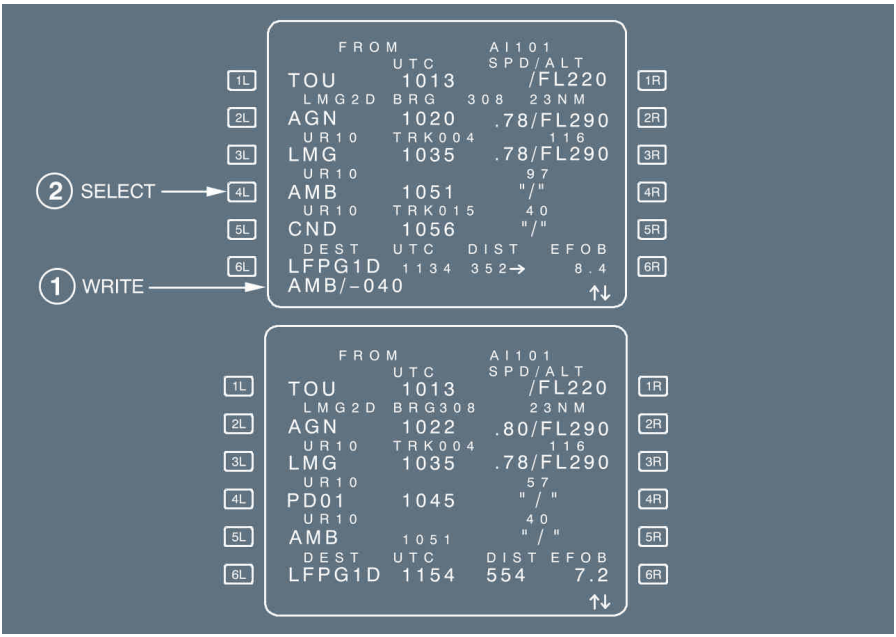
PRESS the [6L] key to access the temporary F-PLN. Revise as necessary.

PRESS the [6R] key to insert the temporary into the active F-PLN.

Ident.: DSC-22_20-30-10-18-B-00009507.0001001 / 14 MAY 12

WAYPOINT INSERTED BY USING THE "NEXT WAYPOINT"

Use of the "NEXT WAYPOINT" function results in the creation of a temporary F-PLN. It has no effect on the active F-PLN, until the temporary F-PLN is inserted.



SELECT the lateral revision (LAT REV) function at an appropriate waypoint.
WRITE the waypoint identifier, or LAT/LONG, or Place/Bearing/Distance, or Place-Bearing in the scratchpad.
ENTER it in the brackets under the NEXT WPT (next waypoint). A temporary F-PLN is automatically displayed.
CLEAR the F-PLN discontinuity, as appropriate, in the temporary F-PLN. Revise as necessary.
PRESS the [6R] key to insert the temporary into the active F-PLN.

FIX INFO

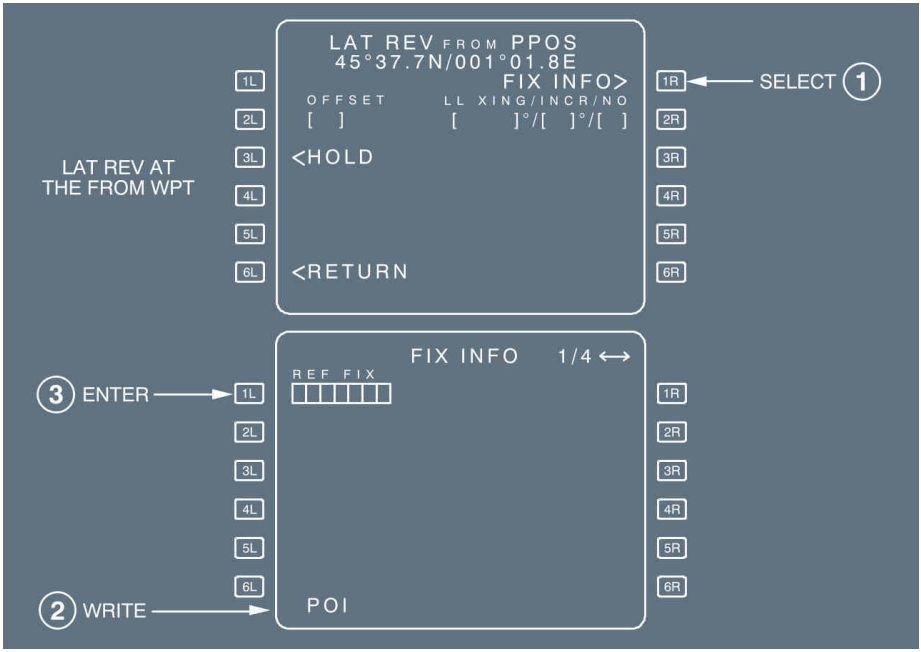
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

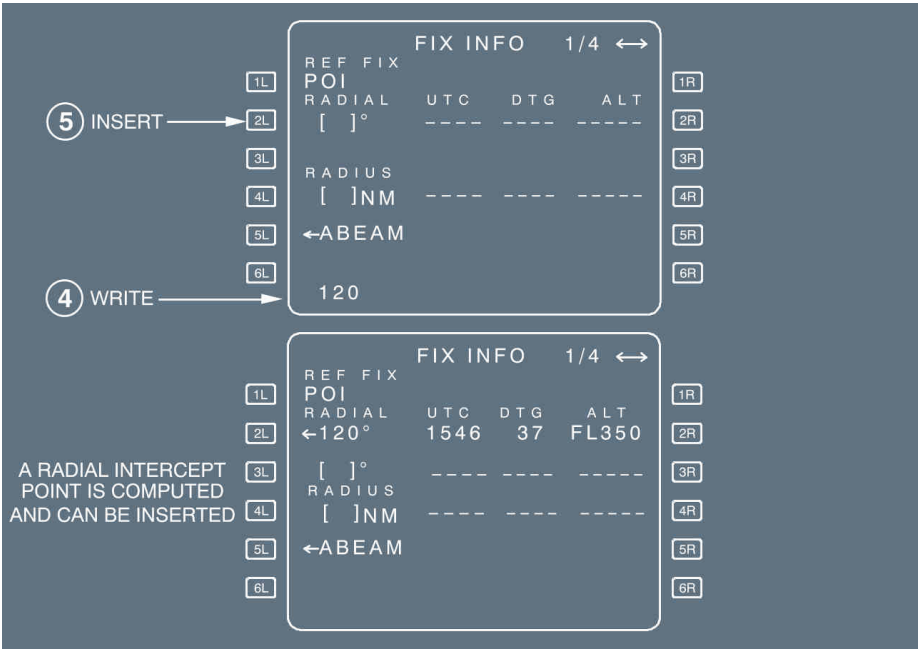
Ident.: DSC-22_20-30-10-18-H-00012787.0001001 / 24 JAN 11

When using the FIX INFO function, the flight crew defines waypoint intersections of the flight plan with radials, circle or abeam associated to a fix.
When the flight crew inserts the intersection points, the system automatically identifies these points, but does not store them in the navigation database.

Ident.: DSC-22_20-30-10-18-H-00012788.0001001 / 01 OCT 12

The flight crew accesses the radial intercept function from the LAT REV page at the origin, at the FROM waypoint, or at a waypoint.


LAT REV FROM PPOS
45°37.7N/001°01.8E
FIX INFO>
OFFSET
[ ]
LL XING/INCR/NO
[ ]°/[ ]°/[ ]
<HOLD
<RETURN
LAT REV AT
THE FROM WPT
SELECT 1
FIX INFO 1/4
REF FIX
3 ENTER
2 WRITE
POI
1L
2L
3L
4L
5L
6L
1R
2R
3R
4R
5R
6R

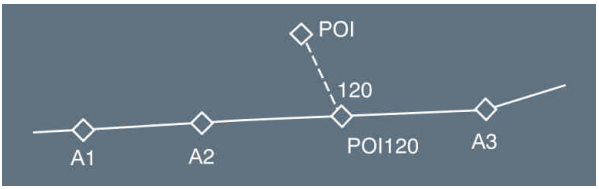


WRITE the reference fix identifier into the scratchpad (here POI), and ENTER it [1L].It may be any database or pilot-defined fix.
WRITE the radial in the scratchpad (here 120 °), and ENTER it [2L].

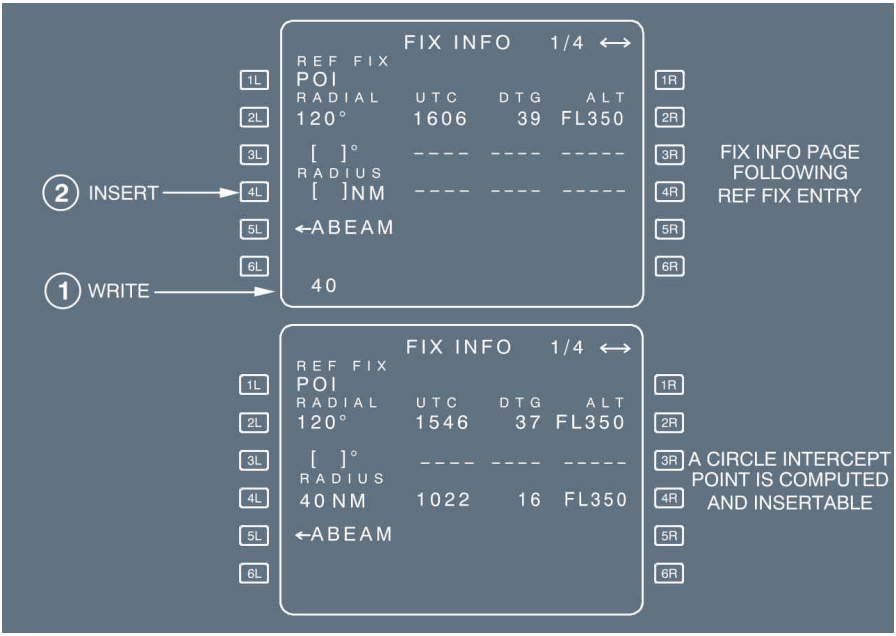
The defined radial appears as a blue dashed line on the ND.
If the radial line intersects the active flight plan, the system computes the time, the along path Distance (DIST), and the altitude at the intersection point.
Up to two radials can be entered.

SELECT the required radial to insert the associated waypoint into the flight plan, if needed:

The system automatically assigns its ident as the three first characters of the reference fix ident, followed by the radial. (Example: POI120). The blue dashed line disappears from the ND.



INSERTING A CIRCLE INTERCEPT WAYPOINT

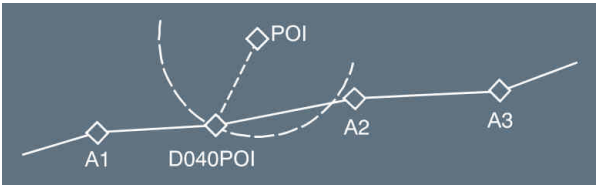


WRITE the reference fix identifier into the scratchpad (here POI), and ENTER it [1L].
WRITE the circle radius in the scratchpad (here 40 NM), and ENTER it [4L]:

The defined circle appears as a blue dashed circle on the ND. If the circle intersects the active flight plan, the system computes the time, along path distance and altitude at the first intersection point from the current aircraft position.

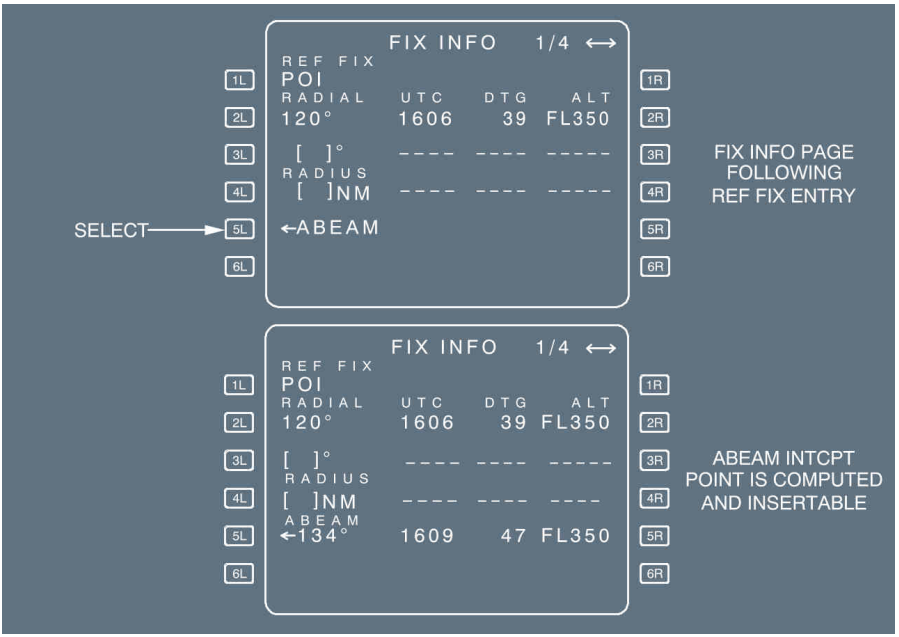
SELECT the required radius to insert the associated waypoint into the flight plan, if needed:

The system automatically assigns its ident as a D, followed by the radius, and followed by the three first characters of the reference fix ident. (Example: D040POI). The blue dashed circle disappears from the ND.



Ident.: DSC-22_20-30-10-18-H-00012790.0001001 / 01 OCT 12

INSERTING AN ABEAM INTERCEPT WAYPOINT

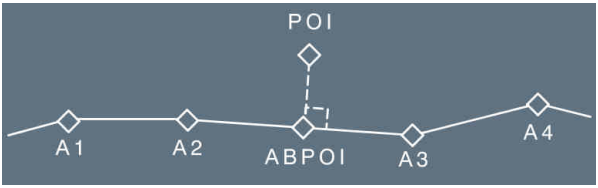


WRITE the reference fix identifier into the scratchpad (here POI), and ENTER it [1L].
SELECT the ABEAM prompt [5L]:

A blue dashed line from the REF FIX and perpendicular to the flight plan appears on the ND. The system computes the radial, time, along path distance, altitude and predictions related to the waypoint abeam the reference fix.

SELECT [5L] to insert the abeam intercept waypoint into the flight plan, if needed:

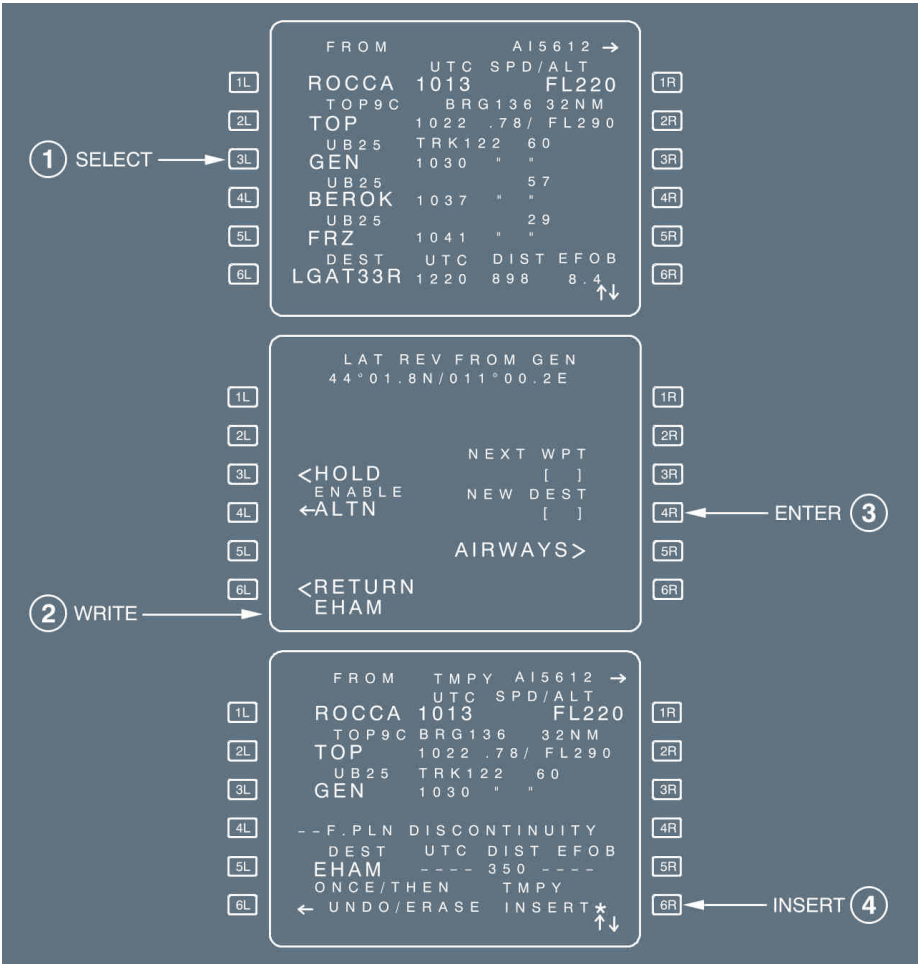
The system automatically assigns its identifier as AB, followed by the first five characters of the reference fix identifier (Example ABPOI). The blue dashed line disappears from the ND.



INSERTING A NEW DESTINATION

Ident.: DSC-22_20-30-10-18-00000475.0001001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The pilot may define a new destination, and insert it via the lateral revision page. This results in the creation of a temporary F-PLN. The function has no effect on the active F-PLN, until the temporary F-PLN is inserted. The pilot may then call up the new destination from any waypoint along the flight plan, except the FROM waypoint, the destination, and the missed-approach waypoint. When the new destination has been inserted, a flight plan discontinuity appears between the revision waypoint and the new destination. All waypoints beyond the revision waypoint (including the previous destination and associated missed approach) are deleted.



SELECT the lateral revision function at an appropriate waypoint.
WRITE the new destination in the scratchpad.
Enter it in the brackets under “NEW DEST”. A temporary F-PLN is automatically displayed.
CLEAR the F-PLN discontinuity in the temporary F-PLN. Revise as necessary.
PRESS the [6R] key to insert the temporary into the active F-PLN.

HOLDING PATTERN

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Ident.: DSC-22_20-30-10-18-C-00000476.0001001 / 24 JAN 11

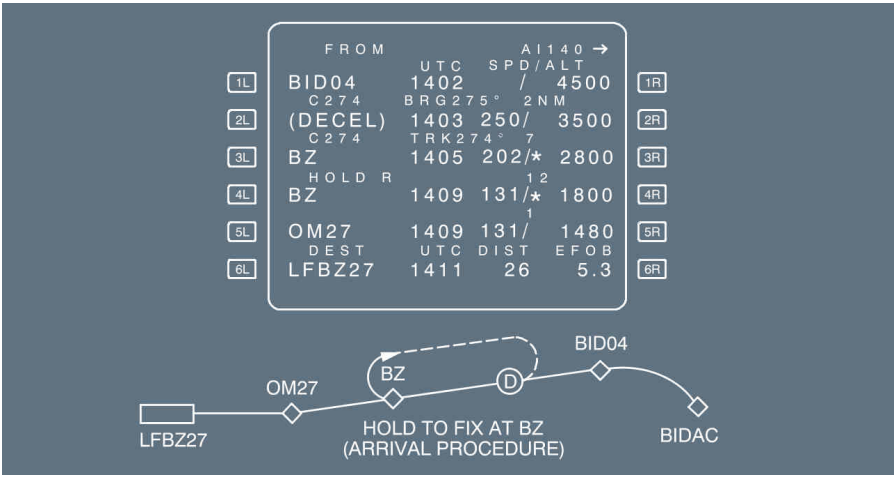
GENERAL

This section describes holding patterns, associated guidance and flight crew procedures. The Flight Management and Guidance Computer (FMGC) has three types of holding patterns that the pilot can use in a flight plan.

Ident.: DSC-22_20-30-10-18-C-00009509.0001001 / 01 OCT 12

HOLD TO FIX (HF)

The holding pattern is always part of an arrival or departure procedure. The aircraft flies it once, and then automatically exits the holding pattern at the fix. The predicted speed in the holding pattern is the lowest of the ICAO speed limit, max endurance speed, or any speed constraint. Guidance to the fix in the holding pattern is similar to that on any leg of a flight plan. The HF patterns are part of the navigation database and cannot be created by the crew.

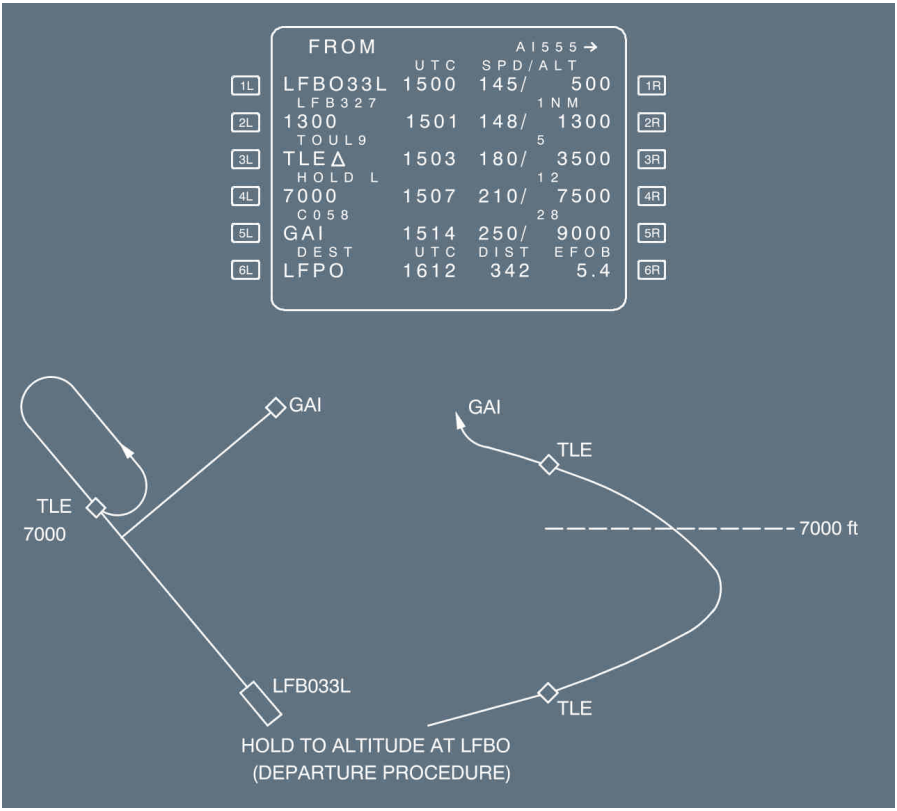


Ident.: DSC-22_20-30-10-18-C-00009513.0001001 / 19 DEC 12

HOLD TO ALTITUDE (HA)

The aircraft flies the hold until it reaches the specified altitude. Then, it automatically exits the hold at the fix.

The predicted speed for the holding pattern is the lowest of the ICAO speed limits, the max endurance speed, or any speed constraint.
The size of the holding pattern is a function of the predicted speed.
Guidance in a hold to altitude (HA) is similar to that for any leg of a flight plan.
The HAs are in the navigation database, as part of the arrival or departure procedures, and cannot be created by the crew.



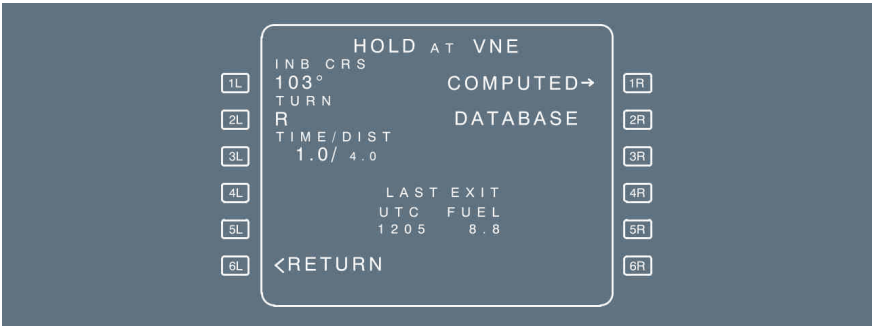
Ident.: DSC-22_20-30-10-18-C-00009514.0015001 / 01 OCT 12

HOLD WITH MANUAL TERMINATION (HM)

This type of holding pattern may be part of an arrival procedure, or the pilot may enter it at the present position or at any flight plan waypoint.

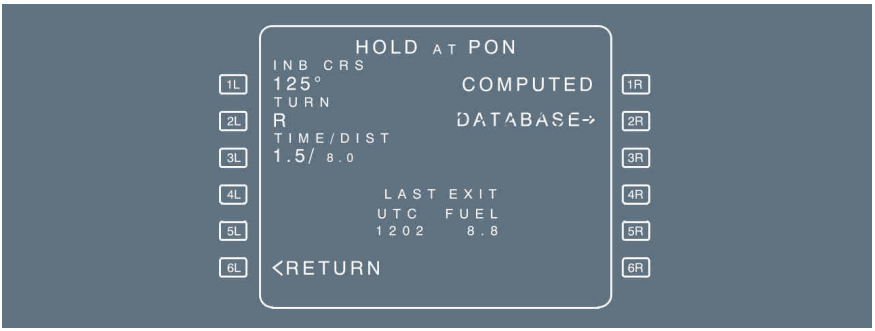
The pilot will use this type of holding pattern to comply with a defined procedure or a clearance limit, or to meet an operational need (such as losing altitude, holding for weather improvement, or absorbing an ATC delay).
This type of holding pattern is exited according to the pilot's decision, not automatically.
There are 3 types of HMs, and all are modifiable.

DATABASE HOLD



If the holding pattern is part of the database, all its associated data (inbound course, turn direction, time/distance) are defined in the database. The flight crew can modify this data, leading to the creation of a temporary F-PLN.

COMPUTED HOLD

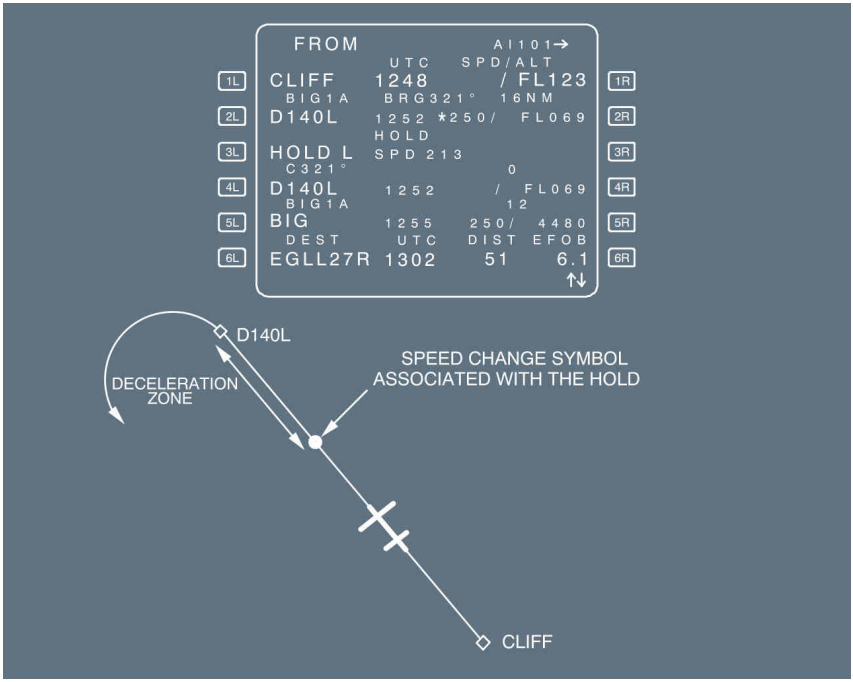


If the holding pattern is not in the database, the FMGC may design a holding pattern and proposes it to the pilot. The associated data consists of default values that the pilot can modify. This results in creating a temporary F-PLN.

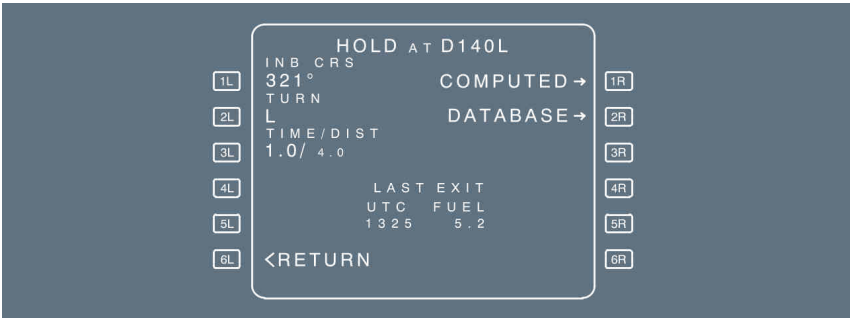
PREDICTIONS AND GUIDANCE ASSOCIATED WITH A HM HOLDING PATTERN (HOLD WITH MANUAL TERMINATION)

Before Deceleration

If an altitude constraint is defined at the hold entry fix, then the FMS duplicates this constraint on the hold exit.
However, different constraints may be inserted at entry and exit fixes.
Although the hold is inserted in the flight plan, the FMGS does not take it into account for predictions until the aircraft enters the hold.
However, if the hold is not deleted by the crew, the FMGS schedules a deceleration point and displays it on the ND.



Note: *The deceleration zone allows to decelerate from the current speed to the holding speed to reach the holding speed when overflying the hold entry fix. The deceleration zone is limited to a maximum length of 20 NM.*



The FMGS predicts the estimated time and amount of fuel remaining at which the aircraft must exit holding, so as to comply with the fuel policy specified on the fuel prediction page.
When the aircraft enters the holding pattern, the FMGS revises all predictions and assumes the aircraft will fly one turn of the holding pattern.
All predictions are revised for one more the holding circuit at the holding fix overfly.

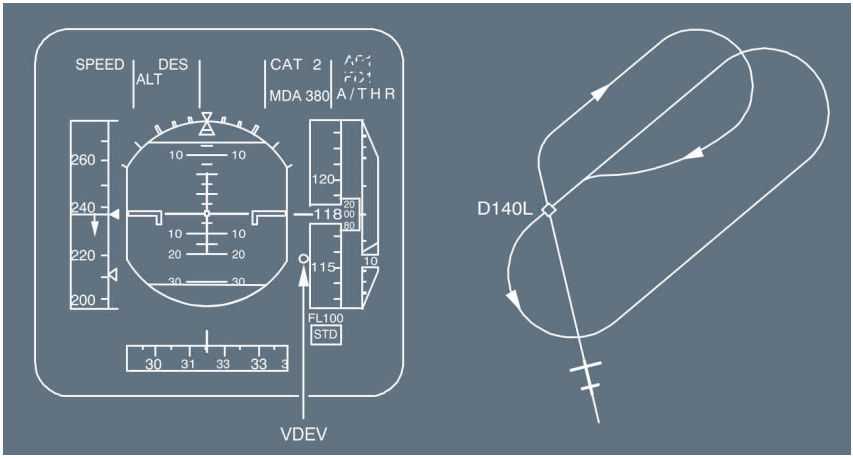
Upon Reaching the Speed Change Pseudo Waypoint

The FMGS either causes the aircraft to decelerate to the hold speed (if managed speed is active and NAV mode engaged), or displays “SET HOLD SPD” (set hold speed) on the MCDU and primary flight display, if the flight crew had selected a speed target.

The default hold speed is the lowest of the:
- Maximum endurance speed
- ICAO limit holding speed
- Speed constraint (if any).

When no specific speed limit applies, the default hold speed is approximately equal to:
- Green Dot speed on the A318, A319, A320 (CFM) and A321
- Green Dot +20 kt on the A320 (IAE).

The flight plan predictions for time and fuel do not yet consider that the hold will be flown, however, the navigation display shows the hold entry and holding pattern trajectory.



Deceleration receives priority, so that when the aircraft is in descent with the descent mode engaged, it will deviate above the descent path to decelerate. (VDEV becomes positive on the progress page).
The flight plan page displays an immediate exit prompt.
If the flight crew presses the key next to “IMM EXIT”, before arriving at the holding fix, the aircraft will not enter the holding pattern, but will resume its phase-related managed-speed profile.

After Reaching the Hold Entry Fix

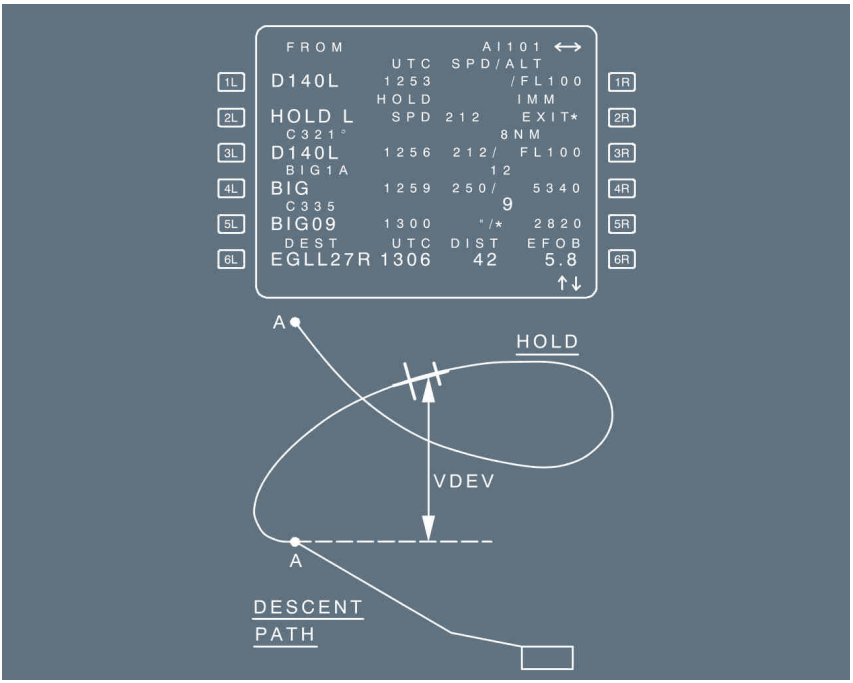
The aircraft enters the hold. The MCDU HOLD page displays the associated holding data:
- The inbound course (INB CRS),
- The TURN direction (L or R),

- The TIME/DIST,
- The LAST EXIT time and the associated fuel to reach the alternate airport with no extra fuel.

The FMS assumes that the aircraft will fly one turn of the holding pattern, and revises the predictions accordingly.

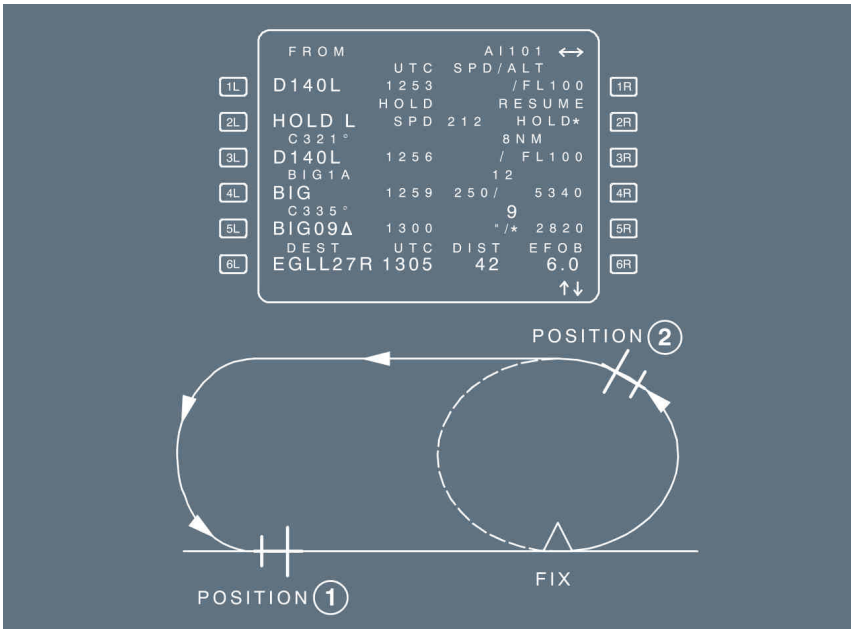
When the holding pattern is defined by a leg time (and not a leg distance), the system revises the size of the hold as a function of the target speed:

- If managed speed is active, the system uses the predicted holding speed to calculate the size of the holding pattern.
- If the selected speed is active, the system uses the target speed selected by the flight crew at the entry fix sequencing to calculate the size of the holding pattern.
- The VDEV displayed on the primary flight display and the PROG page, when the aircraft is flying in the HM (hold pattern with manual termination), is the difference between the aircraft's current altitude, and the altitude at which it should be, when it reaches the hold exit fix in order to be correctly positioned on the descent path.



With IMM Exit Pressed (Aircraft in the Holding Pattern)

The predictions and guidance assume that the aircraft is immediately returning to the hold fix. Sequencing the hold fix, the aircraft exits the holding pattern and resumes its navigation. The flight plan page displays “RESUME HOLD*”, instead of “IMM EXIT*”.



HOLD EXIT PROCEDURE

Position (1) If “IMM EXIT” pressed, the aircraft will exit at the next fix overfly.
Position (2) If “IMM EXIT” pressed, the aircraft will make an immediate turn to the fix where the hold will be exited.

If managed speed is active, the computer sets the target speed to the applicable speed of the current phase (for example, speed constraint, ECON speed, or speed limit).
The computer then bases its predictions on the assumption that the flight will continue on the descent path, if the aircraft is in descent.

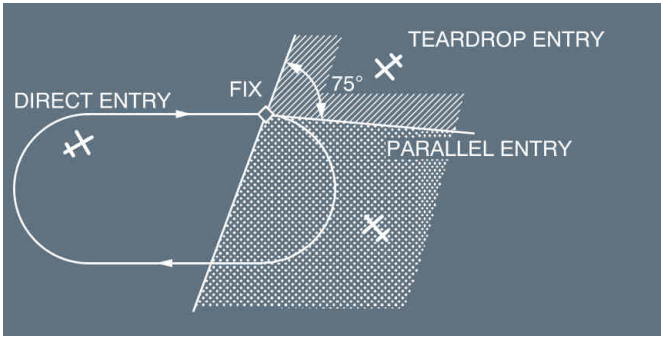
If DES mode is engaged, the following applies:
- The holding pattern is never included in the descent path computation.
- The flight crew cannot enter altitude and speed constraints at the hold exit fix. (This is only allowed at the hold entry fix).
- The vertical guidance in the HM, during the descent phase, calls for a constant -1 000 ft/min. But the computer considers altitude constraints that will take effect farther down the flight path, as it calculates vertical guidance and predictions. The system will not allow the aircraft to descend below the next altitude constraint, neither to the FCU selected altitude. If the aircraft reaches the next altitude constraint, it will level off and the altitude constraint mode will engage.

With Resume Hold Pressed

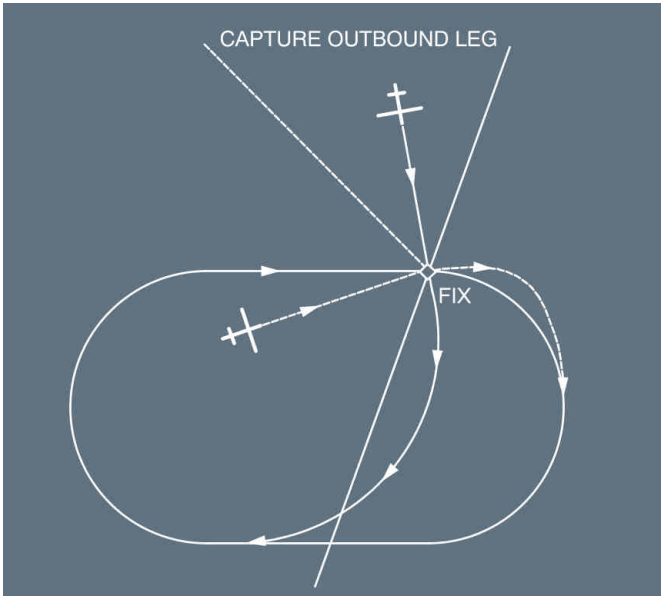
If the flight crew presses the key next to “RESUME HOLD”, the aircraft remains in the holding pattern, and “IMM EXIT” is displayed again.
After that, each time the aircraft flies over the holding fix, the system updates the predictions for one more holding circuit.

HOLDING PATTERN ENTRIES

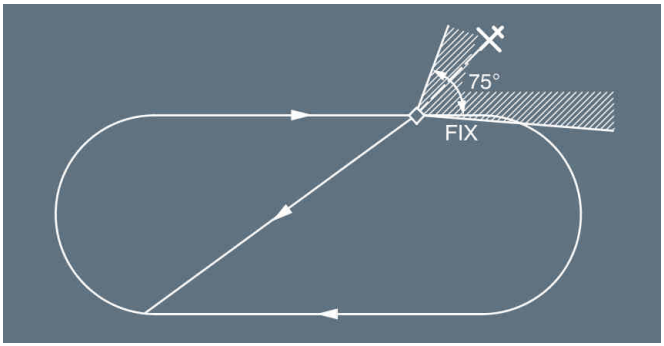
The FMGS offers three types of entry into holding patterns:
1. Direct entry
2. Teardrop entry
3. Parallel entry



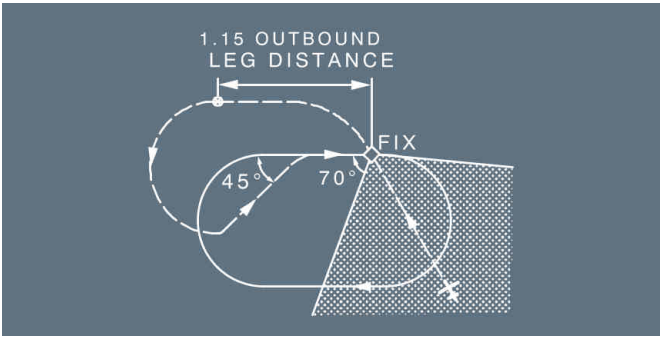
1. **The Direct Entry**



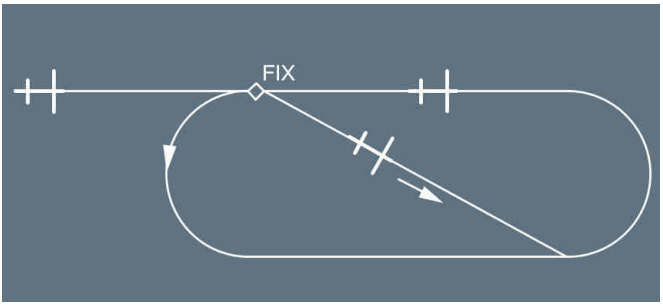
2. **The Teardrop Entry**



3. **The Parallel Entry**



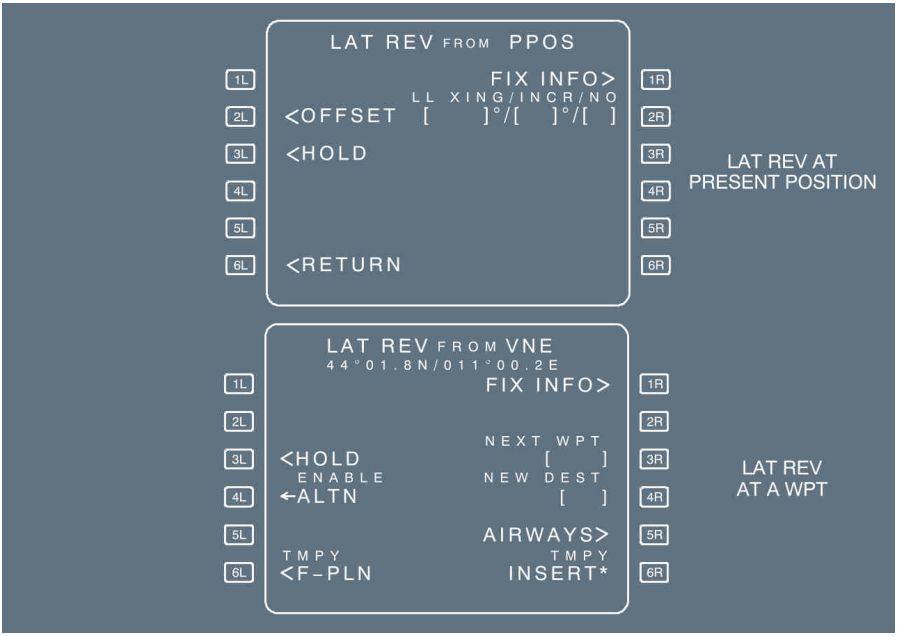
Note: *If the leg the aircraft is flying toward the holding fix is on a "limit" between a teardrop entry and a parallel entry, the FMGC may compute and display either of the two entries. The pilot should keep this in mind, and should not assume that the FMGC is malfunctioning.*
If the flight plan leg toward the hold entry fix is on a course that is the reciprocal of the inbound course of the holding pattern, the aircraft will fly a teardrop entry.



Ident.: DSC-22_20-30-10-18-C-00009515.0015001 / 01 OCT 12

PROCEDURE TO INSERT A HOLD (HOLD WITH MANUAL TERMINATION)

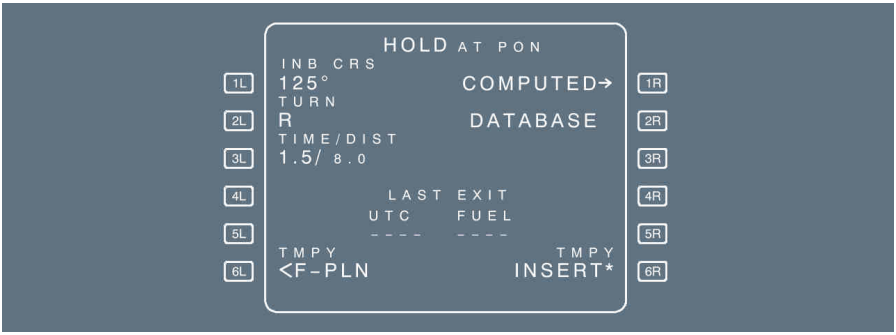
The HOLD prompt enables the crew to enter a holding pattern, with manual termination (HM), at the revised waypoint or at the present position.
The crew accesses the HOLD page from a lateral revision at the present position (PPOS), or at a waypoint. Using the HOLD function results in the creation of a temporary F-PLN. The function has no effect on the active F-PLN, until the temporary F-PLN is inserted.



SELECT a lateral revision at the applicable waypoint, or at the present position (PPOS),
PRESS the HOLD prompt [3L],

A TMPY F-PLN is created and a default hold is proposed: if applicable, the database hold is proposed. If no database hold is available, the computed hold is proposed.

CHECK the proposed hold. If not appropriate, SELECT COMPUTED [1R] or DATABASE [2R] (if applicable),
CHECK the hold parameters and MODIFY them if necessary
INSERT the TMPY F-PLN or continue with next revision.



Ident.: DSC-22_20-30-10-18-C-00009516.0002001 / 24 JAN 11

PROCEDURE TO DELETE A HOLD (HOLD WITH MANUAL TERMINATION)

CLEAR the HOLD directly in the flight plan, as can be done for a normal waypoint.
CHECK and INSERT the TMPY F-PLN or continue with next revision

Note: *Only the constraint on the entry fix of the hold are preserved.*

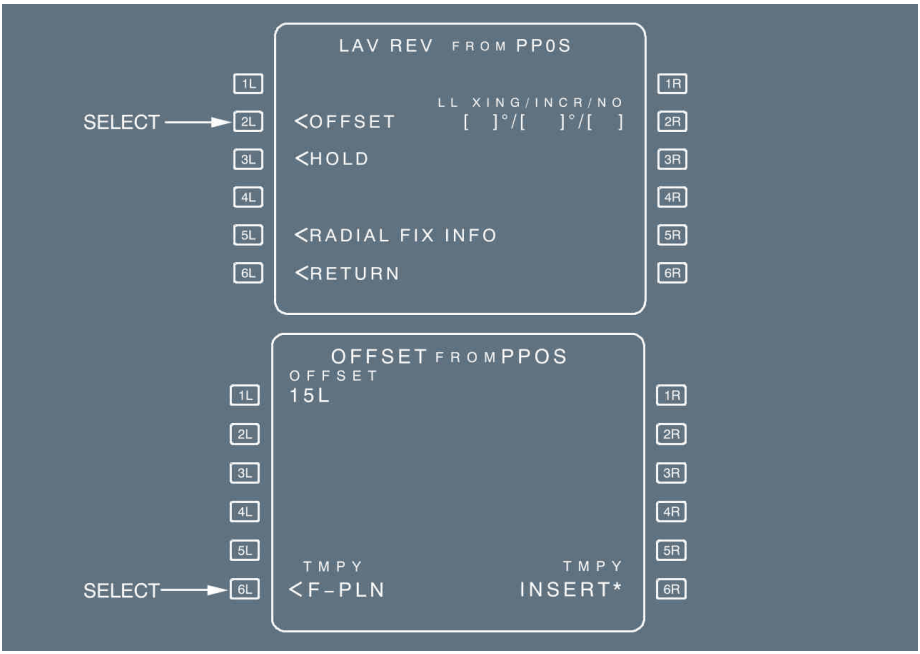
OFFSET

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Ident.: DSC-22_20-30-10-18-D-00000477.0003001 / 01 OCT 12

The OFFSET prompt enables the crew to define a lateral offset to the left or right of the active flight plan. Once inserted, the offset applies from the present position (PPOS) all along the flight plan to the first waypoint (WPT) at which a holding pattern is defined, or to the last waypoint before the runway. In most cases, the crew will use it en-route, because of an ATC clearance, or to avoid bad weather expected along the flight plan route. Accessed from a lateral revision (LAT REV) at the FROM waypoint, an offset may be defined between 1 and 50 NM in one-nautical-mile steps and starts at PPOS. Using the offset function results in the creation of a temporary F-PLN. The function leads to the creation of the creation of a temporary flight plan. Once this TMPY F-PLN is inserted, the flight plan page shows OFFSET in its title, and the navigation display shows the offset flight plan with a solid green line and the original flight plan with a dashed green line. The offset can be manually suppressed by clearing the offset value in [1L] or by performing a DIR TO.

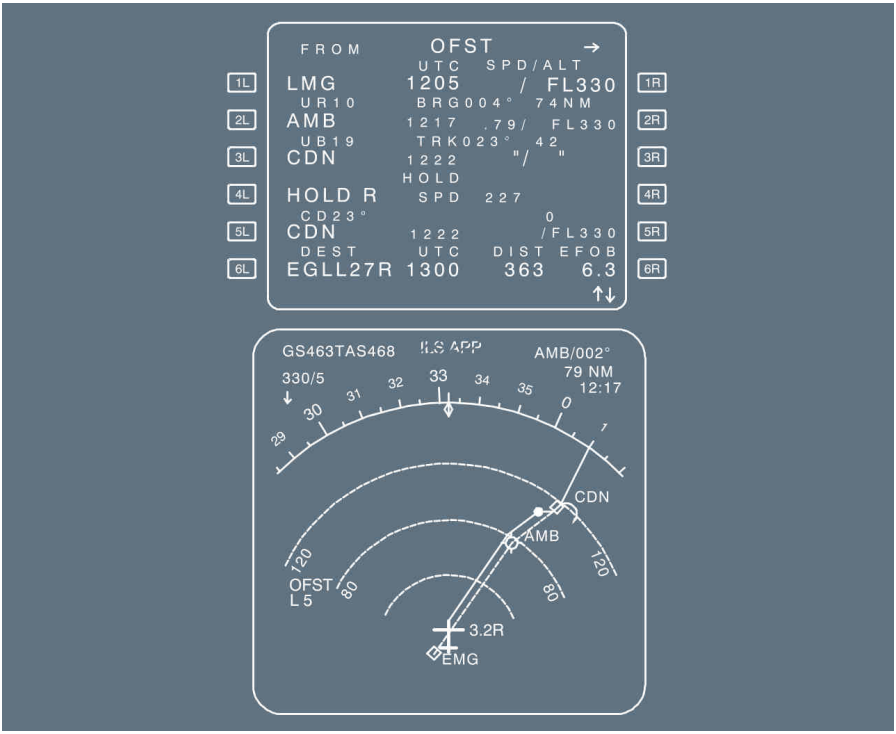
1. If a hold is inserted at PPOS, this hold is flown on the offset path. If a hold is inserted at another waypoint, the offset will be automatically deleted before the hold.
2. No offset can be computed on approach legs.
3. If the crew enters an OFFSET when the aircraft is too close to the TO waypoint, the FMGS may refuse to accept it, in which case the MCDU displays the “ENTRY OUT OF RANGE” message.



Ident.: DSC-22_20-30-10-18-D-00009517.0003001 / 01 OCT 12

INSERTING AN OFFSET

SELECT LAT REV at the present position (PPOS).
SELECT the OFFSET prompt.
WRITE the required offset value and direction (Example : L15 or 15L).
PRESS [1L] to enter the offset in the OFFSET field.
CHECK and INSERT the TMPY F-PLN or continue with next revision.



Ident.: DSC-22_20-30-10-18-D-00009518.0002001 / 14 MAY 12

MANUAL CANCELLATION OF AN OFFSET

There are two standard methods of cancelling an offset :

1. PERFORM DIR TO a waypoint (the next waypoint, for example).
2. SELECT a Lateral Revision (LAT REV) at FROM WPT.

SELECT the OFFSET prompt.
CLEAR the OFFSET field (or ENTER a zero value in the OFFSET field).
CHECK and INSERT the TMPY F-PLN or continue with next revision.

ALTERNATE FUNCTION

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Ident.: DSC-22_20-30-10-18-E-00000478.0002001 / 24 JAN 11

The ALTERNATE FUNCTION performs two actions:
- It reviews and defines alternate airports and inserts them into the flight plan
- It allows a diversion to be activated through the ENABLE ALTN command.

Using the ALTERNATE function results in the creation of a temporary F-PLN. The function has no effect on the active F-PLN until the temporary is inserted.
An alternate airport may also be entered or modified through the dedicated field on INIT A page. In this case, no TMPY F-PLN is created.

Ident.: DSC-22_20-30-10-18-E-00009519.0003001 / 13 DEC 12

REVIEW AND SELECTION OF ALTERNATE AIRPORT

Several alternate airfields may be stored in the database and assigned to a destination. When the pilot selects a company route (CO RTE) (or a city pair), the computer strings the preferred alternate into the active flight plan.
The pilot may review the alternate airports on the ALTN page and change the selected one if not suitable.
The ALTERNATE page shows the track and distance (airway or direct) between destination and alternate, as well as fuel management data (EXTRA fuel, assuming the associated airfield is the alternate airport). This data will help the pilot change the preferred alternate, if necessary.

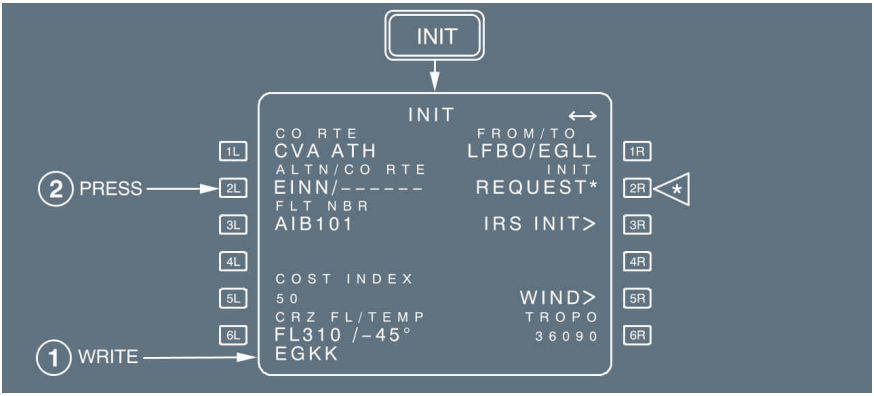
ENTERING NEW ALTERNATE INTO THE F-PLN

SELECT INIT key on the MCDU.
ENTER an AIRFIELD IDENTIFIER in [2L] field.

PRESS FUEL PRED key and CHECK or MODIFY the specified ALTN fuel.

Note: If weather and destination airfield conditions permit, you may select "NO ALTN". Fuel predictions will be computed without alternate fuel.

Note: A new alternate may also be entered in the F-PLN by selection of LAT REV and then ALTN page. In this case, a temporary flight plan will be created before final insertion.



SELECTION OF ANOTHER ALTERNATE

Fuel management information for flight to another alternate airfield may be obtained by selecting the OTHER ALTN field.

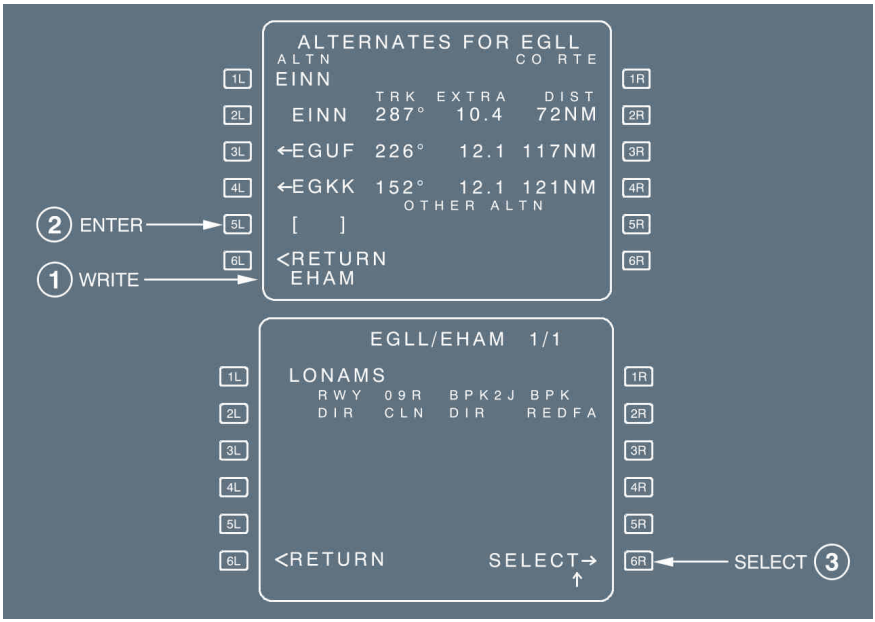
SELECT LAT REV at DESTINATION.
SELECT ALTN [3L].
ENTER the airfield identifier in the brackets.

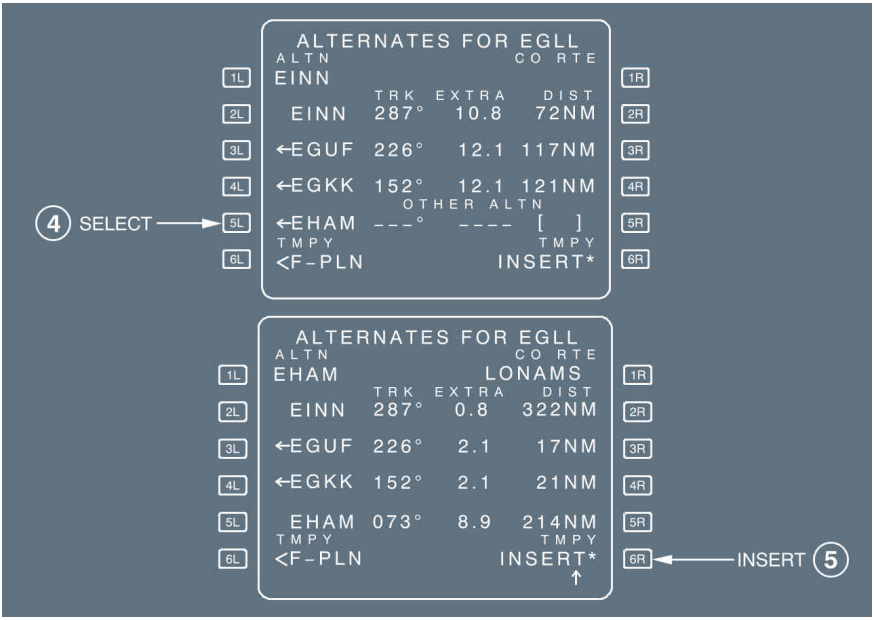
- If the airfield is not in the database, the NEW RUNWAY page automatically appears.
- If the airfield is in the database and there is a company route (CO RTE) to it, the ROUTE SELECTION page automatically appears.

SELECT the route, as appropriate, or RETURN to the ALTN page.
ENTER the distance in the brackets (if required). XTRA fuel and track (TRK) will appear.
SELECT the other alternate (OTHER ALTN) as a primary alternate, if convenient. (EXTRA fuel and DIST revert to AIRWAY distance).

CHECK and INSERT the TMPY F-PLN, or continue with next revision.

Note:
- *The pilot can always overwrite the "OTHER ALTN". The new "OTHER ALTN" then replaces the previous one, which is lost.*
- *The pilot can select OTHER ALTN as a primary alternate (active flight plan), to replace any alternate on the initial list.*
- *If the pilot selects the other alternate as a primary alternate, and overwrites the OTHER ALTN field by entering a new airport, the first one will remain a primary alternate and the system will memorize a second OTHER ALTN.*





The pilot may enter a distance in the OTHER ALTN field. The system will compute the extra fuel, and the track for this distance.
When the OTHER ALTN is selected as a primary alternate, the FMGC will also compute the predictions for the other alternate.

PREDICTED DATA FOR ALTERNATE

Data predictions can be based on:

- Aircraft weight being equal to landing weight at the primary destination.
- Flight at FL 100 if the alternate F-PLN length is less than 100 NM, at FL 220 if the alternate F-PLN length is comprised between 100 NM and 200 NM, or else at FL 310.
- Cost index 0.
- Constant wind (as entered in the alternate field of the DES WIND page).
- Constant delta ISA (equal to delta ISA at primary destination).
- The along flight plan distance from the destination to the alternate airport.

If the crew enters an ALTN fuel value, this value is the one taken into account.

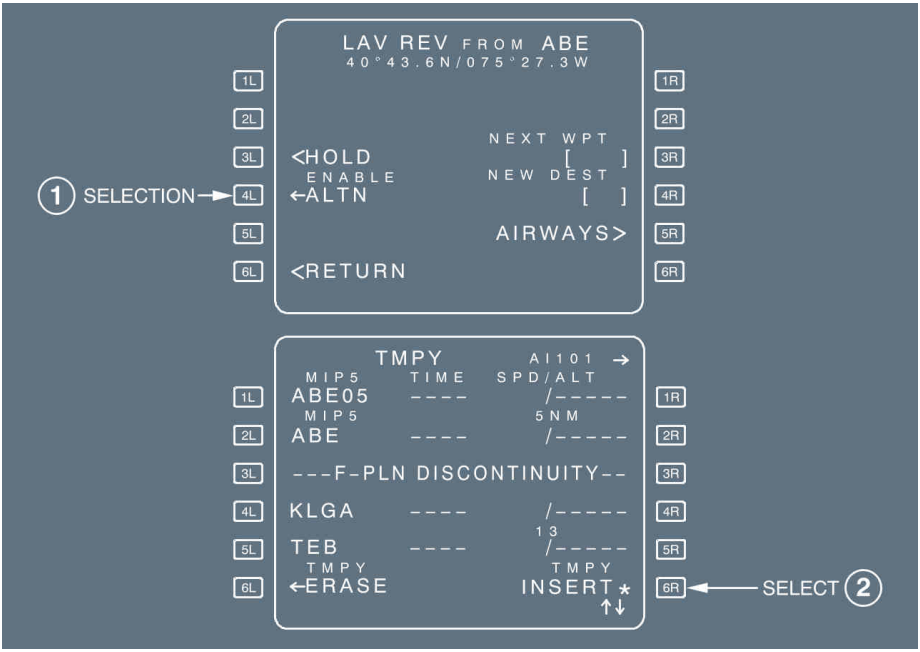
ENABLE ALTN

Ident.: DSC-22_20-30-10-18-00000479.0002001 / 01 OCT 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

This enables the flight crew to initiate a diversion by entering the alternate flight plan just after the revision waypoint (with a discontinuity). Using the ENABLE ALTN function results in the creation of a temporary F-PLN. This function has no effect on the active F-PLN until the temporary F-PLN is inserted.

The flight crew may have to adjust the resulting flight plan (add or delete waypoints), depending on the circumstances.



TO ENABLE THE ALTN F-PLN:

SELECT LAT REV at the waypoint where the ALTN part is to be strung.

PRESS the ENABLE ALTN key

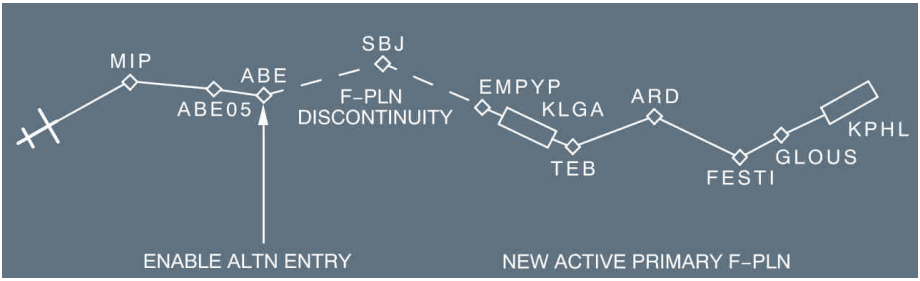
The temporary flight plan is created and displayed.

REVISE the temporary F-PLN as necessary.

INSERT the temporary F-PLN or continue with next revision.

The message "USING COST INDEX 0" is displayed in the scratchpad on the side where the ENABLE ALTN function was used.

If necessary, perform a DIR TO the first waypoint of the alternate.
ADJUST the cost index on the PERF page and the defaulted cruise flight level (CRZ FL) on the PROG page, as required.



When ENABLE ALTN is pressed at ABE, a flight plan discontinuity is created from ABE down to destination and the alternate route is linked to the active flight plan.

DIR KEY (DIRECT-TO-FUNCTION)

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Ident.: DSC-22_20-30-10-18-F-00000480.0003001 / 30 MAR 18

The pilot uses the "Direct To" function to define a direct leg, potentially with inbound/outbound course or abeam waypoint, from the present position to any waypoint on the active flight plan or to any waypoint.
The designated waypoint may be entered by its identifier (if it is stored in the navigation database), or as a pilot defined element, or by a latitude/longitude, place/bearing/distance, a place-bearing/place-bearing, or a place distance (PD) along the F-PLN.

Note:
1. *If the autopilot or flight director is in the heading/track or localizer mode, the "DIR TO" function engages the NAV mode.*
2. *A lateral revision of the flight plan obtained with a DIR TO may also affect the vertical profile of the flight plan.*

Three functions are available through the DIR TO key:

- DIR TO defines a direct leg from the present position to a specified waypoint.
  NAV mode simultaneously engages upon DIR TO selection.
  When the pilot uses DIR TO, the present position (PPOS) becomes the “FROM” waypoint and the active flight plan shows it as the T-P (turn point)
- The DIR TO/ABEAM function, computes the abeam waypoints along the direct leg. These waypoints are the projection on the direct leg of the initial F-PLN waypoints, located between the aircraft position and the specified waypoint.
  NAV mode simultaneously engages upon DIR TO/ABEAM selection
- The DIR TO/INTCPT function allows the definition of a specified RADIAL INBOUND or OUTBOUND at an inserted waypoint. The current aircraft track is used to compute the INTCPT point with the specified radial.

If the DIR TO waypoint is part of the F-PLN, the FMS computes and proposes a default radial in NAV mode is simultaneously armed upon DIR TO/INTCPT selection.
Using the DIRECT TO function results in the creation of a DIR TO temporary flight plan. This flight plan only reflects the insertion of the direct leg in the active flight plan.
A DIR TO TMPY F-PLN can be deleted with [6L] prompt DIR TO ERASE or inserted [6R] prompt DIR TO INSERT.

With the DIR TO TMPY F-PLN:

- The aircraft continues to follow the active F-PLN until the DIR TO is inserted
- The DIR TO TMPY F-PLN is displayed in yellow on both MCDUs and NDs
- A DIR TO TMPY F-PLN cannot be created when a multi-revisions TMPY F-PLN is already in process.

Note: *In the case a DIR TO/INTCPT is performed:*

- *When the angle between the current aircraft track and the intercept course exceeds 140 °, the transition is not displayed*
- *When the angle between the current aircraft track and the intercept course exceeds 160 °, the interception with the radial is not computed and the message NO NAV INTERCEPT is displayed.*

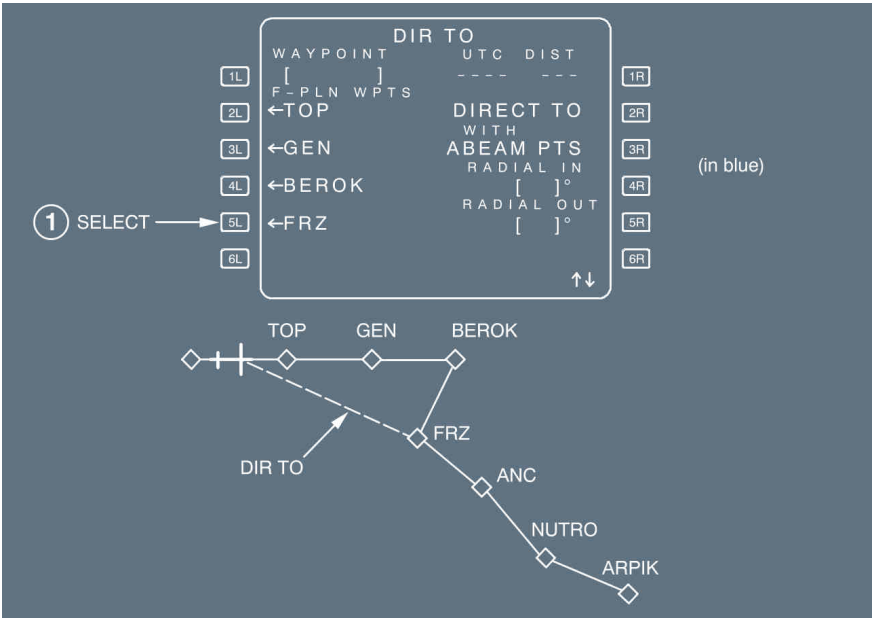
Note: *As soon as a designated waypoint is entered or selected, the DIRECT TO or DIRECT-TO-WITH ABEAM POINTS function is selected by default, and displayed (in yellow), depending on the Airline option on the AMI file.*
The following examples assume that the activated AMI default option is the “DIRECT TO” function.

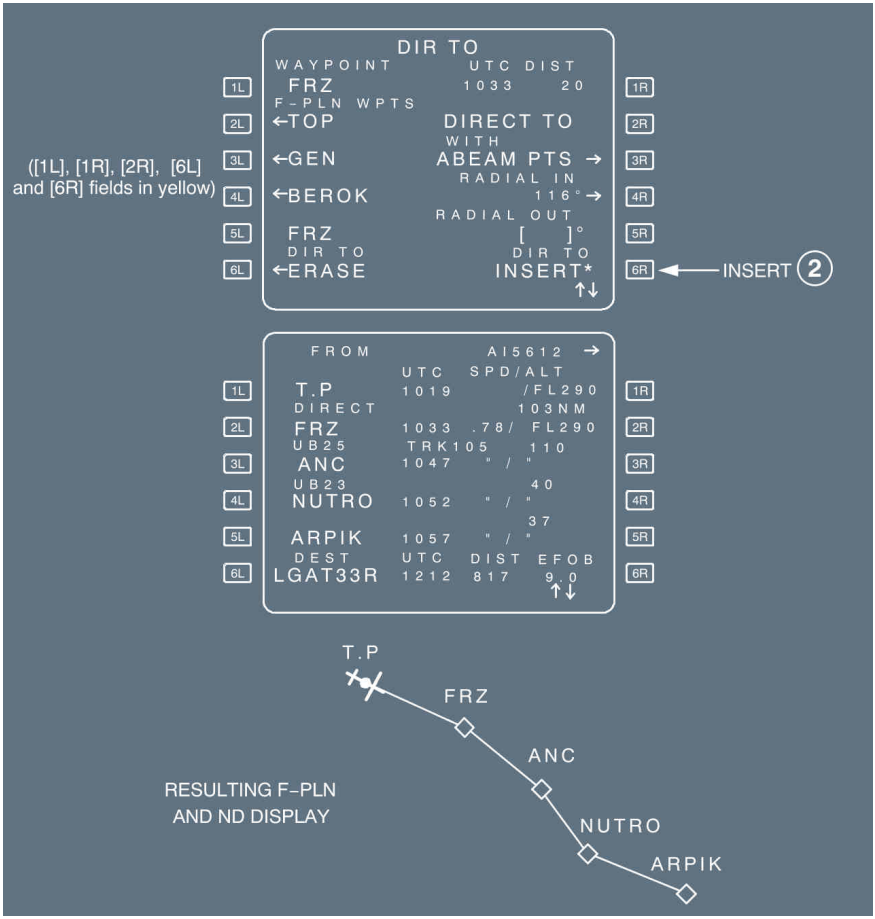
PROCEDURE FOR DIR TO WAYPOINT

CASE 1. THE "TO" WAYPOINT IS IN THE FLIGHT PLAN

Example: DIR TO FRZ (with the AMI default DIRECT TO option activated)

PRESS the DIR key on the MCDU.
PRESS the line select key next to “FRZ”.
CHECK that a temporary F-PLN is automatically displayed on both NDs.
INSERT the DIR TO in the active F-PLN.

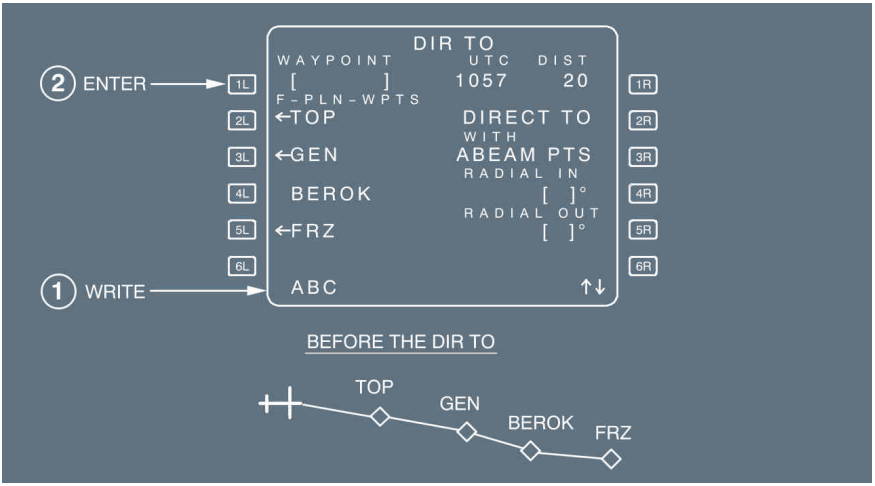


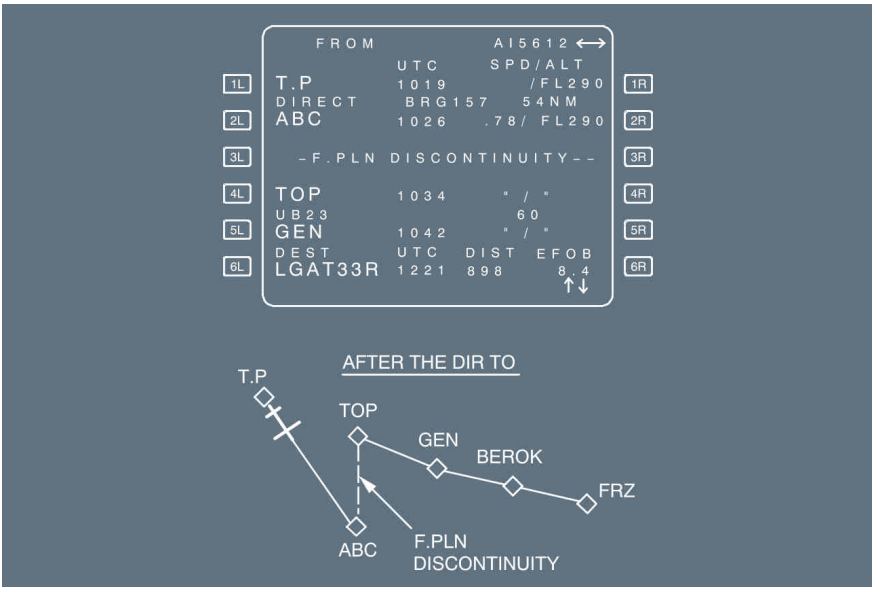


CASE 2. THE "TO" WAYPOINT DOES NOT BELONG TO THE FLIGHT PLAN

Example: Direct to ABC (ABC being an ident, LL or PBD, PB/PB or a PD), with the AMI default DIRECT TO option activated.

PRESS the DIR key.
WRITE the waypoint identifier (e.g. ABC) in the scratchpad.
PRESS [1 L] to enter "ABC" in the "WAYPOINT" field.
CHECK that a temporary F-PLN is automatically displayed on both NDs.
INSERT the DIR TO in the active F-PLN.

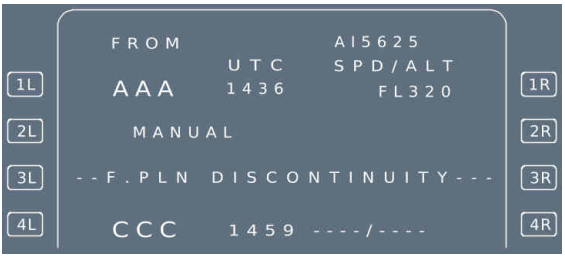




Clear the discontinuity and the waypoints that are not included in the new flight plan.

PARTICULAR CASES FOR USE OF DIR TO

- If the pilot is flying a manual leg (part of a SID or STAR), the flight plan page displays “F-PLN DISCONTINUITY”, preceded by “MANUAL” (see below).
  These legs are specific heading or track legs flown with no defined end waypoint.



- When the pilot encounters a flight plan discontinuity, or if a major reset occurs, the flight plan page displays "PPOS – F-PLN DISCONTINUITY”, and the pilot looses managed guidance in both the lateral and vertical plans.
  The autopilot or flight director reverts to the basic HDG V/S (or TRK FPA) modes. Predictions remain available and are based on the assumption that the aircraft will fly a direct leg from its present position to the next waypoint.

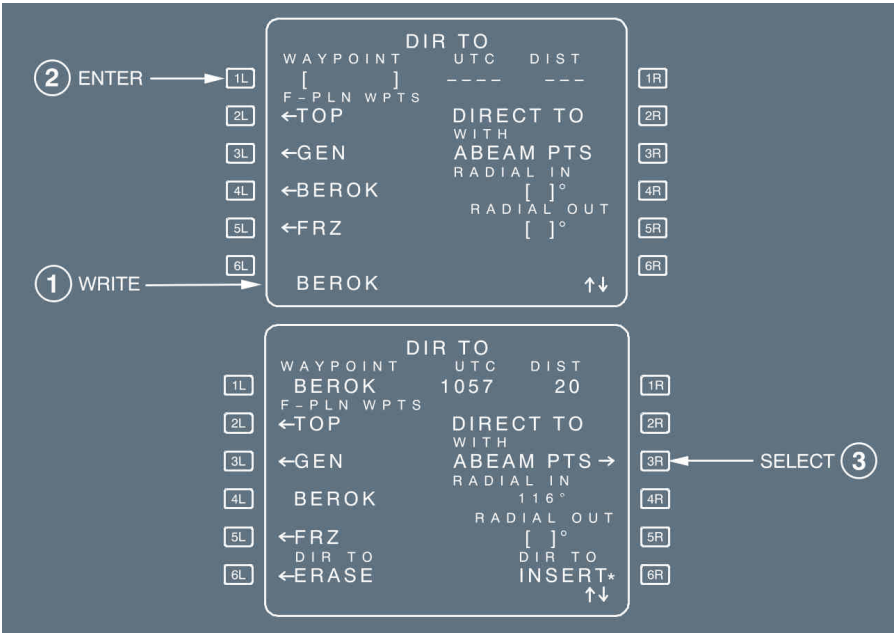
- In both of these cases, the only way to get back to a standard flight plan is to perform a "DIR TO" to a designated waypoint.
- Following a DIR TO, the “MAP PARTLY DISPLAYED” message may appear on the NDs, if the new flight plan includes a very long leg. When this message comes up, enter an intermediate waypoint to shorten the leg.
- If another lateral or vertical revision is attempted, while a DIR TO is pending, the MCDU message “DIR TO IN PROCESS” is displayed.

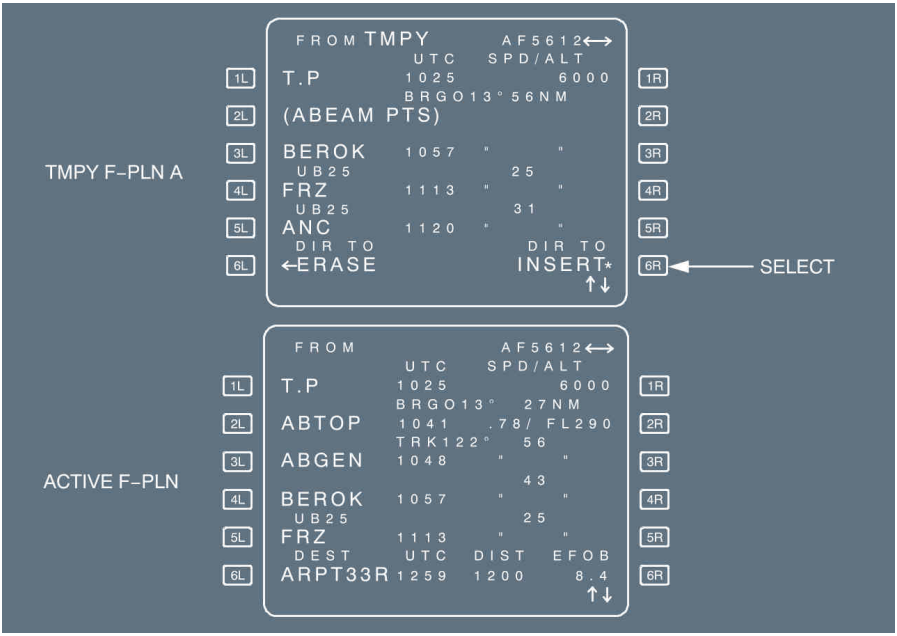
Ident.: DSC-22_20-30-10-18-F-00009525.0002001 / 01 OCT 12

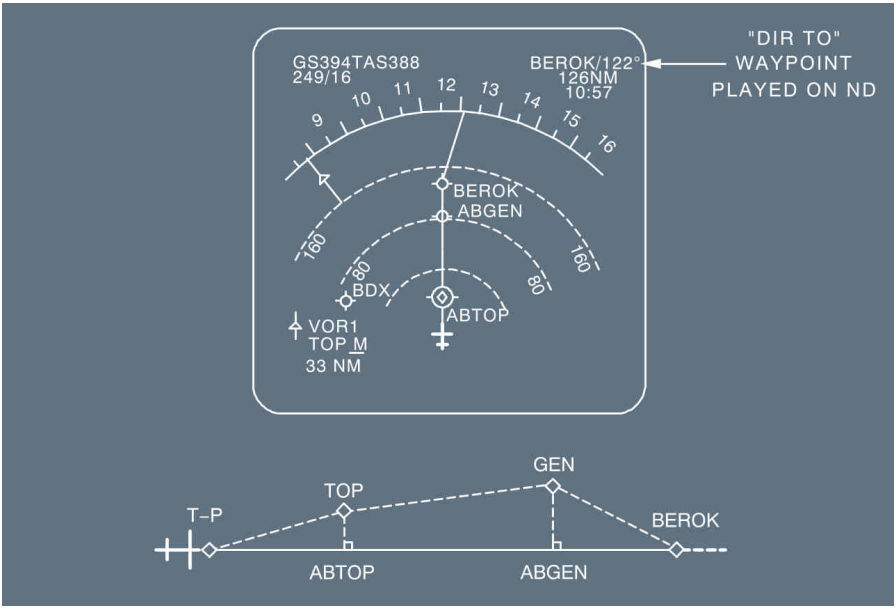
PROCEDURE FOR DIR TO/ABEAM

Example: DIR TO/ABEAM to BEROK (with the AMI default DIRECT TO option activated).

PRESS the DIR key on the MCDU.
WRITE the waypoint identifier in the scratchpad (Here: BEROK).
PRESS [1L] to enter the waypoint identifier in the WAYPOINT field.
SELECT the ABEAM PTS function, and CHECK that a TMPY F-PLN is displayed on both NDs.
INSERT the temporary F-PLN by pressing the [6R] key.




TMPY F-PLN A
FROM TMPY AF5612
UTC SPD/ALT
T.P 1025 6000
BRGO13° 56NM
(ABEAM PTS)
BEROK 1057 " "
UB25 25
FRZ 1113 " "
UB25 31
ANC 1120 " "
DIR TO DIR TO
←ERASE INSERT*
SELECT
ACTIVE F-PLN
FROM AF5612
UTC SPD/ALT
T.P 1025 6000
BRGO13° 27NM
ABTOP 1041 .78/ FL290
TRK122° 56
ABGEN 1048 " "
43
BEROK 1057 " "
UB25 25
FRZ 1113 " "
DEST UTC DIST EFOB
ARPT33R 1259 1200 8.4



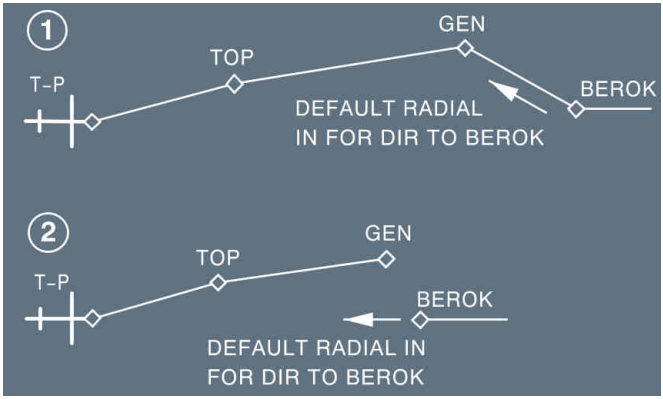
Note: *1. The DIR TO waypoint is displayed on the top right corner of the ND.*
2. Abeam waypoints computed from latitude/longitude-type waypoints are renamed by the system as "AB XXXXX", where "XXXXX" is an abbreviation in, 5 characters, of the latitude and longitude of the initial waypoints.

Ident.: DSC-22_20-30-10-18-F-00009526.0002001 / 01 OCT 12

PROCEDURE FOR DIR TO/INTERCEPT

PRESS the DIR key.
WRITE the waypoint identifier in the scratchpad.
PRESS [1L] to enter the waypoint in the WAYPOINT field.

In the [4R] and [5R] fields, the MCDU displays the functions radial inbound and radial outbound from the waypoint. If the DIR TO waypoint belongs to the flight plan and is not preceded by a discontinuity, the system displays the flight plan track to the DIR TO waypoint as the default inbound radial (figure 1). If the DIR TO waypoint belongs to the flight plan and is preceded by a discontinuity, the system displays the flight plan track from the DIR TO waypoint as the default inbound radial (figure 2).



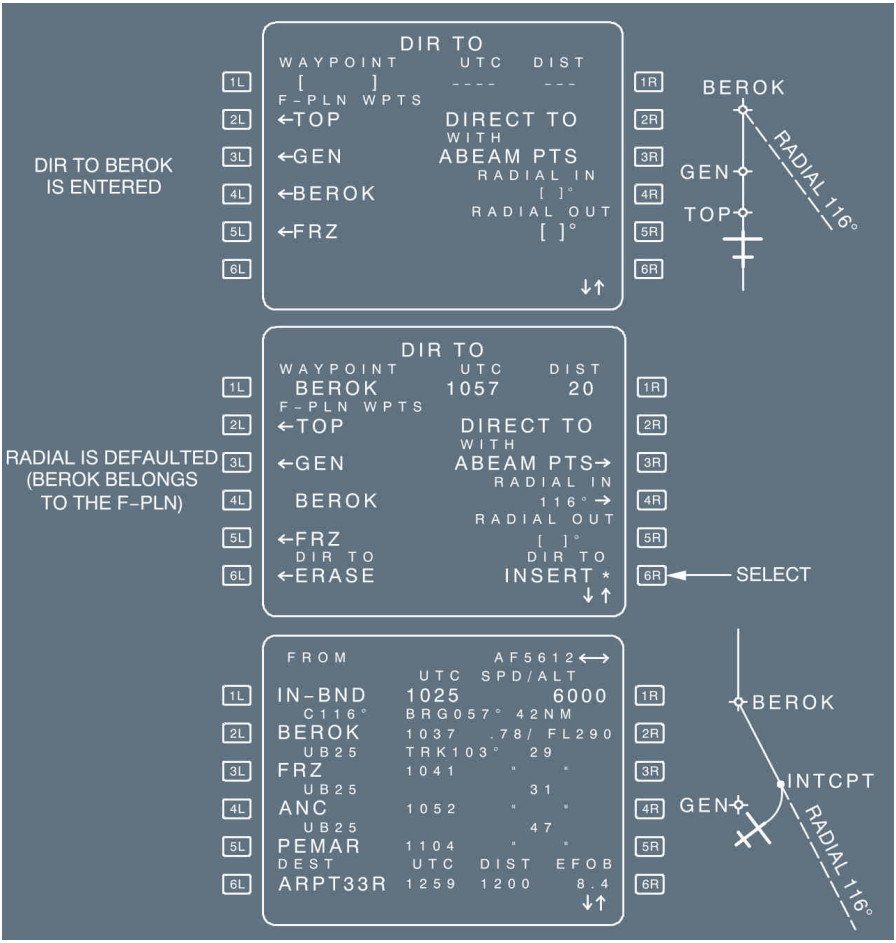
WRITE the required in or out radial in the scratchpad, as necessary.
PRESS [4R] or [5R] to enter the radial in the required field.

The ND displays the temporary F-PLN. The pilot can still modify it:

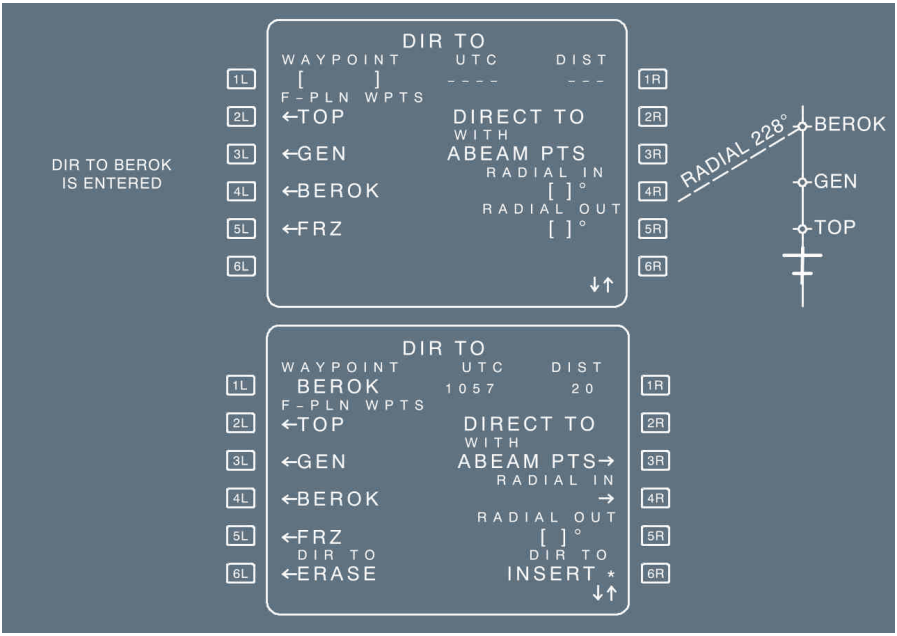
CHECK and INSERT the DIR TO/INTERCEPT into the active F-PLN by using the [6R] key.The display reverts to the F-PLN A page, the system arms the NAV mode, and engages the HDG mode. The FROM waypoint is the aircraft position at the time of the DIR TO/INTERCEPT selection. The MCDU indicates it as INBND or OUTBND.

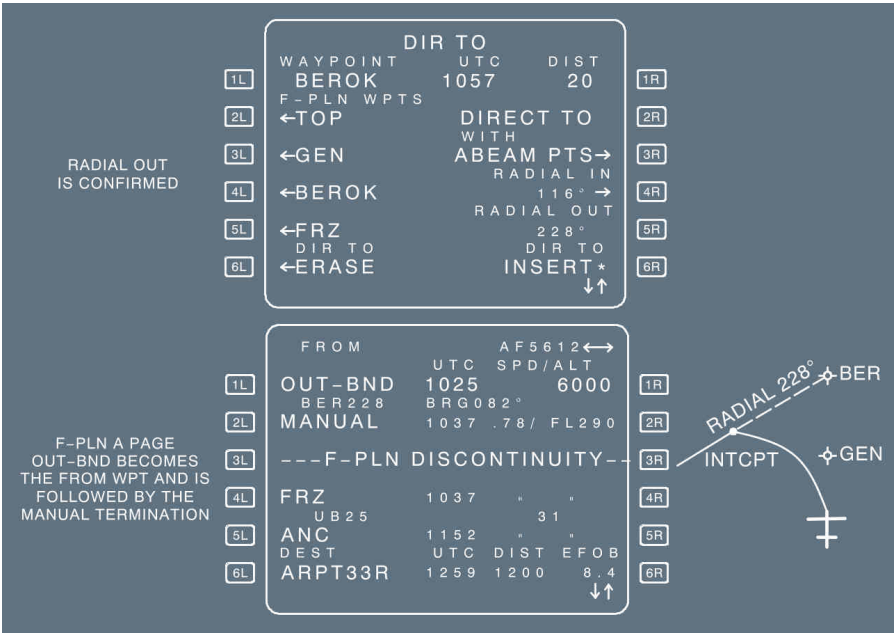
Note:
1. *If the waypoint does not belong to the flight plan, the system strings the DIR TO/INTERCEPT leg to this waypoint, and inserts a discontinuity following the waypoint.*
2. *A DIR TO/INTERCEPT cancels any active offset.*
3. *If the current AP/FD lateral mode is HDG or TRK, NAV becomes armed.*
   If the NAV mode was engaged, NAV becomes armed. FCU HDG or TRK must be used to guide the aircraft.
   The ND displays an intercept point, if the intercept angle is less than 160 °. The system constantly updates it to reflect the current aircraft track and position with respect to the intercept radial. The NAV mode engages when reaching the intercept point.

Example: RADIAL INBND
DIR TO BEROK-RADIAL 116 ° INBOUND



Example: RADIAL OUTBND
DIR TO BEROK-RADIAL 228 ° OUTBOUND


DIR TO BEROK IS ENTERED
DIR TO
WAYPOINT
UTC
DIST
[ ]
- - - -
- - -
F-PLN WPTS
←TOP
←GEN
←BEROK
←FRZ
DIRECT TO
WITH
ABEAM PTS
RADIAL IN
[ ]°
RADIAL OUT
[ ]°
1L
2L
3L
4L
5L
6L
1R
2R
3R
4R
5R
6R
RADIAL 228°
BEROK
GEN
TOP
DIR TO
WAYPOINT
UTC
DIST
BEROK
1057
20
F-PLN WPTS
←TOP
←GEN
←BEROK
←FRZ
DIRECT TO
WITH
ABEAM PTS→
RADIAL IN
→
RADIAL OUT
[ ]°
DIR TO
←ERASE
DIR TO
INSERT *



OVFY (OVERFLY) KEY

Ident.: DSC-22_20-30-10-18-00000481.0001001 / 01 OCT 12

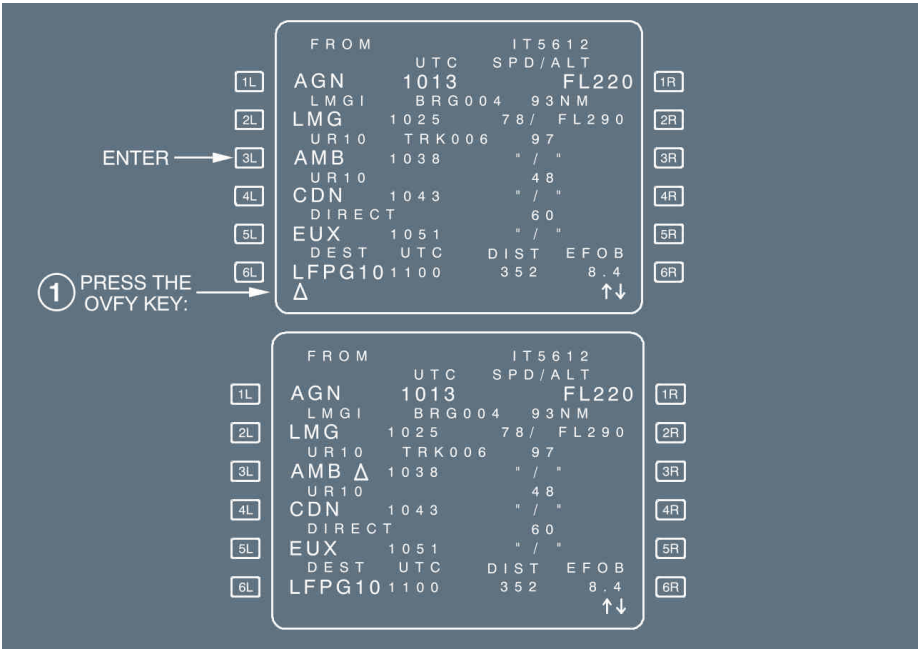
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The overfly key programs the Flight Management Guidance Computer to fly over a specific waypoint or navaid. Using the overfly function results in the creation of a temporary F-PLN. The function has no effect on the active F-PLN, until the temporary is inserted in the active F-PLN.

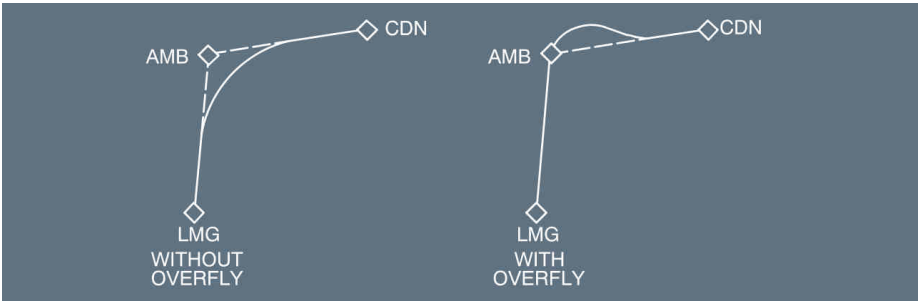
PRESS the “OVFY” key.

A “Δ” appears in the scratchpad.

INSERT it, by pressing the key adjacent to the waypoint to be overflown. [3L], in this example. INSERT the temporary into the active F-PLN.



To cancel the overfly function, associated to a waypoint, press the OFFY ▵ "key again on the MCDU.

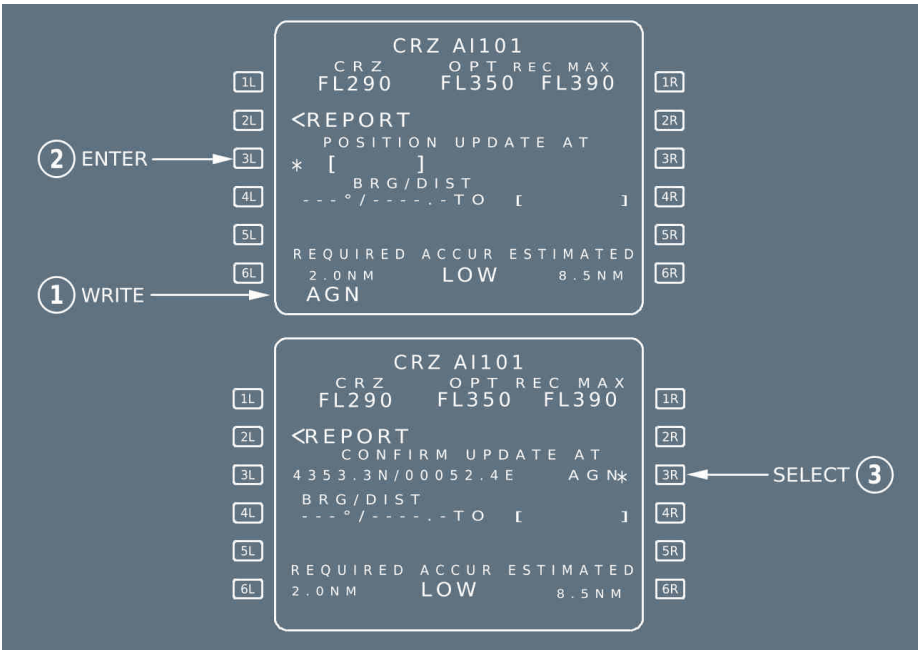


The overfly function allows you to fly over a specific waypoint, and return the aircraft to the great circle track.

"POSITION UPDATE AT"

Ident.: DSC-22_20-30-10-18-00000482.0003001 / 17 SEP 13
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04384, 04399-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

To manually change the position computed by the FMCG (FM position and bias), the pilot uses "POSITION UPDATE AT" on the progress page.
Use this function with extreme caution : It is apt to be inaccurate, because it relies on the pilot's estimation of when a designated position has been reached.



WRITE the IDENT at which the position update is intended. The identifier format are

- NAVAID
- Waypoint, Airport or runway identifier
- LAT / LONG coordinates
- PLACE BRG / PLACE BRG
- PLACE BRG DIST

PRESS [3L] to enter the IDENT in the "POSITION UPDATE AT" field. The coordinates of the point, along with its identifier (or "ENTRY", if the identifier is not in the database), appear in that field.

PRESS [3R] to activate the update, when you estimate that you are at the position.

Note: *The system reinitializes the Estimated Position Error computation when a position update is performed. This may lead to the appearance of a "NAV ACCUR DOWNGRAD" or "NAV ACCUR UPGRAD" message.*

If the "POSITION UPDATE AT" does not properly take effect, it corrupts the FM position.

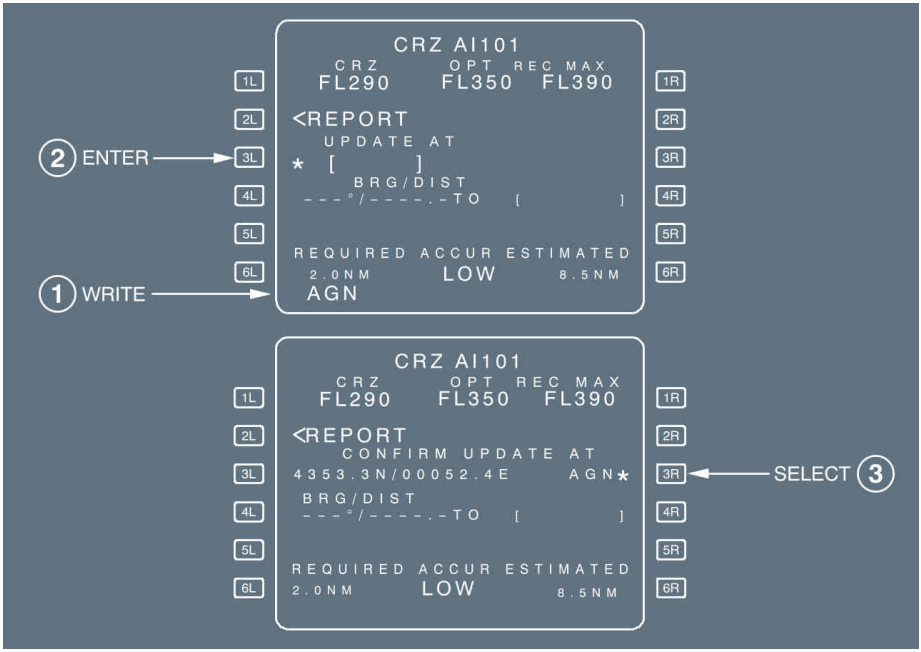
- In an area with good radio NAVAID coverage :
  - If the update error is small, subsequent radio position updating will correct the FM position.
  - If the update error is large, the system will reject any radio updating because its internal "reasonableness test" will reject the various NAVAIDs. Thus, the FM position will only be the MIX IRS position corrected by the position bias, determined at the time of the update, and the error will be maintained.
- In an area without proper NAVAID coverage, radio position updating will not be available and the FM position, if incorrect, will remain incorrect until a new manual update is performed.
- Therefore, the pilot should only use "POSITION UPDATE AT" in case of a major position problem, such as :
  - On the ground, no flight plan appears on the navigation display and ARC/ROSE NAV mode is selected .
  - A "CHECK IRS/FM POSITION" message appears on the MCDU.
  - A "FM/IR POSITION DISAGREE" message appears on the ECAM.

When the aircraft position is computed based on GPIRS, the "POSITION UPDATE AT" function is not allowed. If the flight crew attempts a position update, the message "NOT ALLOWED" is displayed on the MCDU.

"UPDATE AT"

Ident.: DSC-22_20-30-10-18-00000482.0001001 / 01 OCT 12
Applicable to: MSN 04393-04397

To manually change the position computed by the FMCG (FM position and bias), the pilot uses "UPDATE AT" on the progress page.
Use this function with extreme caution : It is apt to be inaccurate, because it relies on the pilot's estimation of when a designated position has been reached.



WRITE the IDENT for the NAVAID (or waypoint, or airport), or the coordinates, or the PBD PB/PB at which the update is intended.
PRESS [3L] to enter the IDENT in the “UPDATE AT” field. The coordinates of the point, along with its identifier (or “ENTRY”, if the identifier is not in the database), appear in that field.
PRESS [3R] to activate the update, when you estimate that you are at the position.

Note: *The system reinitializes the Estimated Position Error computation when a position update is performed. This may lead to the appearance of a “NAV ACCUR DOWNGRAD” or “NAV ACCUR UPGRAD” message.*

If the “UPDATE AT” does not properly take effect, it corrupts the FM position.

- In an area with good radio NAVAID coverage :
  - If the update error is small, subsequent radio position updating will correct the FM position.
  - If the update error is large, the system will reject any radio updating because its internal “reasonableness test” will reject the various NAVAIDs. Thus, the FM position will only be the MIX IRS position corrected by the position bias, determined at the time of the update, and the error will be maintained.
- In an area without proper NAVAID coverage, radio position updating will not be available and the FM position, if incorrect, will remain incorrect until a new manual update is performed.
- Therefore, the pilot should only use “UPDATE AT” in case of a major position problem, such as :
  - On the ground, no flight plan appears on the navigation display and ARC/ROSE NAV mode is selected .
  - A “CHECK IRS/FM POSITION” message appears on the MCDU.
  - A “FM/IR POSITION DISAGREE” message appears on the ECAM.

When GPS PRIMARY is operative, the FM position will always converge towards the GPS position at a rate depending on the aircraft altitude. Therefore, when GPS PRIMARY is operative, an inaccurate “update at” will have a temporary effect on the FM position.

CHANGING THE DEPARTURE/ARRIVAL

Ident.: DSC-22_20-30-10-18-00000483.0002001 / 01 OCT 12

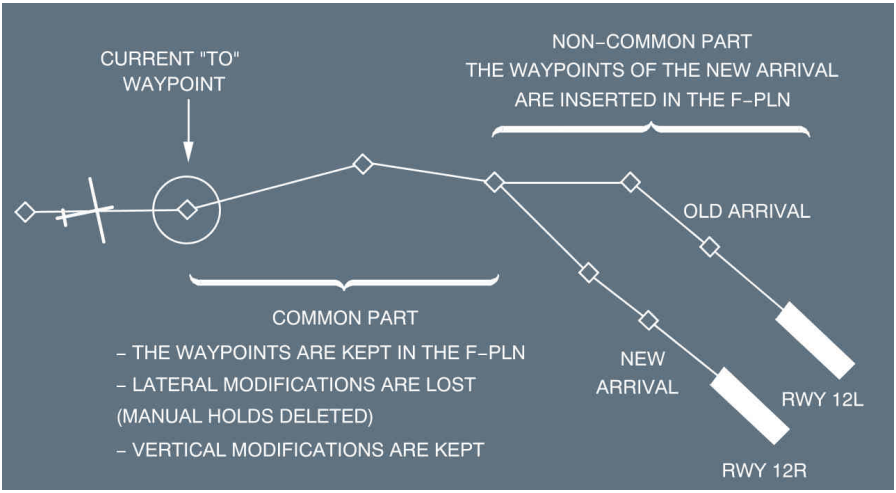
Applicable to: MSN 03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

CHANGING THE ARRIVAL

In approach, the flight crew may be assigned a new arrival procedure or landing runway, while already flying the initially selected arrival. Usually, at that point, the aircraft will still be in a part of the arrival that is common to the old and new procedure. When the new arrival or runway is selected, the FMS strings the remaining part of the new procedure, after the current “TO” waypoint, (see picture below).

All the lateral pilot modifications (including Holds) made to the previous arrival procedure are erased. This includes modifications made to the “TO” waypoint. The vertical pilot modifications (such as speed/altitude constraints) are kept on the waypoints in the common part (including the “TO” waypoint).

If a hold had been inserted in the old arrival procedure, it is deleted and the MCDU displays the “MANUAL HOLD DELETED” message in the scratchpad.



The crew should check and revise the TMPY F-PLN , as necessary, prior to inserting the TMPY F-PLN in the active F-PLN.

IF THE CURRENT "TO" WAYPOINT IS NOT COMMON TO THE OLD AND NEW PROCEDURE

Then, the FMS stacks the current active leg, and the entire new arrival procedure as follows:
- The active "TO" waypoint is kept,
- A "F-PLN DISCONTINUITY" is inserted,
- The entire new procedure is strung after the discontinuity.

The crew should check and revise the TMPY F-PLN, as necessary, prior to inserting the TMPY F-PLN in the active F-PLN.

Note: *Depending on the actual progress of the flight, the flight crew may choose the NO STAR and/or NO VIA options on the ARRIVAL page, in order to string only the final part of the approach in the F-PLN.*

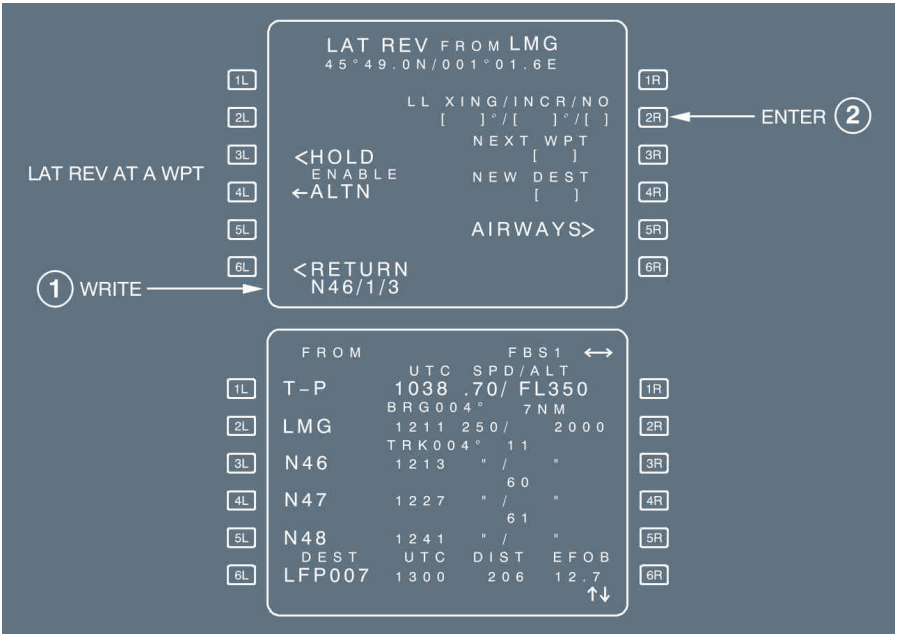
CHANGING THE DEPARTURE

If the flight crew changes the departure procedure, the FMS replaces the entire departure procedure by the new selected one .
However, if a lateral modification had been performed within the initially selected departure procedure, the waypoints following the modified waypoint are considered as "en-route" waypoints by the FMS. When a new runway or a new departure is selected, these "en-route" waypoints are kept in the F-PLN, and inserted after the new selected departure.

LATITUDE/LONGITUDE CROSSING WAYPOINT INSERTION

This function enables the crew to insert one or several points along the flight plan beyond the revised waypoint, at fixed latitude or longitude intervals (INCR), from a specified latitude or longitude.

These waypoints can be inserted in the F-PLN, and visualized on the corresponding ND. They are not stored in the pilot-defined elements ; the system deletes them when sequenced.



WRITE the latitude (NXX or XXN, SXX or XXS) or longitude (EXX, XXE, WXX, XXW), the required increment in degrees between the successive waypoints, and the number of required waypoints.

(Example: If the crew wants to obtain 3 points, at every degree of latitude from N46: Enter N46/1/3).

PRESS [2R] to insert it into the LL XING/INCR/NO field.

PRESS [6R] to insert the new waypoints in the flight plan without discontinuity.

The system does not store these waypoints in the database.

CHANGING THE DEPARTURE/ARRIVAL

Ident.: DSC-22_20-30-10-18-00000483.0003001 / 23 JUN 15

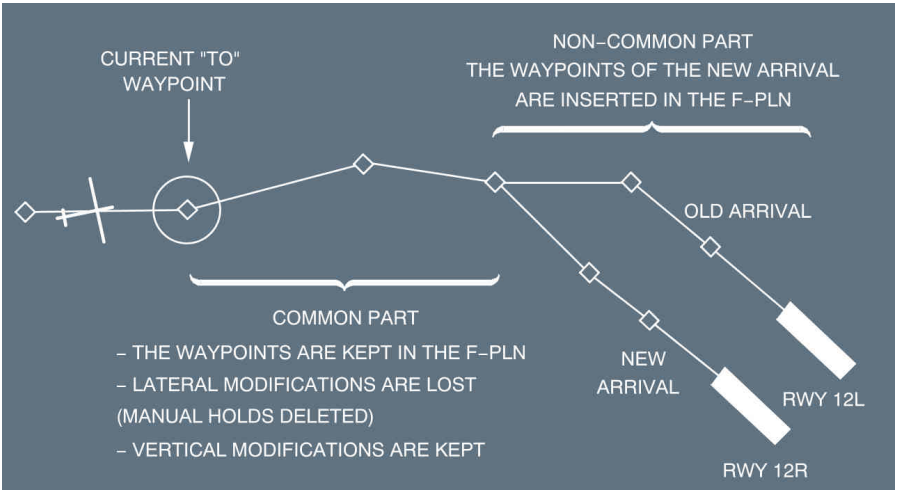
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-02914, 03138, 04294, 04314, 04393-04438, 04510

CHANGING THE ARRIVAL

In approach, the flight crew may be assigned a new arrival procedure or landing runway, while already flying the initially selected arrival. Usually, at that point, the aircraft will still be in a part of the arrival that is common to the old and new procedure. When the new arrival or runway is selected, the FMS strings the remaining part of the new procedure, after the current "TO" waypoint, (see picture below).

All the lateral pilot modifications (including Holds) made to the previous arrival procedure are erased. This includes modifications made to the "TO" waypoint. The vertical pilot modifications (such as speed/altitude constraints) are kept on the waypoints in the common part (including the "TO" waypoint).

If a hold had been inserted in the old arrival procedure, it is deleted and the MCDU displays the "MANUAL HOLD DELETED" message in the scratchpad.



The crew should check and revise the TMPY F-PLN , as necessary, prior to inserting the TMPY F-PLN in the active F-PLN.

IF THE CURRENT "TO" WAYPOINT IS NOT COMMON TO THE OLD AND NEW PROCEDURE

Then, the FMS stacks the current active leg, and the entire new arrival procedure as follows:
- The active "TO" waypoint is kept,
- A "F-PLN DISCONTINUITY" is inserted,
- The entire new procedure is strung after the discontinuity.

The crew should check and revise the TMPY F-PLN, as necessary, prior to inserting the TMPY F-PLN in the active F-PLN.

Note: *Depending on the actual progress of the flight, the flight crew may choose the NO STAR and/or NO VIA options on the ARRIVAL page, in order to string only the final part of the approach in the F-PLN.*

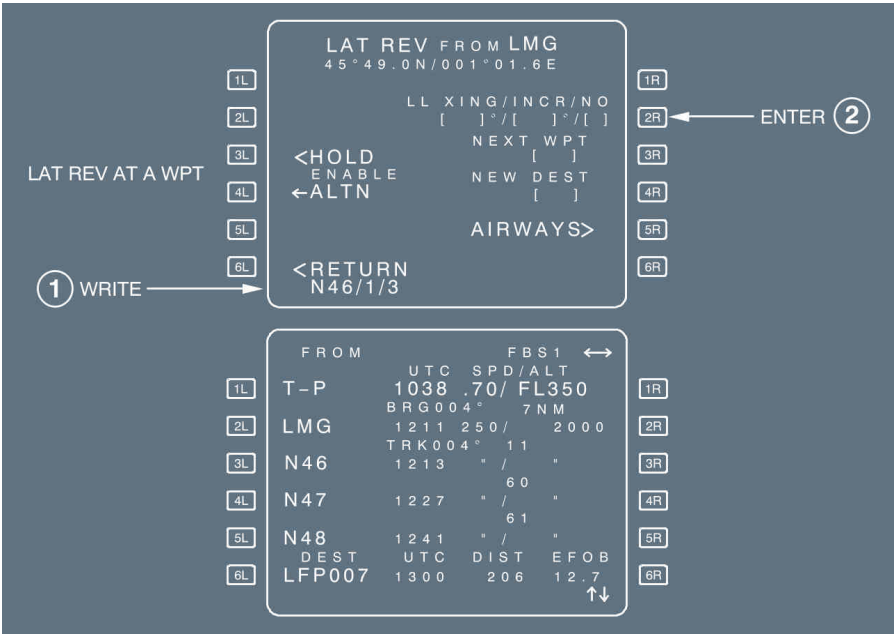
CHANGING THE DEPARTURE

If the flight crew changes the departure procedure, the FMS replaces the entire departure procedure by the new selected one .
However, if a lateral modification had been performed within the initially selected departure procedure, the waypoints following the modified waypoint are considered as "en-route" waypoints by the FMS. When a new runway or a new departure is selected, these "en-route" waypoints are kept in the F-PLN, and inserted after the new selected departure.

LATITUDE/LONGITUDE CROSSING WAYPOINT INSERTION

This function enables the crew to insert one or several points along the flight plan beyond the revised waypoint, at fixed latitude or longitude intervals (INCR), from a specified latitude or longitude.

These waypoints can be inserted in the F-PLN, and visualized on the ND. They are part of cruise only. They are not stored in the pilot-defined elements; the system deletes them when sequenced.



WRITE the latitude (NXX or XXN, SXX or XXS) or longitude (EXX, XXE, WXX, XXW), the required increment in degrees between the successive waypoints, and the number of required waypoints.

(Example: If the crew wants to obtain 3 points, at every degree of latitude from N46: Enter N46/1/3).

PRESS [2R] to insert it into the LL XING/INCR/NO field.

PRESS [6R] to insert the new waypoints in the flight plan without discontinuity.

The system does not store these waypoints in the database.

Note: If one of the obtained waypoints corresponds to an already existing waypoint, it is not inserted.

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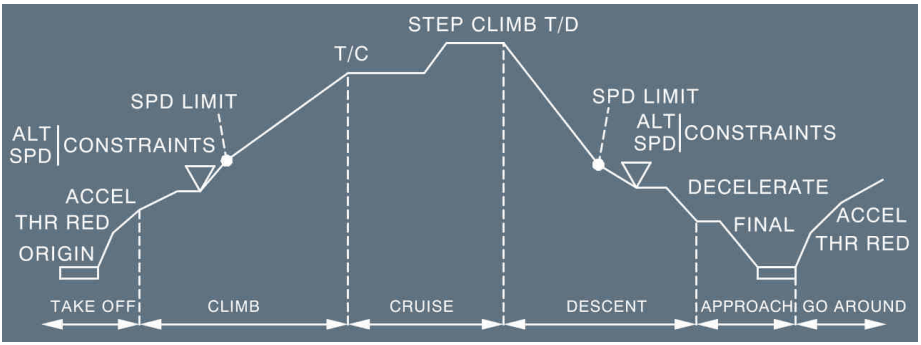
General

GENERAL

Ident.: DSC-22_20-30-20-05-00010939.0001001 / 01 OCT 12
Applicable to: ALL

The vertical flight plan is divided into the following flight phases:
Preflight - Takeoff - Climb - Cruise - Descent - Approach - Go-Around - Done.
All but “Preflight” and “Done” phases are associated with speed and altitude profiles.



Each phase has an assigned profile of target speeds. For each phase the FMGS computes an optimum (ECON) speed as a function of the strategic parameters (CI, CRZ FL, ZFW, ZFWCG, block FUEL) and performance criteria.
ECON speed is the basis of the managed speed profile.

The ECON speed can be modified by:
- Presetting a speed or Mach number on the MCDU (PERF page) for the next phase
- Selecting on the FCU a speed or a Mach number for the active phase
- Inserting speed constraints or speed limits on the MCDU vertical revision (VERT REV) page.

The vertical flight plan includes vertical constraints (altitude, speed, time) that may be stored in the data base or entered manually by the flight crew through vertical revision pages.
The flight crew may also define step climbs or step descents for cruise purposes. If the flight crew plans to climb to a higher flight level or descend to a lower level, they can use a vertical revision at any waypoint to insert the new level.
When all the vertical data has been defined, the FMGC computes the vertical profile and the managed speed/Mach profile from takeoff to landing.

VERTICAL FLIGHT PLANNING

Ident.: DSC-22_20-30-20-05-00011065.0002001 / 17 AUG 10
Applicable to: ALL

DATA ENTRY

The vertical flight plan provides the FMGS with all the data required to calculate performance and predictions. This data is either entered by the flight crew or calculated by the FMS.

There are three categories of data:

- Strategic data, that applies to the overall flight profile:
  - Cost Index (CI)
  - Cruise Flight Level (CRZ FL) and STEP ALTS if any
  - Zero-Fuel Weight (ZFW)
  - Zero-Fuel Weight Center of Gravity (ZFWCG)
  - Block Fuel.
- Weather data:
  - Winds (for climb, cruise, descent, approach)
  - Sea level atmospheric pressure (QNH) at destination
  - Surface temperature (TEMP) at destination
  - Temperature in cruise phase
  - The Tropopause altitude (TROPO).
- Tactical data for the flight phases:
  - Phase switching conditions:
    - Setting of the thrust levers to TOGA or FLEX positions
    - Reaching acceleration altitude (ACCEL ALT)
    - Entering cruise (T/C)
    - Initiation of descent (T/D)
    - Passing a deceleration pseudo waypoint (DECEL PSEUDO WPT)
    - Touchdown.
  - Speed profile:
    - V2
    - Economy climb speed or Mach (ECON CLB SPD/MACH)
    - Preselected speed or Mach (SPD/MACH PRESELECTION)
    - Economy cruise Mach (ECON CRZ MACH)
    - Constant Mach
    - Economy descent Mach or speed (ECON DES MACH/SPD)
    - Approach speed (VAPP).
  - Vertical limitations:
    - Speed limits (SPD LIMIT)
    - Speed and altitude constraints (SPD AND ALT CSTR)
    - Time constraints or Required Time of Arrival (RTA).

In addition to the data entered by the flight crew, the FMS uses some real flight data parameters (CRZ SAT, actual wind) to improve the accuracy of the computed predictions.

FLIGHT PHASES

Ident.: DSC-22_20-30-20-05-00011024.0011001 / 17 SEP 13
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04384, 04399-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The vertical flight plan is divided into flight phases. For each phase, the FMGS computes the optimum speed or Mach Profile. These flight phases are:
Preflight - Takeoff - Climb - Cruise - Descent - Approach - Go-Around - Done.

FLIGHT PHASES	OPTIMUM SPEED PROFILE	SWITCHING CONDITIONS TO NEXT PHASE
PREFLIGHT	/	SRS takeoff mode engaged and N1 > 85 %(EPR ≥ 1.25) or Ground Speed >90 kt
TAKEOFF	V2 (V2 + 10)	At acceleration altitude or by engagement of another vertical mode.
CLIMB	ECON CLB SPD / MACH	Reaching cruise FL
CRUISE	ECON CRZ MACH	No step descent, and distance to destination < 200 NM, or all engines operative and selected altitude below Max [FL 200, highest DES ALT CSTR]
DESCENT	ECON DES MACH / SPD	- Overflying (DECEL) pseudo waypoint with NAV (or LOC*/LOC) mode engaged and altitude <9 500 ft AGL - Manual activation of the approach phase.
APPROACH	VAPP (GS Min)	1. To Go-Around: When thrust levers at TOGA detent, or 2. To Done: 30 s after landing, or 3. To Climb: When inserting a new CRZ FL.
GO-AROUND	VAPP or current SPD, whichever is greater. Green Dot at ACC ALT	1. To Approach: Manual activation of the approach phase, or 2. To Climb: Above acceleration altitude by - Selecting ALTN, or - inserting NEW DEST
DONE	/	To preflight: When INIT or PERF key depressed.

Note: *During the preflight phase, the flight crew inserts the flight plan, which includes all data needed for the flight.*
During the Done phase, the FMGC erases the data entered for the flight. If the descent or the approach phase is inadvertently activated (manual approach phase activation, for example), the flight crew may reselect a CRZ FL on the PROG page to reactivate the CRZ phase.

FLIGHT PHASES

Ident.: DSC-22_20-30-20-05-00011024.0007001 / 22 MAR 16

[1] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The vertical flight plan is divided into flight phases. For each phase, the FMGS computes the optimum speed or Mach Profile. These flight phases are:
Preflight - Takeoff - Climb - Cruise - Descent - Approach - Go-Around - Done.

FLIGHT PHASES	OPTIMUM SPEED PROFILE	SWITCHING CONDITIONS TO NEXT PHASE
PREFLIGHT	/	SRS takeoff mode engaged and N1 > 85 %(EPR ≥ 1.25) or Ground Speed >90 kt
TAKEOFF	V2 (V2 + 10)	At acceleration altitude or by engagement of another vertical mode.
CLIMB	ECON CLB SPD / MACH	Reaching cruise FL
CRUISE	ECON CRZ MACH	No step descent, and distance to destination < 200 NM, or all engines operative and selected altitude below Max [FL 200, highest DES ALT CSTR]
DESCENT	ECON DES MACH / SPD	- Overflying (DECEL) pseudo waypoint with NAV (or LOC*/LOC) mode engaged and altitude <9 500 ft AGL - Manual activation of the approach phase.
APPROACH	VAPP (GS Min)	1. To Go-Around: When thrust levers at TOGA detent, or 2. To Done: 30 s after landing, or 3. To Climb: When inserting a new CRZ FL.

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FLIGHT PHASES	OPTIMUM SPEED PROFILE	SWITCHING CONDITIONS TO NEXT PHASE
GO-AROUND	VAPP or current SPD, whichever is greater. Green Dot at ACC ALT	1. To Approach: Manual activation of the approach phase, or 2. To Climb: Above acceleration altitude, modification of the destination airport by: - Selection of the ALTN, or - Insertion of a NEW DEST, or - Insertion of a SEC F-PLN with a destination airport different from the destination airport of the active F-PLN.
DONE	/	To preflight: When INIT or PERF key depressed.

Note: During the preflight phase, the flight crew inserts the flight plan, which includes all data needed for the flight.
During the Done phase, the FMGC erases the data entered for the flight. If the descent or the approach phase is inadvertently activated (manual approach phase activation, for example), the flight crew may reselect a CRZ FL on the PROG page to reactivate the CRZ phase.

FLIGHT PHASES

Ident.: DSC-22_20-30-20-05-00011024.0002001 / 17 AUG 10
Applicable to: MSN 04393-04397

The vertical flight plan is divided into flight phases. For each phase, the FMGS computes the optimum speed or Mach Profile. These flight phases are:
Preflight - Takeoff - Climb - Cruise - Descent - Approach - Go-Around - Done.

FLIGHT PHASES	OPTIMUM SPEED PROFILE	SWITCHING CONDITIONS TO NEXT PHASE
PREFLIGHT	/	SRS takeoff mode engaged and N1 > 85 %(EPR ≥ 1.25) or Ground Speed >90 kt
TAKEOFF	V2 (V2 + 10)	At acceleration altitude or by engagement of another vertical mode.
CLIMB	ECON CLB SPD / MACH	Reaching cruise FL
CRUISE	ECON CRZ MACH	No step descent, and distance to destination < 200 NM, or all engines operative and selected altitude below Max [FL 200, highest DES ALT CSTR]

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FLIGHT PHASES	OPTIMUM SPEED PROFILE	SWITCHING CONDITIONS TO NEXT PHASE
DESCENT	ECON DES MACH / SPD	- Overflying (DECEL) pseudo waypoint with NAV (or LOC*/LOC) mode engaged and altitude <7 200 ft AGL - Manual activation of the approach phase.
APPROACH	VAPP (GS Min)	1. To Go-Around: When thrust levers at TOGA detent, or 2. To Done: 30 s after landing, or 3. To Climb: When inserting a new CRZ FL.
GO-AROUND	VAPP or current SPD, whichever is greater. Green Dot at ACC ALT	1. To Approach: Manual activation of the approach phase, or 2. To Climb: Above acceleration altitude by - Selecting ALTN, or - inserting NEW DEST
DONE	/	To preflight: When INIT or PERF key depressed.

Note: During the preflight phase, the flight crew inserts the flight plan, which includes all data needed for the flight.
During the Done phase, the FMGC erases the data entered for the flight. If the descent or the approach phase is inadvertently activated (manual approach phase activation, for example), the flight crew may reselect a CRZ FL on the PROG page to reactivate the CRZ phase.

VERTICAL REVISION

Ident.: DSC-22_20-30-20-05-00011025.0002001 / 17 AUG 10

2 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The flight crew uses vertical revisions to enter or modify:
- The speed limit in the climb and descent phases
- An altitude or speed constraint at the revised waypoint
- A step climb or a step descent
- New wind data
- A time constraint.

The vertical revision page is accessed by pressing a right hand select key of the flight plan page.

VERTICAL REVISION

Ident.: DSC-22_20-30-20-05-00011025.0004001 / 17 AUG 10

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The flight crew uses vertical revisions to enter or modify:

- The speed limit in the climb and descent phases
- An altitude or speed constraint at the revised waypoint
- A time constraint (RTA)
- A Constant Mach value to be kept in cruise
- A step climb or a step descent
- New wind data.

The vertical revision page is accessed by pressing a right hand select key of the flight plan page.

VERTICAL CONSTRAINTS (SPEED, ALTITUDE, TIME)

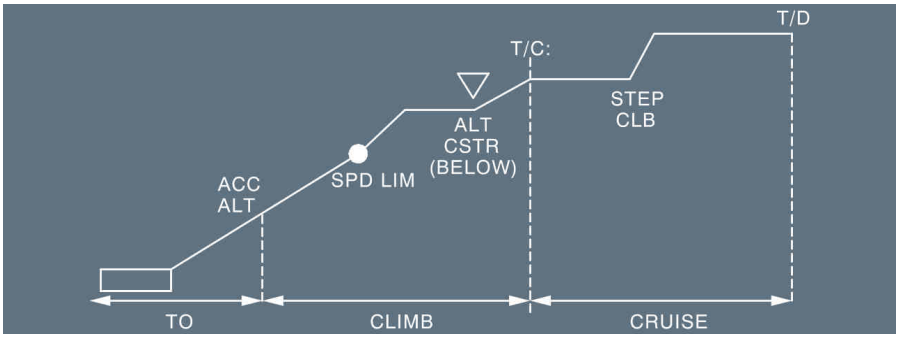
Ident.: DSC-22_20-30-20-05-00012689.0005001 / 18 FEB 15

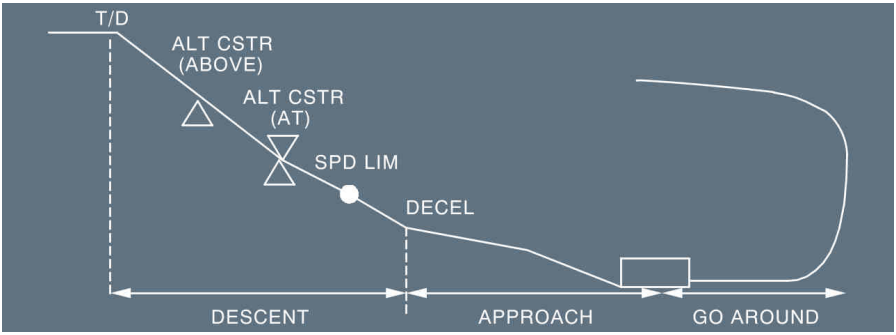
3 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The flight crew enters speed, altitude and time constraint, either to comply with ATC requests and specified procedures, or at the discretion of the flight crew, in response to operational variables.

SPEED LIMIT

A speed limit is associated with altitude as a maximum speed below a specified altitude (only one in climb and one in descent).





ALTITUDE CONSTRAINT

Altitude constraints may be attached to specific waypoints in the climb, descent, or approach phases.
To meet the altitude constraint, the aircraft must fly over the waypoint at an altitude equal, above or below the altitude constraint as specified by the flight crew or the database.

Note: *The database may contain an altitude constraint window (two altitudes between which the aircraft must fly passing over a given waypoint), but the flight crew cannot enter such a constraint manually.*

An altitude constraint is considered as missed if the system predicts more than 250 ft of difference between the constraint value and the predicted aircraft altitude.
Altitude constraints are observed in CLB or DES or APP NAV-FINAL modes.

The FMS automatically deletes from the F-PLN:
- The altitude constraints ("AT", "AT OR ABOVE", or "AT OR BELOW") with values greater than the CRZ FL
- The altitude constraint windows with the upper constraint greater than the CRZ FL.

The MCDU and the ND no longer display the deleted altitude constraints. These altitude constraints are no longer used for the computation of the FMS climb and descent profile.
In that case, the scratchpad of the MCDU displays the "CSTR DEL ABOVE CRZ FL" message.
The FMS does not delete the altitude constraints at the CRZ FL. The FMS computes the T/D, in order to respect these altitude constraints. However these altitude constraints are not used for guidance. If the flight crew initiates the descent before reaching the T/D, the aircraft descents below the altitude constraints, and the altitude constraints are missed (amber on the MCDU and on the ND).

SPEED CONSTRAINT

Speed constraints may be attached to specific waypoints in the climb, descent or approach phases. To meet the speed constraint, the aircraft must fly over the waypoint with a speed equal or less than the speed constraint.
A speed constraint is considered as missed if the system predicts an aircraft speed 10 kt greater than the speed constraint.
Speed constraints are observed when NAV mode is engaged and speed target is managed. Otherwise speed constraints are disregarded.

TIME CONSTRAINT

Time constraint may be attached to any waypoint except the "from" waypoint.

Note: *No constraint can be associated with go-around waypoints.*

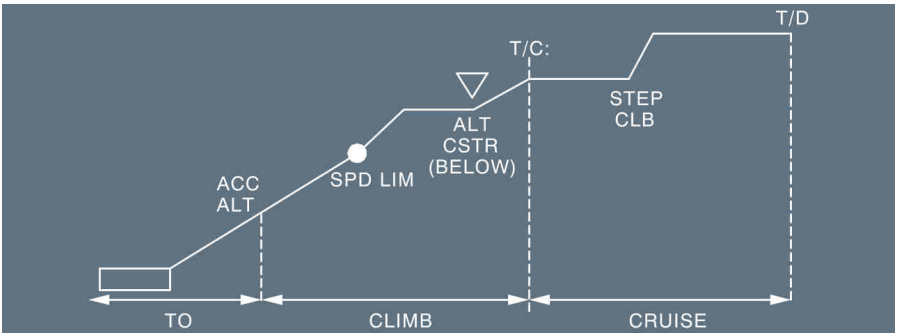
VERTICAL CONSTRAINTS (SPEED, ALTITUDE, TIME)

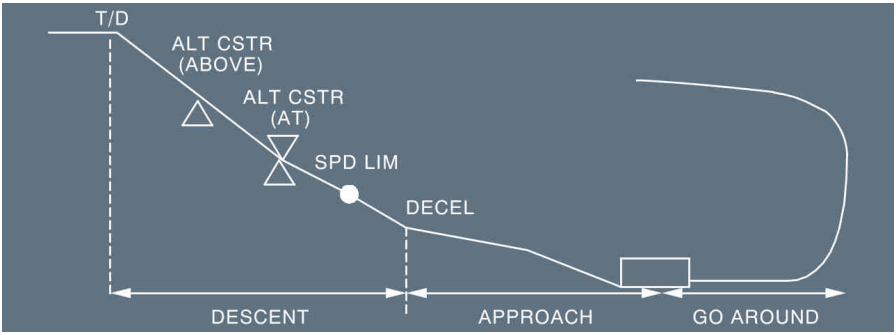
Ident.: DSC-22_20-30-20-05-00012689.0004001 / 18 FEB 15
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The flight crew enters speed, altitude and time constraint, either to comply with ATC requests and specified procedures, or at the discretion of the flight crew, in response to operational variables.

SPEED LIMIT

A speed limit is associated with altitude as a maximum speed below a specified altitude (only one in climb and one in descent).





ALTITUDE CONSTRAINT

Altitude constraints may be attached to specific waypoints in the climb, descent, or approach phases.
To meet the altitude constraint, the aircraft must fly over the waypoint at an altitude equal, above or below the altitude constraint as specified by the flight crew or the database.

Note: *The database may contain an altitude constraint window (two altitudes between which the aircraft must fly passing over a given waypoint), but the flight crew cannot enter such a constraint manually.*

An altitude constraint is considered as missed if the system predicts more than 250 ft of difference between the constraint value and the predicted aircraft altitude.
Altitude constraints are observed in CLB or DES or APP NAV-FINAL modes.

The FMS automatically deletes from the F-PLN:
- The altitude constraints ("AT", "AT OR ABOVE", or "AT OR BELOW") with values equal to the CRZ FL, or greater than the CRZ FL
- The altitude constraint windows with lower constraints equal to the CRZ FL, or greater than the CRZ FL
- The upper constraint of altitude constraint windows with upper constraints equal to the CRZ FL, or greater than the CRZ FL. If the lower constraint of the altitude constraint window is below the CRZ FL, the FMS deletes only the upper constraint of the altitude constraint window and keeps the lower constraint of the altitude constraint window.

The MCDU and the ND no longer display the deleted altitude constraints. These altitude constraints are no longer used for the computation of the FMS climb and descent profile.
In that case, the scratchpad of the MCDU displays the "CSTR DEL ABOVE CRZ FL" message.

SPEED CONSTRAINT

Speed constraints may be attached to specific waypoints in the climb, descent or approach phases. To meet the speed constraint, the aircraft must fly over the waypoint with a speed equal or less than the speed constraint.
A speed constraint is considered as missed if the system predicts an aircraft speed 10 kt greater than the speed constraint.
Speed constraints are observed when NAV mode is engaged and speed target is managed. Otherwise speed constraints are disregarded.

TIME CONSTRAINT

Time constraint may be attached to any waypoint except the "from" waypoint.

Note: *No constraint can be associated with go-around waypoints.*

Intentionally left blank

FMS2 Honeywell

GENERAL

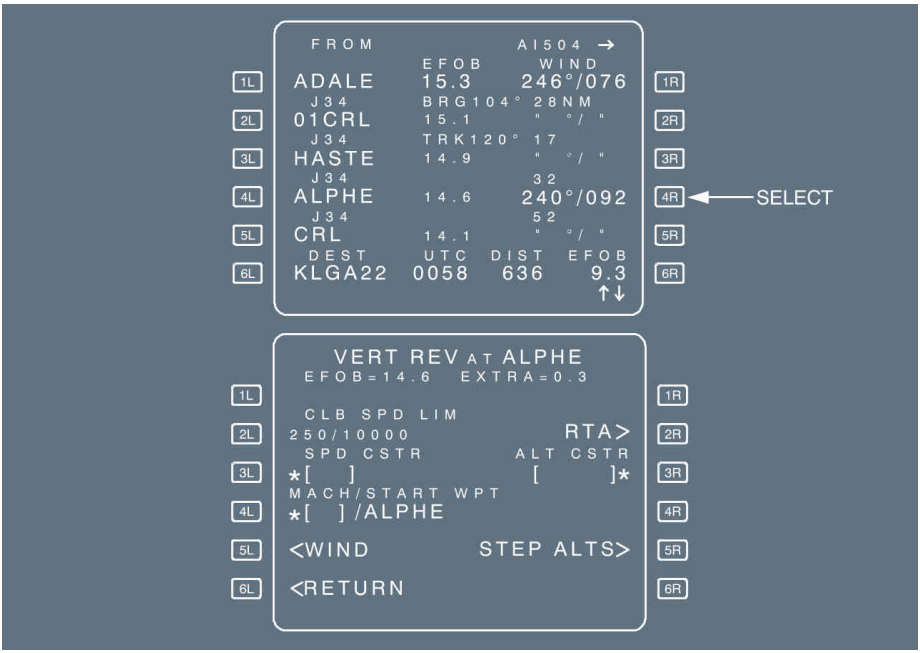
Ident.: DSC-22_20-30-20-25-00009323.0008001 / 14 MAY 12

[1] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The vertical revision function allows the pilot to modify the following parts of the flight plan:

- Speed limit
- Speed and altitude constraints
- Time constraints
- Wind
- Step climb or step descent
- Constant Mach Segment

The pilot selects these functions by pressing the right key on flight plan A or B.



Note: *This vertical functions section only describes the following three functions: Wind and time constraints, and Constant Mach Segment.*
For other vertical revision functions: Refer to the Systems Related Procedures section.

REQUIRED TIME OF ARRIVAL (RTA)

Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063

Ident.: DSC-22_20-30-20-25-A-00009324.0001001 / 24 JAN 11

2

GENERAL

A Required Time of Arrival (RTA) is a time requirement to be met over a specified waypoint of the lateral flight plan, including destination but excluding the origin and FROM waypoints. When the predictions are available, the time constraint value is replaced by the predicted time at the related waypoint, highlighted by a star (*):

- If the RTA is predicted as matched, the star (*) is in magenta.
- If the RTA is predicted as missed, the star (*) is in amber.

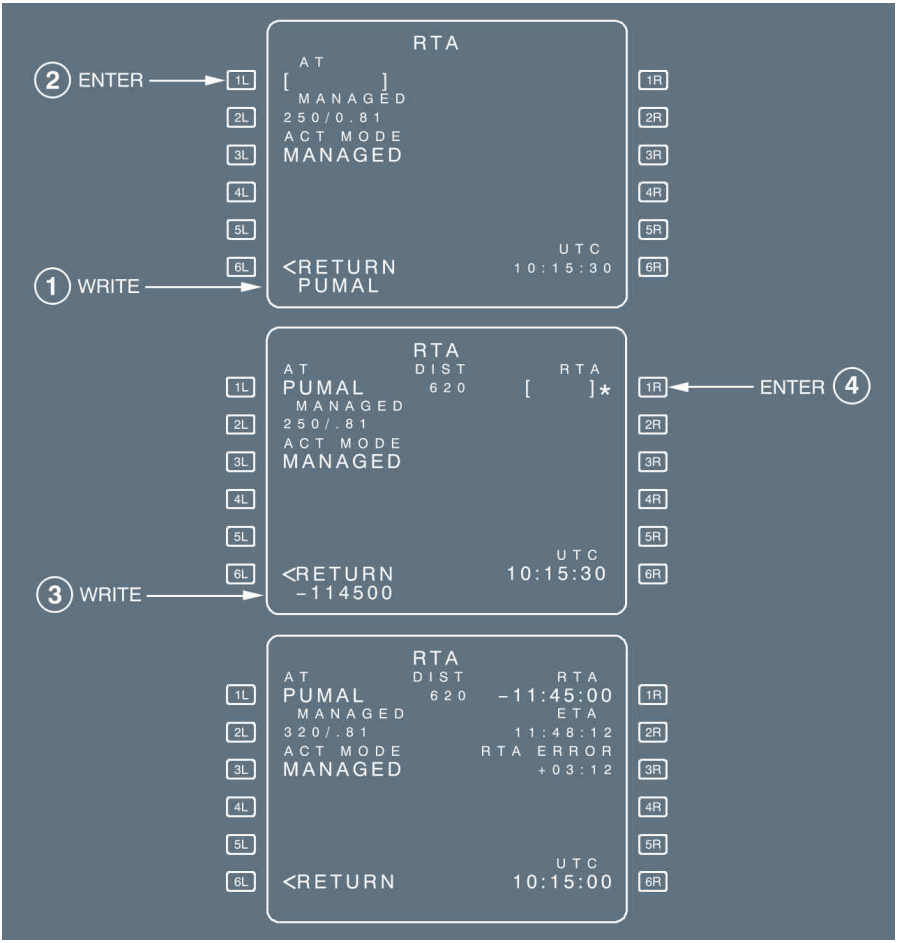
No specific symbol is provided on the ND.
A time constraint is cleared in the same way as any other constraints. If a time constraint is automatically deleted. The MCDU displays an “RTA DELETED” message.

Ident.: DSC-22_20-30-20-25-A-00000489.0008001 / 14 MAY 12

3

ENTERING A REQUIRED TIME OF ARRIVAL

SELECT the F-PLN key on the MCDU.
SELECT a VERT REV at the revised waypoint.
SELECT the RTA prompt (2R).
CHECK, ENTER or MODIFY the identifier of the waypoint at which the time constraint is to be defined in the [1L] field.



WRITE the required time of arrival.

The format is +/- HHMMSS (entry of seconds is not mandatory).

ENTER it in the 1R field.

CHECK the 2R and 3R fields to determine whether the entered constraint can be met.

WIND - TEMPERATURE - QNH

Ident.: DSC-22_20-30-20-25-B-00000490.0001001 / 24 JAN 11

4 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

GENERAL

In order to receive the best predictions, the pilot must enter wind and temperature values for the different phases and for the various waypoints of the cruise phase.
The system uses the temperature value at a given altitude, associated with the tropopause entered on the INIT A page, to optimize the temperature profile.

Ident.: DSC-22_20-30-20-25-B-00009327.0001001 / 24 JAN 11

5 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

ENTERING THE TRIP WIND AND TEMPERATURE DURING F-PLN INITIALIZATION

The trip wind is a mean wind component for the entire flight from origin to destination. The pilot can enter it on the INIT B page prior to engine start. It is usually defined by the airline's flight operations on the computerized flight plan.
The FMGS does not consider the trip wind for alternate predictions.
The trip wind is used as long as no winds are entered in the CLB, CRZ, and DES WIND pages.
When the pilot enters a CLB, CRZ or DES WIND, the FMGS disregards the trip wind.

PRESS the INIT key.
INSERT the temperature at cruise FL.
On the INIT B page, INSERT the TRIP WIND.

The trip wind is defined as a headwind component (HDXX, XXHD or –XX), or as a tailwind (TLXX, XXTL or +XX).
The FMGS uses the trip wind to compute preliminary performance, time and fuel predictions.

CHECK the predictions on the F-PLN B page.

Ident.: DSC-22_20-30-20-25-B-00009328.0008001 / 01 MAR 18

6 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

ENTERING THE WIND AND TEMPERATURE DURING F-PLN INITIALIZATION

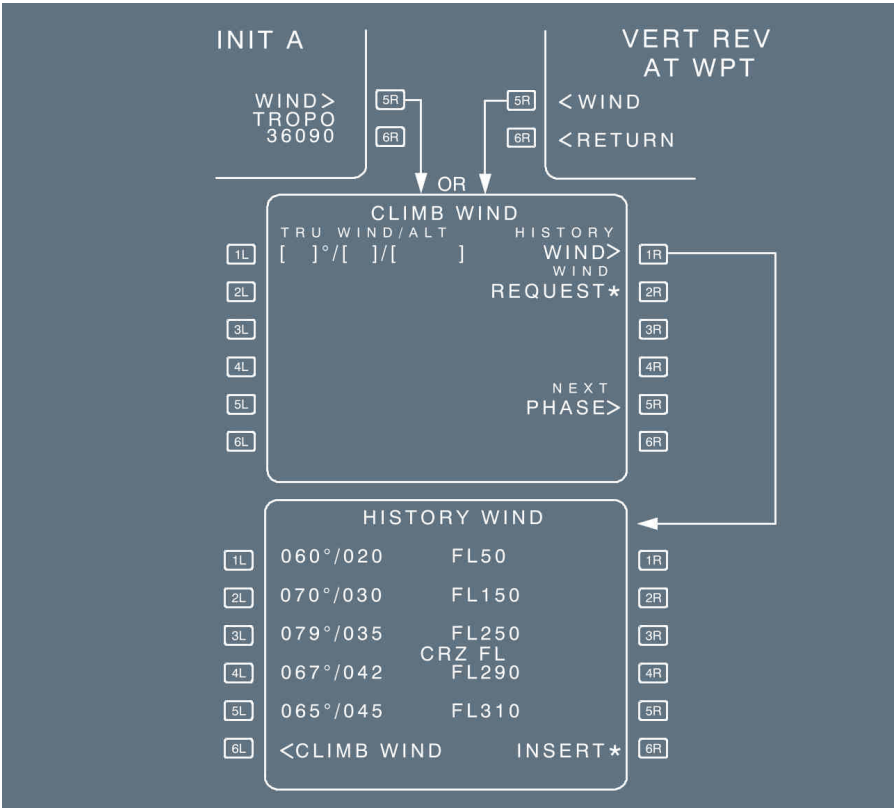
When completing the INIT A page, and once the wind and cruise FL temperature forecasts are available, the pilot may enter them, if significantly different, by pressing the wind prompt.
The pilot will access the different wind pages by using the NEXT PHASE and PREV PHASE prompts. He will slew the CRZ WIND page to access the various cruise wind waypoints.

The pilot will enter wind data as follows:

- For climb phase: By inserting either the HISTORY WIND data (as recorded during the last descent), or by inserting winds (at up to 5 altitudes) on the CLIMB WIND page.
- For cruise phase: By inserting winds (at up to 4 FL) at various CRZ waypoints on the CRZ WIND pages. The 4 levels are the same for all the cruise waypoints. The pilot may enter the temperature of each waypoint and at destination on this page.
- For descent phase: By inserting winds (at up to 5 FL/altitudes) on the DES WIND page.
- For the ALTN F-PLN, an average wind may be entered on the DES WIND page for alternate cruise flight level.

Note: *Wind can be automatically received (and inserted) through the ACARS system.*

Once a CLIMB, CRZ, or DESCENT WIND is entered, the system ignores the TRIP WIND.
Once temperature and winds are inserted, the FMGS computes the ISA profile, and the F-PLN B page displays the forecast wind profile (by linear interpolation and propagation).



WIND ENTRY RULES

When a wind entry is performed from an empty field, direction/velocity/altitude (or flight level) must be entered simultaneously. One entry in each bracket.
Overwriting a wind cancels the previous one.
Entered wind data can be cleared: The field reverts to brackets.
Propagated wind cannot be cleared.
Entering a new altitude, over an existing altitude, replaces that existing altitude at all cruise waypoints. Any winds entered at the overwritten altitude are lost at all cruise waypoints.

ENTERING THE HISTORY WIND (F-PLN INITIALIZATION)

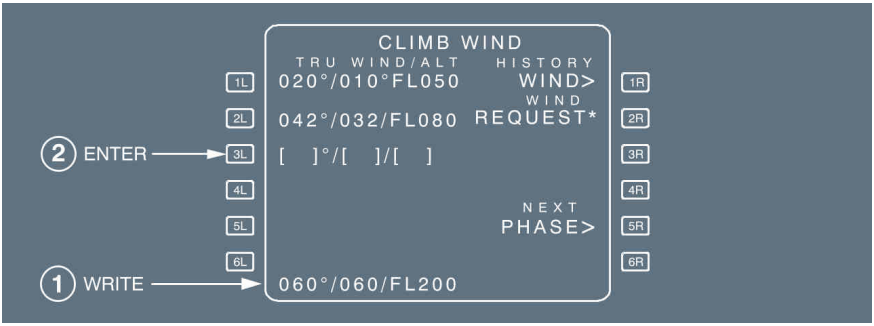
The pilot may insert the history wind, but cannot modify this page.

If convenient, PRESS the (6R) prompt to insert. After insertion, the [6R] prompt is suppressed, but the page still displays the wind values for information.

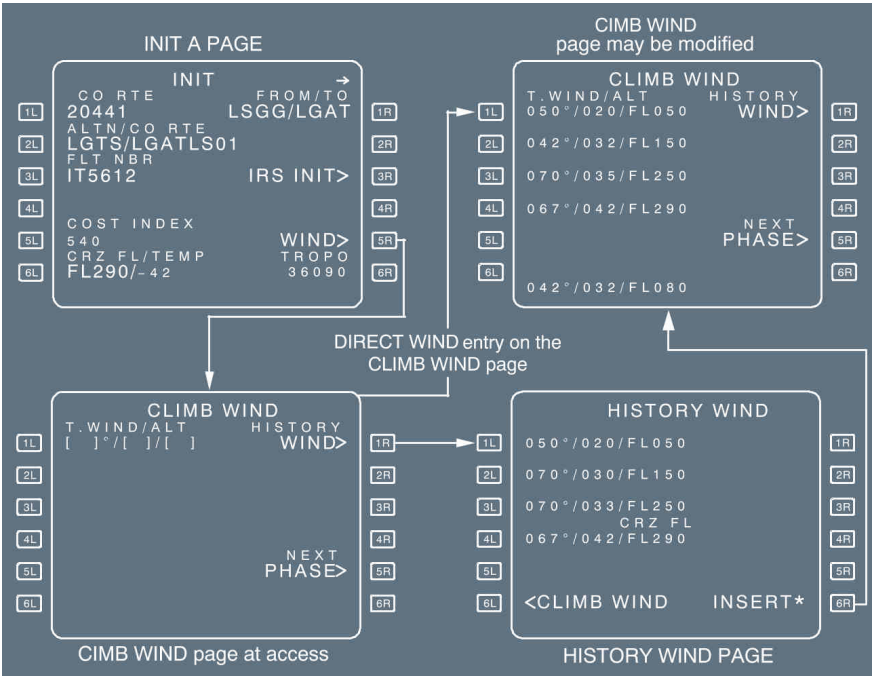
ENTERING THE CLIMB WIND (F-PLN INITIALIZATION)

If history winds are not convenient:

SELECT CLIMB WIND page from INIT A page or VERT REV page.
WRITE new winds into the scratchpad and ENTER.



Winds entered on the CLIMB, CRZ, and DESCENT WIND pages are always true north referenced.
Tower wind, entered on PERF APPR page is magnetic-referenced.
The pilot can enter “GRND” in the altitude field for wind at destination.
CLIMB WIND cannot be modified when the climb phase is active.
At climb phase transition, wind data switches from blue to green, and any attempted modification will trigger the “NOT ALLOWED” message.
The system extrapolates the highest wind entry to all higher levels.
The system interpolates winds between 2 entered levels.



Ident.: DSC-22_20-30-20-25-B-00009329.0001001 / 01 MAR 18

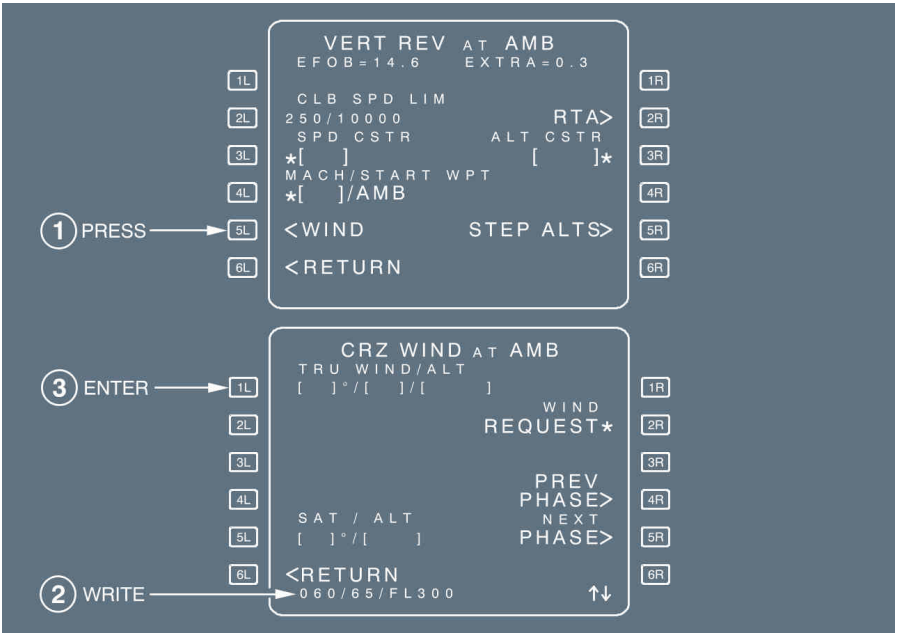
[7] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

ENTERING THE CRUISE WINDS AND TEMPERATURES

At flight plan initialization, the CRZ WIND page displays all cruise waypoints with empty brackets. In flight, only downpath waypoints are displayed.

SELECT VERT REV at WPT.
PRESS the WIND prompt.
SELECT NEXT PHASE.
SLEW until relevant waypoint is displayed.
WRITE and ENTER the new temperature into the scratchpad.
WRITE and ENTER the new wind data into the scratchpad.

WIND and temperature may be entered through the ACARS pages.



The crew will modify the entered winds and temperatures in flight, if a significant difference is expected (greater than 30 kt or 30 ° for the wind data and greater than 5 °C for the temperature). The system propagates the pilot's (or ACARS) wind and temperature entries downpath, until a waypoint for which a different temperature or wind has been entered (for the same flight level), or until the last cruise waypoint.

The forecast winds at a waypoint are determined as follows:

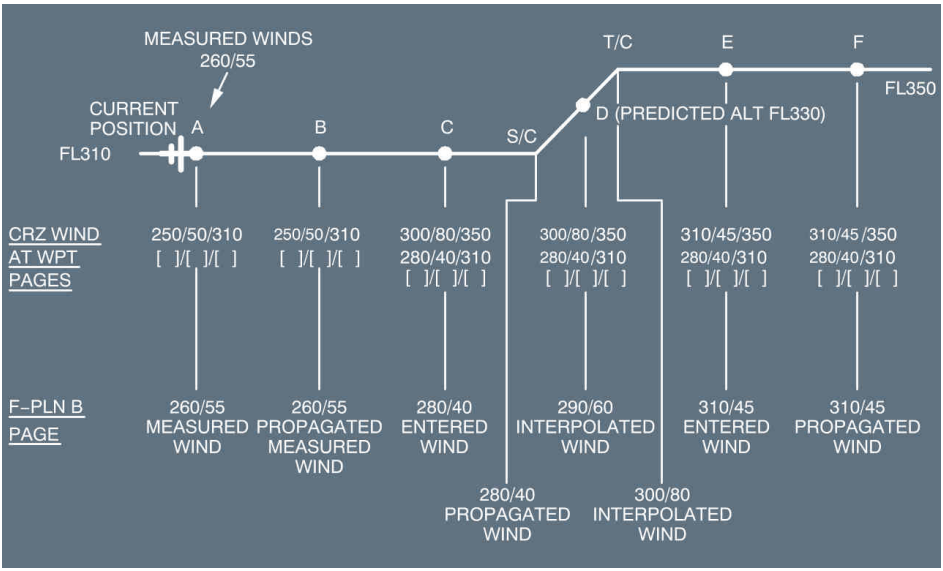
- If the predicted altitude at the waypoint matches an altitude defined in the CRZ WIND page, the forecast wind, is the corresponding entered or propagated wind, displayed at that waypoint on the CRZ WIND page.
- If the predicted altitude lies between two altitudes entered on the CRZ WIND page, the wind direction and velocity are linearly interpolated.
- If the predicted altitude is above or below the set of cruise altitudes, the forecast wind is a constant value extrapolated from the entered or propagated wind at the highest (or lowest) altitude displayed on the CRZ WIND page for that point.

Once in flight, the FMGS considers the actual measured wind up to 200 NM ahead of the aircraft to permanently update the wind profile. This updated wind profile is used to compute the predictions and the performance data, but is not displayed to the crew.

The CRZ WIND pages display the propagated values in small blue font, and the pilot (or ACARS) entries in large blue font.

Note: *The CRZ WIND page displays ACARS or crew-entered or propagated data. It never displays computed data (F-PLN B page only).*

Example:



Ident.: DSC-22_20-30-20-25-B-00009330.0001001 / 24 JAN 11

8 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

EFFECT OF WIND ENTRIES ON OPTIMUM FLIGHT LEVEL

The OPT FL computation considers the wind entries made at different altitudes (normally at the different CRZ FL).

When flying the subsequent CRZ FL, the OPT FL proposed by the PROG page may be affected by the wind entries made at the previous CRZ FL; these winds are automatically propagated and may be significantly different from the actual winds.

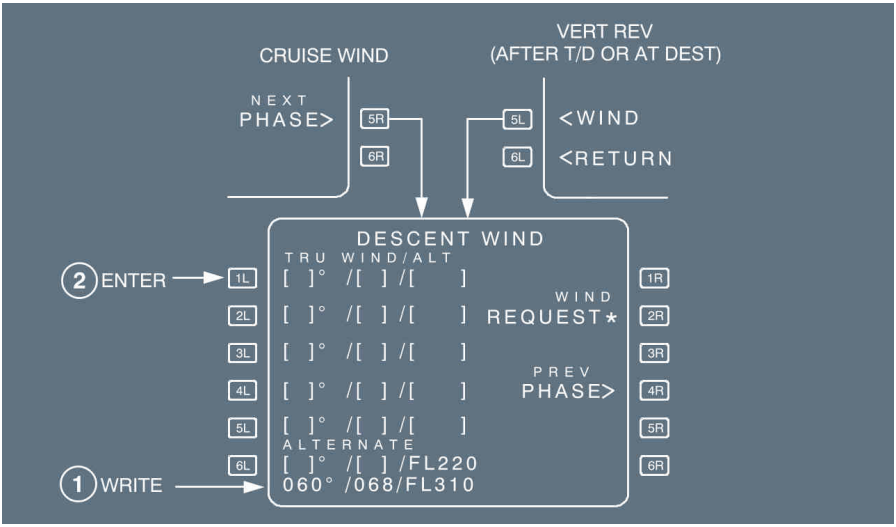
We recommend the following procedure: If the propagated winds at the lower altitudes are significantly different from the actual winds, enter the wind at these altitudes, or if not available, the wind measured at the current CRZ FL.

ENTERING THE DESCENT WINDS

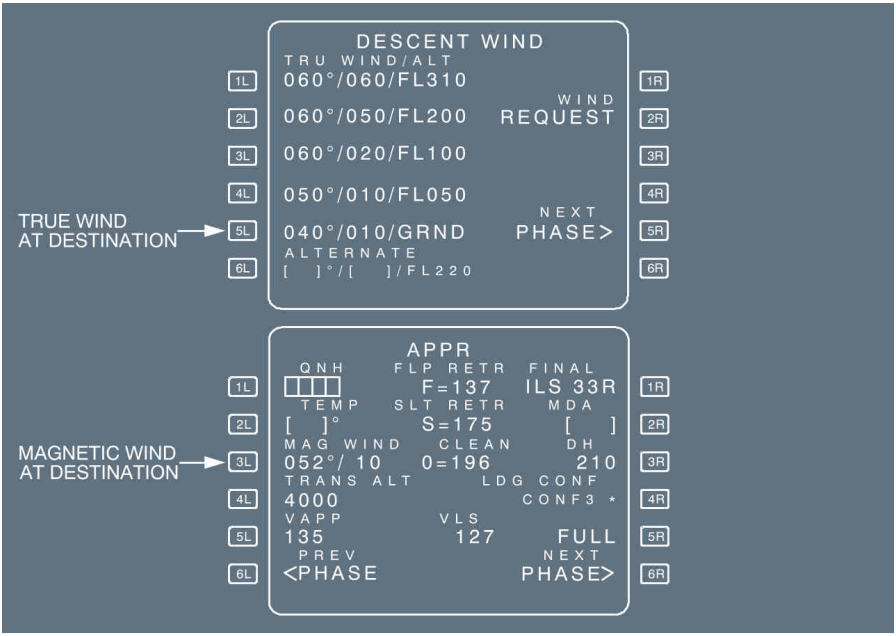
The pilot will enter as many as one wind at 5 different FL or altitudes. This wind data will be used for descent profile and prediction computation.

From the vertical revision page, or from the CRZ WIND page:

PRESS the WIND prompt.
SELECT the DESCENT WIND page.
ENTER up to 5 different “wind/altitude”.



A wind is written as true direction/velocity/flight level or altitude in feet.
If the crew enters “GRND” in the altitude field, the system uses the associated wind as wind at destination.
The descent profile is corrected, as well as the tower wind entered in the PERF APPR page.



When the winds have been entered, the F-PLN B page displays the forecasted wind profile at all descent waypoints, using values it has interpolated from manual entries. Descent winds are not modifiable when the descent, approach, or go-around phase is active. At descent phase transition, wind data switches from blue to green, and any attempted modification will trigger the “NOT ALLOWED” message.

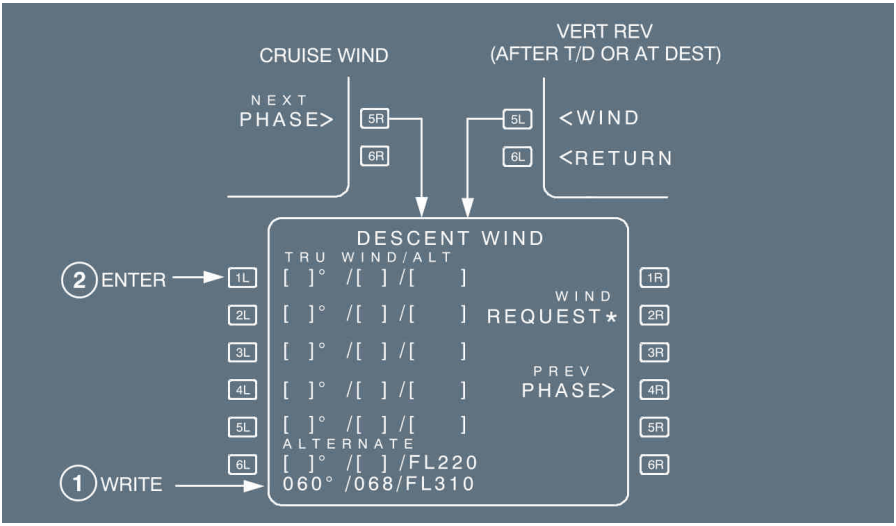
Ident.: DSC-22_20-30-20-25-B-00009331.0016001 / 14 MAY 12
9 **Applicable to: MSN 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

ENTERING THE DESCENT WINDS

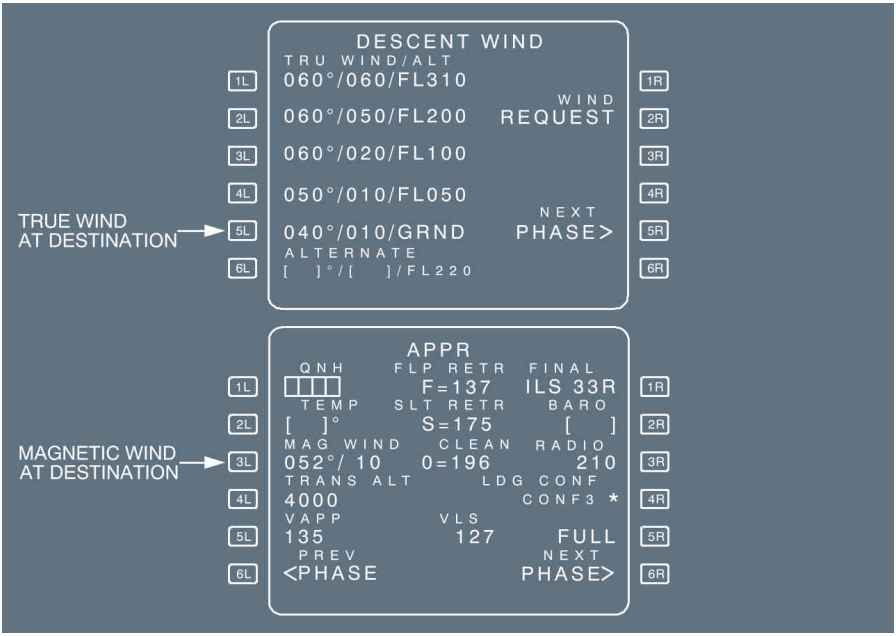
The pilot will enter as many as one wind at 5 different FL or altitudes. This wind data will be used for descent profile and prediction computation.

From the vertical revision page, or from the CRZ WIND page:

PRESS the WIND prompt.
SELECT the DESCENT WIND page.
ENTER up to 5 different “wind/altitude”.



A wind is written as true direction/velocity/flight level or altitude in feet.
If the crew enters “GRND” in the altitude field, the system uses the associated wind as wind at destination.
The descent profile is corrected, as well as the tower wind entered in the PERF APPR page.



When the winds have been entered, the F-PLN B page displays the forecasted wind profile at all descent waypoints, using values it has interpolated from manual entries. Descent winds are not modifiable when the descent, approach, or go-around phase is active. At descent phase transition, wind data switches from blue to green, and any attempted modification will trigger the “NOT ALLOWED” message.

Ident.: DSC-22_20-30-20-25-B-00009332.0001001 / 24 JAN 11

10 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

ENTERING THE ALTERNATE WIND

Alternate wind is entered on the DESCENT WIND page.

The alternate cruise (ALTN CRZ) level defaults to:

- FL 220 if the length of the ALTN F-PLN is less than 200 NM.
- FL 310 if the length of the ALTN F-PLN is greater than 200 NM.

If an alternate wind is not defined, the predictions are computed with a wind defaulted to zero. Alternate wind can be modified at any time.

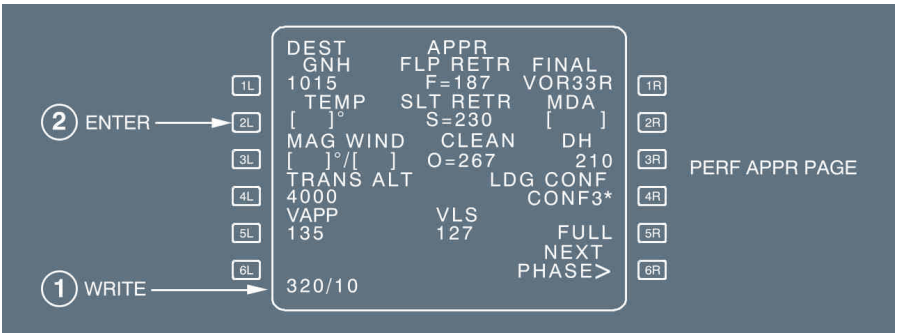
The alternate wind profile is as follows:

- ALTN CLB wind : Mean wind between ALTN CRZ wind (as entered on the DESCENT WIND page), and the wind at primary DEST (as entered on the PERF APPR page).
- ALTN CRZ wind : If no ALTN WIND has been entered on the DESCENT WIND page, the WIND at primary DEST (as entered on the PERF APPR page) is considered.
  In case no entry is made, zero wind is assumed.
- ALTN DES wind : Mean wind between ALTN CRZ WIND and wind at FL 100.
  Wind at FL 100 = Interpolation between wind at ALTN CRZ FL and zero at ALTN DEST.

Ident.: DSC-22_20-30-20-25-B-00009333.0001001 / 14 MAY 12
Applicable to: MSN 01767-01920, 02108, 02275-02334

ENTERING THE APPROACH WIND TEMPERATURE AND QNH

The wind at destination is entered in the 3L field of the PERF APPR page.
It is copied in true reference into the DESCENT WIND page at ground level (GRND), and F-PLN B page at destination. A ground entry on the DESCENT WIND page is, in the same way, automatically copied to F-PLN B page and the PERF APPR page.
This wind is modifiable in descent, approach, and go-around phases.



SELECT the PERF key on the MCDU.
PRESS NEXT PHASE (6R).
WRITE QNH and temperature, and enter them.
WRITE the surface wind in the scratchpad, and enter it.

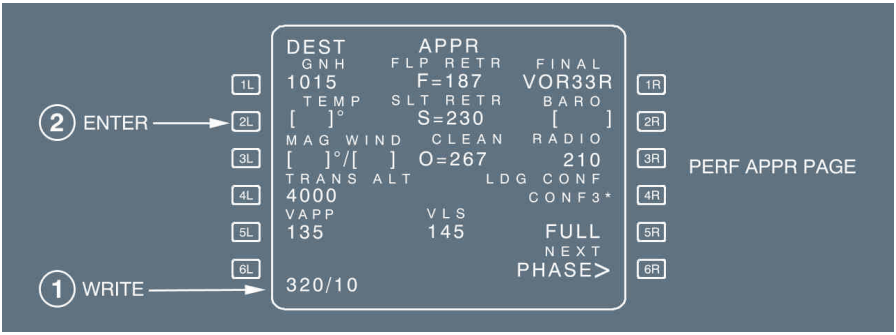
Note: *At each wind entry, the descent profile is recomputed. Therefore, it is recommended to enter all winds, temperature, and QNH at the same time in order to minimize recomputation time.*

Ident.: DSC-22_20-30-20-25-B-00009333.0016001 / 14 MAY 12

11 **Applicable to: MSN 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

ENTERING THE APPROACH WIND TEMPERATURE AND QNH

The wind at destination is entered in the 3L field of the PERF APPR page.
It is copied in true reference into the DESCENT WIND page at ground level (GRND), and F-PLN B page at destination. A ground entry on the DESCENT WIND page is, in the same way, automatically copied to F-PLN B page and the PERF APPR page.
This wind is modifiable in descent, approach, and go-around phases.



SELECT the PERF key on the MCDU.
PRESS NEXT PHASE (6R).
WRITE QNH and temperature, and enter them.
WRITE the surface wind in the scratchpad, and enter it.

Note: *At each wind entry, the descent profile is recomputed. Therefore, it is recommended to enter all winds, temperature, and QNH at the same time in order to minimize recomputation time.*

CONSTANT MACH SEGMENT

Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063

Ident.: DSC-22_20-30-20-25-C-00009334.0001001 / 14 MAY 12

12

GENERAL

The pilot can enter the start and end points of a constant Mach segment, and its associated Mach number, from the VERT REV page.
Only one constant Mach segment may be defined in the active flight plan, and only one in the secondary flight plan. No constant Mach segment can be defined in the alternate flight plan.

Ident.: DSC-22_20-30-20-25-C-00000491.0008001 / 01 OCT 12

13

ENTERING A CONSTANT MACH SEGMENT

SELECT the F-PLN key on the MCDU.
SELECT VERT REV at a waypoint.

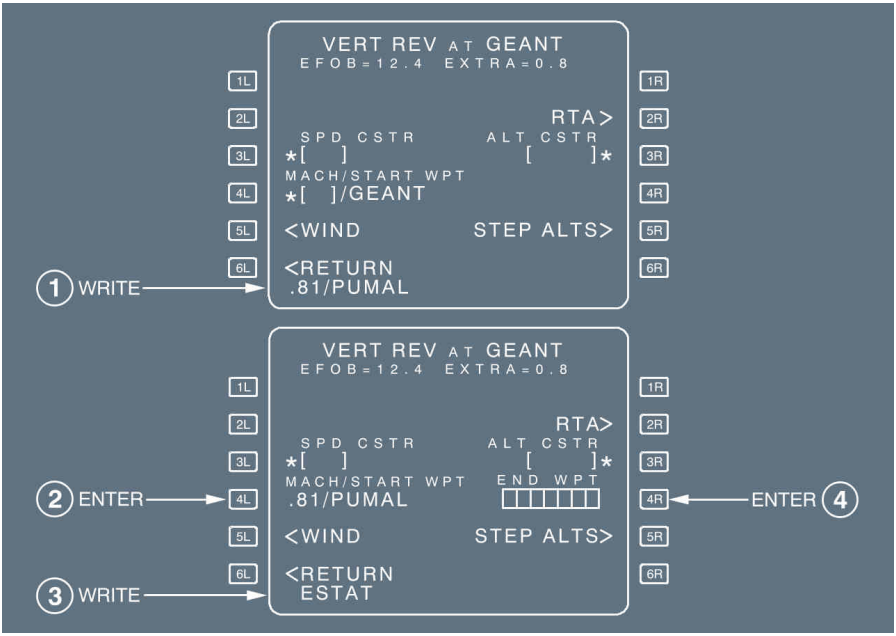
(Except the destination and alternate flight plan waypoint).

WRITE the Mach/start waypoint pair.

It is possible to enter only the Mach or the waypoint. But, for the first entry, a Mach entry is mandatory.
The waypoint must be located in front of the aircraft and must be part of the cruise.

ENTER it in the 4L field

The END WPT prompt appears in the 4R field.



WRITE the end waypoint.

The end waypoint must be part of the cruise.

ENTER it in the 4R field.

FMS2 Thales

GENERAL

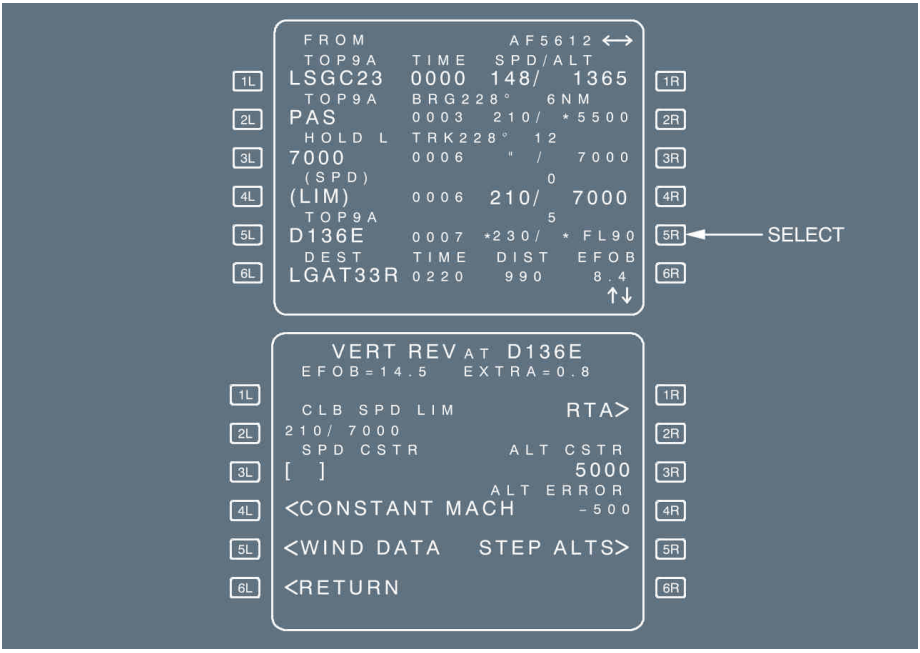
Ident.: DSC-22_20-30-20-28-00000492.0002001 / 01 OCT 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The vertical revision function allows the crew to insert or modify the following items:

- The Speed limit (SPD LIM)
- Speed and altitude constraints
- Time constraints (RTA)
- Predicted Winds
- Step climb or step descent
- Constant Mach in cruise

The crew calls up the VERT REV page by pressing the right key on F-PLN A or B page.



Note: *This vertical functions section only describes the following three functions: Wind and time constraints, and Constant Mach Segment.*
For other vertical revision functions: Refer to the Systems Related Procedures section.

TIME CONSTRAINT/RTA

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Ident.: DSC-22_20-30-20-28-A-00000493.0002001 / 09 FEB 11

GENERAL

A Required Time of Arrival (RTA) is a time requirement to be met over a specified waypoint of the lateral flight plan, including destination but excluding the origin and FROM waypoints.

Once the predictions are available, the time constraint value is replaced by the predicted time at the related waypoint, highlighted by a star (*):
- If the RTA is predicted as matched, the star (*) is in magenta.
- If the RTA is predicted as missed, the star (*) is in amber.

No specific symbol is provided on the ND.
A time constraint is cleared as any other constraints. If a time constraint is automatically deleted, a “RTA DELETED” message is displayed on the MCDU.

Ident.: DSC-22_20-30-20-28-A-00009483.0006001 / 01 OCT 12

TIME CSTR/RTA ENTRY - ENTERING A REQUIRED TIME OF ARRIVAL

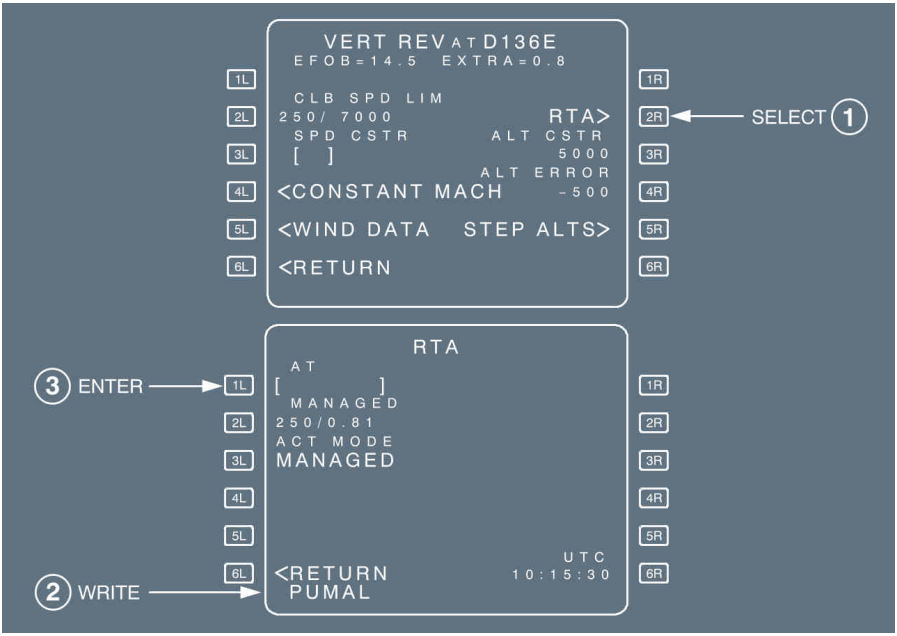
SELECT the F-PLN Key on the MCDU.
SELECT a VERT REV at any waypoint.
SELECT the RTA prompt (2R).

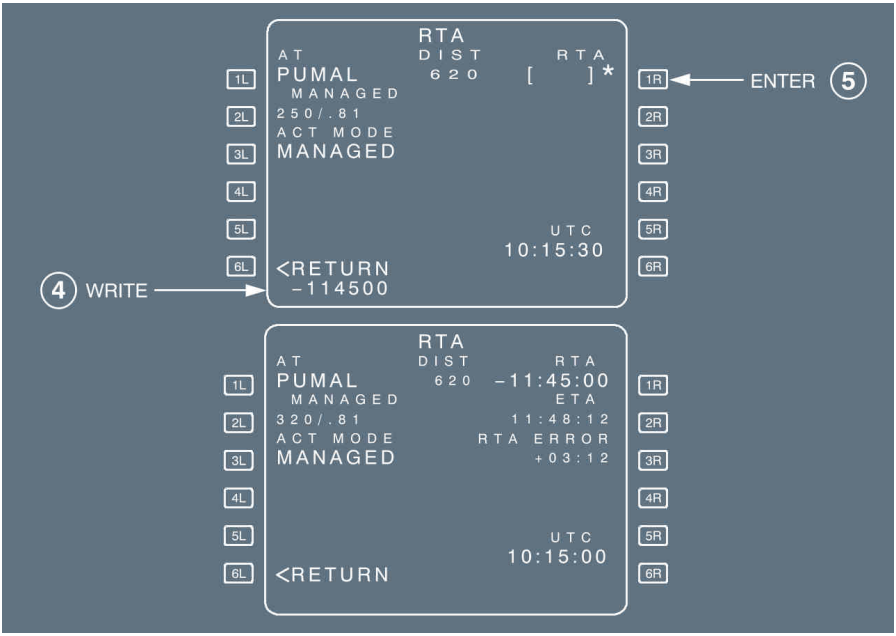
The MCDU displays the RTA page.

ENTER the waypoint where the time constraint has to be defined, in the [1L] prompt.

The RTA prompt and the distance indications appear.

CHECK and INSERT the TMPY F-PLN, or continue with next revision


VERT REV AT D136E
EFOB=14.5 EXTRA=0.8
CLB SPD LIM
250/ 7000
RTA>
SPD CSTR
ALT CSTR
[ ]
5000
ALT ERROR
<CONSTANT MACH
-500
<WIND DATA STEP ALTS>
<RETURN
1L
2L
3L
4L
5L
6L
1R
2R
3R
4R
5R
6R
SELECT 1
RTA
AT
[ ]
MANAGED
250/0.81
ACT MODE
MANAGED
UTC
10:15:30
<RETURN
PUMAL
3 ENTER
2 WRITE



ENTER the required time of arrival, in the [1R] field.

The format is +/- HHMMSS (entry of seconds is not mandatory).

CHECK the 2R and 3R fields to determine whether the entered constraint can be met.

WIND - TEMPERATURE - QNH

Ident.: DSC-22_20-30-20-28-B-00009484.0002001 / 09 FEB 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

GENERAL

In order to obtain the best predictions, the crew must enter wind values for the different phases and for various waypoints of cruise phase.

The system uses the temperature value at a given altitude, associated with the tropopause entered on the INIT A page, to optimize the temperature profile.

Ident.: DSC-22_20-30-20-28-B-00009485.0013001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

ENTERING THE TRIP WIND AND TEMPERATURE DURING F-PLN INITIALIZATION

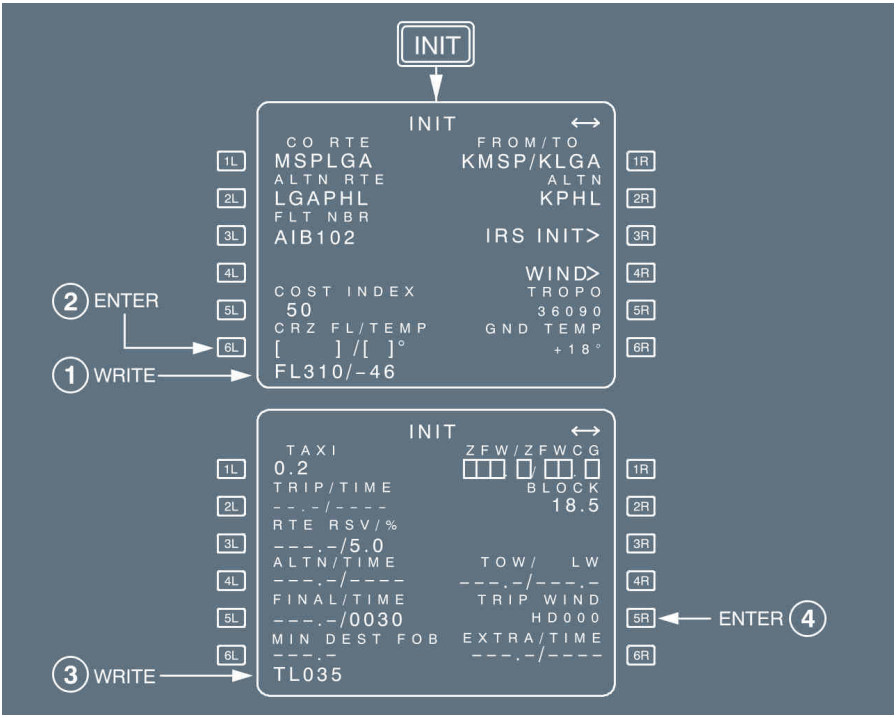
The trip wind is a mean wind component for the entire flight from origin to destination. The crew can enter it on the INIT B page before engine start. It is usually shown on the computerized flight plan.
The FMGS does not consider the trip wind for alternate predictions.
Trip wind function is intended for on-ground predictions only. If it is used for this purpose, the crew should then enter winds on WIND pages prior to departure. In this case, TRIP WIND field on INIT B page will be dashed.

PRESS the INIT key.
INSERT the temperature at CRZ FL (6L field).

This temperature is negative by default. As a consequence, entry of "50" is automatically converted by the FMS into "-50".

On the INIT B page, INSERT the TRIP WIND (5R field).

The trip wind, is defined as a headwind component (HDXX, XXHD or - XX), or as a tailwind (TLXX, XXTL or + XX).
The FMGS uses the trip wind to compute preliminary performance, time and fuel predictions.



Ident.: DSC-22_20-30-20-28-B-00009486.0019001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

ENTERING THE WIND AND TEMPERATURE DURING F-PLN INITIALIZATION

When completing the INIT A page, and once the wind and cruise FL temperatures forecasts are available, the crew can enter them, if significantly different, by pressing the wind prompt.
The crew accesses the various WIND pages by using the NEXT PHASE and PREV PHASE prompts. They can slew the CRZ WIND page to access the various wind values at each cruise waypoints.

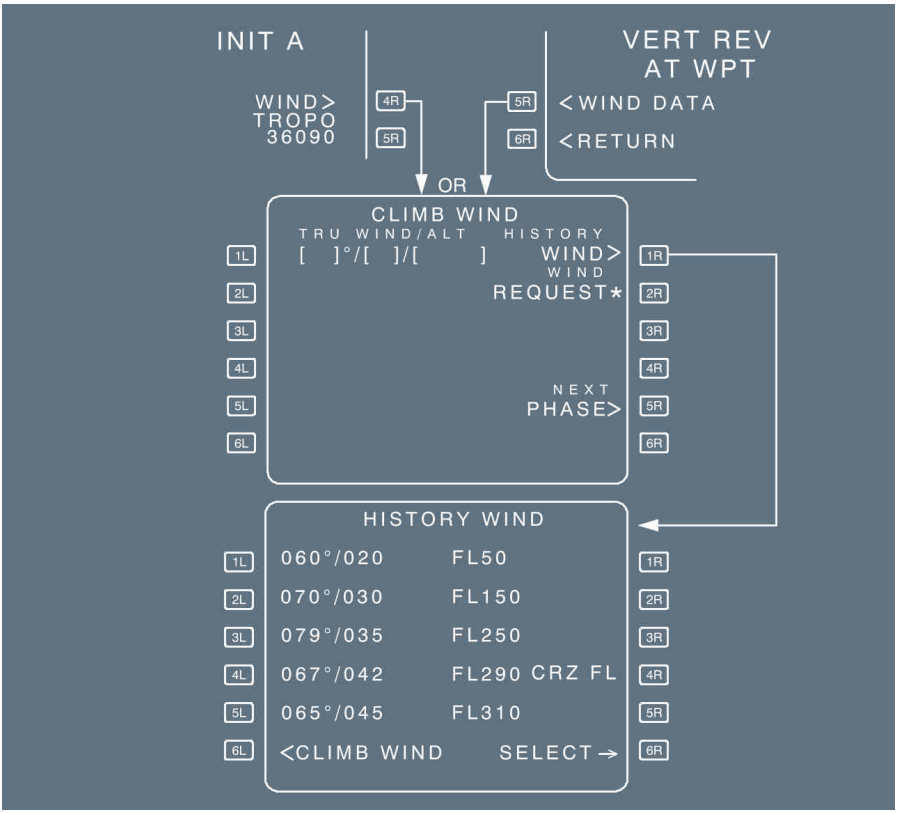
The crew can enter wind data as follows:

- For climb phase: By inserting either the HISTORY WIND data (as recorded during the last descent), or by inserting winds (at up to 5 altitudes/FL) on the CLIMB WIND page
- For cruise phase: By inserting winds (at up to FL 4) at various CRZ waypoints on the CRZ WIND pages. The 4 levels are the same for all the cruise waypoints. The crew may enter the temperature at each waypoint on this page

- For descent phase: By inserting winds (at up to FL 5 /altitudes) on the DES WIND page
- For the ALTN F-PLN, an average wind may be entered on the DES WIND page for alternate cruise flight level.

Note: *Wind can be automatically received (and inserted) via the ACARS system. Refer to DSC-22_20 Auto Flight - Flight Management / 70 AOC Functions / B Wind Data / Wind Data - Request for Wind Data.*

Once a CLIMB, CRZ, or DESCENT WIND is entered, the system ignores the TRIP WIND. Once temperature and winds are inserted, the FMGS computes the ISA profile, and the F-PLN B page displays the forecast wind profile (by linear interpolation and propagation).



WIND ENTRY RULES

When a wind entry is performed from an empty field, direction/velocity/altitude (or flight level) must be entered simultaneously. One entry in each bracket.
Overwriting a wind cancels the previous one. Entered wind data can be cleared: The field reverts to brackets.
Propagated wind cannot be cleared.
Entering a new altitude, over an existing altitude, replaces that existing altitude at all cruise waypoints. Any winds entered at the overwritten altitude are lost at all cruise waypoints.

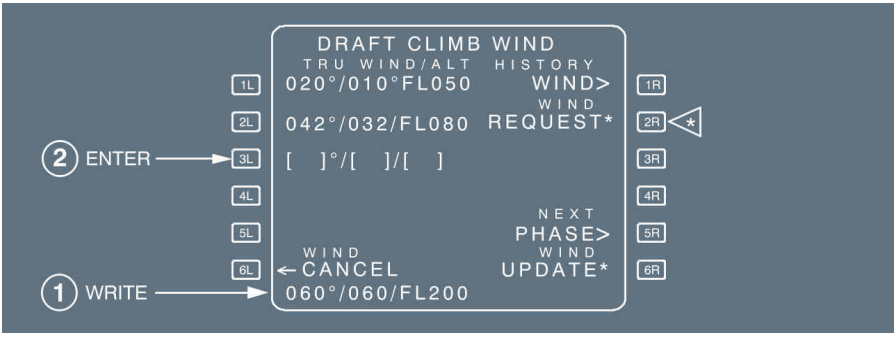
ENTERING THE HISTORY WIND (F-PLN INITIALIZATION)

The crew may insert the history winds, but cannot modify this page.

- **If convenient,** PRESS the (6R) prompt on the HISTORY WIND page to insert them. After insertion, the [6R] prompt is suppressed, but the page still displays the wind values for information.

ENTERING THE CLIMB WIND (F-PLN INITIALIZATION)

- **If history winds are not convenient:**
  SELECT CLIMB WIND page from INIT A page or VERT REV page.WRITE new winds in the scratchpad and ENTER them in the empty fields.

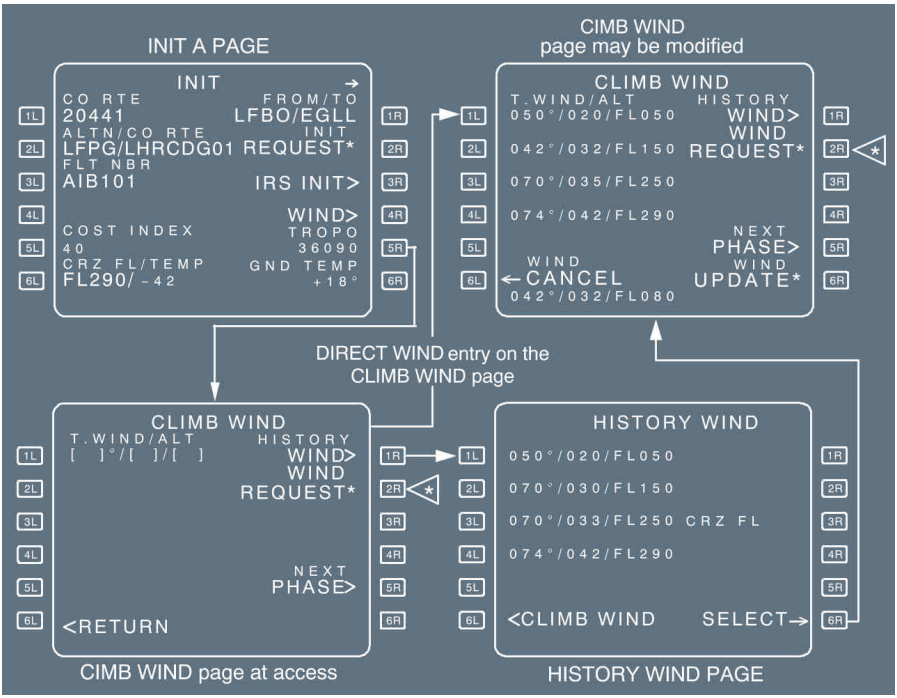


PRESS WIND UPDATE [6R] to insert the winds.

"DRAFT" disappears and the wind data become blue.

The crew can enter "GRND" in the altitude field to specify the wind at ground level, at the departure airport.
CLIMB WIND cannot be modified when the climb phase is active.
At climb phase transition, wind data switches from blue to green colour and any attempted modification will trigger the "NOT ALLOWED" message.

The system interpolates winds between 2 entered levels.



Ident.: DSC-22_20-30-20-28-B-00009487.0019001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

ENTERING THE CRUISE WINDS AND TEMPERATURE

A flight plan initialization, the CRZ WIND page displays all cruise waypoints with empty brackets. Until predictions are available, all the waypoints not being part of a SID, STAR or approach are considered as cruise waypoints. In flight only downpath waypoints are displayed.

SELECT INIT or VERT REV at WPT.
PRESS the WIND DATA prompt.
SELECT NEXT PAGE, to reach the CRZ WIND page.

For each desired waypoint:

SCROLL until the waypoint is displayed.
WRITE the new temperature and altitude in the scratchpad, and ENTER it.

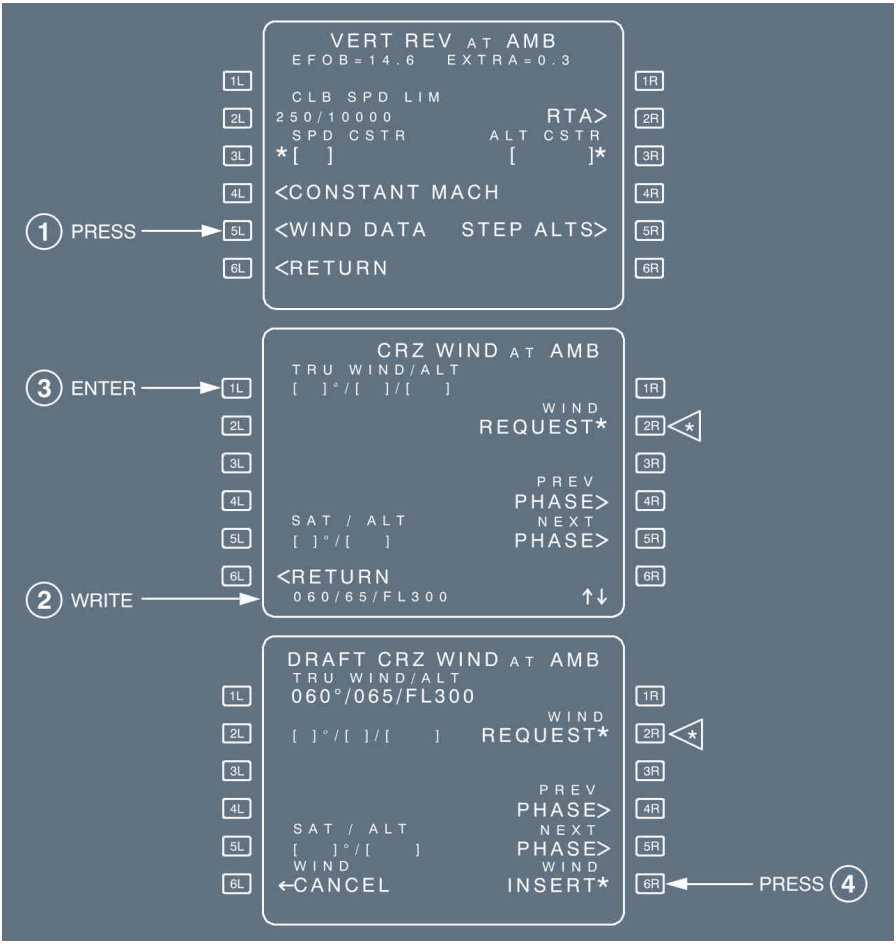
WRITE the new wind data and altitude in the scratchpad, and ENTER IT

WIND and temperature may be entered through the ACARS pages. Refer to DSC-22_20 Auto Flight - Flight Management / 70 AOC Functions / B Wind Data / Wind Data - Request for Wind Data..

Then, when wind update is complete for all these waypoints:

PRESS the UPDATE INSERT prompt.

The wind profile is updated and predictions are re-computed only once this prompt is pressed.



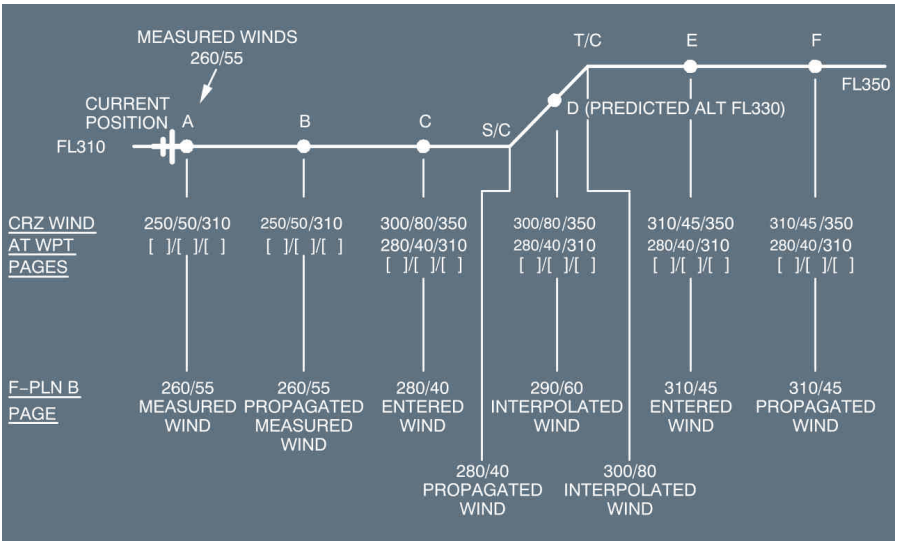
The crew should modify the entered winds and temperatures in flight, if a significant difference is expected (greater than 30 kt or 30 ° for the wind data and greater than 5 °C for the temperature). The FMS propagates the crew (or AOC) wind and temperature entries downpath, until a waypoint for which a different temperature or wind has been entered (for the same flight level), or until the last cruise waypoint.

The forecast winds at a waypoint are determined as follows:

- If the predicted altitude at the waypoint matches an altitude defined in the CRUISE WIND page, the forecast wind is the corresponding entered or propagated wind, displayed at that waypoint on the CRUISE WIND page
- If the predicted altitude lies between two altitudes entered on the CRUISE WIND page, the wind direction and velocity are linearly interpolated
- If the predicted altitude is above or below the set of CRUISE altitudes, the forecast wind is a constant value extrapolated from the entered or propagated wind at the highest (or lowest) altitude displayed on the CRUISE WIND page for that waypoint.

The CRUISE WIND pages display the propagated values in small cyan font, and the crew (or AOC) entries in large cyan font.

Note: *The CRUISE WIND page displays AOC data, crew-entered data or propagated data. It never displays computed data (displayed on the F-PLN B page only).*



Ident.: DSC-22_20-30-20-28-B-00009488.0002001 / 09 FEB 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

EFFECT OF WIND ENTRIES ON OPTIMUM FLIGHT LEVEL

The OPT FL computation considers the wind entries made at different altitudes (normally at the different CRZ FL).
When flying the subsequent CRZ FL, the OPT FL proposed by the PROG page may be affected by the wind entries made at the previous CRZ FL; these winds are automatically propagated and may be significantly different from the actual winds.
We recommended the following procedure:

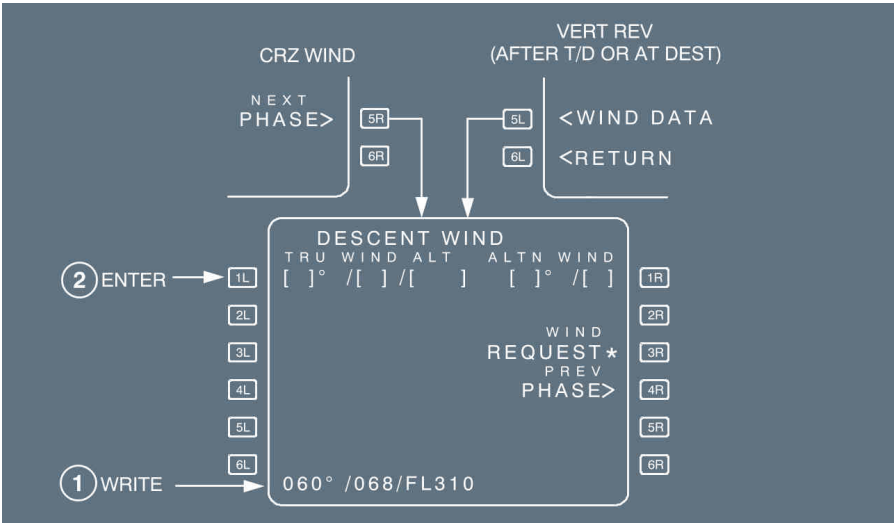
- **if the propagated winds at the lower altitudes are significantly different from the actual winds, enter the wind at these altitudes, or if not available, the wind measured at the current CRZ FL.**

Ident.: DSC-22_20-30-20-28-B-00009489.0014001 / 14 MAY 12
Applicable to: MSN 02195-02204, 02359, 02405, 02482

ENTERING THE DESCENT WINDS

The crew will enter as many as one wind at 5 different FL or altitudes. This wind data will be used for descent profile and prediction computation.
From the vertical revision page, or from the CRUISE WIND page:

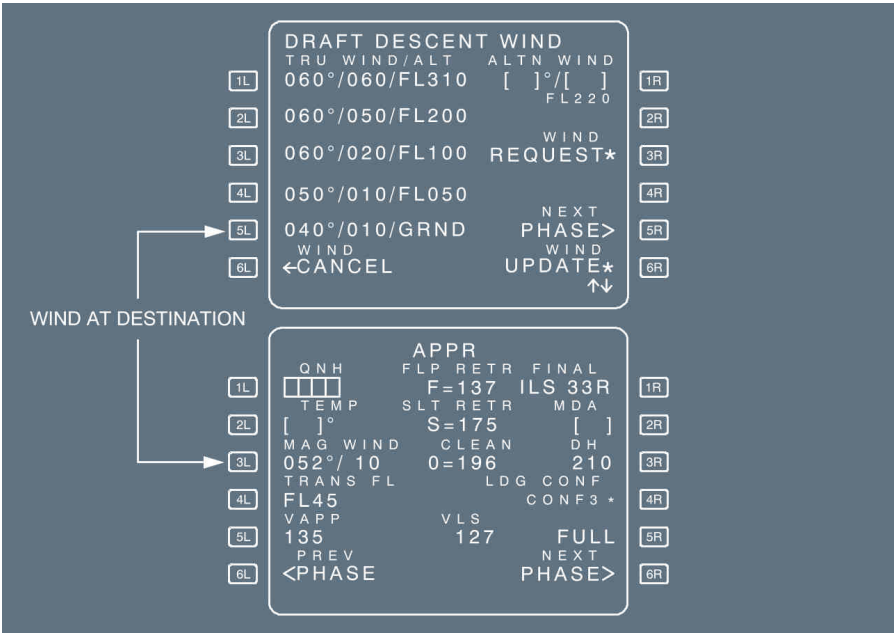
PRESS the WIND prompt.
SELECT the DESCENT WIND page.
ENTER up to 5 different “wind/altitude”.



A wind is written as true direction/velocity/flight level or altitude in feet.

- **If the crew enters "GRND“ in the altitude field** , the system uses the associated wind as wind at destination.

The descent profile is corrected, as well as the tower wind entered in the PERF APPR page.



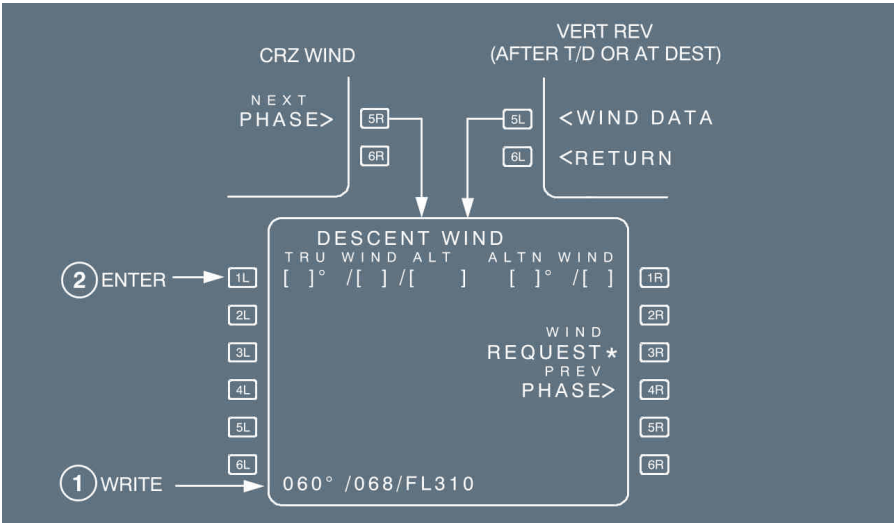
When the winds have been entered, the F-PLN B page displays the forecast wind profile at all descent waypoints using values it has interpolated from manual entries. Descent winds are not modifiable when descent, approach or go around phase is active. At descent phase transition, wind data changes color from blue to green and any attempted modification triggers the “NOT ALLOWED” message.

Ident.: DSC-22_20-30-20-28-B-00009489.0021001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02139, 02443, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

ENTERING THE DESCENT WINDS

The crew will enter as many as one wind at 5 different FL or altitudes. This wind data will be used for descent profile and prediction computation.
From the vertical revision page, or from the CRUISE WIND page:

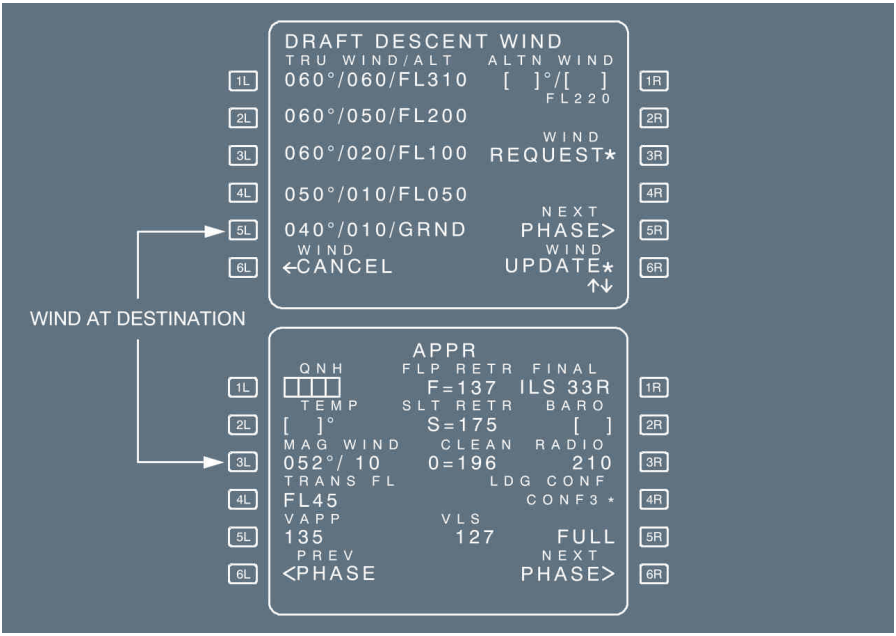
PRESS the WIND prompt.
SELECT the DESCENT WIND page.
ENTER up to 5 different “wind/altitude”.



A wind is written as true direction/velocity/flight level or altitude in feet.

- **If the crew enters "GRND“ in the altitude field** , the system uses the associated wind as wind at destination.

The descent profile is corrected, as well as the tower wind entered in the PERF APPR page.



When the winds have been entered, the F-PLN B page displays the forecast wind profile at all descent waypoints using values it has interpolated from manual entries. Descent winds are not modifiable when descent, approach or go around phase is active. At descent phase transition, wind data changes color from blue to green and any attempted modification triggers the “NOT ALLOWED” message.

Ident.: DSC-22_20-30-20-28-B-00009490.0001001 / 09 FEB 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

ENTERING THE ALTERNATE WIND

Alternate wind is entered in the DESCENT WIND page. The altitude is blanked if no alternate destination is defined.

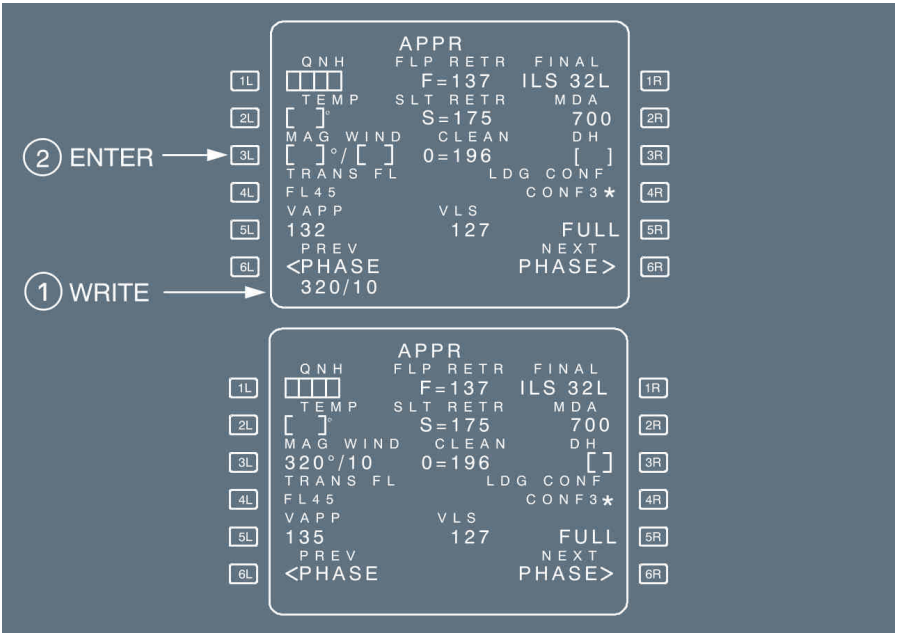
- **If an alternate wind is not defined, the predictions are computed with a wind defaulted to zero.**

Alternate wind can be modified at any time.

Ident.: DSC-22_20-30-20-28-B-00009491.0002001 / 14 MAY 12
Applicable to: MSN 02195-02204, 02359, 02405, 02482

ENTERING THE APPROACH WIND

The wind at destination is entered on the PERF APPR page, [3L] field. It is a magnetic referenced wind, copied in true reference into DESCENT WIND page at ground level (GRND) and F-PLN B page at destination. A ground entry on the DESCENT WIND page is in the same way, copied to F-PLN B page and PERF APPR page (Magnetic) automatically. This wind is modifiable in descent and approach and go-around phase.



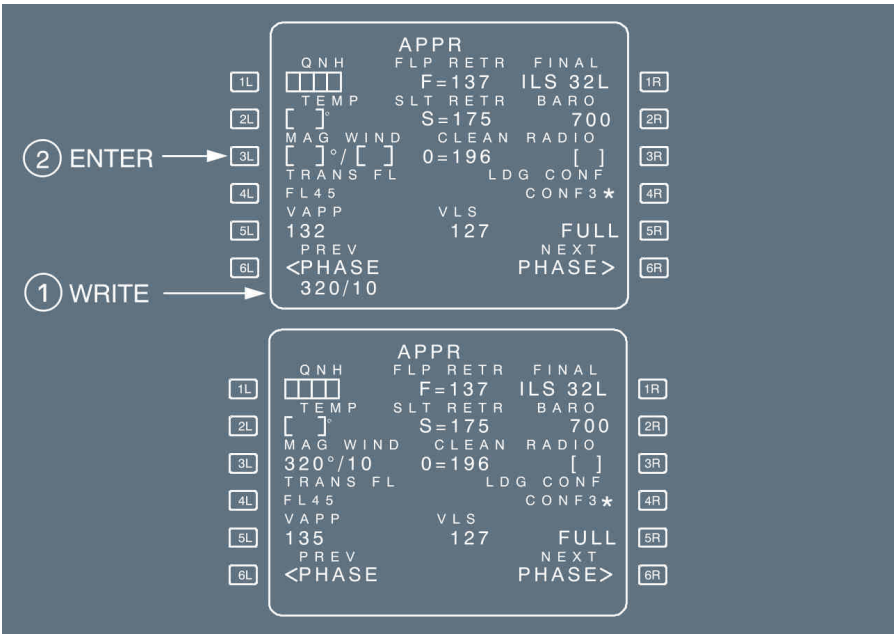
SELECT the PERF key on the MCDU
PRESS the NEXT PHASE key [6R], to reach PERF APPR page.
WRITE the surface wind (magnetic) in the scratchpad and ENTER it in the [3L] field.

Ident.: DSC-22_20-30-20-28-B-00009491.0021001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02139, 02443, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

ENTERING THE APPROACH WIND

The wind at destination is entered on the PERF APPR page, [3L] field. It is a magnetic referenced wind, copied in true reference into DESCENT WIND page at ground level (GRND) and F-PLN B

page at destination. A ground entry on the DESCENT WIND page is in the same way, copied to F-PLN B page and PERF APPR page (Magnetic) automatically. This wind is modifiable in descent and approach and go-around phase.



SELECT the PERF key on the MCDU
PRESS the NEXT PHASE key [6R], to reach PERF APPR page.
WRITE the surface wind (magnetic) in the scratchpad and ENTER it in the [3L] field.

CONSTANT MACH

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Ident.: DSC-22_20-30-20-28-C-00009492.0006001 / 09 FEB 11

GENERAL

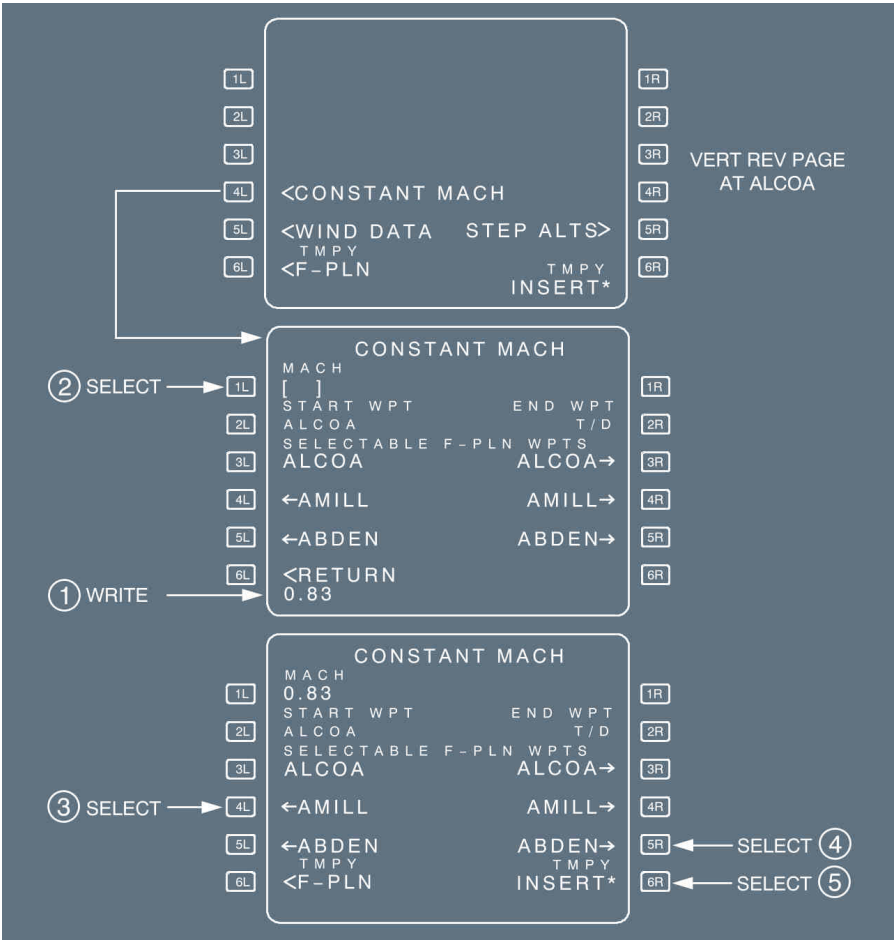
The crew can specify a part of the F-PLN to be flown at a given Mach value, using the Constant Mach function.
Only one Constant Mach segment may be defined in the active or temporary flight plan, and one in the secondary flight plan. No Constant Mach segment can be defined in the alternate flight plan.

ENTERING A CONSTANT MACH SEGMENT

SELECT the F-PLN key on the MCDU.
SELECT VERT REV at any cruise waypoint.
SELECT the CONSTANT MACH prompt [4L], to access the CONSTANT MACH page.
ENTER the desired Mach value in the [1L] field.
SELECT the Start waypoint [2L] and End waypoint [2R] within the list of selectable waypoint (3L → 5L, 3R → 5R, “SELECTABLE F-PLN WPTS”).

When accessing the CONSTANT MACH page, the Start waypoint is defaulted to the first downpath waypoint at which a CMS can be entered. The End waypoint is defaulted to the Top of Descent (T/D).

CHECK and INSERT the TMPY F-PLN, or continue with next revision.

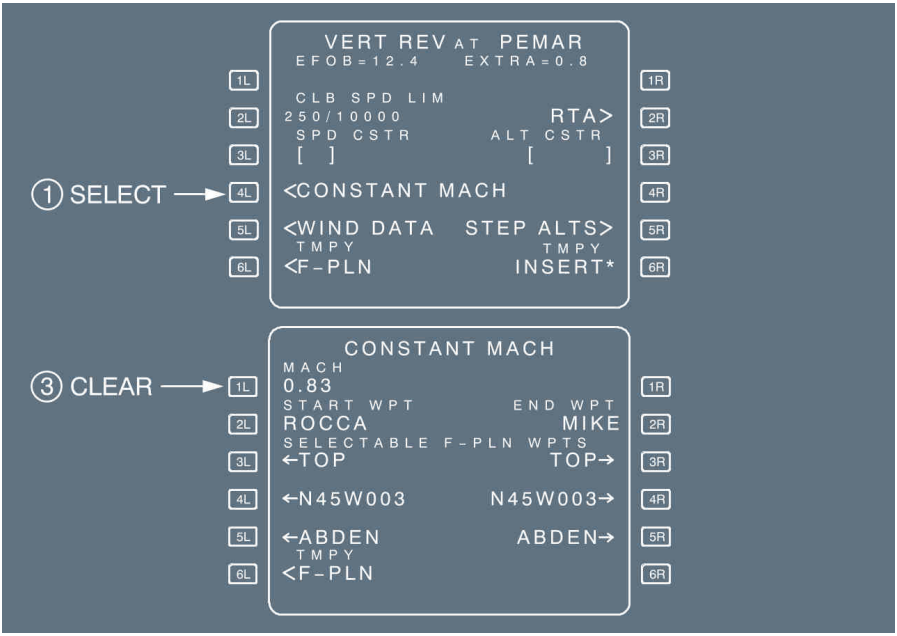


Ident.: DSC-22_20-30-20-28-C-00009494.0006001 / 23 JUN 15

DELETING A CONSTANT MACH

To delete a previously-entered Constant Mach:

SELECT the F-PLN key on the MCDU
SELECT VERT REV at any F-PLN waypoint
SELECT the CONSTANT MACH prompt (4L)



PRESS the CLR key on the MCDU control panel, then SELECT [1L]

The constant Mach is deleted, and no message is displayed to confirm the deletion.

CHECK and INSERT the TMPY F-PLN or continue with next revision.

Intentionally left blank

GENERAL

Ident.: DSC-22_20-40-10-00011077.0001001 / 17 AUG 10
Applicable to: ALL

The performance function:
- Optimizes a flight plan
- Computes predictions.

OPTIMIZATION

Ident.: DSC-22_20-40-10-00011084.0029001 / 23 JUN 15

[1] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The FMGC minimizes cost by optimizing the following items:
- Takeoff, approach, and go-around speeds (F, S, Green Dot, VAPP)
- Target speed for CLB, CRZ and DES phases (ECON SPD/MACH)
- Flight Level (for flight crew's information)
- Descent profile from CRZ FL down to the destination airport.

These items depend on the data the flight crew inserts during lateral and vertical flight planning and revision procedures.
Most are displayed on the PERF pages associated with the appropriate flight phases.

WIND PROFILE

To obtain the best predictions, the flight crew must enter the wind for the various flight phases and specifically for waypoints in cruise.

- **ON GROUND:**
  During flight planning initialization, enter the winds for the climb and cruise phases using the HISTORY WIND and WIND pages. Enter, manually or with ACARS, different wind values in the climb and cruise phases. The system will compute a wind for all waypoints of the F-PLN using linear interpolation between manual/ACARS entries.
  The wind profile will be displayed on the F-PLN B page, and is called forecast wind profile.
  Flight crew or ACARS entries are displayed in large font, and system-computed winds in small font.

- **IN FLIGHT:**
  The system updates the predictions and the current ECON speed, using the measured wind at the present position. It combines actual wind and forecast winds to compute the wind ahead of the aircraft, but this is totally transparent to the flight crew.
  During cruise, the flight crew will enter the descent winds and the approach wind. The system will update the final predictions, compute the optimum descent profile and compute the optimum speed in descent and approach.

The forecast wind profile will be used to compute fuel and time predictions, as well as ECON speed/Mach targets.

OPTIMUM TAKEOFF, APPROACH AND GO-AROUND SPEEDS

The FMGC computes takeoff speeds (F, S, Green Dot) during the preflight and takeoff phases, using the performance model in the database and the takeoff weight.
The flight crew has to insert V1, VR, and V2 in the PERF TO page manually.
The FMGC uses the performance model and either the predicted landing weight or the current gross weight at transition to the approach phase to compute approach speeds (VLS, VAPP, F, S, Green Dot).
On the PERF APPR page, the selected LDG CONF determines the applicable VLS and VAPP, the latter being updated by the WIND correction that the flight crew enters on the same page. The FMGC uses the performance model and gross weight to compute go-around speeds (F, S, Green Dot).

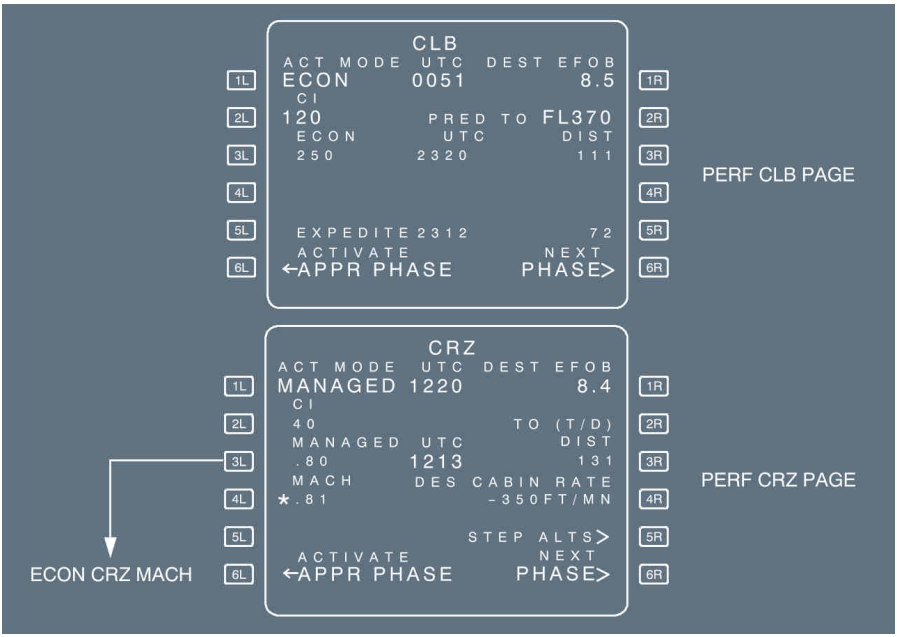
OPTIMUM TARGET SPEED FOR CLIMB, CRUISE AND DESCENT (ECON SPD/MACH)

The FMGS computes the optimum target speed (ECON SPD/MACH) as a function of:
- Cost index (CI)
- Cruise flight level (CRZ FL)
- Gross weight (GW)
- Wind and temperature models
- Performance factor.

The computer processes the ECON SPDs for the climb and descent phases before the initiation of the flight phase, and freezes the values once the flight phase becomes active.
When there is no time or speed constraint/limit, ECON SPEED is the optimum speed for the selected cost index. It refers to fuel and time cost and not directly to fuel saving.
The FM calculates ECON CLB, ECON DES and the associated top of climb and top of descent as a function of cost index, cruise FL, and meteo data.

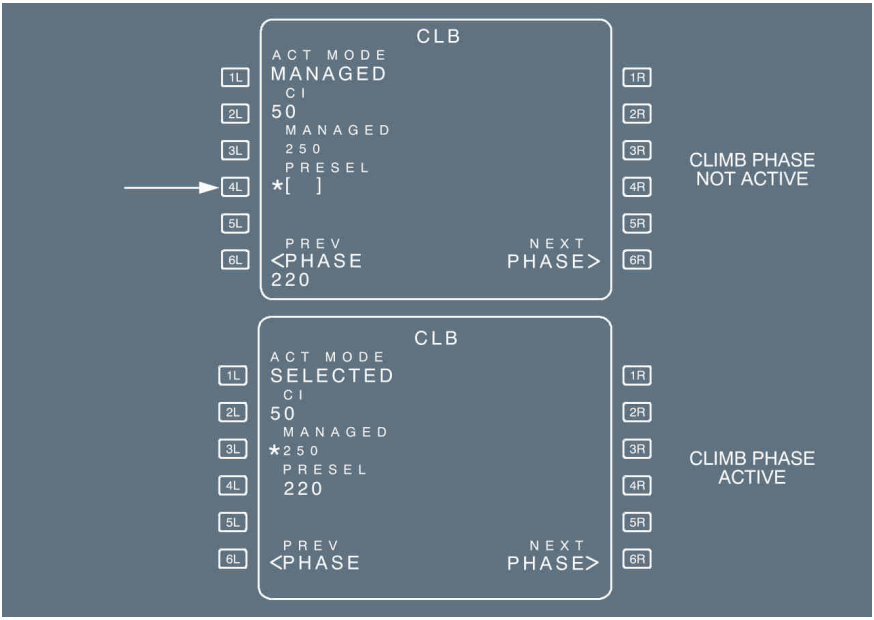
The computer continually updates ECON CRUISE MACH (SPD), taking into account current weather conditions and modifications to the flight plan.

Note: *If the cruise FL is below FL 250, ECON CRUISE SPEED is computed.*
If the cruise FL is above FL 250, ECON CRUISE MACH is computed.



PRESET TARGET SPEED FOR CLB PHASE

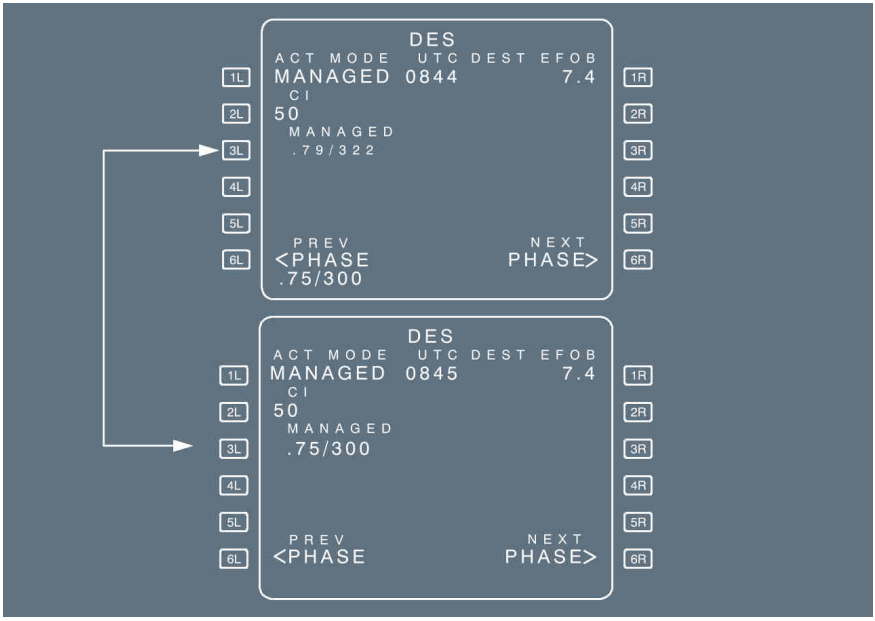
The flight crew can preselect the climb speed before the CLB phase begins, by inserting a speed in the PRESEL field:



The active mode field changes from MANAGED to SELECTED, and the FM will use the entered speed for climb predictions computation.
The flight crew can revert to managed mode by pressing the 3L key.

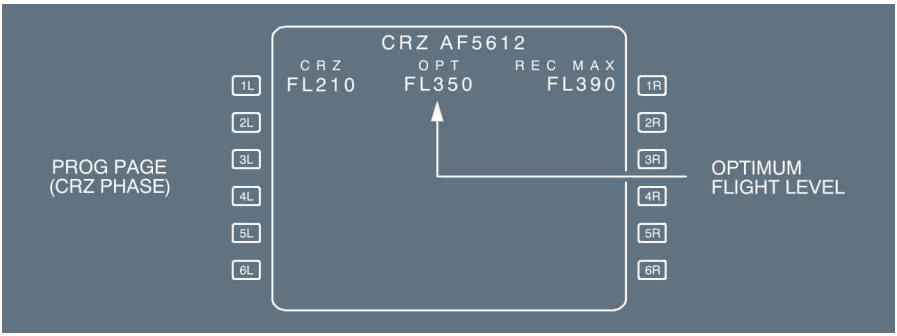
PRESET TARGET SPEED/MACH FOR DES PHASE

The flight crew can change the speed and/or Mach displayed in the MANAGED field by inserting a speed and/or Mach in the MANAGED field.
Although the entered speed is chosen by the flight crew, the FMGS uses it to compute the descent flight path and top of descent. It is therefore part of the managed descent profile.



The flight crew can revert to the optimum speed/Mach by clearing the 3L field.

OPTIMUM FLIGHT LEVEL

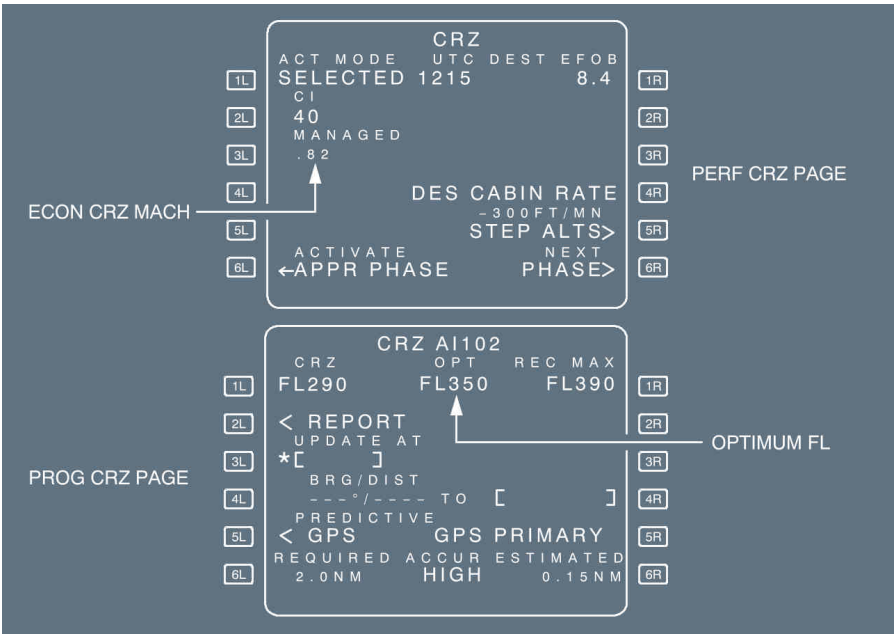


The optimum flight level (OPT FL) indicates the most economic flight level for a given cost index, weight, weather data. It is continuously updated in flight. It requires a 5 min minimum cruise time, at a minimum cruise flight level of FL 100.

The OPT FL is a compromise between fuel and time saving. As a result, the flight crew may observe jumps in OPT FL due to GW, ISA, or wind changes. The computation of the OPT FL considers the wind entries made at the different altitudes (normally at the different CRZ FL). When flying the subsequent CRZ FL, the OPT FL proposed by the PROG page may be affected by the wind entries made at the previous CRZ FL; these winds are automatically propagated and may be significantly different from the actual winds.

Note: *For simplification purposes, the FCOM/QRH gives the OPT FL at a given Mach number. It does not consider the cost index, therefore the FMGS and the FCOM/QRH values are different.*

FM displays OPT FL on the PROG page. The PROG page displays dashes for this quantity when the system detects an engine-out condition.



OPTIMUM DESCENT PATH

The vertical flight path is computed to minimize fuel consumption, while satisfying the various altitude constraints of the F-PLN and the descent speed profile, in order to reach VAPP at 1 000 ft.

The computer calculates the descent profile before the descent phase is initiated, taking into account:
- All lateral and vertical flight plan data
- The descent and approach winds, as inserted into the DESCENT WIND page and PERF APPR page, and the required maximum cabin rate of descent.

During descent, the descent profile is updated only if the flight plan is modified, or if data for the APPR phase (WIND, VAPP, or LDG CONF) are changed.

OPTIMIZATION

Ident.: DSC-22_20-40-10-00011084.0038001 / 23 JUN 15
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The FMGC minimizes cost by optimizing the following items:
- Takeoff, approach, and go-around speeds (F, S, Green Dot, VAPP)
- Target speed for CLB, CRZ and DES phases (ECON SPD/MACH)
- Flight Level (for flight crew's information)
- Descent profile from CRZ FL down to the destination airport.

These items depend on the data the flight crew inserts during lateral and vertical flight planning and revision procedures.
Most are displayed on the PERF pages associated with the appropriate flight phases.

WIND PROFILE

To obtain the best predictions, the flight crew must enter the wind for the various flight phases and specifically for waypoints in cruise.

■ **ON GROUND:**
During flight planning initialization, enter the winds for the climb and cruise phases using the HISTORY WIND and WIND pages. Enter, manually or with AOC, different wind values in the climb and cruise phases. The system will compute a wind for all waypoints of the F-PLN using linear interpolation between manual/AOC entries.
The wind profile will be displayed on the F-PLN B page, and is called forecast wind profile.
Flight crew or AOC entries are displayed in large font, and system-computed winds in small font.

■ **IN FLIGHT:**
The system updates the predictions and the current ECON speed, using the measured wind at the present position. It combines actual wind and forecast winds to compute the wind ahead of the aircraft.

During cruise, the flight crew will enter the descent winds and the approach wind. The system will update the final predictions, compute the optimum descent profile and compute the optimum speed in descent and approach.

The forecast wind profile will be used to compute fuel and time predictions, as well as ECON speed/Mach targets.

OPTIMUM TAKEOFF, APPROACH AND GO-AROUND SPEEDS

The FMGC computes takeoff speeds (F, S, Green Dot) during the preflight and takeoff phases, using the performance model in the database and the takeoff weight.

The flight crew has to insert V1, VR, and V2 in the PERF TO page manually.

The FMGC uses the performance model and either the predicted landing weight or the current gross weight at transition to the approach phase to compute approach speeds (VLS, VAPP, F, S, Green Dot).

On the PERF APPR page, the selected LDG CONF determines the applicable VLS and VAPP, the latter being updated by the WIND correction that the flight crew enters on the same page. The FMGC uses the performance model and gross weight to compute go-around speeds (F, S, Green Dot).

OPTIMUM TARGET SPEED FOR CLIMB, CRUISE AND DESCENT (ECON SPD/MACH)

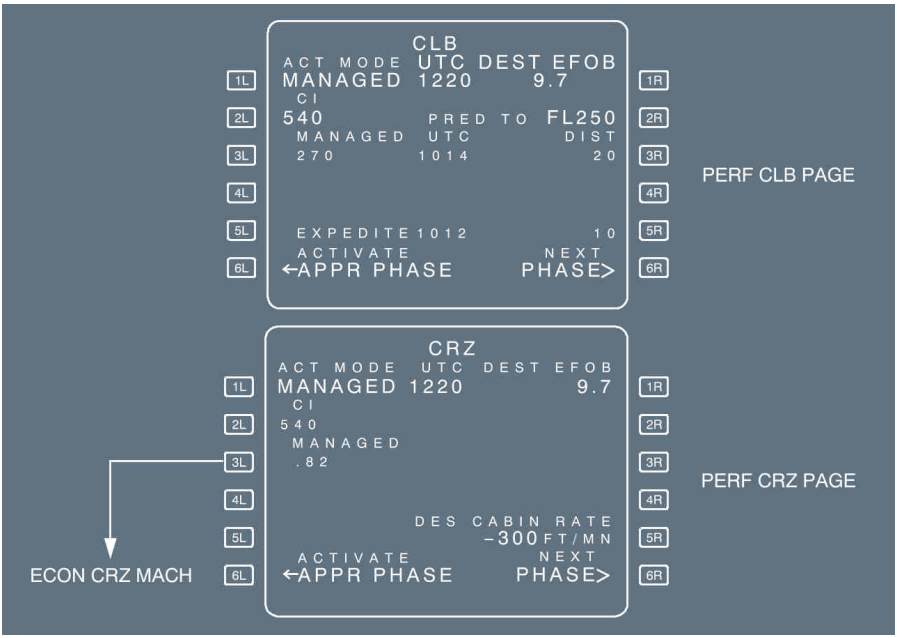
The FMGS computes the optimum target speed (ECON SPD/MACH) as a function of:

- Cost index (CI)
- Cruise flight level (CRZ FL)
- Gross weight (GW)
- Wind and temperature models
- Performance factor.

The computer processes the ECON SPDs for the climb and descent phases before the initiation of the flight phase, and freezes the values once the flight phase becomes active.

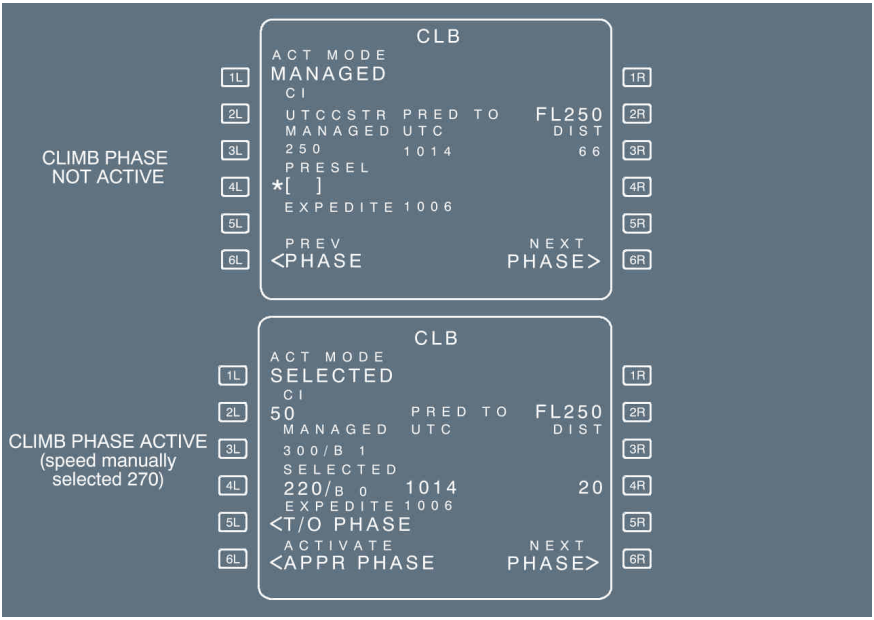
When there is no time or speed constraint/limit, ECON SPEED is the optimum speed for the selected cost index. It refers to fuel and time cost and not directly to fuel saving.
The FM calculates ECON CLB, ECON DES and the associated top of climb and top of descent as a function of cost index, cruise FL, and meteo data.
The computer continually updates ECON CRUISE MACH (SPD), taking into account current weather conditions and modifications to the flight plan.

Note: *If the cruise FL is below FL 250, ECON CRUISE SPEED is computed.*
If the cruise FL is above FL 250, ECON CRUISE MACH is computed.



PRESET TARGET SPEED FOR CLB PHASE

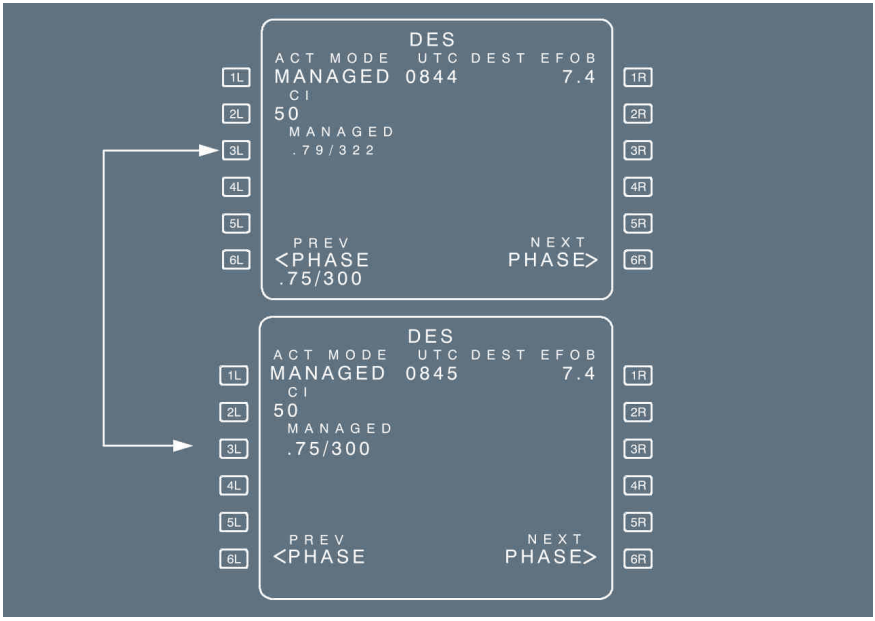
The flight crew can preselect the climb speed before the CLB phase begins, by inserting a speed in the PRESEL field:



The active mode field changes from MANAGED to SELECTED, and the FM will use the entered speed for climb predictions computation.
The flight crew can revert to managed mode by pressing the 3L key.

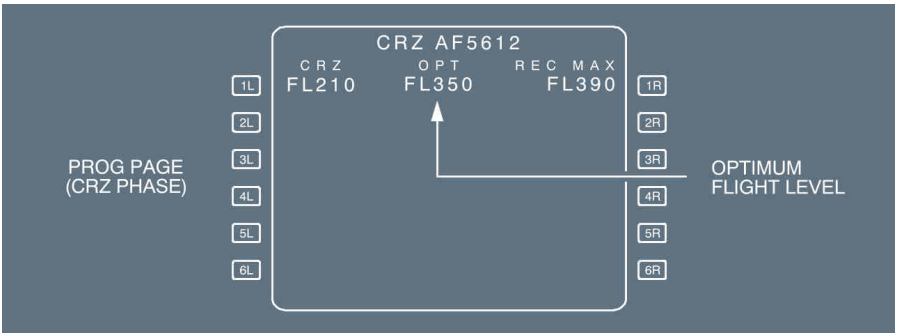
PRESET TARGET SPEED/MACH FOR DES PHASE

The flight crew can change the speed and/or Mach displayed in the MANAGED field by inserting a speed and/or Mach in the MANAGED field.
Although the entered speed is chosen by the flight crew, the FMGS uses it to compute the descent flight path and top of descent. It is therefore part of the managed descent profile.



The flight crew can revert to the optimum speed/Mach by clearing the 3L field.

OPTIMUM FLIGHT LEVEL

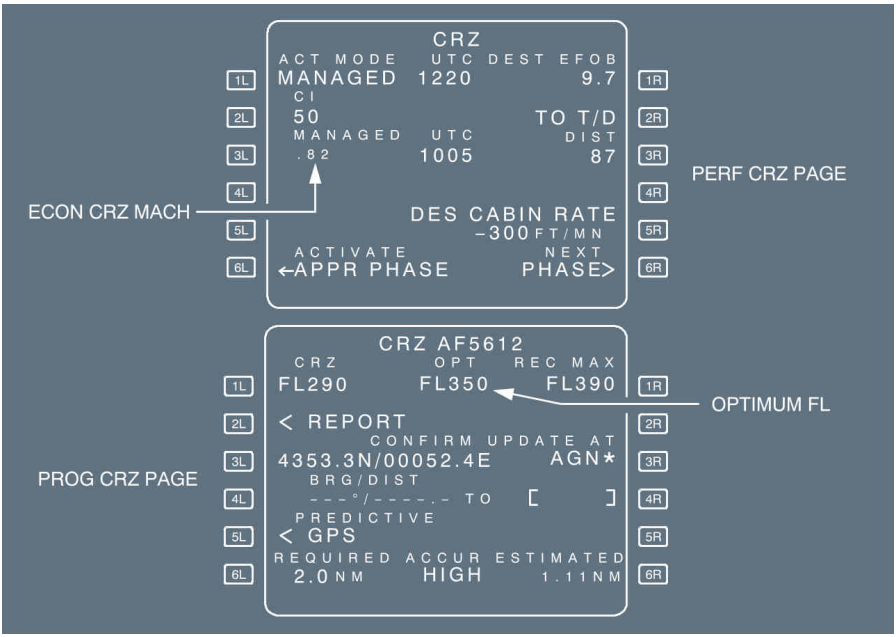


The optimum flight level (OPT FL) indicates the most economic flight level for a given cost index, weight, weather data. It is continuously updated in flight. It requires a 5 min minimum cruise time, at a minimum cruise flight level of FL 100.

The OPT FL is a compromise between fuel and time saving. As a result, the flight crew may observe jumps in OPT FL due to GW, ISA, or wind changes. The computation of the OPT FL takes into account the wind entries made by the flight crew, as well as the winds propagated by the FMS from previously entered winds.

Note: *For simplification purposes, the FCOM/QRH gives the OPT FL at a given Mach number. It does not consider the cost index, therefore the FMGS and the FCOM/QRH values are different.*

FM displays OPT FL on the PROG page. The PROG page displays dashes for this quantity when the system detects an engine-out condition.



OPTIMUM DESCENT PATH

The vertical flight path is computed to minimize fuel consumption, while satisfying the various altitude constraints of the F-PLN and the descent speed profile, in order to reach VAPP at 1 000 ft.

The computer calculates the descent profile before the descent phase is initiated, taking into account:

- All lateral and vertical flight plan data
- The descent and approach winds, as inserted into the DESCENT WIND page and PERF APPR page, and the required maximum cabin rate of descent.

During descent, the descent profile is updated only if the flight plan is modified, or if data for the APPR phase (WIND, VAPP, or LDG CONF) are changed.

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COST INDEX (CI)

Ident.: DSC-22_20-40-20-00011041.0001001 / 17 AUG 10
Applicable to: ALL

The cost index is a fundamental input for the ECON SPEED or ECON MACH computation. ECON SPEED and ECON MACH reduce the total flight cost in terms of flight time and fuel consumption (and not only in terms of fuel saving).
CI is the ratio of flight time cost (CT) to fuel cost (CF).
CI = CT/CF (kg/min or 100 lb/h).
CI = 0 corresponds to minimum fuel consumption (Max Range).
CI = 999 corresponds to minimum time.
CI = Long Range Cruise (*Refer to PRO-NOR-SRP-01-50 Preparation for Descent and Approach - Cost Index for Long-Range Cruise*).

Note: *The airline's operations department usually defines the cost index, to optimize each company route. The flight crew does not ordinarily modify the cost index during a flight.*

Intentionally left blank

GENERAL

Ident.: DSC-22_20-40-30-00011080.0002001 / 17 AUG 10
Applicable to: ALL

The FMGC computes predictions for the primary and secondary flight plans and displays them on the Multipurpose Control and Display Units (MCDUs), and on the navigation display (ND) of the Electronic Flight Instrument System (EFIS).
The computations use the current state of the aircraft (GW, CG, position, altitude, speed, engaged mode of the autopilot or flight director, time, wind, temperature) for the active flight plan.
The computations use data entered by the flight crew for the secondary flight plan when it is not a copy of the active flight plan. When the secondary flight plan is a copy of the active flight plan, it uses the same data.

PREDICTIONS FOR THE PRIMARY FLIGHT PLAN

Ident.: DSC-22_20-40-30-00011085.0001001 / 17 AUG 10
Applicable to: ALL

The predictions displayed on the MCDU assume that the FMGS will guide the aircraft along the preplanned lateral and vertical flight plans.
The predictions displayed on the ND assume that the aircraft will continue to operate in the modes (selected or managed) that are currently active.
As long as the aircraft is flying the flight plan under managed guidance, the predictions on the MCDU will match those on the ND.

If the flight crew does not fly the flight plan, the MCDU predictions assume that:
- The flight crew will fly back towards the flight-planned route
- The flight crew will immediately resume flying the FMGC managed modes.

If the flight crew does not fly the managed speed profile, the MCDU predictions assume that they will maintain the selected speed until they reach:
- In the climb or descent phase, the next speed limit or speed constraint if any, or next phase
- In cruise, the top of descent.

Then, the predictions assume that the flight crew will revert to managed speed.

COMPUTATION OF PREDICTIONS

Ident.: DSC-22_20-40-30-00011086.0001001 / 17 AUG 10

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The system calculates various predictions for the active flight plan and updates them continually during flight as functions of:

- Revisions to the lateral and vertical flight plans
- Cost index
- Current winds and temperature
- Present position versus lateral and vertical flight plans
- Current guidance modes
- Speed control (managed/selected).

The MCDU and the ND show these predictions, each of which is based on specific assumptions.

Note: During computation, prediction fields on the MCDU pages display dashes.

COMPUTATION OF PREDICTIONS

Ident.: DSC-22_20-40-30-00011086.0002001 / 17 AUG 10

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The system calculates various predictions for the active flight plan and updates them continually during flight as functions of:

- Revisions to the lateral and vertical flight plans
- Cost index
- Current winds and temperature
- Present position versus lateral and vertical flight plans
- Current guidance modes
- Cabin rate of descent
- ZFW/ZFWCG or GW/CG on the FUEL PRED page
- The engine anti-ice status during descent
- QNH on the PERF APPR page
- Speed control (managed/selected).

The MCDU and the ND show these predictions, each of which is based on specific assumptions.

Note: During computation, prediction fields on the MCDU pages display dashes.

PREDICTIONS DISPLAYED ON THE NAVIGATION DISPLAY

Ident.: DSC-22_20-40-30-00011090.0002001 / 17 AUG 10

[2] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

These predictions consist of symbols positioned along the lateral flight plan (NAV mode engaged) or the track line (NAV mode not engaged). These symbols (named as pseudo waypoints) and their meanings are:

Pseudo waypoint	Definition
	Level symbol at the position (top of climb or level-off) where the aircraft will reach: - The FCU selected altitude (blue) or - The constrained altitude, if it is more restrictive than the FCU altitude and if appropriate modes are engaged (magenta).
	Top of descent or continue descent symbol: - Top of descent (always white) - Continue descent symbol (white if DES is not armed, blue if it is).
	Start of CLIMB symbol: - White if CLB is not armed - Blue if CLB is armed.
	Intercept point symbol: The point where the aircraft is predicted to intercept the descent path, if there is any vertical deviation when the aircraft is in DES mode (white if DES is not engaged, blue if it is).
•	Speed change symbol: The point at which the aircraft will initiate an automatic ACCEL or DECEL from current speed to a new computed speed if it encounters a SPD LIM, SPD CSTR, or HOLDING SPD (magenta).
	Decelerate point symbol: - Indicates the point at which the aircraft is predicted to decelerate for approach (and thus switch to the approach phase) - Magenta, if in managed speed and NAV or approach mode is engaged - White, if in selected speed or HDG/TRK mode - Automatic deceleration only occurs when displayed in magenta.
	ALT CSTR symbol set around the constrained waypoint: - Magenta, when the ALT CSTR is predicted to be met - Amber, when the ALT CSTR is predicted to be missed - White, when the ALT CSTR is not taken into account by the FMGS, and the NAV mode is engaged.
(10 45) (ETP)	Time marker and equitime point symbols appear in green to indicate where the aircraft reaches the time marker or equitime point.

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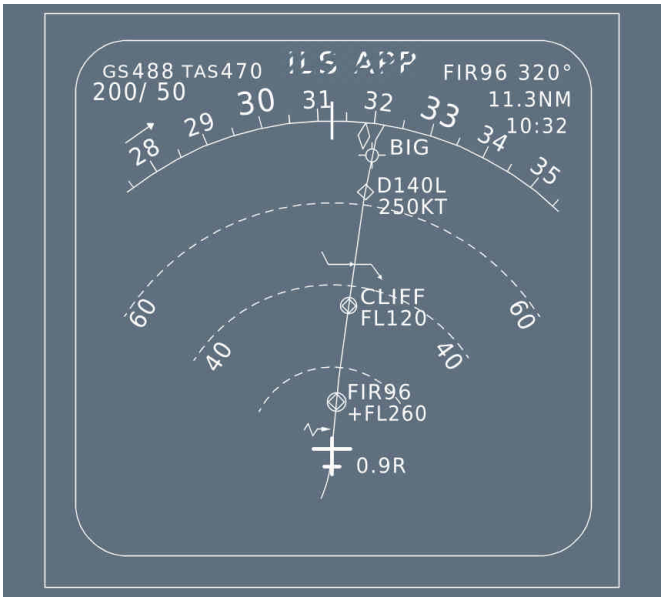
Pseudo waypoint	Definition
	Energy circle symbol (green arc) centered on the aircraft position and oriented to the current track line. Represents the Required Distance to Land. Only displayed if the lateral guidance mode is heading or track, and the current FMS flight phase is in cruise, descent or approach, and the aircraft is within 180 NM of the destination.
Crosstrack error XX.XR or XX.XL (X is a number)	The crosstrack error displays the lateral deviation between the aircraft position and the track of the F-PLN active leg. The value is limited to 99.9 NM left or right.
INTCPT	Intercept waypoint is displayed on the ND at the point at which the present track intercepts the F-PLN.

The predicted time of arrival at the TO WPT is located in the upper right-hand corner of the ND. It assumes direct distance from the aircraft position to the TO WPT and assumes current ground speed will be constant.



As a general rule, the ND indicates what the aircraft will fly, with the current active FG modes.

For example:

- The continuous green line on the ND represents the track the aircraft is currently flying:
  - If HDG/TRK is engaged, the track line is green and the flight plan is dashed
  - If NAV mode is engaged, the green line is the flight plan.
- If the speed target is manually selected, the speed-change symbol is no longer displayed because it will not be taken into account.
- When the aircraft is not following the vertical flight plan (OP CLB, OP DES, V/S) but the NAV mode is engaged, the system disregards any altitude constraints and puts white circles around the waypoints that have these constraints and positions level symbols accordingly.
- Pseudo waypoints are adjusted each time predictions are updated.

PREDICTIONS DISPLAYED ON THE NAVIGATION DISPLAY

Ident.: DSC-22_20-40-30-00011090.0004001 / 20 JAN 15

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

These predictions consist of symbols positioned along the lateral flight plan (NAV mode engaged) or the track line (NAV mode not engaged). These symbols (named as pseudo waypoints) and their meanings are:

Pseudo waypoint	Definition
	Level symbol at the position (top of climb or level-off) where the aircraft will reach: - The FCU selected altitude (blue) or - The constrained altitude, if it is more restrictive than the FCU altitude and if appropriate modes are engaged (magenta).
	Top of descent or continue descent symbol: - Top of descent (always white) - Continue descent symbol (white if DES is not armed, blue if it is).
	Start of CLIMB symbol: - White if CLB is not armed - Blue if CLB is armed.
	Intercept point symbol: The point where the aircraft is predicted to intercept the descent path, if there is any vertical deviation when the aircraft is in DES mode (white if DES is not engaged, blue if it is).
•	Speed change symbol: The point at which the aircraft will initiate an automatic ACCEL or DECEL from current speed to a new computed speed if it encounters a SPD LIM, SPD CSTR, or HOLDING SPD (magenta).

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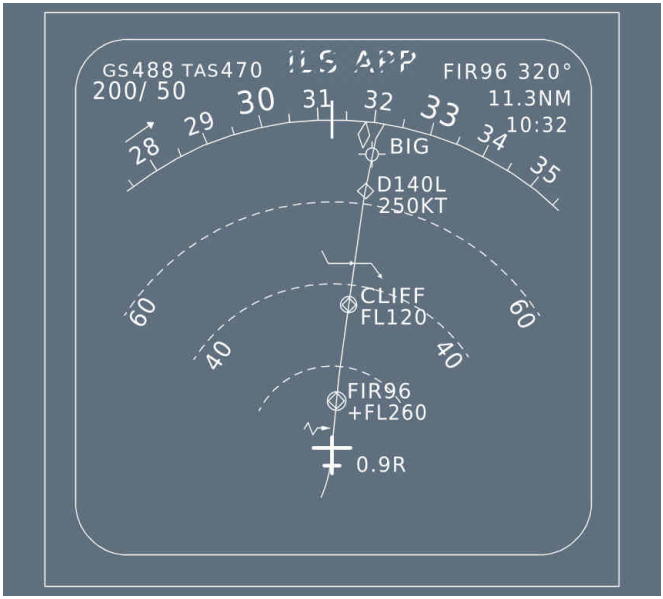
Pseudo waypoint	Definition
	Decelerate point symbol: - Indicates the point at which the aircraft is predicted to decelerate for approach (and thus switch to the approach phase) - Magenta, if in managed speed and NAV or approach mode is engaged - White, if in selected speed or HDG/TRK mode - Automatic deceleration only occurs when displayed in magenta.
	ALT CSTR symbol set around the constrained waypoint: - Magenta, when the ALT CSTR is predicted to be met - Amber, when the ALT CSTR is predicted to be missed - White, when the ALT CSTR is not taken into account by the FMGS, and the NAV mode is engaged.
(10 45) (ETP)	Time marker and equitime point symbols appear in green to indicate where the aircraft reaches the time marker or equitime point.
	Energy circle symbol (green arc) centered on the aircraft position and oriented to the current track line. Represents the Required Distance to Land. Only displayed in descent and approach phases when a selected lateral mode is engaged (HDG or TRK).
Crosstrack error XX.XR or XX.XL (X is a number)	The crosstrack error displays the lateral deviation between the aircraft position and the track of the F-PLN active leg. The value is limited to 99.9 NM left or right.
INTCPT	Intercept waypoint is displayed on the ND at the point at which the present track intercepts the F-PLN.

The predicted time of arrival at the TO WPT is located in the upper right-hand corner of the ND. It assumes direct distance from the aircraft position to the TO WPT and assumes current ground speed will be constant.



As a general rule, the ND indicates what the aircraft will fly, with the current active FG modes.

For example:

- The continuous green line on the ND represents the track the aircraft is currently flying:
  - If HDG/TRK is engaged, the track line is green and the flight plan is dashed
  - If NAV mode is engaged, the green line is the flight plan.
- If the speed target is manually selected, the speed-change symbol is no longer displayed because it will not be taken into account.
- When the aircraft is not following the vertical flight plan (OP CLB, OP DES, V/S) but the NAV mode is engaged, the system disregards any altitude constraints and puts white circles around the waypoints that have these constraints and positions level symbols accordingly.
- Pseudo waypoints are adjusted each time predictions are updated.

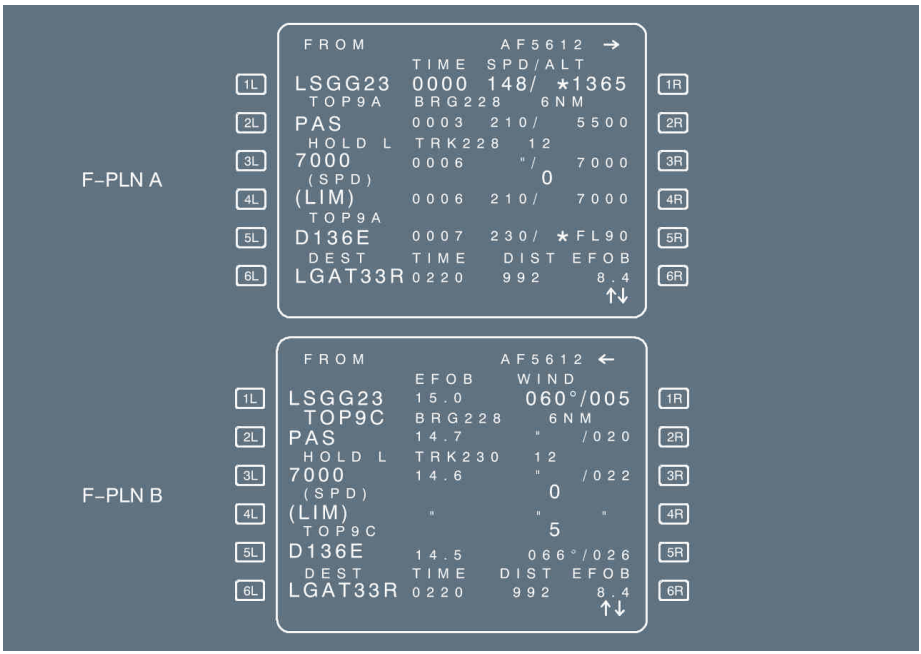
PREDICTIONS DISPLAYED ON THE MCDU

Ident.: DSC-22_20-40-30-00011093.0001001 / 14 MAY 12
Applicable to: ALL

The predictions displayed on the MCDU assume that AP (or FD order) is controlling the aircraft and flying it along the preplanned lateral and vertical flight plan.

Therefore:

- If the aircraft is guided along the flight plan (managed guidance), the MCDU predictions correspond exactly to what the aircraft is doing
- If the aircraft is not guided along the flight plan (selected guidance), the MCDU predictions assume that it will return immediately to the flight plan, intercepting at a predetermined angle, and will then proceed under managed guidance
- If the aircraft does not fly the managed speed profile (ECON, SPD CSTR...), the MCDU predictions assume that it will remain at the present selected speed/Mach until it reaches the next SPD CSTR or SPD LIM or enters the next flight phase.



Note: *For secondary flight plan predictions,* *Refer to DSC-22_20-60-50 Secondary Flight Plan.*

TYPE OF PREDICTIONS

Ident.: DSC-22_20-40-30-00011113.0002001 / 18 MAR 11
Applicable to: ALL

	MCDU PAGE
Pseudo waypoints: T/C, T/D, S/C, S/D, I/P, SPD LIM, DECEL	F-PLN A and B
TIME/SPD/ALT at each WPT and pseudo-WPT	F-PLN A
ETA/DIST TO DEST along F-PLN/EFOB at destination	F-PLN A and B
EFOB/T-WIND at each WPT and pseudo-WPT	F-PLN B
Constraint symbol * at each constrained WPT (TIME/SPD/ALT)	F-PLN A and B
Altitude error in case of missed ALT constraint	VERT REV
EFOB/EXTRA FUEL at each WPT	VERT REV
TIME/EFOB at destination	FUEL PRED/PERF CLB/CRZ/DES
TIME/DIST to a selected altitude	PERF CLB or DES
Fuel prediction prior engine start	INIT B
REC MAX FL	PROG
TIME/EFOB at Alternate	FUEL PRED
XTRA FUEL for various Alternates	ALTN
VDEV vertical deviation from vertical flight path	PROG

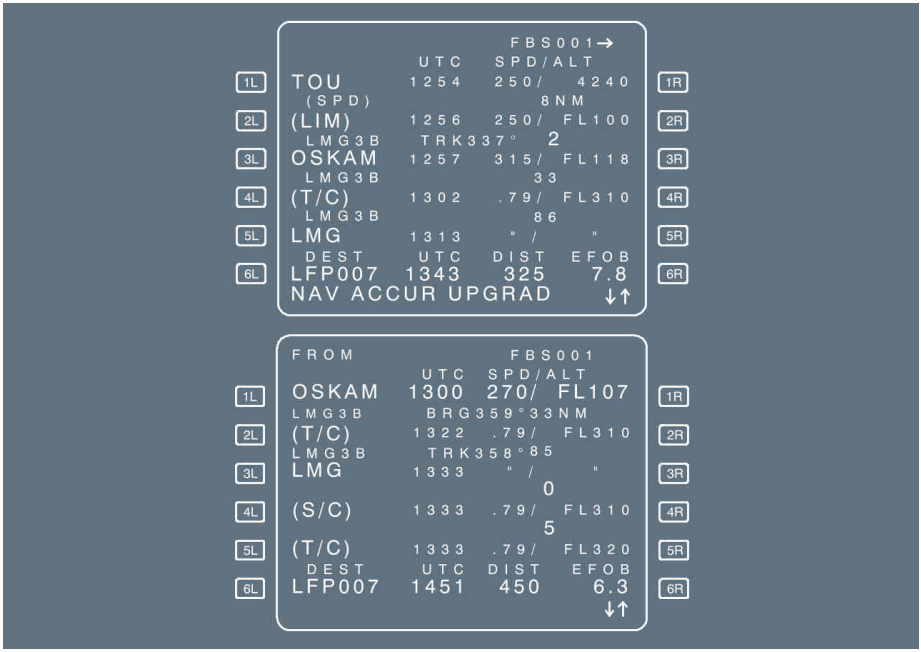
EXAMPLES OF MCDU PREDICTIONS

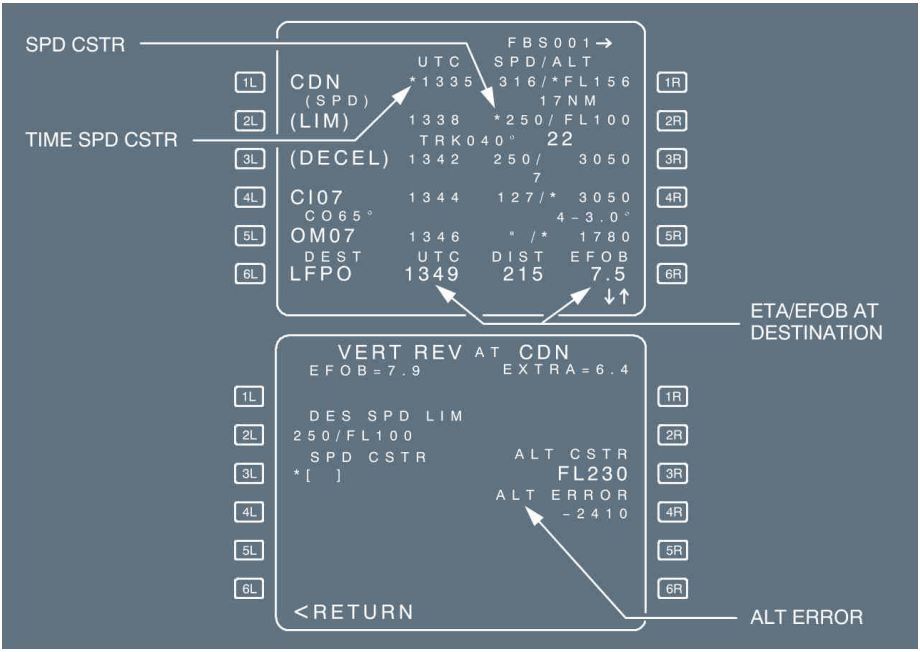
Ident.: DSC-22_20-40-30-00011120.0001001 / 14 MAY 12

3 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The following MCDU pages display some of the prediction types.

- Pseudo-waypoints:
  Top of Climb (T/C), Top-of-Descent (T/D), Start of Climb (S/C) or Start of Descent (S/D) for Step Climb/Descent, Speed Limit (SPD LIM), deceleration to approach phase (DECEL)
- Time, speed, and altitude predictions:
  TIME/SPD/ALT for all waypoints and pseudo-waypoints.


FBS001→
UTC SPD/ALT
1L TOU 1254 250/ 4240 1R
(SPD) 8NM
2L (LIM) 1256 250/ FL100 2R
LMG3B TRK337° 2
3L OSKAM 1257 315/ FL118 3R
LMG3B 33
4L (T/C) 1302 .79/ FL310 4R
LMG3B 86
5L LMG 1313 " / " 5R
DEST UTC DIST EFOB
6L LFP007 1343 325 7.8 6R
NAV ACCUR UPGRAD ↓↑
FROM FBS001
UTC SPD/ALT
1L OSKAM 1300 270/ FL107 1R
LMG3B BRG359°33NM
2L (T/C) 1322 .79/ FL310 2R
LMG3B TRK358°85
3L LMG 1333 " / " 3R
0
4L (S/C) 1333 .79/ FL310 4R
5
5L (T/C) 1333 .79/ FL320 5R
DEST UTC DIST EFOB
6L LFP007 1451 450 6.3 6R
↓↑



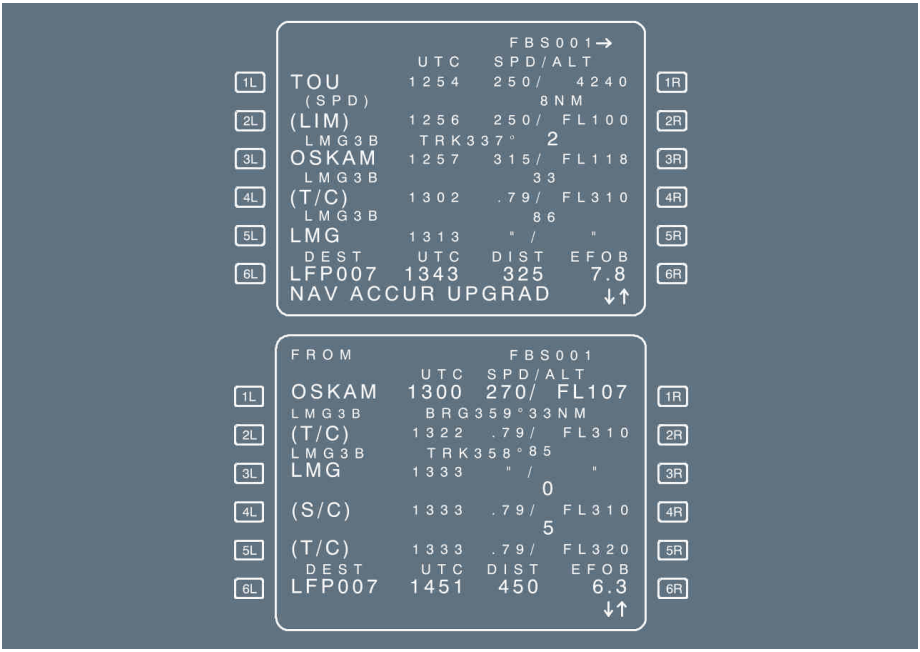
EXAMPLES OF MCDU PREDICTIONS

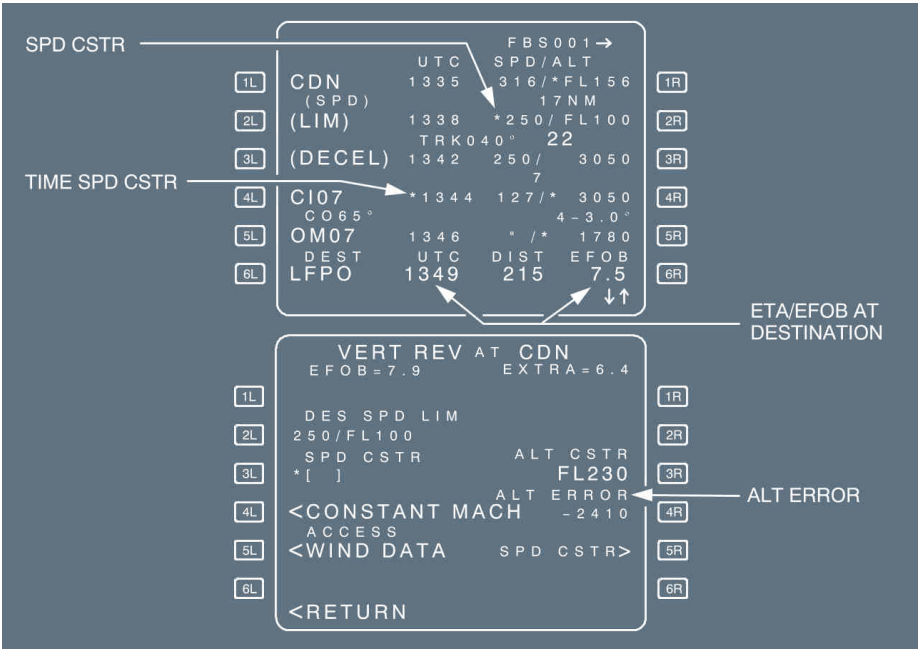
Ident.: DSC-22_20-40-30-00011120.0002001 / 14 MAY 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The following MCDU pages display some of the prediction types.

- Pseudo-waypoints:
  Top of Climb (T/C), Top-of-Descent (T/D), Start of Climb (S/C) or Start of Descent (S/D) for Step Climb/Descent, Speed Limit (SPD LIM), deceleration to approach phase (DECEL)
- Time, speed, and altitude predictions:
  TIME/SPD/ALT for all waypoints and pseudo-waypoints.

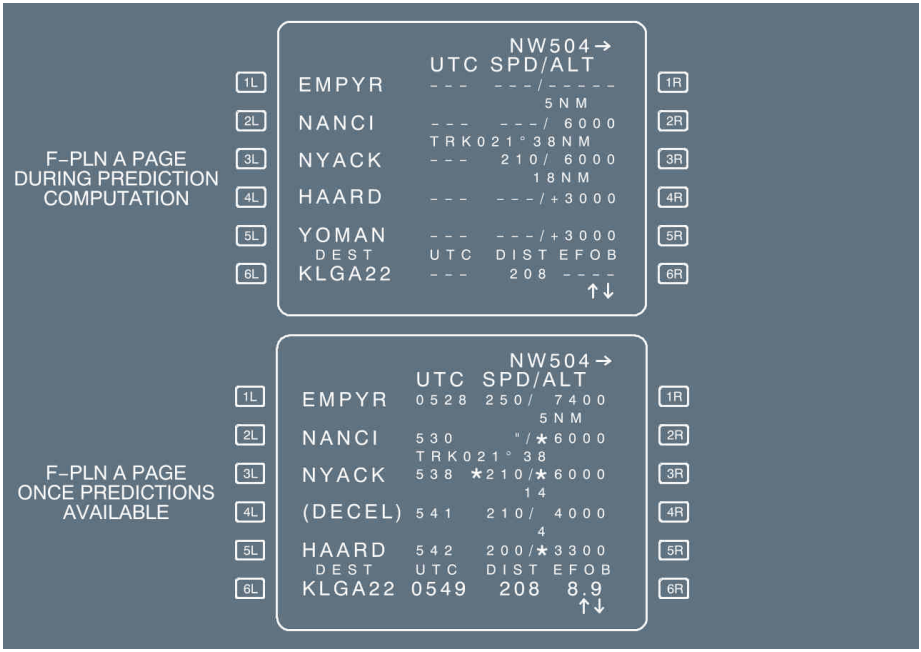

FBS001→
UTC SPD/ALT
1L TOU 1254 250/ 4240 1R
(SPD) 8NM
2L (LIM) 1256 250/ FL100 2R
LMG3B TRK337° 2
3L OSKAM 1257 315/ FL118 3R
LMG3B 33
4L (T/C) 1302 .79/ FL310 4R
LMG3B 86
5L LMG 1313 " / " 5R
DEST UTC DIST EFOB
6L LFP007 1343 325 7.8 6R
NAV ACCUR UPGRAD ↓↑
FROM FBS001
UTC SPD/ALT
1L OSKAM 1300 270/ FL107 1R
LMG3B BRG359°33NM
2L (T/C) 1322 .79/ FL310 2R
LMG3B TRK358°85
3L LMG 1333 " / " 3R
0
4L (S/C) 1333 .79/ FL310 4R
5
5L (T/C) 1333 .79/ FL320 5R
DEST UTC DIST EFOB
6L LFP007 1451 450 6.3 6R
↓↑



CONSTRAINT SYMBOLS (STAR)

Ident.: DSC-22_20-40-30-00011150.0001001 / 14 MAY 12
Applicable to: ALL

When a time speed or an altitude constraint is part of the vertical flight plan, it appears on the F-PLN A page only at the time of insertion, or when predictions are not yet available.
Once available, the time speed and altitude predictions are displayed for all F-PLN waypoints: when a speed or an altitude constraint is at a waypoint, a star symbol appears adjacent to the speed or altitude prediction. If the star is magenta, the constraint is predicted to be matched. If the star is amber, the constraint is predicted to be missed.



Note: *If an altitude constraint is predicted as missed, the system tells you what will be the error at the specific waypoint.*

VERTICAL DEVIATION

Ident.: DSC-22_20-40-30-00011139.0001001 / 29 SEP 15
Applicable to: ALL

During descent, the system indicates to the flight crew the vertical deviation from the computed descent profile (PFD and MCDU) and predicts where the flight crew can rejoin it.
VDEV on the PFD and PROG page, predictions on the MCDU F-PLN page, symbols on the ND, enable assessment to the vertical position versus the computed flight profile.

OPERATION RULES CONCERNING PREDICTIONS

Ident.: DSC-22_20-40-30-00011140.0001001 / 17 AUG 10
Applicable to: ALL

The flight crew must properly update the flight plan data during the flight, in order to obtain accurate and meaningful predictions.

The flight crew should rely on the ND for short-term predictions. It indicates what the aircraft will do under the currently engaged modes (selected or managed).
The flight crew should rely on the MCDU for long-term predictions, when managed guidance is active or about to be reengaged.

OTHER COMPUTATIONS

Ident.: DSC-22_20-40-30-A-00011141.0002001 / 17 AUG 10

4 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

ENGINE-OUT CASE

The FMGS computes an engine-out target speed for each flight phase. It computes an engine-out maximum altitude at long-range cruise speed, and displays it on the PROG page.
The new speed target becomes Green Dot in climb, and EO CRZ SPD in cruise.
The system computes the flight plan predictions down to the primary destination. If the aircraft is above EO MAX ALT, the predictions are computed, assuming that a drift down descent will immediately be performed to reach EO MAX ALT.

Ident.: DSC-22_20-40-30-A-00011141.0004001 / 17 AUG 10

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

ENGINE-OUT CASE

The FMGS computes an engine-out target speed for each flight phase. It computes an engine-out maximum altitude at long-range cruise speed, and displays it on the PROG page.
The new speed target becomes Green Dot in climb, and EO CRZ SPD in cruise.
The system computes the flight plan predictions in all phases (except takeoff phase) down to the primary destination.

Ident.: DSC-22_20-40-30-A-00011142.0001001 / 17 AUG 10

Applicable to: ALL

RECOMMENDED MAXIMUM ALTITUDE (REC MAX)

The recommended maximum altitude is the lowest of the maximum altitude that:
- The aircraft can reach with a 0.3 g buffet margin
- The aircraft can fly in level flight at MAX CRZ rating
- The aircraft can maintain a V/S of 300 ft/min at MAX CLB thrust
- The aircraft can fly at a speed higher than Green Dot and lower than VMO/MMO
- The aircraft is certified at.

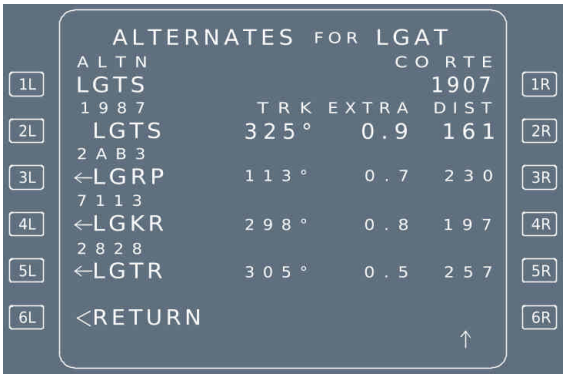
The REC MAX altitude is displayed on the PROG page.
Anti-ice is not taken into account for this computation. Refer to QRH graphs if icing conditions are expected.

A maximum altitude using a 0.2 g buffet margin is also computed. It is not displayed, but the system uses it to limit CRZ ALT entry.

Ident.: DSC-22_20-40-30-A-00011250.0001001 / 17 AUG 10
Applicable to: ALL

PREDICTIONS FOR ALTERNATES

Predictions for alternates are displayed on the ALTERNATES page.



They are based on:

- A default cruise FL equal to 220, if the airway distance is less than 200 NM. Otherwise, it is FL 310
- Simplified wind/temperature models, based on flight crew entries:
  - ALT CRZ wind, as entered on the FUEL PRED page
  - CRZ temperature interpolated from the temperature model for the primary flight plan.
- Airway distance, or direct distance, as provided by the database (manual entry, if not in the database)
- Cost index = 0 (minimum fuel)
- Initial aircraft weight equal to landing weight at primary destination.

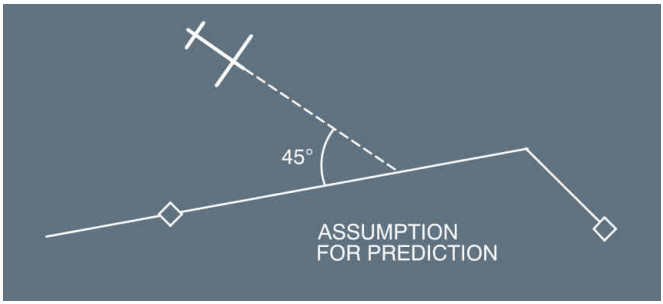
Note: *1. No step can be inserted in an alternate flight plan*

2. No predictions are displayed for the selected alternate on flight plan pages. However, the flight crew can read ALTN trip fuel and time on the INIT B page before engine start, and estimated time and estimated fuel on board at alternate on the FUEL PRED page after engine start.

RETURN-TO-TRAJECTORY ASSUMPTIONS

Ident.: DSC-22_20-40-30-00011148.0001001 / 19 DEC 12
Applicable to: ALL

If the aircraft is not on the lateral flight plan, predictions assume an immediate return to the active lateral leg with a 45 ° convergence angle, or that it will fly directly to the “TO” waypoint, when the required convergence angle is greater than 45 °.



ENERGY CIRCLE

Ident.: DSC-22_20-40-30-00011144.0001001 / 17 AUG 10
Applicable to: ALL

The energy circle is a green arc, centered on the aircraft’s position and oriented towards the current track line. It is displayed on the NDs during descent, when HDG or TRK mode is selected. It represents the required distance to land from the aircraft’s position down to airport elevation at VAPP speed, considering all speed constraints on the vertical profile.

INTRODUCTION TO PERF AND IDLE FACTORS

Ident.: DSC-22_20-40-30-00014856.0001001 / 31 JAN 13
Applicable to: ALL

The FMGS contains a performance database to compute the predictions and the performance data. This performance database has a model of several aircraft configurations (aircraft type/engine model) to tune the performance and the FMGS predictions. For some aircraft configurations, the model can differ from the real aircraft performance. In these cases, the FMGS has to correct the computation of the performance and the predictions. This is the aim of PERF and IDLE factors. With time, the real aircraft drag and engine performance can deviate from the nominal model. The airline Flight Operations should periodically revise the value of these factors to adapt FMGS predictions to actual aircraft performance.

Note: *The IDLE factor is not available on aircraft with FMS1 Honeywell Legacy.*

PERF FACTOR

Applicable to: ALL

Ident.: DSC-22_20-40-30-B-00011145.0001001 / 30 JAN 13

GENERAL

The FMGS uses the PERF factor to correct the predicted fuel flow that is used for the computation of the fuel predictions.

The PERF factor modifies the predicted fuel flow, according to the following formula:

$$FFpred = FFmodel \times (1 + \frac{PERF\,FACTOR}{100})$$

FFpred is the FF used for prediction.
FFmodel is the FF from the aero-engine model.

This correction is applied throughout the entire flight, and modifies the performance predictions and the ECON speed or Mach.
For example: Entering a PERF factor of +1.5 means that Flight Operations have evaluated the aircraft fuel deviation as 1.5 %, compared to the basic performance model (0.0).

PERF FACTOR VALUES

The PERF factors to be used on FMS2, depending on engine type, are:

- For CFM 56-5B engines only:
  Depending on the engine type: CFM 56–5B SAC (Single Annular Chamber) or DAC (Double Annular Chambers), or non/P (without the new LP and HP blade compressor), a positive performance factor has to be entered on the MCDU STATUS page to increase the FMGS' predicted fuel consumption and match the actual fuel burnt.

		NON/P		/P or /3	
		SAC	DAC	SAC	DAC
A321-111	CFM56-5B1	2	2	0	1
A321-112	CFM56-5B2	2	2	0	1
A321-211	CFM56-5B3	2	2	0	1
A321-212	CFM56-5B1	2	2	0	1
A321-213	CFM56-5B2	2	2	0	1
A321-214	CFM56-5B4	-	-	1	-
A320-214	CFM56-5B4	3	3	0	1
A320-215	CFM56-5B5	-	-	0	-
A320-216	CFM56-5B6	-	-	0	-
A319-111	CFM56-5B5	4.5	4.5	0	1
A319-112	CFM56-5B6	4.5	4.5	0	1
A319-115	CFM56-5B7	4.5	4.5	0	1
A318-111	CFM56-5B8	-	-	0	-
A318-112	CFM56-5B9	-	-	0	-

- For other engines:
  - A318 "PW": 0.0 %
  - A319/A320 "CFM" Family fitted with CFM 56-5A engines: 0.0 %
  - A319/A320/A321 "IAE" Family: 0.0 %
  - A320/A321 "PW" Family: 0.0 %
  - A319/A320/A321 "CFM LEAP" Family: 0.0 %

All these numbers assume that:

- The aircraft is brand-new
- Anti-ice is OFF
- The air conditioning is on NORMAL for "IAE" engines and on LOW for "CFM" engines
- The conservative Fuel Lower Heating Value (FLHV) is 18400 btu/lb.

When an aircraft ages, fuel consumption degradation will be measured to determine the so-called "monitored fuel factor". This factor corresponds to the deviation of the aircraft's actual fuel consumption from the nominal model. Generally, the FLHV that is used during fuel factor monitoring is higher than the FMS value.
In order not to penalize FMS predictions, it is necessary to correct the "monitored fuel factor".
For example, add -1 % to the "monitored fuel factor", when an FLHV of 18590 btu/lb is used.
Once this factor is established by the airline, it should be arithmetically added to the above-noted performance factor.

Note: *1. At delivery, ENTER the PERF factor (given in the table above) directly in the MCDU (no correction factor is needed).*
2. When replacing an FMS1 Legacy by an FMS2, on any given aircraft model, the performance model that is stored in the FMS2 may be different from the one that was previously stored in the FMS1 Legacy.
As a result, DISREGARD the PERF factor previously entered in the MCDU.
ADD the "monitored fuel factor" (when available) to the PERF factor (given above), and ENTER the resulting factor in the MCDU.

IDLE FACTOR

Applicable to: ALL

Ident.: DSC-22_20-40-30-D-00014861.0001001 / 29 SEP 15

GENERAL

The FMGS uses the IDLE factor to adjust the computation of the vertical profile during the descent phase (IDLE segment).

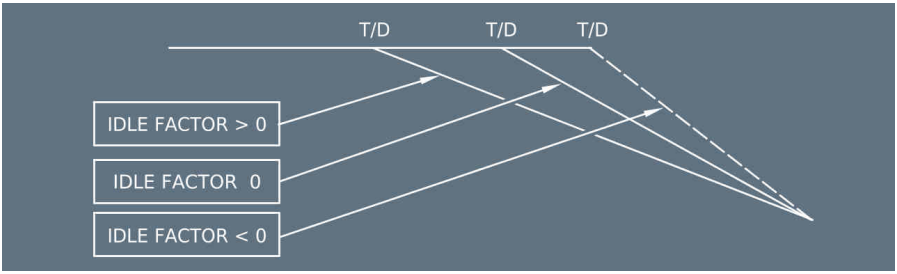
The FMGS computes the vertical profile and the predictions from the Top of Descent (T/D) to the first altitude constraint with the following assumptions:
- The aircraft has a given thrust
- The aircraft has a given speed (within the speed target range).

The IDLE Factor adjusts the value of the given thrust by an addition of a delta (DELTA) thrust to IDLE thrust. With this additional thrust, the IDLE Factor gives flexibility to maintain the aircraft on the computed vertical profile in case of external perturbations such as windy conditions (previously entered by the flight crew in WIND pages).
Depending on the IDLE factor value, the FMGS modifies the position of the T/D and computes a vertical profile in function of the given thrust (IDLE + DELTA).

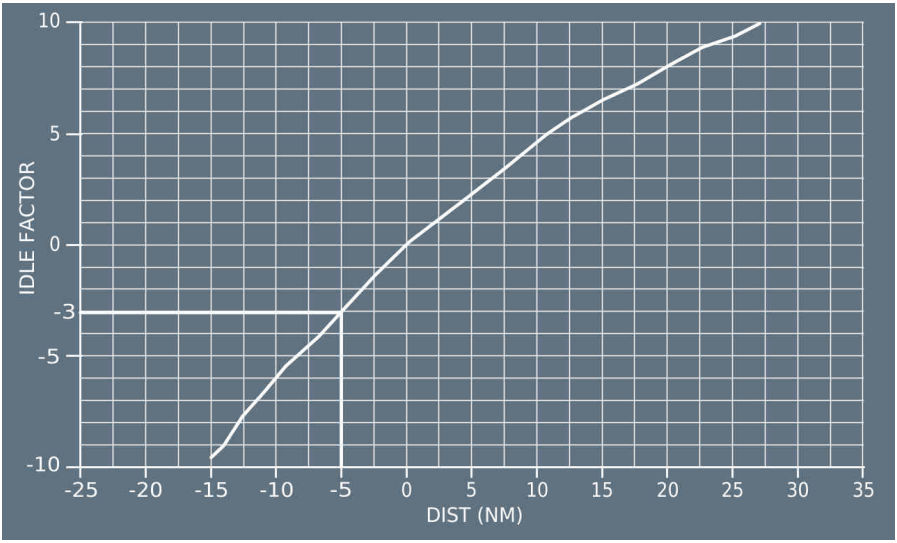
Therefore, the IDLE factor has a direct impact on:
- The computation of vertical profile
- The capability of the aircraft to maintain the vertical profile.

IMPACT ON VERTICAL PROFILE

- If the IDLE factor is positive, the vertical profile is less steep than with IDLE factor 0. The descent phase starts earlier.
- If the IDLE factor is negative, the descent path is steeper than with IDLE factor 0. The descent phase start later.



The following graph provides an example (average values) of the IDLE factor's effect on descent length:

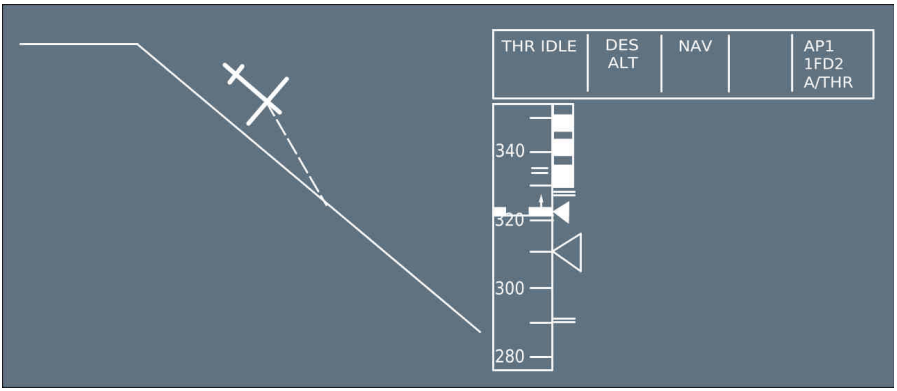


Example: An IDLE factor of -3 decreases the computed descent length by 5 NM.

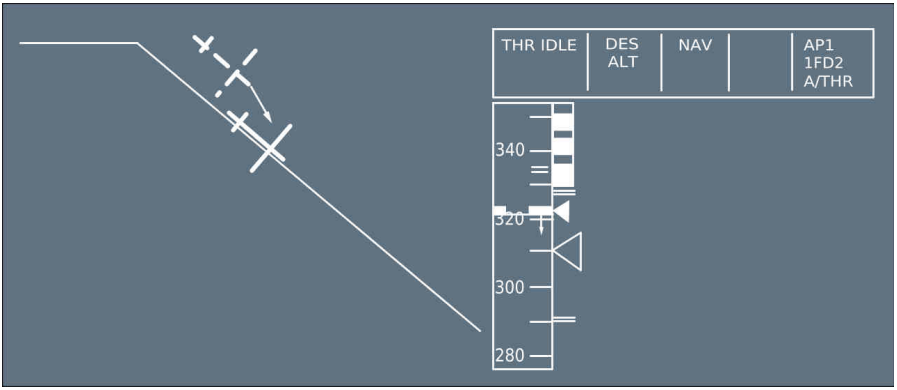
Ident.: DSC-22_20-40-30-D-00014863.0001001 / 30 JAN 13

IMPACT ON GUIDANCE

In DES mode, the FMGS maintains the aircraft on the vertical profile and keeps the IAS within the speed target range.
If the aircraft deviates above the profile, the IAS will increase to return to the vertical profile.



When the aircraft returns to the descent profile, the IAS will decrease to the target speed.



Ident.: DSC-22_20-40-30-D-00014864.0001001 / 30 JAN 13

IDLE FACTOR AT DELIVERY

The IDLE factor to be used at delivery is 0 %.

PROCEDURE TO MODIFY THE PERF AND IDLE FACTORS

Ident.: DSC-22_20-40-30-00014857.0001001 / 30 JAN 13
Applicable to: ALL

PROCEDURE TO MODIFY THE PERF AND IDLE FACTORS (ON GROUND ONLY)

- PRESS the MCDU DATA key and then the A/C STATUS prompt in order to access the A/C STATUS page
- For aircraft with FMS2 Honeywell or Thales:
  - ENTER the change code in the CHG CODE field.
    The default value for this code is “ARM” but it is possible to modify it on airline request.
    The applicable code is then coded in the Airline Modifiable Information (AMI).
    When a valid change code is entered, the IDLE and PERF factors are displayed in blue.
  - ENTER the new IDLE and PERF factors in the MCDU scratchpad separated by a "/".
    For example: "-2/+1"
  - PRESS the corresponding key to insert the new IDLE and PERF factors.

  The new IDLE and PERF factors are displayed in large blue font.

  Note: *Only authorized personnel should take the responsibility to update the IDLE and PERF factor values.*

- For aircraft with FMS1 Honeywell Legacy:
  - ENTER the new PERF factor in the MCDU scratchpad.
  - PRESS the corresponding key to insert the new PERF factor.

  The new PERF factor is displayed in large blue font.

  Note: *1. Only authorized personnel should take the responsibility to update the PERF factor value.*
  2. The IDLE Factor is not available on aircraft with FMS1 Honeywell Legacy.

Intentionally left blank

TAKEOFF SURVEILLANCE FUNCTION

Ident.: DSC-22_20-45-10-10-00022107.0001001 / 05 JUN 18
Applicable to: ALL

The Takeoff Surveillance (TOS) function checks the takeoff data that the flight crew enters and selects on the FMS pages.
The takeoff surveillance function applies to the FMS pages that are associated with the active flight plan only.

The checks aim to ensure that the takeoff data is:
- Consistent
- Compatible with the aircraft performance data that is required for takeoff.

The FMS performs the following takeoff checks:
- The ZFW check
- The takeoff speeds check.

Ident.: DSC-22_20-45-10-10-00022108.0001001 / 05 JUN 18
Applicable to: ALL

ZFW CHECK

The FMS checks that the ZFW value that the flight crew enters on the FUEL PRED page is within the acceptable range.
If the entered ZFW is not within the acceptable range, the FMS message area displays the ENTRY OUT OF RANGE message.

Ident.: DSC-22_20-45-10-10-00022109.0001001 / 05 JUN 18
Applicable to: MSN 04393-04397

TAKEOFF SPEEDS CHECK

For the takeoff speeds (V1, VR, and V2) that the flight crew enters on the PERF TAKEOFF page of the MCDU:
- The FMS compares V1, VR, and V2.

If the entered V1, VR, and V2 do not satisfy the condition V1 ≤ VR ≤ V2:
- The FMS message area displays the V1/VR/V2 DISAGREE message

Ident.: DSC-22_20-45-10-10-00022109.0002001 / 05 JUN 18

1 **Applicable to: MSN 01767-04384, 04399-09063**

TAKEOFF SPEEDS CHECK

For the takeoff speeds (V1, VR, and V2) that the flight crew enters on the PERF TAKEOFF page of the MCDU:

- The FMS compares V1, VR, and V2.

  If the entered V1, VR, and V2 do not satisfy the condition V1 ≤ VR ≤ V2:
  - The FMS message area displays the V1/VR/V2 DISAGREE message

- The FMS checks that V1, VR, and V2 satisfy the regulatory requirements for the minimum speeds (VMCG, VMCA, VMU, and VS1G). If the entered V1, VR, and V2 do not satisfy the regulatory requirements for the minimum speeds (VMCG, VMCA, VMU, and VS1G):
  - The FMS message area displays the TO SPEED TOO LOW message

ASSOCIATED ALERTS AND MESSAGES

Ident.: DSC-22_20-45-10-30-00022143.0004001 / 05 JUN 18

Applicable to: MSN 04393-04397

ASSOCIATED MESSAGES

On the MCDU, the FMS message area displays the following messages:

- ENTRY OUT OF RANGE
- V1/VR/V2 DISAGREE.

Ident.: DSC-22_20-45-10-30-00022143.0002001 / 05 JUN 18

2 **Applicable to: MSN 01767-04384, 04399-09063**

ASSOCIATED MESSAGES

On the MCDU, the FMS message area displays the following messages:

- ENTRY OUT OF RANGE
- TO SPEED TOO LOW
- V1/VR/V2 DISAGREE .

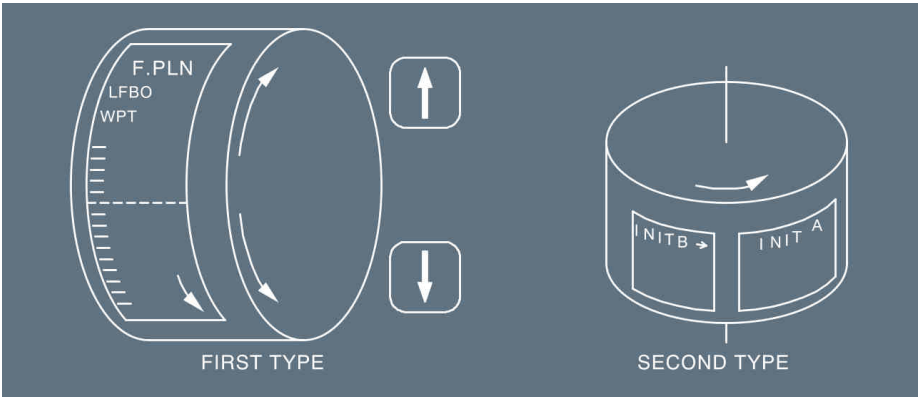
FMS2 Honeywell

GENERAL

Ident.: DSC-22_20-50-10-25-00000556.0001001 / 01 OCT 12

[1] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The Flight Management and Guidance System (FMGS) displays information on various “pages”. When a page cannot display all of the assigned information, it cues the pilot to call up additional information. There are three types of pages, and each type has its particular way of cuing the pilot to call up additional information.



FIRST TYPE

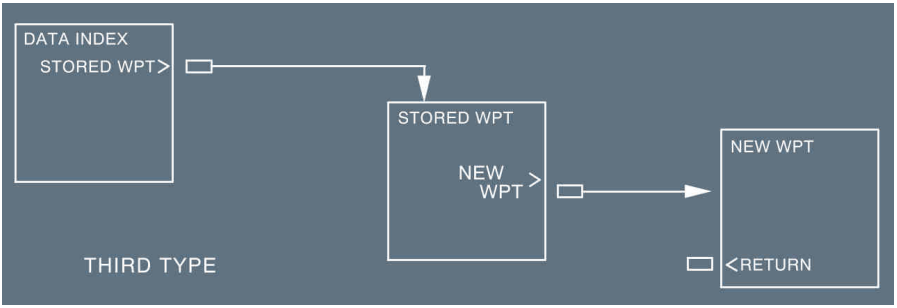
When this page cannot simultaneously display all the information on the screen (more information than the six pairs of lines can hold), the pilot can scroll the page up or down.
In this case, the screen displays a ↑ ↓ symbol in the bottom righthand corner (F-PLN pages, secondary F-PLN page, departure/arrival pages,...).

SECOND TYPE

When the information is on successive pages, the pilot presses the “NEXT PAGE” key to sequentially call up these pages.
In this case, an arrow is displayed in the top righthand corner of the screen (INIT pages).

THIRD TYPE

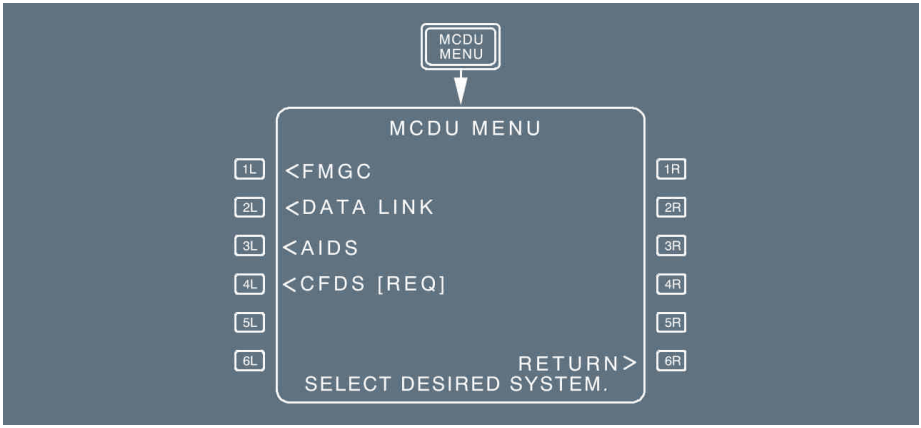
When different types of information are on successive pages, the pilot calls up these pages by pressing the key adjacent to the prompts >, < or *.



MCDU MENU PAGE

Ident.: DSC-22_20-50-10-25-00000557.0001001 / 14 MAY 12
Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804

This page lists the various systems which the pilot can access via the MCDU.



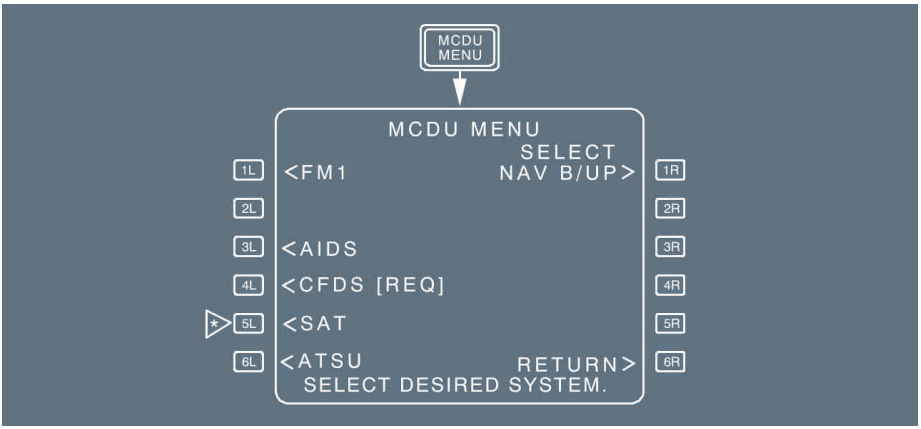
The pilot selects a system by pressing the key adjacent to the name of that system. The name of the selected system is displayed in green, all others in white.
If the MCDU cannot establish communication with the selected system, it displays “OUT”.
When a system calls for the pilot's attention, the MCDU displays “REQ” next to the system's name, and the “MCDU MENU” annunciator lights up.
When the pilot presses the key next to the name of the system requiring attention, the “MCDU MENU” annunciator light goes out.

MCDU MENU PAGE

Ident.: DSC-22_20-50-10-25-00000557.0010001 / 14 MAY 12

[2] **Applicable to: MSN 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This page lists the various systems which the pilot can access via the MCDU.



The flight crew selects a system by pressing the key adjacent to the name of that system.
The name of the selected system is displayed in green, all others in white.
If the MCDU cannot establish communication with the selected system, it displays “OUT”.
When a system calls for the flight crew attention, the MCDU displays “REQ” next to the system’s name, and the “MCDU MENU” annunciator lights up.
When the flight crew presses the key next to the name of the system requiring attention, the “MCDU MENU” annunciator light goes out.

SELECT NAV B/UP — Pressing the [1R] key selects the NAV B/UP function and DESELECT NAV B/UP appears in the [1R] field. If the NAV B/UP is inoperative, the field is blank.

RETURN — This field is displayed when a function is active

When the MCDU communicated with a system other than the FMGC, the flight crew should use the MCDU MENU page to revert to the FMGC system.

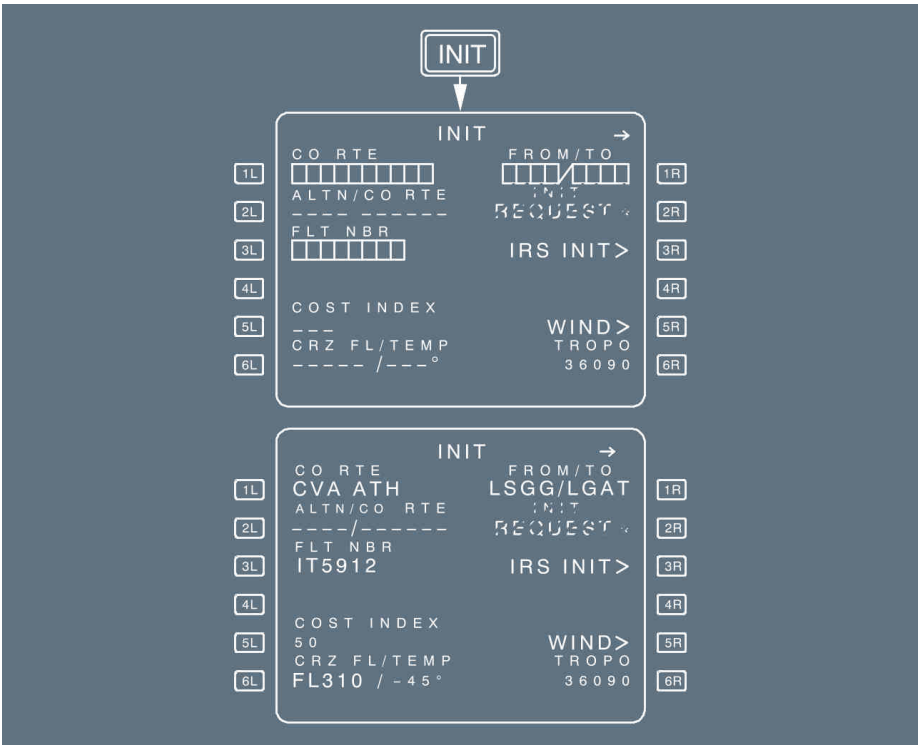
INIT A PAGE

Ident.: DSC-22_20-50-10-25-00000558.0009001 / 01 MAR 18

[3] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The flight crew uses the INIT A page to initialize the flight plan and align the inertial reference system.

- The flight crew accesses to this page by pressing the INIT key on the MCDU. The INIT A page can be accessed on ground or in flight.
- The flight crew may also call up this page by:
  - Pressing the “NEXT PAGE” key on the MCDU console, while on the INIT B page, or
  - Pressing the key next to “RETURN” or “INSERT” on the route selection page, or
  - Pressing the key next to “INSERT” on the wind page.
- When in the done phase, the pilot may press the INIT key to switch to the next preflight phase.



[1L] CO RTE	If the flight crew enters a company route number, the screen displays all data associated with that route (8 or 10 characters, depending on the pin program). Inserting the CO RTE into the RTE selection page also enters the CO RTE number in this field.
[2L] ALTN/CO RTE (blue)	This field is dashed, until a primary destination is entered in the 1R field. If a preferred alternate is associated with the primary destination, it is displayed in this field with the company route identification. The crew may manually enter an alternate and company route. If preferred alternate is not associated with the primary destination, NONE is displayed in this field. When the alternate route and the primary destination do not match, the MCDU scratchpad displays “DEST/ALTN MISMATCH”. If the primary destination is changed, this field is modified accordingly.
[3L] FLIGHT NUMBER	The flight number automatically appears in this field, if it is stored with the company route. The flight crew may modify it, or enter a new number here.
[5L] COST INDEX	This is usually stored in the database along with the company route. The flight crew may modify it, or enter a new value here. It defaults to the last entered value, if a value is not stored in the database.
[6L] CRZ FL/TEMP (cruise flight level and temperature)	The cruise flight level is usually stored in the database along with the company route. If not, it has to be entered manually. If no cruise flight level is entered, the system will not furnish predictions, while the aircraft is on the ground. The flight crew has to enter the temperature at cruise flight level in order to refine the predictions. Otherwise, these are computed for ISA conditions. (If no sign is entered, the system uses a plus).
[1R] FROM/TO	This field allows the pilot to enter a city pair (ICAO codes for city of origin and destination). This entry automatically deletes any previously entered company route and calls up the route selection page. If one airfield of the pair is not in the database, the display changes to the NEW RWY page.

[2R] INIT REQUEST	This prompt is displayed if the pilot did not enter an active flight plan or entered a flight number or a company route that is not in the aircraft database. Selecting this prompt sends the ground a request for active flight plan initialization (downlink message). When the star is not displayed, a downlink message cannot be sent. The uplink flight plan is automatically inserted in the active flight plan, prior to engine start, provided an active flight plan does not exist. After engine start, the uplink flight plan is sent to the secondary flight plan and manually inserted or rejected.
[3R] IRS INIT	The flight crew presses this key to access the IRS INIT page.
[5R] WIND	The pilot presses this key in order to gain access to the climb wind page, unless a temporary flight plan exists. In this case, the scratchpad displays TEMPORARY F-PLN EXISTS.
[6R] TROPO	The default tropopause altitude is 36 090 ft. The pilot can use this field to modify it (60 000 ft maximum).

ROUTE SELECTION PAGE

Ident.: DSC-22_20-50-10-25-00000559.0001001 / 17 MAR 11

4 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This page displays all the company routes, stored in the database, that are associated with the inserted city pair. They can be called up manually, or displayed automatically.

- Manually : The pilot presses the FROM/TO or ALTN key on the INIT A page when a city pair is displayed.
- Automatically : The system displays it, when the pilot enters a city pair, or defines an alternate on the INIT A page of the active or secondary flight plan.

TITLE	Idents for the city pair inserted on the INIT A page. (The numbers in the upper righthand corner are the total number of company routes from this city pair stored in the database).
[1L]	This field shows the name of the company route. NONE appears, if there is no company route for this city pair.
Line 2 to Line 5	These fields display the various elements of the company route: Waypoints in large green font, and airways in small white font.
[6L] RETURN	The pilot presses this key to return to the INIT A page.
[6R] INSERT	The pilot presses this key to insert the displayed company route in the flight plan, and return to the INIT A page.

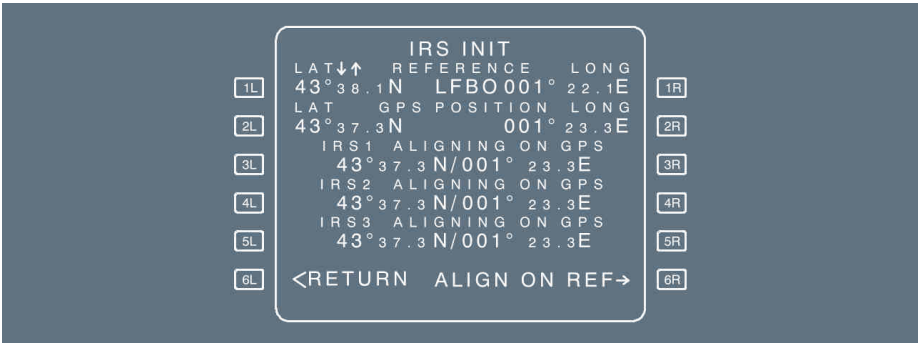
Note: *The pilot can slew the display to show the rest of the route, if one page does not show it all, or to display other company routes for this city pair.*

IRS INIT PAGE

Ident.: DSC-22_20-50-10-25-00013511.0051001 / 14 MAY 12

[5] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The flight crew uses the IRS INIT page to align the inertial reference system. The crew accesses this page, by pressing the IRS INIT key on the INIT A page.



Line 1 LAT-REFERENCE-LONG	This line provides the latitude and longitude of the FM reference position. This reference is extracted from the navigation database. The flight crew can modify this reference. Only when the FM reference position matches the origin airport position, the airport identifier is displayed in green. Otherwise, there are dashes at the place of the airport identifier. Latitude and longitude of the FM reference position are displayed in blue. The flight crew can modify the latitude and longitude values using the scroll keys.
Line 2 LAT-GPS POSITION-LONG	This line displays the GPS position latitude and longitude.
Line 3 to 5	These lines display the IRS 1-2-3 alignment state, source and latitude/longitude. The alignment status can be ALIGNING ON XXX, or ALIGNED ON XXX or IN ATT. XXX is the alignment source and can be GPS or CDU or REF. It is displayed in white font. The latitude and longitude values are displayed in green.
[6L] RETURN	This prompt enables the flight crew to return to the INIT A page.
[6R]	If a reference is available, field displays ALIGN ON REF → in blue which is replaced by CONFIRM ALIGN* in amber when 6R prompt is pressed. Pressing again the 6R prompt enables the transmission of the FM reference position displayed in line 1.

WIND PAGES

Ident.: DSC-22_20-50-10-25-00000560.0009001 / 01 MAR 18

6 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

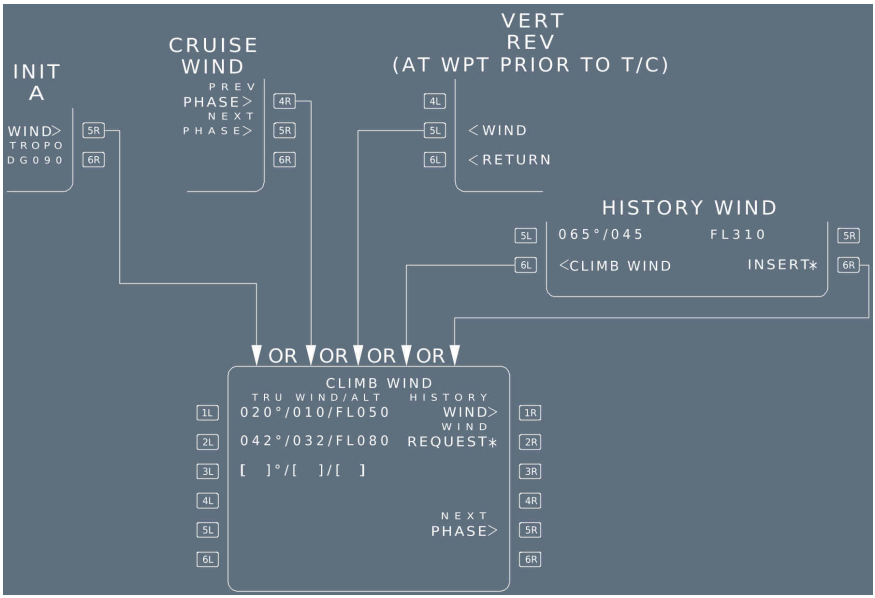
Winds in climb, cruise, descent and approach are necessary to provide the pilot with reliable predictions and performance. Wind pages enable the pilot to enter and/or review the winds propagated by the FMGS or sent by ACARS for the various flight phases.

Note: *On WIND pages, wind direction is always true-referenced.*

CLIMB WIND PAGE

This page enables the pilot to enter and/or review predicted wind vectors (direction and velocity) at up to 5 different levels.

THE CLIMB WIND PAGE IS ACCESSED FROM:



TITLE CLIMB WIND in large white font.

[1L] to [5L] TRU WIND/ALT

This field displays the winds, entered at various climb altitudes : In blue before climb phase activation, and in green after climb phase activation.
This field may also display history winds or uplink winds. Large blue brackets are displayed before any wind entry. Pilot-entered and uplinked winds are displayed in large font. History wind data is displayed in small font.
Upon sequencing the top of climb, the climb winds are deleted.

Note: *Climb winds are not deleted, when the origin airport is changed.*

[1R] HISTORY WIND

Displayed in preflight phase only. This key calls up the history wind page. This page is not modifiable (small green font), but can be inserted into the CLIMB WIND page by using the 6R key and modified accordingly.

[2R] WIND REQUEST

Pressing this key sends a request for ACARS winds.

[5R] NEXT PHASE

Pressing this key calls up the CRUISE WIND page, or the DESCENT WIND page, if no cruise waypoint exists.

HISTORY WIND PAGE

[6L] CLIMB WIND

This key reverts the display to the CLIMB WIND page.

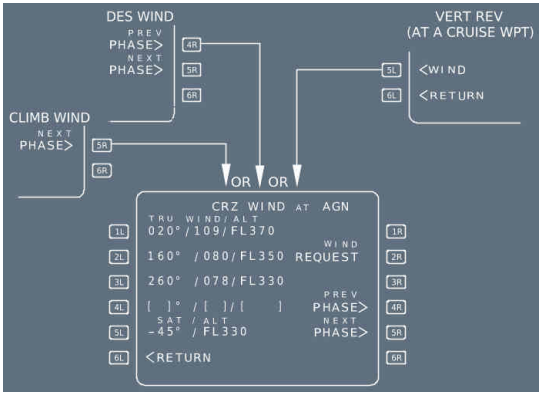
[6R] INSERT

This key inserts the history wind values into the CLIMB WIND page.

CRZ WIND PAGE

This page displays the wind direction and velocity for each cruise waypoint.

The cruise wind page enables the definition of a temperature at a given altitude, and is accessed as follows:



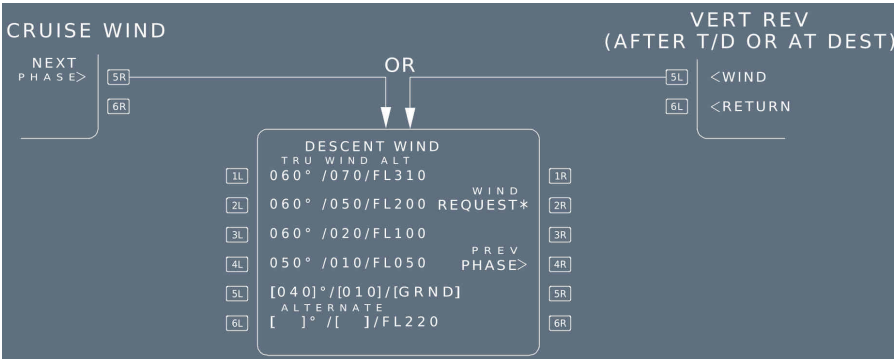
TITLE	CRZ WIND AT in large white font.
[1L] to [4L] TRU WIND/ALT	These fields display the entered wind at various altitudes in blue. The entered winds are propagated at the same altitude to the downpath cruise waypoints, if no other winds are entered. The propagated wind direction and velocity are displayed in small fonts. Both uplinked winds and pilot-entered winds are displayed in large blue font. Wind data is modifiable during cruise.
[5L] SAT/ALT	This field allows the pilot to enter a temperature at a given flight level, or to display a propagated value. The crew must enter both temperature and altitude at the first entry. They can then independently modify the temperature, or the altitude.
[2R] WIND REQUEST	Pressing this key sends a request for ACARS winds.
[4R] PREV PHASE	This prompt is displayed in Preflight, Takeoff, Climb and Done phases. Pressing this prompt calls up the CLIMB WIND page.
[5R] NEXT PHASE	Pressing this prompt calls up the DES WIND page.

Any new entry performed on the CRZ WIND page is immediately inserted into the corresponding flight plan. Predictions are dashed on the F-PLN pages during the recomputation time. CRZ WIND page automatically reverts to F-PLN page, if a temporary flight plan is created or the secondary flight plan is activated.

DESCENT WIND PAGE

This page enables the pilot to define and display the winds used for computing the descent profile.

The pilot calls it up by selecting NEXT PHASE on the CRUISE WIND page, or the WIND prompt on the VERT REV page.



[1L] to [5L]	This displays inserted winds or uplinked winds, in large blue fonts, prior to activating the descent phase (modifiable values), and in green after descent phase activation (not modifiable values). An entry of “GRND” in the “ALT” field is seen as the wind at ground level. This wind is copied on the PERF APPR page (and corrected for the magnetic variation). A clear action on one key reverts the line to blue brackets.
[6L] ALTERNATE	This field is only displayed when an alternate is defined. The pilot-entered value or uplinked value is displayed in large blue font. It is always modifiable by the pilot.
[2R] WIND REQUEST*	Pressing this key sends a request for ACARS winds.
[4R] PREV PHASE	Pressing this key calls up the CRUISE WIND page. The field is erased after the top of descent has sequenced.

Note: *Descent winds and alternate wind are deleted, if the destination airport is changed.*

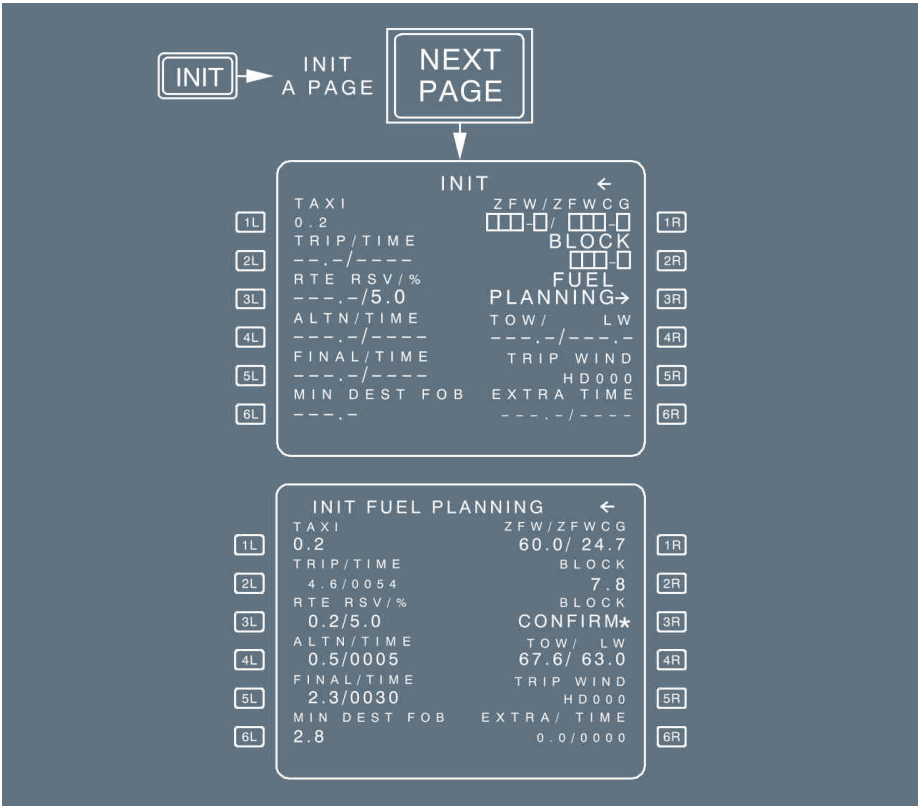
INIT B PAGE

Ident.: DSC-22_20-50-10-25-00000561.0009001 / 01 MAR 18

7 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The pilot uses this page to initialize the gross weight and center of gravity, before starting the engines.
The pilot can call it up from the INIT A page during preflight phase prior to engine start, by pressing the NEXT PAGE key on the MCDU console, as long as engines have not been started.
This page automatically reverts to the FUEL PRED page after the first engine is started.

The FMGC will stop using the pilot-entered block fuel and will compute its predictions based on the FOB indicated by the FQI computer (or the FAC as a back up) from that moment on.



[1L] TAXI — This is the taxi fuel, which defaults to a preset value, (usually 200 kg or 400 lb in the AMI file). The crew can change the value through this field.

[2L] TRIP/TIME (green) — This field displays trip fuel and time when predictions become available. The pilot cannot modify this data.

[3L] RTE RSV/% (blue) — This field displays the contingency fuel for the route and the corresponding percentage of trip fuel. It may be equal to 0.0, if such is the policy of the operator. The flight crew can either enter a fuel quantity, or a percentage.

[4L] ALTN/TIME (blue/green)	Displays alternate trip fuel and time, assuming that the Cost Index = 0 and that the aircraft flies at the default cruise flight level. The flight crew can modify the alternate fuel as required. In this case, alternate time will be dashed.
[5L] FINAL/TIME (blue)	Displays the final reserve fuel and time calculated at the alternate airport (or destination airport, if selected in the “airline fuel policy” section of the AMI). Before any crew entry, the FINAL field is dashed and FINAL TIME field is defaulted to the value specified in the AMI file (typically 30 min). The flight crew may enter a final fuel or time, and the system will compute associated holding time/fuel available. The system assumes a holding pattern at 1 500 ft AGL, with the aircraft in CONF 1 at maximum endurance speed (racetrack pattern, altitude and selected airport can be modified through the “airline fuel policy” section of the AMI).
[6L] MIN DEST FOB (blue)	Displays the expected minimum fuel at destination. It is equal by default to the ALTN + FINAL fuel. This field can be modified directly by the flight crew, and is also impacted by the modification of ALTN and/or FINAL fuel. *Note: If pilot entry of MIN DEST FOB is lower than ALTN + FINAL fuel, the message “CHECK MIN DEST FOB” is triggered on the MCDU.*
[1R] ZFW/ZFWCG (blue)	Displays the Zero Fuel Weight (ZFW) and Zero Fuel Weight CG (ZFWCG). The flight crew must enter the ZFW/ZFWCG values (as appropriate) to obtain a speed profile and predictions. *Note: If the flight crew enters a ZFW value that exceeds the acceptable range (as defined in the OPC or in the performance database), the “ENTRY OUT OF RANGE” message appears and the value is rejected.*
[2R] BLOCK	The block fuel in this field is a mandatory entry. When the flight crew enters a block fuel, the page title changes to INIT FUEL PREDICTION.

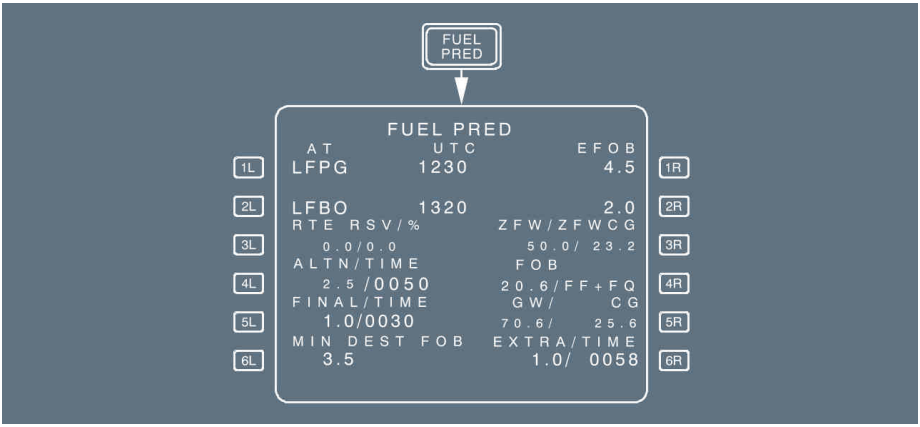
[3R] FUEL PLANNING (amber)	Initiates an FMGC block fuel computation using current hypothesis and extra = 0. When the pilot selects this function, FUEL PLANNING becomes green, and the BLOCK field is dashed during FMGC computation. The title of the page changes to INIT FUEL PLANNING, and BLOCK CONFIRM* replaces the FUEL PLANNING prompt, when the block fuel is computed by the FMGC. If the pilot modifies the parameters used to compute prediction before confirmation, the computation automatically restarts and FUEL PLANNING is displayed in green.
[4R] TOW/LW (green)	Displays the computed Takeoff Weight (TOW) and Landing Weight (LW) at the primary destination. This cannot be modified.
[5R] TRIP WIND (blue)	This field allows the entry of a mean wind component for the trip from the origin to the destination. Upon entry of a CO RTE or FROM/TO pair, this field defaults to HD 000 in small font. An entry preceeded by –, H, HD is considered to be headwind, +, T, TL to be tailwind. The entered speed is displayed in large blue font. When the flight crew inserts a wind on the CLIMB, CRUISE or DESCENT WIND page, or on the PERF APP page, the system no longer considers the trip wind, and the corresponding field is dashed.
[6R] EXTRA/TIME (green)	Displays the amount of extra fuel, and the resulting time available for holding over the primary destination. EXTRA FUEL = BLOCK – (TAXI + TRIP + RSV + MIN DEST FOB). The field displays its information in small font, and it cannot be modified by the flight crew.

FUEL PREDICTION PAGE

Ident.: DSC-22_20-50-10-25-00000562.0009001 / 01 MAR 18

8 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The pilot presses the FUEL PRED key on the MCDU console to display fuel prediction information at destination and alternate, as well as fuel management data after the engines are started.



[1L] - [1R] AT-UTC/TIME-EFOB (green)
Display time and fuel predictions to the primary destination.
TIME is displayed before takeoff. UTC predictions are displayed after takeoff. If the flight crew has entered an Estimated Takeoff Time (ETT), the UTC is displayed.
The EFOB at destination will turn to amber, if it becomes less than the MIN DEST FOB value.

[2L] - [2R] AT-UTC/TIME-EFOB (green)
These lines display time and fuel predictions to the alternate airport.

[3L] RTE RSV% (blue)
Before departure, this field displays the route reserve fuel and the corresponding percentage of trip fuel. It may be equal to 0.0, if such is the policy of the operator. The crew can either enter a fuel quantity or a percentage. After takeoff, it becomes green 0.0/0.0, and the corresponding fuel is added to the EXTRA fuel.

[4L] ALTN/TIME (blue/green)
Displays alternate trip fuel and time, assuming that the Cost Index = 0 and that the aircraft flies at the default cruise flight level.
The flight crew can modify the alternate fuel as required.
In this case, alternate time will be dashed.

[5L] FINAL/TIME (blue)	Displays the final reserve fuel and time calculated at the alternate airport (or destination airport, if selected in the “airline fuel policy” section of the AMI). The flight crew may enter a final fuel or time, and the system will compute associated holding time/fuel available. The system assumes a holding pattern at 1 500 ft AGL, with the aircraft in CONF 1 at maximum endurance speed (racetrack pattern, altitude and selected airport can be modified through the “airline fuel policy” section of the AMI).
[6L] MIN DEST FOB (blue)	Displays the expected Minimum Fuel at Destination. It is equal to the FINAL + ALTN fuel. The field can be modified directly by the flight crew, and is also impacted by the modification of the ALTN and/or the FINAL fuel.
[3R] ZFW/ZFWCG (blue)	Displays the Zero Fuel Weight (ZFW) and Zero Fuel Weight Center of Gravity (ZFWCG) values, as entered before engine start on the INIT B page. The flight crew can re-enter or modify these values after engine start on the FUEL PRED page. If at engine start, no ZFW or ZFWCG values have been entered, amber boxes are displayed in the corresponding field. The flight crew must enter the ZFW/ZFWCG values to obtain a speed profile and predictions.
[4R] FOB (blue)	Displays the Fuel On Board (FOB) calculated by the FMGS and the following fuel sensors: - Fuel flow and fuel quantity sensors (/FF+FQ) - Fuel flow sensors only (/FF). - Fuel quantity sensors only (/FQ). The flight crew can modify the FOB value in flight, or modify the sensors used by entering “/FF”, “/FQ” or “/FF+FQ”, as required.
[5R] GW/CG (green)	The FMS continuously updates the GrossWeight (GW) and Center of Gravity (CG) during the flight. The field displays dashes, as long as the system is not calculating the Fuel On Board, or the ZFW has not been entered by the flight crew. The field cannot be modified.
[6R] EXTRA/TIME (green)	Displays the amount of extra fuel, and the resulting time available for holding over the primary destination. EXTRA FUEL = FOB – (TAXI + TRIP + RSV + MIN DEST FOB). This field displays its information in small green font, and it cannot be modified by the flight crew.

Note: All fields are dashed before engines are started.

FLIGHT PLAN PAGES

Ident.: DSC-22_20-50-10-25-00000563.0009001 / 23 JUN 15

9 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

These pages display all waypoints of the active and alternate flight plans, along with associated predictions.

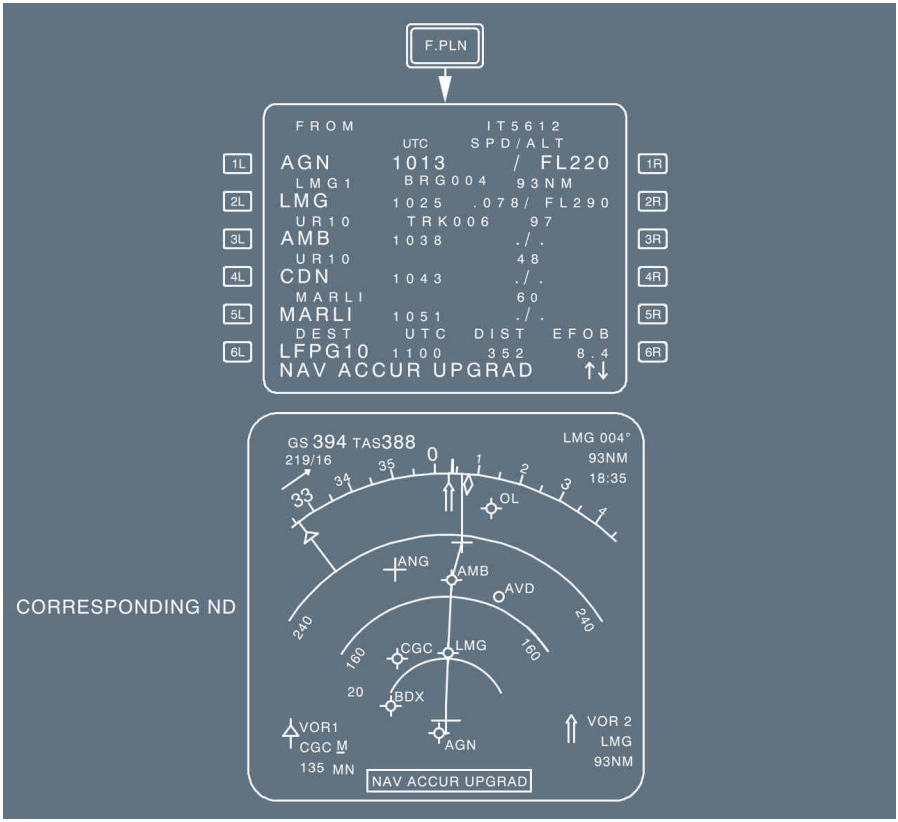
The pilot can make all revisions to the lateral and vertical flight plans from these pages:

He presses the left key to revise the lateral flight plan, and the right key to revise the vertical flight plan.

He presses the F-PLN key on the MCDU console to access the page A of the active flight plan.

FLIGHT PLAN A PAGE

Page A displays time, speed, and altitude predictions for each waypoint of the active flight plan.



TITLE	FLIGHT NUMBER (blank, if no flight number has been entered). This line may display: TMPY in yellow if a temporary flight plan exists; OFST in white, if a lateral offset is flown; or, OFST in yellow, if a lateral offset revision is pending.
Line 1 to Line 5 WPT, UTC, SPD, ALT	These lines display consecutive waypoints along with associated predictions of time, speed or Mach and altitude for each. TIME is displayed before takeoff, and UTC after takeoff. After the pilot enters an estimated takeoff time (ETT), UTC is displayed. The time and flight level display at the FROM waypoint (first line of the flight plan) are values that the system memorized at waypoint sequencing.

[1R] SPD/ALT

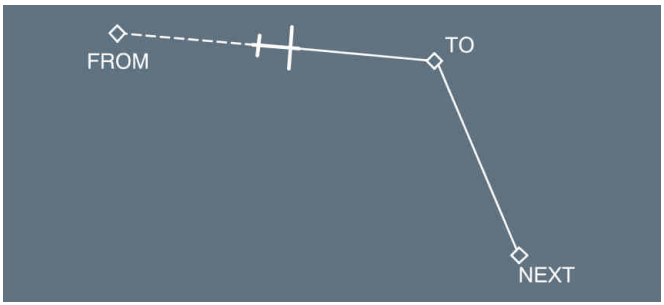
The field dedicated to SPEED or MACH is blank at the FROM waypoint, except at the departure airport. (V1 associated with runway elevation, is displayed).

Note: *When the HOLD marker is slewed, the HOLD SPD Label will overwrite the TIME/UTC title.*

Line 6, DEST UTC/TIME DIST, EFOB

DIST is the distance to destination along the displayed flight plan.
EFOB is the estimated fuel on board at destination. The EFOB at destination will turn to amber, if it becomes less than the MIN DEST FOB value.
The sixth line is permanent and is displayed in white font once predictions are available, except when a TMPY F-PLN is displayed or in some cases when an ALT CSTR is entered ("*CLB or DES*" prompt appears).

Note: *The predicted altitude at a waypoint is related to the QNH below the transition altitude, and is given as a flight level above the transition altitude.*



The generic flight plan page displays the FROM waypoint (last waypoint to be overflown) on the first line, and the TO waypoint (in white) on the second line. The FROM/TO flight plan leg is called the active leg.
The flight crew can use the scroll keys to review all flight plan legs down to the last point of the alternate flight plan. The AIRPORT key serves as a fast slew key. The pilot can press it to call up the next airport (DEST, ALTN, ORIGIN) to be displayed on the flight plan page.
In order to return to the beginning of the flight plan page, the pilot presses the F-PLN key on the MCDU console.
The display shows the name of the leg between two waypoints, and the distance between them on a line between the lines that identify them. During an approach, this in-between line also defines the angle of the final descent path. For example, "2-3 °" indicates that the leg is two nautical miles long, and the flight path angle is -3 °.

The display shows the bearing between FROM and TO waypoints as the bearing from the aircraft position to the TO waypoint. It shows track (TRK) between the waypoints shown in lines 2 and 3. This is the outbound track of the next leg.
If the database contains a published missed approach procedure, or if someone has inserted one manually, the display shows it in blue after the destination runway identification. It turns green when the go-around phase becomes active.
After the last waypoint of the missed approach, the display shows the alternate flight plan in NAV mode.
When NAV mode is engaged, the flight crew can only clear or modify the TO waypoint by using the DIR key on the MCDU console.

PREDICTIONS

The system calculates and displays predictions for all waypoints.
It uses the current wind to compute TO waypoint predictions, and uses predicted winds to compute all others.

CONSTRAINTS

The database may define an altitude and speed constraint for each waypoint of the climb, descent, and approach phases, or the pilot may manually insert such constraints (except at origin, destination, FROM, and pseudo-waypoints).
The constraints are displayed in magenta, as long as predictions are not completed.
Once predictions are available, constraints are replaced by speed and altitude predictions, preceded by stars. If the star is in magenta, the system predicts that the aircraft will match the constraint (altitude within 250 ft, speed not more than 10 kt above the constraints). If the star is in amber, the system predicts that the aircraft will miss the constraint and the MCDU displays: “SPD ERROR AT WPT”.

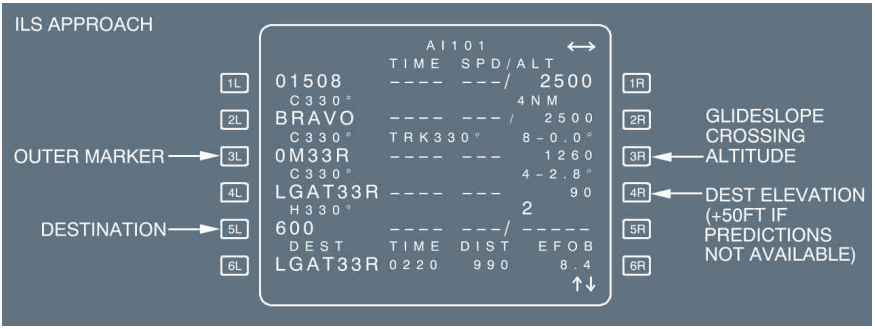
Note: SPD and ALT CSTR may either be entered on the VERT REV page or directly on the F-PLN A page, whereas TIME CSTR may only be entered from the RTA page.

PSEUDO-WAYPOINTS

Pseudo-waypoints are geographical positions corresponding to an event in the vertical flight plan: T/C (top of climb), T/D (top of descent), SPD/LIM (speed limit), DECEL (deceleration for approach), etc. The display shows them as waypoints in parentheses.

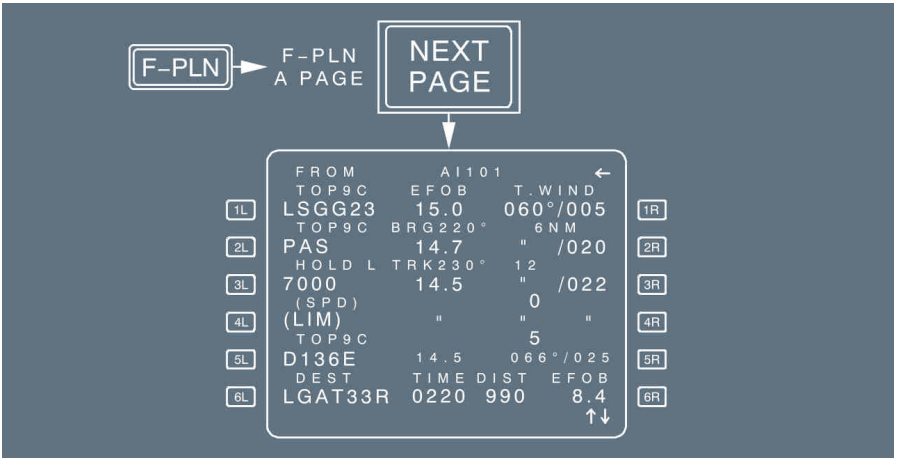
APPROACH DISPLAY

The flight crew cannot enter an altitude constraint at destination or Missed Approach Point (MAP).



FLIGHT PLAN B PAGE

This page displays fuel predictions and forecast winds at each waypoint.
The pilot calls it up by pressing the NEXT PAGE key when the FLIGHT PLAN A page is displayed.



TITLE — FLIGHT NUMBER (blank if no flight number has been entered).

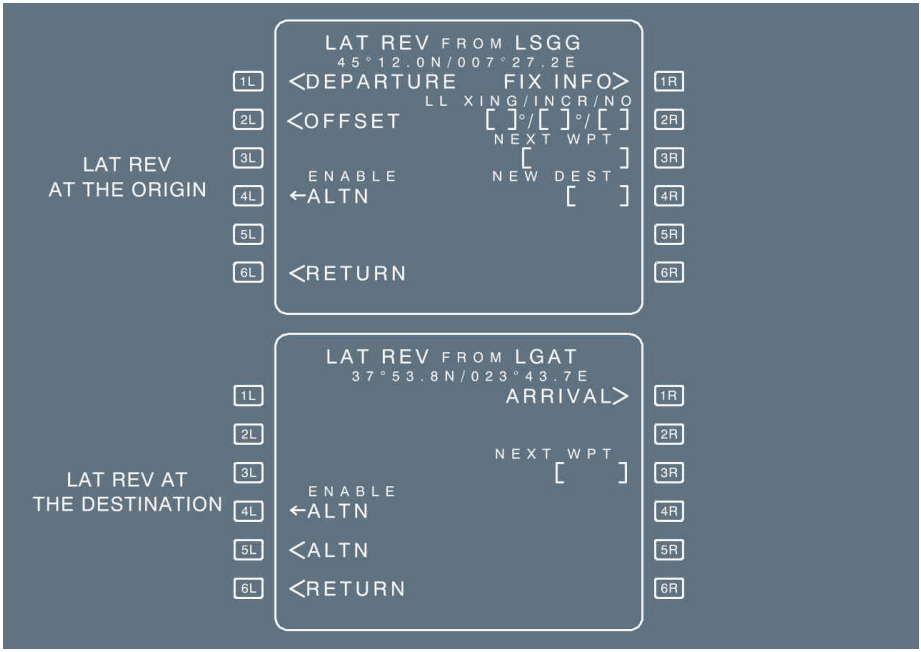
Line 1 to Line 5 WPT-EFOB-WIND	These lines display consecutive waypoints and associated fuel predictions, and the forecast wind profile. The direction of forecast winds is relative to true north. Forecast winds include winds entered by the pilot (large font) and the propagated winds at intermediate waypoints (small font). If the flight crew uses a trip wind, it will be displayed for each waypoint. If no other wind entry is made after takeoff, the FROM waypoint will display the actually recorded wind, and the waypoints downpath will still display the trip wind.
Line 6 DEST-UTC/DIST-EFOB	Identical to F-PLN A page.

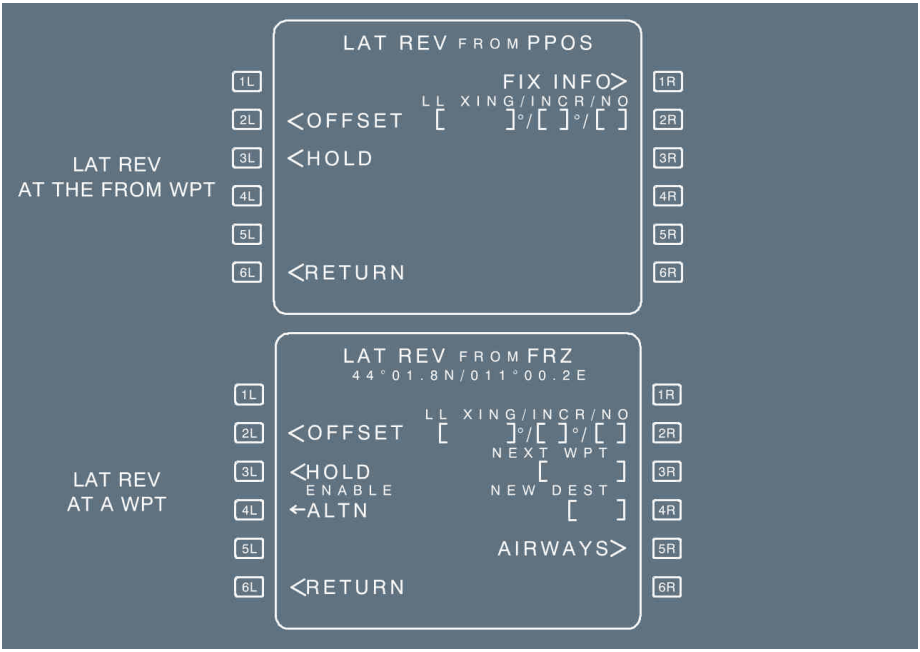
LATERAL REVISION PAGES

Ident.: DSC-22_20-50-10-25-00000564.0009001 / 01 OCT 12

10 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

These pages give the pilot a list of the lateral flight plan revisions, which can be used to change the flight plan beyond a selected waypoint.
The pilot calls up these pages from the flight plan pages (A or B) by pressing the left key adjacent to the selected waypoint.
Different lateral flight plan revisions are available for different waypoints.


LAT REV AT THE ORIGIN
LAT REV FROM LSGG
45°12.0N/007°27.2E
<DEPARTURE
FIX INFO>
LL XING/INCR/NO
<OFFSET
[ ]°/[ ]°/[ ]
NEXT WPT
[ ]
ENABLE
NEW DEST
←ALTN
[ ]
<RETURN
LAT REV AT THE DESTINATION
LAT REV FROM LGAT
37°53.8N/023°43.7E
ARRIVAL>
NEXT WPT
[ ]
ENABLE
←ALTN
<ALTN
<RETURN
1L
2L
3L
4L
5L
6L
1R
2R
3R
4R
5R
6R

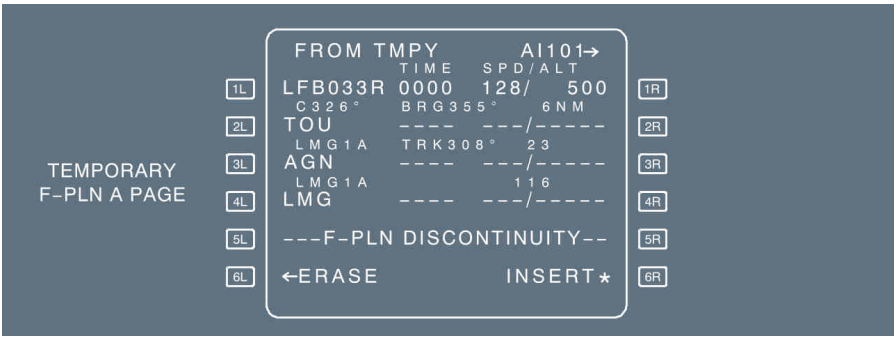


TITLE	The ident of the waypoint or airport selected for revision, along with its latitude and longitude. If the selected waypoint is the FROM waypoint, the title omits the aircraft latitude and longitude, and displays the “PPOS” (present position) instead.
[1L] DEPARTURE	This prompt gives the pilot access to the departure pages, where he can select and insert runways, SIDs, and TRANSs.
[2L] OFFSET	This prompt gives the flight crew access to the OFFSET page.
[3L] HOLD	This prompt gives access to the hold pages.
[4L] ENABLE ALTN	This prompt allows the pilot to switch to the alternate flight plan at the selected revision waypoint, and use it as a new active flight plan. The system never displays this prompt at the FROM waypoint.
[5L] ALTN	This prompt gives access to the alternate airport page. The system displays it only at the destination.
[6L] RETURN	This prompt returns the display to the flight plan page.
[1R] ARRIVAL	This prompt calls up the arrival pages, where RWY, APPR, STAR TRANS and VIA can be selected and inserted.

[1R] FIX INFO	FIX INFO is only displayed on the lateral revision page at the origin or FROM waypoint. It gives access to the FIX INFO page.
[2R] LLXING/INCR/NO	This prompt allows the pilot to create the latitude/longitude crossing point. The increment (INCR) ranges from 1 to 20 °, and the number of crossing points from 1 to 99. This prompt is not displayed for waypoints belonging to the descent procedure.
[3R] NEXT WPT	The pilot uses this prompt to enter the next waypoint. If this waypoint is a latitude/longitude, or is neither in the database nor in the pilot-defined elements, the display reverts to the NEW WAYPOINT PAGE.
[4R] NEW DEST	The pilot uses this prompt to enter a new destination.
[5R] AIRWAYS	The pilot uses this prompt to access the AIRWAYS page.
[6R] INSERT	This prompt is displayed when the pilot has created a temporary flight plan. It can be used to activate the temporary flight plan.

TEMPORARY REVISION

When the pilot selects a lateral revision, the system creates a “Temporary F-PLN” and displays it in yellow on the MCDU, and as a dashed yellow line on the ND, enabling the pilot to review the data before inserting it. As long as the temporary flight plan is not inserted, the previous flight plan remains active and the system guides the aircraft along it.



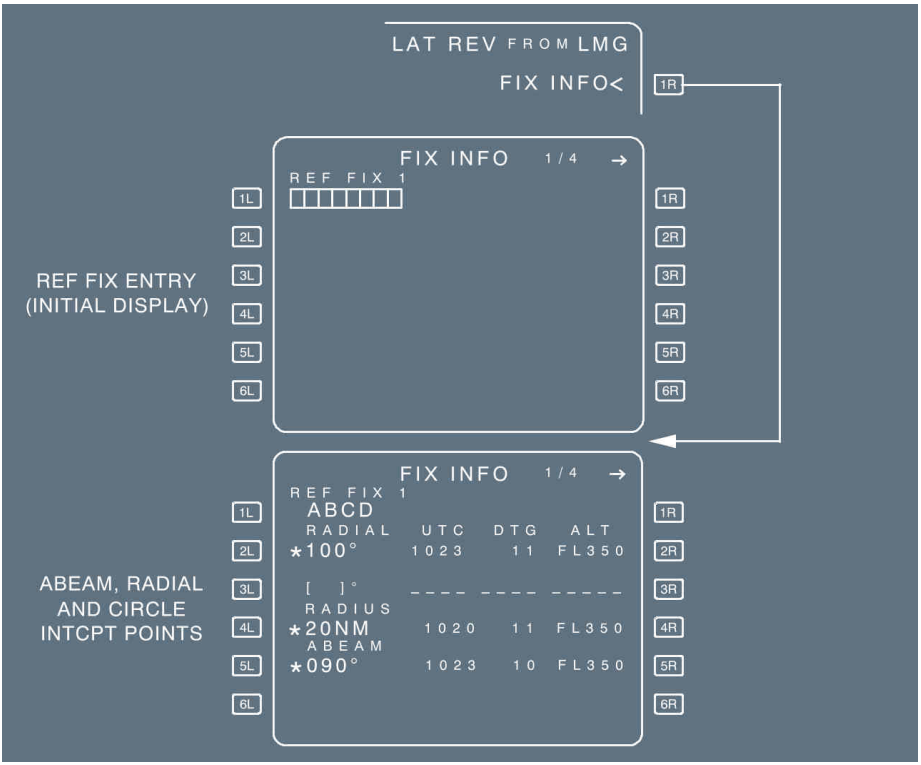
FIX INFO PAGE

Ident.: DSC-22_20-50-10-25-00000565.0009001 / 14 MAY 12

11 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This page provides access to the RADIAL, CIRCLE, and ABEAM intercept functions.
The reference may be a given database fix or a pilot-defined element.

If the radial, circle or abeam intercepts the active flight plan, the intersection point can be converted to a waypoint and inserted into the flight plan.
The FIX INFO page may be accessed from the LAT REV page at the origin airport, or at FROM.



[1L] REF FIX (blue) — Allows entries of the REF FIX. This reference may be any database element (navaid, waypoint, NDB, airport, runway) or a pilot-defined element. Prior to entry, amber boxes are displayed.

[2L] - [2R] RADIAL (blue) and [3L] - [3R] (blue)

Enables entry of a radial from the REF FIX.

If the radial line intersects the active flight plan, the FMGS will compute the time, the along path DTG (Distance To Go), and the altitude at the intersection point (small green font). A large blue star is then displayed to insert the intersection waypoint into the flight plan. This waypoint is not part of the pilot-stored elements. Format of the created waypoint is:

XXXNNN XXX = First 3 letters of REF FIX ident.
NNN = Value of the radial

[4L] - [4R] RADIUS (blue)

This function enables the flight crew to enter a radius that defines a circle around the REF FIX.
When the circle intercepts the current flight path, the FMGS will compute the time, the along path distance and the altitude at the first intersection point, from the current aircraft position (small green front).
A large blue star is then displayed to insert the intersection waypoint into the flight plan. This waypoint is not part of the pilot stored element.

The waypoint is automatically labelled:

"DNNNXXX" NNN = Value of the radius
XXX = First 3 letters of the REF FIX ident.

[5L] - [5R] ABEAM

This function enables the pilot to create waypoints on a flight plan (primary or secondary) that are abeam a reference fix.
Once computed, the page displays the radial number in large green font.
Time, distance and altitude predictions are displayed in small green font.
Selecting the key adjacent to the star creates the waypoint and inserts it into the flight plan.
The waypoint is identified by AB + the REF FIX ident e.g. AB TLS.
Abeam waypoints are not stored in the pilot-stored waypoint database.

Note: Four FIX INFO pages, providing the capability to define four different REF FIX elements, are available.

OFFSET PAGE

Ident.: DSC-22_20-50-10-25-00013512.0019001 / 14 MAY 12

12 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This page allows the flight crew to insert a preplanned offset into the flight plan by entering:

- A start waypoint
- An end waypoint

- An offset distance to the left or to the right
- The intercept angle value.

The flight crew calls up this page from the LATERAL REVISION page, by pressing [2L] key.

TITLE	OFFSET in white large font. If a temporary flight plan exists, it is displayed in yellow large font.
[1L] OFFSET	This field displays the lateral offset distance, left or right, in the flight plan. The offset may be between 1 and 50 NM. Blue brackets are displayed until an offset is inserted. When the flight crew enters an offset, or modifies another element in the OFFSET page, the OFFSET field becomes yellow. One time the temporary flight plan is inserted, the field becomes blue. The flight crew can delete an inserted offset either by pressing the CLR key, by entering a zero for the amount of the offset, or by pressing OFFSET DELETE in 6L field.
[2L] START WPT	The START WPT ident for the offset is displayed in yellow if a temporary flight plan exists, in blue if already inserted, or in green when the field is not modifiable. The default START WPT shall be the waypoint where the lateral revision is performed, the first waypoint offsettable, or PPOS if the offset is currently flown. This waypoint can also be selected from the list of waypoints in the fields 3L to 5L, or can be manually entered by the flight crew.
[3L] to [5L]	Display the start waypoints available for selection. Two scrolling list are available. The active start waypoint is displayed in green in the list. Other waypoints are displayed in blue. The currently selected start waypoint does not have selection arrow associated.

[6L] RETURN ERASE	RETURN: The flight crew presses this key to return to the last displayed LAT REV page. ERASE: It is displayed when a temporary flight plan has been created, and it enables the flight crew to erase the temporary flight plan.
[1R] INTCPT ANGLE	This field displays the intercept angle. The angle may be between 10 ° and 50 °. The intercept angle in the AMI is the default value, and is shown in blue. When the flight crew enters an intercept angle, or modifies another element in the OFFSET page, the field becomes yellow. One time the temporary flight plan is inserted, the field becomes blue.
[2R] END WPT	The END WPT ident for the offset is displayed in yellow if a temporary flight plan exists, or in blue if already inserted. The default END WPT shall be the waypoint terminating the last consecutive offsettable leg from default or currently selected START WPT. This waypoint can also be selected from the list of waypoints in the fields 3R to 5R, or can be manually entered by the flight crew.
[3R] to [5R]	Display the end waypoints available for selection. Two scrolling lists are available. The active end waypoint is displayed in green in the lists. Other waypoints are displayed in blue. The currently selected end waypoint does not have selection arrow associated.
[6R] INSERT OFFSET DELETE	INSERT: This field allows the flight crew to activate the temporary flight plan and reverts the display to the active flight plan. This field is displayed when the offset segment is completely defined on OFFSET page. OFFSET DELETE: This prompt enables the flight crew to create a temporary flight plan where the predefined offset is canceled. This field is displayed when an offset exists in the active flight plan.

Note: *If the waypoint lists in lines 3 to 5 do not fit in one page, the flight crew can scroll in an open loop, two lines by two lines. To keep the initial order of the list, two markers appear:*

- *- START OF LIST - : This marker is displayed at the beginning of the list*
- *- END OF LIST - : This marker is displayed at the end of the list.*

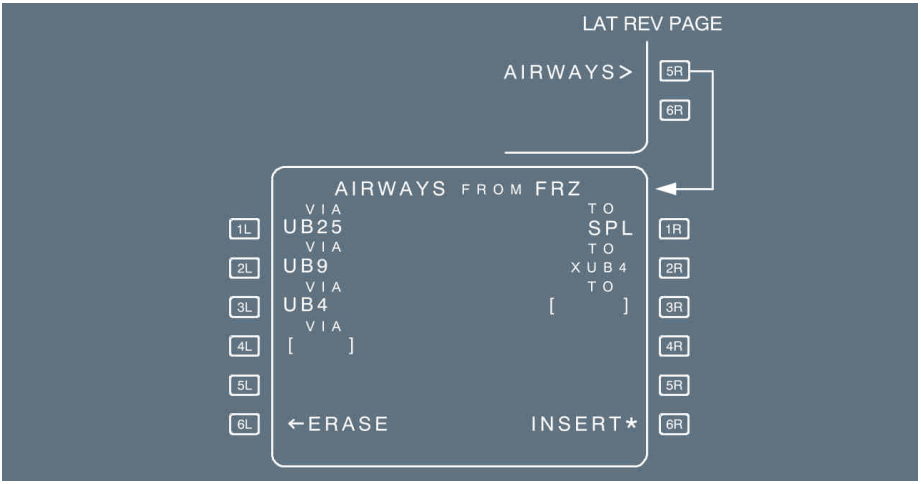
AIRWAYS PAGE

Ident.: DSC-22_20-50-10-25-00000566.0009001 / 14 MAY 12

13 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This page allows the pilot to select up to five airways for stringing into the flight plan, after the revise waypoint.

The pilot calls up this page by pressing the lateral revision page [5R] key.



TITLE	Revise point ident (large green font)
[1L] to [5L] VIA	This field displays the airways entered by the pilot.
[6L] ERASE or RETURN	The flight crew presses this key to return to the lateral revision page. This field displays ERASE when a temporary flight plan is created. It enables the temporary flight plan to be erased.
[1R] to [5R] TO	Displays the end points of the corresponding airways entered on the [1L] to [5L] entries. The ending point is displayed in large blue font, if manually-entered, in blue small font if FMGC-computed.
[6R] INSERT (amber)	Allows the entered VIA/TO segments to be inserted into the flight plan. The display reverts to the F-PLN page.

Note:
1. *If the entered airway contains at least one fixed radius transition waypoint as defined in the navigation database, and the TO waypoint is defined and, the fixed radius transition waypoint is in the flight plan, then, "FIXED TURN RADIUS AWY" is displayed between the VIA and TO fields.*
2. *If the condition for display "FIXED TURN RADIUS AWY" is satisfied for two consecutives airways lines, the second line displays (") instead of the whole message.*

DEPARTURE PAGES

Ident.: DSC-22_20-50-10-25-00000567.0001001 / 17 MAR 11

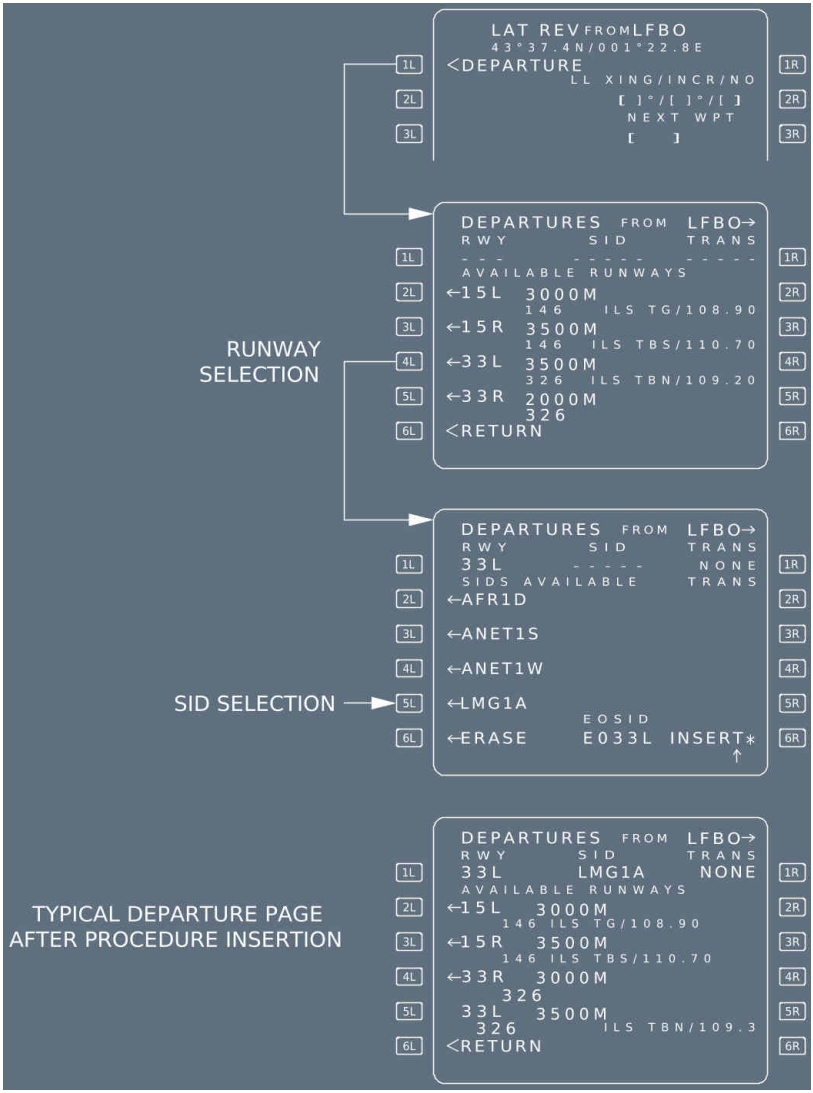
14 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

These pages allow the pilot to review departure procedures (RWY, SID, TRANS) and enter them into the active flight plan.

When the display shows the lateral revision page for the origin, the pilot calls them up by pressing the 1L key.

Three pages are available: RWY, and SIDS and TRANS (if any).

The pilot sequentially calls up each page by selecting a data item (such as RWY), or by pressing the NEXT PAGE key on the MCDU console.



Line 1 RWY, SID TRANS

This line displays the RWY, SID, and TRANS in green after they have been inserted into the active flight plan, or in yellow if selected but not yet inserted. If nothing has been selected or inserted, the line displays dashes.

[2L] to [5L] RWY/SIDs	These fields display selectable and selected RWYs or SIDs (including EOSID and NO SID option). The pilot can slew each list. Selectable RWYs and SIDs are displayed in blue with an arrow. Once a RWY or SID is selected, the arrow disappears. A RWY or SID, already inserted in the flight plan, is displayed in green. The display shows the length, heading, and, if available, the ILS ident and frequency for each runway.
[6L] ERASE or RETURN	The pilot presses this key to erase a selected data item and revert to the previous selection. If the pilot erases the page, the display reverts to the active flight plan page. The display shows RETURN instead of ERASE, when the pilot has not created a temporary flight plan.
[2R] to [5R] TRANS	This field displays the selectable and selected enroute transitions in blue and green respectively. They are blank, if there are no transitions.
[6R] INSERT or BLANK	The pilot uses this key to insert a temporary procedure into the flight plan. The page reverts to the active flight plan page, when the insertion is completed. It is associated with RETURN (6L).
[6M] EOSID	Once a runway is inserted into the flight plan, this field displays any ENG OUT SID for that runway. If there is none, it displays NONE.

HOLD PAGES

Ident.: DSC-22_20-50-10-25-00000568.0001001 / 01 OCT 12

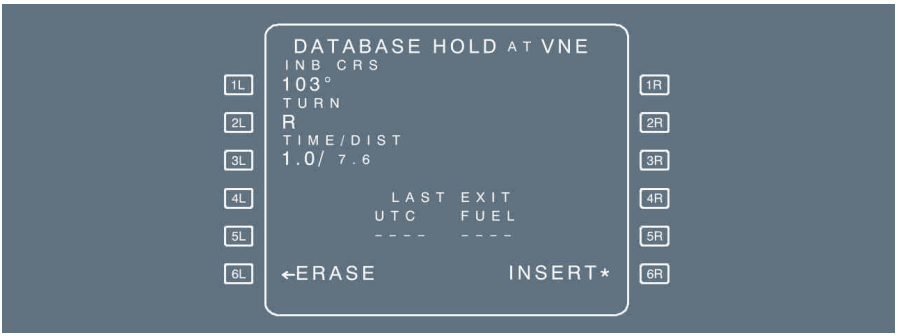
15 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

These pages allow the pilot to review and modify the holding pattern parameters at the selected revise waypoint.
The flight crew calls up these pages by pressing the HOLD key on the LAT REV page for the waypoint. The flight crew can insert database hold, holds computed by the FMS or holds that they manually define.

At first access, the HOLD page appears as follow:

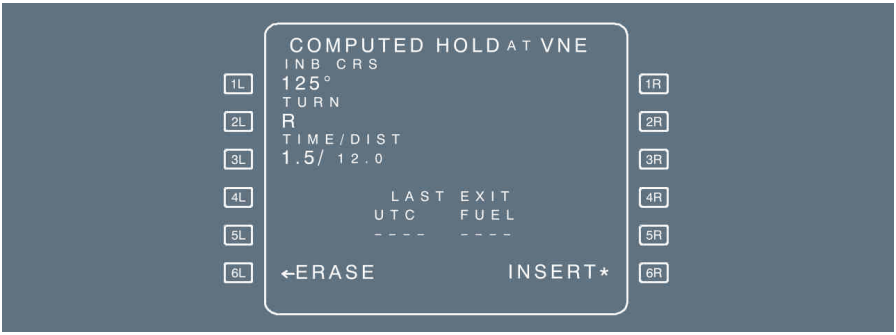
DATABASE HOLD

If a hold is defined in the navigation database for the revised waypoint, and can be inserted, the parameters in [1L], [2L] and [3L] appear in yellow.



COMPUTED HOLD

If a default hold is computed by the FMS and can be inserted, the parameters in [1L], [2L] and [3L] appear in yellow.

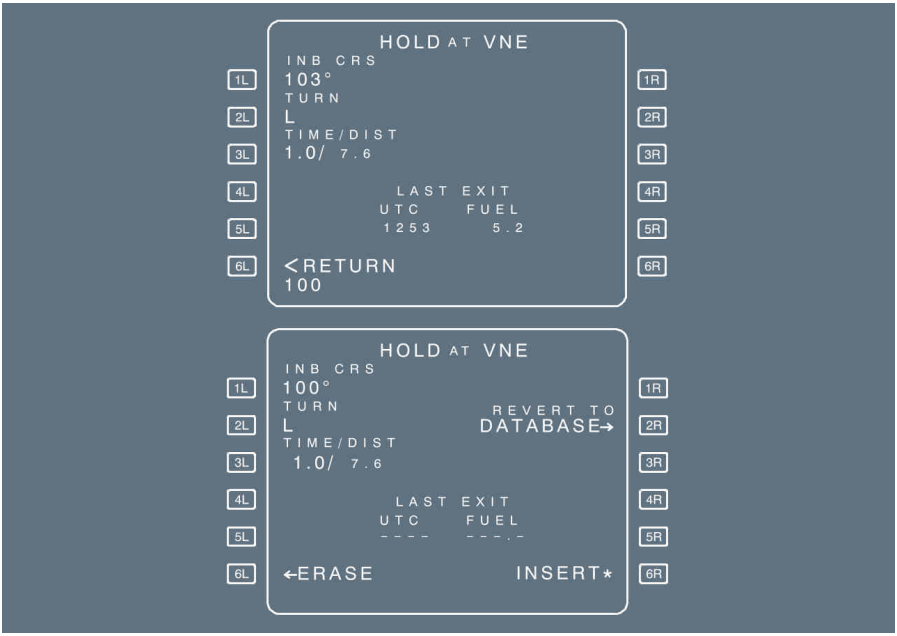


A computed hold has the following default parameters:

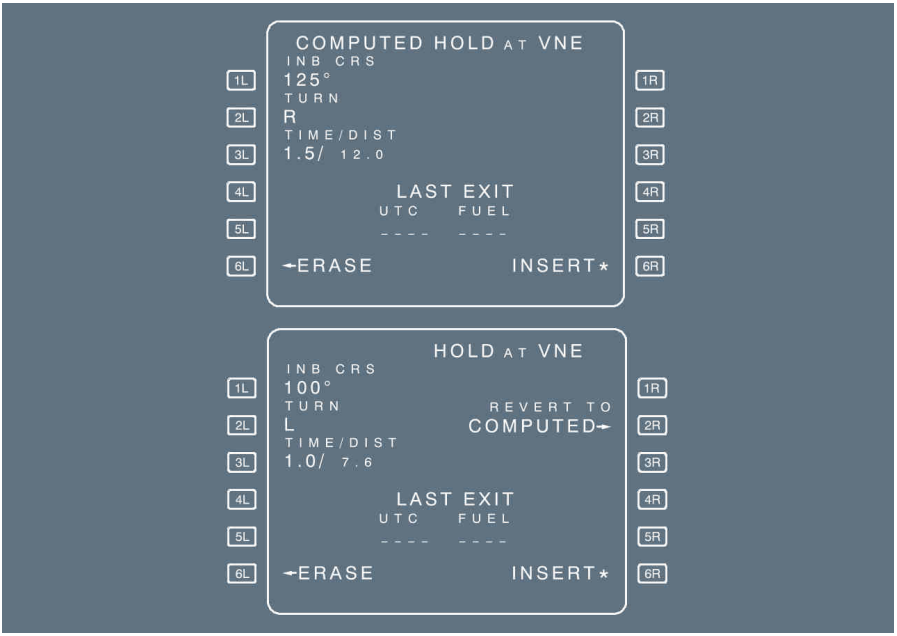
[1L] INB CRS	Inbound track of the F-PLN leg leading to the revised waypoint
[2L] TURN	Direction right (R) to turn in the hold
[3L] TIME/DIST	TIME on outbound leg is 1.5 min above 14 000 ft, 1 min below 14 000 ft.
[2R]	This field shows “REVERT TO COMPUTED” when the flight crew has modified the holding pattern.

HOLD MODIFIED BY FLIGHT CREW

If the flight plan contains a holding pattern that was defined by the pilot from an existing database or computed hold, the parameters in [1L], [2L] and [3L] appear in blue.
If the pilot has modified holding pattern data from the database, the field next to [2R] displays “REVERT TO DATABASE” or “REVERT TO COMPUTED” to enable the pilot to revert to default parameters.



EXAMPLE	The pilot modifies the inbound course.



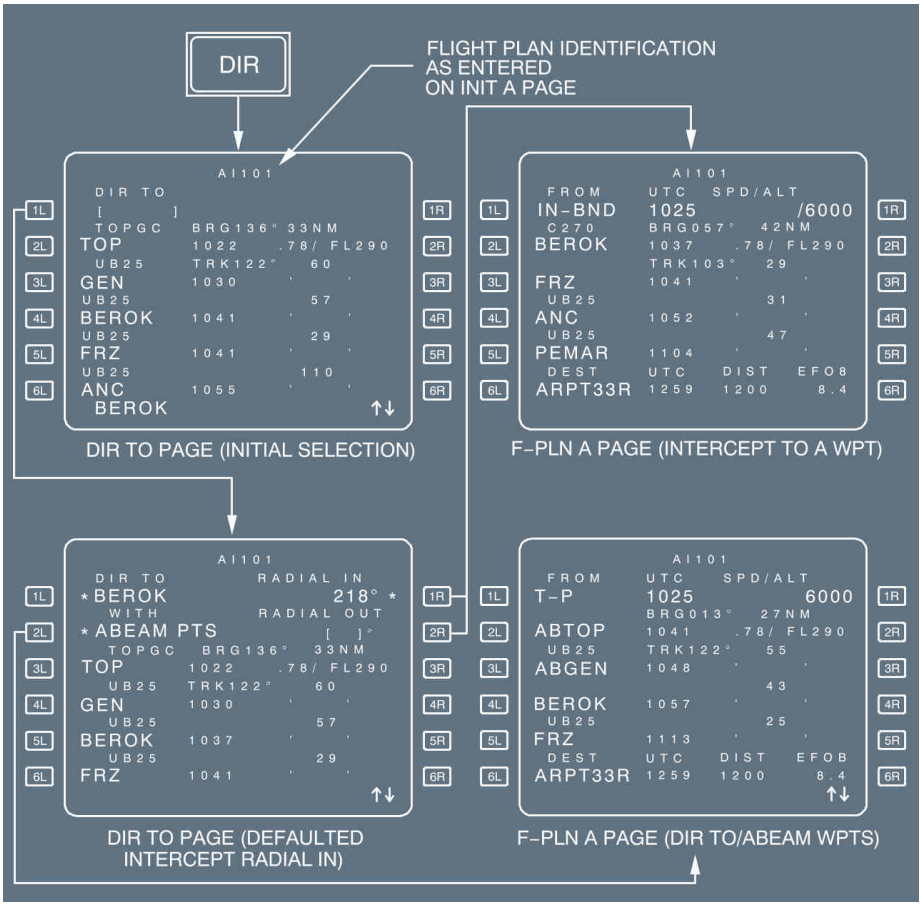
[1L] INB CRS	This field displays the inbound course of the holding pattern. The data may be manually or automatically modified.
[2L] TURN	This field shows the direction to turn in the hold (L or R). The data may be modified.
[3L] TIME/DIST	This field shows the time and distance for the outbound leg. The data may be modified, but time and distance cannot be entered simultaneously. Time and distance are dependent values that the system calculates from the predicted true airspeed, which in turn depends upon the holding speed (speed for maximum endurance, ICAO speed limit, or constraint speed, whichever is lower).
[6L] ERASE or RETURN	The pilot presses this key when the field shows “ERASE”, to erase the holding pattern. The pilot presses this key when the field shows “RETURN”, to return to the LAT REV page, if the hold is already inserted in the flight plan.
[2R] REVERT TO...	The pilot presses this key to delete manual modifications to the database hold (or computed hold), and to revert to the database (or computed) holding data.

[6R] INSERT	The pilot presses this key to insert the hold into the active flight plan.
LAST EXIT UTC FUEL	This field displays the time at which the aircraft must leave the holding pattern in order to meet fuel policy criteria (extra fuel = 0). The system also displays the estimated fuel on board at that time. Always displayed in thousand of kilograms or pounds.

DIRECT TO PAGE

Ident.: DSC-22_20-50-10-25-00000569.0001001 / 23 JUN 15

16 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**



Pressing the “DIR” key under the MCDU screen brings up the DIR TO page. On this page, the [1L] key is the DIR TO key. The pilot presses it to modify the flight plan by creating a direct leg from the aircraft's present position to any selected waypoint. When in NAV mode, the pilot must use this key to modify the active leg or the TO waypoint. The pilot cannot call up this page when the aircraft's present position is not valid.

[1L] DIR TO

Pressing this key selects the DIRECT TO or INTERCEPT waypoint. The pilot can identify the waypoint to be inserted by using its identifier, its latitude and longitude, place/bearing/distance, or place-bearing/place-bearing.

Note: *If the entered DIR TO is a latitude/longitude, the NEW WAYPOINT page is automatically called up.*

If the pilot does not select the RADIAL IN (1R) or RADIAL OUT (2R) or ABEAM PTS (2L), the DIR TO function routes the aircraft from the present position to the waypoint inserted in the DIR TO field.

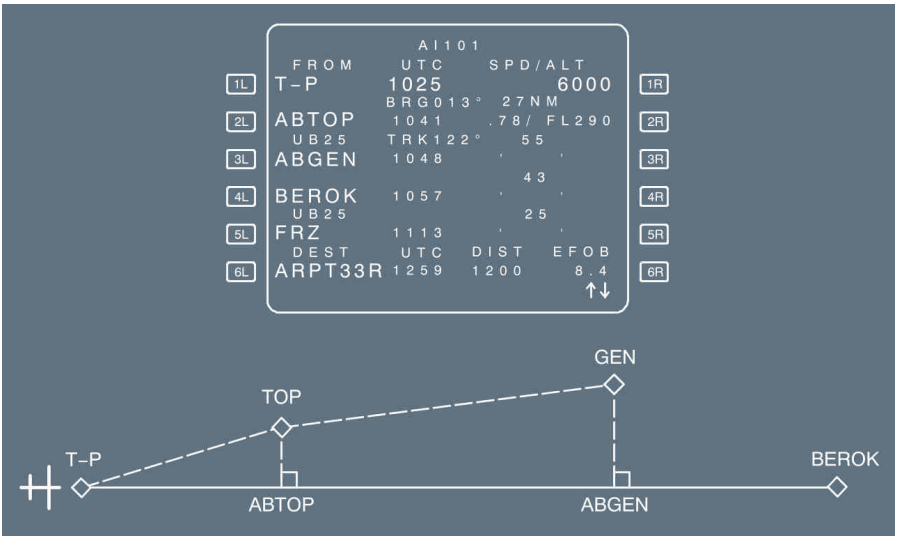
Line 3 to Line 6

These lines display the active flight plan with time/speed/distance predictions. The display may be slewed ↑ ↓.
Pressing any key activates the DIRECT TO function from the present position to the waypoint adjacent to that key.

[2L] ABEAM PTS

The flight crew presses this key to activate the DIR TO/ABEAM function which projects the flight plan waypoints perpendiculary on the DIR TO leg:

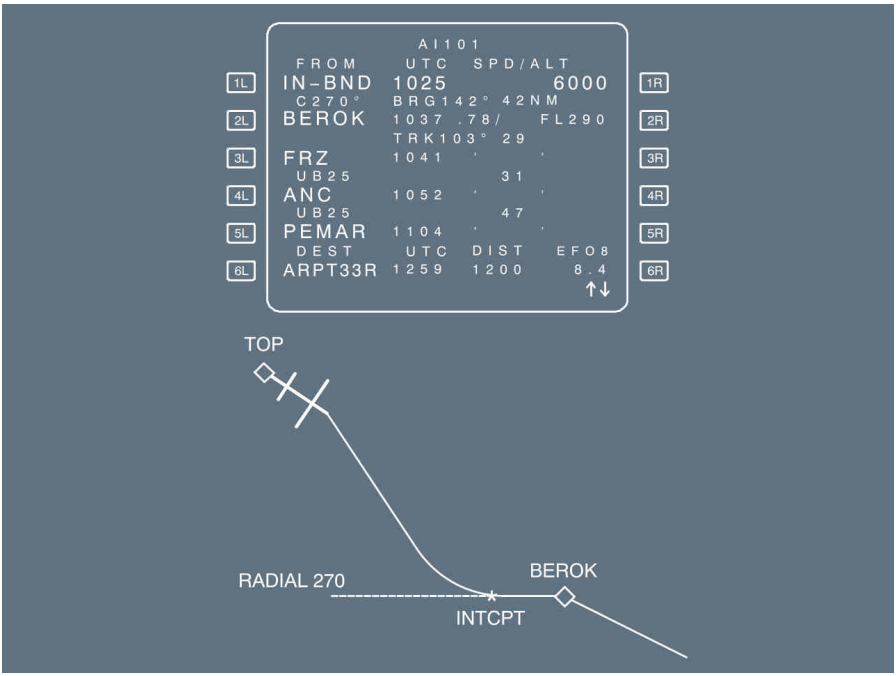
EXAMPLE: DIR TO BEROK - ABEAM.



[1R] RADIAL IN and [2R] RADIAL OUT

The pilot fills in these fields to define a radial, associated to the waypoint defined in 1L. These keys respectively activate the DIR TO/INTERCEPT TO and DIR TO/INTERCEPT FROM functions. The pilot enters the radial in, or radial out, as : XXX, XXX being the radial.
The aircraft intercepts from its current position and tracks the selected waypoint and radial to (or from) this waypoint.

EXAMPLE: RADIAL INBND - DIR TO BEROK - RADIAL 270 ° INBOUND



If the DIR TO/INTCPT WPT entry is to a waypoint already in the flight plan, a default RADIAL IN is displayed in small font. However, no radial is displayed on the ND for this default radial. No default radial is provided for the RADIAL OUT field.

Selecting the INTCPT TO (RADIAL IN [1R]) function:
- Activates the intercept radial INTO the WPT.
- Sets the course = radial IN + 180 °.
- Reverts the display to the F-PLN A page.

Selecting the INTCPT FROM (RADIAL OUT [2R]) function:
- Activates the intercept radial FROM the WPT.
- Sets the course = radial OUT.
- Reverts the display to F-PLN A page.

For details, DSC_22_20_30 Flight Planning.

Note: *It is not recommended to use the DIR TO function when the aircraft is on the ground. The use of the DIR TO function when the aircraft is on the ground may result in the loss of all departure data, that includes both of the following:*

- *The takeoff speeds*
- *The derated level, or the flexible temperature.*

ARRIVAL PAGES

Ident.: DSC-22_20-50-10-25-00000570.0009001 / 14 MAY 12

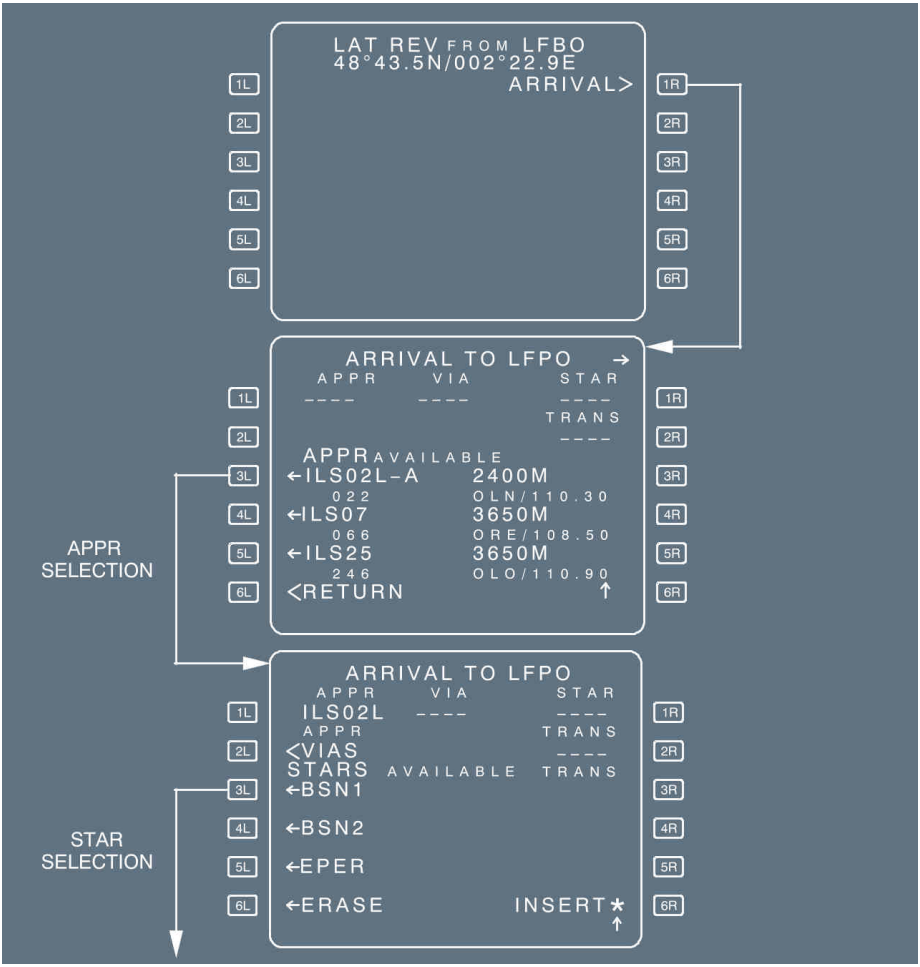
17 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

These pages enable the pilot to review arrival procedures (approaches, VIAs, STARs, TRANS) and enter them into the active flight plan.
The pilot calls them up from the LAT REV page for the destination by the pressing the 1R key.
Three pages, APPR, STAR, and VIA, are available, along with a fourth,TRANS, if there are any transitions.
The pilot calls up each page sequentially, either by selecting a data item (such as APPR), or by pressing the NEXT PAGE key on the MCDU console.

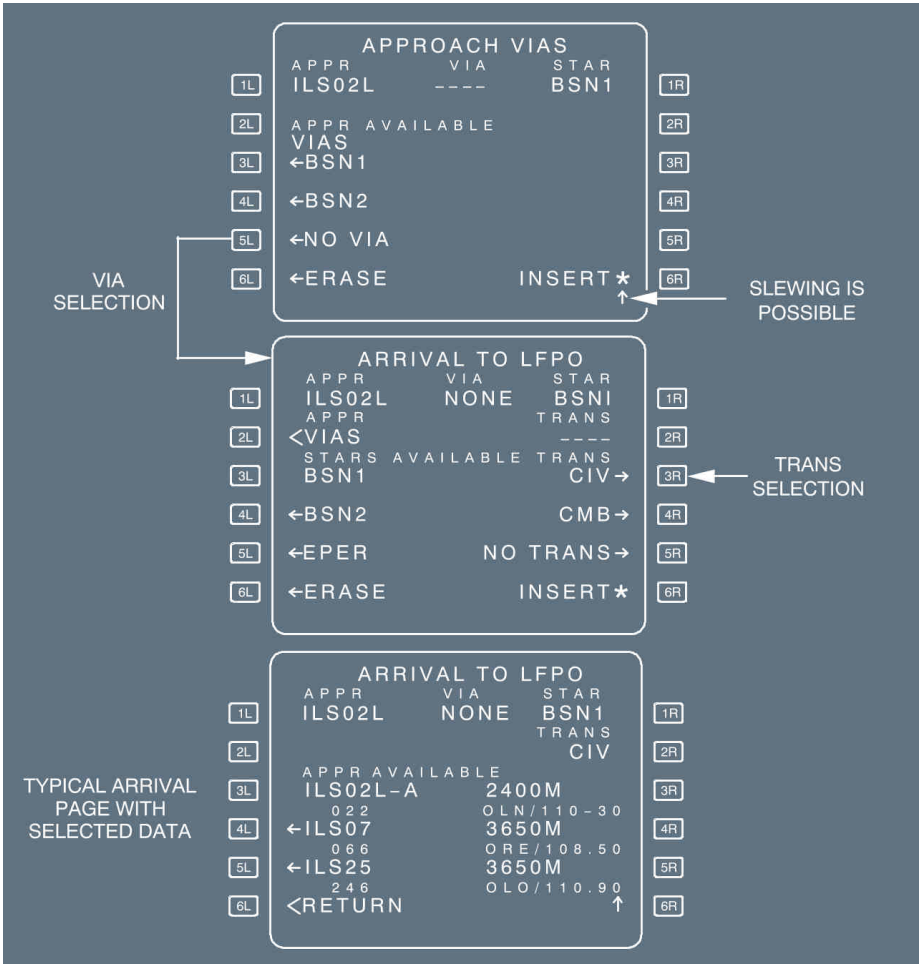
Line [1L] - [1R] [2R] This line displays the APPR, VIA, STAR, and TRANS in green, if they have been inserted in the flight plan, and in yellow, as a temporary flight plan, if they have been selected but not yet inserted.
It displays dashes or NONE, if nothing has been selected or inserted.

[2L] APPR VIAS The pilot presses this key to call up transitions from the last point of the STAR to the first point of the approach.

[3L] to [5L]	These fields list selectable and selected APPRs, STARs, and VIAs. The flight crew can slew the pages, when necessary. Selectable APPRs, STARs, and VIAs are displayed in blue with an arrow. Once the pilot has selected an APPR, STAR, or VIA, the arrow disappears. After the APPR, STAR, or VIA is inserted into the flight plan, it is displayed in green. For each approach, the display shows runway length, heading, and the frequency and identifier of the ILS when ILS is available. In case there are multiple approaches for the same runway, the approach is identified with the runway plus the multiple indicator (i.e. ILS 33L-S).
[6L] ERASE or RETURN	The pilot presses this key to erase selected data and to revert to the previous selection. The page reverts to the LAT REV page. The field displays “RETURN”, instead of ERASE, when the flight crew has not created a temporary flight plan.
[3R] TRANS to [5R]	These fields display selectable and selected enroute transitions (if any). They are blue when selected, and become green when inserted into the active flight plan.
[6R] INSERT	The pilot presses this key to insert the temporary procedure into the active flight plan. The page reverts to the active flight plan page when this occurs.


LAT REV FROM LFBO
48°43.5N/002°22.9E
ARRIVAL>
ARRIVAL TO LFPO
APPR VIA STAR
---- ---- ----
TRANS

APPR AVAILABLE
←ILS02L-A 2400M
022 OLN/110.30
←ILS07 3650M
066 ORE/108.50
←ILS25 3650M
246 OLO/110.90
<RETURN
APPR SELECTION
ARRIVAL TO LFPO
APPR VIA STAR
ILS02L ---- ----
APPR TRANS
<VIAS ----
STARS AVAILABLE TRANS
←BSN1
←BSN2
←EPER
←ERASE INSERT*
STAR SELECTION



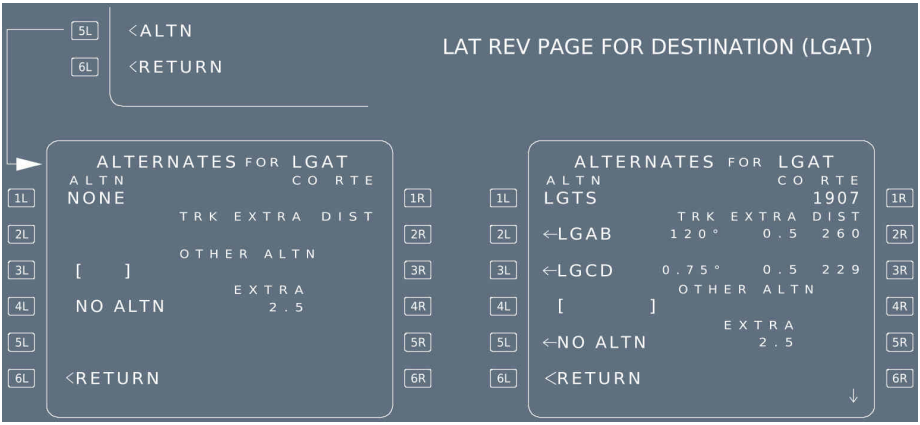
ALTERNATE PAGE

Ident.: DSC-22_20-50-10-25-00000571.0001001 / 17 MAR 11

18 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This page enables the pilot to review, in the NAV database, the alternate airports that are paired with the destination, and define additional alternates, if needed. (Alternate airports are linked to the

destination). The pilot calls up this page with the ALTN prompt, from the lateral revision page for the destination.



TITLE	The destination airport is displayed large green font.
[1L] ALTN	This field displays the selected alternate: In green, if it is active; in yellow, if it is temporary. “NONE” is displayed, if NO ALTN option is selected, or if the destination has no alternate.
Line 2 to line 5	These lines display the identifications of alternates (up to 6), the extra fuel weight remaining after landing at the alternates, and the great-circle track and distances to them from the destination. If the database contains a company route between the destination and the alternate, the distance shown is an airway distance, not a great-circle distance. When the database defines a preferred alternate, it is displayed on Line 2 (if no scrolling has been performed).

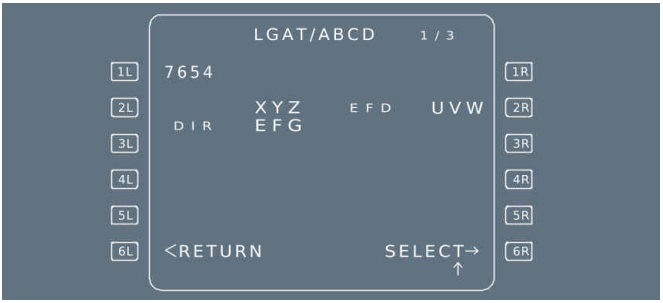
[4L] OTHER ALTN	The pilot can enter an airport identifier in the brackets (Line 3). If that airport is not stored in the database , the NEW RUNWAY page appears for the pilot to use in defining it. If it is stored in the database, the ROUTE SELECTION page appears, and the pilot can use it to select the best route. The pilot may enter a distance in the DIST field of the OTHER ALTN prompt, in order to get preliminary fuel predictions. However, once he has selected the alternate airfield as a temporary alternate and then inserted it, the ALTN distance reverts either to the airway distance, if he has selected a company route, or otherwise to the direct distance to the alternate. The pilot can use OTHER ALTN to overwrite and replace the previous OTHER ALTN.
NO ALTN	The pilot uses this key to select the NO ALTN option.
[6L] RETURN or ERASE	The pilot presses this key to make the display revert to the LAT REV page. Pressing this key erases the temporary selection.
[1R] CO RTE	Pressing this key displays the active company route between the destination and the selected alternate.
[6R] INSERT	Pressing this key activates the temporary selection.

ROUTE SELECTION PAGE FOR ALTERNATE

Ident.: DSC-22_20-50-10-25-00000572.0001001 / 17 MAR 11

19 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This page enables the pilot to review the company route between the destination and the alternate, and to select a different route, if that seems appropriate.
This page comes up automatically, when the flight crew enters an ident in the OTHER ALTN field.
See the “Route Selection” page *Refer to DSC-22_20-50-10-25 Route Selection Page*for a description of this page.



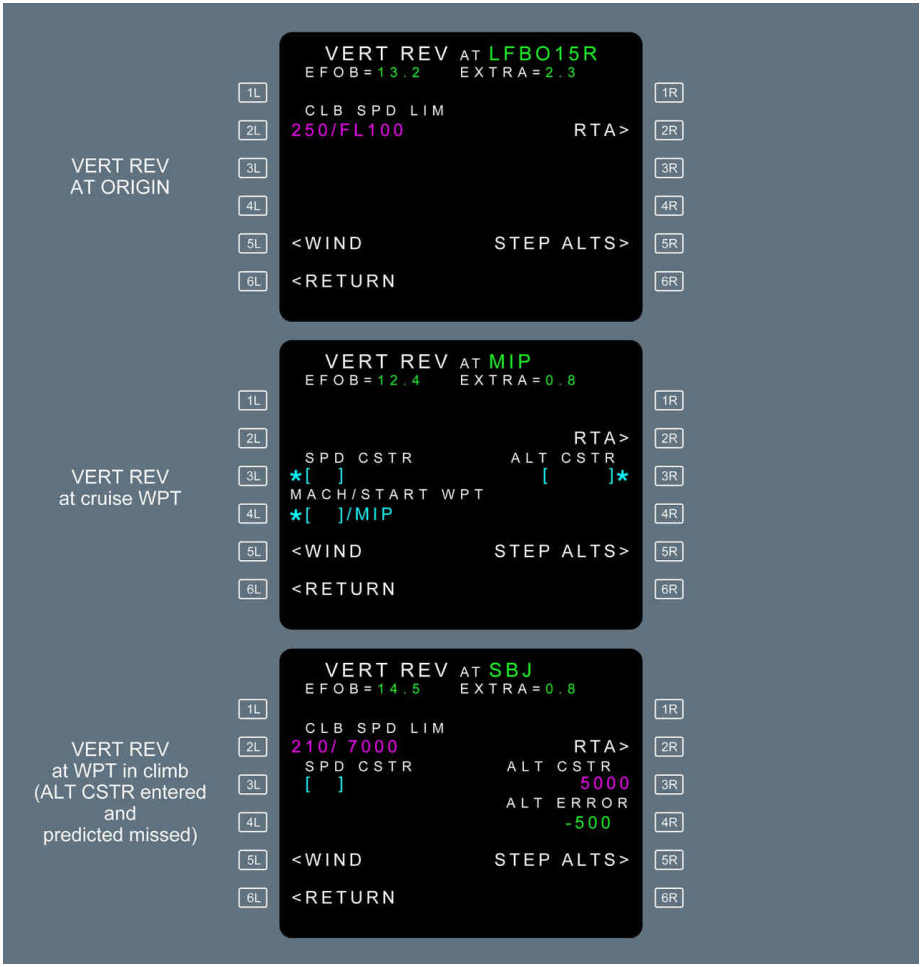
[6R] SELECT	Pressing this key reverts the display to the alternate page. (The distance between the destination and the alternate is then the airway distance).

VERTICAL REVISION PAGES

Ident.: DSC-22_20-50-10-25-00000573.0001001 / 04 DEC 18

20 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

These pages contain the menu of available vertical flight plan revisions that can be applied at a selected waypoint.
The pilot calls up these pages from the flight plan A or B pages by pressing the right hand key next to the selected revised waypoint.
The pilot may make several different vertical revisions (although some may not be available at all waypoints): Speed limit, speed constraint, altitude constraint, time constraint, wind page and STEP ALTS page.


VERT REV AT ORIGIN
VERT REV AT LFBO15R
EFOB=13.2 EXTRA=2.3
CLB SPD LIM
250/FL100
RTA>
<WIND
STEP ALTS>
<RETURN
VERT REV at cruise WPT
VERT REV AT MIP
EFOB=12.4 EXTRA=0.8
RTA>
SPD CSTR
ALT CSTR
*[ ]
[ ]*
MACH/START WPT
*[ ]/MIP
<WIND
STEP ALTS>
<RETURN
VERT REV at WPT in climb (ALT CSTR entered and predicted missed)
VERT REV AT SBJ
EFOB=14.5 EXTRA=0.8
CLB SPD LIM
210/ 7000
RTA>
SPD CSTR
ALT CSTR
[ ]
5000
ALT ERROR
-500
<WIND
STEP ALTS>
<RETURN

TITLE	"VERT REV AT [location]" The second line shows remaining fuel and extra fuel at the waypoint being revised. From FMS2 release 2 the second line does not exist.
[1L] "TOO STEEP PATH BEYOND"	This message appears if the waypoint is part of a leg with a descent path that is too steep.

[2L] CLB/DES SPD LIM	This field displays the speed limit applicable to the climb or descent phase. It displays it in large font when data has been inserted manually, and in small font when data comes from the database.
[3L] SPD CSTR	This field displays any speed constraint assigned to the revised waypoint. It is in large font when inserted manually, and in small font when it comes from the database. It is not displayed at the origin airport, at a FROM waypoint, a speed limit pseudo waypoint, or the destination airport.
[4L] QNH	This field only functions when the revised waypoint is the primary destination. It allows the pilot to enter the atmospheric pressure at sea level. This field is identical to the QNH field of the PERF APPR page.
[4L] MACH/START WPT	This prompt allows the pilot to enter or modify the start point of a constant Mach segment, and its associated Mach. It is not displayed at primary destination and alternate flight plan waypoints. (*Refer to DSC-22_20-30-20-25 Constant Mach Segment - Entering a Constant Mach Segment*).
[5L] WIND	The pilot presses this key to access the wind pages. The first wind displayed page, corresponds to the selected waypoint (e.g. climb page), if the selected waypoint is a climb phase waypoint. A CLR action reverts it to brackets.
[6L] RETURN or CLB	The pilot presses this key to return to the last displayed flight plan page. When displayed, pressing this key assigns the constraint to CLB phase and inserts it into the vertical flight plan. The page reverts to the flight plan page.
[2R] RTA prompt	This prompt gives access to the RTA page. It is not displayed when the VERT REV page is accessed from the alternate F-PLN.
[3R] ALT CSTR	This field displays the altitude constraint assigned to this revised waypoint. It uses large font when the constraint is manually-entered, and small font when it is from the database. A CLR action reverts it to brackets. The constraint may be: - "At", entered as XXXXX (Example: FL 180). - "At or above", entered as + XXXXX or XXXXX + (Example: FL +310). - "At or below", entered as – XXXXX or XXXXX – (Example: -5 000). - A "window" constraint. The altitude window consists of two altitudes between which the aircraft should fly. The crew cannot manually enter a "window" constraint.

G/S INTCP	This field displays the glide intercept altitude for an ILS approach on the vertical revision page at destination.
[4R] ALT ERROR	When the aircraft misses a predicted altitude constraint, this field displays the difference between the altitude constraint and the predicted altitude. If, for example, "-500" appears in this field in green, the aircraft will reach the waypoint at an altitude 500 ft below the constraint altitude. This only applies to waypoints in the climb and descent phases.
[4R] END WPT	This prompt allows the pilot to enter or modify the endpoint of a constant Mach segment. It is displayed when a pair Mach/start exists in 4L field. This prompt is not displayed on the destination VERT REV page. (*Refer to DSC-22_20-30-20-25 Constant Mach Segment - Entering a Constant Mach Segment*).
[5R] STEP ALTS	This legend appears for any waypoint, once a cruise altitude has been entered. It is not available in engine-out, descent, approach, and go-around phases. This gives the pilot access to the STEP ALTS page.
[6R] DES	When this field displays "DES", pressing this key assigns the constraints to the descent phase and inserts them into the vertical flight plan. The page reverts to the F-PLN page. (See note below).

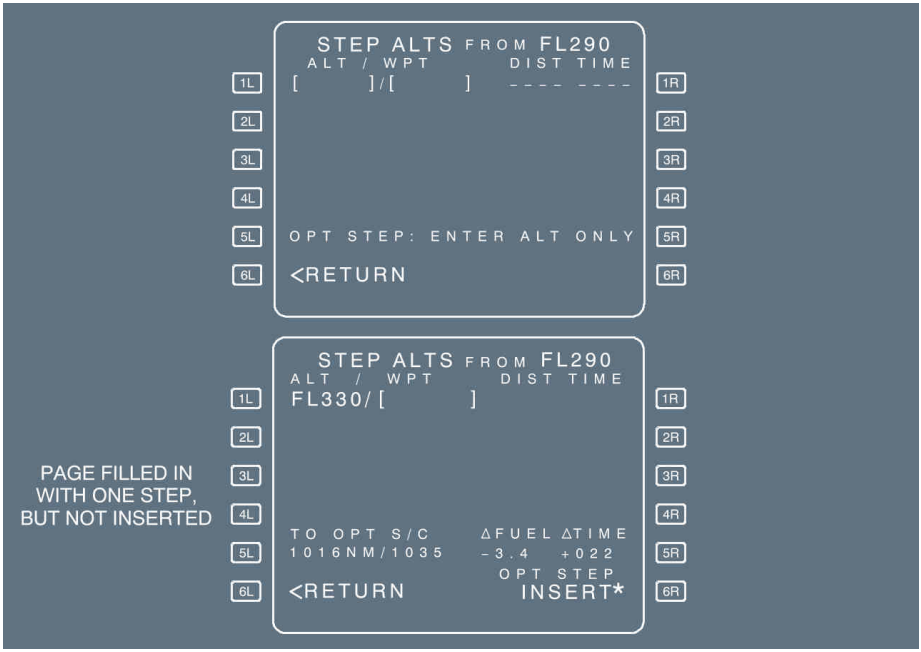
Note: Altitude and speed constraints may apply to the climb, descent, or approach phase, but never to the cruise phase. Fields 6L/6R display "CLB/DES" when the revised waypoint is a cruise phase waypoint and the FMGS needs to know if the new constraint is to be applied in climb or descent phase. The FMGS will modify the cruise phase accordingly. These 2 prompts also display "CLB/DES" when the predictions are not computed. (Top of climb and top of descent not yet defined).

STEP ALTS PAGE

Ident.: DSC-22_20-50-10-25-00000574.0009001 / 14 MAY 12

21 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This page allows the pilot to insert up to four geographic step points and one optimal step point into the flight plan. This page also displays the fuel/time savings associated with the optional step.
The flight crew calls it up either from the vertical revision page.



TITLE [1L] - [1R] [4L] - [4R] STEP ALTS in white followed by the current cruise altitude in green.

ALT/WPT {blue} : The waypoint identifier, as well as the altitude to step, can be entered in this field. Both are displayed in large font. The waypoint may either be an active (or secondary) flight plan waypoint, or an inserted optimal point (OPT). When an entry is made, a temporary F-PLN is created.

DIST / TIME (UTC) (small green font)

Displays the distance to go, and time from the present aircraft position along the flight plan to the step point.

Note: *The following messages may be displayed in the DIST/TIME field:*

- *ABOVE MAX, if the step altitude exceeds the MAX altitude.*
- *"IGNORED", if the step start or end point is less than 50 NM from the top of descent or if the step climb is located prior to the top of climb or after the top of descent.*
- *"STEP AHEAD", when the aircraft is within 20 NM of the start step point.*
- *"NO OPTIMAL" if a non inserted optimal step falls in a discontinuity due to a flight plan change, or when no new optimal exists after an UPDATE or when no optimal step point exists for the entered altitude.*

Note: *If no optimal step point exists for the altitude displayed in [1L], the "NO OPTIMAL" message is displayed in the FUEL/TIME field. This message is also displayed, if the optimal step falls into a discontinuity.*

[5L] OPT STEP: ENTER ONLY ALT (white) TO OPT S/C (green small front)

This field displays the distance and time to an uninserted optimal step point, if one exists. It is displayed to guide the flight crew for the entry format of an optional step.

Note: *On any flight plan change, an inserted optimal step remains in the flight plan at a fixed distance to destination.*

[6L] RETURN

The flight crew presses this key to return to the previous page.

[5R] SAVINGS

This field displays the fuel and time savings prior to the insertion of the optimal step point.

Fuel savings are displayed in thousand of kilograms (or pounds) (maxi 99.9). The value is preceded by:
"–" in case of fuel saving,
"+" in case of additional fuel cost.

Time savings are displayed in hours and minutes. The value is preceded by
"–" in case of time saving,
"+" in case of additional time cost.

[6R] INSERT* (amber) This field displays INSERT*, when an optimal step point exists but is not yet inserted. When INSERT is selected:
- The optimal step point is inserted into the flight plan.
- OPT is displayed in line 1L.
- Optimal step distance and time are deleted in line 5L.
- The UPDATE* blue prompt replaces the INSERT* prompt.

UPDATE* This prompt enables the computation of another optimal step point. The UPDATE* prompt is then replaced by the INSERT* prompt.

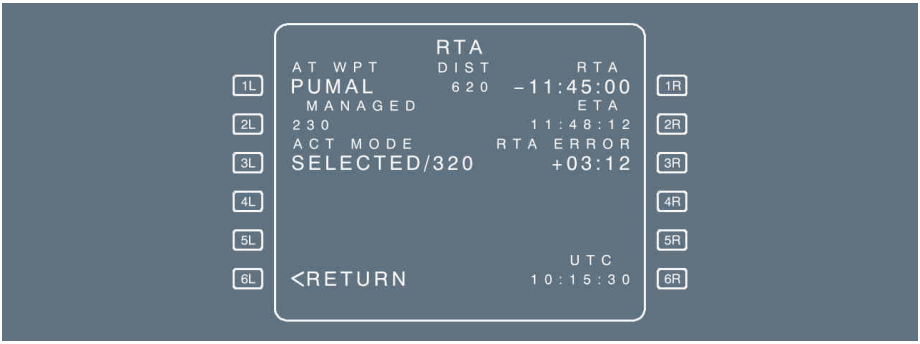
RTA PAGE

Ident.: DSC-22_20-50-10-25-00000575.0009001 / 14 MAY 12

22 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The Required Time of Arrival (RTA) page allows the entry and display of a waypoint identifier, with associated time constraints. The page also displays the entered or computed Estimated Takeoff Time (ETT), as well as the following data:
- Predicted ETA at the time-constrained waypoint;
- Performance adjusted SPD target;
- Time error;
- Distance to time constrained waypoint;
- Active speed mode;

The flight crew calls up this page with the RTA prompt from the vertical revision page.



TITLE RTA (large white font)

line 1	This line displays: - AT WPT, DIST and RTA when a time constraint can be defined. The identifier of the revised waypoint or the first following waypoint at which the time constraint can be defined, is displayed by default in large blue font - AT WPT, DIST and RTA when a time constraint has already been defined. The associated constrained waypoint identifier is displayed by default in large blue font - AT WPT and white dashes when no time constraint can be defined - AT WPT and blue brackets if a time constraint can only be introduced before the waypoint at which the VERT REV has been initiated. Only when the waypoint identifier has been defined (by the flight crew or by default), blue brackets and a blue start are displayed in [1R] field. The flight crew enters the time constraint as “HHMMSS”, preceded by: - for at or before; + for at or after; no sign for at.
[2L] MANAGED	This field displays the FMGS-computed ECON speed/Mach (*Refer to DSC-22_20-40-10 Optimization*)
[3L] ACT MODE	This field displays the active speed mode : MANAGED or SELECTED/NNN (NNN is the selected target speed). The pilot cannot modify it through this field.
[6L] RETURN	The pilot presses this key to revert the display to the VERT REV page.
[2R] ETA	When a required time at arrival has been defined, the 2R field displays the estimated time of arrival as “HHMMSS”.
[3R] RTA ERROR	This field is blank when the RTA is predicted as made. If the RTA is predicted as missed, “RTA ERROR” is displayed in small white font, and the time error between ETA and RTA is displayed in small amber font.
[6R] ETT	The Estimated Takeoff Time (ETT) field is available in the preflight phase. If no ETT is available, the 6R field displays blue brackets and a blue star. Once available, the ETT is displayed in magenta.
UTC	Universal time is displayed in green for takeoff, climb, cruise, descent and approach phases.

DATA INDEX PAGES

Ident.: DSC-22_20-50-10-25-00000576.0001001 / 17 MAR 11

[23] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

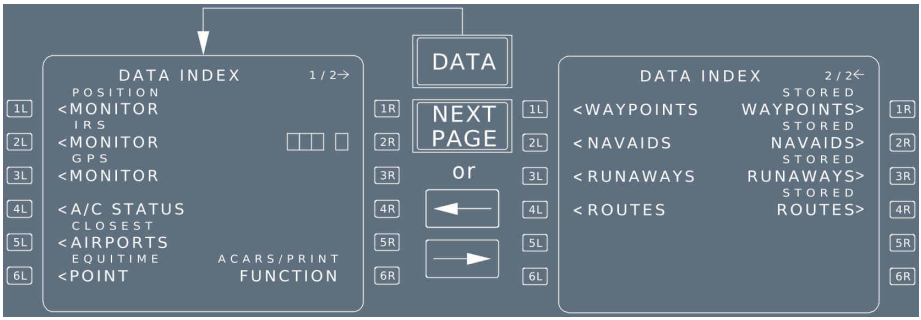
There are two INDEX pages:

The DATA INDEX 1/2 page gives access to various pages devoted to navigation.

The DATA INDEX 2/2 page lists the navigation data, entered in the FMGS.

The pilot enters those items labeled “stored” and can modify them. The pilot can call up the others, but cannot modify them.

The pilot calls up these pages by pressing the DATA key on the MCDU console:



DATA INDEX 1/2 PAGE

[1L] POSITION MONITOR - [2L] IRS MONITOR	When the flight crew presses these keys, the display shows all essential navigation data.
[3L] GPS MONITOR	This key calls up the GPS MONITOR page.
[4L] A/C STATUS	This key calls up the aircraft status page.
[5L] CLOSEST AIRPORTS.	This key calls up the closest airports page.
[6L] EQUITIME POINT	This key calls up the equitime point page.
[6R] ACARS/PRINT	This key calls up the PRINT function pages and the ACARS function pages.

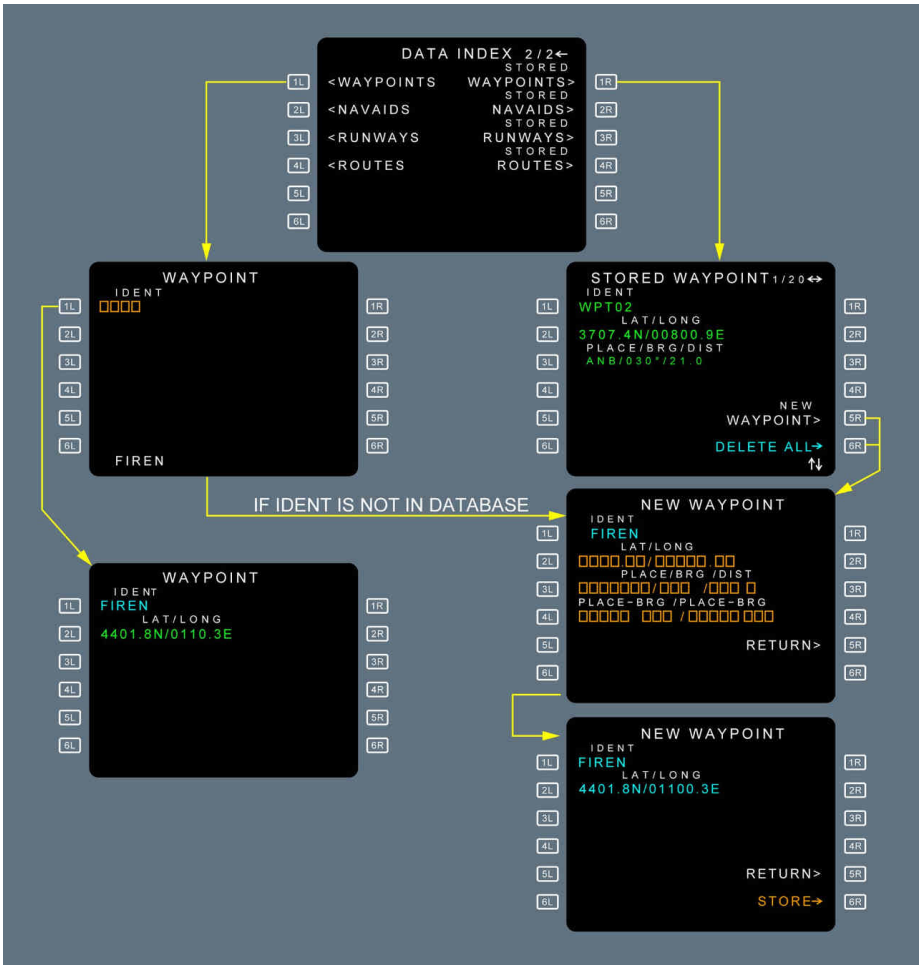
DATA INDEX 2/2 PAGE

[1L] WAYPOINTS [2L] NAVAIDS [3L] RUNWAYS [4L] ROUTES	These keys call up descriptions of waypoints, NAVAIDs, runways, and routes stored in the database, so that they can be reviewed.
[1R] STORED WAYPOINTS [2R] STORED NAVAIDS [3R] STORED RUNWAYS [4R] STORED ROUTES	These keys call up waypoints, NAVAIDs, runways, and routes that the pilot has stored, enabling the pilot to review and store them in, or delete them from, the database. The airline can choose to automatically have all pilot-stored data erased in the done phase.

WAYPOINT/STORED WAYPOINT/NEW WAYPOINT PAGES

Ident.: DSC-22_20-50-10-25-00000577.0001001 / 30 AUG 18

24 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**



WAYPOINT PAGE

- The pilot can call up this page by pressing the 1L key on the DATA INDEX page. The display then shows waypoint information associated with the identifier the flight crew inserts it in the [1L] field.
- With this page it is possible to call any waypoint not stored in the stored waypoint list, if they belong to the active, temporary, or secondary flight plan.

STORED WAYPOINT PAGE

The pilot calls up this page by pressing the 1R key on the DATA INDEX page.
This page displays waypoints, defined and stored by the pilot. It lists each stored waypoint, along with a number that shows the relative order in which it was inserted in the database. This number is displayed in the upper righthand corner of the page. For example, “1/20” indicates that the waypoint was the first of 20 stored.

Note: Latitude/Longitude crossing points and Abeam/Radial Intercept points are never included in the stored waypoint list.

[1L] IDENT	To delete a waypoint, the pilot clears the 1L ident display.
[2L] LAT/LONG	Latitude and longitude of the waypoint are displayed in this field.
[3L]	This field either displays PLACE/BRG/DIST or PLACE-BRG/ PLACE-BRG or PLACE/DIST, depending on how the waypoint was defined.
[5R] NEW WAYPOINT	The pilot presses this key to call up the NEW WAYPOINT page.
[6R] DELETE ALL	The pilot presses this key and the label changes to amber CONFIRM DELETE ALL. Pressing this key a second time deletes all the waypoints, stored by the flight crew, except those currently used in the active or secondary flight plan. (“F-PLN ELEMENT RETAINED” appears on the MCDU).

NEW WAYPOINT PAGE

- The flight crew displays this page by pressing the 5R key on the STORED WAYPOINT page.
- The flight crew uses this page to define and store waypoints. The maximum number of waypoints that it is possible to enter depends on the FMS standard. It is possible for these to be 20 or 99, and appears in the upper right corner of the STORED WAYPOINT page. For example, "1/20" indicates that 20 is the maximum number of waypoints that it is possible to store. If an additional waypoint is entered, then the first one is deleted.

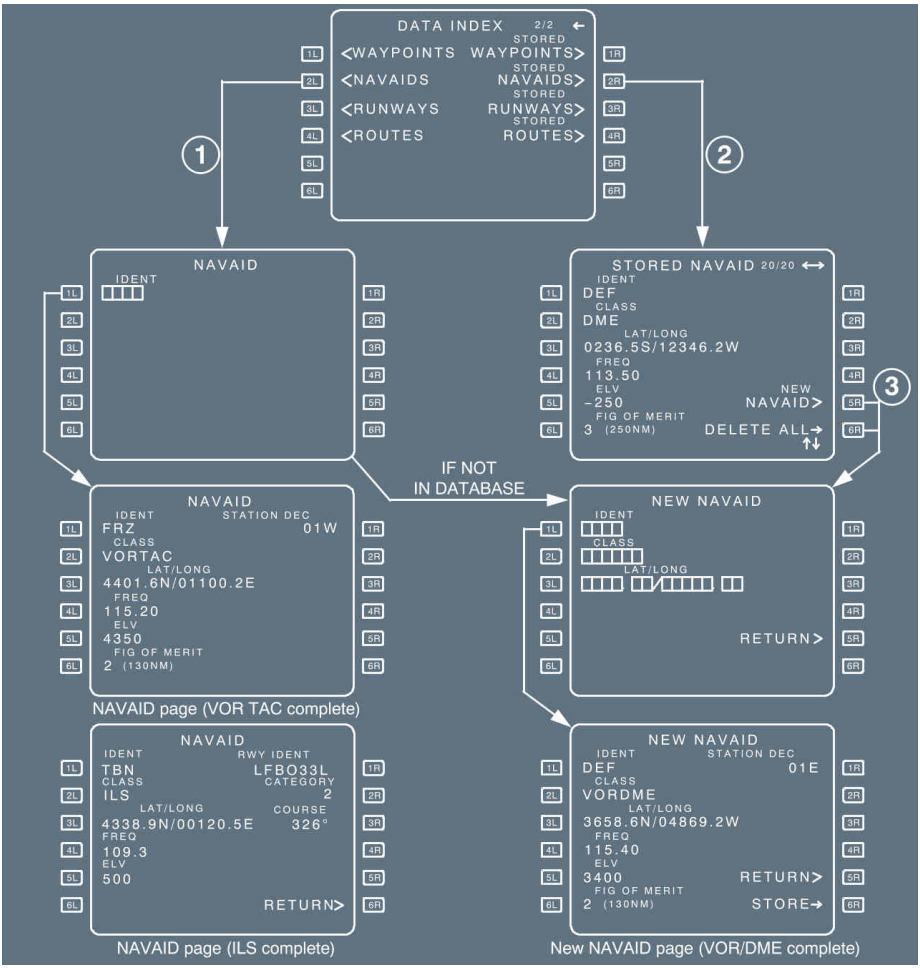
The flight crew defines a waypoint by entering its ident in the data field next to 1L, then by entering its position in the amber boxes.

The STORE prompt appears next to 6R when the boxes are filled in, and the pilot presses the key to store the waypoint in the database.
If the pilot enters the waypoint's position as place/bearing/distance, or place-bearing/place-bearing, the FMGC computes its latitude and longitude.

NAVAID/STORED NAVAID/NEW NAVAID PAGES

Ident.: DSC-22_20-50-10-25-00000578.0001001 / 01 OCT 12

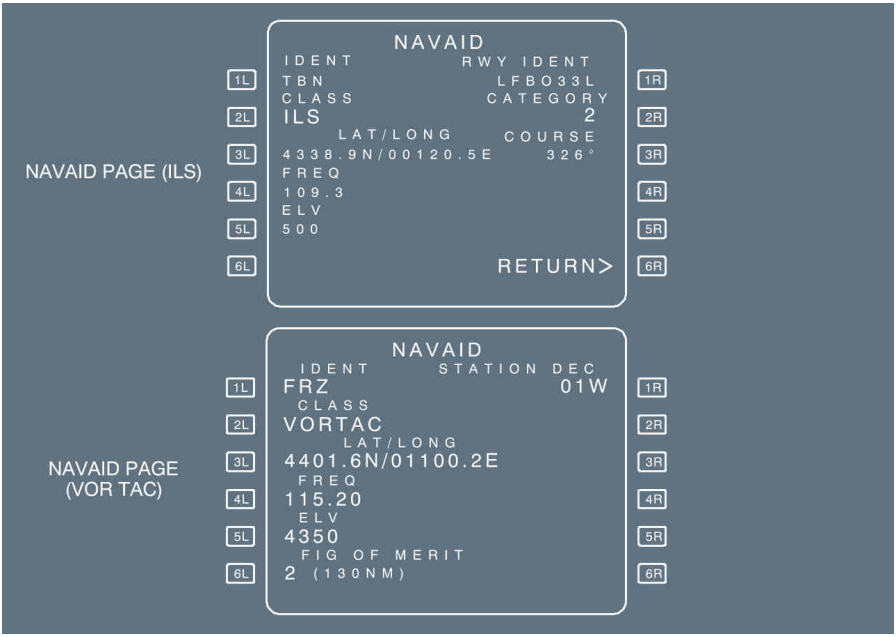
[25] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**



NAVAID PAGE

The pilot calls up this page by pressing the 2L key on the DATA INDEX page 2.

This page displays NAVAID information associated with the identifier the pilot inserts in the [1L] field.

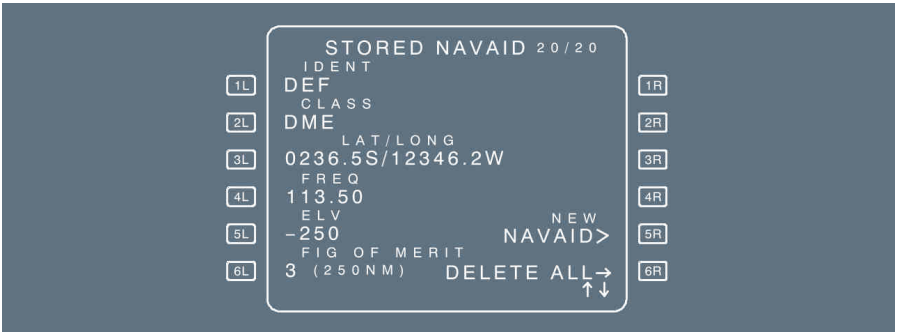


[2L] CLASS	This field identifies the NAVAID as VOR, DME, VOR DME, VORTAC, NDB, LOC, ILS, MLS, ILS/DME, MLS/DME, ILS/TAC or TACAN. It displays NON COLLOCATED, if the NAVAID is uncollocated.
[4L] FREQ or CHAN	CHAN is displayed, if the class of NAVAID is an MLS or an MLS DME.
[5L] ELV	This field gives the NAVAID elevation in feet above sea level. It is not displayed for VOR or NDB.
[6L] FIG OF MERIT	This field shows how far out the FMGS can autotune a VOR, VOR/DME, VORTAC, or DME for display or for computing position. 0 : up to 40 NM 1 : up to 70 NM 2 : up to 130 NM 3 : up to 250 NM

[1R] STATION DEC or RWY IDENT	This is the magnetic declination in the NAVAID area (used only for VOR, VOR/DME, and VORTAC). The field displays RWY IDENT, if the NAVAID is a LOC, ILS, MLS, ILS/DME, MLS/DME or ILS/TAC.
[2R] CATEGORY	This field shows the NAVAID's category, if it is an ILS, ILS/DME, MLS, MLS/DME or ILS/TAC. A LOC DME has a category = 0.
[3R] COURSE	This is the localizer course, if the NAVAID is an ILS or a LOC.
[6R] RETURN	This prompt is displayed, if the page has been accessed from the SELECTED NAVAID page. The pilot presses this key to return to the SELECTED NAVAID page.

STORED NAVAID PAGE

The pilot calls up this page by pressing the 2R key on the DATA INDEX page. This page is used to display or delete defined and stored NAVAIDs.

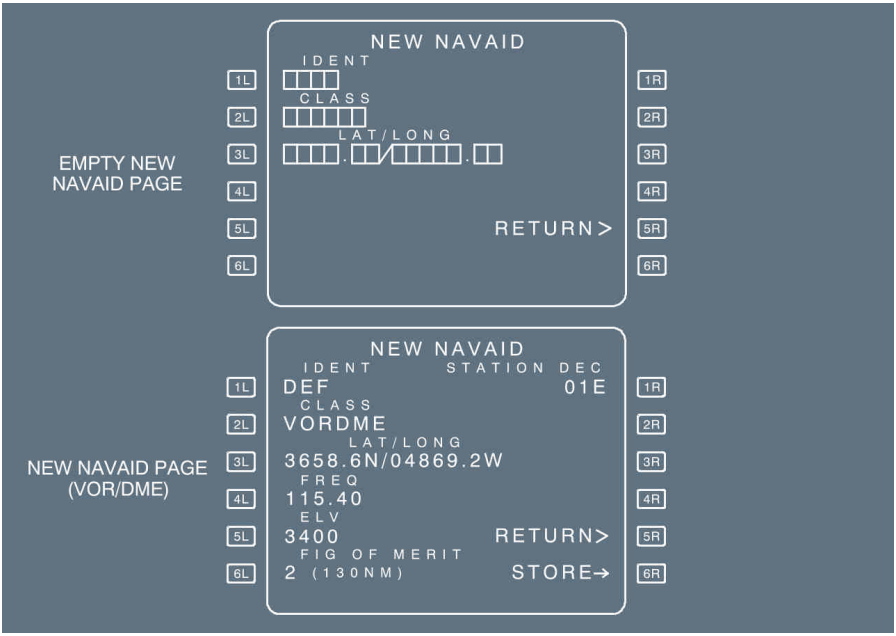


A number in the upper righthand corner of the screen shows the relative order in which the NAVAIDs were stored. (For example, 3/7 means the third out of the seven stored).
Slew keys give the pilot access to the different stored NAVAIDs.

[1L] IDENT	The pilot deletes a stored NAVAID by entering its ident in this field, then by pressing the CLR key at the bottom of the MCDU control panel.
[6R] DELETE ALL and CONFIRM DELETE ALL	The pilot presses this key to erase all the stored NAVAIDs, except those currently used in the active or secondary flight plan. (The MCDU displays “F-PLN ELEMENT RETAINED.”).

NEW NAVAID PAGE

The pilot calls up this page by pressing the 5R key on the STORED NAVAID page.



It can be used to define and store up to 20 NAVAIDs. Entering an additional waypoint deletes the first one. The NAVAID elements must be entered in two steps:

1. Enter the data in the lines of amber boxes.
2. Enter frequency, elevation, figure of merit, and station declination or ILS category and course, if applicable.

Note: *The pilot cannot create an ILS/DME or an uncollocated NAVAID.*
If the runway associated with the ILS has been entered through the new runway page, the course, IDENT, and runway IDENT are already displayed on the new NAVAID page when it comes up (copied from the new runway page). For details, see the new runway page info below.

[1R] STATION DEC — The pilot must enter the magnetic declination, if the prompt is displayed. This prompt is displayed only for VOR, VORTAC or VOR/DME.

[3R] COURSE — If the NAVAID is an ILS, LOC, enter the course.

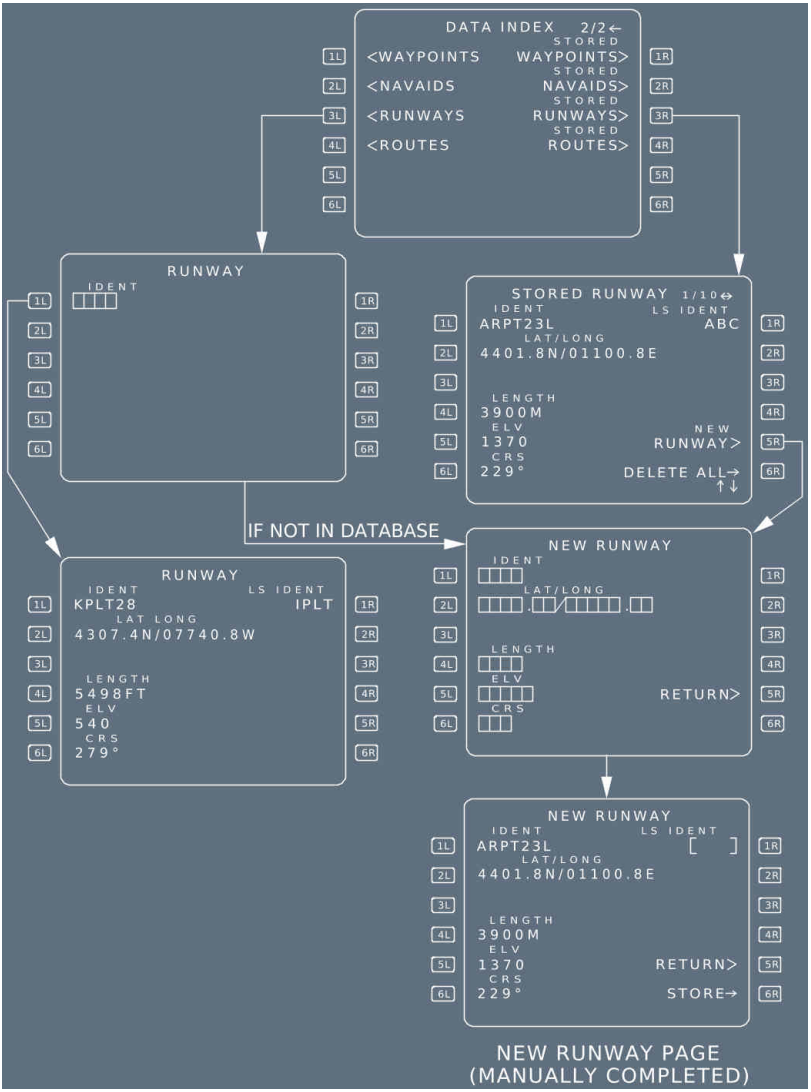
[6R] STORE — This prompt appears when all the amber boxes are filled in. The pilot presses the key to store the NAVAID.

A stored NAVAID is never used for position computation.

RUNWAYS/STORED RUNWAYS/NEW RUNWAY PAGES

Ident.: DSC-22_20-50-10-25-00000579.0001001 / 17 MAR 11

26 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**



RUNWAY PAGE

This page displays the following information:

[1L] IDENT	The runway IDENT, which comprises the airport identification and the runway direction, uses six or seven digits (Example: CYYZ 24L and LFRJ 08).
[2L] LAT/LONG	The latitude and longitude of the runway threshold.
[4L] LENGTH	The runway length in meters (M) or feet (ft), in five digits (9 999 ft).
[5L] ELV	The elevation of the threshold in feet above sea level.
[6L] CRS	The runway course (degrees magnetic).
[1R] LS IDENT	The LOC or ILS identifier.

STORED RUNWAY PAGE

The pilot uses this page to display or delete the defined and stored runways. The stored runways are listed and numbered in the order in which they were inserted. The number is displayed in the upper righthand corner of the page. (For example, 2/4 means the runway is the second of the four stored runways).
The pilot can delete any stored runway from the database by displaying its IDENT in the 1L field, then by pressing the CLR key on the MCDU control panel.

[6R] DELETE ALL and CONFIRM DELETE ALL	The pilot presses this key to erase all the stored runways, except those used in the active or secondary flight plan. (The MCDU displays “F-PLN ELEMENT RETAINED”).
[1L] to [6L]	These fields are similar to the RUNWAY page fields.

NEW RUNWAY PAGE

The pilot can use this page to define and store up to 10 runways.

- **When the pilot enters an ILS/LOC IDENT in the [1R] field the new NAVAID page comes up. When the pilot has entered and stored the necessary data in the new NAVAID page, the new runway page reappears.**

The new runway page and the new NAVAID page (ILS/LOC) are not independent:

- **When the flight crew first defines the ILS/LOC (on the new NAVAID page) the new runway page, when called up, already displays the RWY course, RWY IDENT, and ILS IDENT (copied from the new NAVAID page).**
- **When the flight crew first defines the runway (on the new runway page) the new NAVAID page, when called up, already displays the ILS course, ILS IDENT, and runway IDENT.**

The pilot must enter the two runway directions on two different new runway pages (Example: LFRJ 08 and LFRJ 26) to allow the flight plan to select either one.

Note: *When 10 runways are stored, entering a new stored runway deletes the first one of the list (1/10).*

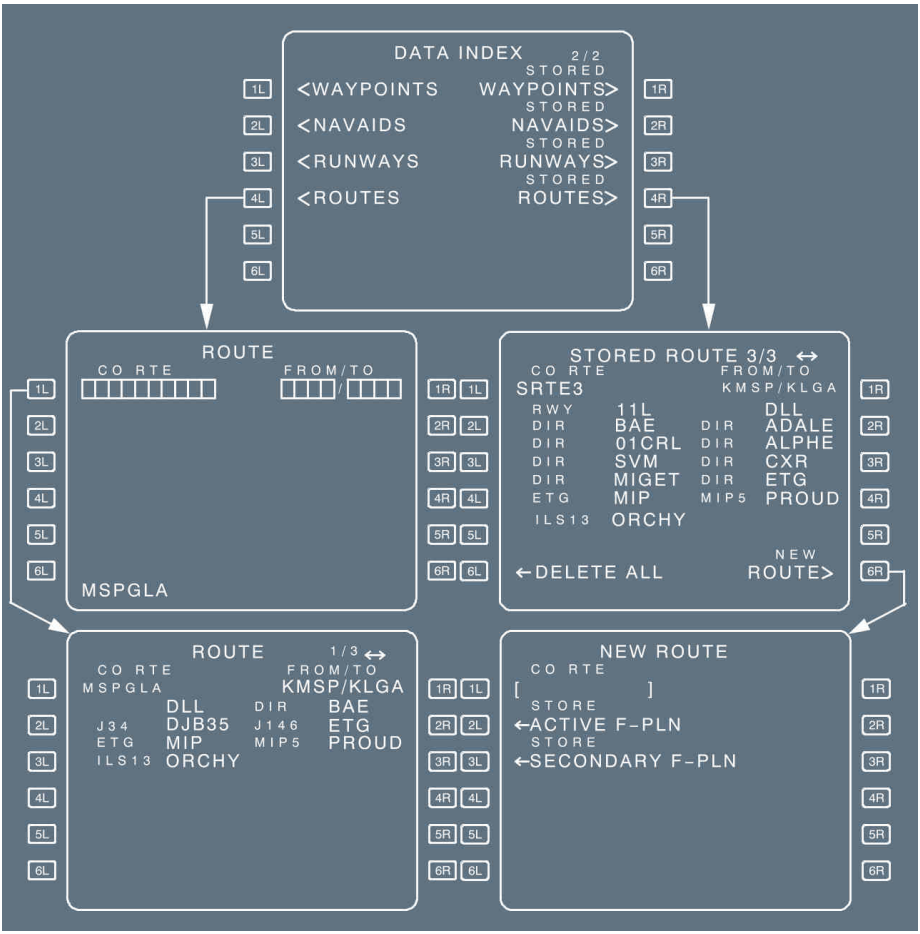
[1L] to [6L]	Enter information about the new runway.
[1R] LS IDENT	Enter the ILS/LOC IDENT. The NEW NAVAID page comes up.
[5R] RETURN	The pilot presses this key to return to the NEW NAVAID page.
[6R] STORE	This prompt only appears when all the amber boxes have been filled in.

Note: *The NEW RUNWAY may be used for departure or destination, but no SID or STAR can be associated or stored with this runway. Therefore, the pilot will use it as an "independent" airport.*
A new runway is identified by the 4–letter ICAO airport identifier, although all six or seven digits must be entered.

ROUTE/STORED ROUTE/NEW ROUTE PAGES

Ident.: DSC-22_20-50-10-25-00000580.0001001 / 01 OCT 12

[27] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

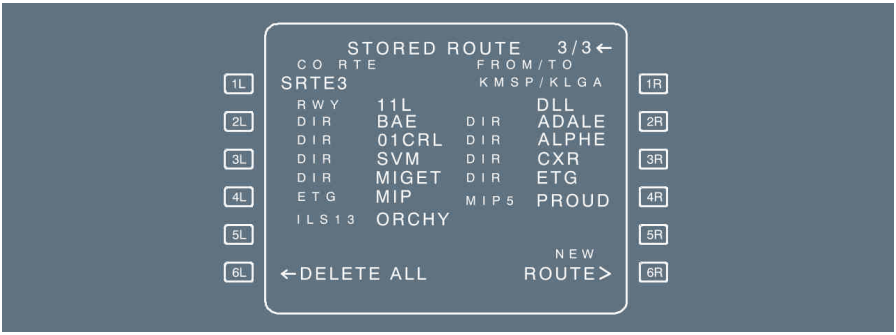


ROUTE PAGES

(Not-modifiable)

[1L] CO RTE	Any company route IDENT, entered in this field, causes all the elements of the route to be displayed.
Line 2 to Line 6	These lines display the various route elements, including waypoints and airways.
[1R] FROM/TO	This field is automatically filled in, when the pilot enters the IDENT for a company route. When the pilot manually enters a city pair, the MCDU displays “NOT IN DATA BASE” if the city pair is not in the navigation database. If the city pair is in the database, the CO RTE field displays the first route stored (small blue font). If more than one route is stored, the pilot can slew to see the different routes.

STORED ROUTE PAGE

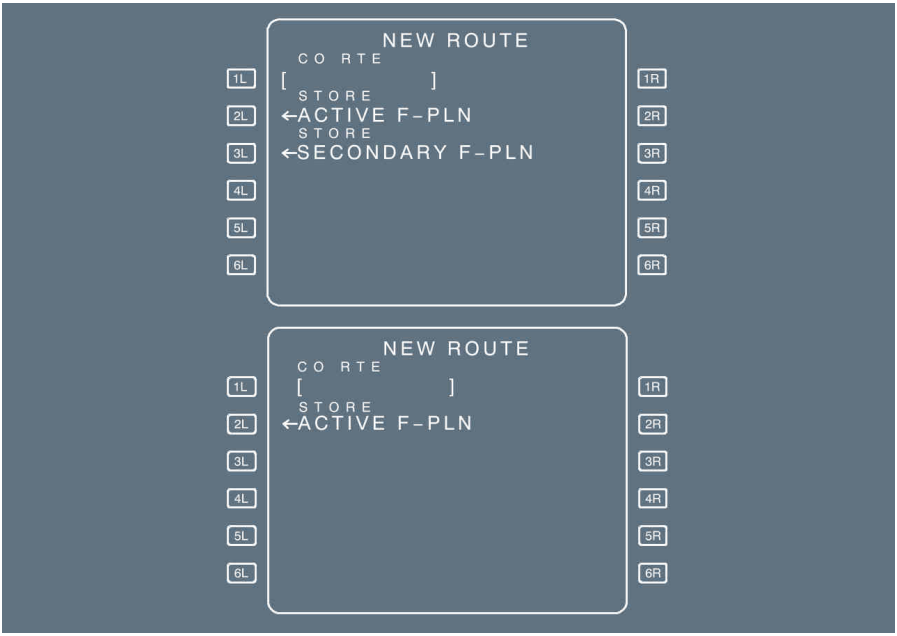


This page displays up to 5 routes, stored by the pilot. The stored routes are listed and numbered in the order of insertion. The number is displayed in the upper right-hand corner of the page.

[1L] CO RTE	This field identifies the stored route. Clearing this field deletes the stored route.
Line 2 to Line 5	The fields in these lines are identical to the corresponding fields in the route page.
[6L] DELETE ALL	Pressing this key changes the label to amber CONFIRM DELETE ALL. Pressing this key a second time deletes all previously-stored routes.
[1R] FROM/TO	This identifies the city pair of the stored route.
[6R] NEW ROUTE	Pressing this key calls up the new route page.

NEW ROUTE PAGE

The pilot calls up this page by pressing the NEW ROUTE key on the stored route page. It can be used to store up to five new routes that have already been defined in the active or secondary flight plan.



[1L] CO RTE	This field enables the pilot to enter a new company route IDENT. If that IDENT has already been assigned, the entry is rejected.
[2L] STORE ACTIVE F-PLN (blue)	Pressing this key stores parameters of the active flight plan as new route. The display shows this prompt when the system contains a FROM/TO, but only during preflight.
[3L] STORE SECONDARY F-PLN (blue)	Pressing this key stores parameters of the secondary flight plan as new route. The display shows this prompt when the system contains a FROM/TO and the secondary flight plan has not yet been sequenced.

Note:
- *If it has not already been named, a stored route is automatically named when stored: SRTE 1 to SRTE 5.*
- *When 5 routes are already stored, the pilot cannot insert a new stored route. The "STORED ROUTE FULL" message is displayed, and the pilot must manually delete a route in order to store a new one.*
- *Several flight plan elements are not retained when the route is stored:*
  - *Pilot-entered holds*
  - *Offset*
  - *Pilot-entered constraints*
  - *Modifications to terminal procedures*
  - *Pseudo-waypoints*
  - *Step at optimum.*
  - *Pilot-entered constant Mach segment.*

  The MCDU then displays "REVISIONS NOT STORED".

AIRCRAFT STATUS PAGE

Ident.: DSC-22_20-50-10-25-00000581.0001001 / 28 APR 14

28 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The system automatically displays this page at power up, but the pilot may also call it up by pressing the DATA key on the MCDU console.

TITLE — AIRCRAFT TYPE

[1L] ENGINE TYPE — The system uses this to calculate predictions.

Note: *When the same performance database is used for various aircraft configurations, the aircraft type displayed may differ from the actual aircraft.*

[2L] ACTIVE DATABASE — The validity period and part number are displayed in large font.

[3L] SECOND DATABASE — The validity period is displayed in small font. The pilot can press the 3L key to switch to the second database as the active database.

CAUTION	Cycling the database erases the primary and secondary flight plans, as well as the stored data. The flight crew must never do this in flight.

[5L] CHG CODE — This field allows the entry of a code to change the IDLE and/or PERF factor, displayed in 6L. It is displayed in the PREFLIGHT and DONE phases. The label is displayed in small white font. The brackets, or the entered value, is displayed in large blue font.

[6L] IDLE/PERF — It is only possible to modify these factors when the aircraft is on ground. If no value was entered, the FMS displays default values coded in the Airline Modifiable Information (AMI) file.
Default values are displayed in small font, although manually entered values are displayed in large font.

When it is necessary to modify the IDLE or the PERF factor:
- ENTER the change code in the CHG CODE field [5L].
  The default value for this code is “ARM” but it is possible to modify it on airline request (the applicable code is then coded in the Airline Modifiable Information (AMI) file).
  When a valid change code is entered, the IDLE and PERF factors are displayed in blue.
- ENTER the new IDLE and/or PERF factor(s) in the scratchpad.
- PRESS the [6L] key to insert the new IDLE and/or PERF factor(s).
  The new IDLE and/or PERF factor(s) is (are) displayed in large blue font.

[4R] STORED — This field displays pilot-stored data in a large green font. The field is blank, if no data is stored. (The airline can choose to have this data automatically erased at the done phase).

[5R] DELETE ALL — Pressing this key changes the label to amber CONFIRM DELETE ALL. Pressing this key a second time deletes all pilot-stored data, except data that is part of the active and secondary flight plans.

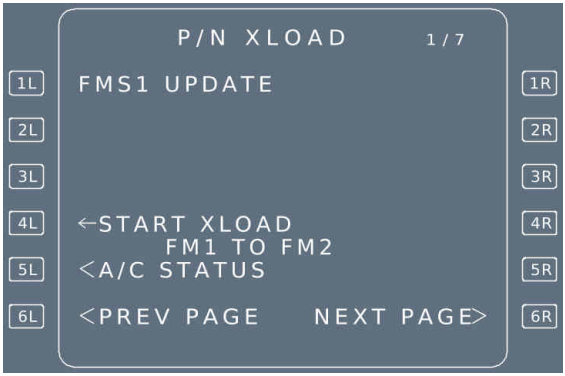
[6R] STATUS/XLOAD — This prompt gives access to the P/N STATUS and P/N XLOAD pages.

P/N XLOAD PAGE

Ident.: DSC-22_20-50-10-25-00000582.0001001 / 17 MAR 11

[29] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This page allows the crossloading of all databases or configuration files part numbers which are different between both sides. Crossloading from this page avoids reviewing each individual P/N STATUS page.



TITLE	P/N XLOAD
[1L]	FMS 1 UPDATE: FMS 1 can be loaded on the right side MCDU. FMS 2 UPDATE: FMS 2 can be loaded on the left side MCDU
[4L]	START XLOAD: This blue prompt is displayed, only if the system detects a difference between both sides' part numbers. FMS 1/FMS 2 IDENTICAL: Displayed in green, when there is no difference between both sides' part numbers.
Line 5	FM 1 TO FM 2 or FM 2 TO FM 1: Indicates the crossloading direction. This line is not displayed when there is no difference between both side part numbers.
[5L]	A/C STATUS: This white prompt is displayed, when there is no crossloading in process. It gives access to the A/C STATUS page. MM: SS MIN REMAINING: Indicates the time remaining for crossload completion, when a crossload is in process.
[6L] PREV PAGE	The pilot presses this key to return to the A/C STATUS page.
[6R] NEXT PAGE	Pressing this key calls up the next P/N XLOAD page.

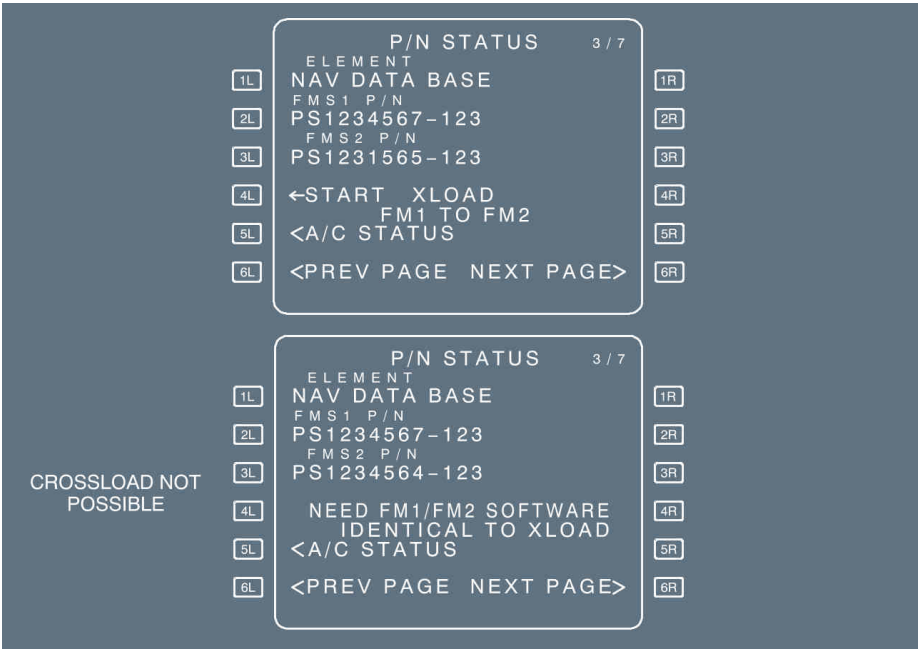
P/N STATUS PAGES

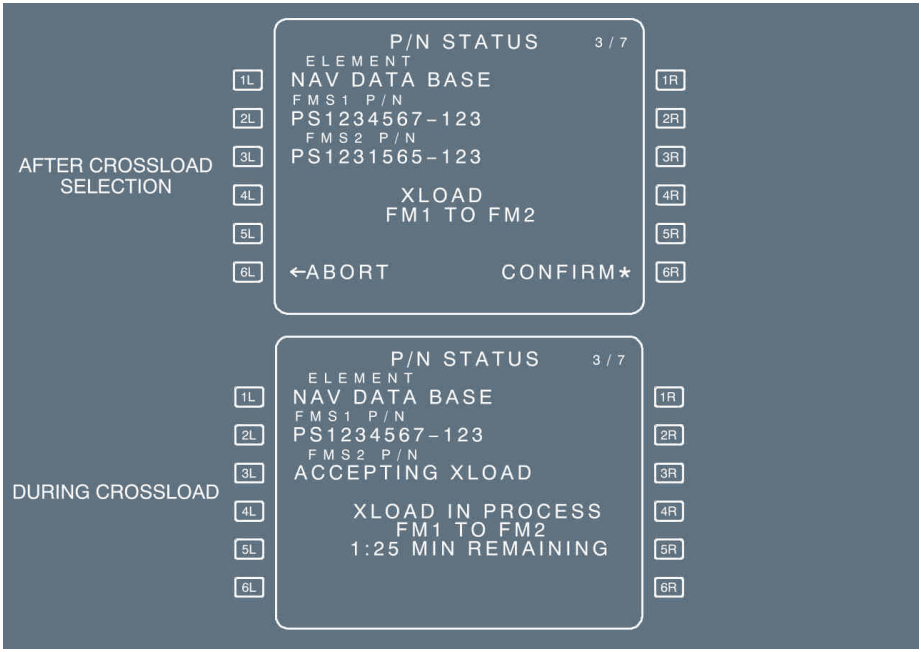
Ident.: DSC-22_20-50-10-25-00000583.0001001 / 01 OCT 12

30 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

These pages allow reviewing and crossloading the following databases and configuration files between both FMS:

- Page 2 FMS SOFTWARE part numbers
- Page 3 NAV DATA BASE part numbers
- Page 4 FM AIRLINE CONFIG part numbers
- Page 5 FM OPTIONS CONFIG part numbers
- Page 6 PERF DATA BASE part numbers
- Page 7 FLIGHT TEST DATA BASE





TITLE	P/N STATUS
Line 1 ELEMENT	Indicates the name of the database or configuration file that can be crossloaded: - FMS SOFTWARE on Page 2 - NAV DATA BASE on Page 3 - FM AIRLINE CONFIG on Page 4 - FM OPTIONS CONFIG on Page 5 - PERF DATA BASE on Page 6 - FLIGHT TEST DATABASE on Page 7.
Line 2 FMS1 P/N Line 3 FMS2 P/N	These fields display the part numbers of the database or configuration file (stated on line 1), that are installed on the FMS 1 and 2. Identical part numbers are displayed in green, different ones in amber. During crossload, the updated part number is replaced by the amber “ACCEPTING XLOAD” message.

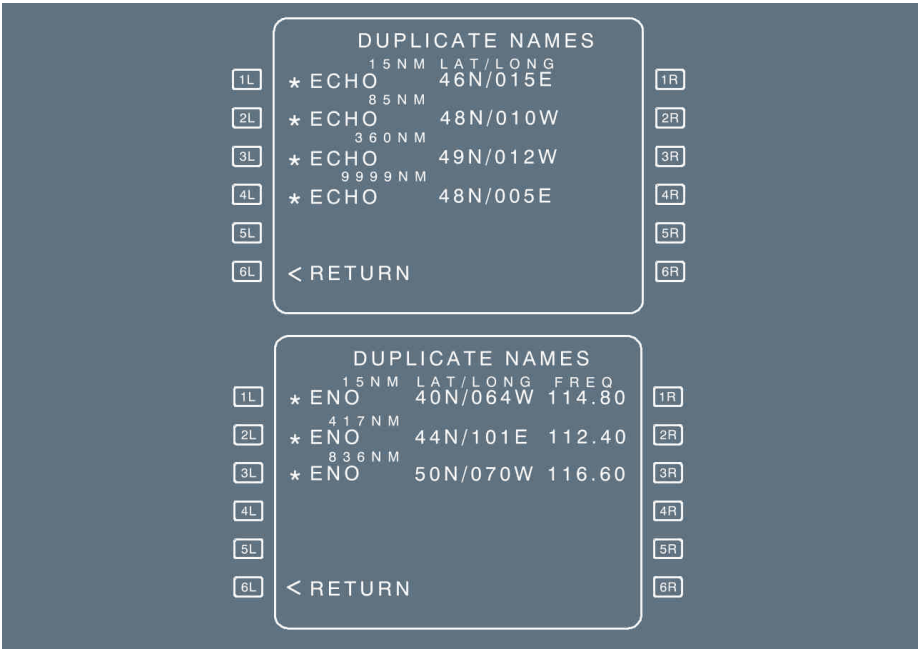
Line 4	This line is empty when the active flight phase is not Preflight or Done. XLOAD FMx TO FMy or START XLOAD FMx TO FMy: This blue prompt is displayed when the database or configuration file (stated on line 1) can be crossloaded. XLOAD ARMED: Displayed in blue on the receiving FM when the crossload has been requested, but not yet confirmed. XLOAD IN PROCESS: Displayed in white when the crossload is ongoing. XLOAD NOT SUPPORTED: Crossloading is unavailable for this element. NO P/N TO XLOAD: The element is missing. NEED FG 1/FG 2 IDENTICAL TO XLOAD: The receiving side's FG software is incompatible with the FG software to be crossloaded. NEED FM 1/FM 2 SOFTWARE IDENTICAL TO XLOAD: The crossloaded element is incompatible with the receiving side's FM software.
[5L] A/C STATUS	This prompt is available, when no crossload is in process. This gives the pilot access to the aircraft status page. MM: SS MIN REMAINING: Displays the time remaining to complete the crossload, when a crossload is in process.
[6L] PREV PAGE ABORT	This key calls up the previous P/N STATUS page. This amber prompt is displayed when a crossload is in process. The pilot uses it to stop the crossload.
[6R] NEXT PAGE CONFIRM*	This key calls up the next P/N STATUS page. This amber prompt is displayed when a crossload has been armed. The pilot presses it to start the crossload.

DUPLICATE NAMES PAGE

Ident.: DSC-22_20-50-10-25-00000584.0001001 / 01 OCT 12

31 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This page, which automatically appears, allows the pilot to select a specific waypoint, airport, or NAVAID when the database holds more than one under the same identifier.



The pilot presses the key adjacent to a waypoint, NAVAID, or airport to select it as the one to be entered. When the pilot has finished, the page automatically reverts to the previously displayed page.

DISTANCE

The direct distance to the aircraft is displayed in green above each name. If this distance is greater than 9 999 NM, 9 999 NM is displayed.

LAT/LONG COLUMN

This column lists the rounded off latitudes and longitudes of the different points, using the same identifier.

FREQ/CHAN COLUMN

This column lists the NAVAIDs frequencies, if any. It displays CHAN for a MLS.

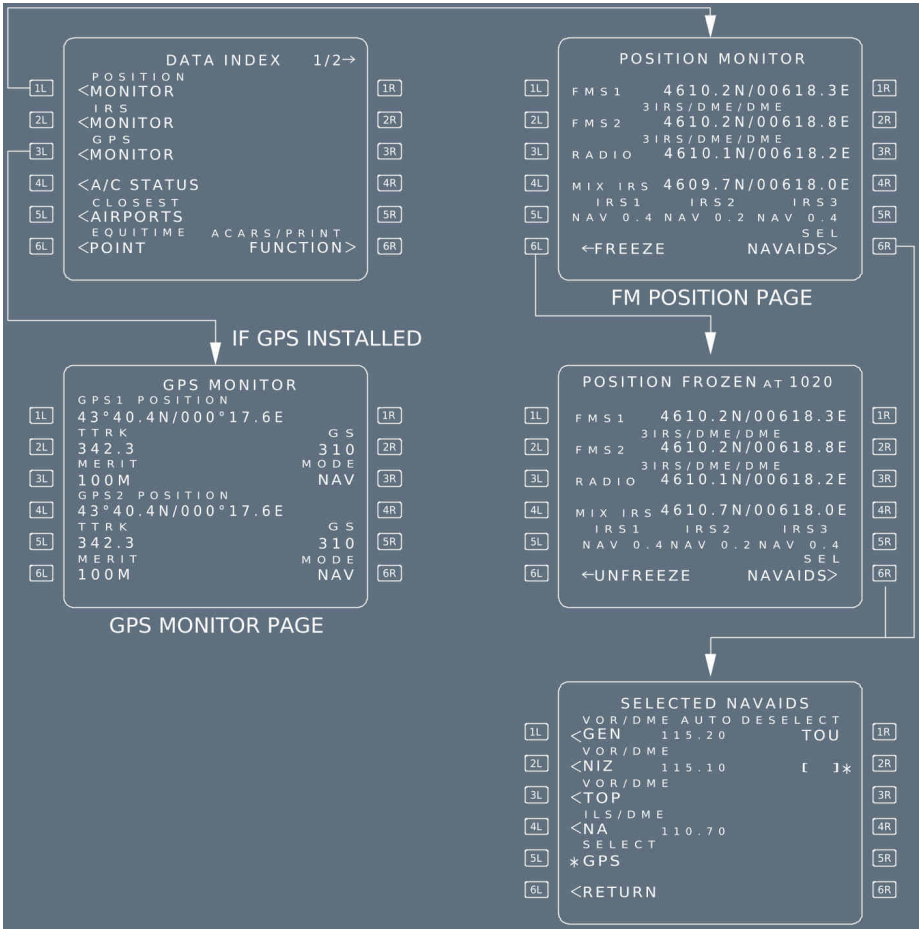
Note:
- *The DUPLICATE NAMES page is not displayed when 2 waypoints with the same IDENT belong to the same airway. The system selects the first waypoint found in the database.*
- *The waypoints or NAVAIDs are ranked by their distance from the aircraft position.*
- *When a waypoint is named using ICAO phonetic alpha characters, a minus sign and the ICAO code of the country where the waypoint is located, are displayed. e.g. Alpha in France becomes A-LF; Bravo in England becomes B-EG.*

POSITION MONITOR PAGE

Ident.: DSC-22_20-50-10-25-00000585.0001001 / 17 MAR 11

32 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This page displays all the different positions that the FMGC has computed with the various available methods of navigation. It also shows which method obtained each position. (The positions should be almost identical).
The pilot calls up this page by pressing the 1L key on the data index page.



POSITION MONITOR AND POSITION FROZEN PAGE

Ident.: DSC-22_20-50-10-25-00009133.0001001 / 29 MAR 12

33 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

Line 1 FMGC 1 — This line shows the latitude and longitude, as calculated by the FMGC 1, and the navigation method used by the FMGC for that calculation (Example: “3 IRS/DME/DME”).

Line 2 FMGC 2	This line shows the latitude and longitude, as calculated by the FMGC 2, and the navigation method used.
Line 3 RADIO or GPS or GPIRS	This line shows the latitude and longitude, calculated by the onside FMGC from selected radio NAVAIDs (Example: DME/DME, VOR/DME, or LOC) or from GPS or GPIRS.
Line 4 MIX IRS	This line shows the latitude and longitude of the weighted mean inertial reference system (IRS) calculated by the onside FMGC from the available IRSs.
Line 5 IRS 1,2,3	This line shows the deviation in nautical miles of each IRS position from the onside FMGC position. It also displays the IRS mode, which can be INVAL, ALIGN, NAV or ATT. *Note:* *INVAL is displayed when an ADIRS has failed, or the IRS position is not refreshed.*
[6L] FREEZE/UNFREEZE	The pilot presses this key to freeze (or unfreeze) all the data displayed on the page. When the data is frozen, the title of the page specifies the time at which it was frozen.
[6R] SEL NAVAIDS	The pilot presses this key to access the selected NAVAIDs page.

SELECTED NAVAIDS PAGE

Ident.: DSC-22_20-50-10-25-00000586.0014001 / 03 APR 13

34 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

MODIFIABLE ONLY FOR DESELECTION

Line 1	This field displays the NAVAID tuned for display purposes, and the tuning mode (AUTO, MAN, or RMP).
Line 2 and 3	These fields display the NAVAIDs, if any, tuned for the calculation of radio position by the FMGC.
[4L]	This field displays the tuned ILS, GLS ⋖, MLS ⋖, if any.
[5L] DESELECT/SELECT RADIONAV	The flight crew presses this key to manually select or deselect the NAVAIDs. If the flight crew selects (deselects) the NAVAIDs for position calculation, “RADIONAV SELECTED” (“RADIONAV DESELECTED”) is displayed in the label line in blue small font and “DESELECT” (“SELECT”) is displayed in white large font. By default NAVAIDs are selected. The deselection of the RADIONAV inhibits use of radio position (either DME/DME or VOR/DME) for position calculation.

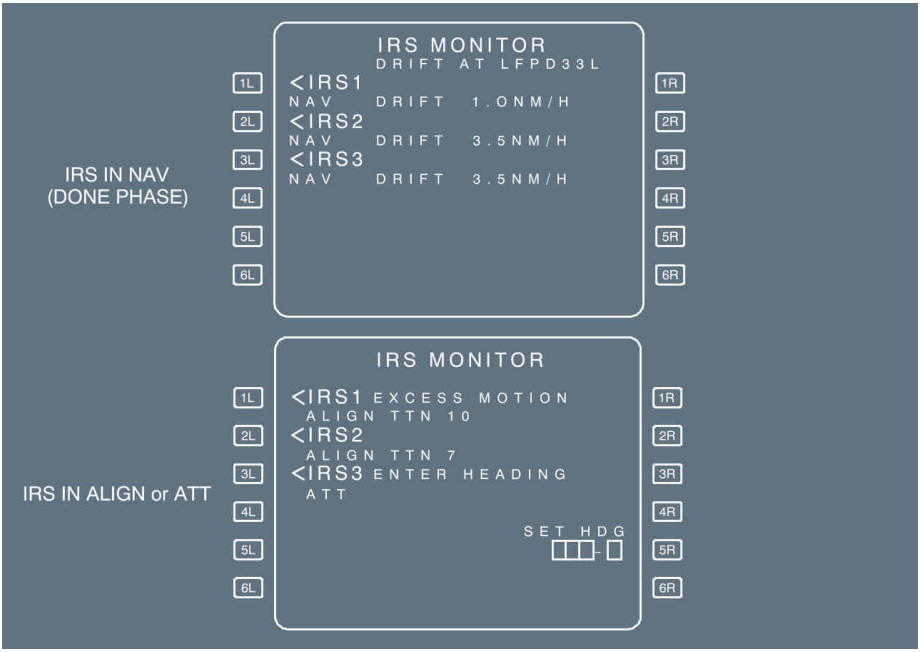
[6L] DESELECT/SELECT GPS	The crew presses this key to manually select or deselect the GPS for position computation. Upon transition to the DONE phase, the prompt returns to DESELECT status. If the pilot deselects the GPS, “GPS IS DESELECTED” is displayed when the aircraft is less than 80 NM from the top of descent, or in approach phase.
[1R] DESELECT to [4R]	The pilot deselects a NAVAID by entering its identifier in one of these six fields. Once deselected in this way, the NAVAID can no longer be tuned manually through the entry of its IDENT, nor can it be autotuned for display or determination of the position for the rest of the flight. The deselection is cleared: - Manually, by a CLR action into this field, or - Automatically upon transition to the done or preflight phase, or upon activation of the second database. The pilot may deselect as many as four stations.
[6R] RETURN	The pilot presses this key to return to the POSITION MONITOR page.

IRS MONITOR PAGE

Ident.: DSC-22_20-50-10-25-00000587.0010001 / 01 OCT 12

35 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This page displays the IRS data. The crew calls up this page by pressing the IRS monitor prompt of the DATA INDEX page.



TITLE DRIFT AT XXXX (amber)	Displays “DRIFT AT” runway identifier, if at least one IRS average drift is displayed.
[1L] to [3L] IRS 1(2) (3) (white)	These prompts allow access to the associated IRS pages. Each label line displays the mode (NAV, ALIGN, ATT or INVAL), the average drift (upon transition to DONE phase), and the Time To NAV (if IRS in align) for each IRS.

[1R] to [3R] Displays the status message of the associated IRS in small green font.

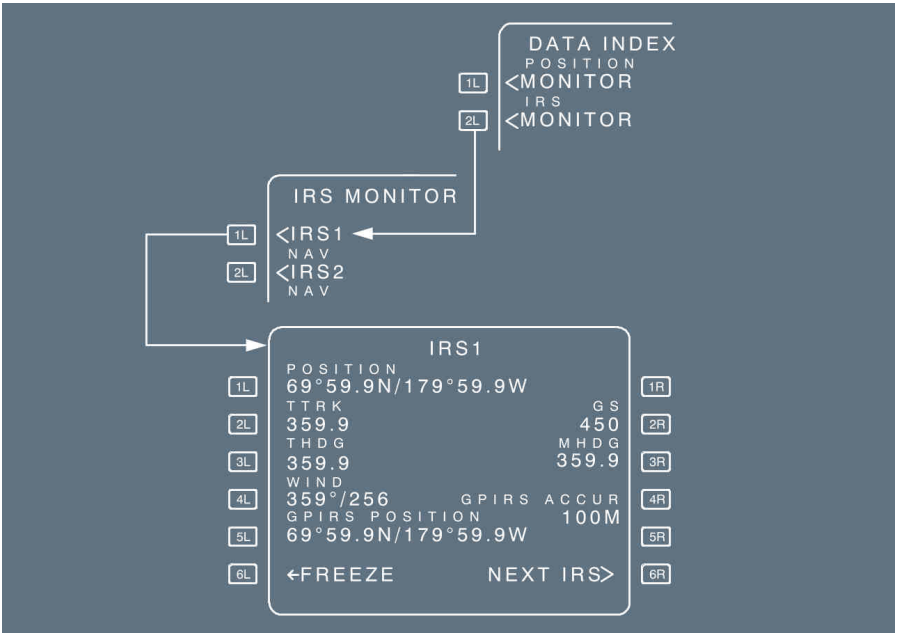
List of available messages:
- IR FAULT
- CHECK C/B
- DELAYED MAINT
- CDU FAULT
- ENTER PPOS
- ENTER HEADING
- SELECT ATT
- REENTER PPOS
- EXCESS MOTION
- SYS BELOW -15 °
- SWITCH ADR

[5R] SET HDG (white) This field is displayed, if at least one IRS is in ATT mode.

This function allows initialization of a heading for IRS in ATT mode:
- If a heading has been entered in this field, or on the ADIRS panel, the value is displayed in blue.
- If not, amber boxes are displayed.

IRS 1 (2)(3) PAGE

This page displays the IRS parameters and GPS/IRS hybrid parameters. The pilot calls up this page by pressing either the 1L key from the IRS MONITOR page, or the NEXT IRS prompt on another IRS page (closed loop).



TITLE	Displays the selected IRS in large white font. When data is frozen, IRS is replaced by “IRS FROZEN AT”, followed by the time at which the pilot has frozen the display.
[1L] POSITION	Displays the latitude/longitude given by the selected IRS.
[2L] TTRK	True track
[3L] THDG	True heading
[4L] WIND	True wind direction/velocity
[5L] GPIRS	GPS/IRS hybrid position of the IRS
[6L] FREEZE/UNFREEZE	Allows the crew to freeze or unfreeze all data displayed on all three IRS pages. When the data is frozen, the title of the page specifies the time at which it was frozen. It is automatically unfrozen when exiting the page.
[2R] GS	Ground speed
[3R] MHDG	Magnetic heading
[4R] GPIRS ACCUR	GPS/IRS Figure of Merit (meters or feet)

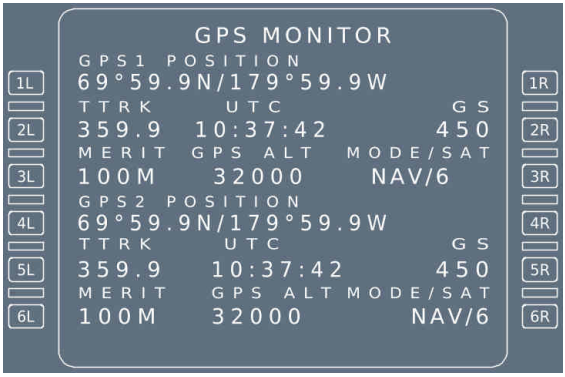
[6R] NEXT IRS — This prompt enables another IRS page (closed loop IRS 1 → 2 → 3 → 1) to be displayed.

GPS MONITOR PAGE

Ident.: DSC-22_20-50-10-25-00000588.0001001 / 17 MAR 11

36 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This page displays the GPS data. The pilot calls up this page by pressing the GPS MONITOR prompt of the DATA INDEX page.



Line 1 and 4 GPS 1,2 — POSITION

[2L] and [5L] TTRK — GPS 1, 2 true track

[3L] and [6L] MERIT — GPS 1, 2 figure of merit (meters or feet)

[2R] and [5R] GS — GPS 1, 2 ground speed

[3R] and [6R] MODE/SAT — GPS 1, 2 mode (INIT, ACQ, NAV, TEST, FAULT, AIDED or ALTAID) and Number of satellites tracked.

- INIT : System initialization
- ACQ : Satellite acquisition
- NAV : Normal mode
- TEST : System test
- FAULT : Invalid system
- ALTAID/AIDED : Degraded modes. GPS uses aircraft inputs for computation purposes.

[2] and [5] UTC : GPS 1, 2 UTC

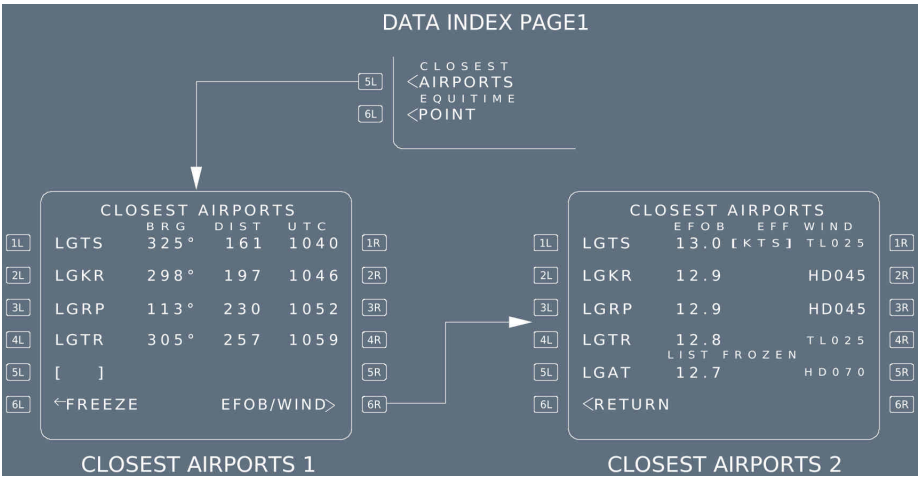
[3] and [6] GPS ALT : GPS altitude is displayed for information purposes. It is not used by the FMGS.

CLOSEST AIRPORTS PAGES

Ident.: DSC-22_20-50-10-25-00000589.0001001 / 17 MAR 11

37 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The system automatically selects the closest 4 airports from the current aircraft position, and displays them on these pages. A fifth one can be selected by the pilot.
Page 1 displays the bearing, distance, and time to go to each airport; page 2 displays the EFOB and allows the crew to enter an effective wind to be flown to each airport.
The flight crew accesses the CLOSEST AIRPORTS page 1 by pressing the 5L key from the DATA INDEX A page. They access the CLOSEST AIRPORTS page 2 by pressing the EFOB/WIND prompt (6R key) on page 1.



[1L] - [1R] to [4L] - [4R] The closest four airports are extracted from the database, and ranked by distance from the aircraft position.

BRG	Displays the current bearing from the aircraft's position to the airport.
DIST	Displays the current great-circle distance from the aircraft's position to the airport.
TIME or UTC	Displays the predicted time to the airport, computed using the current wind or a wind vector entered on page 2, and the speed according to the current mode (managed or selected). The time is only computed in cruise phase.

[5L] The crew may enter a fifth airport here, using the 4-letter code. The entry may be modified at any time, even when “LIST FROZEN” is displayed.

If the pilot enters an airport that is not in the database, then “NOT IN DATABASE” appears in the scratchpad.

[1L] - [1R] EFOB to [5L] - [5R] EFF WIND Displays the EFOB at each airport. EFOB is only computed in cruise phase.
Used to enter an anticipated headwind or tailwind along the bearing to the airport. If the entry is preceded by +, T, or TL, a tailwind is assumed.
If the entry is preceded by -, H, or HD, a headwind is assumed.
Before pilot entry, a default value may be displayed, based on the current wind.
The effective wind is used to compute the EFOB and time to the airport.

[6L] FREEZE/UNFREEZE This prompt enables the pilot to freeze and unfreeze the list of four airports.
The list is automatically frozen when accessing page 2. It will remain frozen upon returning to page 1.
The “LIST FROZEN” message is always displayed on page 2.

RETURN Returns to page 1.

[6R] EFOB/WIND Gives access to page 2.
Pressing this prompt automatically freezes the list of the four closest airports.

Note: - *If the aircraft position becomes invalid, all fields are dashed, FREEZE/UNFREEZE and EFOB/WIND prompts are removed, LIST FROZEN is displayed, and the A/C POSITION INVALID message is displayed in the scratchpad. Page 2 cannot be accessed.*

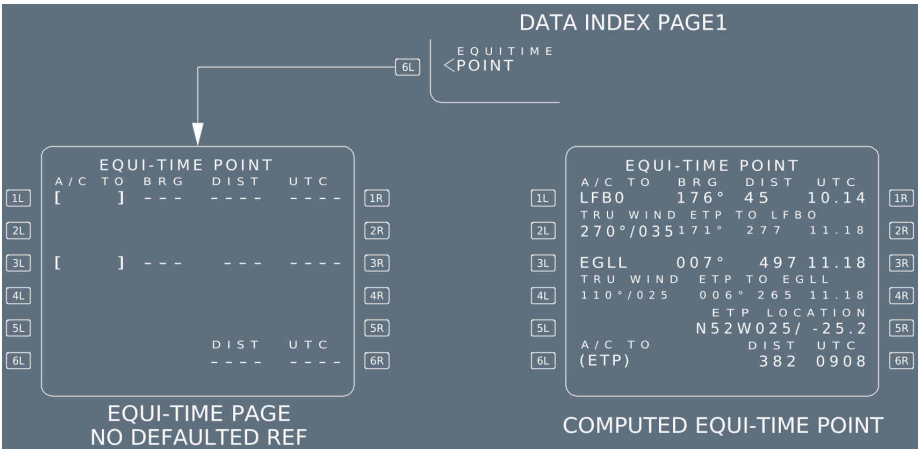
- *Predictions (EFOB, TIME) displayed on the page assume:*
  - *ECON CRZ speed (managed) or current selected speed (selected)*
  - *CI (for managed speed only) and CRZ FL from primary F-PLN are kept*
  - *constant wind value*
  - *In case of engine out, the aircraft altitude is the minimum of (CRZ FL, EO MAX ALT)*
  - *Downpath steps are not considered*
  - *Descent fuel burn is a conservative value which only depends on the difference between current CRZ ALT and destination altitude.*

EQUI-TIME POINT PAGE

Ident.: DSC-22_20-50-10-25-00000590.0001001 / 18 DEC 12

38 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The pilot uses this page to require an equitime point computation between two different points (airport, NAVAID, runway, NDB or waypoint). This pseudo-waypoint (ETP) is displayed on the navigation display along the F-PLN. The EQUI-TIME POINT page is accessed by pressing the 6L key from the DATA INDEX page:



[1L] A/C TO and (blue) [3L] Displays reference waypoint 1.
Displays reference waypoint 2.

Note: Origin and destination airports are used by default for respective reference points 1 and 2, until a pilot entry is made.

[1R] BRG/DIST/UTC and [3R] (green)

Displays the bearing, distance, time, from the aircraft's current position to the reference waypoint 1.
Displays the bearing, distance, time, from the current position of the aircraft to the reference waypoint 2.

- BRG : Displays the current great-circle bearing from the position of the aircraft to the reference waypoint.
- DIST : Displays the current great-circle distance from the position of the aircraft to the reference waypoint.
- UTC : Displays the predicted time of arrival at the reference waypoint (computed using the current wind or a wind vector, entered by the crew).
  The time is only computed in cruise phase. In other phases, it is dashed.

[2L] and [4L] TRU WIND (blue)

The pilot may enter the wind (direction/velocity) at the reference waypoint and the CRZ FL:
This wind is used to compute the time from the aircraft's position to the reference waypoint, and to locate the equitime point.
If no entry is made, the wind/velocity field will read zero.

[2R] and [4R] EPT TO XXX (green)

This field displays the bearing distance and the time from the equitime point position (ETP) to the reference waypoint.

[5R] ETP LOCATION

This field displays the ident of the next waypoint following the equitime point. It provides the distance along the flight plan from the equitime point to the indicated waypoint.

[6L] - [6R] A/C TO (ETP) DIST/UTC (green)

This field displays the distance and time from the aircraft's current position to the equitime point along the flight plan.
If at least one reference waypoint exists, but no equitime point exists, the field is blank and NO ETP is displayed in 6L.

Note: The assumptions for the equitime point computation include the cost index, speed managed (with SPD LIM), and winds.
In case of engine-out, the EO LRC speed is considered.

PRINT FUNCTION PAGES

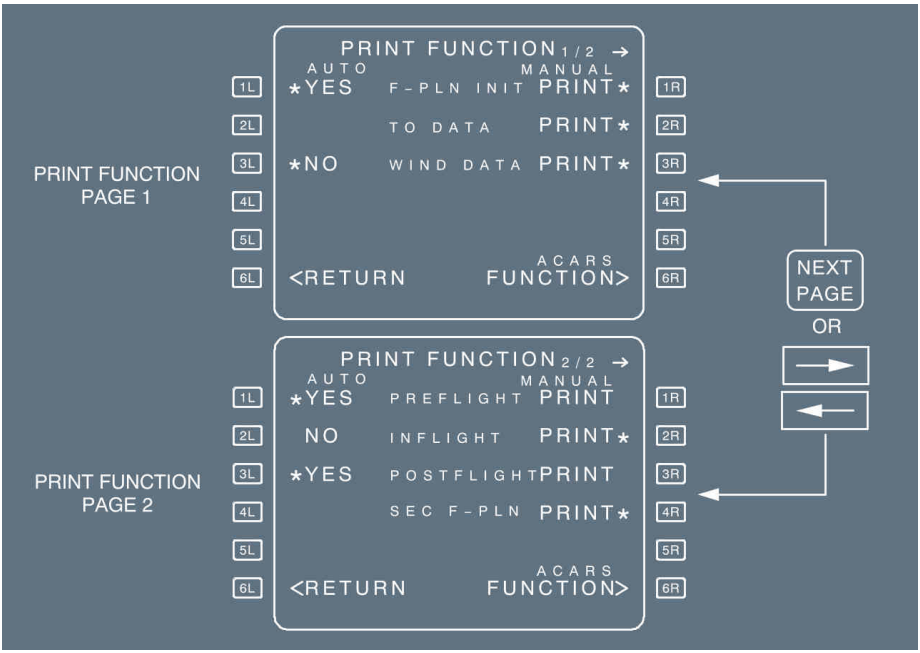
Ident.: DSC-22_20-50-10-25-00000591.0001001 / 01 OCT 12

[39] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The PRINT FUNCTION pages enable the crew to print the data relative to the current flight.

This data comes from 2 different sources:
- ACARS uplink messages, and
- Active data from the current flight.

The pilot may access these pages from the “DATA INDEX” page1/2 by pressing the [6R] ACARS/PRINT FUNCTION key.



PRINT FUNCTION PAGE 1/2

This page displays the status of the automatic printing capabilities, for the uplink messages (left column), and the status of the manual printing capabilities of the current active data (right column).

LEFT COLUMN

AUTO

* YES (blue)
  - Line 1: Uplink messages related to flight plan INIT data are automatically printed when received.
  - Line 2: Uplink messages related to takeoff data are automatically printed when received.
  - Line 3: Uplink messages related to wind data are automatically printed when received.

* NO (blue): When “NO”, preceded by a star, is displayed in front of a line, automatic printing is deselected. The pilot can reactivate it by pressing the left key of the line.

NO (without a star): Automatic printing is internally deactivated for the data of the line. The pilot cannot reactivate it manually.

Blank: The ACARS function is not available for this line. Uplink messages can neither be received nor automatically printed.

RIGHT COLUMN

MANUAL: Displays the status of the manual printing capability of the active data (and not of the ACARS uplink data).

PRINT * (amber): Pressing the right keys prints the following active data:
- Line 1: Active flight plan INIT data
- Line 2: Active takeoff data
- Line 3: Active wind data

If the star is not displayed, printing is not possible.
When the key is pressed, the star is removed until the data is printed.

[6L] RETURN: Pressing this key reverts the display to the DATA INDEX page.

[6R] ACARS FUNCTION: Pressing this key reverts the display to the ACARS FUNCTION page.

PRINT FUNCTION PAGE 2/2

This page describes the printing capabilities of the reports displayed on lines 1 to 4.

LEFT COLUMN

AUTO (white)

* YES (blue)
  - Line 1: The PREFLIGHT report is automatically printed at engine start.
  - Line 2: The INFLIGHT report is automatically printed at takeoff.
  - Line 3: The POSTFLIGHT report is automatically printed at engine shutdown.

* NO (blue): The report, displayed on the line, is not printed automatically. The pilot can reactivate the function by pressing the left key of the line.

NO (without a star): Automatic printing is internally deactivated for the report. The pilot cannot reactivate it.

RIGHT COLUMN

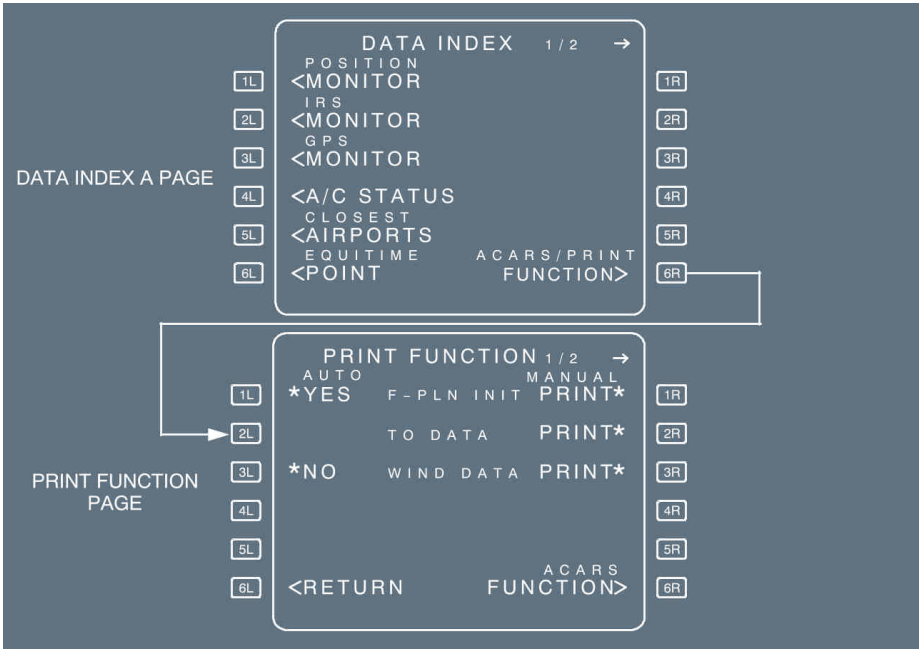
MANUAL PRINT *	Pressing a right key prints the report displayed on the line. If the star is not displayed, printing is not possible. When the key is pressed, the star is removed until the report is printed. For the PREFLIGHT, INFLIGHT and POSTFLIGHT reports, only one type of report is available for printing at any given time, depending on the current flight phase. For the SEC F-PLN report, the print selection start is only displayed if a secondary flight plan exists.

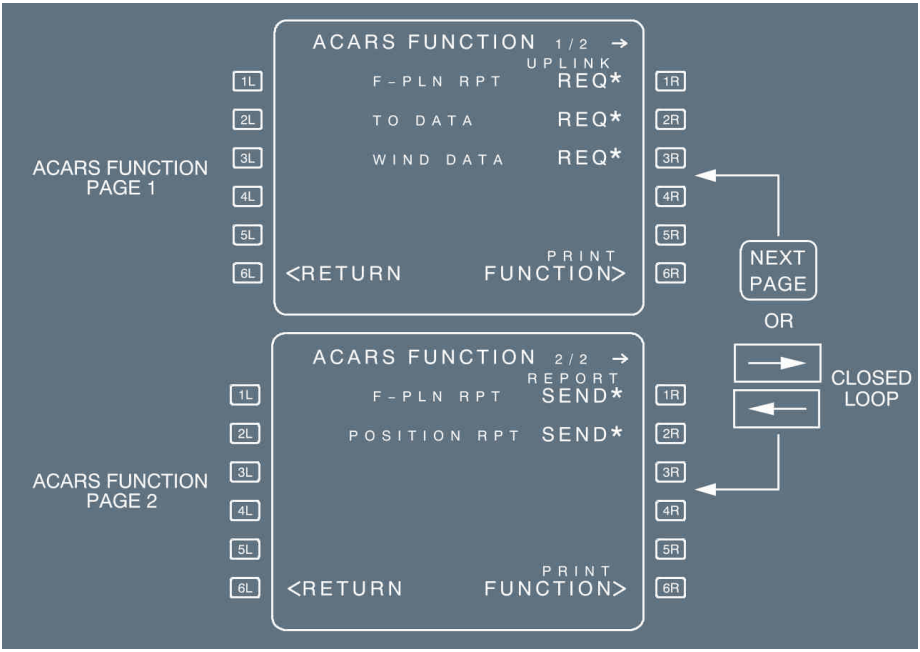
ACARS FUNCTION PAGE

Ident.: DSC-22_20-50-10-25-00000592.0001001 / 01 OCT 12

40 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The ACARS FUNCTION pages display the functions enabling the crew to send manual requests or reports to the ground.
All functions, displayed on pages 1 and 2, may be inhibited through a pin program.
The ACARS/PRINT FUNCTION prompt is displayed on the DATA INDEX page 1/2. Pressing this key displays the PRINT FUNCTION page from which the ACARS FUNCTION page can be accessed.

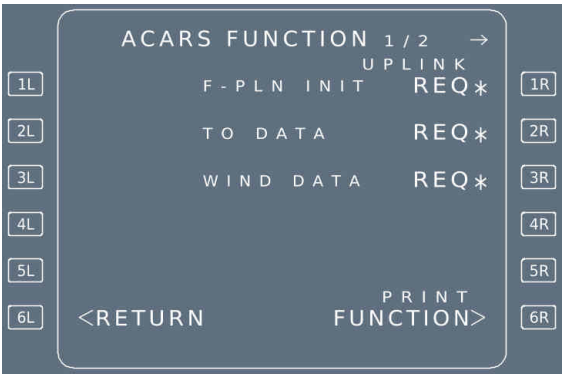

DATA INDEX 1/2 →
POSITION
<MONITOR
IRS
<MONITOR
GPS
<MONITOR
<A/C STATUS
CLOSEST
<AIRPORTS
EQUITIME
<POINT
ACARS/PRINT
FUNCTION>
DATA INDEX A PAGE
PRINT FUNCTION 1/2 →
AUTO
MANUAL
*YES
F-PLN INIT
PRINT*
TO DATA
PRINT*
*NO
WIND DATA
PRINT*
<RETURN
ACARS
FUNCTION>
PRINT FUNCTION PAGE
1L
2L
3L
4L
5L
6L
1R
2R
3R
4R
5R
6R



ACARS FUNCTION PAGE 1

Ident.: DSC-22_20-50-10-25-00000593.0001001 / 01 MAR 18

41 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**



TITLE	ACARS FUNCTION 1/2 in white
Line 1 F-PLN INIT REQ*	Pressing this key sends a request for flight plan to the ground (downlink message) The INIT REQUEST prompt of the INIT A page provides the same function.
Line 2 TO DATA REQ*	Pressing this key sends a request for takeoff data. Displayed in the DONE and PREFLIGHT phases. The TO DATA REQUEST prompt of the UPLINK TO DATA REQ page provides the same function.
Line 3 WIND DATA REQ*	Pressing this key sends a request for wind data. The WIND REQUEST prompt of the CLIMB, CRUISE, and DESCENT WIND pages provides the same function.

Note: If "REQ" is not followed by a star, the request cannot be sent (downlink message). When a function (line 1 or 2 or 3) is deactivated internally, the corresponding line is blank.

[6L] RETURN The pilot presses this key to make the display revert to the DATA INDEX page.

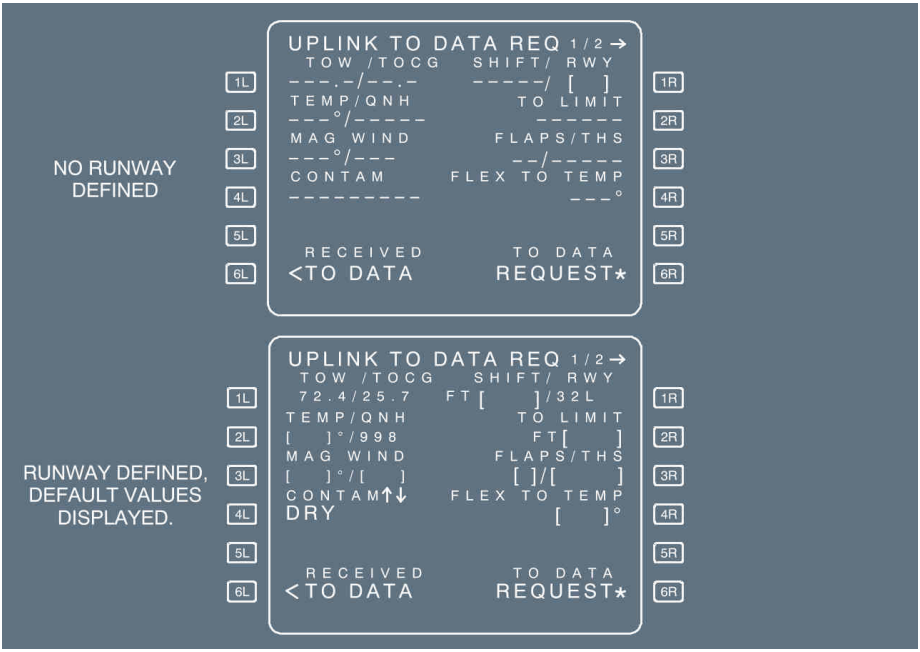
[6R] PRINT FUNCTION The pilot presses this key to access the PRINT FUNCTION page.

UPLINK TO DATA REQ PAGES

Ident.: DSC-22_20-50-10-25-00000594.0009001 / 14 MAY 12

42 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This page allows the flight crew to send a request for takeoff data for up to 2 runways. There is one page for each runway. The page is accessed from the PERF TAKEOFF page, or from the UPLINK XXX (MAX or DRT or FLX) TO DATA page, by pressing the UPLINK TO DATA prompt.



TITLE	White.
[1L] TOW/TOCG (green)	This field is dashed, until a runway is defined in the [1R] field. The TOW/TOCG is defaulted to the values of the INIT B and FUEL PRED pages. If not available, dashes are displayed. It cannot be modified by the pilot.
[2L] TEMP/QNH or QFE (green/blue)	This field is dashed, until a runway is defined in the [1R] field. It displays the temperature at origin and baro setting. TEMP = If the temperature is not defined, blue brackets are displayed, and the flight crew can modify this field according to the weather information. BARO = Defaulted to FCU selection and can be modified by the pilot.
[3L] MAG WIND (blue)	This field is dashed, until a runway is defined in the [1R] field. It displays the wind at the origin. If the wind is not defined, blue brackets are displayed. The pilot can modify this field.

[4L] CONTAM (blue) — This field is dashed, until a runway is defined in the [1R] field. The display is defaulted to DRY.
The scroll keys allow the crew to modify the runway contamination.
DRY, WET, 1/4 WATER, 1/2 WATER, 1/4 SLUSH, 1/2 SLUSH, COMP SNOW.

[6L] RECEIVED TO DATA — This field calls up the UPLINK MAX (or FLX or DRT) TO DATA page that displays the data received by AOC.

[1R] SHIFT/RWY (blue) — This field is dashed, until a runway is defined in the F-PLN. If a runway is defined in the F-PLN, it is automatically filled in as:

- SHIFT = Value from the PERF TO page, or blue brackets [ ], if no value is defined.
- RWY = F-PLN departure runway. The pilot can modify this field.

[2R] TO LIMIT (blue) — It is dashed, until a runway is defined in the [1R] field.
It displays blue brackets [ ], when a runway is defined.
The pilot may enter a length, considering runway obstacles.

[3R] FLAPS/THS (blue) — This field is dashed, until a runway is defined in the [1R] field; it is then defaulted to values from the PERF TO page. Blue brackets are displayed, if the PERF TO page does not have any defined values.

[4R] FLEX TO TEMP (blue) — This field is dashed, until a runway is defined in the [1R] field; it is then defaulted to values from the PERF TO page. Blue brackets are displayed, if the PERF TO page does not have any defined values.
The pilot can modify this field and enter a FLEX TO temperature (FXX).

[6R] TO DATA REQUEST* (amber) — Pressing the key sends the takeoff data request message to the ground. The asterisk disappears when the request is sent. It reappears when the data is available.

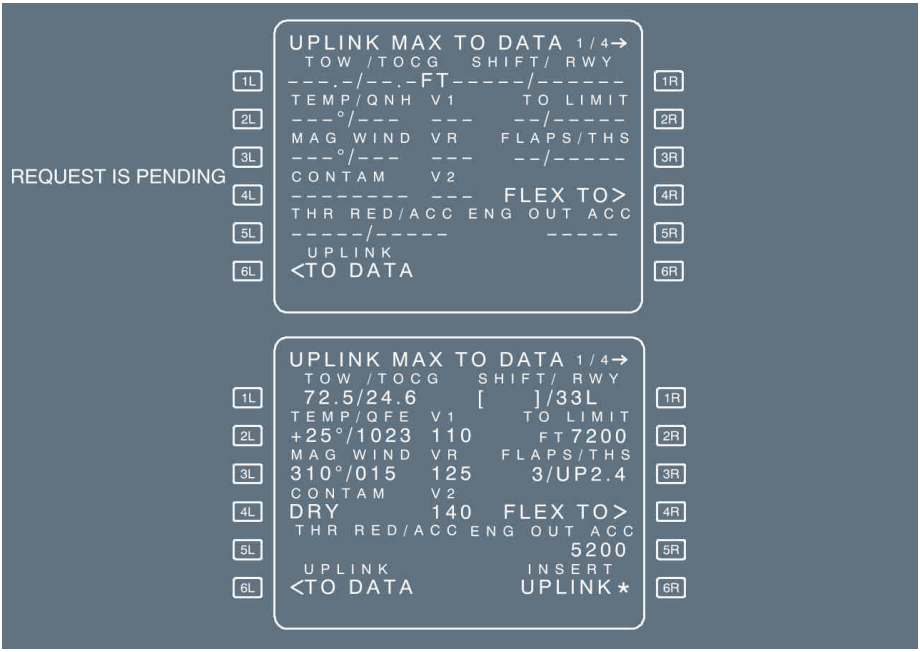
Page 2/2 is a page used for requesting a second runway data.

Note: *If the UPLINK TO DATA REQ Page 2 is accessed (Page 1 being filled), the fields of this page are filled with default values after entry of a runway in [1R]. QNH or QFE and wind are common with Page 1.*

UPLINK MAX TO DATA PAGES

Ident.: DSC-22_20-50-10-25-00000595.0010001 / 01 OCT 12

43 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**



This page is accessed from the UPLINK TO DATA REQ page by pressing the RECEIVED TO DATA key.
There is a set of 2 pages (MAX TO DATA and FLEX TO DATA) for each of the 4 uplinked runway data. Uplinked data is displayed in green. (It cannot be modified by the flight crew).

[1L] TOW/TOCG	Uplinked reference Takeoff Gross Weight and Takeoff Center of Gravity.
[2L] TEMP/QNH (or QFE)	Uplinked assumed temperature and BARO setting.
[3L] MAG WIND	Uplinked takeoff runway wind.

[4L] CONTAM	Uplinked takeoff runway contamination.
[5L] THR RED/ACC	Uplinked Thrust Reduction and Acceleration altitudes.
[6L] UPLINK TO DATA	Pressing the key calls up the UPLINK TO DATA REQ page.
V1, VR, V2	Uplinked takeoff speeds.
[1R] SHIFT/RWY	Uplinked TO runway IDENT, runway intersection and position shift.
[2R] TO LIMIT	Uplinked runway length remaining.
[3R] FLAPS/THS	Uplinked FLAPS/SLATS CONF and TRIM position.
[4R] FLEX TO	Pressing this key calls up the UPLINK FLEX TO DATA pages.
[5R] ENG OUT ACC	Uplinked engine-out acceleration altitude.
[6R] INSERT UPLINK*	Uplinked takeoff data is available for insertion.

Selecting this prompt inserts the following data on the PERF TO page:
- V1, VR, V2
- THR RED/ACC, ENG OUT ACC altitudes
- FLAPS/THS
- SHIFT
- FLEX

The display reverts to the PERF TO page, the asterisk disappears.

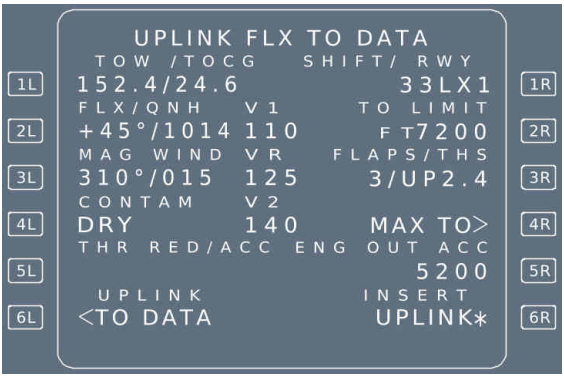
This field is not displayed, if the runway does not match the active runway. If the runway matches the active runway but the uplinked TOW differs from the current TOW (the uplinked TOW is 3 t greater or 1 t lower than the TOW estimated by the FMS):
- The asterisk disappears and the insertion is not possible
- The TOW value is displayed in amber in [1L] field.

Note: *All previously-received data is replaced by the new uplinked data.*

UPLINK FLX TO DATA PAGES

Ident.: DSC-22_20-50-10-25-00000596.0001001 / 05 JUN 18

44 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

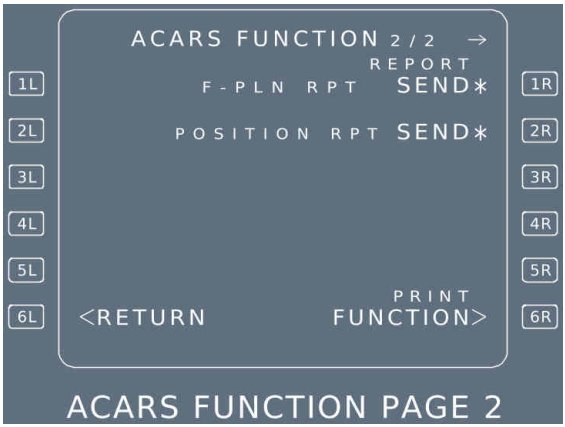


TITLE	UPLINK FLX TO DATA.
[2L]	FLX/QNH (or QFE) When the UPLINK FLEX TO DATA page is selected, it displays uplink assumed Flex Temperature and BARO setting (QNH or QFE).
[4R] MAX TO	Pressing this key calls up the MAX TO DATA page.

ACARS FUNCTION PAGE 2

Ident.: DSC-22_20-50-10-25-00000597.0001001 / 17 MAR 11

45 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**



Line 1 F-PLN RPT SEND — Pressing this key sends the flight plan report to the ground.

Line 2 POSITION RPT SEND — Pressing this key sends a Position Report to the ground.

Note:
- *No report can be sent, if "SEND" is not followed by a star*
- *When a function (line 1 or 2) is deactivated through the navigation database policy file, the corresponding line is blank.*

[6L] RETURN — The pilot presses this key to revert to the DATA INDEX page.

[6R] PRINT FUNCTION — The pilot presses this key to access the PRINT FUNCTION page.

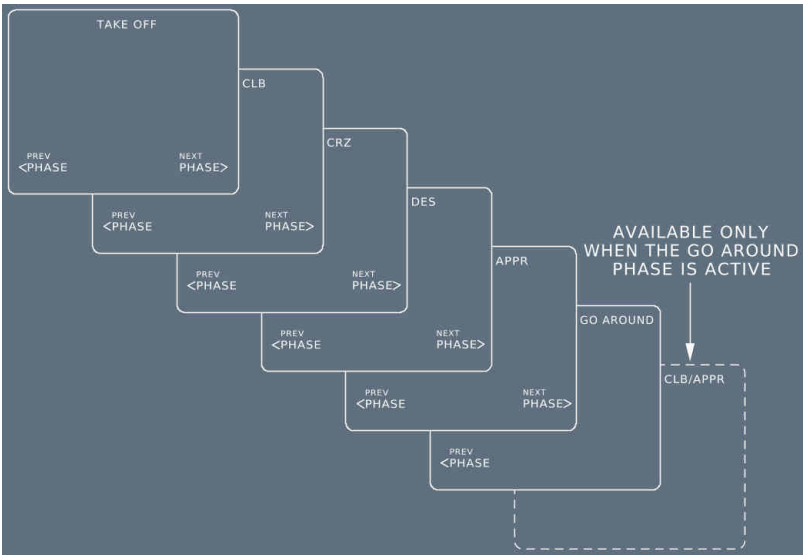
PERF PAGE

Ident.: DSC-22_20-50-10-25-00000598.0001001 / 17 MAR 11

46 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The flight plan is divided into the following phases:
PREFLIGHT, TAKEOFF, CLIMB, CRUISE, DESCENT, APPROACH, GO-AROUND, DONE.
Each phase, except for the preflight and done phases, has a performance (PERF) page. The PERF pages display performance data, speeds related to the various phases, and predictions.

Pressing the PERF key on the MCDU console calls up the performance page for the current active phase. Performance pages, relating to phases already flown, are not available.
In the preflight and done phases, pressing the PERF key brings up the takeoff performance page.
Pressing the PERF key in the done phase makes the phase transition to the preflight phase.

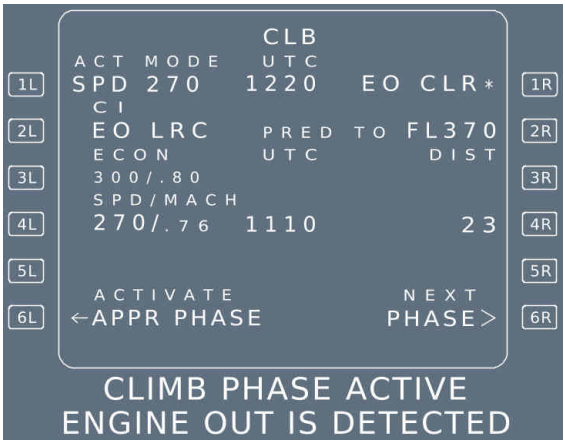


The FMGS flight phases are not related to the FWC flight phases.

Line 6	Fields may display two different prompts, depending upon whether the phase is active or not.
[6L] PREV PHASE	To review the performance page for the previous phase. The prompt is unavailable on the takeoff performance page. It is also unavailable for phases already flown.
[6L] ACTIVATE APPR PHASE	To activate, then confirm, the APPR phase. Available only on the page corresponding to the active phase.
[6R] NEXT PHASE	To review the performance page for the next phase.

Note: ***Engine-out condition***

- *When the FMGS detects an engine-out condition, the system automatically calls up the performance page for the current flight phase (except when this occurs before the diversion point during takeoff or no EOSID exists in the flight plan) and displays "EO CLR*" in the [1R] field and EO LRC (engine-out long range cruise) in the [2L] field. On the CLB, CRZ and DES (when the descent phase is not active) PERF pages, the pilot can enter a cost index value and overwrite to "EO LRC". Clearing the cost index reverts to EO LRC.*
  If the pilot presses the [1R] key, the system reverts to the normal processing (with no engine failed) and suppresses the EO information. (Refer to DSC-22_20-30-10-15 General).
- *If the engine-out condition is detected before the diversion point at takeoff, a temporary flight plan is created.*

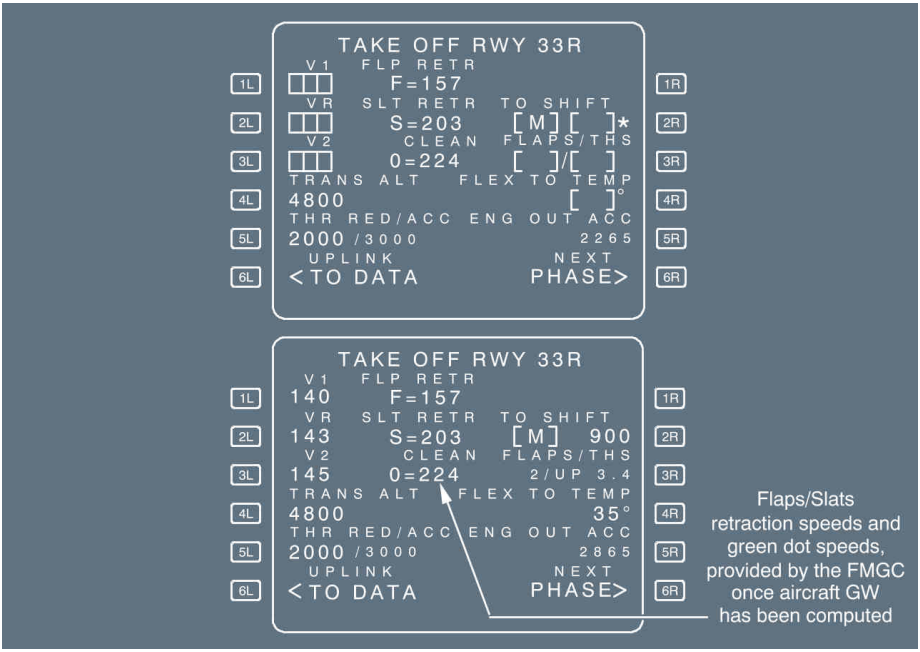


PERF TAKEOFF PAGE

Ident.: DSC-22_20-50-10-25-00000599.0010001 / 08 JUL 15

47 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

During the preflight phase, the pilot presses the PERF key to call up the takeoff performance page.



TITLE

TAKE OFF RWY is in large green font when the takeoff phase is active, and in large white font when it is inactive. The active flight plan selected runway is displayed in large green font.

Note: *If the takeoff shift, or the flaps/THS, or the runway is changed after V1, VR or V2 insertion, but the origin airport remains the same, the MCDU "CHECK TAKE OFF DATA" message appears. All takeoff parameters are retained except in case of runway change. In case of runway change, the parameters are invalidated, but still displayed adjacent to each field. The "CONFIRM TO DATA" prompt in [6R] allows reverting to the previous values.*

[1L] V1 [2L] VR [3L] V2 The boxes remain amber, as long as the pilot does not make entries in them. The pilot can modify any entry, as long as the takeoff phase is not active.

Note: *1. If the flight crew does not enter V2, the SRS mode will be unavailable at takeoff.*
2. The MCDU "V1/VR/V2 DISAGREE" amber message appears if the inserted V1, VR, V2 speeds do not satisfy the condition: V1 ≤ VR ≤ V2.
3. The MCDU "TO SPEED TOO LOW" amber message appears if the inserted V1, VR, V2 speeds do not satisfy the existing regulatory conditions regarding VMCG/VMCA and VS1G speeds.

[4L] TRANS ALT (transion altitude) This field displays the navigation database default altitude (if defined) once the origin airport is entered. The pilot can modify it.

[5L] THR RED (thrust reduction altitude) This is the altitude at which the pilot should reduce the thrust from TOGA/FLX to MAX CLIMB (CL detent) with all engines operative ("CLB" or "LVR CLB" flashing on the FMA).
- The thrust reduction altitude defaults to 1 500 ft above the runway elevation, or to the altitude set by the airline
- The pilot can modify this altitude: The minimum is 400 ft above the runway elevation.

ACC (Acceleration altitude) This is the altitude at which the climb phase is triggered.
- The target speed jumps to the initial climb speed
- The default value is 1 500 ft above runway elevation
- The flight crew can modify the value. The minimum value is 400 ft above runway elevation, and it can be higher than, or equal to, or lower than THR RED.

Note: - *A clearing action reverts both values to the defaulted ones*
- *When the flight crew selects an altitude on the FCU that is below THR RED, it brings THR RED and ACC down to this altitude. (The 400 ft minimum still applies).*

[6L] UPLINK TO DATA This key calls up the UPLINK TO DATA REQ page.
It is only displayed in the preflight and done phases.

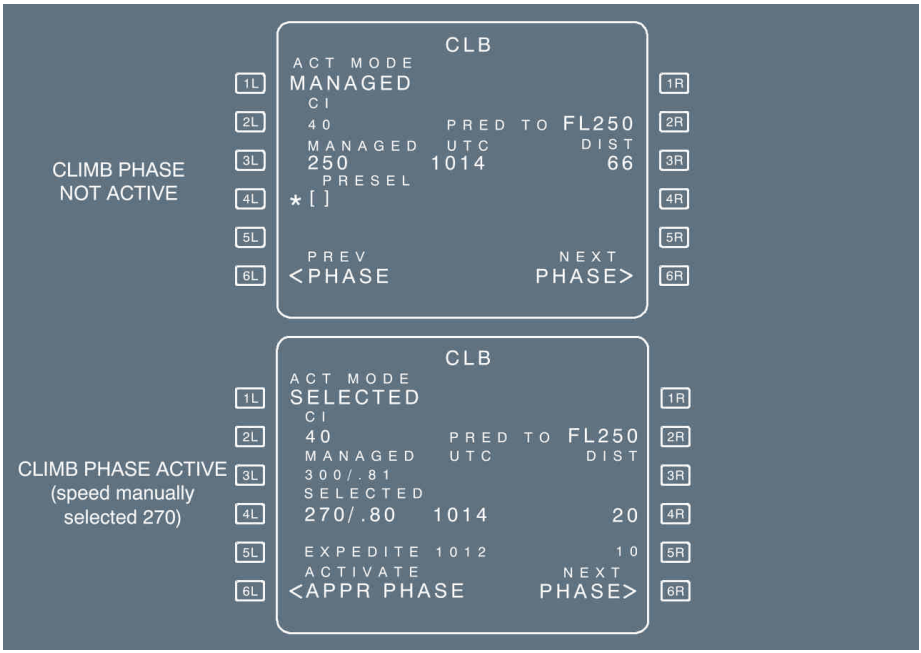
[1R] EO CLR EO CLR is displayed when an engine-out is detected and when active flight phase is takeoff.

[2R] TO SHIFT	The takeoff shift is the distance in meters or feet between the beginning of the runway and the aircraft's takeoff position. When taking off from an intersection, the flight crew should insert this value to ensure a correct update of the FM position. The takeoff shift value must be positive, and cannot be greater than the runway length.
[3R] FLAPS/THS	This is a flight crew entry for the positions of the flaps and the trimmable horizontal stabilizer (THS) at takeoff. The flight crew can modify it until takeoff, by entering “UP X.X” or “X.X UP”, or “DN X.X” or “X.X DN” for the THS.
[4R] FLX TO TEMP	The flight crew inserts the FLX TO temperature for FLX takeoff setting purposes. The flight crew can only enter it during preflight. The system sends it to the FADEC and displays the entered data on the upper ECAM display. The TEMP value is always entered in degrees Celsius.
[5R] ENG OUT ACC	This field displays the engine-out acceleration altitude, as defined in the database, or is manually entered by the flight crew. This is for display only, as a reminder. It cannot be cleared. The above ACC altitude rules of [5L] apply to this field.
[6R] NEXT PAGE or CONFIRM TO DATA*	This key calls up the climb performance page, or allows the flight crew to revert to the previously-entered T.O. parameters, in case of runway change with the same origin airport.

PERF CLIMB PAGE

Ident.: DSC-22_20-50-10-25-00000600.0001001 / 14 MAY 12

48 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**



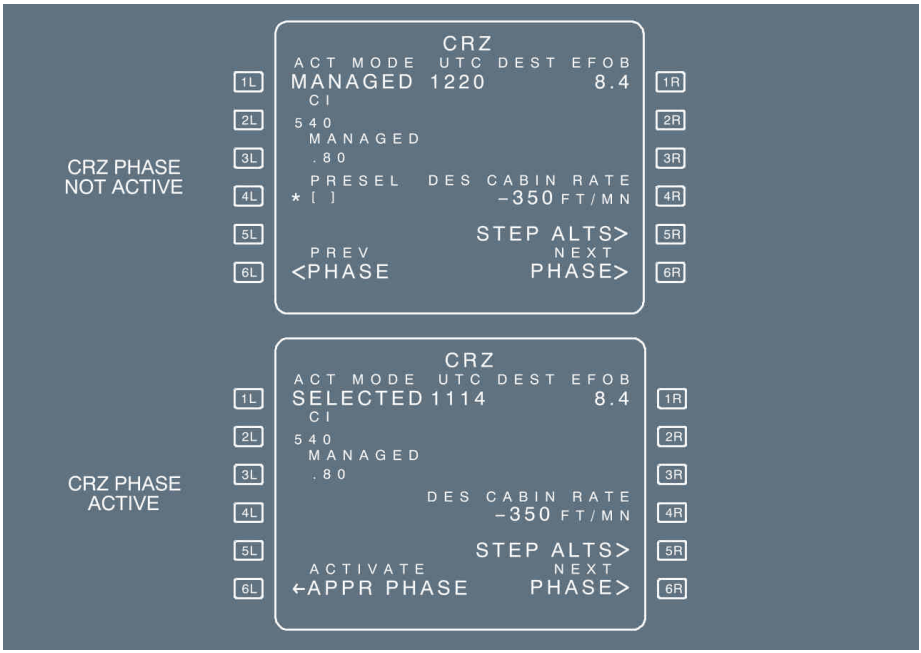
TITLE	CLB is displayed in large white fonts when the climb phase is inactive, and in large green fonts if it is active.
[1L] ACT MODE	This field displays the preselected or active speed mode: SELECTED or MANAGED. The pilot cannot modify it from this field.
[2L] CI (Cost Index)	This field displays the cost index, as initialized on the INIT A or defaulted from the database, or inserted in this field by the pilot. EO LRC automatically replaces the cost index value in case of engine-out.
[3L] MANAGED	This field displays the FMGS computed ECON speed/Mach (*Refer to DSC-22_20-40-10 Optimization*). Before CLIMB phase is active, if the preselected speed mode is SELECTED, a star is displayed next to the MANAGED speed. Pressing the 3L key in this case preselects MANAGED speed, and 4L reverts to brackets.

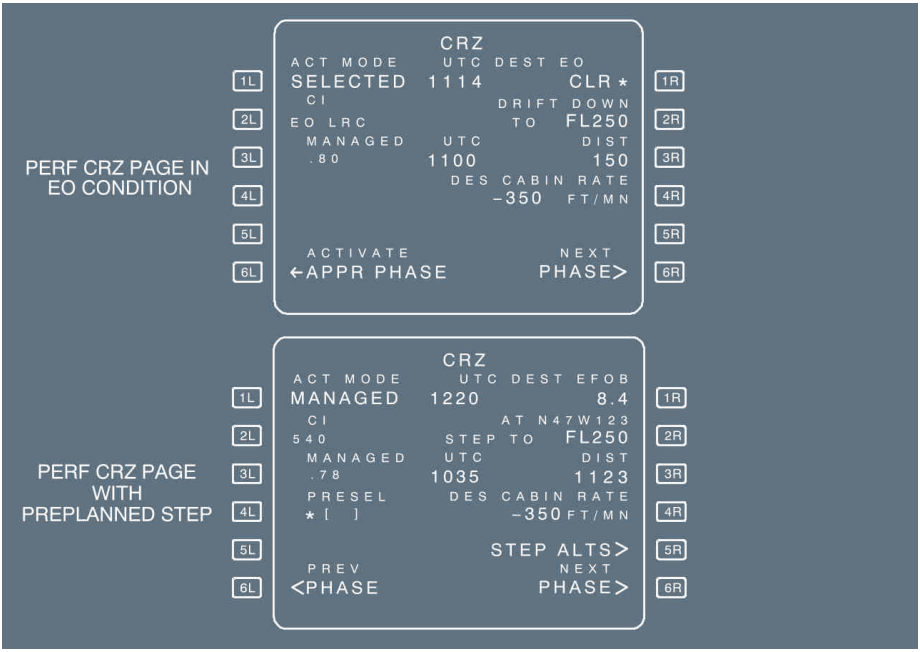
[4L] PRESEL or SELECTED	If the climb phase is not active: This field displays PRESEL as long as the climb phase is not active. The pilot can enter a preselected speed only. If the climb phase is active: The title of this field becomes SELECTED. This field displays the selected (or preselected) SPD or MACH target. The pilot cannot modify it directly in this field, but can adjust it with the SPD/MACH selection knob on the FCU. If the pilot pushes in the FCU SPD/MACH selection knob to revert to managed speed, the system selects (or reselects) ECON SPD/MACH and [4L] is blank.
[5L] Blank or EXPEDITE	This field is blank as long as the aircraft is in preflight. This field displays this legend when the takeoff or climb phase is active. The flight crew cannot engage EXPEDITE from this field. It indicates the time and distance required to reach the altitude displayed in the 2R field, in case of climb at green dot.
[6L] PREV PHASE	This field displays this legend if climb phase is not active. The pilot presses this key to call up the takeoff page.
[6L] ACTIVATE APPR PHASE	The field displays this legend if the climb phase is active. Pressing this key once displays “CONFIRM APPR PHASE*”. Pressing it again activates the approach phase.
[1R] EO CLR	The system displays the EO CLR prompt in case of engine out in climb.
[2R] PRED TO...	This field displays the target altitude for the predictions shown in 3R, 4R, or 5L. It defaults to FCU altitude, but the pilot can modify it to any altitude below CRZ FL.
[3R] [4R] [5R]	These fields show time and distance predictions for the target altitude selected in [2R], computed for the current vertical mode and speed mode (MANAGED, SELECTED). These fields are displayed only while the takeoff, or climb phase is active.
[6R] NEXT PHASE	The flight crew presses this key to call up the PERF CRZ page.

PERF CRUISE PAGE

Ident.: DSC-22_20-50-10-25-00000601.0009001 / 30 MAR 15

49 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**





TITLE	CRZ in white large font, when cruise phase is not active, in green large font, when it is.
[1L] ACT MODE	This field shows the preselected or active speed mode: SELECTED or MANAGED. The pilot cannot modify it through this field.
[2L] CI	This field shows the cost index as initialized on the INIT A page or defaulted from the database, or as inserted in this field by the crew. EO LRC replaces automatically the cost index value in case of engine out.
[3L] MANAGED	This field displays the FMGS computed ECON speed/Mach (*Refer to DSC-22_20-40-10 Optimization*). Before CRUISE phase is active, if the preselected speed mode is SELECTED, a star is displayed next to the MANAGED speed. Pressing the 3L key in this case preselects MANAGED speed, and 4L reverts to brackets.

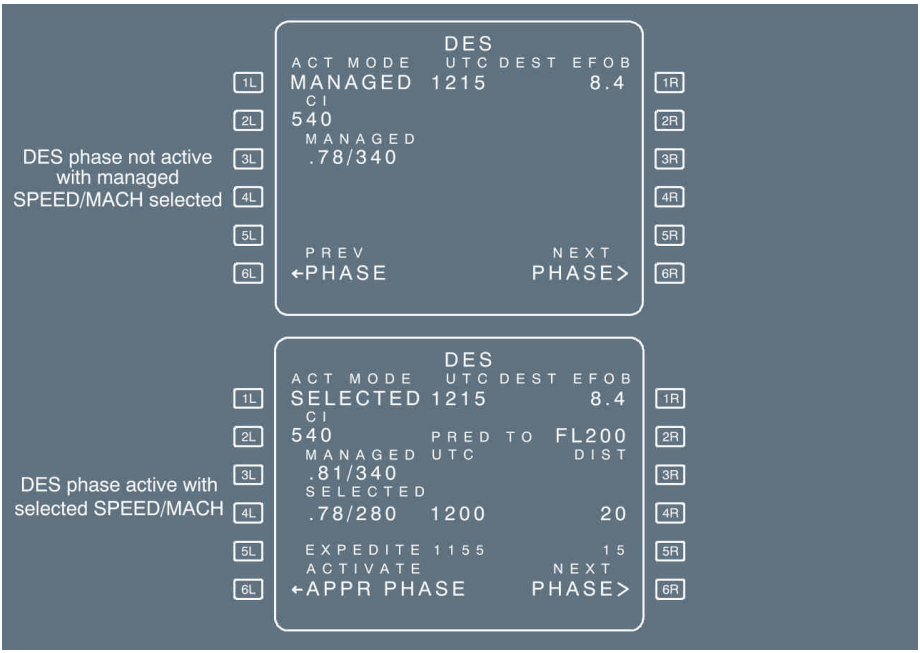
[4L] PRESEL	If cruise phase is not active: The pilot can enter a preselected speed or Mach number. If cruise phase is active: This field is blank. Note: *If the flight crew enters a value in the PRESEL field during the cruise altitude capture (ALT CRZ*), the FCU selected speed may revert to M 0.01.*
[6L] PREV PHASE or	The pilot can press this key to call up the climb page, if the cruise phase is not yet active.
[6L] ACTIVATE APPR PHASE	This field displays this legend if the cruise phase is active. The flight crew presses the key once to change the legend to “CONFIRM APPR PHASE*”. A second press activates the approach phase. Note: *If the pilot activates the approach phase inadvertently, it can reselect the cruise flight level into the progress page to reactivate the cruise phase.*
[1R] TIME/UTC DES EFOB	Before takeoff this field displays the flight time to destination and the predicted remaining fuel on board. If the crew enters an estimated takeoff time, the field displays automatically the predicted arrival time (UTC) at destination. After takeoff it displays the predicted arrival time at destination (UTC) and the remaining fuel on board (DEST EFOB) at destination, in green font. The DEST EFOB field will turn to amber, if the EFOB at destination becomes less than the MIN DEST FOB value displayed on the FUEL PRED page. EO CLR is displayed when an engine-out is detected.
[2R] STEP TO FL XX, DRIFT DOWN TO FL XX, or TO T/D	The field, in combination with 3R, displays the predictions for the step point and the step altitude, the drift down altitude, or the Top of Descent.
[3R] TIME/UTC and DIST	This field displays the time and distance to go to the various points identified in 2R.
[4R] DES CABIN RATE	This field displays MAX [computed DES cabin rate, maximum descent cabin rate]. The pilot may modify the value: the FM recomputes then the top of descent in order to match this value. If the FM cannot match the pilot entry, the FM computed value overwrites the pilot entry. A clear action reverts to the default value (-350 ft/min). DES CAB RATE being a negative value, 'minus” is not a necessary entry.
[5R] STEP ALTS	This key calls up the STEP ALTS page (vertical revision *Refer to DSC-22_20-50-10-25 VERTICAL REVISION Pages*).

[6R] NEXT PHASE — This key calls up the DES page.

PERF DESCENT PAGE

Ident.: DSC-22_20-50-10-25-00000602.0011001 / 23 JUN 15

50 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**



TITLE	DES is in large white font if the descent phase is not active; it is in large green font, if it is.
[1L] ACT MODE	This field displays the preselected or active speed mode (MANAGED or SELECTED). The flight crew cannot modify it through this field.
[2L] CI	This field displays the cost index, as initialized on the INIT A page or defaulted from the database, or inserted in this field by the flight crew. The flight crew cannot modify it when the descent phase is active.

[3L] MANAGED	If the descent phase is not active: Before the flight crew makes any entry. This field displays MANAGED in white, with the associated ECON descent Mach or speed in blue. The crew may overwrite the ECON descent Mach or speed by entering a Mach number or a speed in this field. The system uses the pilot entry to compute the descent profile. The descent may be flown in managed using this new pilot entry. The entry is modifiable. It can be cleared to revert to ECON speed/Mach. If the descent phase is active: The flight crew cannot make an entry in this field. The field displays the ECON speed/Mach or the speed/Mach value previously entered by the pilot.
[4L] blank or SELECTED	If the descent phase is not active, or the descent phase is active but the active speed mode is MANAGED: This field is blank. If the descent phase is active and the active speed mode is SELECTED: The field displays the speed or Mach target manually selected by the pilot. “SELECTED” is displayed in the [1L] field. To modify the field value, the pilot will use the SPD/MACH selector knob of the FCU. [4L] field and FCU window will display the same value. Pushing in the FCU speed selector knob activates the managed SPD/MACH target displayed in the [3L] field.
[5L] Blank or EXPEDITE	If the descent phase is not active this field is blank. Displays this legend if the descent phase is active. It indicates the time and distance required to reach the altitude displayed in the 2R field at MMO/VMO speed. The pilot cannot select the EXPEDITE mode through this field.
[6L] PREV PHASE or ACTIVATE APPR PHASE	This key calls up the cruise phase page if the descent phase is not yet active. Displayed if the descent phase is active. First press causes “CONFIRM APPR PHASE” to be displayed. Second press activates the approach phase.

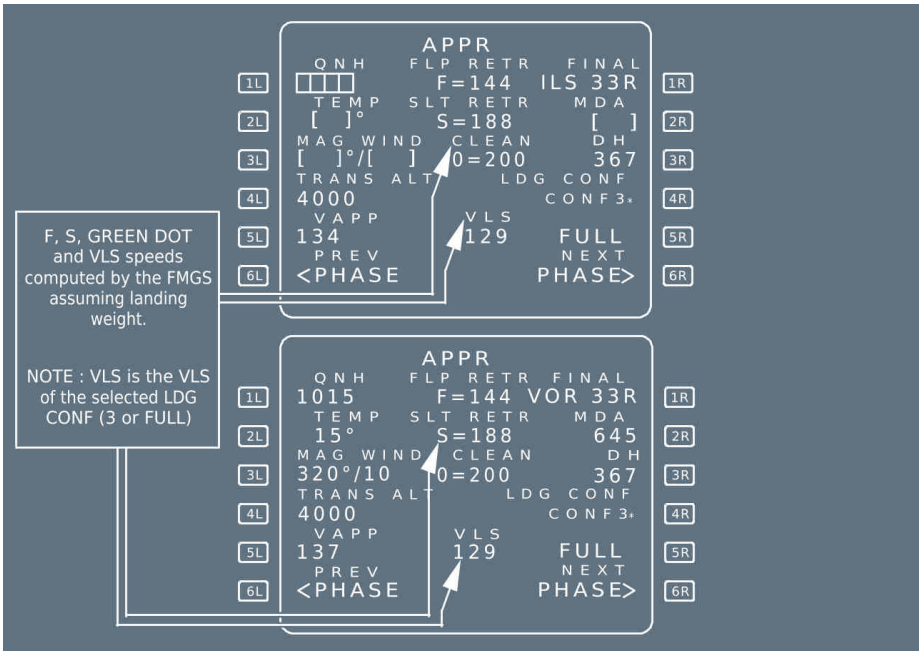
[1R] TIME/UTC DEST EFOB	Before takeoff, this field displays the flight time to destination and the predicted remaining fuel on board. If the crew enters an estimated takeoff time, the field displays automatically the predicted arrival time (UTC). After takeoff, it displays the predicted arrival time at destination (UTC) and the remaining fuel on board (DEST EFOB) at destination in green font. The DEST EFOB field will turn to amber, if the EFOB at destination becomes less than the MIN DEST FOB value displayed on the FUEL PRED page. EO CLR is displayed when an engine-out is detected.
[2R] PRED TO...	This field displays the target altitude for the predictions in [3R] [4R], or [5R]. The display defaults to the altitude selected on the FCU. The flight crew can modify it to any altitude lower than present altitude.
[3R] [4R] [5R]	These fields display time and distance predictions down to the target altitude selected in [2R], computed for the current vertical mode (DES or OP DES) and the indicated speed mode (MANAGED, SELECTED).
[6R] NEXT PHASE	The pilot presses this key to call up the PERF APPR page.

PERF APPR PAGE

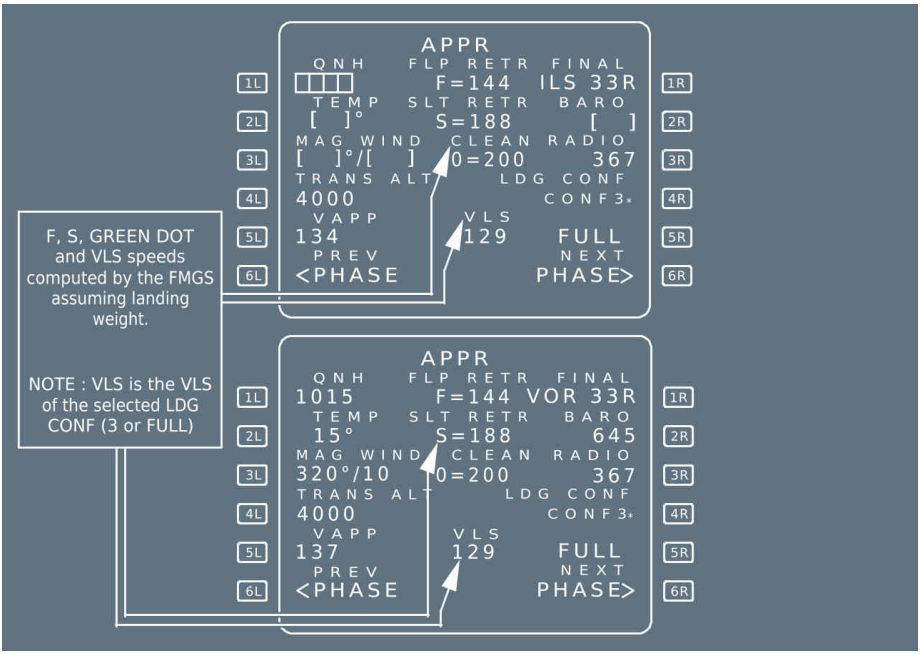
Ident.: DSC-22_20-50-10-25-00016132.0010001 / 30 AUG 18

51 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

PERF APPR Page



PERF APPR Page (with BARO/RADIO ◁✱ option)



APPR is in large white font, if the approach phase is not active; it is in large green font, if it is.

[1L] QNH

This field displays brackets, when the aircraft is more than 180 NM from the destination. Inside 180 NM, a mandatory amber box appears. The flight crew must enter the QNH in hectopascals (hPa) or in inches of mercury (inches of Hg). The value is either entered in hPa or inches of Hg:

- An entry in hPa format is interpreted as QNH in hPa, and
- An entry in Inches of Hg format is interpret as QNH in inches of Hg.

Refer to *Refer to DSC-22_20-50-30 MCDU Data Format List*.

Note: *An erroneous entry of an OAT in the QNH field, for example 22 °C, or a higher value, is accepted by the system.*

The flight crew can modify this entry at any time.
The Cabin Pressure Controller (CPC) uses the QNH to compute the cabin repressurization segment. Therefore, an erroneous QNH entry may result in a cabin pressurization that is not appropriate.

[2L] TEMP	This field displays the temperature at destination. The field displays brackets until the pilot enters the temperature. The pilot can modify this figure. The system uses this temperature to refine its computation of the descent profile (ISA model).
[3L] MAG WIND	The flight crew enters the magnetic wind in knots at the destination in this field. The system transmits any entry made in this field to the vertical revision and flight plan B pages (which display wind direction as true, not magnetic).
[4L] TRANS ALT	This field displays the transition altitude taken from the data base (small font) or entered by the flight crew (large font). The flight crew can modify it at any time.
[5L] VAPP	The FMGC computes this approach speed, using the formula: VAPP = VLS + 1/3 of the headwind components (limited to VLS + 5 as a minimum and VLS + 15 as a maximum). The flight crew can modify VAPP. A clear action reverts VAPP to the computed value. *Note: VLS = 1.23 VS1G of the selected landing configuration (full or 3).*
[6L] PREV PAGE	This field displays this legend if the approach phase is not active. Pressing this key calls up the descent performance page.
[1R] FINAL	This field displays the approach specified in the flight plan. The flight crew cannot modify it through this field.

[2R] MDA/MDH or BARO ◁	This field displays:
	- The Minimum Descent Altitude with associated brackets, or
	- The Minimum Descent Height with associated brackets, if:
	  - The QFE pin program is activated, or
	  - The FCU setting is QFE, on aircraft equipped with the BARO ◁ option.
	
	The flight crew inserts the value, which it can modify at any time. If the flight crew makes an entry in [3R] or changes the approach, it clears this figure.

[3R] DH or RADIO ◁	If the flight plan includes an ILS approach, this field displays “DH" or "RADIO" ◁ and empty brackets. The flight crew inserts the decision height. The system will accept an entry of “NO", "NODH" or "NO DH". If the flight crew inserts an MDA or an MDH (or a BARO ◁ value) in FIELD [2R], this erases the decision height, and this field reverts to brackets. The DH or RADIO range is 0 to 700 ft.

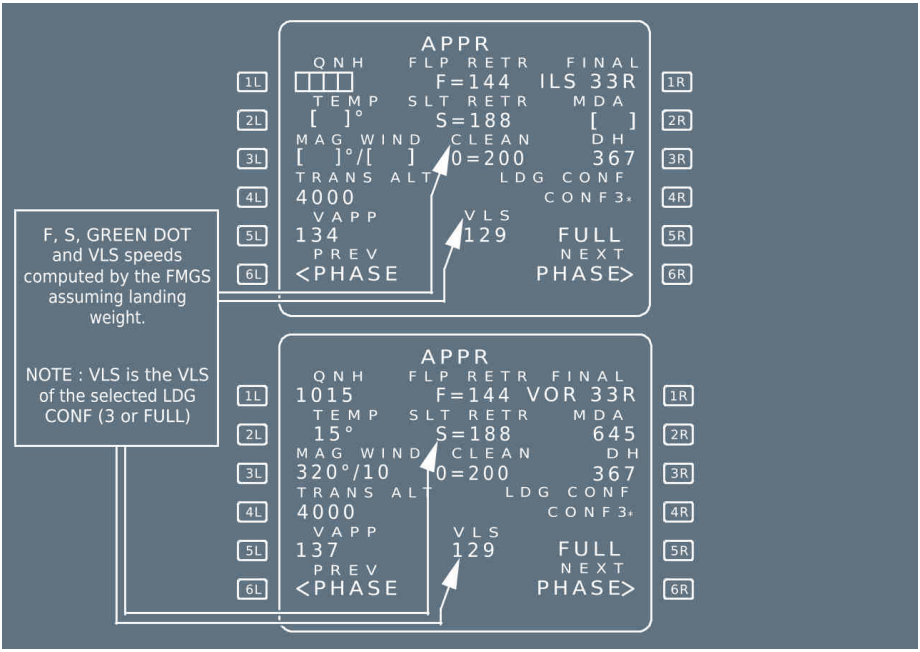
[4R] LDG CONF CONF 3	The flight crew can select configuration 3 by pressing the 4R key. This moves the * down to the [5R] field, which is displaying “FULL"?.
[5R] FULL	The flight crew can use this key to select configuration FULL when necessary configuration FULL is the default landing configuration.
[6R] NEXT PHASE	Pressing this key calls up the go-around performance page.

PERF APPR PAGE

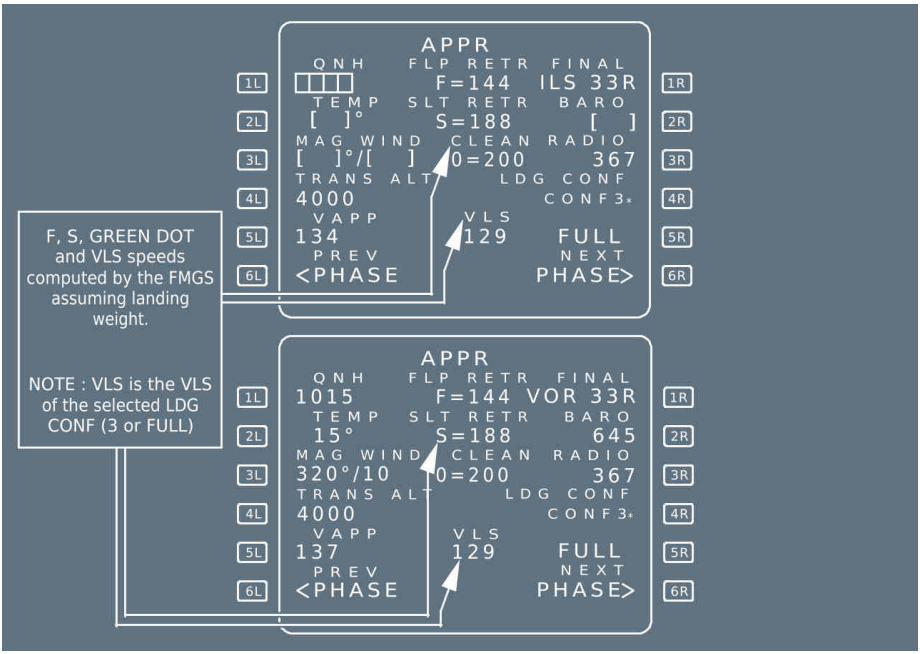
Ident.: DSC-22_20-50-10-25-00016132.0002001 / 30 AUG 18

52 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

PERF APPR Page



PERF APPR Page (with BARO/RADIO ◁✻ option)



APPR is in large white font, if the approach phase is not active; it is in large green font, if it is.

[1L] QNH

This field displays brackets, when the aircraft is more than 180 NM from the destination. Inside 180 NM, a mandatory amber box appears. The flight crew must enter the QNH in hectopascals (hPa) or in inches of mercury (inches of Hg). The value is either entered in hPa or inches of Hg:

- An entry in hPa format is interpreted as QNH in hPa, and
- An entry in Inches of Hg format is interpret as QNH in inches of Hg.

Note: *An erroneous entry of an OAT in the QNH field, for example 22 °C, or a higher value, is accepted by the system.*

The flight crew can modify this entry at any time.
The Cabin Pressure Controller (CPC) uses the QNH to compute the cabin repressurization segment. Therefore, an erroneous QNH entry may result in a cabin pressurization that is not appropriate.

[2L] TEMP	This field displays the temperature at destination. The field displays brackets until the pilot enters the temperature. The pilot can modify this figure. The system uses this temperature to refine its computation of the descent profile (ISA model).
[3L] MAG WIND	The flight crew enters the magnetic wind in knots at the destination in this field. The system transmits any entry made in this field to the vertical revision and flight plan B pages (which display wind direction as true, not magnetic).
[4L] TRANS ALT	This field displays the transition altitude taken from the data base (small font) or entered by the flight crew (large font). The flight crew can modify it at any time.
[5L] VAPP	The FMGC computes this approach speed, using the formula: VAPP = VLS + 5 + 1/3 of the headwind components (1/3 of the headwind component is limited to 15 kt). The flight crew can modify VAPP. A clear action reverts VAPP to the computed value. *Note: VLS = 1.23 VS1G of the selected landing configuration (full or 3).*
[6L] PREV PAGE	This field displays this legend if the approach phase is not active. Pressing this key calls up the descent performance page.
[1R] FINAL	This field displays the approach specified in the flight plan. The flight crew cannot modify it through this field.

[2R] MDA/MDH or BARO ◁	This field displays:
	- The Minimum Descent Altitude with associated brackets, or
	- The Minimum Descent Height with associated brackets, if:
	  - The QFE pin program is activated, or
	  - The FCU setting is QFE, on aircraft equipped with the BARO ◁ option.
	
	The flight crew inserts the value, which it can modify at any time. If the flight crew makes an entry in [3R] or changes the approach, it clears this figure.

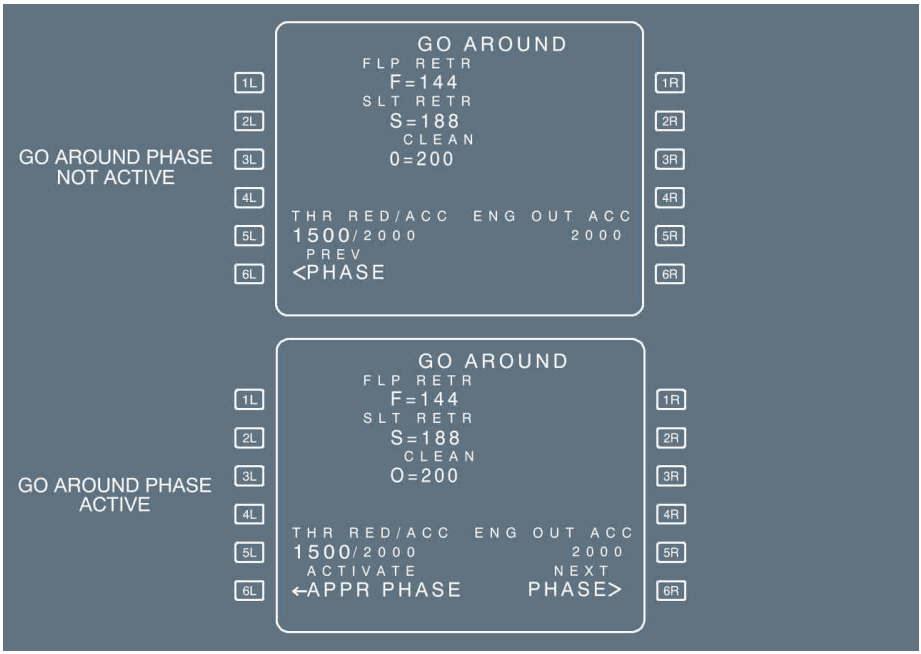
[3R] DH or RADIO ◁	If the flight plan includes an ILS approach, this field displays “DH" or "RADIO" ◁ and empty brackets. The flight crew inserts the decision height. The system will accept an entry of “NO", "NODH" or "NO DH". If the flight crew inserts an MDA or an MDH (or a BARO ◁ value) in FIELD [2R], this erases the decision height, and this field reverts to brackets. The DH or RADIO range is 0 to 700 ft.

[4R] LDG CONF CONF 3	The flight crew can select configuration 3 by pressing the 4R key. This moves the * down to the [5R] field, which is displaying “FULL"?.
[5R] FULL	The flight crew can use this key to select configuration FULL when necessary configuration FULL is the default landing configuration.
[6R] NEXT PHASE	Pressing this key calls up the go-around performance page.

PERF GO AROUND PAGE

Ident.: DSC-22_20-50-10-25-00000604.0002001 / 01 OCT 12

53 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**



TITLE	GO AROUND is in large white font, if the go-around phase is not active; it is in large green font, if it is.

[5L] THR RED ACC	This field displays the thrust reduction altitude and the acceleration altitude. **Thrust reduction altitude:** - Altitude at which thrust must be reduced from takeoff/go-around thrust to maximum climb thrust - "CLB" or "LVR CLB" flashing on flight mode annunciator - Defaults to 1 500 ft above destination runway elevation, or to the altitude set by the airline - Can be modified by the crew (minimum 400 ft above destination runway elevation). **Acceleration altitude:** - Altitude at which target speed jumps to green-dot speed (see the note below) - Defaults to 1 500 ft above destination runway elevation, or to the altitude set by the airline. - Can be modified by the crew, but is always equal to (or higher than) the thrust reduction altitude.
[6L] PREV PHASE or	This field displays this legend if the go-around phase is not active. Pressing the key calls up the PERF APPR page.
ACTIVATE APPR PHASE	This field displays this legend if the go-around phase is active. Pressing it once makes "CONFIRM APPR" appear. A second press activates the approach phase.
[5R] ENG OUT ACC	This display has the same characteristics as the display beside the 5R key on the takeoff page. It is for display only, and the pilot can modify it.
[6R] NEXT PHASE	Pressing this key calls up the PERF APPR page.
[IR] Blank or EO CLR*	This field is normally blank. EO CLR* is displayed when GO AROUND is the active phase and an engine-out condition is detected.

Note: *When the go-around phase is active, if the pilot enables ALTN or if the pilot inserts a new destination in the active flight plan and a new cruise flight level on the progress page, the go-around phase shifts automatically into the climb phase. (The target speed jumps from green dot speed to initial climb speed).*

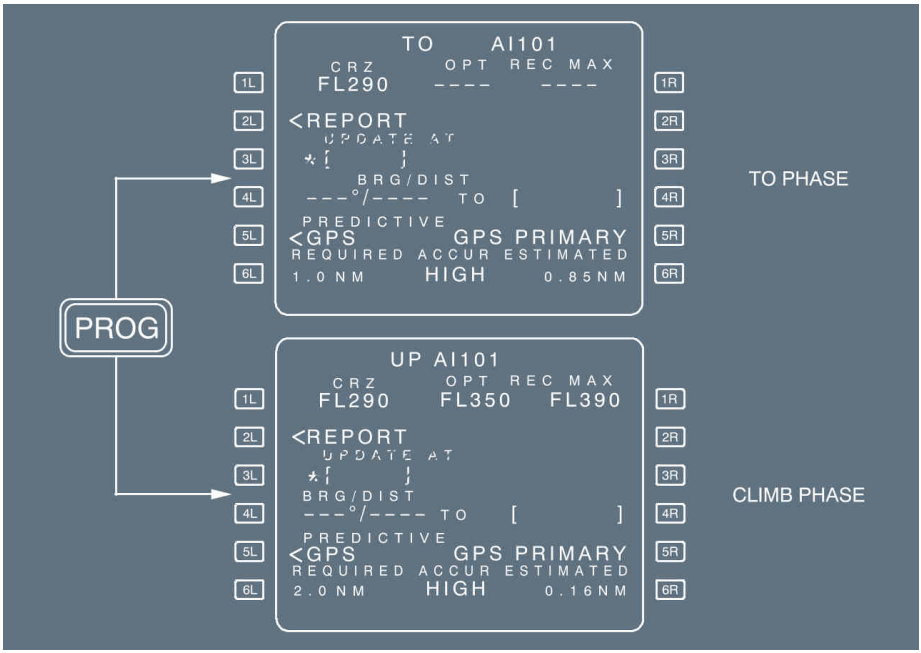
PROG PAGES

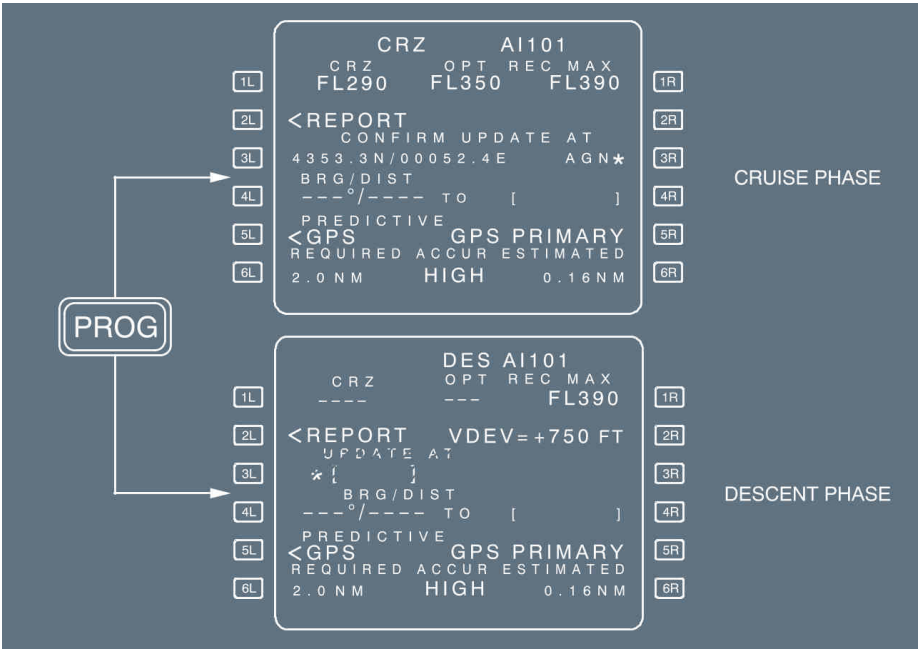
Ident.: DSC-22_20-50-10-25-00000605.0051001 / 22 MAR 17

54 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The progress page is a multifunction page that enables the pilot to:

- Select a new cruise flight level
- Crosscheck the navigation accuracy of the Flight Management (FM) system and validate it
- Update the FM position
- Monitor the descent.





TITLE	Different for each flight phase (see above). The vertical phase is in large green font. The flight number is in large white font. EO is large amber font, if the engine-out condition is detected.
Line 1 CRZ (blue)	This line displays the cruise flight level, inserted on the INIT A page or directly in this field in blue. If the flight crew uses the FCU to select an altitude that is higher than the one displayed in this field, the system changes the number displayed to agree. In this line, the flight crew cannot insert a flight level that is lower than the FCU-selected altitude. This field shows dashes when the descent or approach phase is active.
OPT	This field displays the optimum flight level (in green), that is computed based on the current gross weight, cost index, temperature and wind. This flight level requires a 5 min minimum cruise at a minimum cruise flight level of FL 100. It displays dashes if an engine-out is detected.

REC MAX

This field displays the recommended maximum altitude (in magenta), that is computed based on the current gross weight and temperature, and assuming that the anti-ice is off (if icing conditions are expected, *Refer to QRH/PER-M Optimum & Maximum Altitudes (Paper Only)* or the performance application of FlySmart with Airbus). It provides the aircraft with a 0.3 g buffet margin, a minimum rate of climb at MAX CL thrust, and level flight at MAX CRZ thrust. This field is limited to FL 398.
If one engine is out, this field displays the recommended maximum engine-out altitude, that is computed based on the long-range cruise speed and assuming that anti-ice is off.

[2L] REPORT

This key calls up the REPORT PAGE.

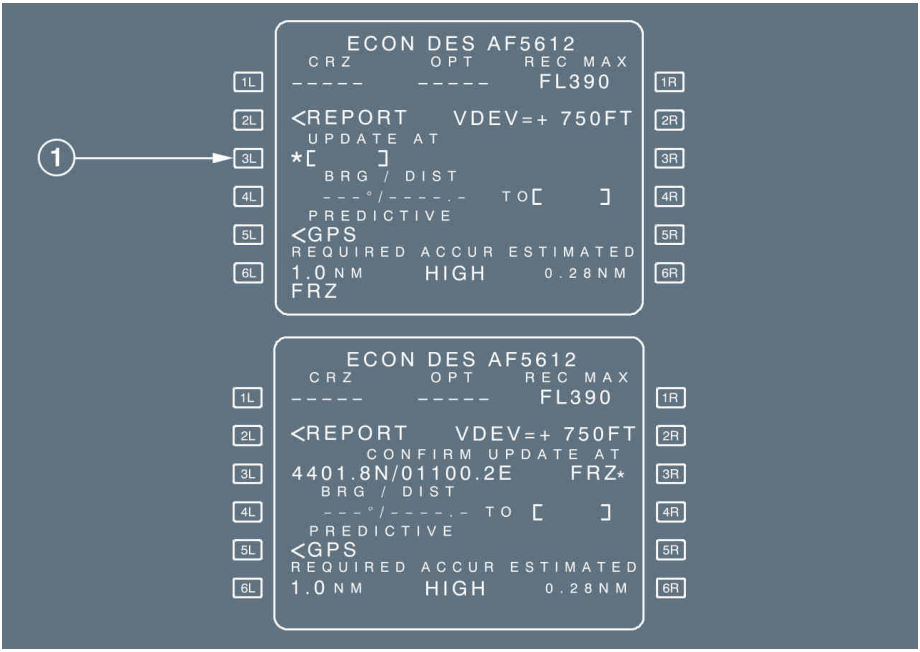
[2R] VDEV

This field is displayed during the descent and approach phases, when NAV mode is engaged, or in HDG mode, provided that the crosstrack error (XTK) is less than 5 NM. It displays the vertical deviation between the aircraft's current altitude and the FMS-computed vertical profile.

Line 3 POSITION UPDATE AT ◁

The flight crew can update the FMS position via this field by entering either the IDENT of a waypoint, a NAVAID, an airport, a latitude and longitude (LL), a place/bearing/distance, or a place-bearing/place-bearing (PBX).
When the flight crew has entered this data, this field changes its format to: "CONFIRM UPDATE AT", followed by the latitude/longitude and IDENT of the inserted position with an asterisk.
The flight crew presses the right-hand key adjacent to the asterisk to confirm the update, when the aircraft overflies the inserted position.

Note: *If no IDENT has been inserted, the field displays "ENTRY" instead of an IDENT.*

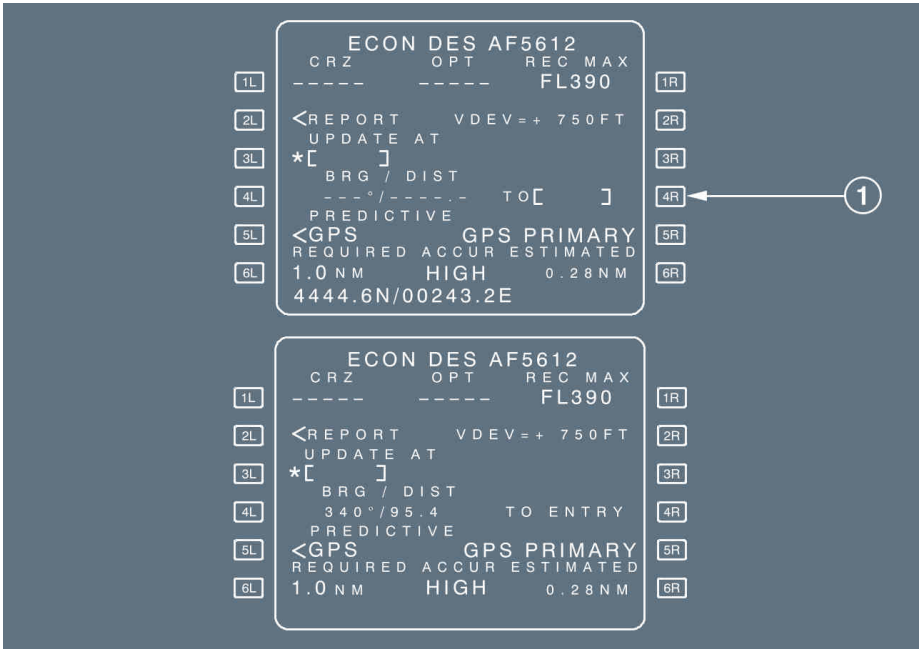


Line 4 BRG/DIST

On this line, the pilot can enter an airport, a waypoint, a NAVAID, or a runway. The pilot may enter each as an IDENT, a latitude/longitude (LL), a place/bearing/distance (PBD), or a place-bearing/place-bearing (PBX). The field then shows the FMGC-computed bearing and distance from this site to the aircraft's present position. The last distance digit is in 1/10 of a NM. If it does not have an IDENT, the point is called “ENTRY”.

Example:

BRG/DIST
340 °/95.4 to ENTRY



[5L] PREDICTIVE GPS — This prompt gives access to the PREDICTIVE GPS page.

[5R] GPS PRIMARY — This prompt is displayed, when the FMS navigation mode is GPS PRIMARY. When GPS PRIMARY is not available, or navigation mode is not GPS/IRS, this field is blank.
The scratchpad displays the relevant “GPS PRIMARY” message when this prompt appears; and “GPS PRIMARY LOST”, when the field turns to blank.

[6L] REQUIRED — This field displays the default value for the required navigation accuracy level. The pilot can modify it. Provided no pilot entry has been made, the default value changes according to the actual flight area (En route, terminal, approach).

ACCUR HIGH/LOW — This field shows the flight management system's estimate of the navigational accuracy. “HIGH” indicates that the FMS estimates that the navigational accuracy matches the accuracy criteria of the area currently flown. “LOW” indicates that the criteria are not matched.

[6R] ESTIMATED — This field displays the current estimated navigation accuracy value (EPE) as computed by the FMS.

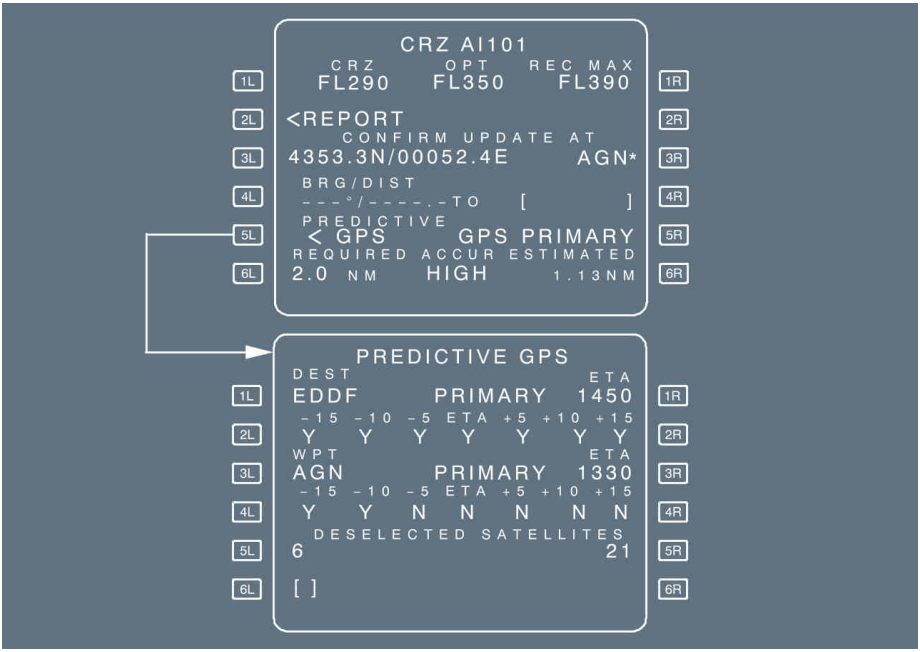
PREDICTIVE GPS PAGES

Ident.: DSC-22_20-50-10-25-00009139.0001001 / 31 AUG 17

55 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

Note: *1. This page is only operative with Honeywell ADIRS.*
2. This page cannot be used as a substitute to determine pre-flight planning RAIM availability when required by operational regulations. Refer to PRO-NOR-SOP-02 GPS PRIMARY Availability (If Installed).

The pilot accesses this page by pressing the PREDICTIVE GPS prompt of the PROG page. This page displays information relative to theoretical predictive availability of GPS PRIMARY at destination, and at any waypoint selected by the crew.



[1L] DEST — Destination, airport as currently selected in active flight plan. It is not modifiable. This field displays dashes, when no destination airport exists.

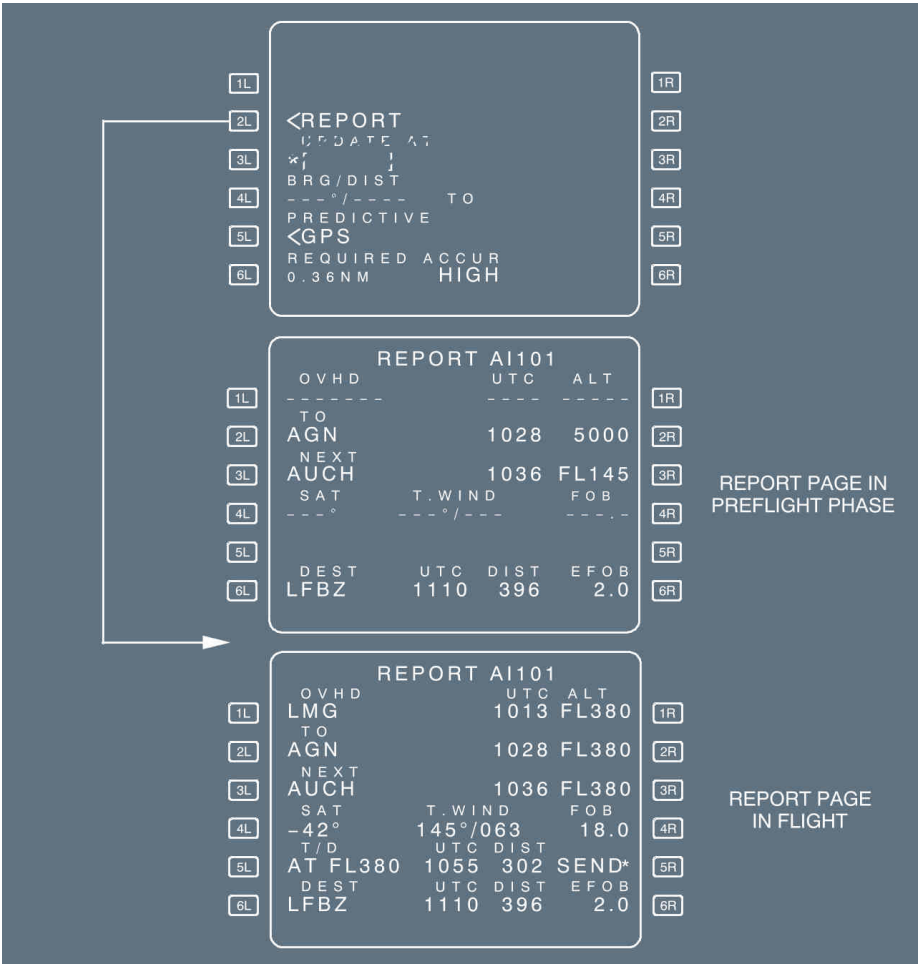
[1R] ETA	This field is defaulted to the Estimated Arrival Time, as computed by the FMS (small blue font). The pilot may enter a value in this field (large blue font). Amber boxes are displayed, when no prediction exists, or the crew entry has been cleared.
Line 2 PRIMARY Y/N	Predicted primary status at destination airport, at the following times: Estimated time of arrival ±5, 10, 15 min. Availability of GPS PRIMARY at the corresponding time is indicated by Y, when PRIMARY is predicted to be available; and, by N, when GPS PRIMARY is predicted not to be available. These fields are blanked when the destination [1L] field, or the time [1R] field is not defined.
[3L] WPT	The pilot may enter a reference waypoint in this field. Blue brackets are displayed, when no entry has been made.
[3R] ETA	When a reference waypoint has been entered in the [3L] field, amber boxes are displayed. The crew is requested to enter a reference time in this field.
Line 4 PRIMARY Y/N	Information equivalent to [2L] / [2R] is displayed for any pilot-selected waypoint. The corresponding time of arrival is also displayed.
Line 5 DESELECTED SATELLITES and Line 6 SATELLITES	Enables the pilot to deselect up to four satellites by inserting the corresponding satellite number ; the number is then displayed in large blue font. When deactivated, the satellites are not considered for predictive GPS availability at destination, or at the selected waypoint. The deselection is cancelled when the entry is cleared (blue brackets are displayed), or the field is overwritten by a different satellite number.

REPORT PAGE

Ident.: DSC-22_20-50-10-25-00000606.0009001 / 14 MAY 12

56 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The pilot calls this page by pressing the [2L] key on the PROG page:



This page displays information related to the FROM, TO, NEXT and DEST waypoints, as well as the current wind, temperature, distance and time to the next cruise profile change.

TITLE (White) — Displays the flight number. This line displays EO in amber, in case an engine-out is detected.

[1L] OVHD (green) — Displays the last sequenced waypoint. This field never displays the pseudo-waypoints and the F-PLN markers (T-P, PPOS, IN-BND, OUT-BND).

[1R] UTC/TIME ALT (green)	This field displays the time and altitude recorded at the time of sequence.
[2L]-[2R] TO (green)	This field displays the active waypoint, predicted time of arrival and predicted altitude at this waypoint. *Note: Time and altitude values are identical to those values on the F-PLN pages.*
[3L]-[3R] NEXT (green)	Same information for the next waypoint.
[4L] [4R] SAT/T.WIND/FOB (green)	This field displays the static air temperature, the wind direction and velocity, and the FOB recorded at waypoint sequencing.
[5L] T/D/UTC/DIST (green)	This field displays the estimated time, and the distance to go to the next change of the cruise profile (T/D, S/C, S/D). These data are only displayed when the cruise phase is active.
[5R] SEND* (blue)	The crew uses this prompt to downlink a position report. This field may be blank, depending on airline policy.
Line 6 DEST/UTC/DIST/EFOB	This field displays the estimated time of arrival, the distance along the F-PLN, and the estimated fuel on board (DEST EFOB) at destination. The DEST EFOB field will turn to amber, if the EFOB at destination becomes less than the MIN DEST FOB value displayed on the FUEL PRED page.. This display is identical to the information on the F-PLN pages.

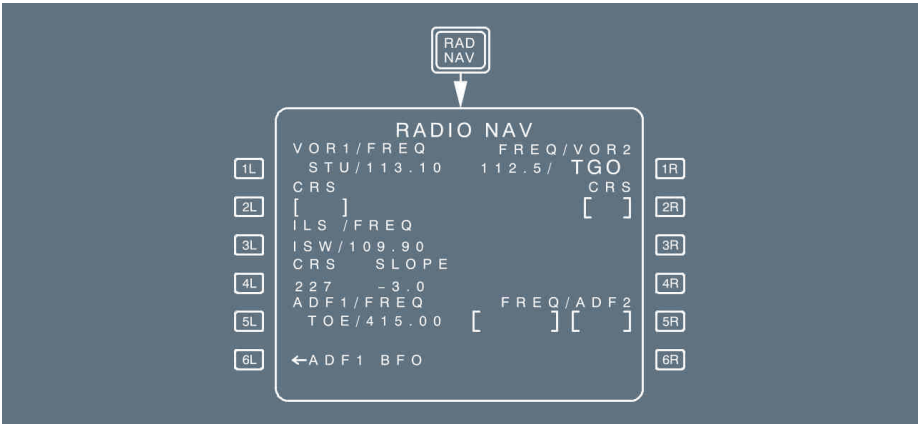
Note: No data can be inserted or modified on the REPORT page.

RADIO NAV PAGE

Ident.: DSC-22_20-50-10-25-00000607.0009001 / 06 APR 16

57 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This page enables the pilot to select or verify the radio NAVAIDs, tuned for display purposes only. These NAVAIDs include: VOR, VOR/DME, TAC, VORTAC, ILS, and ADF.



Line 1 VOR1/FREQ FREQ/VOR2	This line displays the identifiers and frequencies of VORs 1 and 2, whether they are automatically or manually tuned. To manually tune a VOR, the pilot inserts the IDENT or frequency. If the IDENT is not in the database, the new NAVAID page comes up. A “clear” action reverts the selection to the autotuned NAVAID.
Line 2 CRS	This line displays courses for the NAVAIDs in Line 1. The pilot can manually enter the courses through these fields.
[3L] LS/FREQ	This field displays the IDENT of an ILS and its frequency (for ILS). It is autotuned, if the ILS is associated to the departure runway, or if the flight plan contains an ILS approach. The flight crew may also enter an ILS manually. When the manually entered ILS differs from the ILS that the FMS would autotune, “RWY-LS MISMATCH” appears.

[4L] CRS SLOPE

CRS: This field displays the course associated with the LS displayed in Line 3. It comes up automatically if an LS is autotuned, or if an LS has been manually tuned via its IDENT. Otherwise, the course must be entered manually. The course may be backbeam (Bxxx) or frontbeam (Fxxx)..
SLOPE: This field displays the slope associated with the LS displayed in Line 3. It comes up automatically if an LS is autotuned for approach, or if an LS has been manually tuned via its IDENT.

Note:
1. *The slope does not apply to LOC only, LDA, SDF or Backbeam approaches.*
2. *If the flight crew intends to manually tune an ILS that is not in the navigation database or to manually tune an ILS by its frequency (ident not entered), and if they do not enter the course, the flight crew will not be able to arm approach modes.*

Line 5 ADF1/FREQ
FREQ/ADF2

This line displays the identifiers and frequencies of ADFs 1 and 2.
The pilot can use the IDENT or the frequency to manually tune the ADF.

Line 6 ADF1/BFO
BFO/ADF2

When an ADF is selected, these fields display an ADF/BFO prompt. The flight crew presses the key once to erase the arrow and put the ADF in BFO mode. A clear action brings the arrow back and cancels BFO.

Note:
- *The autotune function only works for NAVAIDs stored in the database.*
- *When tuning manually, the operator should use the IDENT, rather than the frequency, unless the NAVAID is not in the database.*
- *Manually-tuned frequencies are displayed in large font.*

SECONDARY PAGES

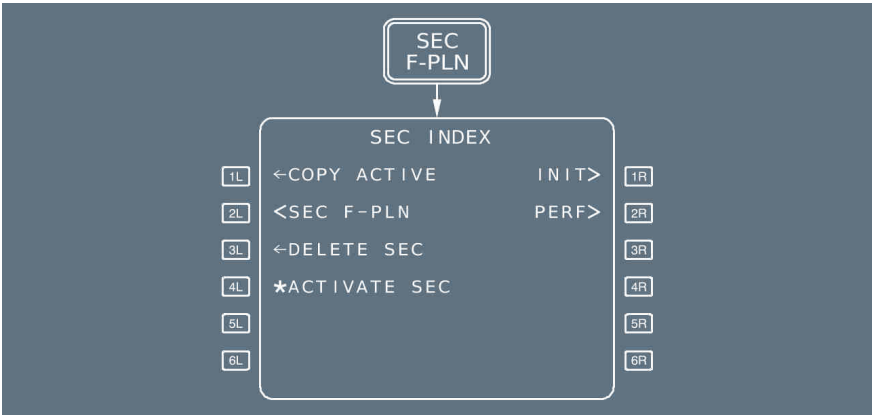
Ident.: DSC-22_20-50-10-25-00000608.0009001 / 13 FEB 13

58 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The SEC F-PLN key on the MCDU console allows the flight crew to call up the secondary index page and the secondary flight plan page. The secondary flight plan is generally for a diversion, for predictable runway changes for takeoff or landing, or for training.
There are two types of secondary index pages. The type selected depends on the presence of a secondary flight plan.

SECONDARY INDEX PAGE

A SECONDARY FLIGHT PLAN IS ALREADY DEFINED

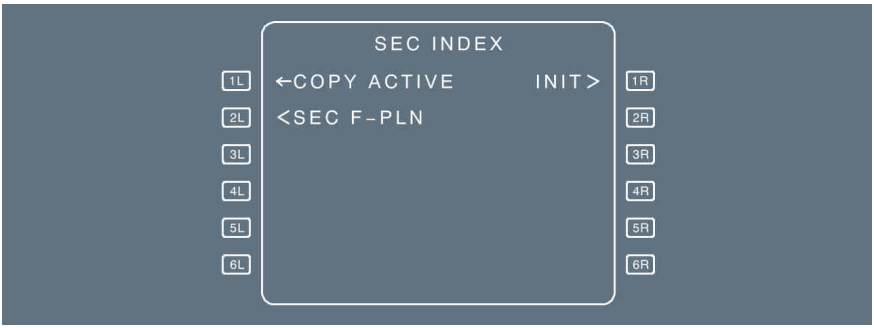


[1L] COPY ACTIVE (blue)	The flight crew presses this key to copy the active flight plan into the secondary flight plan and delete the previous secondary plan.
[2L] SEC F-PLN (white)	The flight crew presses this key to call up the secondary flight plan pages.
[3L] DELETE SEC (blue)	The flight crew presses this key to delete the current secondary flight plan.
[4L] ACTIVATE SEC (amber)	The flight crew presses this key to activate the secondary flight plan as the active flight plan.

Note: *"ACTIVATE SEC" routinely appears if the HDG/TRK mode is active. If the NAV mode is active, "ACTIVATE SEC" appears only if the active and secondary flight plans have a common active leg.*

[1R] INIT (white)	The flight crew presses this key to call up the SEC INIT A page.
[2R] PERF (white)	The flight crew presses this key to call up the performance pages for the secondary flight plan.

A SECONDARY FLIGHT PLAN IS NOT DEFINED



[1L] COPY ACTIVE (blue)	The pilot presses this key to copy the primary active flight plan into the secondary flight plan.
[2L] SEC F-PLN (white)	The pilot presses this key to call up the secondary flight plan pages.
[1R] INIT (white)	The pilot presses this key to call up the secondary INIT page. It is similar to the active INIT page, but blue brackets replace all the amber boxes.

SECONDARY FLIGHT PLAN PAGES

The secondary flight plan pages A and B are identical to those of the active flight plan, but are automatically sequenced, only when the secondary is copied from the primary and their active legs are identical.
The active and secondary flight plans pages differ from each other as follows:

SECONDARY LATERAL REVISION PAGES:

- ERASE and INSERT are not displayed.
- FIX INFO is not available.
- A lateral revision of the secondary flight plan does not create a temporary flight plan: All revisions are directly applied to the secondary flight plan.

SECONDARY VERTICAL REVISION PAGES:

A vertical revision on the secondary flight plan does not create a temporary flight plan.

SECONDARY INIT A AND B PAGES:

- They use blue brackets, instead of amber boxes.
- They have no align prompt.
- They do not provide for slewing or entering data in the 4L-4R fields (airport reference).

SECONDARY STEP ALTITUDE PAGES:

These pages operate as the primary STEP ALTS page, except that optimal step, savings are not available.

SECONDARY WIND PAGES:

They have no history wind page.

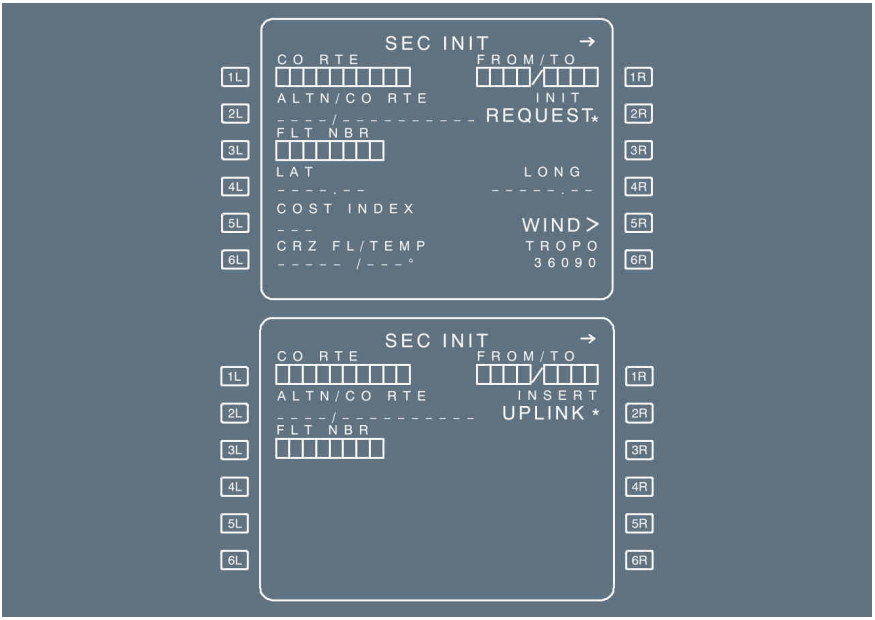
SECONDARY PERFORMANCE PAGES:

- All boxes are replaced by blue brackets.
- They have no engine-out mode, no engine-out long range cruise cost index.
- They have no expedite predictions.
- They have no ACTIVATE/CONFIRM APPROACH PHASE prompt.
- They have no PRED TO ALTN predictions on the PERF CLB and PERF DES pages.
- They have no engine-out drift down, no top of descent, no cabin descent rate information on the PERF CRZ page.

The secondary flight plan has no FUEL PRED page.

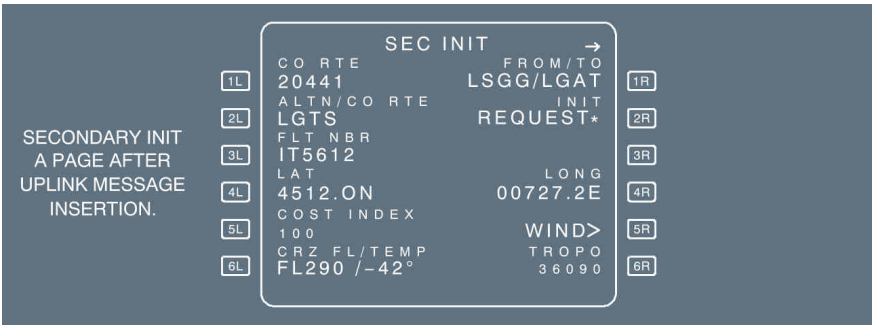
SECONDARY INIT A PAGE IS ALSO USED TO REQUEST OR DISPLAY AN UPLINK INIT MESSAGE RECEIVED AFTER ENGINE START.

This uplink INIT message can be cleared or inserted as SECONDARY INIT data.



[2R] INIT REQUEST* Enable to request init data from the ground or,

[2R] INSERT UPLINK* A downlink message has been received following a request. The message can be cleared or entered in the SEC INIT page.



BACK UP NAV PAGES

Ident.: DSC-22_20-50-10-25-00013508.0019001 / 29 JAN 13

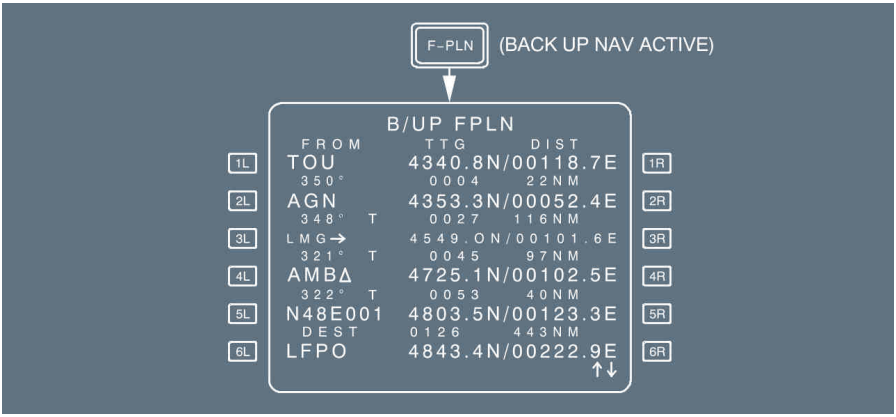
[59] **Applicable to: MSN 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The MCDU features a back up navigation function which provides simplified point-to-point GPIRS and IRS based navigation in case of a dual FM failure.
The backup Navigation mode allows limited lateral flight planning within the MCDU, that can be used to drive the Navigation Display and provides relative path position information and auto-sequencing of the Backup Navigation flight plan. The Backup Navigation flight plan reflects, as much as possible, the active primary FM flight plan upon its initial activation.
During FM normal operation, the F-PLN is continuously downloaded in the MCDU memory: the BACK UP NAV function links the MCDU of the failed FM to its onside IRS. All navigation data related to the MCDU F-PLN are displayed on the associated ND.
BACK UP NAV function is activated on the MCDU MENU page by pressing the NAV B/UP prompt.
The MCDU back-up F-PLN may accept a maximum of 165 legs, including information such as waypoint position/identification, leg type, discontinuity, overfly and turn direction information (radial, pattern, heading leg... cannot be part of the MCDU F-PLN). No secondary or temporary F-PLN exists.

BACK UP NAV pages display the data related to the BACK UP NAV function. There are six pages available while BACK UP NAV is active:
- B/UP F-PLN
- B/UP F-PLN for DIRECT TO
- B/UP PROG
- B/UP IRS for onside IRS (1+2)
- B/UP IRS 3
- B/UP GPS (if the GPS is installed)

B/UP F-PLN PAGE

The B/UP F-PLN page displays the MCDU F-PLN data. The pilot calls up this page by pressing the F-PLN key while B/UP NAV is active.



TITLE line 1 to line 5

B/UP F-PLN is displayed in a white large font

Display consecutive waypoints with their associated latitude/longitude.

If a waypoint is to be overflown, an overfly symbol (△) is displayed after the identifier.

If a turn is specified into the next leg, a large font arrow is displayed after the identifier.

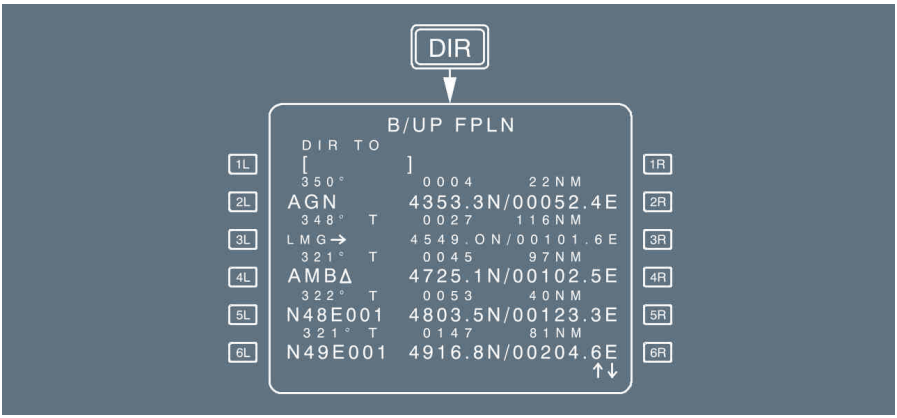
Label lines contain the bearing, time to go and distance to the next waypoint displayed in small font.

white	bearing
green	time to go and distance
BRG	Between FROM and TO waypoints: True or Mag depending on the TRUE pb-sw position. T is displayed when the bearing is true referenced. Between other waypoints: out bound true track of the great circle joining the 2 related waypoints, independant of TRUE pb-sw .
TTG	HHMM limited to 9 959. Time between the 2 related waypoints.
DIST	NM limited to 9 999.

line 6 DEST	DEST airport identifier and associated latitude/longitude. DIST to destination is computed as the direct distance from the aircraft to the active waypoint plus the along flight plan distances. time to go to destination is computed as distance to destination divided by ground speed. TTG and DEST are dashed if aircraft position is unavailable.

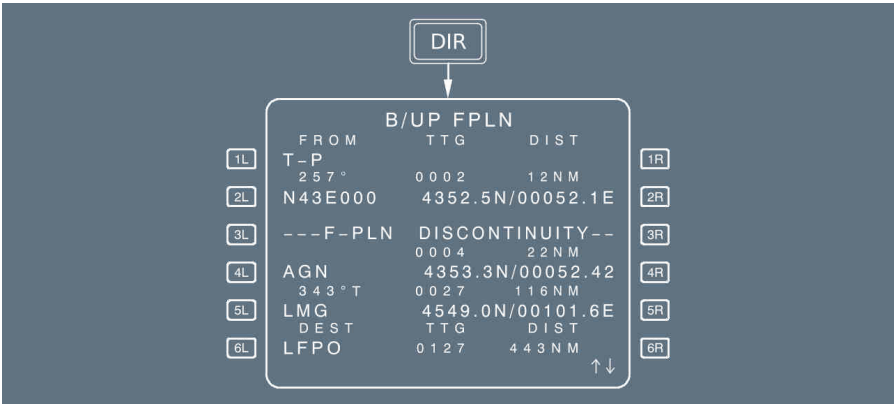
B/UP F-PLN (DIR TO)PAGE

The pilot calls up this page using the DIR key on MCDU while BACK UP NAV is active and aircraft position is valid.



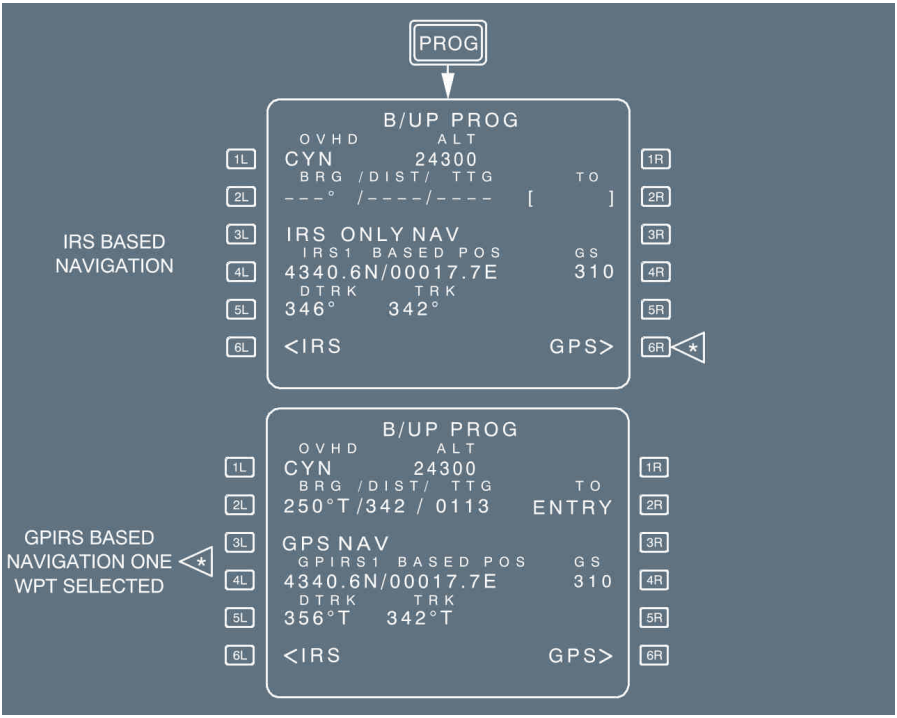
TITLE [1L] DIR TO	B/UP F-PLN is displayed in a white large font Allows DIRECT TO selection to the desired waypoint. This waypoint can be selected from the F-PLN or manually entered through the scratchpad (IDENT/LAT/LONG or LAT/LONG)
line 2 to line 6	Display consecutive waypoints of the F-PLN. Same as the B/UP F-PLN page. The TO WAYPOINT is displayed in [2L]. Vertical slewing function is available.

After a DIR TO selection, the B/UP F-PLN page is modified as following:



B/UP PROG PAGE

It displays flight parameters relative to the F-PLN or a selected waypoint.
The flight crew calls up this page by pressing the PROG key on MCDU when BACK UP NAV is active.



TITLE line 1 OVHD/ALT B/UP PROG is displayed in a white large font.
Displays the identifier of the last sequenced waypoint and the altitude at the time of the sequence.

line 2 BRG/DIST/TTG/TO — Allows the flight crew to enter an existing MCDU F-PLN waypoint identifier or LAT/LONG or IDENT/LAT/LONG.
MCDU then computes bearing, distance and time to go to that waypoint from the present position.
The pilot may modify or clear this entry (2R field).

- BRG — True or magnetic outbound track of the great circle joining aircraft present position to the entered waypoint: dependent on the TRUE pb-sw ◁ position.
- DIST — limited to 9 999.
- TTG — HHMM limited to 9 959. time to go to the entered position computed assuming current ground speed.

These fields are displayed in a green small font.
They are dashed if present position is unavailable.

[3L] — Means of navigation used by the Back-Up Navigation. If GPS is fitted and is the navigation source, “GPS NAV” is displayed, otherwise “IRS ONLY NAV” is displayed.
If the GPS is not installed, this field is blank.

[4L] IRS 1 (2 or 3) BASED POS GPIRS 1 (2 or 3) (green) — Current aircraft position provided by the selected IRS GPIRS
IRS 1 (or 3 if IRS 1 failed) on MCDU 1
IRS 2 (or 3 if IRS 2 failed) on MCDU 2
GPIRS 1 (or GPIRS 3) or MCDU 1 ◁
GPIRS 2 (or GPIRS 3) or MCDU 2 ◁

[4R] GS (green) — Current ground speed from the selected IRS or GPS ◁ .

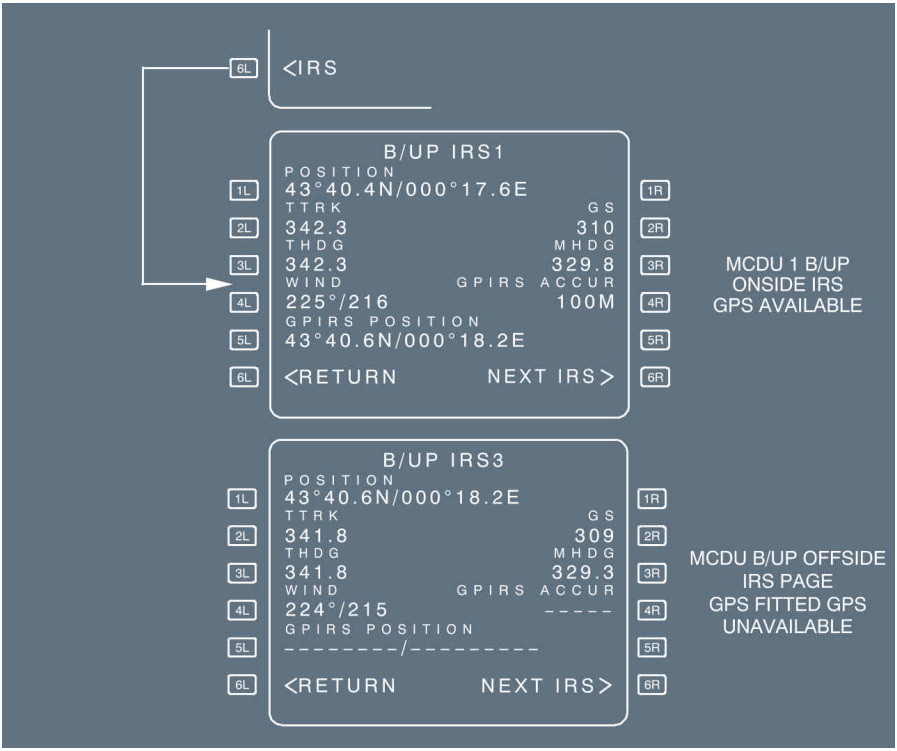
[5L] DTRK/TRK (green) — Desired track of the MCDU F-PLN active leg and current aircraft track from the selected IRS/GPS (True or Mag).
These tracks are true or magnetic depending on TRUE pb-sw ◁ position.

[6L] IRS 1 (2) — Gives access to onside B/UP IRS (1 or 2) page

[6R] GPS — Gives access to B/UP GPS page.
This prompt only appears when the GPS is installed.

B/UP IRS 1 OR 2 OR 3 PAGE

Display IRS 1, 2, 3 navigation data.
The pilot calls up this page from B/UP PROG page, by pressing the corresponding prompt.



TITLE	B/UP IRS 1, 2, 3 displayed in a white large font.
[1L] POSITION	Current aircraft position from selected IRS
[2L] T TRK	True track
[2R] GS	Ground speed
[3L] T HDG	True heading
[3R] M HDG	Magnetic heading Dashed when in polar area.
[4L] WIND	Wind direction and velocity Wind direction is always true referenced.
[4R] GPIRS ACCUR	GPS accuracy in meters as in the IRS page.
[5R] GPIRS POSITION	If GPS is installed, the GPS IRS position is provided as in the IRS page.
[6L] RETURN	Gives access to B/UP PROG page

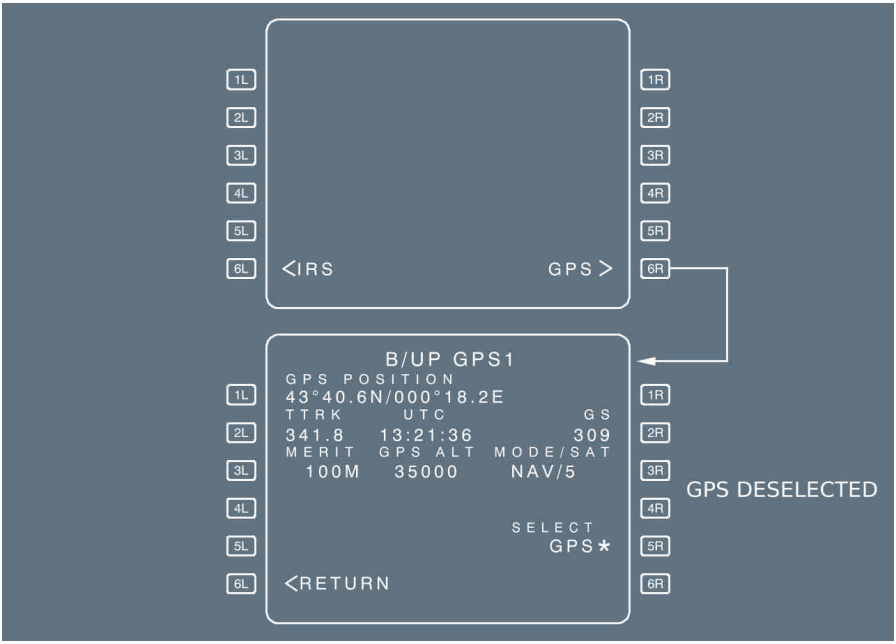
[6R] NEXT IRS — Gives access to the next IRS page.
(Closed loop 1 → 2 → 3 → 1)

This page is not modifiable by the crew.

Note: The fields [4R] and [5L] are blanked when the GPS is not installed.

B/UP GPS

Display GPS navigation data.
The flight crew calls up this page from B/UP PROG page, by pressing the corresponding prompt.



TITLE	B/UP GPS 1, 2 displayed in a white large font.
[1L]	GPS POSITION
Line 2:	TTRK GPIRS position (latitude/longitude) UTC: Time GS: Ground Speed
Line 3:	MERIT: GPS figure of merit GPS ALT: GPS altitude MODE/SAT: Navigation mode and number of tracked satellites. These values are displayed as in the FM GPS page.

[5R]	DESELECT/SELECT GPS: The flight crew may select and deselect the GPS for navigation Backup function. The default configuration is GPS selected.

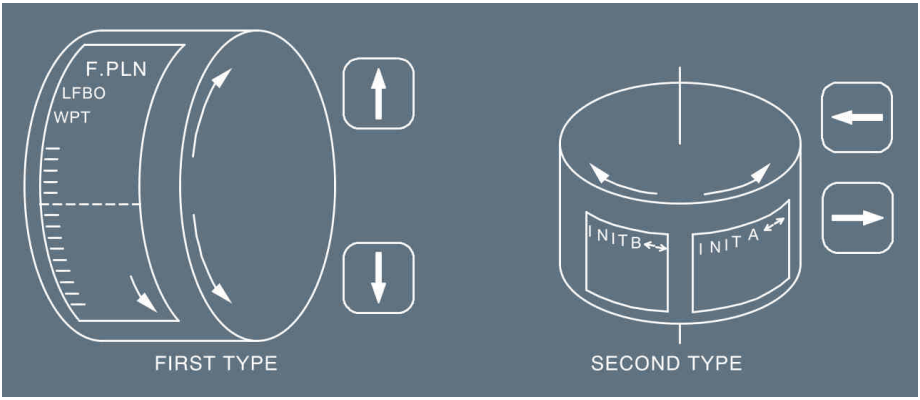
Intentionally left blank

FMS2 Thales

GENERAL

Ident.: DSC-22_20-50-10-28-00000813.0001001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The Flight Management and Guidance System (FMGS) displays information on several “pages”. When a page cannot display all of the assigned information, it cues the pilot to call up additional information. There are three types of pages, and each type has its particular way of cuing the pilot to call up additional information.



FIRST TYPE

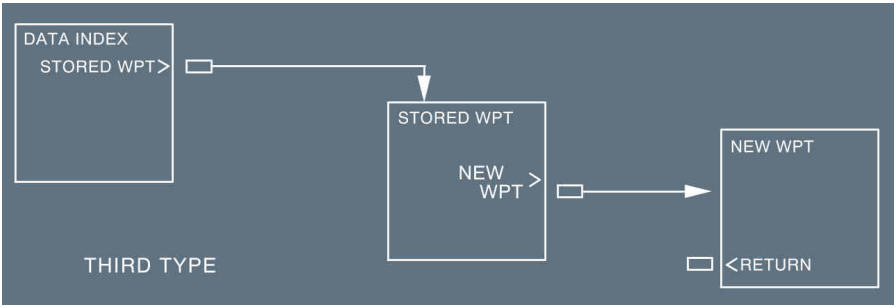
When this page cannot simultaneously display all the information on the screen (more information than the six pairs of lines can hold), the pilot can scroll up or down the page.
In this case, the screen displays a ↑ ↓ symbol in the bottom right-hand corner (F-PLN pages, secondary F-PLN page, departure/arrival pages,...).

SECOND TYPE

When the information is on successive pages, the pilot presses the “→” or "←" keys to sequentially call up these pages.
In this case, an arrow is displayed in the top right-hand corner of the screen (INIT pages).

THIRD TYPE

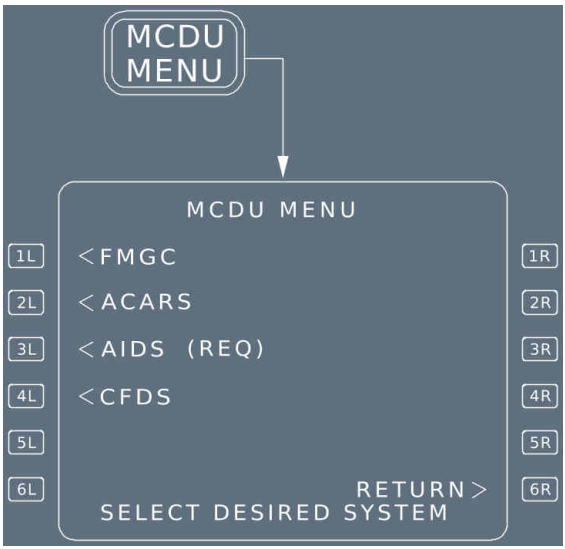
When different types of information are on successive pages, the pilot calls up these pages by pressing the key adjacent to the prompts : >, < or *.



MCDU MENU PAGE

Ident.: DSC-22_20-50-10-28-00000814.0001001 / 16 MAR 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03541

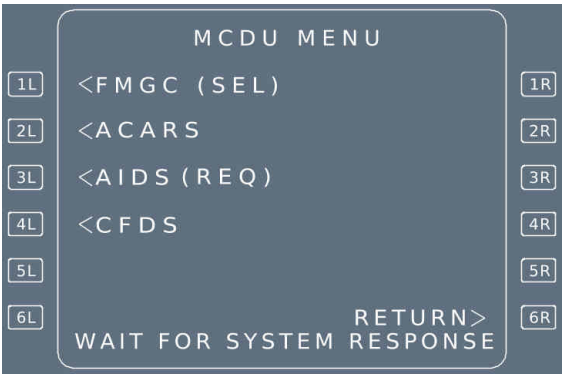
This page lists the various systems which are accessible via the MCDU. The system automatically displays this page at power up.



The pilot selects a system by pressing the key adjacent to the name of that system.

The screen shows the name of the selected system in:
- Green, if communication is established.
- Blue, associated with the (SEL) indicator, until communication is established. The scratchpad displays “WAIT FOR SYSTEM RESPONSE”.
- White, associated with the (TIME OUT) indicator, if the MCDU cannot establish communication with the selected system.

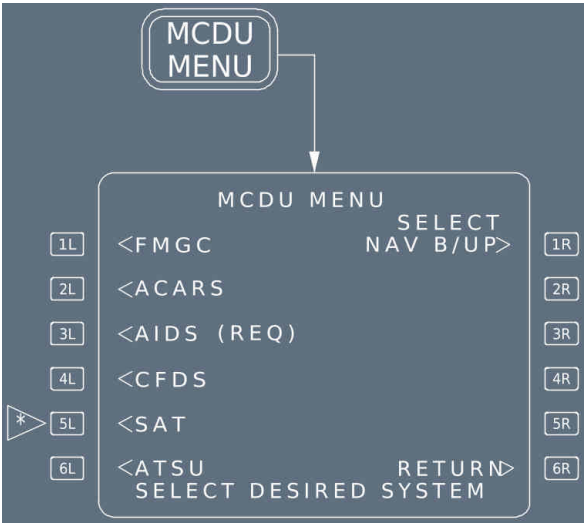
When a system calls for the pilot's attention, the MCDU displays “REQ” next to the system's name, and the “MCDU MENU” annunciator lights up.
When the pilot presses the key next to the name of the system that requires attention, the “MCDU MENU” annunciator light goes off.
When the MCDU is communicating with a system other than the FMGC, the pilot should use the MCDU MENU page to revert to the FMGC system.



MCDU MENU PAGE

Ident.: DSC-22_20-50-10-28-00000814.0012001 / 16 MAR 11
Applicable to: MSN 03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

This page lists the various systems which are accessible via the MCDU. The system automatically displays this page at power up.



The flight crew selects a system by pressing the key adjacent to the name of that system.

The screen shows the name of the selected system in:
- Green, if communication is established.
- Blue, associated with the (SEL) indicator, until communication is established. The scratchpad displays “WAIT FOR SYSTEM RESPONSE”.
- White, associated with the (TIME OUT) indicator, if the MCDU cannot establish communication with the selected system.

When a system calls for the flight crew’s attention, the MCDU displays “REQ” next to the system’s name, and the “MCDU MENU” annunciator lights up.
When the flight crew presses the key next to the name of the system that requires attention, the “MCDU MENU” annunciator light goes off.
When the MCDU is communicating with a system other than the FMGC, the pilot should use the MCDU MENU page to revert to the FMGC system.

SELECT NAV B/UP	Pressing the [1R] key selects the NAV B/UP function and DESELECT NAV B/UP appears in the [1R] field. If the NAV B/UP is inoperative, the field is blank.
RETURN	This field is displayed when a function is active.

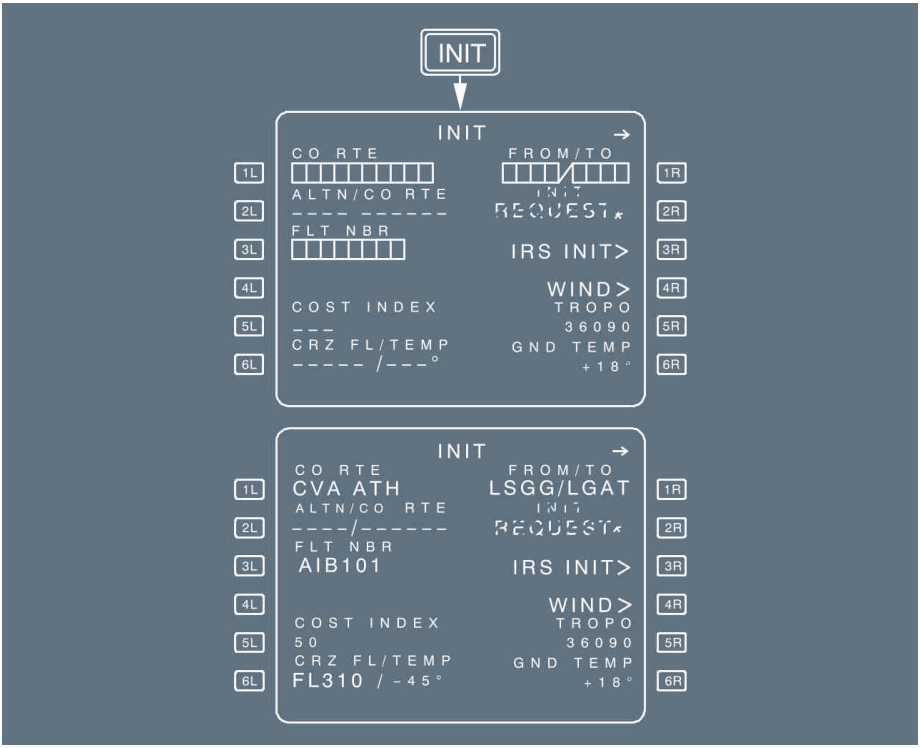
If the MCDU attempts to communicate with a system, “SEL” is displayed next to the system name.

INIT A PAGE

Ident.: DSC-22_20-50-10-28-00000815.0021001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The flight crew uses the INIT A page in pre-flight phase, to initialize the flight plan and align the inertial reference system.
The flight crew accesses this page by pressing the INIT key on the MCDU.
The INIT A page can be accessed on ground or in flight.
When in the done phase, the pilot can press the INIT key to begin the next preflight phase.

Note: *The flight crew may also call up this page by pressing:*
- *The "→" or "←" keys on the MCDU, when on the INIT B page, or*
- *The key next to "RETURN" or "INSERT" on the ROUTE SELECTION page.*



[1L] CO RTE (blue)	If the flight crew enters a company route number, the screen displays all data associated with that route (8 or 10 characters, depending on the pin program). Inserting the CO RTE into the RTE selection page also enters the CO RTE number in this field.
[2L] ALTN/CO RTE (blue)	This field is dashed, until a primary destination is entered in the 1R field. If a preferred alternate is associated with the primary destination in the Navigation Database, it is displayed in this field with the company route identification. The crew may manually enter an alternate and company route. If the preferred alternate is not associated with the primary destination, “NONE” is displayed in this field. When the alternate route and the primary destination do not match, the MCDU scratchpad displays “DEST/ALTN MISMATCH”. If the primary destination is changed, this field is modified accordingly.
[3L] FLT NBR (blue)	The flight number automatically appears in this field, if it is stored with the company route. The flight crew may modify it, or enter a new number here.
[5L] COST INDEX (blue)	This is usually stored in the database, along with the company route. The flight crew may modify it, or enter a new value here. It defaults to the last entered value, if a value is not stored in the database.
[6L] CRZ FL/TEMP (cruise flight level and temperature)	The cruise flight level is usually stored in the database, along with the company route. If not, it has to be entered manually. If no cruise flight level is entered, the system will not furnish predictions, while the aircraft is on ground. The flight crew has to enter the temperature at cruise flight level in order to refine the predictions. Otherwise, these are computed for ISA conditions. (If no sign is entered, the system uses a plus).
[1R] FROM/TO (blue)	The flight crew can enter a city pair in this field (ICAO codes for city of origin and destination). This entry automatically deletes any previously-entered company route, and calls up the route selection page (if a company route exists). If one airfield of the pair is not in the database, the display changes to the NEW RWY page.

[2R] INIT REQUEST ◁✻	This prompt is displayed, if the pilot did not enter an active flight plan, or entered a flight number or a company route that is not in the aircraft database. Selecting this prompt sends the ground a request for active flight plan initialization (downlink message). When the asterisk is not displayed, a downlink message cannot be sent. The uplink flight plan is automatically inserted in the active flight plan, before engine start, provided that an active flight plan does not exist. After engine start, the uplink flight plan is sent to the secondary flight plan, and manually-inserted or rejected (Refer to DSC/Auto Flight - Flight management/AOC Fonctions ◁✻).
[3R] IRS INIT	The flight crew presses this key to access the IRS INIT page.
[4R] WIND	The crew presses this key to access the pages, unless a temporary flight plan exists. In this case, the scratchpad displays “TEMPORARY F-PLN EXISTS”.
[5R] TROPO (blue)	The default tropopause altitude is36 090 ft. The pilot can use this field to modify the tropopause altitude (99 990 ft maximum).
[6R] GND TEMP (blue)	When a CO RTE or a FROM/TO is defined, the ground temperature value corresponds to the standard ISA temperature at the origin airport elevation. The flight crew can modify this value as required on the pre-flight phase.

ROUTE SELECTION PAGE

Ident.: DSC-22_20-50-10-28-00000818.0001001 / 16 MAR 11

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

This page displays all the company routes, stored in the database, that are associated with the inserted city pair. They can either be called up manually, or displayed automatically.

- Manually: The pilot presses the FROM/TO or ALTN key on the INIT A page when a city pair is displayed.
- Automatically: The system displays it, when the pilot enters a city pair or defines an alternate on the INIT A page of the active or secondary flight plan.

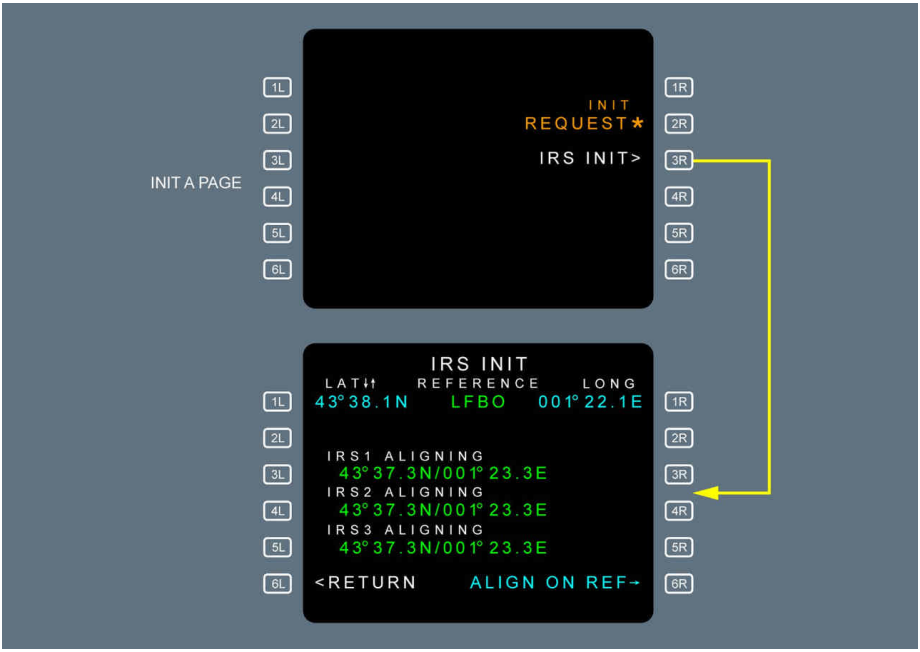
TITLE	Idents for the city pair inserted on the INIT A page. (The numbers in the upper right-hand corner are the total number of company routes from this city pair stored in the database).
[1L]	This field shows the name of the company route. "NONE" appears, if there is no company route for this city pair.
Line 2 to Line 5	These fields display the various elements of the company route : Waypoints appear in large green font, and airways in small white font.
[6L] RETURN	The pilot presses this key to return to the INIT A page.
[6R] INSERT or SELECT	This prompt displays an amber INSERT (blue for the secondary flight plan), if the pilot accessed the page from the INIT A (or secondary INIT A) page. It displays SELECT (blue) if the crew accessed the page from the alternate page. The pilot presses this key to insert the displayed company route in the respective flight plan and to return the display to the accessing page.

Note: *The pilot can scroll to display the rest of the route (if one page does not show it all), or other company routes for this city pair.*

IRS INIT PAGE

Ident.: DSC-22_20-50-10-28-00009556.0046001 / 30 AUG 18
Applicable to: MSN 02135, 02139-02204, 02359, 02405, 02482, 03071, 03308, 03357-03618, 03782-04312, 04328-04384, 04433, 04481-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-05313

The flight crew uses the IRS INIT page to align the inertial reference system. The crew accesses this page, by pressing the IRS INIT key on the INIT A page.



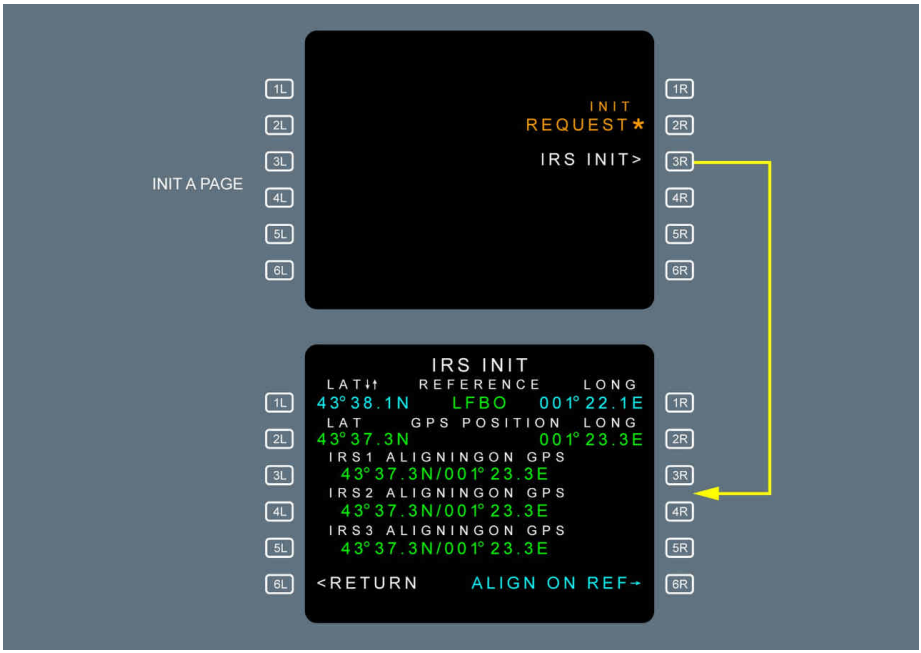
Line 1 LAT-REFERENCE-LONG	This line provides the latitude and longitude of the FM reference position. This reference is extracted from the navigation database. The flight crew can modify this reference. Only when the FM reference position matches the origin airport position, the airport identifier is displayed in green. Otherwise, there are dashes at the place of the airport identifier. Latitude and longitude of the FM reference position are displayed in blue. The flight crew can modify the latitude and longitude values using the scroll keys.
Line 3 to 5	These lines display the IRS 1-2-3 alignment state, source and latitude/longitude. The alignment status can be ALIGNING, or ALIGNED or IN ATT. It is displayed in white font. The latitude and longitude values are displayed in green
[6L] RETURN	This prompt enables the crew to return to the INIT A page.

[6R] If a reference is available, this field displays ALIGN ON REF → in blue which is replaced by CONFIRM ALIGN * in amber when 6R prompt is pressed. Pressing again the 6R prompt enables the transmission of the FM reference position displayed in line 1.

IRS INIT PAGE

Ident.: DSC-22_20-50-10-28-00009556.0052001 / 30 AUG 18
Applicable to: MSN 01957-02097, 02121, 02138, 02443, 02712, 02908-02914, 03138-03264, 03330, 04314, 04393-04399, 04438, 05158, 05365-06336

The flight crew uses the IRS INIT page to align the inertial reference system. The crew accesses this page, by pressing the IRS INIT key on the INIT A page.



Line 1 LAT-REFERENCE-LONG	This line provides the latitude and longitude of the FM reference position. This reference is extracted from the navigation database. The flight crew can modify this reference. Only when the FM reference position matches the origin airport position, the airport identifier is displayed in green. Otherwise, there are dashes at the place of the airport identifier. Latitude and longitude of the FM reference position are displayed in blue. The flight crew can modify the latitude and longitude values using the scroll keys.
Line 2 LAT-GPS POSITION-LONG	These lines display the IRS 1-2-3 alignment state, source and latitude/longitude.
Line 3 to 5	The alignment status can be ALIGNING ON XXX, or ALIGNED ON XXX or IN ATT. XXX is the alignment source and can be GPS or CDU or REF. It is displayed in white font. The latitude and longitude values are displayed in green.
[6L] RETURN	This prompt enables the crew to return to the INIT A page.
[6R]	If a reference is available, this field displays ALIGN ON REF → in blue which is replaced by CONFIRM ALIGN * in amber when 6R prompt is pressed. Pressing again the 6R prompt enables the transmission of the FM reference position displayed in line 1.

WIND PAGES

Ident.: DSC-22_20-50-10-28-00009557.0021001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

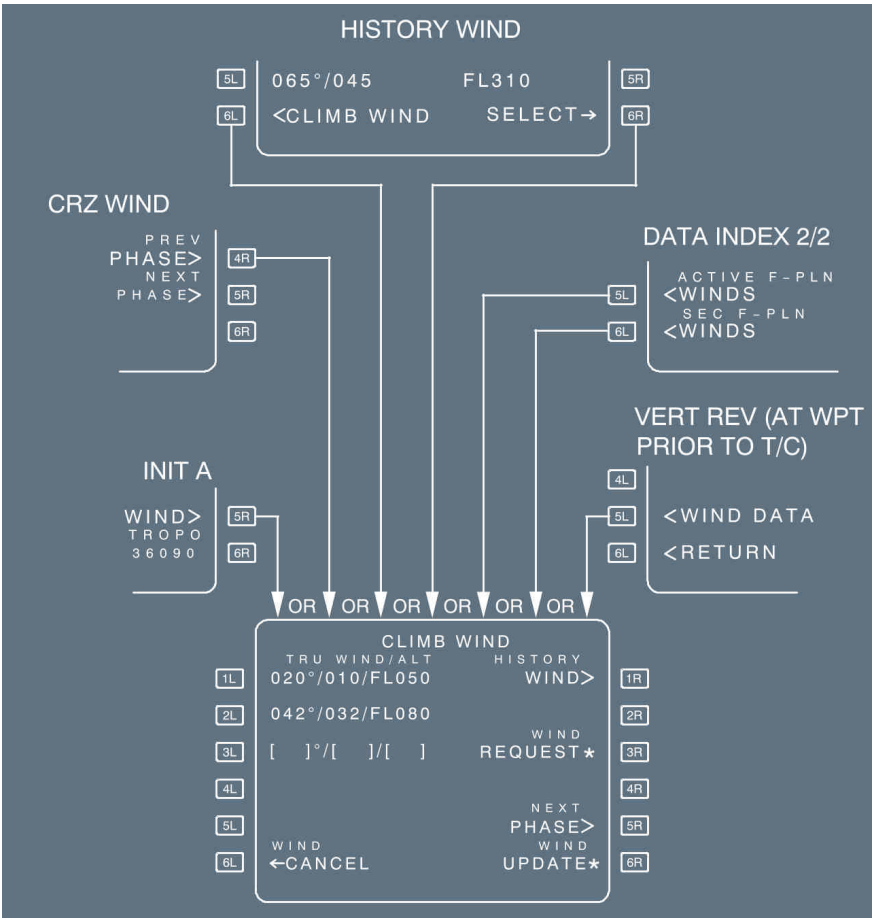
Winds in climb, cruise, descent, and approach are necessary to provide the pilot with reliable predictions and performance. Wind pages enable the pilot to enter and/or review the winds propagated by the FMGS or sent by ACARS for the various flight phases.

Note: *1. On the WIND pages, wind direction is always true-referenced.*
2. On the WIND pages, pending wind data exist as soon as a wind entry or a modification is performed on any of the WIND pages and until WIND UPDATE or WIND CANCEL is selected.

CLIMB WIND PAGE

This page enables the pilot to enter and/or review predicted wind vectors (direction and velocity) at up to 5 different levels.

THE CLIMB WIND PAGE IS ACCESSED FROM:



TITLE	"CLIMB WIND" is displayed in large white font. "DRAFT" is displayed next to "CLIMB WIND", in yellow large font, when pending wind data exist for the active flight plan.

[1L] to [5L] TRU WIND/ALT	This field displays the winds, entered at various climb altitudes: before climb phase, in yellow when pending wind data exist, and blue otherwise. In green, after climb phase activation. This field may also display history winds. Large blue brackets are displayed before any wind entry. Flight crew-entered winds are displayed in large blue font. History wind data is displayed in small green font. Upon sequencing the top of climb, the climb winds are deleted.
[6L] RETURN or WIND CANCEL	The RETURN prompt is displayed in large white font, when no wind entry is performed. Selecting this prompt reverts to the access page. The WIND CANCEL prompt appears in amber, as soon as a wind entry is performed. It is used to cancel a wind data update. *Note:* *Climb winds are not deleted, when the origin airport is changed.*
[1R] HISTORY WIND	This key calls up the history wind page and is only displayed in the preflight phase. It cannot be modified (white font), but can be inserted into the CLIMB WIND page by using the 6R key and modified accordingly.
[3R] WIND REQUEST	Pressing this key sends a request for AOC winds. (Refer to DSC-22_20 Auto Flight - Flight Management / 70 AOC Functions / B Wind Data / Wind Data - Request for Wind Data).
[5R] NEXT PHASE	Pressing this key calls up the CRZ WIND page, or the DESCENT WIND page, if no cruise waypoint exists. It is displayed in white font.
[6R] WIND UPDATE	This prompt is displayed in amber, as soon as a wind entry or a modification is performed. When it is pressed winds are inserted.

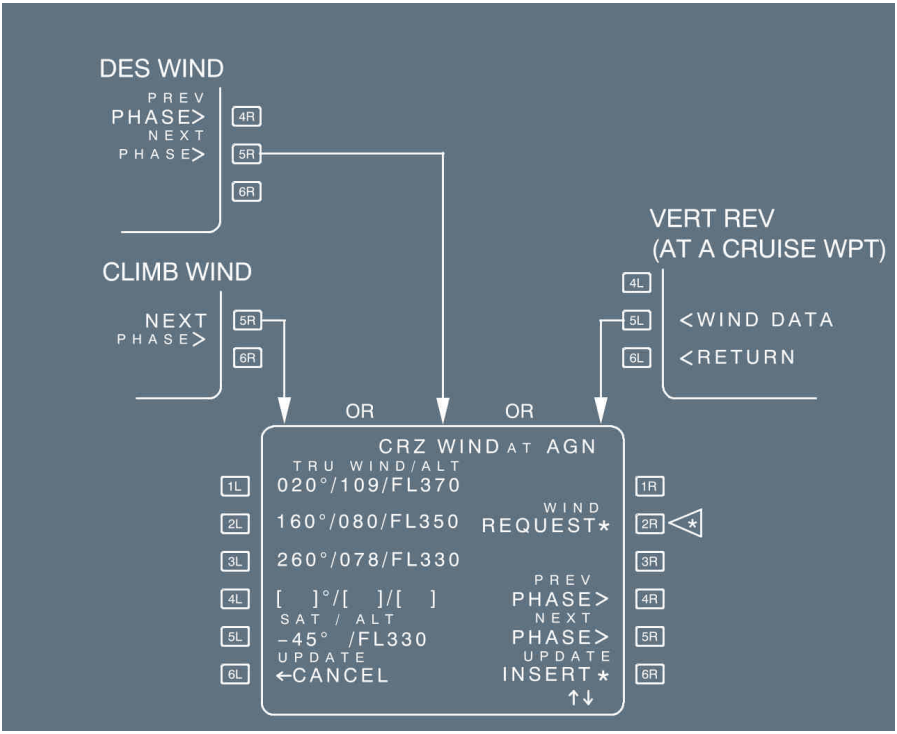
HISTORY WIND PAGE

[1L] to [5L]	The history winds are given for the default altitudes of FL 050, FL 150, FL 250 and the CRZ FL of the previous flight. They are displayed in yellow when pending data exist, in blue otherwise.
[6L] CLIMB WIND	This key reverts the display to the CLIMB WIND page. It is displayed in white font.
[6R] SELECT	This key inserts the history wind values into the CLIMB WIND page. This prompt is displayed in amber, if no wind has been inserted yet.

CRZ WIND PAGE

The CRUISE WIND page allows the entry and display of predicted wind data (direction and velocity) for each cruise waypoint.
Until weight data is entered and predictions are computed, cruise winds may be entered at any waypoint that is not part of a SID, STAR or approach.
The CRZ WIND page also enables the definition of a temperature at a given altitude to refine the predicted temperature profile. It is accessed from the CLIMB or DESCENT WIND page, or by pressing the WIND DATA prompt on the VERT REV page of a cruise waypoint. The flight crew can scroll from a cruise waypoint to the next one by using the MCDU scroll keys. Once the last cruise waypoint is reached, the “up arrow”slew key allows access to the first cruise waypoint.
The flight crew can enter wind data for each cruise waypoint at up to four different altitudes.

Note: This set of four altitudes is defined for the whole cruise phase. Entering a new altitude at a cruise waypoint will remove the previous altitude from the computations.

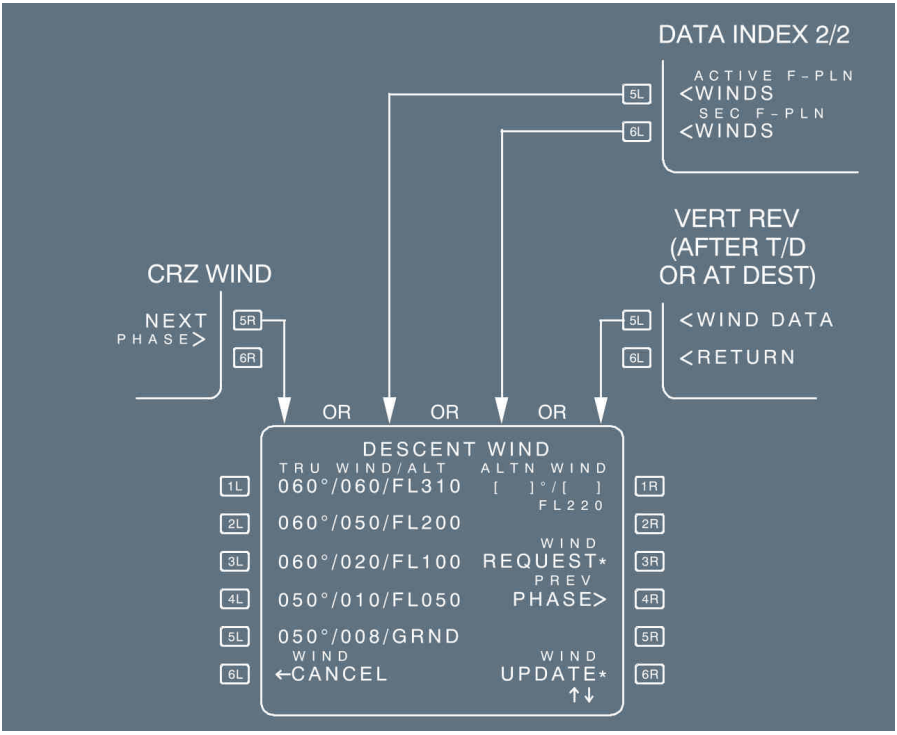


TITLE	”CRZ WIND AT” is displayed in white font. “DRAFT” is displayed next to “CRZ WIND AT”, in yellow large font, when pending wind data exist for the active flight plan. The cruize waypoint at which the wind data is defined is displayed in green large font.
[1L] to [4L] TRU WIND/ALT	These fields display the entered winds at various altitudes. The entered winds are propagated at the same altitude to the downpath cruise waypoints, if no other winds are entered. The propagated wind direction and velocity are displayed in small font. Both the uplinked winds and the pilot-entered winds are displayed in large font. Wind data can be modified during cruise. Wind data is displayed in yellow when pending winds exist and in blue when inserted.

[5L] SAT/ALT	This field enables the crew to enter a temperature at a given flight level, or it displays a propagated value. The flight crew must enter both temperature and altitude at the first entry. They can then modify the temperature or the altitude independently. SAT and Altitude are displayed in yellow when pending winds exist and in blue otherwise.
[6L] RETURN or WIND CANCEL	The "< RETURN" prompt is displayed when no modification has been performed on any WIND page. Selecting this prompt reverts to the page from which WIND pages have been accessed when modifications have been performed on any WIND page, the "WIND CANCEL" prompt is displayed. Selecting this prompt cancels all modifications to the WIND pages.
[2R] WIND REQUEST	Pressing this key sends a request for ACARS winds. (Refer to DSC-22_20 Auto Flight - Flight Management / 70 AOC Functions / B Wind Data / Wind Data - Request for Wind Data).
[4R] PREV PHASE	This prompt is displayed in white in Preflight, Takeoff, Climb, Done and Go-Around phases. Pressing this prompt calls up the CLIMB WIND page.
[5R] NEXT PHASE	This prompt is displayed in white. Pressing this prompt calls up the DES WIND page.
[6R] WIND UPDATE*	This prompt is displayed when entries or modifications have been performed on any WIND page. Selecting this prompt inserts all the modifications performed on the WIND pages. Predictions are dashed on the F-PLN pages during the recomputation time. CRZ WIND page automatically reverts to F-PLN page, if the secondary flight plan is activated.

DESCENT WIND PAGE

This page enables the pilot to define and display the winds used for computing the descent profile at up to 5 descent altitudes.
The pilot calls it up by selecting NEXT PHASE on the CRUISE WIND page, or the WIND prompt on the VERT REV page.



TITLE

"DESCENT WIND" is displayed in large white font. "DRAFT" is displayed next to "DESCENT WIND" in yellow large font when pending wind data exist for the active flight plan.

[1L] to [5L] TRU WIND/ALT

These lines display inserted winds or uplinked winds: in yellow when pending data exist, and in blue otherwise, prior to activating the descent phase (modifiable values). In green after descent phase activation (not modifiable values).

An entry of "GRND" in the "ALT" field is seen as the wind at ground level. This wind is copied on to the PERF APPR page (and corrected for the magnetic variation), and used for the computation of the predictions.

A clear action on one key reverts the line to blue brackets.

[6L] RETURN or WIND CANCEL	The RETURN prompt is displayed in white large font, when no wind entry is performed. Selecting this prompt reverts to the access page. The WIND CANCEL prompt appears in amber, as soon as a wind entry is performed. It is used to cancel a wind data update.

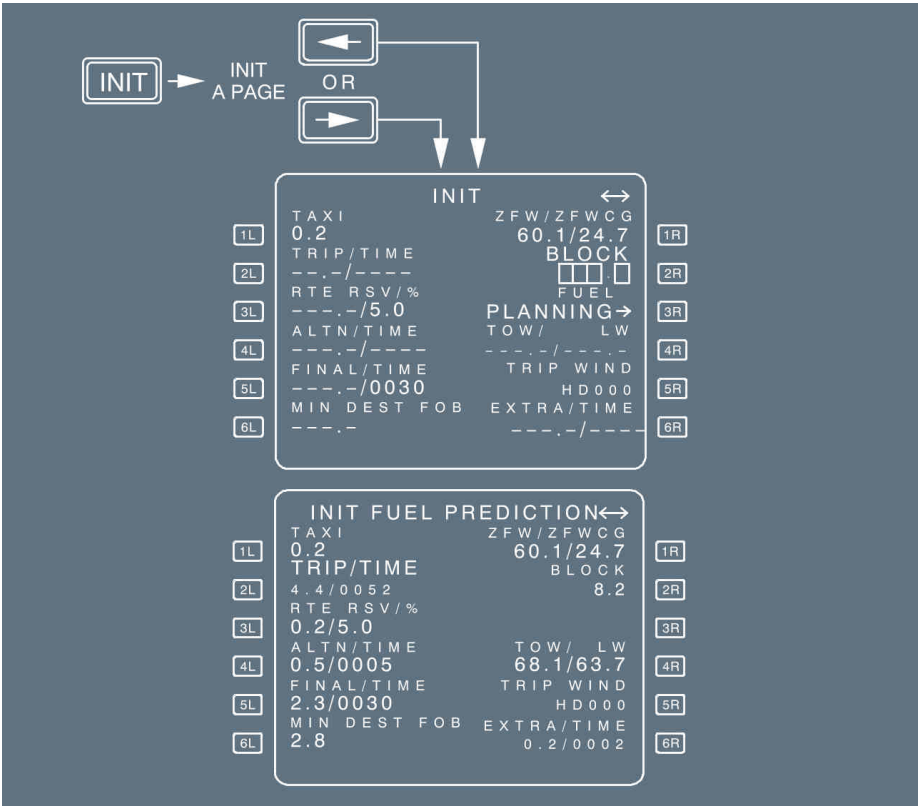
Note: *Descent and alternate winds are deleted, if the destination airport is changed.*

[1R] ALTN WIND	This field is only displayed when an alternate is defined. The flight crew-entered or uplinked value is displayed in large yellow font when pending data exist, and in blue otherwise. It can always be modified by the pilot.
[2R] FLXXX	This field displays an uplinked alternate cruise altitude in the label line. If no uplink is done, this field displays the FMS alternate cruise flight level in small green font.
[3R] WIND REQUEST	Pressing this key sends a request for ACARS winds (Refer to DSC-22_20 Auto Flight - Flight Management / 70 AOC Functions / B Wind Data / Wind Data - Request for Wind Data).
[4R] PREV PHASE	Pressing this key calls up the CRZ WIND page. The prompt is erased after the top of descent is sequenced. It is displayed in large white font.
[6R] WIND UPDATE	This prompt is displayed in amber, as soon as a wind entry or a modification is performed. Pressing the up (down) scroll key will display the data at the next (previous) downpath (up path) descent waypoint.

INIT B PAGE

Ident.: DSC-22_20-50-10-28-00000824.0021001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

This page is used to initialize the gross weight and center of gravity values, before starting the engines.
The crew can call it up from the INIT A page, by pressing the "→" or "←" key on the MCDU, as long as the engines have not been started.
This page automatically reverts to the FUEL PRED page after the first engine is started.
The FMGC will stop using the pilot-entered block fuel and will compute its predictions based on the FOB indicated by the FQI computer (or the FAC as backup) from that moment on.



[1L] TAXI (blue)

This is the taxi fuel, that defaults to a preset value, (usually 200 kg or 400 lb in the AMI file). The crew can change the value through this field.

[2L] TRIP/TIME (green)

This field displays the trip fuel and time when predictions are available. The crew cannot modify these values.

[3L] RTE RSV/% (blue)

This field displays the contingency fuel for the route and the corresponding percentage of trip fuel. It may be equal to 0.0, if such is the policy of the operator. The crew can either enter a fuel quantity, a percentage.

[4L] ALTN/TIME (blue/green) Displays alternate trip fuel and time, assuming that the Cost Index = 0 and that the aircraft flies at the default cruise flight level. (*Refer to DSC-22_20-30-10-18 Alternate Function - Review and Selection of Alternate Airport*). The flight crew can modify the alternate fuel as required. In this case, alternate time will be dashed.

[5L] FINAL/TIME (blue) Displays the final reserve fuel and time calculated at the alternate airport (or destination airport, if selected in the “airline fuel policy” section of the AMI). Before any crew entry, the FINAL field is dashed and FINAL TIME field is defaulted to the value specified in the AMI file (typically 30 min).
The flight crew may enter a final fuel or time, and the system will compute associated holding time/fuel available. The system assumes a holding pattern at 1 500 ft AGL with the aircraft in CONF 1 at maximum endurance speed (racetrack pattern, altitude and selected airport can be modified through the “airline fuel policy” section of the AMI).

[6L] MIN DEST FOB (blue) Displays the expected minimum fuel at destination. It is equal to the ALTN + FINAL fuel. This field can be modified by the flight crew, and is also impacted by the modification of ALTN and/or FINAL fuel.

Note: If flight crew entry of MIN DEST FOB is lower than ALTN + FINAL fuel, the message “CHECK MIN DEST FOB” is triggered on the MCDU.

[1R] ZFWCG/ZFW (blue) Displays the Zero Fuel Weight (ZFW) and Zero Fuel Weight CG (ZFWCG). The flight crew must enter the ZFW/ZFWCG values (as appropriate) to obtain a speed profile and predictions.

Note: If the flight crew enters a ZFW value that exceeds the acceptable range as defined in the performance data base, the “ENTRY OUT OF RANGE” message appears and the value is rejected.

[2R] BLOCK The block fuel in this field is a mandatory entry.
When the flight crew enters a block fuel, the page title changes to INIT FUEL PREDICTION.

[3R] FUEL PLANNING (amber)	Initiates an FMGC block fuel computation using current hypothesis and extra = 0. When the pilot selects this function, FUEL PLANNING becomes green, and the BLOCK field is dashed during FMGC computation. The title of the page changes to INIT FUEL PLANNING, and BLOCK CONFIRM* replaces the FUEL PLANNING prompt, when the block fuel is computed by the FMGC. If the pilot modifies the parameters used to compute prediction before confirmation, the computation automatically restarts and FUEL PLANNING is displayed in green.
[4R] TOW/LW (green)	Displays the computed Takeoff Weight (TOW) and Landing Weight (LW) at the primary destination. This cannot be modified.
[5R] TRIP WIND (blue)	This field allows the entry of a mean wind component for the trip from the origin to the destination. Upon entry of a CO RTE or FROM/TO pair, this field defaults to HD 000 in small font. An entry preceeded by –, H, HD is considered to be headwind, +, T, TL to be tailwind. The entered speed is displayed in large blue font. When the flight crew inserts a wind on the CLIMB, CRUISE or DESCENT WIND page or on the PERF APP page, the system no longer considers the trip wind, and the corresponding field is dashed.
[6R] EXTRA/TIME (green)	Displays the amount of extra fuel, and the resulting time available for holding over the primary destination. EXTRA FUEL = BLOCK – (TAXI + TRIP + RSV + MIN DEST FOB). The field displays its information in small font, and it cannot be modified by the flight crew.

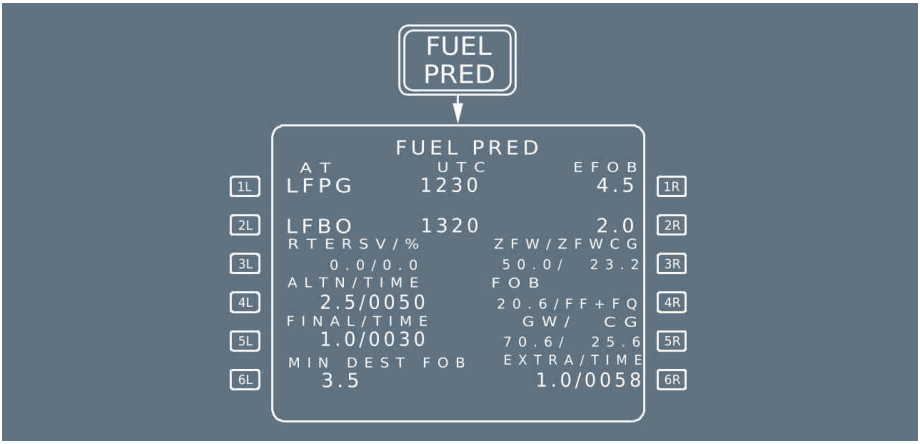
FUEL PREDICTION PAGE

Ident.: DSC-22_20-50-10-28-00000825.0022001 / 09 NOV 17

Applicable to: MSN 02135, 02139-02195, 02359, 02908-03071, 03330-03457, 03541-03618, 03782-03863, 04008-04156, 04314-04328, 04488, 04506, 04518, 04535-04614, 04637, 04757-04888, 04954-05094, 05155-05190, 05230-05259, 05291-05807, 05893, 05923-06336

The FUEL PRED page displays fuel prediction information at destination and alternate, as well as fuel management data after the engines are started. The flight crew accesses the FUEL PRED page, by pressing the FUEL PRED key on the MCDU.

Note: *The flight crew can also call up this page by pressing the "→" key on the MCDU when on the INIT A page.*



[1L] – [1R] AT-UTC-TIME/EFOB (green)
Display time and fuel predictions to the primary destination. TIME is displayed before takeoff. UTC predictions are displayed after takeoff. If the flight crew has entered an Estimated Takeoff Time (ETT), the UTC is displayed.
The EFOB at destination will turn to amber, if it becomes less than the MIN DEST FOB value.

Line 2 AT-UTC/TIME-EFOB
These lines display time and fuel predictions to the alternate airport. (*Refer to DSC-22_20-30-10-18 Alternate Function - General*).

[3L] RTE RSV/% (blue)
Before departure, this field displays the route reserve fuel and the corresponding percentage of trip fuel. It may be equal to 0.0, if such is the policy of the operator. The crew can either enter a fuel quantity or a percentage. After takeoff, it is dashed, and the corresponding fuel is added to the EXTRA fuel.

[4L] ALTN/TIME (blue/green)
Displays alternate trip fuel and time, assuming that the Cost Index = 0 and that the aircraft flies at the default cruise fligh level.
Refer to DSC-22_20-30-10-18 Alternate Function - Review and Selection of Alternate Airport
The flight crew can modifiy the alternate fuel as required. In this case, alternate time will be dashed.

[5L] FINAL/TIME (blue)	Displays the final reserve fuel and time calculated at the alternate airport (or destination airport, if selected in the “airline fuel policy” section of the AMI). The flight crew may enter a final fuel or time, and the system will compute associated holding time/fuel available. The system assumes a holding pattern at 1 500 ft AGL, with the aircraft in CONF1 at maximum endurance speed (racetrack pattern, altitude and selected airport can be modified through the “airline fuel policy” section of the AMI).
[6L] MIN DEST FOB (blue)	Displays the expected Minimum Fuel at Destination. It is equal to the FINAL + ALTN fuel. The field can be modified directly by the flight crew, and is also impacted by the modification of the ALTN and/or the FINAL fuel.
[3R] ZFW/ZFWCG (blue)	Displays the Zero Fuel Weight (ZFW) and Zero Fuel Weight Center of Gravity (ZFWCG) values, as entered before engine start on the INIT B page. The flight crew can re-enter or modify these values after engine start on the FUEL PRED page. If at engine start, no ZFW or ZFWCG values have been entered, amber boxes are displayed in the corresponding field. The crew must enter the ZFW/ZFWCG values to obtain a speed profile and predictions.
[4R] FOB (green)	Displays the Fuel On Board (FOB) calculated by the FMGS and/or the following fuel sensors: - Fuel flow and fuel quantity sensors (/FF+FQ) - Fuel flow sensors only (/FF) - Fuel quantity sensors only (/FQ). The flight crew can modify the FOB value in flight, or modify the sensors used by entering “/FF”, “/FQ” or “/FF+FQ”, as required.
[5R] GW/CG (green)	The FMS continuously updates the Gross Weight (GW) and Center of Gravity (CG) during the flight. The field displays dashes, as long as the system is not calculating the Fuel On Board, or ZFW has not been entered by the flight crew. If after engine start ZFW and FOB are defined but GWCG cannot be computed (ZFWCG missing), 25 % is used as a default value and is displayed in amber small font; "INITIALIZE WEIGHT/CG" amber message is triggered on MCDU scratch pad and the crew must enter ZFWCG in [3R]. The field cannot be modified.

[6R] EXTRA/TIME (green) — Displays the amount of extra fuel, and the resulting time available for holding over the primary destination.
EXTRA FUEL = FOB - (TAXI + TRIP + RSV + MIN DEST FOB). This field displays its information in small green font, and it cannot be modified by the flight crew.

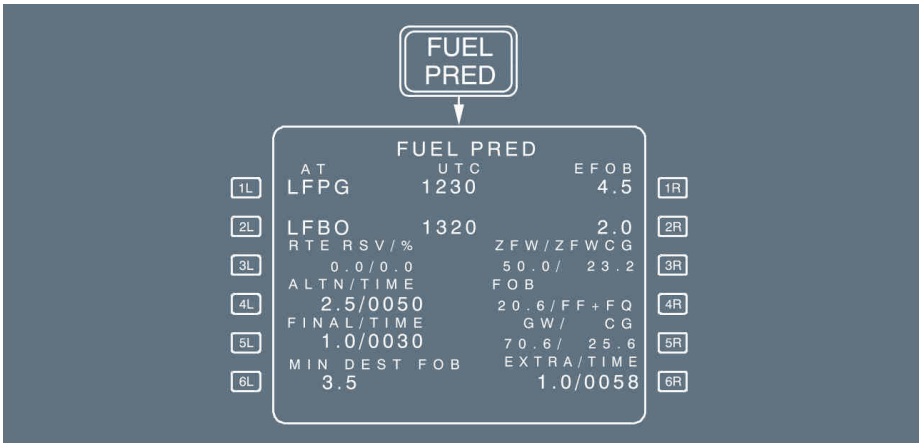
Note: *All fields, are dashed before engines are started.*

FUEL PREDICTION PAGE

Ident.: DSC-22_20-50-10-28-00000825.0021001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121, 02138, 02204, 02405-02443, 02482, 02712, 03138-03308, 03497, 03943, 04216-04312, 04384-04481, 04510, 04630, 04752, 04947, 05262, 05829, 05898

The FUEL PRED page displays fuel prediction information at destination and alternate, as well as fuel management data after the engines are started. The flight crew accesses the FUEL PRED page, by pressing the FUEL PRED key on the MCDU.

Note: *The flight crew can also call up this page by pressing the "→" key on the MCDU when on the INIT A page.*



[1L] – [1R] AT-UTC-TIME/EFOB (green) — Display time and fuel predictions to the primary destination. TIME is displayed before takeoff. UTC predictions are displayed after takeoff. If the flight crew has entered an Estimated Takeoff Time (ETT), the UTC is displayed.
The EFOB at destination will turn to amber, if it becomes less than the MIN DEST FOB value.

Line 2 AT-UTC/TIME-EFOB	These lines display time and fuel predictions to the alternate airport. (*Refer to DSC-22_20-30-10-18 Alternate Function - General*).
[3L] RTE RSV/% (blue)	Before departure, this field displays the route reserve fuel and the corresponding percentage of trip fuel. It may be equal to 0.0, if such is the policy of the operator. The crew can either enter a fuel quantity or a percentage. After takeoff, it is dashed, and the corresponding fuel is added to the EXTRA fuel.
[4L] ALTN/TIME (blue/green)	Displays alternate trip fuel and time, assuming that the Cost Index = 0 and that the aircraft flies at the default cruise fligh level. *Refer to DSC-22_20-30-10-18 Alternate Function - Review and Selection of Alternate Airport* The flight crew can modifiy the alternate fuel as required. In this case, alternate time will be dashed.
[5L] FINAL/TIME (blue)	Displays the final reserve fuel and time calculated at the alternate airport (or destination airport, if selected in the “airline fuel policy” section of the AMI). The flight crew may enter a final fuel or time, and the system will compute associated holding time/fuel available. The system assumes a holding pattern at 1 500 ft AGL, with the aircraft in CONF1 at maximum endurance speed (racetrack pattern, altitude and selected airport can be modified through the “airline fuel policy” section of the AMI).
[6L] MIN DEST FOB (blue)	Displays the expected Minimum Fuel at Destination. It is equal to the FINAL + ALTN fuel. The field can be modified directly by the flight crew, and is also impacted by the modification of the ALTN and/or the FINAL fuel.
[3R] ZFW/ZFWCG (blue)	Displays the Zero Fuel Weight (ZFW) and Zero Fuel Weight Center of Gravity (ZFWCG) values, as entered before engine start on the INIT B page. The flight crew can re-enter or modify these values after engine start on the FUEL PRED page. If at engine start, no ZFW or ZFWCG values have been entered, amber boxes are displayed in the corresponding field. The field crew must enter the ZFW/ZFWCG values to obtain a speed profile and predictions.

[4R] FOB (green)	Displays the Fuel On Board (FOB) calculated by the FMGS and/or the following fuel sensors: - Fuel flow and fuel quantity sensors (/FF+FQ) - Fuel flow sensors only (/FF) - Fuel quantity sensors only (/FQ). The flight crew can modify the FOB value in flight, or modify the sensors used by entering "/FF", "/FQ" or "/FF+FQ", as required.
[5R] GW/CG (green)	The FMS continuously updates the Gross Weight (GW) and Center of Gravity (CG) during the flight. The field displays dashes, as long as the system is not calculating the Fuel On Board, or ZFW has not been entered by the flight crew. The field cannot be modified.
[6R] EXTRA/TIME (green)	Displays the amount of extra fuel, and the resulting time available for holding over the primary destination. EXTRA FUEL = FOB - (TAXI + TRIP + RSV + MIN DEST FOB). This field displays its information in small green font, and it cannot be modified by the flight crew.

Note: *All fields, are dashed before engines are started.*

FLIGHT PLAN PAGES

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Ident.: DSC-22_20-50-10-28-A-00000826.0001001 / 16 MAR 11

These pages display all active and alternate flight plan, waypoints alongwith the associated predictions.

The flight crew can make all revisions to the lateral and vertical flight plans from these pages:

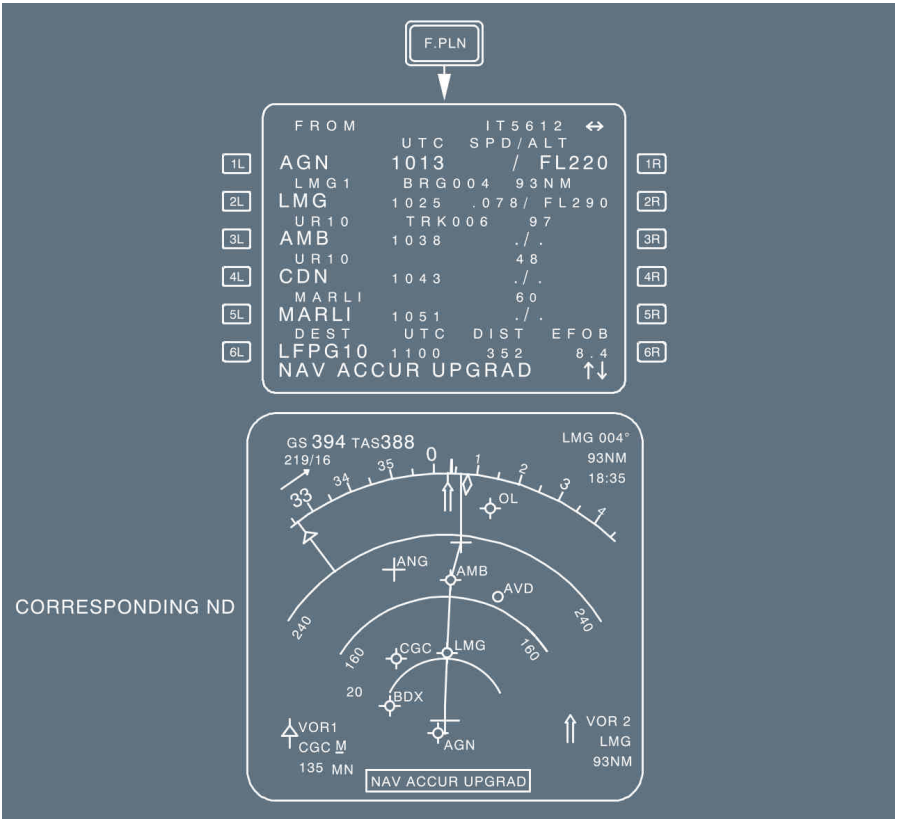
The flight crew presses the left key to revise the lateral flight plan, and the right key to revise the vertical flight plan.

The flight crew presses the F-PLN key on the MCDU console to access page A of the active flight plan.

Ident.: DSC-22_20-50-10-28-A-00000827.0006001 / 14 MAY 12

FLIGHT PLAN A PAGE

Page A displays time, speed, and altitude predictions for each active flight plan waypoint.



TITLE	FLIGHT NUMBER (blank, if no flight number has been entered). This line may display OFST in white, if a lateral offset is flown.
Line 1 to Line 5 WPT, UTC, SPD, ALT	These lines display consecutive waypoints, alongwith associated predictions of time, speed or Mach and altitude for each. TIME is displayed before takeoff, and UTC after takeoff. After the pilot enters an Estimated Takeoff Time (ETT), UTC is displayed. The time and flight level display at the FROM waypoint (first line of the flight plan) are values that the system memorized at waypoint sequencing.
[1R] SPD/ALT	The field dedicated to SPEED or MACH is blank at the FROM waypoint, except at the departure airport. (V1 associated with runway elevation, is displayed).

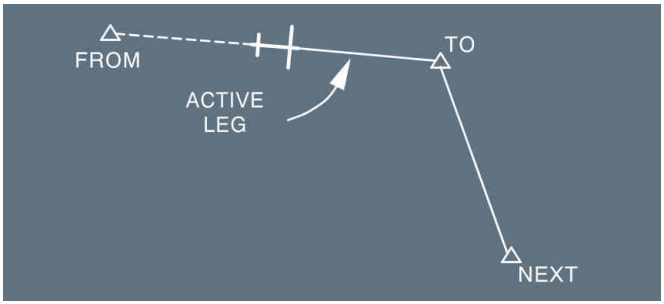
Note: When the HOLD marker is slewed, the HOLD SPD label will overwrite the TIME/UTC title. In addition, the IMM EXIT or RESUME HOLD prompt will replace the SPD/ALT field.

Note: The predicted altitude at a waypoint is related to the QNH below the transition altitude, and is given as a flight level above the transition altitude.

Line 6, DEST UTC/TIME DIST, EFOB

DIST is the distance to destination along the displayed flight plan.
EFOB is the estimated fuel on board at destination. The EFOB at destination will turn to amber, if it becomes less than the MIN DEST FOB value.
The sixth line is permanent and is displayed in white font, once predictions are available, except when a TMPY F-PLN is displayed, or in some cases when an ALT CSTR is entered ("← CLB or DES →" prompt appears).

The generic flight plan page displays the FROM waypoint (last waypoint to be overflown) on the first line, and theTO waypoint (in white) on the second line. The FROM/TO flight plan leg is called the active leg.



The flight crew can use the scroll keys to review all flight plan legs down to the last point of the alternate flight plan. The AIRPORT key serves as a fast scroll key. The pilot can press it to call up the next airport (DEST, ALTN, ORIGIN) to be displayed on the flight plan page.
In order to return to the beginning of the flight plan page, the pilot presses the F-PLN key on the MCDU console.
The display shows the name of the leg between two waypoints, and the distance between them on a line between the lines that identify them. During an approach, this in-between line also defines the angle of the final descent path. For example, "2-3 °" indicates that the leg is two nautical miles long, and the flight path angle is -3 °.
The display shows the bearing between FROM and TO waypoints as the bearing from the aircraft position to the TO waypoint. It shows track (TRK) between the waypoints shown in lines 2 and 3. This is the outbound track of the next leg.

If the database contains a published missed approach procedure, or if someone has inserted one manually, the display shows it in blue after the destination runway identification. It turns green when the go-around phase becomes active.
After the last waypoint of the missed approach, the display shows the alternate flight plan.
When NAV mode is engaged, the flight crew can only clear or modify the TO waypoint by using the DIR key on the MCDU console.

PREDICTIONS

The FMS calculates and displays predictions at all F-PLN waypoints.
It uses the current wind and the predicted winds to compute the predictions.

CONSTRAINTS

The database can define an altitude constraint and speed constraint for each waypoint of the climb, descent, and approach phases, or the flight crew can manually insert such constraints (except at origin, destination, FROM, and pseudo-waypoints).
The constraints are displayed in magenta, until the predictions are completed.
When the predictions are available, the constraints are replaced by speed and altitude predictions preceded by stars. If the star is in magenta, the system predicts that the aircraft will match the constraint (altitude within 250 ft, speed not more than 10 kt above the constraints). If the star is in amber, the system predicts that the aircraft will miss the constraint, and the MCDU displays “SPD ERROR AT WPT”.

Note: *SPD and ALT CSTR can either be entered from the VERT REV page, or directly on the F-PLN A page. Time constraints can only be entered on the RTA page.*

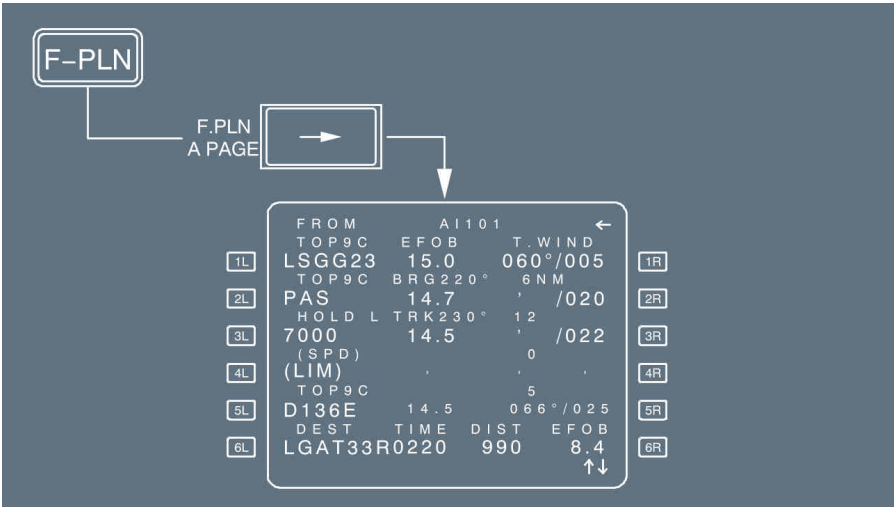
PSEUDO-WAYPOINTS

Pseudo-waypoints are geographical positions corresponding to an event in the flight plan : T/C (Top of Climb), T/D (Top of Descent), SPD/LIM (Speed Limit), S/C (Step Climb point), S/D (Step Descent point), DECEL (Deceleration for Approach), Time Markers etc.
Pseudo-waypoints are displayed as waypoints in parentheses.

Ident.: DSC-22_20-50-10-28-A-00000828.0001001 / 01 OCT 12

FLIGHT PLAN B PAGE

This page displays fuel predictions and forecast winds at each waypoint.
The pilot calls it up by pressing the “→” or “←” keys when the FLIGHT PLAN A page is displayed.



TITLE	FLIGHT NUMBER (blank, if no flight number has been entered).
Line 1 to Line 5 WPT-EFOB-WIND	These lines display consecutive waypoints and associated fuel predictions, and the predicted wind profile. The direction of forecast winds is relative to true north. Forecast winds include winds entered by the pilot (large font) and the propagated winds at intermediate waypoints (small font). EFOB and WIND at the FROM waypoint are displayed in large font. At other waypoints, it is displayed in small font, and in the same color as the associated waypoint. No wind entry is allowed on this page. The pilot will use the CLIMB, CRUISE, or DESCENT WIND pages, accessed from the INIT A page or the DATA INDEX B page.
Line 6 DEST-UTC/DIST-EFOB	Identical to the F-PLN A page.

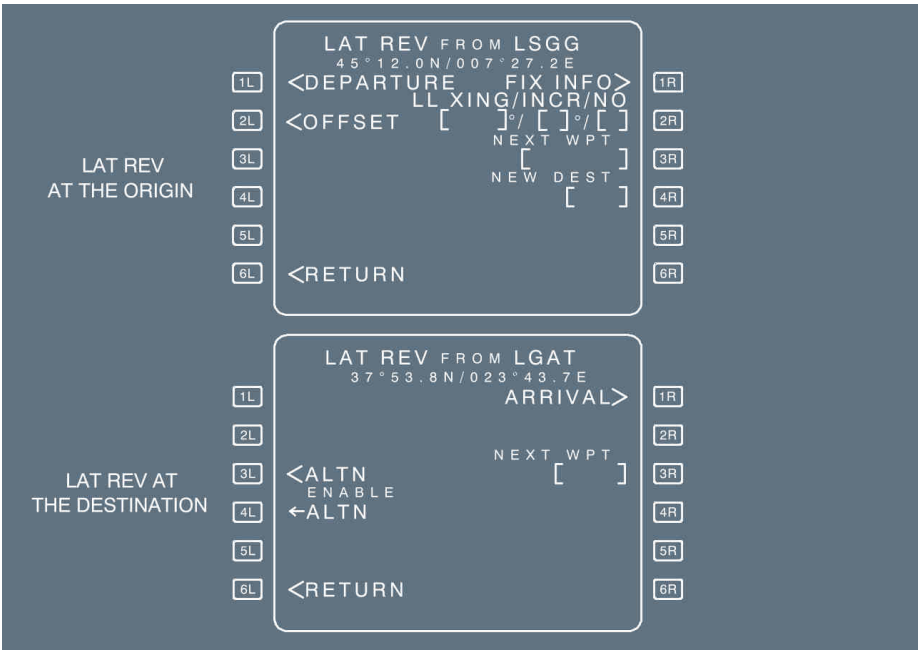
LATERAL REVISION PAGES

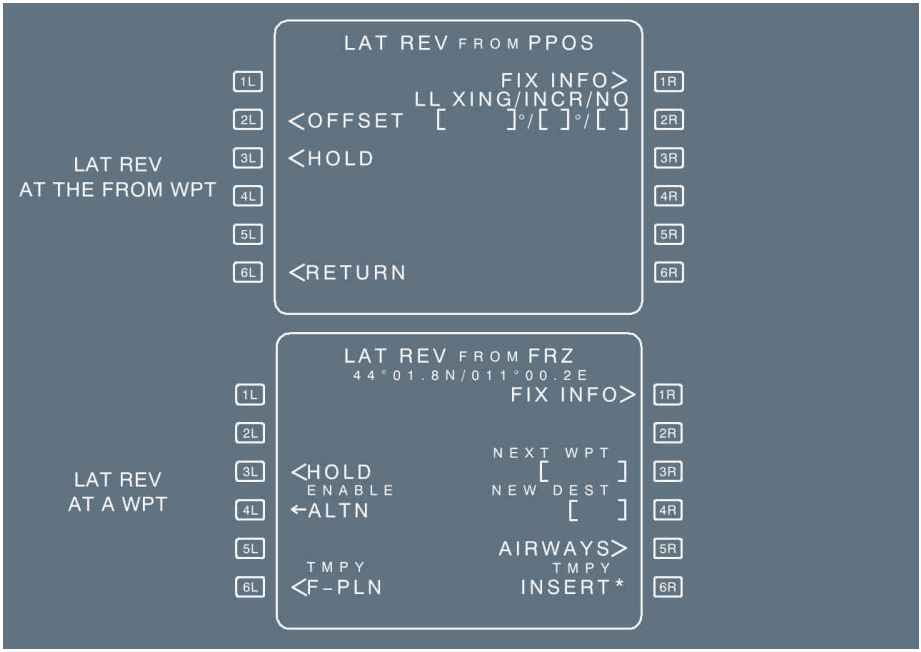
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Ident.: DSC-22_20-50-10-28-B-00000829.0021001 / 14 MAY 12

These pages provide a list of the lateral flight plan revisions, that can be used to change the flight plan beyond a selected waypoint.

The crew calls up these pages from the flight plan pages (A or B), by pressing the left key next to the selected waypoint.
Different lateral flight plan revisions are available for different waypoints.





TITLE	The ident of the waypoint or airport selected for revision, alongwith its latitude and longitude. If the selected waypoint is the FROM waypoint, the title omits the aircraft latitude and longitude, and instead displays the "PPOS" (present position) instead.
[1L] DEPARTURE	This prompt gives access to the DEPARTURE pages, where the crew can select and insert runways, SIDs, and TRANSs.
[2L] OFFSET [ ]	This prompt allows the pilot to enter a left or right lateral offset in the flight plan. The offset can be between 1 and 50 NM. When the pilot enters an offset, the OFFSET field becomes yellow, and the 6L and 6R fields display "ERASE" and "INSERT". The pilot can delete an inserted offset by pressing the CLR pb, by entering a zero for the amount of the offset, or by selecting a DIR TO.
[3L] HOLD or [3L] ALTN	HOLD prompt gives access to the hold pages. ALTN prompt is only available if the revised point is the destination airport. It enables the pilot to access the alternate airport page.

[4L] ENABLE ALTN	The crew presses this key to create a temporary flight plan using the alternate flight plan that is defined, but not inserted. This prompt is not displayed at the ORIGIN and FROM waypoints.
[6L] TMPY F-PLN (yellow) or RETURN (white)	Pressing this key gives access to the temporary flight plan (when created). (No temporary flight plan exists). This prompt gives access to the last displayed page.
[1R] ARRIVAL or FIX INFO	ARRIVAL prompt calls up the arrival pages, where APPR, STAR, TRANS and VIA can be selected. FIX INFO prompt gives access to the FIX INFO pages. This prompt is only displayed on the lateral revision at the origin (before take off) or FROM (after take off), and at waypoints of the primary flight plan (except destination).
[2R] LL XING/INCR/NO (blue)	This field allows the crew to create latitude/longitude crossing points. The increment (INCR) ranges from 1 to 20 °, and the number of crossing points (from 1 to 99). This field is in yellow when a temporary flight plan exists and is not displayed for waypoints belonging to the descent procedure.
[3R] NEXT WPT (blue)	The crew presses this key to enter the content of the scratchpad as next waypoint. This prompt is not displayed at the FROM (or PPOS) waypoint. This field is in yellow when a temporary flight plan exists.
[4R] NEW DEST (blue)	The system displays this prompt for the flight crew to enter a new destination. It is not displayed at the FROM (or PPOS) waypoint, at waypoints beyond the destination, or at destination. When the missed approach becomes active, the prompt is available at any point of the missed approach. This field is in yellow when a temporary flight plan exists.
[5R] AIRWAYS	The crew presses this key to insert an airway starting at the revised waypoint and another waypoint. This prompt is not displayed at the FROM waypoint, origin or destination, and on manually-created waypoints.
[6R] TMPY INSERT*	Activates the temporary flight plan.

Ident.: DSC-22_20-50-10-28-B-00000830.0002001 / 14 MAY 12

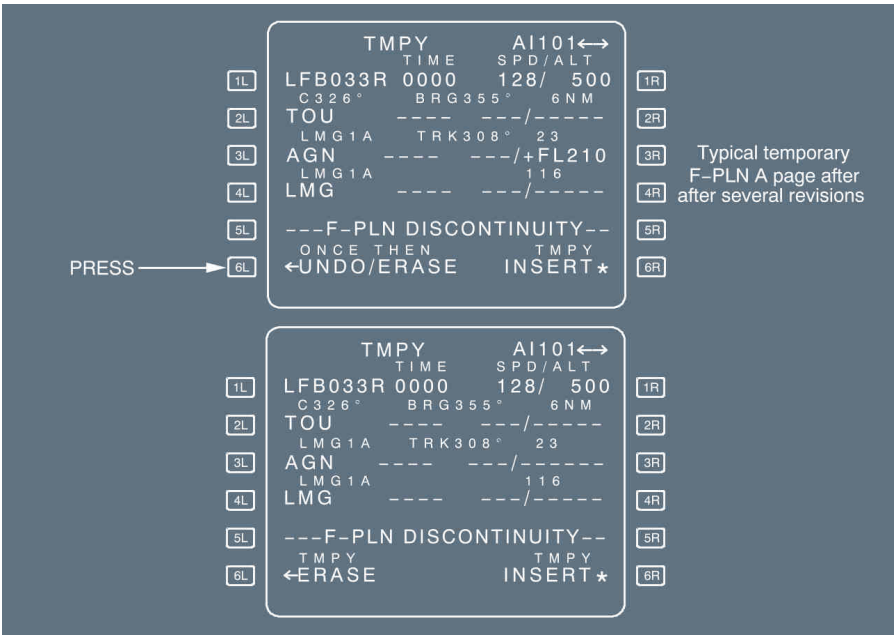
TEMPORARY REVISION

When the pilot selects a lateral or vertical revision, the system creates a “Temporary F-PLN” and displays it in yellow on the MCDU (except Missed approach and Alternate parts that are dispalyed in blue) and as a dashed yellow line on the ND to enable the pilot to review the data before

inserting. As long as the temporary flight plan is not inserted, the previous flight plan remains active and the system guides the aircraft along. The pilot can perform multiple revisions in the same temporary flight plan.

The temporary flight plan does not display destination information on 6L, but displays fields to erase or insert the temporary revision:

- UNDO/THEN ERASE: Cancels the last revision in the temporary flight plan.
- TMPY INSERT: Activates the entire temporary flight plan with all the revisions included.
- TMPY ERASE: Deletes the entire temporary flight plan.



Note: *The destination information is still available by scrolling up to the end of the flight plan or by using the AIRPORT key.*

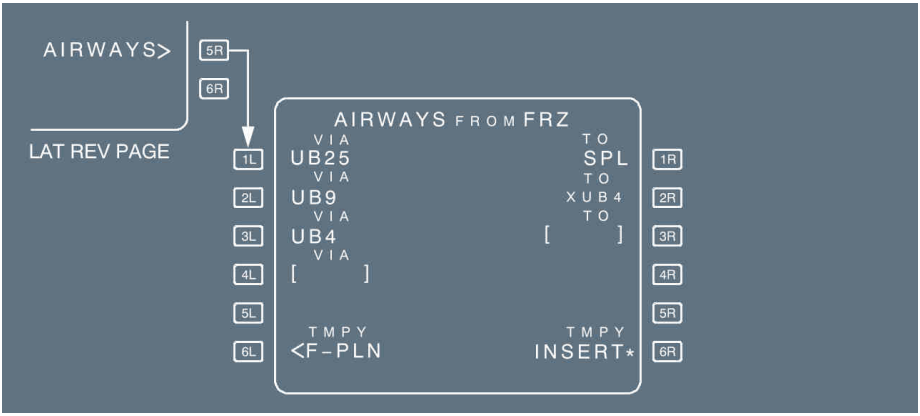
AIRWAYS PAGE

Ident.: DSC-22_20-50-10-28-00000831.0021001 / 14 MAY 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The flight crew can use the AIRWAYS page to select up to five airways, and string them into the flight plan, after the revised waypoint.

The crew calls up this page, by pressing the AIRWAYS key (5R) on the LAT REV page.



TITLE	"AIRWAYS from XXX", XXX: Revised waypoint ident (large green font).
[1L] to [5L] VIA	Displays the airways entered by the crew.
[6L] TMPY F-PLN or RETURN	The flight crew presses this key to return to the lateral revision page. This field displays "TMPY F-PLN" when a temporary flight plan is created. It enables the temporary flight plan to be consulted.
[1R] to [5R] TO	Displays the end point of the corresponding airways entered on the [1L] to [5L] entries. The ending point is displayed in large blue font, if manually-entered, in small blue font, if computed by the FMGC.
[6R] TMPY INSERT*	Activates the temporary flight plan.

Note: *1. If the entered airway contains at least one fixed radius transition waypoint as defined in the navigation database, and the TO waypoint is defined, and the fixed radius transition waypoint is in the flight plan, then, "FIXED TURN RADIUS AWY" is displayed between the VIA and TO fields.*

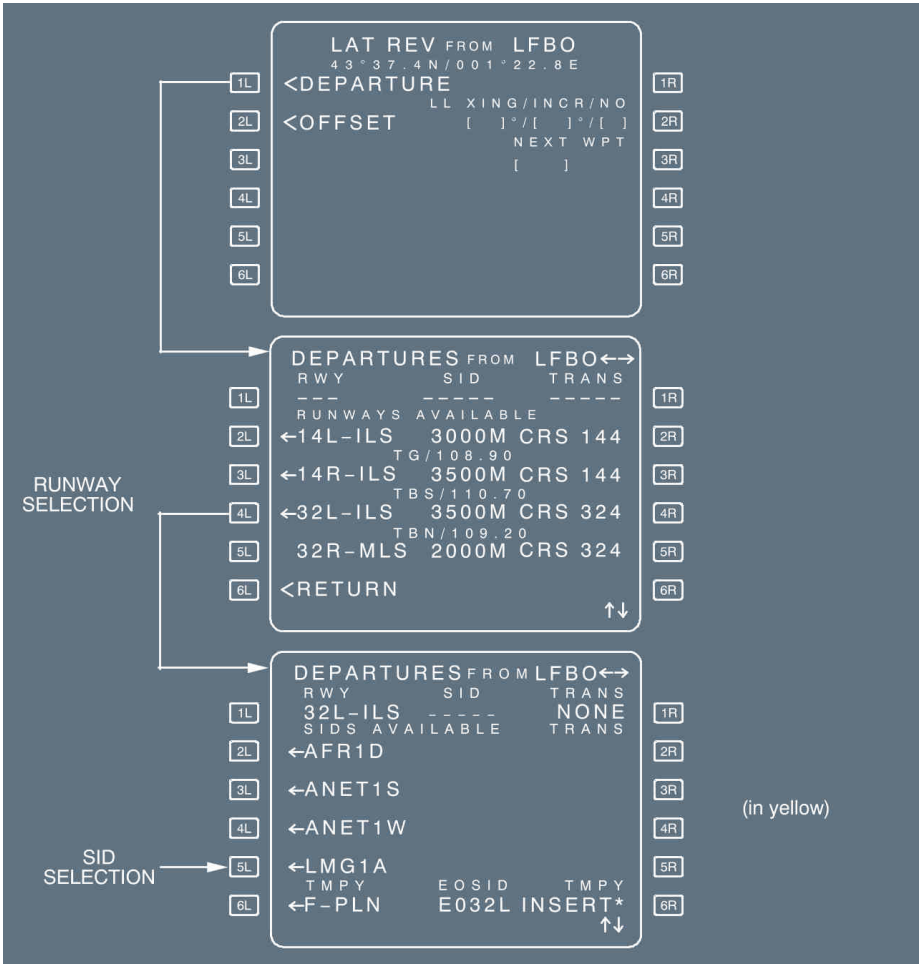
2. If the condition for display "FIXED TURN RADIUS AWY" is satisfied for two consecutives airways lines, the second line displays (") instead of the whole message.

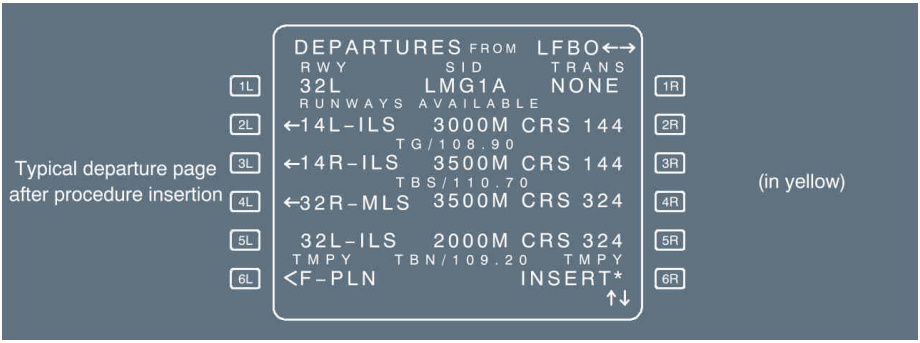
DEPARTURE PAGES

Ident.: DSC-22_20-50-10-28-00000832.0004001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The flight crew can use the DEPARTURE pages to review departure procedures (RWY, SID, TRANS), and enter them into the temporary flight plan.

When the display shows the lateral revision page for the origin, the flight crew calls it up by pressing the 1L key.
The RWY, and, SIDS/enroute TRANS (if any) pages are available.
The flight crew sequentially calls up the SIDs and TRANS (if any) pages by selecting a runway on the RWY page. The flight crew can also scroll between the RWY, SIDs and TRANS (if any) pages by pressing the "←" or "→" key on the MCDU console.





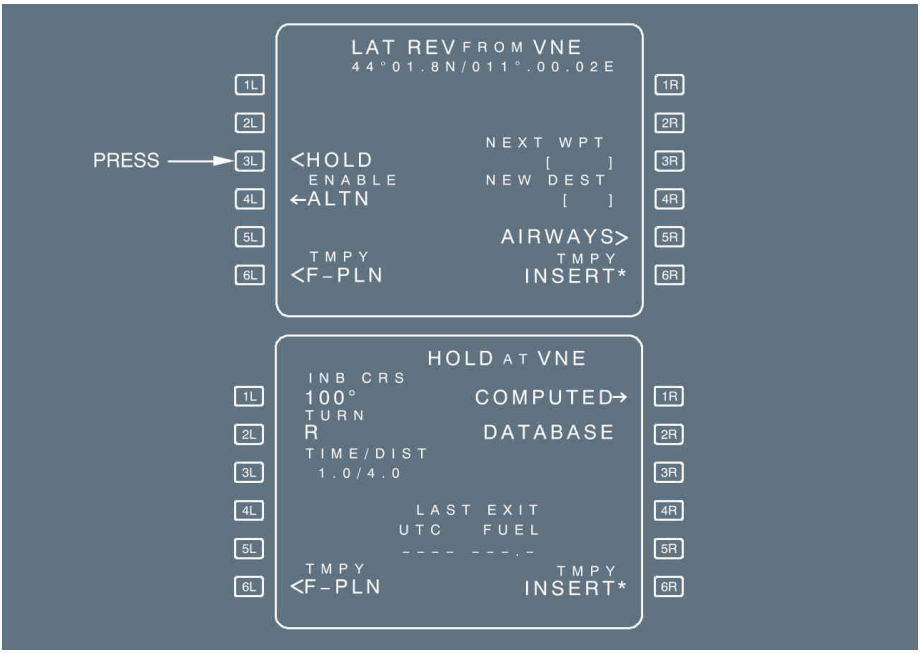
Line 1 RWY, SID TRANS	This line displays the RWY, SID, and TRANS in green after they have been inserted into the active flight plan, or in yellow if a temporary is created or updated. If nothing has been selected or inserted, the line displays dashes. “NONE” is displayed in the SID or TRANS field, if no SID or TRANS exists, or NO SID or NO TRANS was selected by the crew.
[2L] to [5L] RWY/SIDs	These fields display selectable and selected RWYs or SIDs. The pilot can scroll each list. Selectable RWYs and SIDs are displayed in blue with an arrow. Once a RWY or SID is selected, the arrow disappears. A RWY or SID, already inserted in the flight plan, is displayed in green. When a runway is selected, a temporary is created or modified, and the DEPARTURE page 2 for SID selection is automatically displayed. The display shows the length, course and, if available, the MLS ident and frequency for each runway.
[6L] TMPY F-PLN or RETURN	The pilot presses this key to return to the temporary flight plan page, if a temporary exists. The display shows RETURN, instead TMPY F-PLN, when the pilot has not created a temporary flight plan. Pressing this key reverts to the LAT REV page.
[2R] to [5R] TRANS	This field displays the selectable and selected enroute transitions in blue and green respectively. They are blank, if there are no transitions. When a TRANS is selected, a temporary is created or updated (if one already exists).
[6M] EOSID	Once a runway is inserted into the flight plan, this field displays any ENG OUT SID for that runway. If a temporary is created or updated, the EOSID is displayed in yellow. Otherwise, it is displayed in green. If there is none, it displays “NONE”.

[6R] TMPY INSERT* Activates the temporary flight plan.

HOLD PAGES

Ident.: DSC-22_20-50-10-28-00000833.0021001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

These pages allow the pilot to review and modify the holding pattern parameters at the selected revise waypoint
The pilot calls up these pages by pressing the HOLD key on the LAT REV page for the waypoint.
The flight crew can insert database holds, hold computed by the FMS, or manually defined holds.



The page title is displayed in white, if no temporary flight plan exists, or in yellow if a temporary flight plan is in progress. Hold parameters are displayed in blue if no Temporary exists, or in yellow if a temporary flight plan is in progress.

At first access, the HOLD page is displayed as follows:

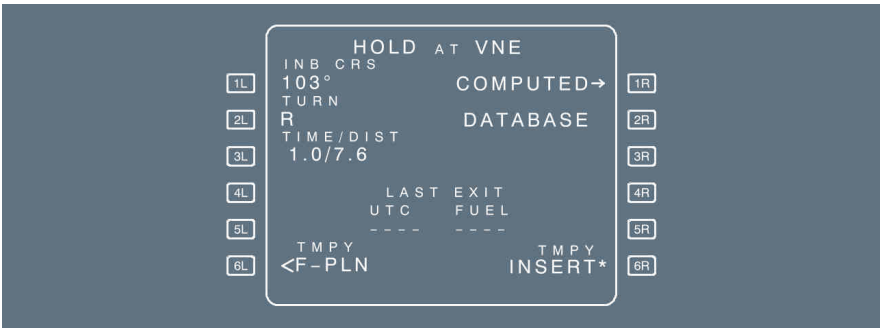
- If a database hold is available at that waypoint, [1L], [2L] and [3L] display in yellow the parameters of the FMS database hold.
  In [2R], DATABASE is displayed in yellow. If any hold parameter is modified, DATABASE is displayed in white with a white arrow.
  In [1R], COMPUTED is displayed in white with a white arrow.
- If no database hold is available at that waypoint, [1L], [2L] and [3L] display in yellow the parameters of the FMS computed hold
  In [1R], COMPUTED is displayed in yellow. If any hold parameter is modified, COMPUTED is displayed in white with a white arrow.

When the HOLD has been inserted, [1L], [2L] and [3L] display in blue the parameters of the already-existing hold.

- If the already-existing hold is a computed hold, COMPUTED is displayed in blue in [1R].
- If the already-existing hold is a database hold, DATABASE is displayed in blue in [2R].
- If the already-existing hold is neither a computed hold nor a database hold, both COMPUTED and DATABASE are displayed in white with a white arrow.

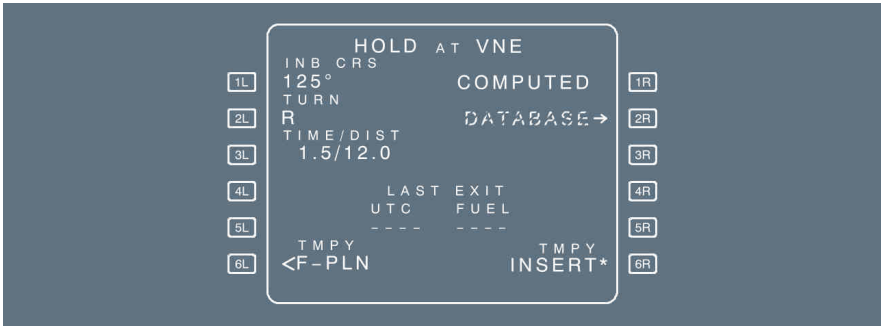
● **Database Hold**

If a hold is defined in the navigation database for the revised waypoint and can be inserted then the corresponding TMPY F-PLN is automatically created by the FMS and DATABASE is displayed in yellow.



● **Computed Hold**

If a default hold is computed by the FMS and can be inserted then the corresponding TMPY F-PLN is automatically created by the FMS and COMPUTED is displayed in yellow.

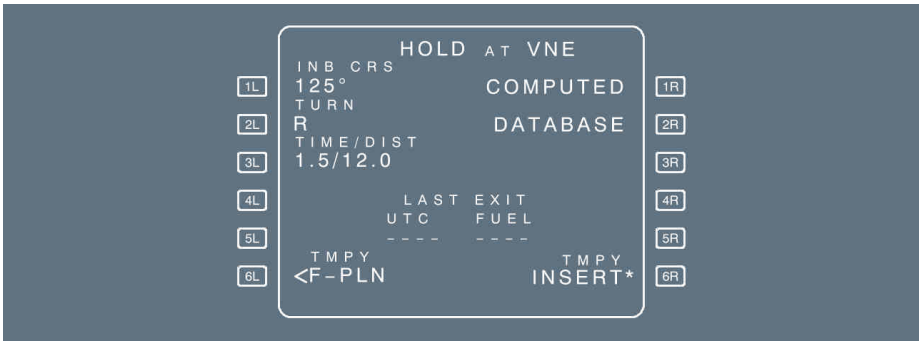


A computer hold has the following default parameters:

INB CRS = INBD TRK of the F-PLN leg leading to the revised waypoint.

TURN = Turn direction right.

TIME on outbound leg is 1.5 min above 14 000 ft, 1 min below 14 000 ft.



[1L] INB CRS — This field displays the inbound course of the holding pattern. The data may be manually or automatically modified (via COMPUTED or DATABASE prompts).

[2L] TURN — This field shows the direction to turn in the hold (L or R). The data may be modified.

[3L] TIME/DIST	This field shows the time and distance for the outbound leg. The data may be modified, but time and distance cannot be entered simultaneously. Time and distance are dependent values that the system calculates from the predicted ground speed at the revised point, which in turn depends upon the holding speed (speed for maximum endurance, ICAO speed limit, or constraint speed, whichever is lower).
[6L] TMPY F-PLN or RETURN	This prompt gives access to the temporary flight plan page if one is in progress. If not, “RETURN” is displayed and allows a return to the LAT REV page.
[1R] COMPUTED (→)	Pressing this key reverts parameters to the system-computed parameters (1L, 2L, 3L).
[2R] DATABASE (→)	Pressing this key reverts the displayed parameters to the parameters memorized in the database for this waypoint.
LAST EXIT UTC FUEL	This field displays the time at which the aircraft must leave the holding pattern in order to meet fuel policy criteria (extra fuel = 0). The system also displays the estimated fuel on board at that time in thousands of kg or lb.

The 1R and 2R fields, as well as the hold parameters (1L, 2L, 3L), are blue when no temporary flight plan exists, and yellow when a temporary flight plan is in progress.

[6R] TMPY INSERT*	Activates the temporary flight plan.

DIRECT TO PAGE

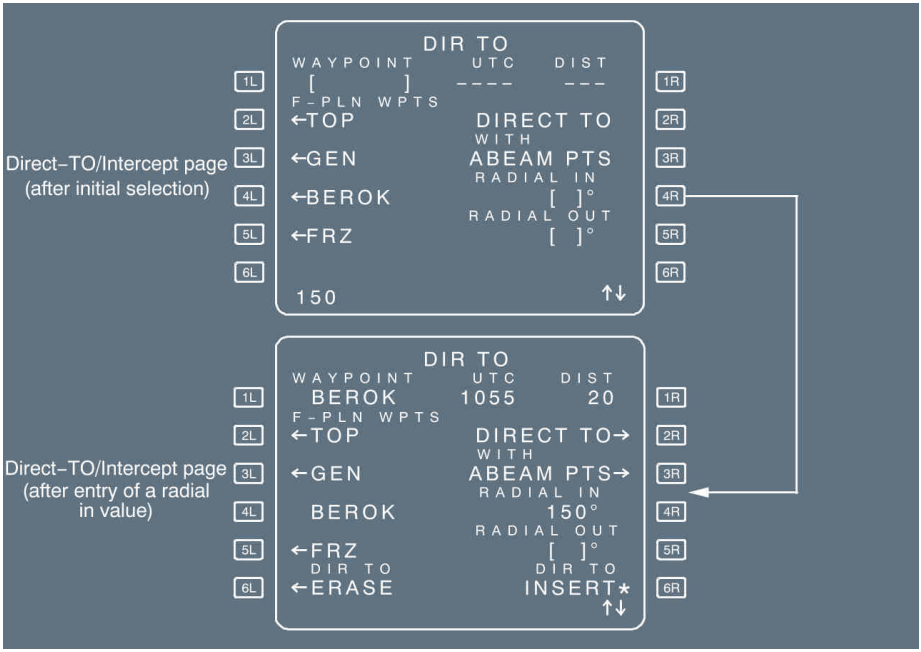
Ident.: DSC-22_20-50-10-28-00000834.0004001 / 01 OCT 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

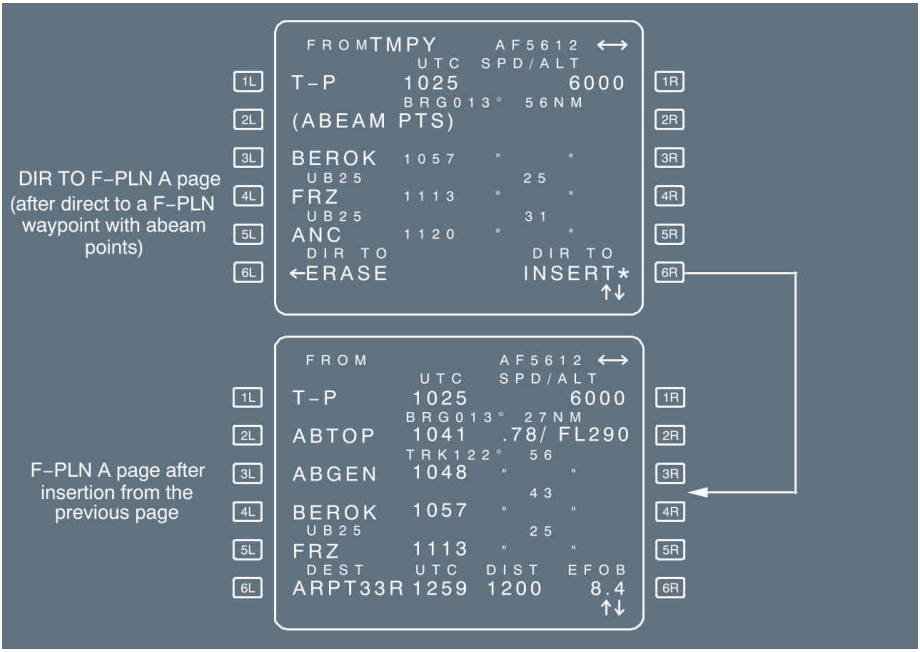
Pressing the “DIR” key from the MCDU screen calls up the DIR TO page. The pilot presses it to modify the flight plan, by creating a direct leg from the aircraft’s present position to any selected waypoint. The pilot cannot call up this page when the aircraft's present position is invalid. The “A/C POSITION INVALID” message is then displayed.

These are four DIRECT TO/INTERCEPT functions: DIRECT TO, ABEAM PTS, RADIAL IN, RADIAL OUT.

Using the DIRECT TO function results in the creation of a DIR TO temporary flight plan. This DIR TO temporary flight plan only reflects the insertion of the direct leg in the active flight plan. Moreover, a DIR TO temporary flight plan and a multi-revision flight plan cannot exist at the same time.


Direct–TO/Intercept page
(after initial selection)
DIR TO
WAYPOINT
UTC
DIST
[ ]

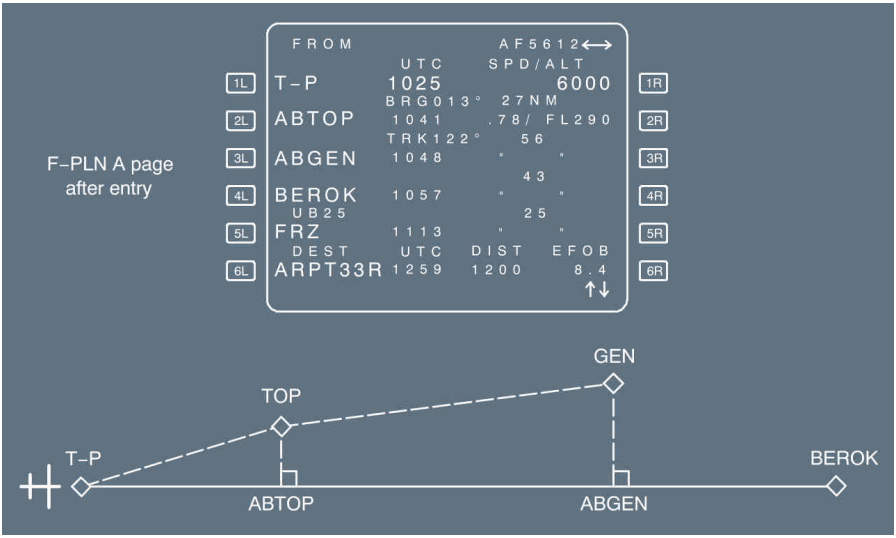
F-PLN WPTS
←TOP
DIRECT TO
WITH
←GEN
ABEAM PTS
RADIAL IN
←BEROK
[ ]°
RADIAL OUT
←FRZ
[ ]°
150
Direct–TO/Intercept page
(after entry of a radial
in value)
DIR TO
WAYPOINT
UTC
DIST
BEROK
1055
20
F-PLN WPTS
←TOP
DIRECT TO→
WITH
←GEN
ABEAM PTS→
RADIAL IN
BEROK
150°
RADIAL OUT
←FRZ
[ ]°
DIR TO
DIR TO
←ERASE
INSERT*
1L
2L
3L
4L
5L
6L
1R
2R
3R
4R
5R
6R



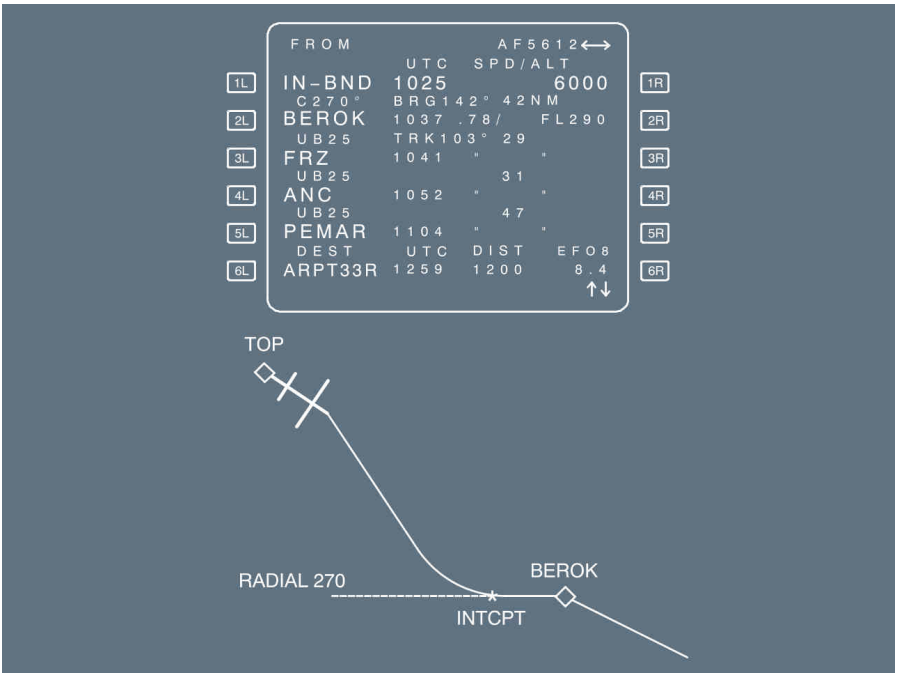
[1L] WAYPOINT	This field gives access to the 'Direct TO' fix waypoint to be selected from a list of waypoints. The 'Direct TO' waypoint may be entered by using its identifier, place/bearing/distance, place-bearing/ place-bearing or latitude/longitude.
[2L] to [5L] F-PLN WPTS	This list provides the waypoints of the active flight plan, except waypoints from the missed approach, pseudo-waypoints F-PLN markers, non fixed waypoints. The display may be scrolled ↑ ↓
[6L] DIR TO ERASE	Pressing this key deletes the DIR TO temporary F-PLN.
[1R] UTC/DIST	As soon as the DIR TO temporary F-PLN is created, the time and distance to the 'Direct TO' fix waypoint is displayed in yellow.
[2R] DIRECT TO	Selecting this key activates the DIRECT TO function in the DIR TO temporary F-PLN.
[3R] ABEAM PTS	Selecting this key activates the ABEAM PTS function in the DIR TO temporary F-PLN.

[4R] RADIAL IN and [5R] RADIAL OUT	The pilot fills in these fields to define a radial associated to the waypoint. Selecting a radial in (out) will activate the intercept radial into (from) the specified waypoint in the DIR TO temporary F-PLN. The pilot enters the radial in, or radial out, as XXX, XXX being the radial. An M or T may also be entered, referring to a MAG or a True value. A default radial in is proposed by the FMS if the DIR TO waypoint is part of the F-PLN.
[6R] DIR TO INSERT	Pressing this key enables the DIR TO temporary F-PLN to be inserted. After insertion, the F-PLN A page is displayed.

EXAMPLE 1: DIR TO BEROK - ABEAM



EXAMPLE 2: RADIAL INBND - DIR TO BEROK - RADIAL 270° INBOUND



If the DIR TO/INTCPT WPT entry is to a waypoint already in the flight plan, a default RADIAL IN is displayed in small font. However, no radial is displayed on the ND for this default radial. No default radial is provided for the RADIAL OUT field.

Selecting the INTCPT TO (RADIAL IN [1R]) function:
- Activates the intercept radial IN TO the WPT in the temporary F-PLN.
- Sets the course = radial IN + 180 °.

Selecting the INTCPT FROM (RADIAL OUT [2R]) function:
- Activates the intercept radial OUT from the WPT.
- Sets the course = radial OUT.

For details: *Refer to DSC-22_20-30-10-18 DIR Key (DIRECT-TO-FUNCTION) - General.*

ARRIVAL PAGES

Ident.: DSC-22_20-50-10-28-00000835.0025001 / 23 JUN 15
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

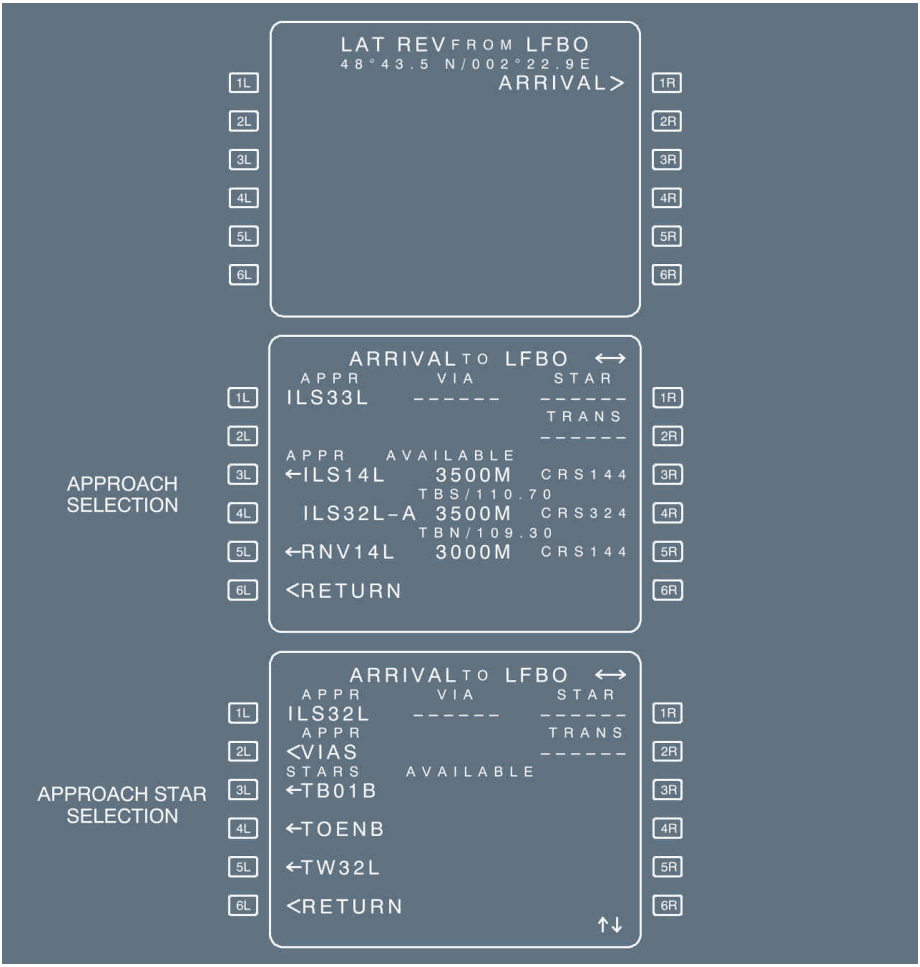
These pages enable the pilot to select a runway with its associated final, and to review arrival procedures (approaches, VIAs, STARs, TRANS) and enter them into the active flight plan.
The pilot calls them up from the LAT REV page for the destination.
Three lists APPR, STAR, and TRANS are available, along with a fourth, APPROACH VIAS if there are any transitions.
The pilot sequentially calls up each page, either by selecting a data item (such as APPR) or by pressing the "→" or "←" keys on the MCDU console.
When an approach is selected, it is inserted in a temporary fight plan and the ARRIVAL page 2 or APPROACH VIA page is automatically displayed.

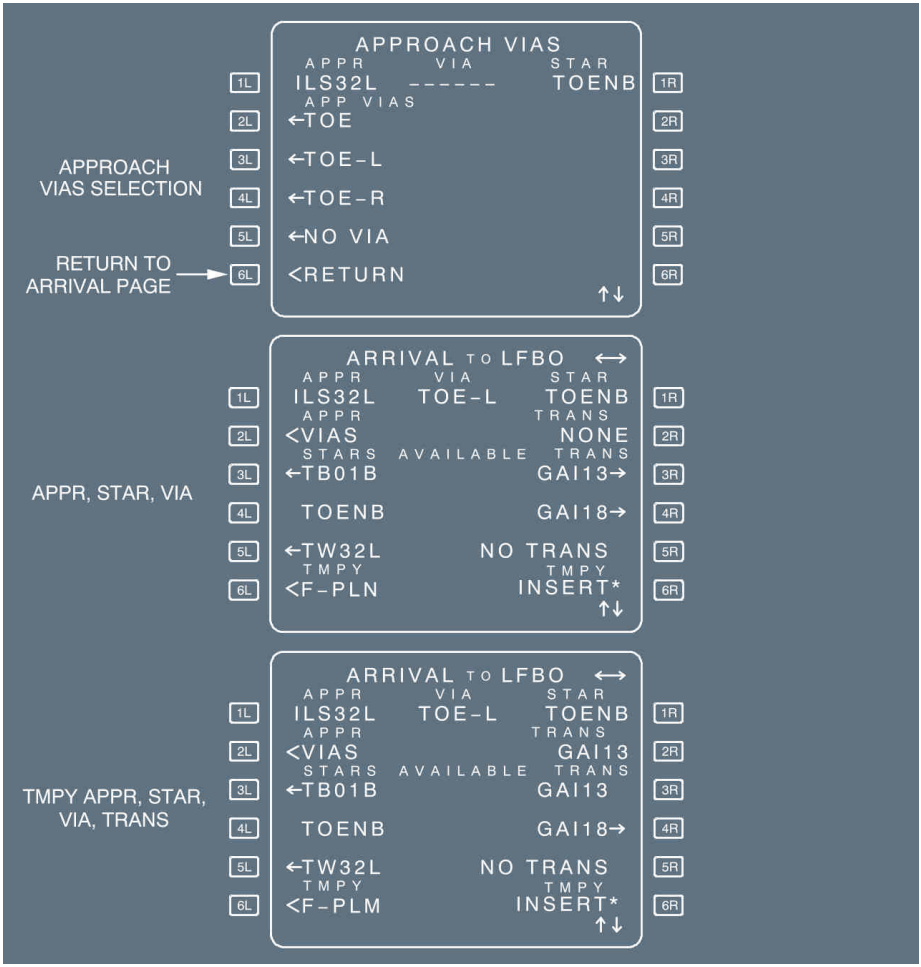
Line [1L]-[1R] [2R]	This line displays the APPR, VIA, STAR, and TRANS in green, if they have been inserted in the flight plan, and in yellow, as a temporary flight plan, if they have been selected but not yet inserted. It displays dashes or "NONE", if nothing has been selected or inserted.
[2L] APPR VIAS	The pilot presses this key to call up transitions from the last point of the STAR to the first point of the approach.
[3L] to [5L]	These fields list selectable and selected APPRs, STARs, and VIAs. The flight crew can scroll the pages, when necessary. Selectable APPRs, STARs, and VIAs are displayed in blue with an arrow. Once the pilot has selected an APPR, STAR, or VIA, a temporary F-PLN is created. After the APPR, STAR, or VIA is inserted into the flight plan, it is displayed in green. For each approach, the display shows runway length, heading, and the frequency and identifier of the ILS when ILS is available. In case there are multiple approaches for the same runway, the ILS is identified with the runway plus the multiple indicator (i.e. ILS33L-S)
[6L] TMPY F-PLN or RETURN	TMPY F-PLN is displayed to access the temporary F-PLN page corresponding to the last revision. The field displays “RETURN”, instead of TMPY F-PLN, when the flight crew has not created a temporary flight plan.

[3R] to [5R]

These fields either display:

- The indent and the frequency of the NAVAID specified for the approach, or
- The enroute transitions compatible with the selected STAR. The active selected TRANS is in green, the remaining TRANS are in blue.



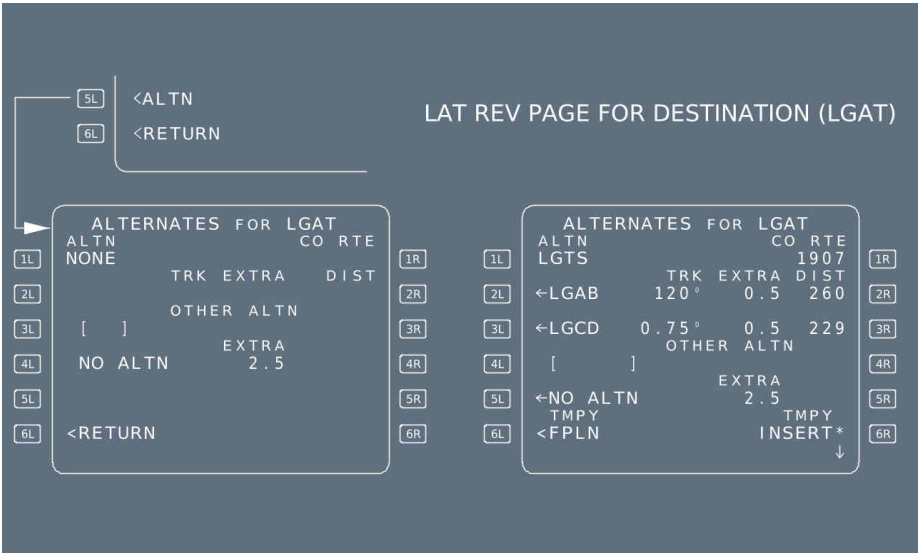


ALTERNATE PAGE

Ident.: DSC-22_20-50-10-28-00000836.0002001 / 16 MAR 11

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

This page enables the pilot to review, in the NAV database, the alternate airports that are paired with the destination, and define additional alternates, if needed. The pilot calls up this page with the ALTN prompt, from the lateral revision page for the destination.



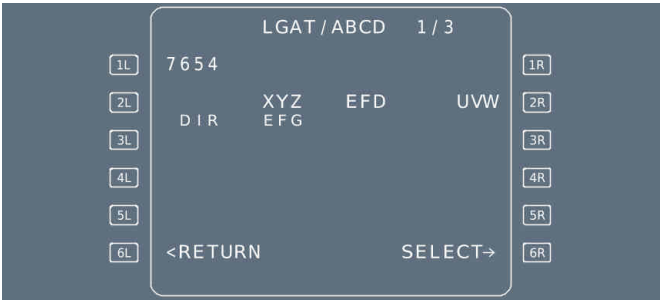
TITLE	The destination airport is displayed in large green font.
[1L] ALTN	This field displays the selected alternate: In green, if it is active; in yellow, if it is temporary. “NONE” is displayed, if NO ALTN option is selected, or if the destination has no alternate.
Line 2 to line 5	These lines display the identifications of alternates (up to 6), the extra fuel weight remaining after landing at the alternates, and the great-circle track and distances to them from the destination. If the database contains a company route between the destination and the alternate, the distance shown is an airway distance, not a great-circle distance. When the database defines a preferred alternate, it is displayed on Line 2 (if no scrolling has been performed).

[4L] OTHER ALTN	The pilot can enter an airport identifier in the brackets (Line 3). If that airport is not stored in the database, the NEW RUNWAY page appears for the pilot to use in defining it. If it is stored in the database, the ROUTE SELECTION page appears, and the pilot can use it to select the best route. The pilot may enter a distance in the DIST field of the OTHER ALTN prompt, in order to get preliminary fuel predictions. However, once he has selected the alternate airfield as a temporary alternate and then inserted it, the ALTN distance either reverts to the airway distance, if he has selected a company route, or to the direct distance to the alternate. The pilot can use OTHER ALTN to overwrite and replace the previous OTHER ALTN.
NO ALTN	The pilot uses this key to select the NO ALTN option.
[6L] RETURN or THPY F-PLN	The pilot presses this key to revert the display to the LAT REV page. Pressing this key gives access to the TMPY F-PLN page corresponding to the last revised item.
[1R] CO RTE	Pressing this key displays the active company route between the destination and the selected alternate.
[6R] TMPY INSERT*	Activates the temporary flight plan.

ROUTE SELECTION PAGE FOR ALTERNATE

Ident.: DSC-22_20-50-10-28-00000837.0002001 / 05 JUN 18
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

This page enables the pilot to review the company route between the destination and the alternate, and to select a different route, if that seems appropriate.
This page comes up automatically, when the flight crew enters an ident in the OTHER ALTN field and if a route is stored in the Navigation database for this ALTN.



[6R] SELECT	Pressing this key reverts the display to the alternate page. (The distance between the destination and the alternate is then the airway distance).

VERTICAL REVISION PAGES

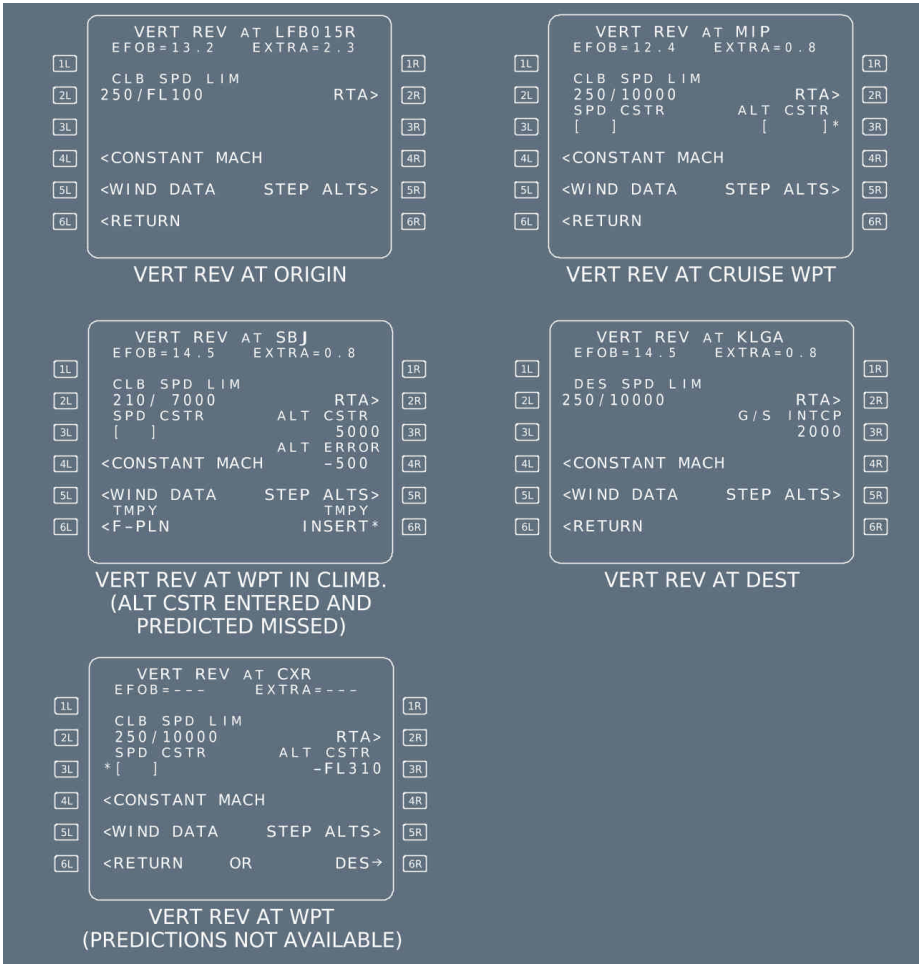
Ident.: DSC-22_20-50-10-28-00000838.0004001 / 16 MAR 11

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

These pages contain the menu of available vertical flight plan revisions that can be applied at a selected waypoint.

The crew calls up these pages from the flight plan A or B pages by pressing the right-hand key next to the selected revised waypoint.

The crew may make several different vertical revisions although some may not be available at all waypoints.



TITLE (white)	"VERT REV AT [location]" The second line shows the remaining fuel and the extra fuel at the waypoint being revised.
[1L] "TOO STEEP PATH BEYOND" (amber)	Is displayed, if the waypoint is part of a leg with a descent path too steep.

[2L] CLB/DES SPD LIM (magenta)	Displays the speed limit applicable to the climb or descent phase. It is in large font when entered manually, and in small font when it comes from the database.
[3L] SPD CSTR (magenta)	This field displays any speed constraint assigned to the revised waypoint. It is in large font when entered manually, and in small font when it comes from the database. It is in yellow when a temporary flight plan exits.
[4L] CONSTANT MACH	This prompt provides access to the CONSTANT MACH page.
[5L] WIND DATA (white)	This prompt is only displayed for climb, cruise and descent waypoints, respectively giving access to the CLIMB, CRUISE and DESCENT WIND pages for wind data at the revised point.
[6L] RETURN or TMPY F-PLN or ← CLB	The pilot presses this key to return to the last displayed flight plan page. When a temporary flight plan exists, the TMPY F-PLN prompt appears and provides access to this page. When "← CLB" displayed, pressing this key assigns the constraint to CLB phase and inserts it into the vertical flight plan.
[2R] RTA	This prompt provides access to the Required Time Arrival (RTA) page. It is not displayed when the VERT REV page is accessed from the alternate F-PLN.
[3R] ALT CSTR (magenta)	This field displays the altitude constraint assigned to this revised waypoint. It is in large font when the constraint is manually-entered, and in small font when it comes from the database. A CLR action reverts it to brackets. The constraint may be: • "At", entered as XXXXX (Example: FL 180). • "At or above", entered as + XXXXX or XXXXX + (Example: FL +310). • "At or below", entered as – XXXXX or XXXXX – (Example: -5 000). • A "window" constraint. The altitude window consists of two altitudes within which the aircraft should fly. The crew cannot manually enter a "window" constraint. It is in yellow when a temporary flight plan exists.
G/S INTCP (green)	This field displays the glide intercept altitude for an ILS approach on the vertical revision page at destination. It cannot be modified by the pilot.

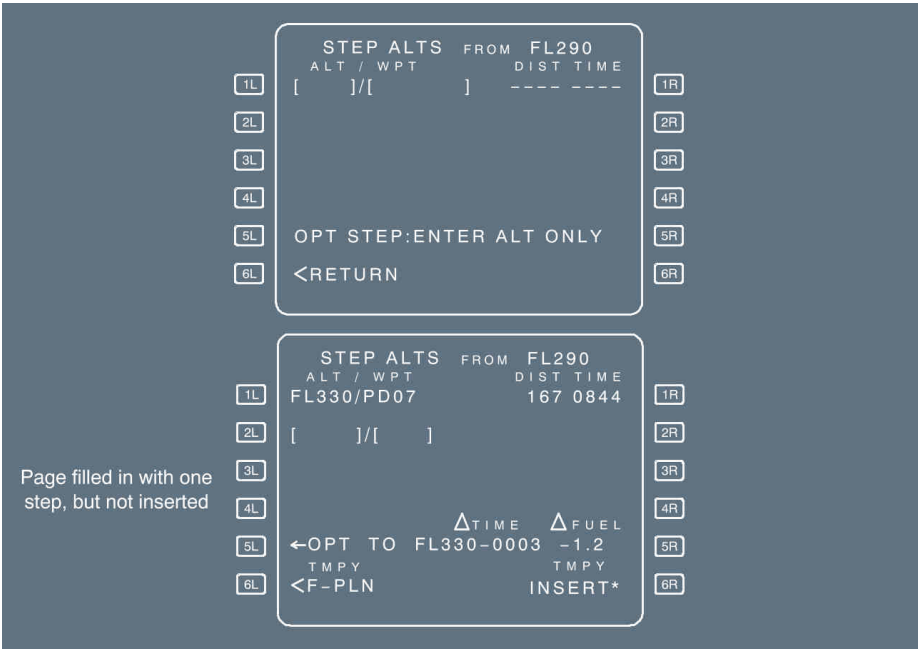
[4R] ALT ERROR (green)	When the aircraft misses a predicted altitude constraint, this field displays the difference between the altitude constraint and the predicted altitude. If, for example, "-500" appears in this field in green, the aircraft will reach the waypoint at an altitude 500 ft below the constraint altitude. This only applies to waypoints in the climb and descent phases.
[5R] STEP ALTS (white)	This legend appears for any waypoint, once a cruise altitude has been entered. It is not available in engine-out, descent, approach, and go-around phases. This gives the pilot access to the STEP ALTS page.
[6R] DES →	When this field displays "DES", pressing this key assigns the constraints to the descent phase and inserts them into the vertical flight plan. (See note below).
TMPY INSERT *	Activates the temporary flight plan.

Note: Altitude and speed constraints may apply to the climb, descent, or approach phase, but never to the cruise phase. The 6L/6R fields display "CLB/DES" when the revised waypoint is a cruise phase waypoint, and the FMGS needs to know if the new constraint is to be applied in climb or descent phase. The FMGS will modify the cruise phase accordingly. These 2 prompts also display "CLB/DES" when the predictions are not computed. (Top of climb and top of descent not yet defined).

STEP ALTS PAGE

Ident.: DSC-22_20-50-10-28-00000839.0004001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

This page enables the pilot to insert up to four geographic step points and one optimal step point into the flight plan. This page also displays the fuel/time savings associated with the optional step.
The crew calls it up from the vertical revision page.



TITLE	STEP ALTS followed by the current cruise altitude.
[1L] – [1R] [4L] – [4R] ALT/WPT (blue)	The waypoint identifier, as well as the altitude to step, can be entered in this field. Both are displayed in large font. When an entry is made, a temporary F-PLN is created.

DIST/TIME (UTC) (small green font)	Displays the distance to go, and time from the present aircraft position, along the flight plan to the step point. Note: *The following messages may be displayed in the DIST/TIME field:* - *"ABOVE MAX", if the step altitude exceeds the Max altitude.* - *"IGNORED", if the end step point is less than 50 NM from the top of descent or if the step climb is located prior to the top of climb or after the top of descent.* - *"STEP AHEAD", when the aircraft is within 20 NM of the start step point.* - *"NO OPTIMAL STEP" if the FMS is not able to compute an optimal step for the corresponding altitude.* - *"NO OPTIMAL" if an inserted optimal step is not optimal any longer.*
[5L] OPT STEP: ENTER ONLY ALT (white)	Is displayed to guide the crew for the entry format of an optimal step.
(OPT) FROZEN: RTA EXISTS	Is displayed, if a time constraint exists in the flight plan.
(OPT) TO FLXXX	This prompt allows the selection of the optimal step.
NO OPTIMAL STEP	Is displayed when the system cannot determine the optimal point for the corresponding altitude.
[6L] RETURN or TMPY F-PLN	The flight crew presses this key to return to the previous page. Appears when a temporary flight plan exists. It provides access to the temporary flight plan page.
[5R] ΔTIME/ΔFUEL (green)	Time and fuel savings represent the gain from selecting the optimal step: The difference in flight time and fuel consumption between the F-PLN without the optimal step selected and the F-PLN with the optimal step selected. It is displayed, when an optimal step has been computed. As soon as the optimum step is selected, the time/fuel savings information is no longer displayed.
[6R] TMPY INSERT *	Activates the temporary flight plan.

DATA INDEX PAGES

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Ident.: DSC-22_20-50-10-28-C-00000841.0002001 / 01 OCT 12

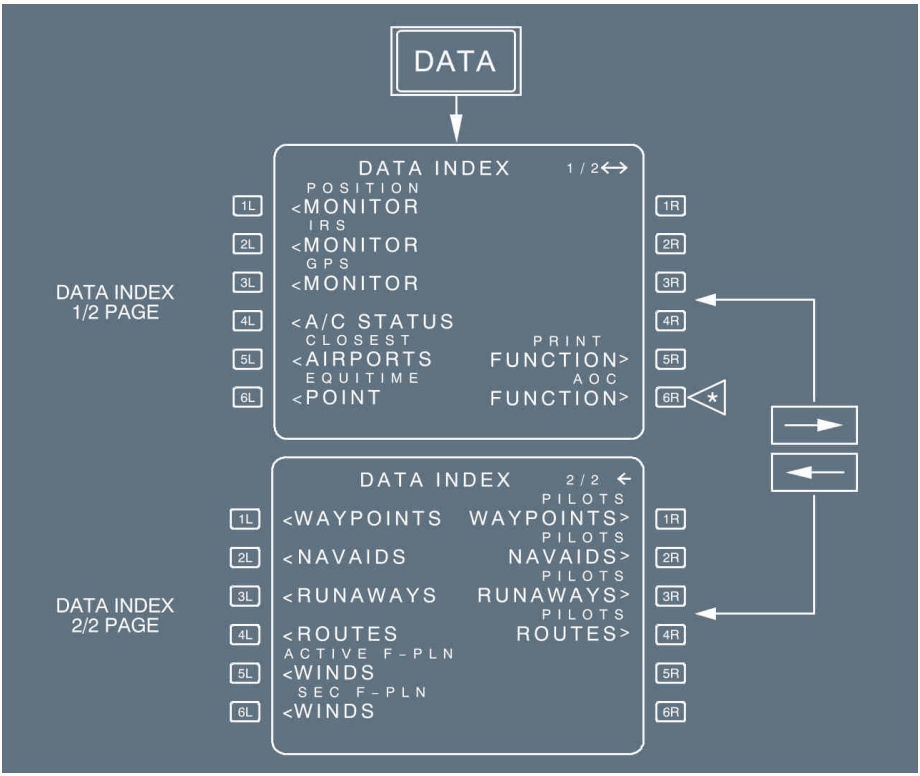
There are two INDEX pages:

The DATA INDEX 1/2 page gives access to various pages assigned to navigation.

The DATA INDEX 2/2 page lists the navigation data, entered in the FMGS.

The crew enters those items labeled “PILOTS” and can modify them. The crew can call up the others, but cannot modify them.

The crew calls up these pages by pressing the DATA key on the MCDU console:



Ident.: DSC-22_20-50-10-28-C-00000842.0002001 / 16 MAR 11

DATA INDEX 1/2 PAGE

[1L] POSITION MONITOR - [2L] IRS MONITOR	When the flight crew presses these keys, the display shows all essential navigation data.
[3L] GPS MONITOR	This key calls up the GPS MONITOR page.
[4L] A/C STATUS	This key calls up the aircraft status page.
[5L] CLOSEST AIRPORTS.	This key calls up the closest airports page.
[6L] EQUI-TIME POINT	This key calls up the equi-time point page.
[5R] PRINT	This key calls up the printer function pages.
[6R] AOC	This key calls up the ACARS function pages.

Ident.: DSC-22_20-50-10-28-C-00000843.0001001 / 23 JUN 15

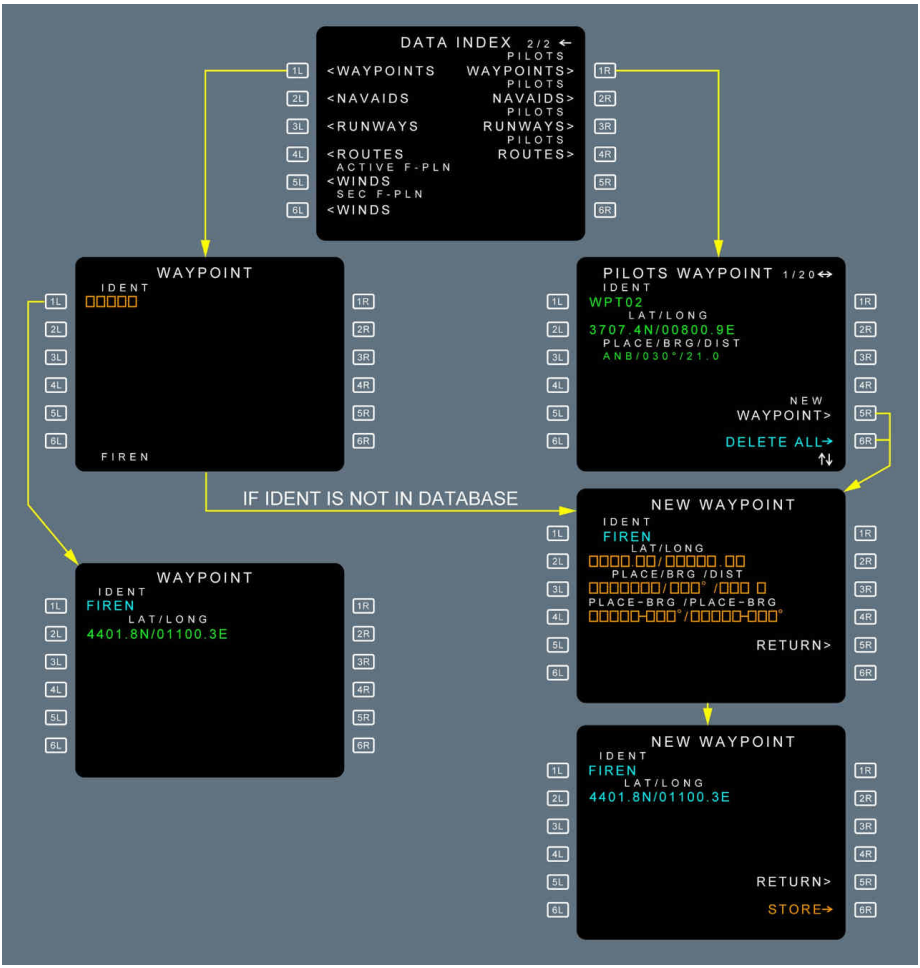
DATA INDEX 2/2 PAGE

[1L] WAYPOINTS [2L] NAVAIDs [3L] RUNWAYS [4L] ROUTES	These keys call up descriptions of waypoints, NAVAIDs, runways, and routes stored in the database, so that they can be reviewed.
[5L] ACTIVE F-PLN WINDS	This key calls up the appropriate active F-PLN wind page (CLIMB, CRUISE, or DESCENT).
[6L] SEC F-PLN WINDS	This key calls up the appropriate secondary F-PLN page (CLIMB, CRUISE, or DESCENT).
[1R] PILOTS WAYPOINTS [2R] PILOTS NAVAIDS [3R] PILOTS RUNWAYS [4R] PILOTS ROUTES	These keys call up waypoints, NAVAIDs, runways, and routes that the pilot has stored, enabling the pilot to review and store them in, or delete them from, the database. The airline can choose to automatically have all pilot-stored data erased in the done phase.

WAYPOINT/PILOTS WAYPOINT/NEW WAYPOINT PAGES

Ident.: DSC-22_20-50-10-28-00000844.0002001 / 04 SEP 18

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336



WAYPOINT PAGE

- The pilot calls up this page by pressing the 1L key on the DATA INDEX page. It displays waypoint information associated with the identifier, which the flight crew inserts in the [1L] field.
- From this page, it is possible to call up any waypoint from the navigation database, or any waypoint not stored in the stored waypoint list, if they belong to the active, temporary, or secondary flight plan.

PILOTS' WAYPOINT PAGE

The pilot calls up this page by pressing the 1R key on the DATA INDEX page. It displays waypoints, defined and stored by the pilot. It lists each stored waypoint, along with a number that shows the relative order in which it was inserted in the database. This number is displayed in the upper right-hand corner of the page. For example, “1/20” indicates that the waypoint was the first of 20 stored.

[1L] IDENT	To delete a waypoint, the pilot clears the 1L IDENT display.
[2L] LAT/LONG	The waypoint latitude and longitude are displayed in this field.
[3L]	This field displays PLACE/BRG/DIST, or PLACE-BRG/ PLACE-BRG, or PLACE/DIST, depending on how the waypoint was defined.
[5R] NEW WAYPOINT	The pilot presses this key to call up the NEW WAYPOINT page.
[6R] DELETE ALL	The pilot presses this key and the label changes to an amber "CONFIRM DELETE ALL". Pressing this key a second time deletes all the waypoints stored by the flight crew, except those currently used in the active or secondary flight plan. (“PILOT ELEMENT RETAINED” appears on the MCDU).

NEW WAYPOINT PAGE

- The pilot displays this page by pressing the 5R key on the PILOTS' WAYPOINT page.
- The flight crew uses this page to define and store waypoints. The maximum number of waypoints that it is possible to enter depends on the FMS standard. The maximum number can be 20 or 99. This number appears in the upper right corner of the STORED WAYPOINT page. For example, "1/20" indicates that it is possible to store up to 20 waypoints. If an additional waypoint is entered, then the first one is deleted.

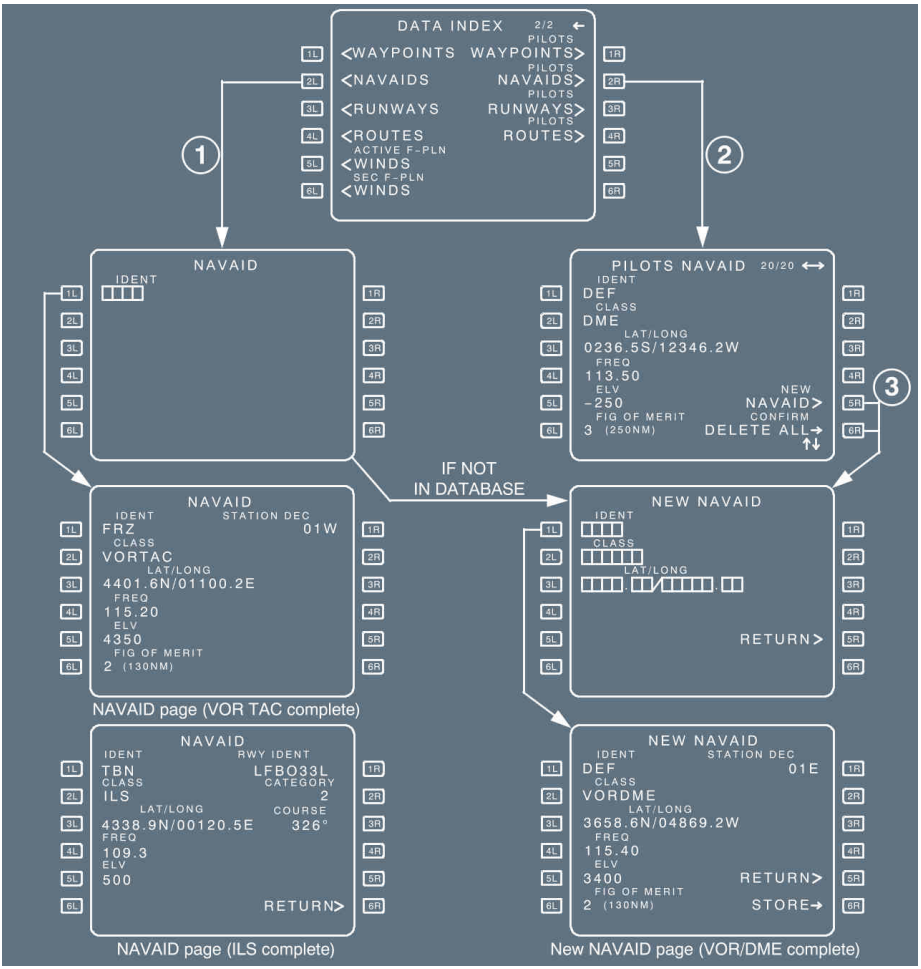
The flight crew defines a waypoint by entering its IDENT in the data field next to 1L, then by entering its position in the amber boxes.
The STORE prompt appears next to 6R when the boxes are filled in, and the pilot presses the key to store the waypoint in the database.

If the pilot enters the waypoint's position as place/bearing/distance, or place-bearing/place-bearing, the FMGC computes its latitude and longitude.

NAVAID/PILOTS' NAVAID/NEW NAVAID PAGES

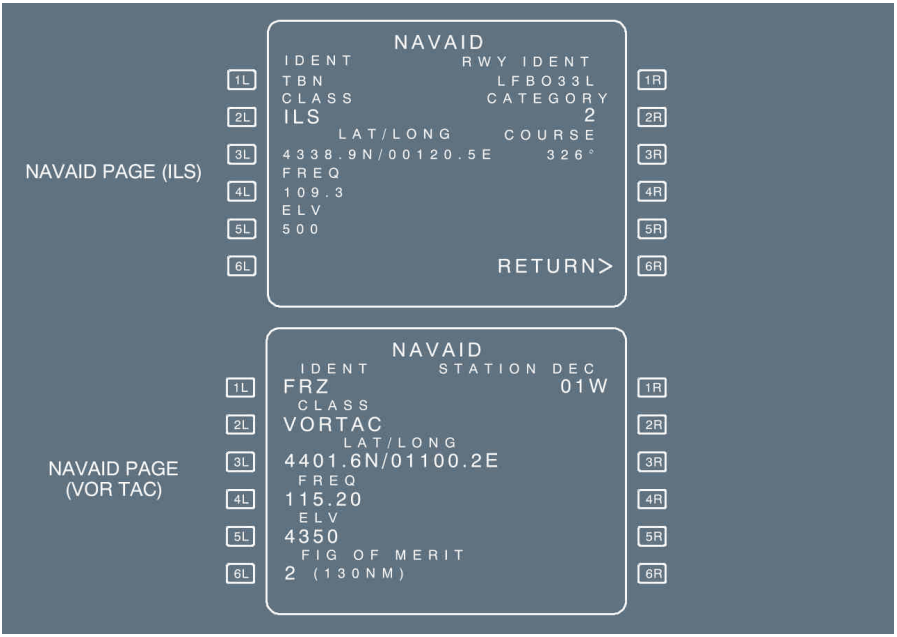
Ident.: DSC-22_20-50-10-28-00000845.0002001 / 01 OCT 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336



NAVAID PAGE

The pilot calls up this page by pressing the 2L key on the DATA INDEX page 2.
This page displays NAVAID information associated with the identifier the pilot inserts in the [1L] field.

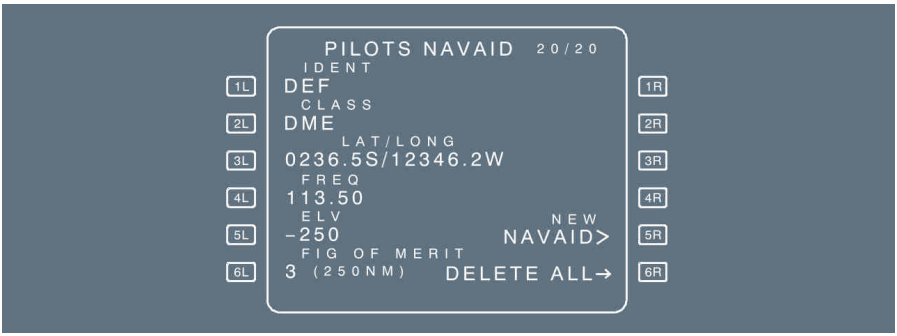


[2L] CLASS	This field identifies the NAVAID as VOR, DME, VOR DME, VORTAC, NDB, LOC, ILS, MLS, ILS/DME, MLS/DME, ILS/TAC or TACAN. It displays NON COLLOCATED, if the NAVAID is uncollocated.
[3L] LAT/LONG	If a uncollocated VOR DME or VORTAC is displayed, the LAT/LONG is the VOR latitude and longitude. The LAT/LONG displayed for an ILS, ILS DME, ILS TAC is the LAT/LONG of the localizer.
[4L] FREQ or CHAN	CHAN is displayed, if the class of NAVAID is an MLS or an MLS DME.
[5L] ELV	This field gives the NAVAID elevation in feet above sea level. It is not displayed for VOR or NDB.

[6L] FIG OF MERIT	This field shows how far out the FMGS can autotune a VOR, VOR/DME, VORTAC, or DME for display or for computing position. 0 : Up to 40 NM 1 : Up to 70 NM 2 : Up to 130 NM 3 : Up to 250 NM
[1R] STATION DEC or RWY IDENT	This is the magnetic declination in the NAVAID area (used only for VOR, VOR/DME, and VORTAC). The field displays RWY IDENT, if the NAVAID is a LOC, ILS, MLS, ILS/DME, MLS/DME or ILS/TAC.
[2R] CATEGORY	This field shows the NAVAID's category, if it is an ILS, ILS/DME, MLS, MLS/DME or ILS/TAC. A LOC DME has a category = 0.
[3R] COURSE	This is the localizer course, if the NAVAID is an ILS or a LOC, ILS TAC, ILS, MLS or MLS/DME.
[6R] RETURN	This prompt is displayed, if the page is accessed from the SELECTED NAVAID page. The pilot presses this key to return to the SELECTED NAVAID page.

PILOTS' NAVAID PAGE

The pilot calls up this page by pressing the 2R key on the DATA INDEX page. This page is used to display or delete defined and stored navaids.



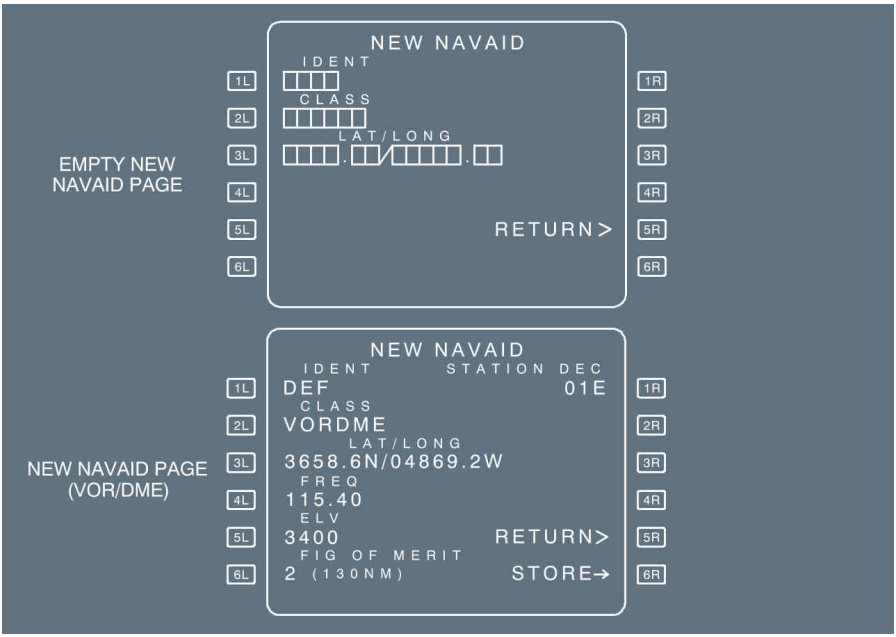
A number in the upper right-hand corner of the screen shows the relative order in which the NAVAIDs were stored. (For example, 3/7 means the third of seven stored).
Scroll keys are used to access the different stored NAVAIDs.

[1L] IDENT	The pilot deletes a stored NAVAID by entering its IDENT in this field, then by pressing the CLR key at the bottom of the MCDU control panel.
[2L] - [6L]	Same as the NAVAID page, but data is displayed in green.

[1R] - [4R]	Same as the NAVAID page, but data is displayed in green.
[5R] NEW NAVAID	This key calls up the NEW NAVAID page to define and store a NAVAID.
[6R] DELETE ALL and CONFIRM DELETE ALL	The pilot presses this key to erase all the stored NAVAIDs, except those currently used in the active or secondary flight plan. (The MCDU displays “PILOT ELEMENT RETAINED.”).

NEW NAVAID PAGE

The pilot calls up this page by pressing the 5R key on the STORED NAVAID page.



It can be used to define and store up to 20 NAVAIDs. Entering an additional waypoint deletes the first one. The NAVAID elements must be entered in two steps:

1. Enter the data in the amber-boxed lines.
2. Enter frequency, elevation, figure of merit, and station declination or ILS category and course, if applicable.

Note: *The pilot cannot create an ILS/DME, MLS/DME, or ILS/TAC or an uncollocated NAVAID. If the runway associated with the ILS or MLS has been entered via the new runway page, the course, IDENT, and runway IDENT are already displayed on the new NAVAID page when it comes up (copied from the new runway page). For details:* *Refer to DSC-22_20-50-10-28 RUNWAYS/PILOTS' RUNWAYS/NEW RUNWAY Pages.*

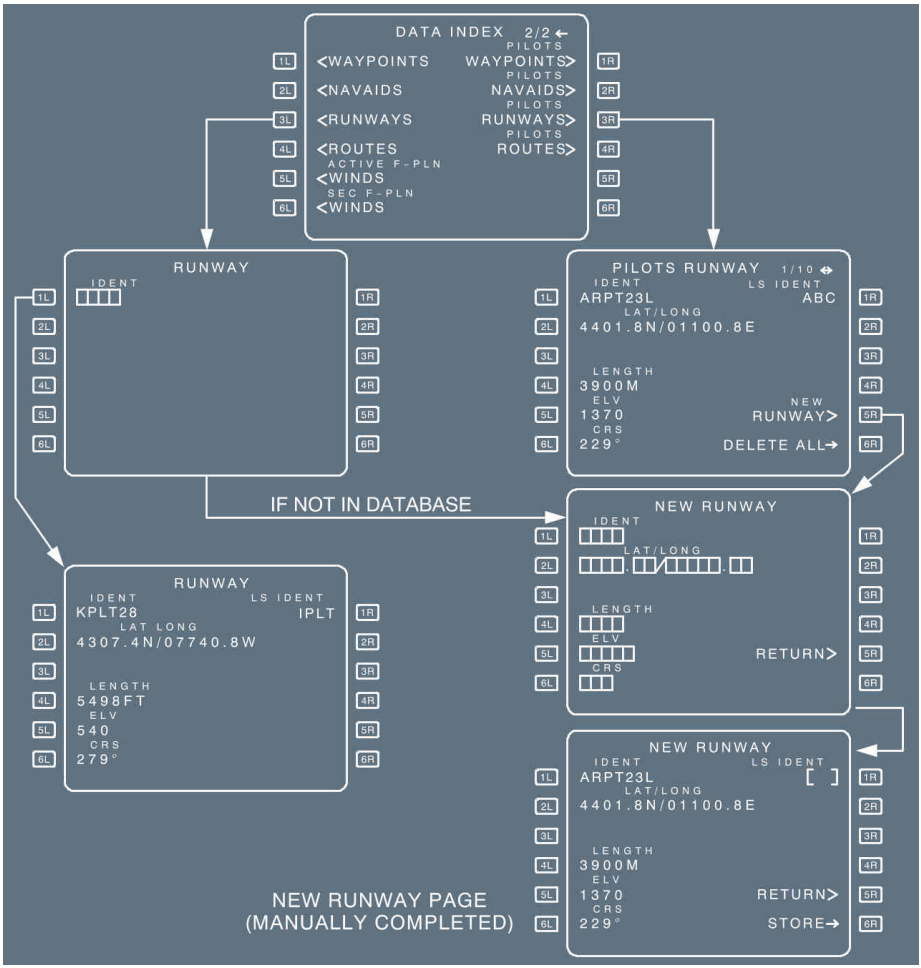
[1R] STATION DEC	The pilot must enter the magnetic declination, if the prompt is displayed. This prompt is only displayed for VOR, VORTAC, or VOR/DME.
[3R] COURSE	If the NAVAID is an ILS, MLS, LOC, enter the course.
[6R] STORE	This prompt appears when all the amber boxes have been filled in. The pilot presses this key to store the NAVAID.

A stored NAVAID is never used for position computation.

RUNWAYS/PILOTS' RUNWAYS/NEW RUNWAY PAGES

Ident.: DSC-22_20-50-10-28-00000846.0002001 / 14 MAY 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336



RUNWAY PAGE

This page displays the following information :

[1L] IDENT	The runway ident, which comprises the airport identification and the runway direction, uses six or seven digits (Example : CYYZ 24L and LFRJ 08).
[2L] LAT/LONG	The latitude and longitude of the runway threshold.
[4L] LENGTH	The runway length in meters (M) or feet (ft), in four digits (26 300 ft or 8 000 m).
[5L] ELV	The elevation of the threshold in feet above sea level.
[6L] CRS	The runway course (degrees magnetic).
[1R] LS IDENT	The LOC, ILS or MLS identifier.

PILOTS' RUNWAY PAGE

The pilot uses this page to display or delete the defined and stored runways. The stored runways are listed and numbered in the order in which they were inserted. The number is displayed in the upper right-hand corner of the page. (For example, 2/4 means the runway is the second of four stored runways).
The pilot can delete any stored runway from the database by displaying its ident in the 1L field, then by pressing the CLR key on the MCDU control panel.

[6R] DELETE ALL and CONFIRM DELETE ALL	The pilot presses this key to erase all the stored runways, except those used in the active or secondary flight plan. (The MCDU displays “PILOT ELEMENT RETAINED”).
[1L] to [6L]	These fields are similar to the RUNWAY page fields.

NEW RUNWAY PAGE

The pilot can use this page to define and store up to 10 runways.
When the pilot enters an ILS/LOC ident in the [1R] field, the new navaid page comes up. When the pilot has entered and stored the necessary data in the new navaid page, the new runway page reappears.

The new runway page and the new navaid page (ILS/LOC) are not independent :

- When the flight crew first defines the ILS/LOC (on the new navaid page), the new runway page, when called up, already displays the RWY course, RWY ident, and ILS ident (copied from the new navaid page).
- When the flight crew first defines the runway (on the new runway page), the new navaid page, when called up, already displays the ILS course, ILS ident, and runway ident.

The pilot must enter the two runway directions on two different new runway pages (Example: LFRJ 08 and LFRJ 26) to allow the flight plan to select either one.

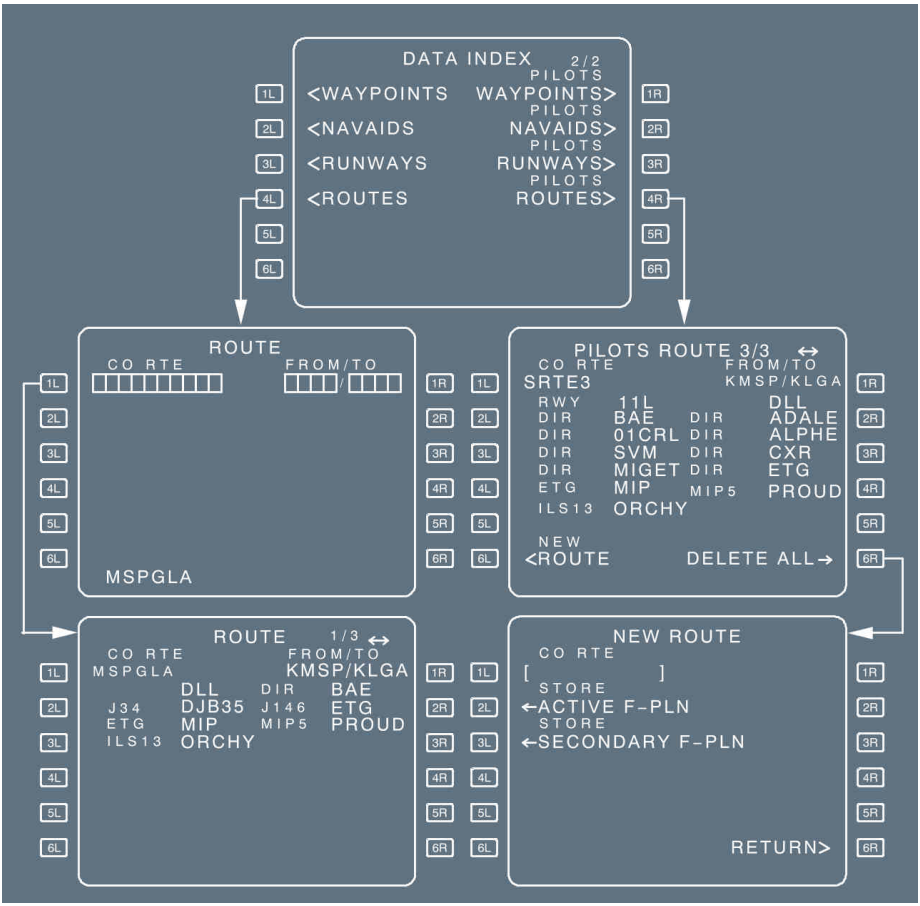
Note: When 10 runways are stored, entering a new stored runway deletes the first one of the list (1/10).

[1L] to [6L]	These keys are used to enter information about the new runway.
[1R] LS IDENT	This key is used to enter the ILS/MLS/LOC ident. The NEW NAVAID page comes up.
[5R] RETURN	The pilot presses this key to return to the NEW NAVAID page.
[6R] STORE	This prompt only appears when all the amber boxes have been filled in.

Note: *The NEW RUNWAY may be used for departure or destination, but no SID or STAR can be associated or stored with this runway. Therefore, the pilot will use it as an "independent" airport.*
A new runway is identified by the 4–letter ICAO airport identifier, although all six or seven digits must be entered.

ROUTE/PILOTS' ROUTE/NEW ROUTE PAGES

Ident.: DSC-22_20-50-10-28-00000847.0001001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336



ROUTE PAGES

(Not-modifiable)

[1L] CO RTE — Any company route ident, entered in this field, causes all the elements of the route to be displayed.

Line 2 to Line 6	These lines display the various route elements, including waypoints and airways.
[1R] FROM/TO	This field is automatically filled in, when the pilot enters the ident for a company route. When the pilot manually enters a city pair, the MCDU displays “NOT IN DATA BASE”, if the city pair is not in the navigation database. If the city pair is in the database, the CO RTE field displays the first route stored in small blue font. If more than one route is stored, the pilot can scroll to see the different routes.

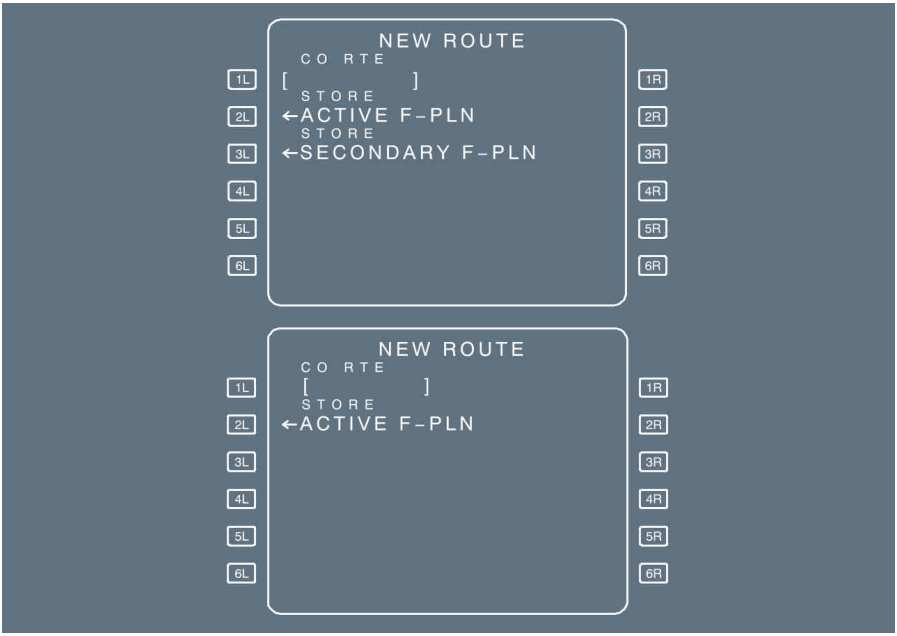
PILOTS' ROUTE PAGE

This page displays up to 5 routes, stored by the pilot. The Pilots' routes are listed and numbered in the order of insertion. The number is displayed in the upper right-hand corner of the page.

[1L] CO RTE	This field identifies the stored route. Clearing this field deletes the stored route.
Line 2 to Line 5	The fields in these lines are identical to the corresponding fields on the route page.
[6L] NEW ROUTE	Pressing this key calls up the new route page.
[1R] FROM/TO	This identifies the city pair of the stored route.
[6R] DELETE ALL	Pressing this key changes the label "CONFIRM DELETE ALL" which appears in amber. Pressing this key a second time deletes all previously-stored routes.

NEW ROUTE PAGE

The pilot calls up this page by pressing the NEW ROUTE key on the PILOT'S ROUTE page. It can be used to store up to five new routes that have already been defined in the active or secondary flight plan.



[1L] CO RTE	This field allows the pilot to enter a new company route ident. If that ident has already been assigned, the entry is rejected. The message NON UNIQUE ROUTE is then displayed.
[2L] STORE ACTIVE F-PLN (cyan)	Pressing this key stores parameters of the active flight plan as a new route. This prompt appears when the system contains a FROM/TO, but only during preflight.
[3L] STORE SECONDARY F-PLN (cyan)	Pressing this key stores parameters of the secondary flight plan as a new route. This prompt appears when the system contains a FROM/TO, and the secondary flight plan has not yet been sequenced.

Note: - *If it has not already been named, a stored route is automatically named (SRTE 1 to SRTE 5) when stored.*
- *When 5 routes are already stored, the pilot cannot insert a new stored route. The "PILOTS' ROUTE FULL" message is displayed, and the pilot must manually delete a route, in order to be able to store a new one.*
- *The following flight plan elements are not retained when the route is stored :*
  - *Pilot-entered holds and constraints*
  - *Offset*
  - *Modifications to terminal procedures*
  - *Pseudo waypoints*
  - *Step at optimum*
  - *The MCDU then displays "REVISIONS NOT STORED".*

AIRCRAFT STATUS PAGE

Ident.: DSC-22_20-50-10-28-00000848.0001001 / 24 SEP 14
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The pilot call this page up by pressing the DATA key on the MCDU console.

TITLE	AIRCRAFT TYPE
[1L] ENGINE TYPE	The system uses this engine model to calculate predictions.

Note: *When the same performance database is used for different aircraft configurations, the aircraft or engine type displayed in the [1L] field may differ from the actual aircraft.*

[2L] ACTIVE DATABASE	The validity period and part number are displayed in large font.
[3L] SECOND DATABASE	The validity period and part number are displayed in small font. The pilot can press the 3L key to switch to the second database as the active database.

CAUTION	Cycling the database erases the primary and secondary flight plans, as well as the stored data. The flight crew must never do this in flight.

[5L] CHG CODE

This field allows entry of a code which permits modification of the IDLE and/or PERF factor displayed in 6L. It is displayed in the PREFLIGHT and DONE phases. The label is displayed in small white fonts; the brackets, or the entered value, are displayed in large blue fonts.

[6L] IDLE/PERF

It is only possible to modify these factors when the aircraft is on ground. If no value was entered, the FMS displays default values coded in the Airline Modifiable Information (AMI) file.
Default values are displayed in small font, although manually entered values are displayed in large font.

When it is necessary to modify the IDLE or the PERF factor:

- ENTER the change code in the CHG CODE field [5L].
  The default value for this code is “ARM” but it is possible to modify it on airline request (the applicable code is then coded in the Airline Modifiable Information (AMI) file).
  When a valid change code is entered, the IDLE and PERF factors are displayed in blue.
- ENTER the new IDLE and/or PERF factor(s) in the scratchpad.
- PRESS the [6L] key to insert the new IDLE and/or PERF factor(s).
  The new IDLE and/or PERF factor(s) is (are) displayed in large blue font.

[4R] STORED

This field displays pilot-stored data in a large green font. The field is blank, if no data is stored. (The airline can choose to have this data automatically erased at the done phase).

[5R] DELETE ALL

Pressing this key changes the label to "CONFIRM DELETE ALL" in amber. Pressing this key a second time deletes all pilot-stored data, except data that is part of the active and secondary flight plans.

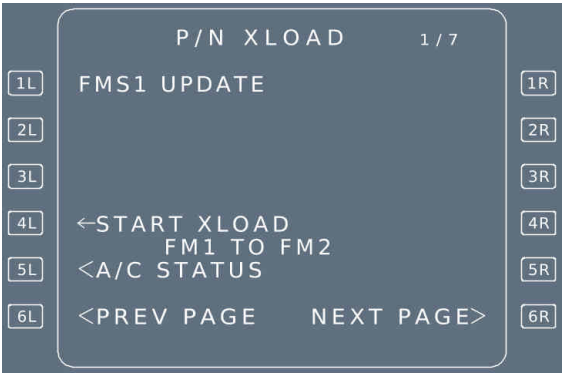
[6R] STATUS/XLOAD

This prompt gives access to the P/N STATUS and P/N XLOAD pages.

P/N XLOAD PAGE

Ident.: DSC-22_20-50-10-28-00000849.0001001 / 10 DEC 09
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

This page allows the crossloading of all databases or configuration files' part numbers which are different between both sides. Crossloading from this page avoids reviewing each individual P/N STATUS page.



TITLE	P/N XLOAD
[1L]	FMS1 UPDATE : FMS1 can be loaded on the right side MCDU. FMS2 UPDATE : FMS2 can be loaded on the left side MCDU
[4L]	START XLOAD : This blue prompt is displayed, only if the system detects a difference between both sides' part numbers. FMS1/FMS2 IDENTICAL : Displayed in green, when there is no difference between both sides' part numbers.
Line 5	FM1 TO FM2 or FM2 TO FM1 : Indicates the crossloading direction.
[5L]	A/C STATUS : This white prompt is displayed, when there is no crossloading in progress. It gives access to the A/C STATUS page. MM : SS MIN REMAINING : Indicates the time remaining for crossload completion, when a crossload is in progress.
[6L] PREV PAGE	The pilot presses this key to return to the A/C STATUS page.
[6R] NEXT PAGE	Pressing this key calls up the next P/N XLOAD page.

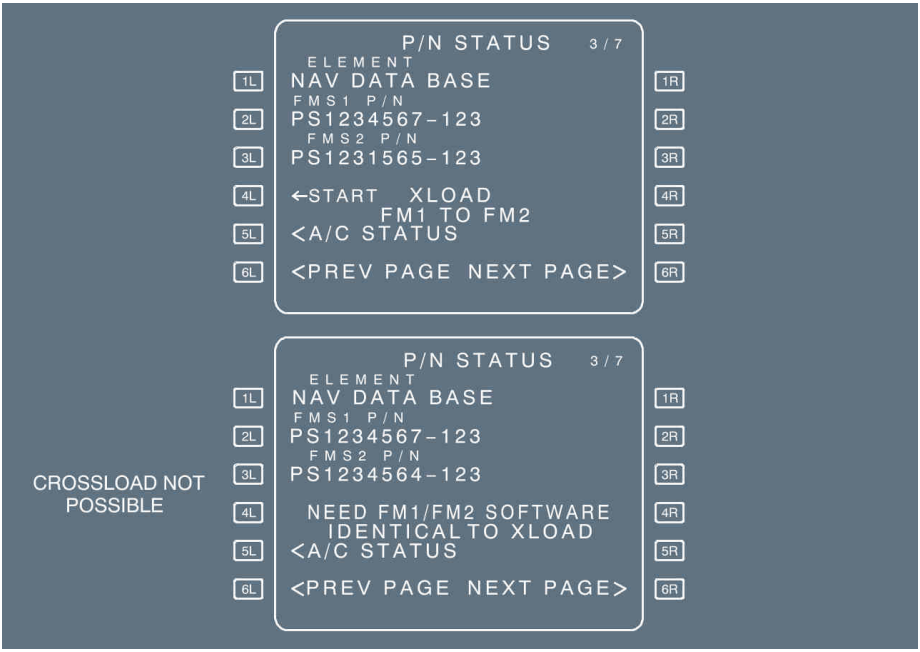
P/N STATUS PAGES

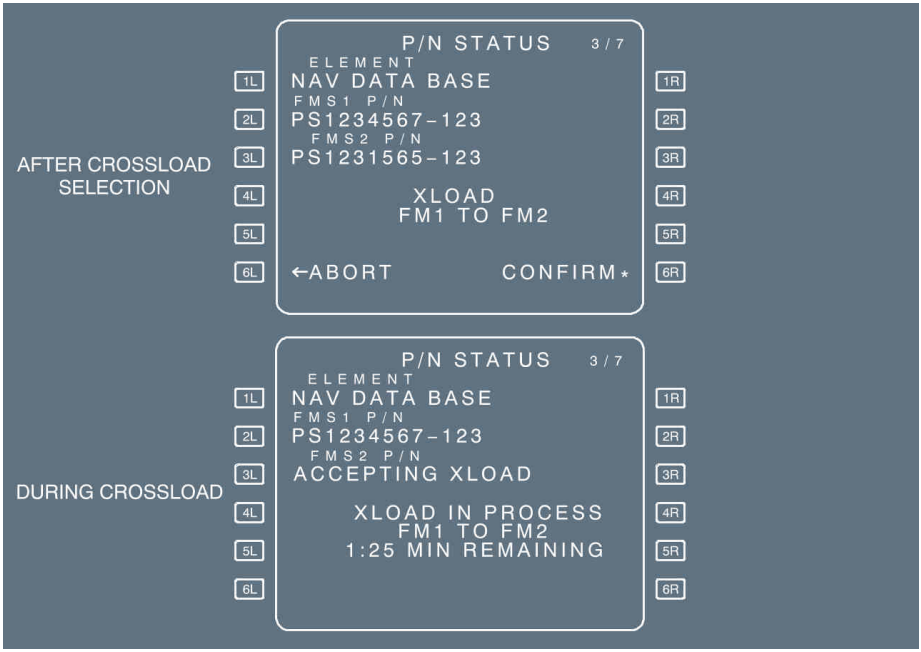
Ident.: DSC-22_20-50-10-28-00000850.0001001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

These pages enable the following databases and configuration files to be reviewed and crossloaded between both FMS :

- Page 2 FMS SOFTWARE part numbers
- Page 3 NAV DATA BASE part numbers
- Page 4 FM AIRLINE CONFIG part numbers
- Page 5 FM OPTIONS CONFIG part numbers

- Page 6 PERF DATA BASE part numbers
- Page 7 MAG VAR DATABASE part numbers





TITLE	P/N STATUS
Line 1 ELEMENT	Indicates the name of the database or configuration file that can be crossloaded : - FMS SOFTWARE on Page 2 - NAV DATA BASE on Page 3 - FM AIRLINE CONFIG on Page 4 - FM OPTIONS CONFIG on Page 5 - PERF DATA BASE on Page 6 - MAG VAR DATABASE on Page 7.
Line 2 FMS1 P/N Line 3 FMS2 P/N	These fields display the part numbers of the database or configuration file (stated on line 1), that are installed on the FMS 1 and 2. Identical part numbers are displayed in green, different ones in amber. During crossload, the updated part number is replaced by the “ACCEPTING XLOAD” amber message.

Line 4	This line is empty when the active flight phase is not Preflight or Done. XLOAD FMx TO FMy or START XLOAD FMx TO FMy : This blue prompt is displayed when the database or configuration file (stated on line 1) can be crossloaded. XLOAD ARMED : Displayed in blue on the receiving FM when the crossload has been requested, but not yet confirmed. XLOAD IN PROCESS : Displayed in white, when the crossload is ongoing. A/C ENG NOT SUPPORTED : Related to the Performance Database only. It is displayed when the FMS performance database model is incompatible with the aircraft/engine's pin program. XLOAD NOT SUPPORTED : Crossloading is unavailable for this element. NO P/N TO XLOAD : The element is missing. NEED FG1/FG2 IDENTICAL TO XLOAD : The receiving side's FG software is incompatible with the FG software to be crossloaded. NEED FM1/FM2 SOFTWARE IDENTICAL TO XLOAD : The crossloaded element is incompatible with the receiving side's FM software.
[5L] A/C STATUS	This prompt is available, when no crossload is in process. This gives the pilot access to the aircraft status page. MM : SS MIN REMAINING : Displays the time remaining to complete the crossload, when a crossload is in process.
[6L] PREV PAGE ABORT	This key calls up the previous P/N STATUS page. This amber prompt is displayed when a crossload is in progress. The pilot uses it to stop the crossload.
[6R] NEXT PAGE CONFIRM*	This key calls up the next P/N STATUS page. This amber prompt is displayed when a crossload has been armed. The pilot presses it to start the crossload.

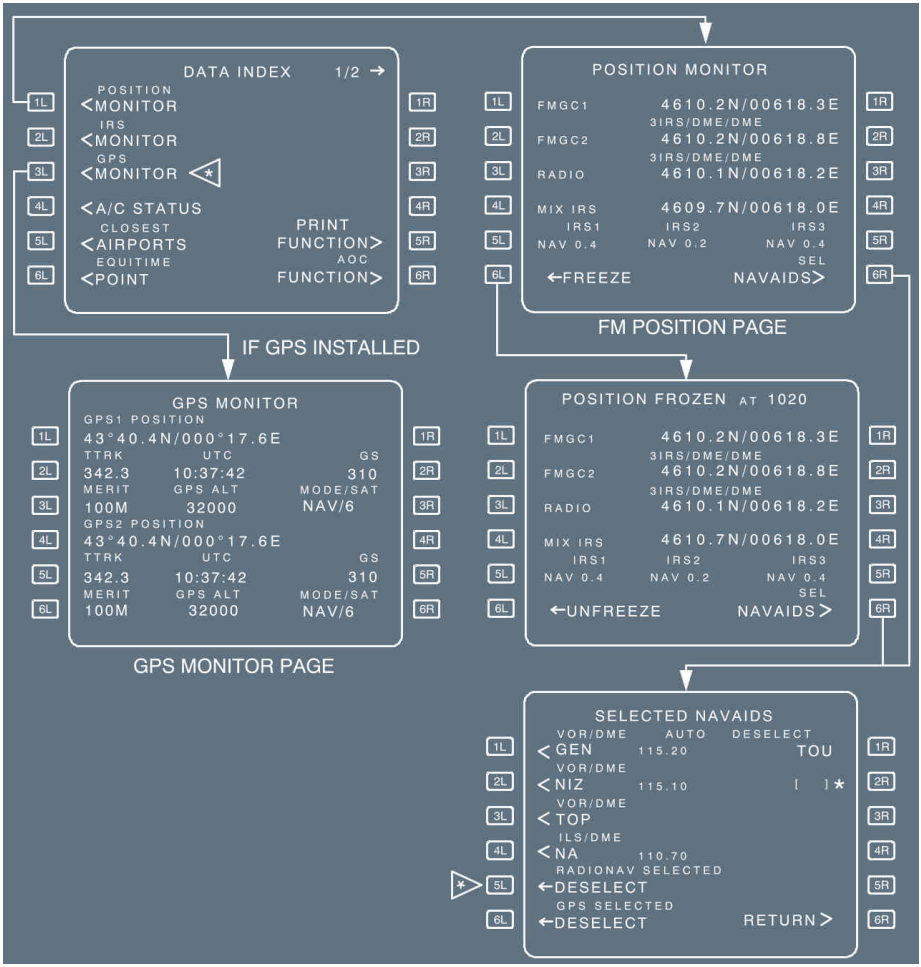
POSITION MONITOR PAGE

Ident.: DSC-22_20-50-10-28-00000853.0008001 / 14 MAY 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

This page displays all the different positions that the FMGC has computed with the various available navigation methods. It also shows which method obtained each position. (The positions should be almost identical).

The pilot calls up this page by pressing the 1L key on the data index page.



POSITION MONITOR AND POSITION FROZEN PAGE

Line 1 FMGC 1

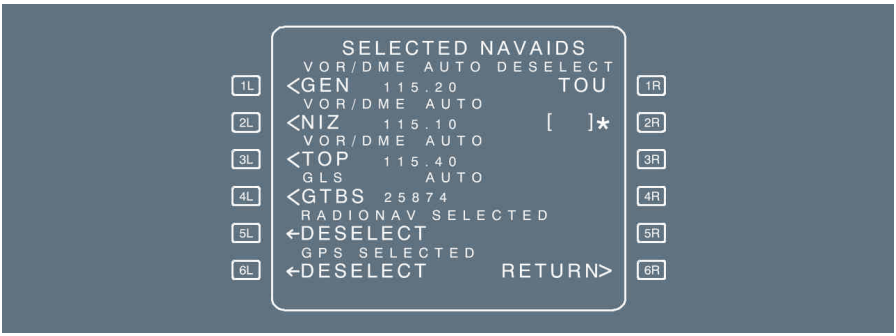
This line displays the latitude and longitude in green, as calculated by the FMGC 1, and the navigation method used by the FMGC for that calculation in white (Example: “3 IRS/DME/DME”).

Line 2 FMGC 2	This line displays the latitude and longitude in green, as calculated by the FMGC 2, and the navigation method used, in white.
Line 3 RADIO or GPS or GPIRS or RADIO DESELECTED	This line displays the latitude and longitude in green, calculated by the onside FMGC from selected radio NAVAIDs (Example: DME/DME, VOR/DME, or LOC) or from GPS or GPIRS. The selected radio NAVAIDs are displayed in white.
Line 4 MIX IRS	This line shows the latitude and longitude of the weighted mean inertial reference system (IRS) calculated by the onside FMGC from the available IRSs.
Line 5 IRS 1,2,3	This line shows the deviation in nautical miles of each IRS position from the onside FMGC position. It also displays the IRS mode, which can be INVAL, ALIGN, NAV or ATT. *Note: INVAL is displayed when an ADIRS has failed, or the IRS position is not refreshed.*
[6L] FREEZE/UNFREEZE (blue)	The pilot presses this key to freeze (or unfreeze) all the data displayed on the page. When the data is frozen, the title of the page specifies the time at which it was frozen.
[6R] SEL NAVAIDS	The pilot presses this key to access the selected navaids page.

SELECTED NAVAIDS PAGE

Ident.: DSC-22_20-50-10-28-00000854.0003001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

MODIFIABLE FOR DESELECTION/SELECTION



[1L] This field displays the ident of the NAVAID tuned for display purposes, in blue, and the frequency of the NAVAID in green.

[2L] to [3L] These fields display the ident of the NAVAIDs tuned for the calculation of the radio position by the FMGC, in blue, and the frequency of the NAVAIDs in green.

[4L] This field displays the ident of the landing system (XLS) in blue, and the frequency (or the channel) of the landing system in green.

Note: *For fields [1L] to [4L] the class of the tuned NAVAID or the landing systems, and the tuning mode (AUTO, MAN, or RMP) are displayed in white in the label field.*

[5L] The flight crew presses this key to manually select or deselect the NAVAIDs.
If the flight crew selects (deselects) the NAVAIDs for position calculation, “RADIONAV SELECTED” (“RADIONAV DESELECTED”) is displayed in the label line in blue small font and “DESELECT” (“SELECT”) is displayed in white large font. By default NAVAIDS are selected.
The deselection of the RADIONAV inhibits use of radio position (either DME/DME or VOR/DME) for position calculation.

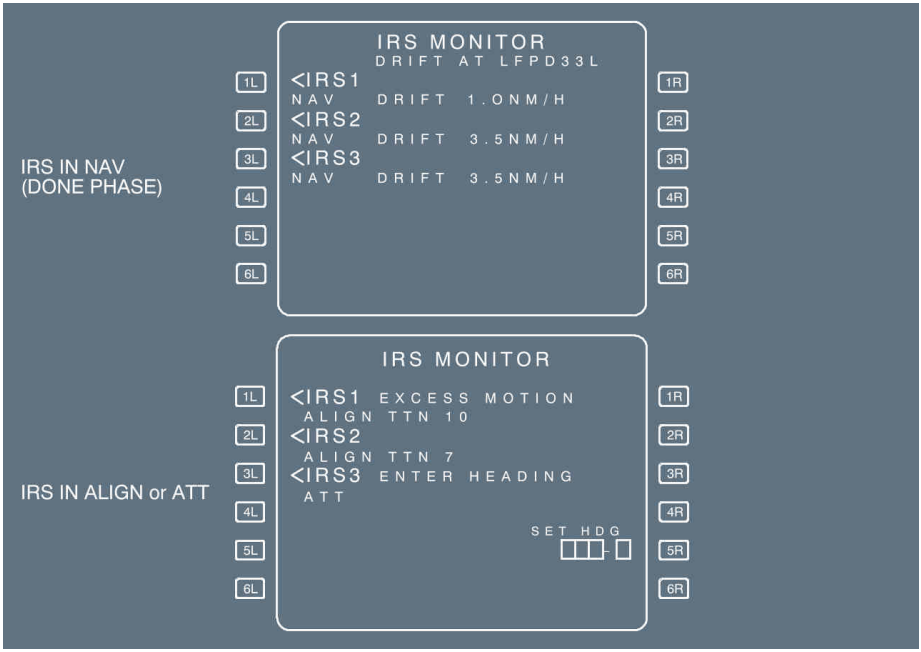
[6L]	The flight crew presses this key to manually select or deselect the GPS. If the flight crew selects (deselects) the GPS, “GPS SELECTED” (“GPS DESELECTED”) is displayed in the label line in blue small font and “DESELECT” (“SELECT”) is displayed in white large font. By default GPS is selected. If the flight crew deselects the GPS, “GPS IS DESELECTED” MCDU message is displayed when the aircraft is less than 80 NM from the top of descent, or in approach phase.
[1R] to [5R]	The flight crew deselects a NAVAID by entering the NAVAID identifier in one of these four fields. Once deselected, the flight crew can manually tune the NAVAID by entering the ident of the NAVAID for display purposes. The deselection can be cleared: - Manually, by a CLR action in this field, or - Automatically upon transition to the done or preflight phase, or upon activation of the second database. The flight crew may deselects as many as four stations. If the flight crew attempts to deselect a NAVAID that has been previously deselected, the “XXXX IS DESELECTED” MCDU message is displayed.
[6R] RETURN	The flight crew presses this key to return to the POSITION MONITOR page.

IRS MONITOR PAGE

Ident.: DSC-22_20-50-10-28-00000856.0003001 / 23 JUN 15

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

This page displays the IRS data. The crew calls up this page by pressing the IRS monitor prompt of the DATA INDEX 1/2 page.

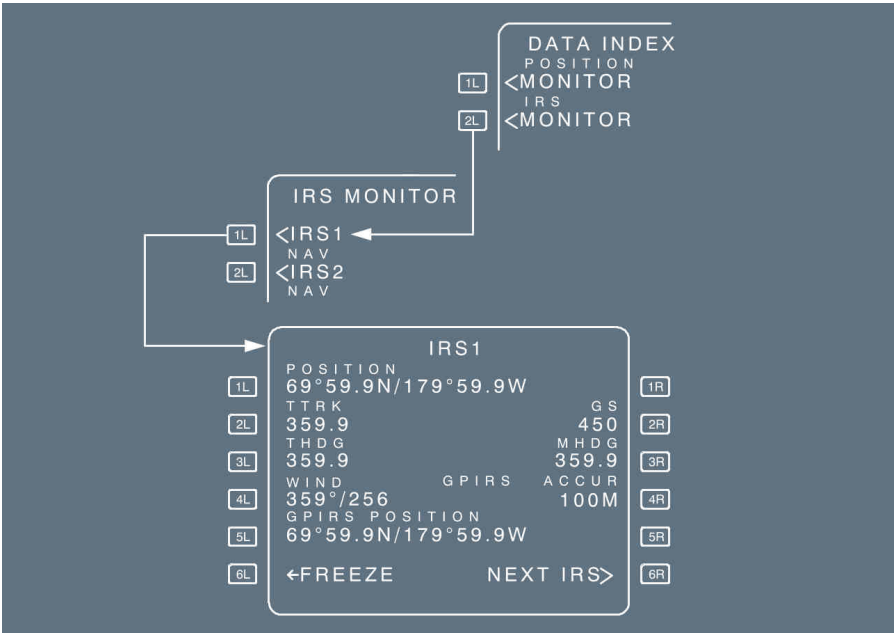


TITLE DRIFT AT XXXX (amber)	Displays “DRIFT AT” runway identifier, if at least one IRS average drift is displayed.
[1L] to [3L] IRS 1(2) (3) (white)	These prompts access the associated IRS pages. Each label line displays the mode (NAV, ALIGN, ATT or INVAL), the average drift (upon transition to DONE phase), and the Time To NAV in minutes (if IRS in align) for each IRS.

[1R] to [3R]	Displays the status message of the associated IRS in small green font. List of available messages: IR FAULT DELAYED MAINT ENTER PPOS SELECT ATT EXCESS MOTION SWITCH ADR CHECK C/B CDU FAULT ENTER HEADING REENTER PPOS SYS BELOW -15 °
[5R] SET HDG (white)	This field is displayed, if at least one IRS is in ATT mode. This function allows initialization of a heading for IRS in ATT mode: - If a heading has been entered in this field, or on the ADIRS panel, the value is displayed in blue. - If not, amber boxes are displayed.

IRS 1 (2) (3) PAGE

This page displays the IRS parameters and GPS/IRS hybrid parameters.
The pilot calls up this page by pressing either the 1L key from the IRS MONITOR page, or the NEXT IRS prompt on another IRS page (closed loop).



TITLE	Displays the selected IRS in large white font. When data is frozen, IRS is replaced by “IRS FROZEN AT”, followed by the time at which the pilot has frozen the display.
[1L] POSITION	Displays the latitude/longitude given by the selected IRS.
[2L] TTRK	True track
[3L] THDG	True heading
[4L] WIND	True wind direction/velocity
[5L] GPIRS	GPS/IRS hybrid position of the IRS
[6L] FREEZE/UNFREEZE	Allows the crew to freeze or unfreeze all data displayed on all three IRS pages. When the data is frozen, the title of the page specifies the time at which it was frozen. It is automatically unfrozen when exiting the page.
[2R] GS	Ground speed
[3R] MHDG	Magnetic heading
[4R] GPIRS ACCUR	GPS/IRS Figure of Merit (meters or feet)

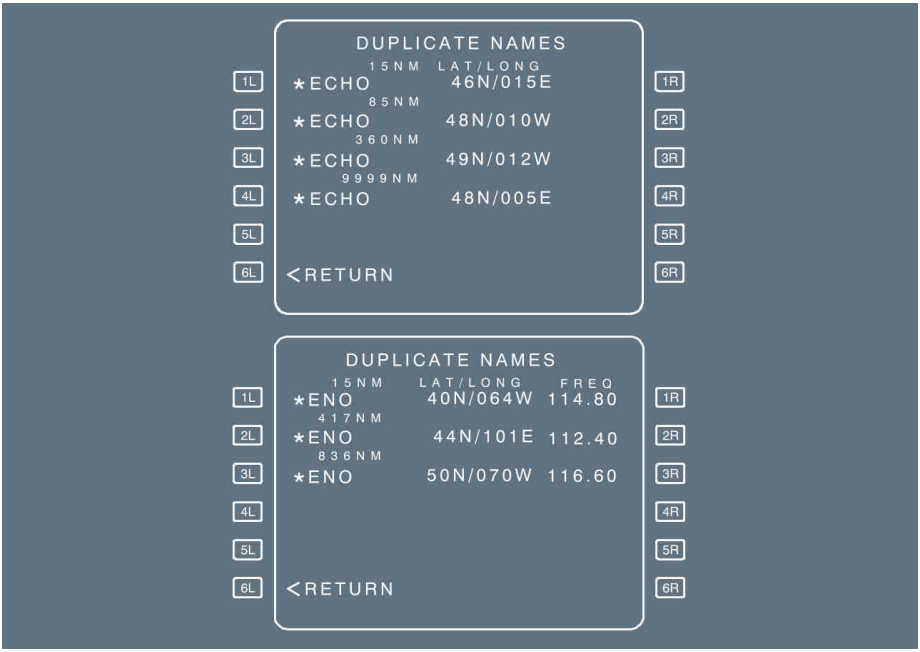
[6R] NEXT IRS	This prompt enables another IRS page (closed loop IRS 1 → 2 → 3 → 1) to be displayed.

DUPLICATE NAMES PAGE

Ident.: DSC-22_20-50-10-28-00000852.0001001 / 23 JUN 15

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

This page automatically appears and enables the pilot to select a specific waypoint, airport, or NAVAID, when the database has more than one with the same identifier.



The pilot presses the key adjacent to a waypoint, NAVAID, or airport, to select it as the one to be entered. When the pilot has finished, the page automatically reverts to the previously displayed page.

DISTANCE

The direct distance to the aircraft is displayed in green above each name. If this distance is greater than 9 999 NM, then +9 999 NM is displayed.

LAT/LONG COLUMN

This column lists the rounded off latitudes and longitudes of the different points, using the same identifier.

FREQ/CHAN COLUMN

This column lists the NAVAIDs frequencies, if any. It displays CHAN for an MLS.

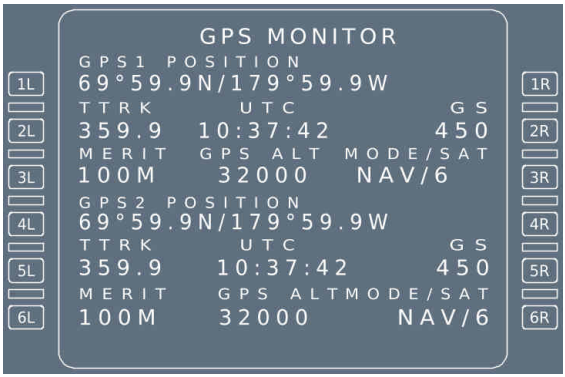
Note:

- *The DUPLICATE NAMES page is not displayed, when 2 waypoints with the same ident belong to the same airway. The system selects the first waypoint found in the database.*
- *The waypoints or NAVAIDs are ranked according to their distance from the aircraft's position.*
- *When a waypoint is named using ICAO phonetic alpha characters, a minus sign and the ICAO code of the country where the waypoint is located, are displayed. e.g. Alpha in France becomes A-LF ; Bravo in England becomes B-EG.*

GPS MONITOR PAGE (IF INSTALLED)

Ident.: DSC-22_20-50-10-28-00000858.0001001 / 16 MAR 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

This page displays the GPS data. The pilot calls up this page by pressing the GPS MONITOR prompt of the DATA INDEX page.



Line 1 and 4 GPS 1,2	POSITION
[2L] and [5L] TTRK	GPS 1, 2 true track
[3L] and [6L] MERIT	GPS 1, 2 figure of merit (meters or feet)
[2R] and [5R] GS	GPS 1, 2 ground speed

[3R] and [6R] MODE/SAT	GPS 1, 2 mode (INIT, ACQ, NAV, TEST, FAULT, AIDED or ALTAID) and Number of satellites tracked. INIT : System initialization ACQ : Satellite acquisition NAV : Normal mode TEST : System test FAULT : Invalid system ALTAID/: AIDED : Degraded modes. GPS uses aircraft inputs for computation purposes.
[2] and [5] UTC	GPS 1, 2 UTC
[3] and [6] GPS ALT	GPS altitude is displayed for information purposes. It is not used by the FMGS.

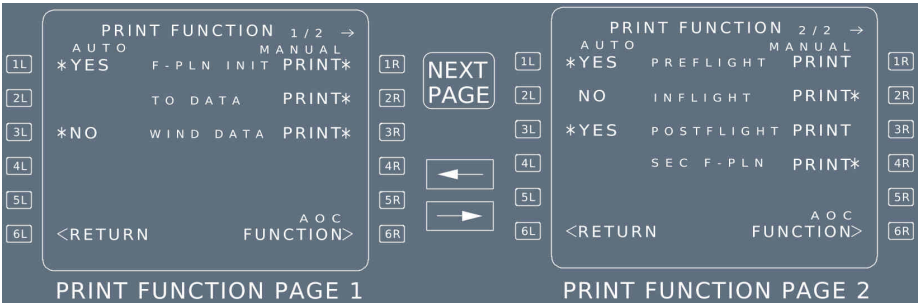
PRINT FUNCTION PAGES

Ident.: DSC-22_20-50-10-28-00009558.0001001 / 16 MAR 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The PRINT FUNCTION pages enable the crew to print the data relative to the current flight.

This data comes from 2 different sources:
- ACARS uplink messages, and
- Active data from the current flight.

The pilot may access these pages from the “DATA INDEX” page1/2, by pressing the [6R] ACARS/PRINT FUNCTION key.



PRINT FUNCTION PAGE 1/2

This page displays the status of the automatic printing capabilities, for the uplink messages (left column), and the status of the manual printing capabilities of the current active data (right column).

LEFT COLUMN

AUTO

* YES (blue)
  - Line 1 : Uplink messages related to flight plan INIT data are automatically printed when received.
  - Line 2 : Uplink messages related to takeoff data are automatically printed when received.
  - Line 3 : Uplink messages related to wind data are automatically printed when received.

NO (without an asterisk) — Automatic printing is internally deactivated for the data of the line. The pilot cannot reactivate it manually.

Blank — The ACARS function is not available for this line. Uplink messages can neither be received nor automatically printed.

RIGHT COLUMN

MANUAL — Displays the status of the manual printing capability of the active data (and not of the ACARS uplink data).

PRINT * (amber) — Pressing the right keys prints the following active data:
- Line 1 : Active flight plan INIT data
- Line 2 : Active takeoff data
- Line 3 : Active wind data

Printing is only possible, if the asterisk appears.
When the key is pressed, the asterisk disappears until the data is printed.

[6L] RETURN — Pressing this key reverts the display to the DATA INDEX page.

[6R] ACARS FUNCTION — Pressing this key reverts the display to the ACARS FUNCTION page.

PRINT FUNCTION PAGE 2/2

This page describes the printing capabilities of the reports displayed on lines 1 to 4.

LEFT COLUMN

AUTO (white)

* YES (blue)
  - Line 1 : The PREFLIGHT report is automatically printed at engine start.
  - Line 2 : The INFLIGHT report is automatically printed at takeoff.
  - Line 3 : The POSTFLIGHT report is automatically printed at engine shutdown.

NO (without an asterisk)	Automatic printing is internally deactivated for the report. The pilot cannot reactivate it.

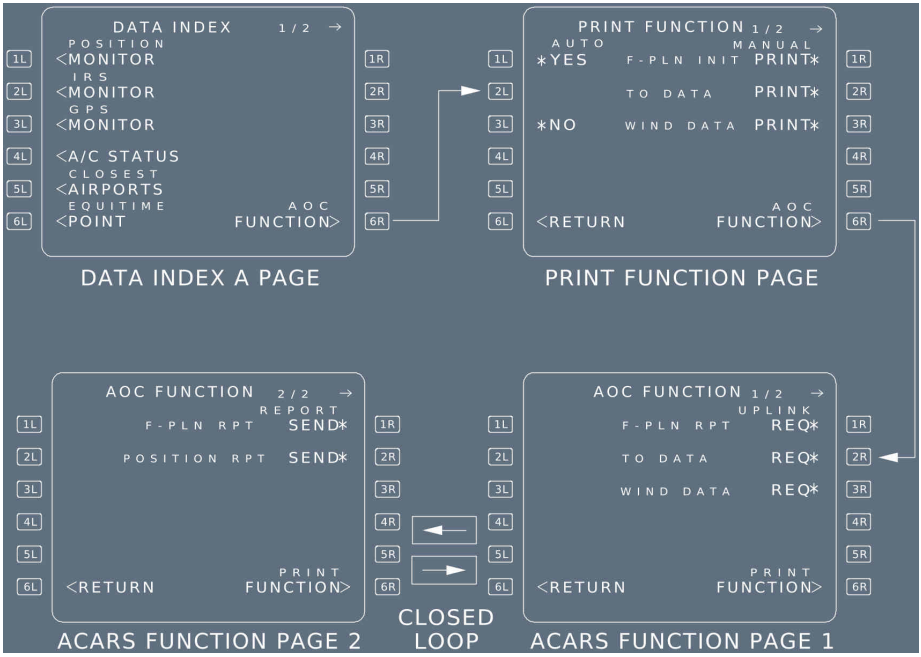
RIGHT COLUMN

MANUAL	Pressing a right key prints the report displayed on the line.
PRINT *	It is not possible to print, if the asterisk does not appear. When the key is pressed, the asterisk disappears until the report is printed. Regarding the PREFLIGHT, INFLIGHT, and POSTFLIGHT reports: Only one can be printed at a time, depending on the applicable flight phase. For the SEC F-PLN report, the print selection start is only displayed if a secondary flight plan exists.

AOC FUNCTION PAGE (IF INSTALLED)

Ident.: DSC-22_20-50-10-28-D-00000896.0001001 / 16 MAR 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

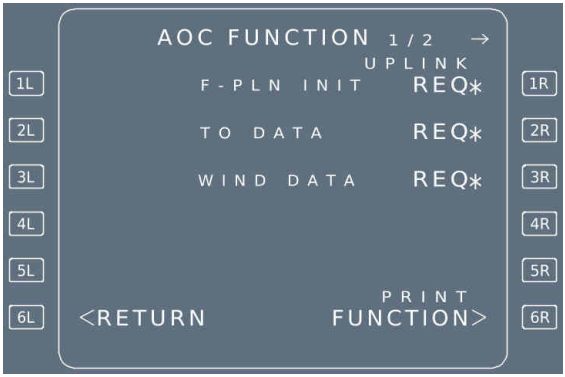
The AOC FUNCTION pages display those functions which enable crews to send manual requests or reports to the ground.
All functions, displayed on pages 1 and 2, may be inhibited via a pin program.
The AOC/PRINT FUNCTION prompt is displayed on the DATA INDEX page 1/2. Pressing this key displays the PRINT FUNCTION page, from which the AOC FUNCTION page can be accessed.



The AOC function page 2 is accessed using the "→" or "←" keys from page 1 and vice versa.

Ident.: DSC-22_20-50-10-28-D-00000897.0001001 / 28 MAR 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

AOC FUNCTION PAGE 1 (IF INSTALLED)



TITLE	AOC FUNCTION 1/2 is in white.
Line 1 F-PLN INIT REQ*	Pressing this key sends a flight plan request to the ground (downlink message). The INIT REQUEST prompt of the INIT A page provides the same function.
Line 2 TO DATA REQ*	Pressing this key sends a request for takeoff data. Displayed in the DONE and PREFLIGHT phases. The TO DATA REQUEST prompt of the UPLINK TO DATA REQ page provides the same function.
Line 3 WIND DATA REQ*	Pressing this key sends a request for wind data. The WIND REQUEST prompt of the CLIMB, CRUISE, and DESCENT WIND pages provides the same function.

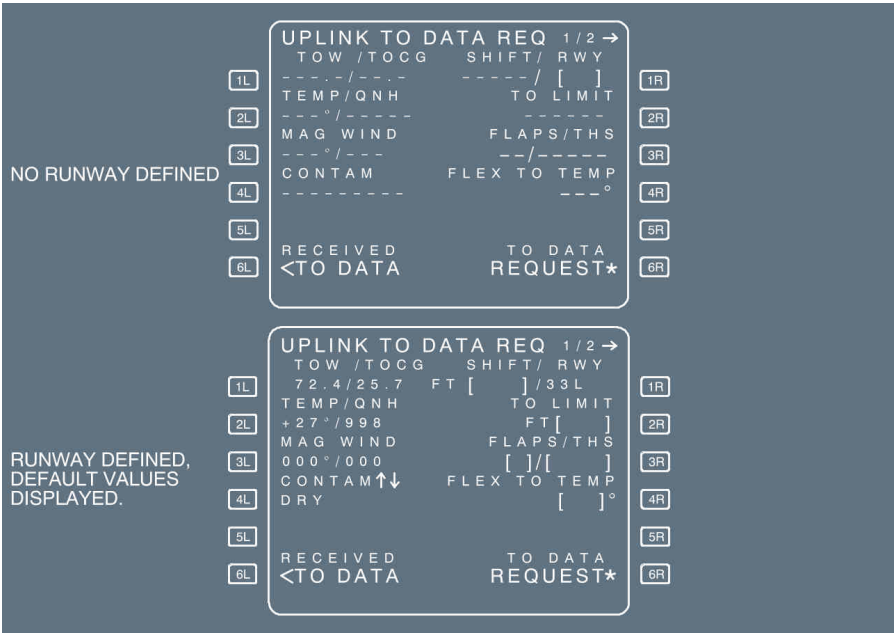
Note: *If "REQ" is not followed by an asterisk, the request cannot be sent (downlink message). When a function (line 1 or 2 or 3) is deactivated internally, the corresponding line is blank.*

[6L] RETURN	The pilot presses this key to revert the display revert to the DATA INDEX page.
[6R] PRINT FUNCTION ◁⊪	The pilot presses this key to access the PRINT FUNCTION page. (DSC-22_20 Auto Flight - Flight Management/50 Controls and Indicators/10 MCDU - Page Description/28 FMS2 thales/Print Function Pages).

Ident.: DSC-22_20-50-10-28-D-00000898.0001001 / 14 MAY 12
Applicable to: MSN 02712, 03071-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

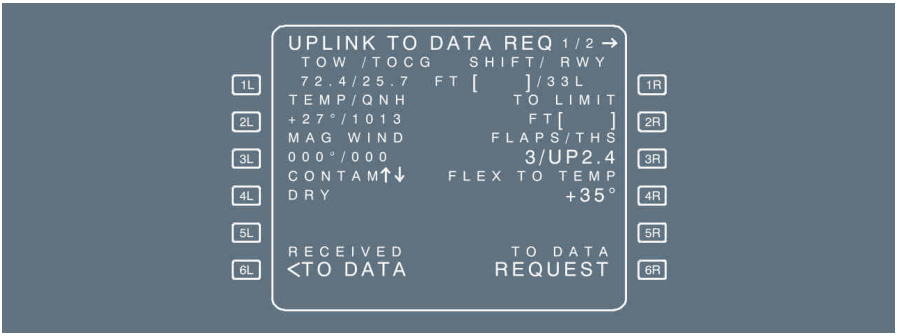
UPLINK TO DATA REQ PAGES (IF INSTALLED)

This page allows the pilot to send a request for takeoff data for up to 2 runways. There is one page for each runway. The page is accessed from the PERF TAKEOFF page, or from the UPLINK XXX (MAX or DRT or FLX) TO DATA page, by pressing the UPLINK TO DATA prompt.



TITLE	White.
[1L] TOW/TOCG (green)	This field is dashed, until a runway is defined in the [1R] field. The TOW/TOCG is defaulted to the values of the INIT B and FUEL PRED pages. If not available, dashes are displayed. It cannot be modified by the pilot.
[2L] TEMP/QNH or QFE (green/blue)	This field is dashed, until a runway is defined in the [1R] field; TEMP = Defaulted to SAT, and cannot be modified by the crew. BARO = Defaulted to FCU selection and can be modified by the pilot.
[3L] MAG WIND (blue)	This field is dashed, until a runway is defined in the [1R] field. It displays the wind at the origin. The pilot can modify this field.
[4L] CONTAM (blue)	This field is dashed, until a runway is defined in the [1R] field. The display is defaulted to DRY. The scroll keys are used to modify the runway contamination: DRY, WET, 1/4 WATER, 1/2 WATER, 1/4 SLUSH, 1/2 SLUSH, COMP SNOW.

[6L] RECEIVED TO DATA — This field calls up the UPLINK MAX (or FLX) TO DATA page that displays the data received by ACARS.



[1R] SHIFT/RWY (blue) — This field is dashed, until a runway is defined in the F-PLN. If a runway is defined in the F-PLN, it is automatically filled in as:
SHIFT = Value from the PERF TO page, or blue brackets [ ], if no value is defined.
RWY = F-PLN departure runway. The pilot can modify this field.

[2R] TO LIMIT (blue) — It is dashed, until a runway is defined in the [1R] field.
It displays blue brackets [ ], when a runway is defined.
The pilot may enter a length, considering runway obstacles.

[3R] FLAPS/THS (blue) — This field is dashed, until a runway is defined in the [1R] field; it is then defaulted to values from the PERF TO page. Blue brackets are displayed, if the PERF TO page does not have any defined values.

[4R] FLEX TO TEMP (blue) — This field is dashed, until a runway is defined in the [1R] field; it is then defaulted to values from the PERF TO page. Blue brackets are displayed, if the PERF TO page does not have any defined values.
The pilot can modify this field and enter a FLEX TO temperature (FXX).

[6R] TO DATA REQUEST* (amber) — Pressing this key sends the takeoff data request message to the ground.
The asterisk disappears when the request is sent. It reappears when the data is available.

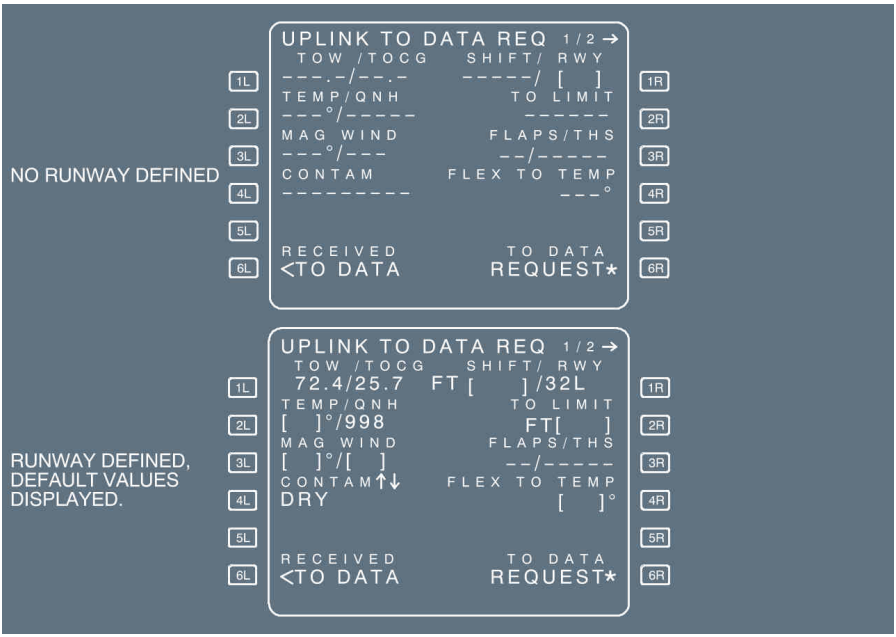
Page 2/2 is used for requesting a second runway data.

Note: *If the UPLINK TO DATA REQ Page 2 is accessed (Page 1 being filled), the fields on this page are filled in with default values after entering of a runway in the [1R] field. QNH or QFE, and wind are common with Page 1.*

Ident.: DSC-22_20-50-10-28-D-00000898.0002001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02908-02914

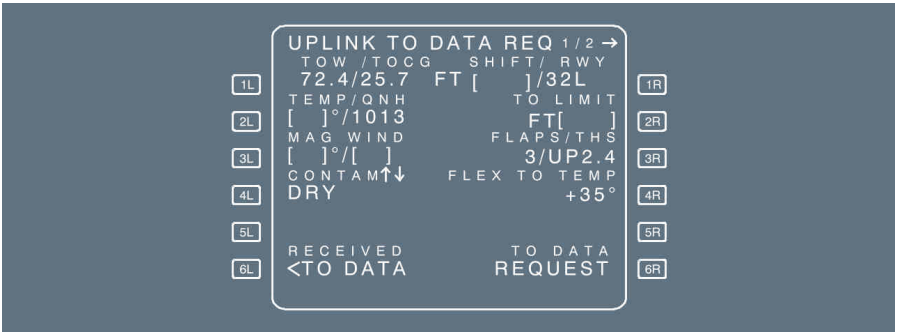
UPLINK TO DATA REQ PAGES (IF INSTALLED)

This page allows the pilot to send a request for takeoff data for up to 2 runways. There is one page for each runway. The page is accessed from the PERF TAKEOFF page, or from the UPLINK XXX (MAX or DRT or FLX) TO DATA page, by pressing the UPLINK TO DATA prompt.



TITLE	White.
[1L] TOW/TOCG (green)	This field is dashed, until a runway is defined in the [1R] field. The TOW/TOCG is defaulted to the values of the INIT B and FUEL PRED pages. If not available, dashes are displayed. It cannot be modified by the pilot.

[2L] TEMP/QNH or QFE (green/blue)	This field is dashed, until a runway is defined in the [1R] field. It displays the temperature at origin and baro setting. TEMP = If the temperature is not defined, blue brackets are displayed, and the flight crew can modify this field according to the weather information.
[3L] MAG WIND (blue)	This field is dashed, until a runway is defined in the [1R] field. It displays the wind at the origin. If the wind is not defined, blue brackets are displayed. The pilot can modify this field.
[4L] CONTAM (blue)	This field is dashed, until a runway is defined in the [1R] field. The display is defaulted to DRY. The scroll keys are used to modify the runway contamination: DRY, WET, 1/4 WATER, 1/2 WATER, 1/4 SLUSH, 1/2 SLUSH, COMP SNOW.
[6L] RECEIVED TO DATA	This field calls up the UPLINK MAX (or FLX) TO DATA page that displays the data received by AOC



[1R] SHIFT/RWY (blue)	This field is dashed, until a runway is defined in the F-PLN. If a runway is defined in the F-PLN, it is automatically filled in as: SHIFT = Value from the PERF TO page, or blue brackets [ ], if no value is defined. RWY = F-PLN departure runway. The pilot can modify this field.
[2R] TO LIMIT (blue)	It is dashed, until a runway is defined in the [1R] field. It displays blue brackets [ ], when a runway is defined. The pilot may enter a length, considering runway obstacles.

[3R] FLAPS/THS (blue) — This field is dashed, until a runway is defined in the [1R] field; it is then defaulted to values from the PERF TO page. Blue brackets are displayed, if the PERF TO page does not have any defined values.

[4R] FLEX TO TEMP (blue) — This field is dashed, until a runway is defined in the [1R] field ; it is then defaulted to values from the PERF TO page. Blue brackets are displayed, if the PERF TO page does not have any defined values.
The pilot can modify this field and enter a FLEX TO temperature (FXX).

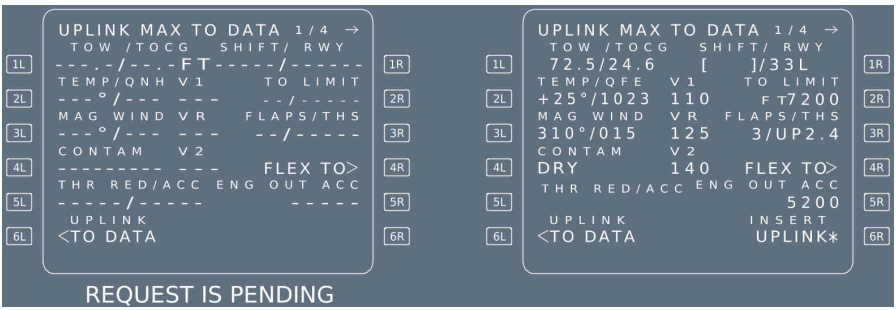
[6R] TO DATA REQUEST* (amber) — Pressing this key sends the takeoff data request message to the ground.
The asterisk disappears when the request is sent. It reappears when the data is available.

Page 2/2 is used for requesting a second runway data.

Note: *If the UPLINK TO DATA REQ Page 2 is accessed (Page 1 being filled), the fields on this page are filled in with default values after entering of a runway in the [1R] field. QNH or QFE, and wind are common with Page 1.*

Ident.: DSC-22_20-50-10-28-D-00000900.0021001 / 18 MAR 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

UPLINK MAX TO DATA PAGES (IF INSTALLED)



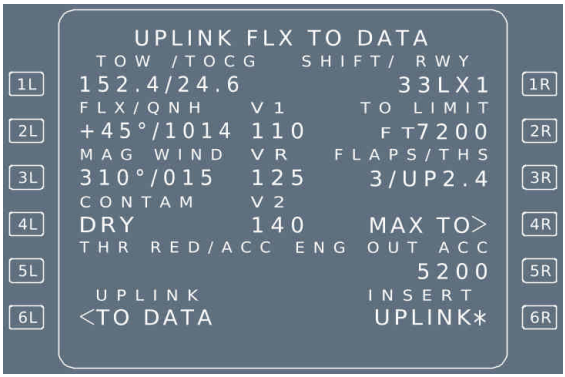
This page is accessed from the UPLINK TO DATA REQ page by pressing the RECEIVED TO DATA key.
There is a set of 2 pages (MAX TO DATA and FLEX TO DATA) for each of the 4 uplinked runway data. Uplinked data is displayed in green. (It cannot be modified by the pilot).

[1L] TOW/TOCG	Uplinked reference Takeoff Gross Weight and Takeoff Center of Gravity.
[2L] TEMP/QNH (or QFE)	Uplinked assumed temperature and baro setting.
[3L] MAG WIND	Uplinked takeoff runway wind.
[4L] CONTAM	Uplinked takeoff runway contamination.
[5L] THR RED/ACC	Uplinked Thrust Reduction and Acceleration altitudes.
[6L] UPLINK TO DATA	Pressing the key calls up the UPLINK TO DATA REQ page
V1 , VR, V2	Uplinked takeoff speeds.
[1R] SHIFT/RWY	Uplinked TO runway ident, runway intersection, and position shift.
[2R] TO LIMIT	Uplinked runway length remaining.
[3R] FLAPS/THS	Uplinked FLAPS/SLATS CONF and TRIM position.
[4R] FLEX TO	Pressing this key calls up the UPLINK FLEX TO DATA pages.
[5R] ENG OUT ACC	Uplinked engine-out acceleration altitude.
[6R] INSERT UPLINK *	Uplinked Takeoff data is available for insertion. Selecting this prompt inserts the following data in the PERF TO page: - V1, VR, V2 - THR RED/ACC, ENG OUT ACC altitudes - FLAPS/THS - SHIFT - FLEX The display reverts to the PERF TO page, the asterisk disappears. This field is not displayed, if the runway does not match the active runway. If the runway matches the active runway but the uplinked TOW differs from the current TOW: - The asterisk disappears and the insertion is not possible (the uplink TOW is 3 t greater or 1 t lower than the TOW estimated by the FMS). - The TOW value is displayed in amber in [1L] field.

Note: *All previously received data is replaced by the new uplinked data.*

Ident.: DSC-22_20-50-10-28-D-00000901.0001001 / 16 MAR 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

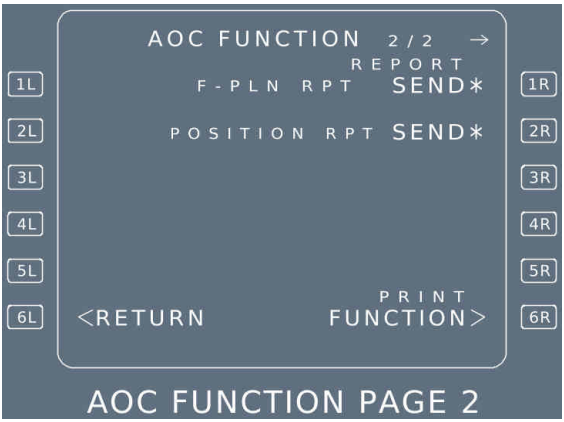
UPLINK FLX TO DATA PAGES (IF INSTALLED)



TITLE	UPLINK FLX TO DATA in white.
[2L]	FLX/QNH (or QFE) When the UPLINK FLEX TO DATA page is selected, it displays uplink assumed Flex Temperature and baro setting (QNH or QFE).
[4R] MAX TO	Pressing this key calls up the MAX TO DATA page. For all other fields, refer to MAX TO DATA page.

Ident.: DSC-22_20-50-10-28-D-00000902.0001001 / 16 MAR 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

AOC FUNCTION PAGE 2 (IF INSTALLED)



Line 1 F-PLN RPT SEND — Pressing this key sends the flight plan report to the ground.

Line 2 POSITION RPT SEND — Pressing this key sends a Position Report to the ground.

Note: - *No report can be sent, if "SEND" is not followed by an asterisk.*
- *When a function (line 1 or 2) is deactivated via the navigation database policy file, the corresponding line is blank.*

[6L] RETURN — The pilot presses this key to revert to the DATA INDEX page.

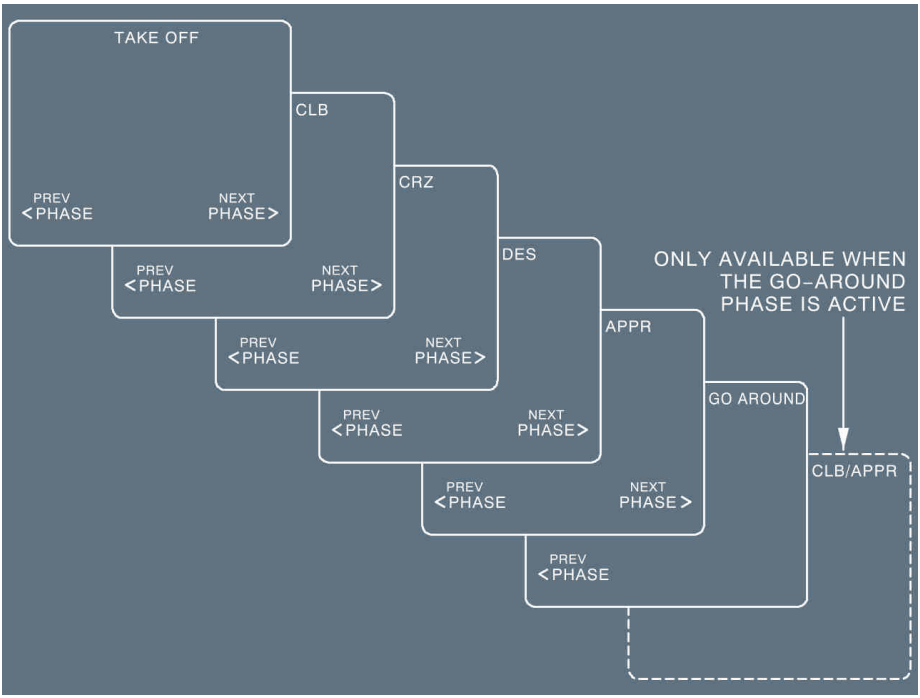
[6R] PRINT FUNCTION — The pilot presses this key to access the PRINT FUNCTION page.

PERF PAGE

Ident.: DSC-22_20-50-10-28-E-00000903.0001001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The flight plan is divided into the following phases :
PREFLIGHT, TAKEOFF, CLIMB, CRUISE, DESCENT, APPROACH, GO-AROUND, DONE.
Each phase, except for the preflight and done phases, has a performance (PERF) page. The PERF pages display performance data, speeds related to the various phases, and predictions.

Pressing the PERF key on the MCDU console calls up the performance page for the current active phase. Performance pages, relating to phases already flown, are unavailable.
In the preflight and done phases, pressing the PERF key brings up the takeoff performance page.
Pressing the PERF key in the done phase makes the phase transition to the preflight phase.

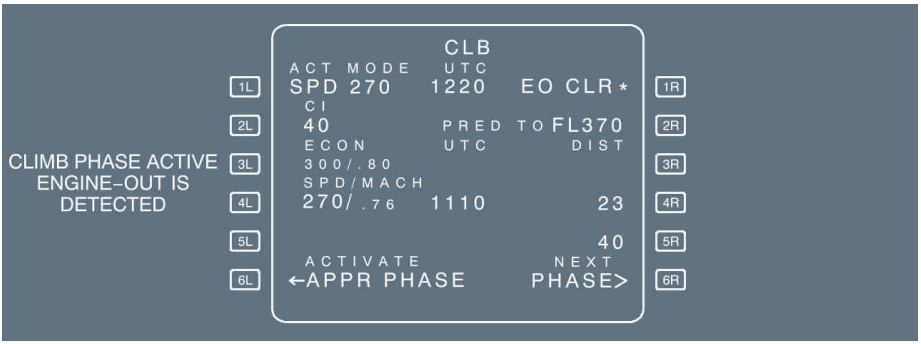


The FMGS flight phases are unrelated to the FWC flight phases.

Line 6	Fields may display two different prompts, depending upon whether the phase is active or not.
[6L] PREV PHASE	To review the performance page for the previous phase. The prompt is unavailable on the takeoff performance page. It is also unavailable for phases already flown.
[6L] ACTIVATE APPR PHASE	To activate, then confirm, the APPR phase. It is only available on the page corresponding to the active phase.
[6R] NEXT PHASE	To review the performance page for the next phase.

Note: ***"EO CLR*" prompt***

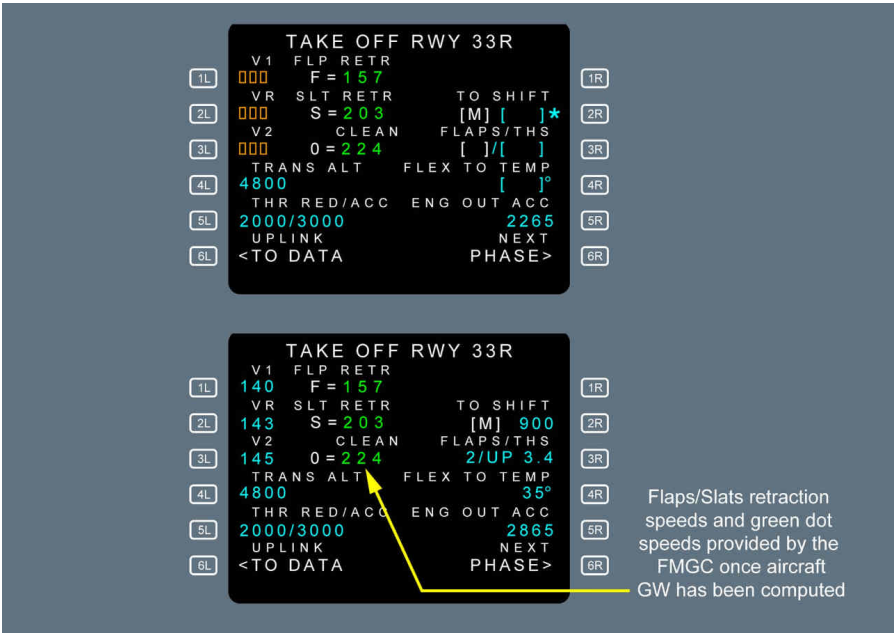
- *When the FMGS detects an engine-out condition, the system automatically calls up the performance page for the current flight phase (except when this occurs before the diversion point during takeoff, or no EOSID exists in the flight plan), and displays "EO CLR*" in the [1R] field.*
  If the pilot presses the [1R] key, the system reverts to the normal processing (with no engine failed) and suppresses the EO information.
- *If the engine-out condition is detected before the diversion point at takeoff, a temporary flight plan is created.*



Ident.: DSC-22_20-50-10-28-E-00000904.0004001 / 30 AUG 18
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04384, 04399-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

PERF TAKEOFF PAGE

During the preflight phase, the pilot presses the PERF key to call up the takeoff performance page.



TITLE

TAKE OFF RWY is in large green font when the takeoff phase is active, and in large white font when it is inactive. The active flight plan selected runway is displayed in large green font.

Note: *If the takeoff shift, or the flaps/THS, or the runway is changed after V1, V2 or VR insertion, but the origin airport remains the same, the MCDU "CHECK TAKEOFF DATA" message appears, but all takeoff parameters are retained (except in case of runway change.They are invalidated, but still displayed adjacent to each field. The "CONFIRM TO DATA" prompt in [6R] allows reverting to the previous values).*

[1L] V1 [2L] VR [3L] V2

The boxes remain amber, as long as the pilot does not make entries in them.
The pilot can modify any entry, as long as the takeoff phase is inactive.

Note:
1. *If the pilot does not enter V2, the SRS mode will be unavailable at takeoff.*
2. *The MCDU "V1/VR/V2 DISAGREE" amber message appears if the inserted V1, VR, V2 do not satisfy the condition: V1 ≤ VR ≤ V2*
3. *The MCDU "TO SPEED TOO LOW" amber message is displayed if the Take-Off Speeds entered by the flight crew are not above the minimum control speeds.*

[4L] TRANS ALT (transition altitude)

This field displays the navigation database default altitude (if defined), once the origin airport is entered. The pilot can modify it.

[5L] THR RED (thrust reduction altitude)

This is the altitude at which the pilot should reduce the thrust from TOGA/FLX to MAX CLIMB (CL detent) with all engines operative ("CLB" or "LVR CLB" flashing on the FMA).

- The thrust reduction altitude defaults to 1 500 ft above the runway elevation, or to the altitude set by the airline.
- The pilot can modify this altitude: The minimum is 400 ft above the runway elevation.

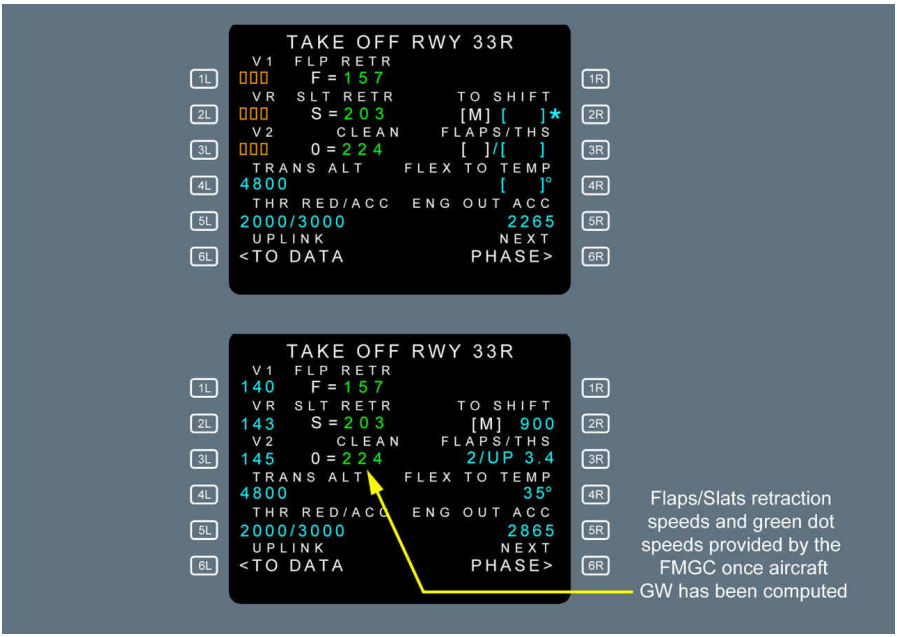
ACC (Acceleration altitude)	This is the altitude at which the climb phase is triggered. - The target speed jumps to the initial climb speed. - The default value is 1 500 ft above runway elevation. - The flight crew can modify the value. The minimum value is 400 ft above runway elevation, and it can be higher than, or equal to, or lower than THR RED. *Note:* - *A clearing action reverts both values to the defaulted ones.* - *When the crew selects an altitude on the FCU that is below THR RED, it brings THR RED and ACC down to this altitude. (The 400 ft minimum still applies).*
[6L] UPLINK TO DATA	This key calls up the UPLINK TO DATA REQ page. It is only displayed in the preflight and done phases.
[1R] EO CLR	EO CLR is displayed when an engine-out is detected and when active flight phase is takeoff.
[2R] TO SHIFT	The takeoff shift is the distance in meters or feet between the beginning of the runway and the aircraft's takeoff position. When taking off from an intersection, the flight crew should insert this value to ensure a correct update of the FM position. The takeoff shift value must be positive, and cannot be greater than the runway length.
[3R] FLAPS/THS	This is a flight crew entry for the positions of the flaps and the trimmable horizontal stabilizer (THS) at takeoff. The flight crew can modify it until takeoff, by entering “UP X.X” or “X.X UP”, or “DN X.X” or “X.X DN” for the THS.
[4R] FLX TO TEMP or DRT TO (if installed) or FLX TO	The pilot inserts the FLX TO temperature for FLX takeoff setting purposes, or a derate ◁ level. The pilot can only enter it during preflight. The system sends it to the FADEC and displays the entered data on the upper ECAM display. The TEMP value is always entered in degrees Celsius.

[5R] ENG OUT ACC	This field displays the engine-out acceleration altitude, as defined in the database, or is manually entered by the flight crew. This is for display only, as a reminder. It cannot be cleared. The above ACC altitude rules of [5L] apply to this field.
[6R] NEXT PAGE or CONFIRM TO DATA*	This key calls up the climb performance page, or allows the pilot to revert to the previously-entered T.O. parameters, in case of runway change with the same origin airport.

Ident.: DSC-22_20-50-10-28-E-00000904.0003001 / 30 AUG 18
Applicable to: MSN 04393-04397

PERF TAKEOFF PAGE

During the preflight phase, the pilot presses the PERF key to call up the takeoff performance page.



TITLE	TAKE OFF RWY is in large green font when the takeoff phase is active, and in large white font when it is inactive. The active flight plan selected runway is displayed in large green font. Note: *If the takeoff shift, or the flaps/THS, or the runway is changed after V1, V2 or VR insertion, but the origin airport remains the same, the MCDU "CHECK TAKEOFF DATA" message appears, but all takeoff parameters are retained (except in case of runway change.They are invalidated, but still displayed adjacent to each field. The "CONFIRM TO DATA" prompt in [6R] allows reverting to the previous values).*
[1L] V1 [2L] VR [3L] V2	The boxes remain amber, as long as the pilot does not make entries in them. The pilot can modify any entry, as long as the takeoff phase is inactive. Note: *1. If the pilot does not enter V2, the SRS mode will be unavailable at takeoff.* *2. The MCDU "V1/VR/V2 DISAGREE" amber message appears if the inserted V1, VR, V2 do not satisfy the condition: V1 ≤ VR ≤ V2*
[4L] TRANS ALT (transition altitude)	This field displays the navigation database default altitude (if defined), once the origin airport is entered. The pilot can modify it.
[5L] THR RED (thrust reduction altitude)	This is the altitude at which the pilot should reduce the thrust from TOGA/FLX to MAX CLIMB (CL detent) with all engines operative ("CLB" or "LVR CLB" flashing on the FMA). - The thrust reduction altitude defaults to 1 500 ft above the runway elevation, or to the altitude set by the airline. - The pilot can modify this altitude: The minimum is 400 ft above the runway elevation.

ACC (Acceleration altitude)	This is the altitude at which the climb phase is triggered. - The target speed jumps to the initial climb speed. - The default value is 1 500 ft above runway elevation. - The flight crew can modify the value. The minimum value is 400 ft above runway elevation, and it can be higher than, or equal to, or lower than THR RED. Note: - *A clearing action reverts both values to the defaulted ones.* - *When the crew selects an altitude on the FCU that is below THR RED, it brings THR RED and ACC down to this altitude. (The 400 ft minimum still applies).*
[6L] UPLINK TO DATA	This key calls up the UPLINK TO DATA REQ page. It is only displayed in the preflight and done phases.
[1R] EO CLR	EO CLR is displayed when an engine-out is detected and when active flight phase is takeoff.
[2R] TO SHIFT	The takeoff shift is the distance in meters or feet between the beginning of the runway and the aircraft's takeoff position. When taking off from an intersection, the flight crew should insert this value to ensure a correct update of the FM position. The takeoff shift value must be positive, and cannot be greater than the runway length.
[3R] FLAPS/THS	This is a flight crew entry for the positions of the flaps and the trimmable horizontal stabilizer (THS) at takeoff. The flight crew can modify it until takeoff, by entering “UP X.X” or “X.X UP”, or “DN X.X” or “X.X DN” for the THS.
[4R] FLX TO TEMP or DRT TO (if installed) or FLX TO	The pilot inserts the FLX TO temperature for FLX takeoff setting purposes, or a derate ◁ level. The pilot can only enter it during preflight. The system sends it to the FADEC and displays the entered data on the upper ECAM display. The TEMP value is always entered in degrees Celsius.

[5R] ENG OUT ACC

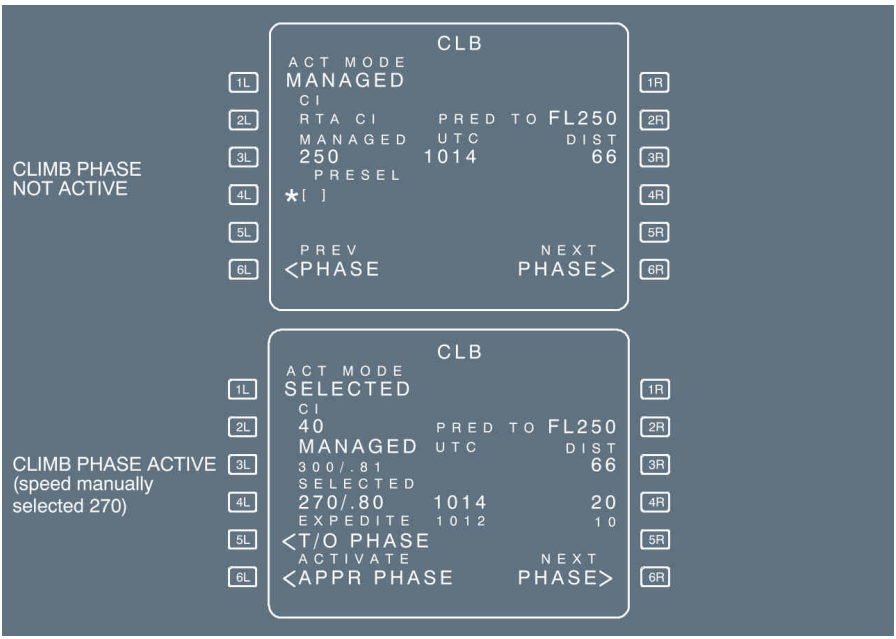
This field displays the engine-out acceleration altitude, as defined in the database, or is manually entered by the flight crew. This is for display only, as a reminder. It cannot be cleared.
The above ACC altitude rules of [5L] apply to this field.

[6R] NEXT PAGE or CONFIRM TO DATA*

This key calls up the climb performance page, or allows the pilot to revert to the previously-entered T.O. parameters, in case of runway change with the same origin airport.

Ident.: DSC-22_20-50-10-28-E-00000905.0021001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

PERF CLIMB PAGE



TITLE

CLB is displayed in large green font when climb phase is active, and in large white font when it is inactive.

[1L] ACT MODE

This field displays the preselected or active speed mode: SELECTED or MANAGED. The pilot cannot modify it from this field.

[2L] CI (Cost Index)

This field displays the cost index, as initialized on the INIT A or defaulted from the database, or inserted in this field by the pilot. RTA CI automatically replaces the cost index value, if a time constraint exists in the F-PLN.

Note: *In case of an engine-out, EO LRC (engine-out long range cruise) replaces the CI field.*
You can enter a cost index and overwrite EO LRC. In this case, clearing the cost index reverts to EO LRC.

[3L] MANAGED

This field displays the FMGS computed ECON speed/Mach *Refer to DSC-22_20-40-10 Optimization*.
Before the CLIMB phase is active, if the preselected speed mode is SELECTED, an asterisk appears next to the MANAGED speed. In this case, pressing the 3L key preselects MANAGED speed, and 4L reverts to brackets.

[4L] PRESEL or SELECTED

If the climb phase is active:

- The title of this field becomes "SELECTED".
- This field displays the selected (or preselected) SPD or MACH target.
- The flight crew cannot modify this field directly, but can adjust it with the FCU's SPD/MACH selection knob.
- If the flight crew pushes in the FCU's SPD/MACH selection knob to revert to managed speed, the system selects (or reselects) ECON SPD/MACH, and [4L] is blank.

If the climb phase is inactive:

- This field displays PRESEL, as long as the climb phase is inactive.
- The flight crew can only enter a preselected speed.

[5L]

EXPEDITE is displayed in green small font in the [5L] label line when the takeoff or climb phase is active. The flight crew cannot engage EXPEDITE from this field.
It indicates the time and distance required to reach the altitude displayed in the 2R field, in case of climb at green dot.
If the climb phase is active, T/O PHASE is displayed.
This field enables the flight crew to access the PERF TAKE OFF page.

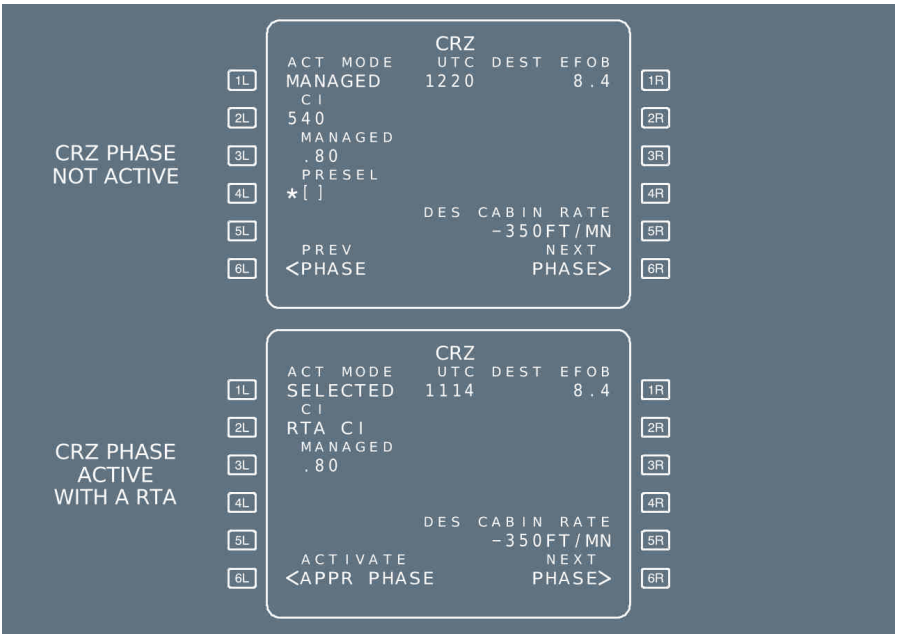
[6L] PREV PHASE

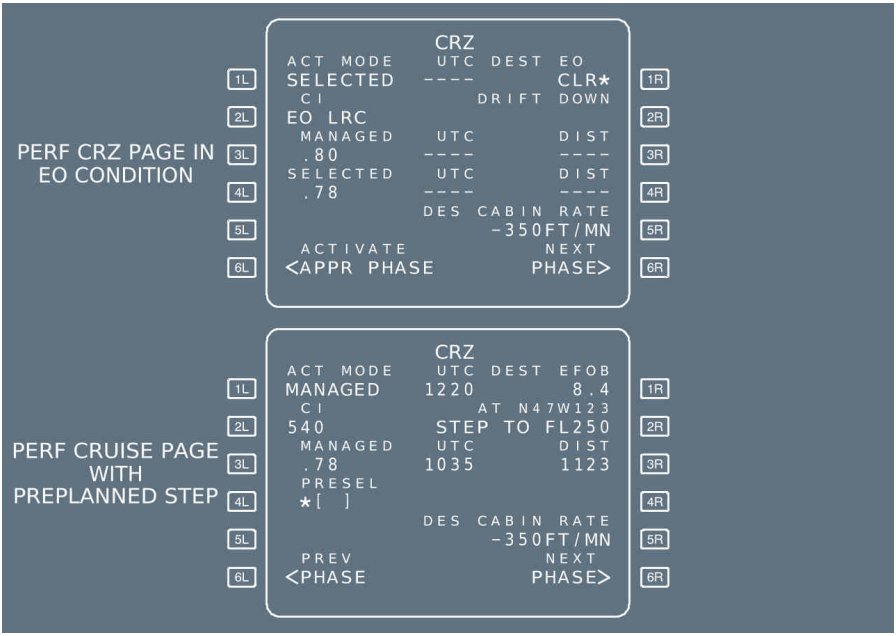
This field displays this legend, if the climb phase is inactive. The flight crew presses this key to call up the takeoff page.

[6L] ACTIVATE APPR PHASE	The field displays this legend, if the climb phase is active. Pressing this key once displays “CONFIRM APPR PHASE*”. Pressing it again activates the approach phase.
[1R] EO CLR	In case of engine-out detection, the [1R] field displays the EO CLR prompt.
[2R] PRED TO...	This field displays the target altitude for the predictions shown in the 3R, 4R, or 5L field. It defaults to the FCU altitude, but the pilot can modify it to any altitude below MAX ALT.
[3R] [4R]	These fields show time and distance predictions for the target altitude selected in [2R], computed for the current vertical mode and speed mode (MANAGED, SELECTED). These fields are only displayed while the takeoff, or climb phase is active.
[6R] NEXT PHASE	The flight crew presses this key to call up the PERF CRZ page.

Ident.: DSC-22_20-50-10-28-E-00000906.0004001 / 30 MAR 15
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

PERF CRUISE





TITLE	CRZ is in large green font, when the cruise phase is active, and in large white font, when it is inactive.
[1L] ACT MODE	This field shows the preselected or active speed mode : SELECTED or MANAGED. The pilot cannot modify it from this field.
[2L] CI	This field shows the cost index, as initialized on the INIT A page or defaulted from the database, or as inserted in this field by the crew. RTA CI automatically replaces the cost index value, if a RTA exists in the F-PLN. EO LRC automatically replaces the cost index value in case of an engine-out.
[3L] MANAGED	This field displays the FMGS-computed ECON speed/Mach *Refer to DSC-22_20-40-10 Optimization*. Before the CRUISE phase is active, if the preselected speed mode is SELECTED, an asterisk appears next to the MANAGED speed. In this case, pressing the 3L key preselects MANAGED speed, and 4L reverts to brackets.

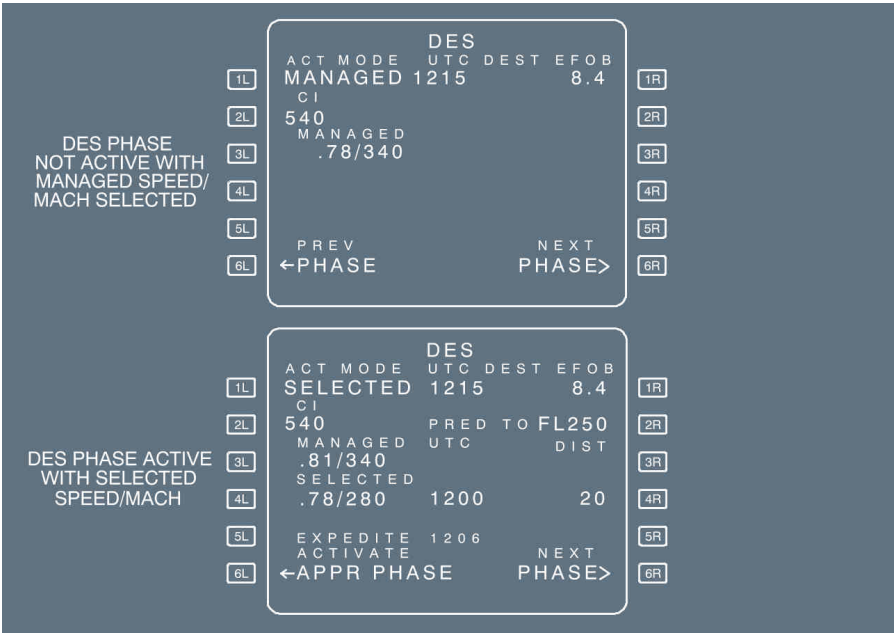
[4L] PRESEL	If the cruise phase is active: This field is blank. If the cruise phase is inactive: The pilot can enter a preselected speed or Mach number. *Note: If the flight crew enters a value in the PRESEL field during the cruise altitude capture (ALT CRZ*), the FCU selected speed may revert to M 0.01.*
[6L] PREV PHASE or	The pilot can press this key to call up the climb page, if the cruise phase is not yet active.
[6L] ACTIVATE APPR PHASE	This field displays this legend, if the cruise phase is active. The flight crew presses this key once to change the legend to "CONFIRM APPR PHASE*". A second press activates the approach phase. *Note: If the pilot inadvertently activates the approach phase, he can reselect the cruise flight level from the progress page, in order to reactivate the cruise phase.*
[1R] TIME/UTC DEST EFOB	Before takeoff, this field displays the flight time to destination and the predicted remaining fuel on board. If the crew enters an estimated takeoff time, the field automatically displays the predicted arrival time (UTC) at destination. After takeoff, it displays the predicted arrival time at destination (UTC) and the remaining fuel on board (DEST EFOB) at destination, in green font. The DEST EFOB field will turn to amber, if the EFOB at destination becomes less than the MIN DEST FOB values displayed on the FUEL PRED page. EO CLR is displayed when an engine-out is detected.
[2R] STEP TO FL XX, TO T/D, or DRIFT DOWN	This field, in combination with 3R and 4R, displays the predictions for the step point and step altitude, the Top of Descent, or the drift down altitude.
[3R] and [4R] TIME/UTC and DIST	These fields display the time and distance to go to the various points identified in the 2R field.

[5R] DES CABIN RATE — This field displays MAX [computed DES cabin rate, maximum descent cabin rate]. The pilot may modify the value : The FM then recomputes the top of descent, in order to match this value. If the FM cannot match the pilot's entry, the FM-computed value overwrites the pilot's entry.
A clear action reverts to the default value (-350 ft/min). DES CAB RATE being a negative value, "minus" is not a necessary entry.

[6R] NEXT PHASE — This key calls up the DES page.

Ident.: DSC-22_20-50-10-28-E-00000907.0025001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

PERF DESCENT PAGE



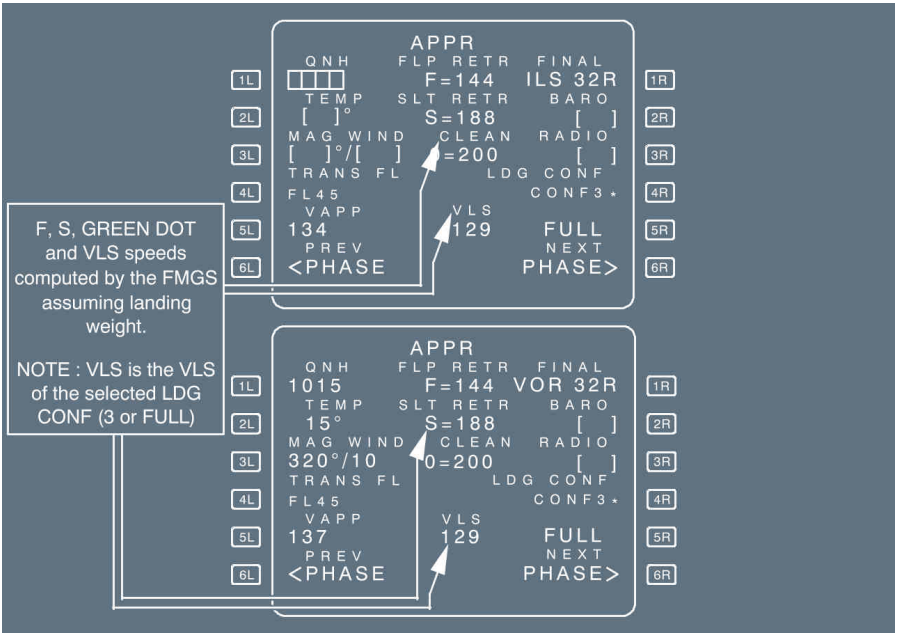
TITLE — DES is in large green font if the descent phase is active, and in large white font if it is inactive.

[1L] ACT MODE — This field displays the preselected or active speed mode (MANAGED or SELECTED). The flight crew cannot modify it from this field.

[2L] CI	This field displays the cost index, as initialized on the INIT A page or defaulted from the database, or inserted in this field by the flight crew. RTA CI automatically replaces the cost index value, if a time constraint exists in the F-PLN. The flight crew cannot modify in descent/approach phase below the descent speed limit altitude, or FL 100, whichever is higher.
[3L] MANAGED	Before the flight crew makes any entry, this field displays "MANAGED" in white, with the associated ECON descent Mach or speed, in blue. The crew may overwrite the ECON descent Mach or speed, by entering a Mach number or a speed in this field. The system uses the pilot's entry to compute the descent profile. The descent may be flown in managed, using this new pilot entry. The entry is modifiable. It can be cleared to revert to ECON speed/Mach.
[4L] blank or SELECTED	**If the descent phase is inactive, or the descent phase is active but the active speed mode is MANAGED:** - This field is blank. **If the descent phase is active, and the active speed mode is SELECTED:** - The field displays the speed or Mach target manually selected by the pilot. “SELECTED” is displayed in the [1L] field. - To modify the field value, the pilot uses the FCU's SPD/MACH selector knob. The [4L] field and FCU window will display the same value. - Pushing in the FCU speed selector knob activates the managed SPD/MACH target displayed in the [3L] field.
[5L] Blank or EXPEDITE	If the descent phase is inactive, this field is blank. Displays this legend, if the descent phase is active. It indicates the time and distance required to reach the altitude displayed in the 2R field at MMO/VMO speed. The pilot cannot select the EXPEDITE mode from this field.
[6L] PREV PHASE or ACTIVATE APPR PHASE	This key calls up the cruise phase page, if the descent phase is not yet active. Displayed, if the descent phase is active. Pressing this key once makes “CONFIRM APPR PHASE” appear. A second press activates the approach phase.

[1R] TIME/UTC DEST EFOB	Before takeoff, this field displays the flight time to destination and the predicted remaining fuel on board. If the crew enters an estimated takeoff time, the field automatically displays the predicted arrival time (UTC). After takeoff, it displays the predicted arrival time at destination (UTC) and the remaining fuel on board (DEST EFOB) at destination, in green font. The DEST EFOB field will turn to amber, if the EFOB at destination becomes less than the MIN DEST FOB value displayed on the FUEL PRED page. EO CLR is displayed when an engine-out is detected.
[2R] PRED TO...	This field displays the target altitude for the predictions in [3R], [4R], or [5L]. The display defaults to the FCU-selected altitude. The flight crew can modify it to any altitude lower than the present altitude.
[3R] [4R]	These fields display time and distance predictions down to the target altitude selected in [2R], computed for the current vertical mode (DES or OP DES) and the indicated speed mode (MANAGED or SELECTED).
[6R] NEXT PHASE	The pilot presses this key to call up the PERF APPR page.

PERF APPR PAGE



TITLE — APPR is in large green font, if the approach phase is active, and in large white font, if it is inactive.

[1L] QNH

This field displays brackets, when the aircraft is more than 180 NM from the destination. Inside 180 NM, a mandatory amber box appears.

The flight crew must enter the QNH in hPa or in inches of mercury:
- For hPa, enter three or four digits.
- For inches of mercury:
  - Enter four digits, or
  - Enter two digits followed by a decimal point and two additional digits.

The system interprets:
- 1 003 as 1 003 hPa
- 2 900 as 29.00 inHg
- 29.92 as 29.92 inHg.

Note: An erroneous entry of an OAT in the QNH field, for example 22 °C, or a higher value, is accepted by the system.

The flight crew can modify this entry at any time.
The Cabin Pressure Controller (CPC) uses the QNH to compute the cabin repressurization segment. Therefore, an erroneous QNH entry may result in a cabin pressurization that is not appropriate.
In addition, the FMS uses the QNH to:

- Compute the descent profile
- Compute the FLS beam.

[2L] TEMP

This field displays the temperature at destination. It displays brackets until the pilot enters the temperature. The pilot can modify this figure. The system uses this temperature to:

- Refine its computation of the descent profile (ISA model).
- Compute the FLS beam.

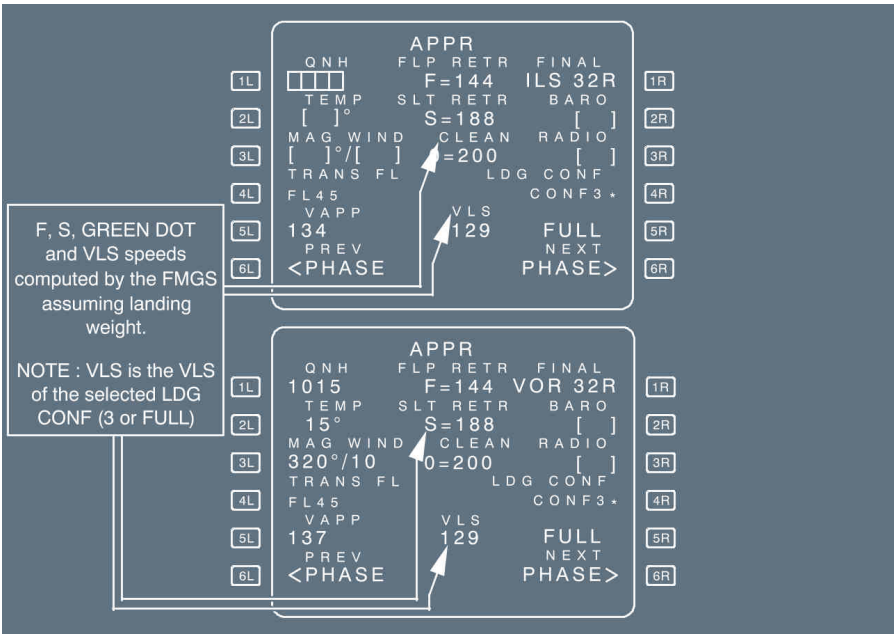
[3L] MAG WIND or TRUE WIND

In this field, the flight crew enters the magnetic wind at the destination in knots. The system transmits any entry made in this field to the vertical revision and flight plan B pages (which display wind direction as true, not magnetic).

[4L] TRANS FL	Displays the Transition Level, computed by the FMS based on the Transition Altitude (extracted from the database) and the QNH value entered in the [1L] field. It is rounded to the upper multiple of 5. By default, it is displayed in small blue font. The crew can modify it (it is then displayed in large blue font).
[5L] VAPP	The FMGC computes this approach speed, using the formula: VAPP = VLS + 1/3 of the headwind components (limited to VLS + 5 as a minimum and VLS + 15 as a maximum). The flight crew can modify VAPP. A clear action reverts VAPP to the computed value. *Note: VLS = 1.23 VS1G of the selected landing configuration (full or 3).*
[6L] PREV PAGE	This field displays this legend, if the approach phase is inactive. Pressing this key calls up the descent performance page.
[1R] FINAL	Displays the approach specified in the flight plan. The flight crew cannot modify it from this field.
[2R] BARO (blue)	Displays the minimum descent altitude or decision altitude (or minimum descent height, or decision height, if the QFE pin program is activated), with associated brackets. The referenced altitude is barometric altitude. The flight crew inserts the value, that they can modify at any time. If the flight crew makes an entry in the [3R] field, or changes the approach, it clears this figure.
[3R] RADIO (blue)	If the flight plan includes an ILS approach, this field displays “RADIO” and empty brackets. For a CAT II or CAT III approach, the flight crew inserts the decision height. The decision height is a radio altimeter height. The system will accept an entry of “NO”. If the flight crew inserts a BARO value in [2R] field, this erases the decision height, and the field reverts to brackets. The RADIO range is from 0 to 700 ft.
[4R] LDG CONF CONF 3	The flight crew can select configuration 3 by pressing the 4R key. This moves the asterisk down to the [5R] field, that displays “FULL”.
[5R] FULL	The flight crew can use this key to select configuration FULL when necessary configuration FULL is the default landing configuration.
[6R] NEXT PHASE	Pressing this key calls up the PERF GO AROUND page.

Ident.: DSC-22_20-50-10-28-E-00000908.0063001 / 17 SEP 13
Applicable to: MSN 02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04384, 04399-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

PERF APPR PAGE



TITLE — APPR is in large green font, if the approach phase is active, and in large white font, if it is inactive.

[1L] QNH

This field displays brackets, when the aircraft is more than 180 NM from the destination. Inside 180 NM, a mandatory amber box appears.

The flight crew must enter the QNH in hPa or in inches of mercury:
- For hPa, enter three or four digits.
- For inches of mercury:
  - Enter four digits, or
  - Enter two digits followed by a decimal point and two additional digits.

The system interprets:
- 1 003 as 1 003 hPa
- 2 900 as 29.00 inHg
- 29.92 as 29.92 inHg.

Note: *An erroneous entry of an OAT in the QNH field, for example 22 °C, or a higher value, is accepted by the system.*

The flight crew can modify this entry at any time.
The Cabin Pressure Controller (CPC) uses the QNH to compute the cabin repressurization segment. Therefore, an erroneous QNH entry may result in a cabin pressurization that is not appropriate.

[2L] TEMP

This field displays the temperature at destination. It displays brackets until the pilot enters the temperature. The pilot can modify this figure. The system uses this temperature to refine its computation of the descent profile (ISA model).

[3L] MAG WIND or TRUE WIND

In this field, the flight crew enters the magnetic wind at the destination in knots. The system transmits any entry made in this field to the vertical revision and flight plan B pages (which display wind direction as true, not magnetic).

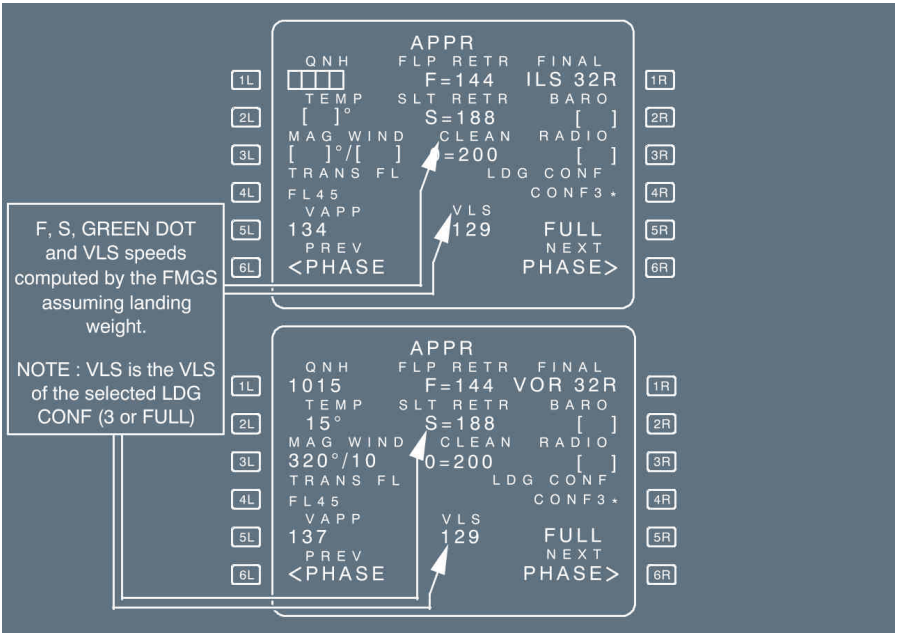
[4L] TRANS FL

Displays the Transition Level, computed by the FMS based on the Transition Altitude (extracted from the database) and the QNH value entered in the [1L] field. It is rounded to the upper multiple of 5. By default, it is displayed in small blue font.
The crew can modify it (it is then displayed in large blue font).

[5L] VAPP	The FMGC computes this approach speed, using the formula: VAPP = VLS + 1/3 of the headwind components (limited to VLS + 5 as a minimum and VLS + 15 as a maximum). The flight crew can modify VAPP. A clear action reverts VAPP to the computed value. *Note: VLS = 1.23 VS1G of the selected landing configuration (full or 3).*
[6L] PREV PAGE	This field displays this legend, if the approach phase is inactive. Pressing this key calls up the descent performance page.
[1R] FINAL	Displays the approach specified in the flight plan. The flight crew cannot modify it from this field.
[2R] BARO (blue)	Displays the minimum descent altitude or decision altitude (or minimum descent height, or decision height, if the QFE pin program is activated), with associated brackets. The referenced altitude is barometric altitude. The flight crew inserts the value, that they can modify at any time. If the flight crew makes an entry in the [3R] field, or changes the approach, it clears this figure.
[3R] RADIO (blue)	If the flight plan includes an ILS approach, this field displays “RADIO” and empty brackets. For a CAT II or CAT III approach, the flight crew inserts the decision height. The decision height is a radio altimeter height. The system will accept an entry of “NO”. If the flight crew inserts a BARO value in [2R] field, this erases the decision height, and the field reverts to brackets. The RADIO range is from 0 to 700 ft.
[4R] LDG CONF CONF 3	The flight crew can select configuration 3 by pressing the 4R key. This moves the asterisk down to the [5R] field, that displays “FULL”.
[5R] FULL	The flight crew can use this key to select configuration FULL when necessary configuration FULL is the default landing configuration.
[6R] NEXT PHASE	Pressing this key calls up the PERF GO AROUND page.

Ident.: DSC-22_20-50-10-28-E-00000908.0032001 / 14 MAY 12
Applicable to: MSN 04393-04397

PERF APPR PAGE



TITLE — APPR is in large green font, if the approach phase is active, and in large white font, if it is inactive.

[1L] QNH

This field displays brackets, when the aircraft is more than 180 NM from the destination. Inside 180 NM, a mandatory amber box appears.

The flight crew must enter the QNH in hPa or in inches of mercury:
- For hPa, enter three or four digits.
- For inches of mercury:
  - Enter two digits, or
  - Enter two digits followed by a decimal point and two additional digits.

The system interprets:
- 1 003 as 1 003 hPa
- 29 as 29.00 inHg
- 29.92 as 29.92 inHg.

Note: An erroneous entry of an OAT in the QNH field, for example 22 °C, or a higher value, is accepted by the system.

The flight crew can modify this entry at any time.
The Cabin Pressure Controller (CPC) uses the QNH to compute the cabin repressurization segment. Therefore, an erroneous QNH entry may result in a cabin pressurization that is not appropriate.

[2L] TEMP

This field displays the temperature at destination. It displays brackets until the pilot enters the temperature. The pilot can modify this figure. The system uses this temperature to refine its computation of the descent profile (ISA model).

[3L] MAG WIND or TRUE WIND

In this field, the flight crew enters the magnetic wind at the destination in knots. The system transmits any entry made in this field to the vertical revision and flight plan B pages (which display wind direction as true, not magnetic).

[4L] TRANS FL

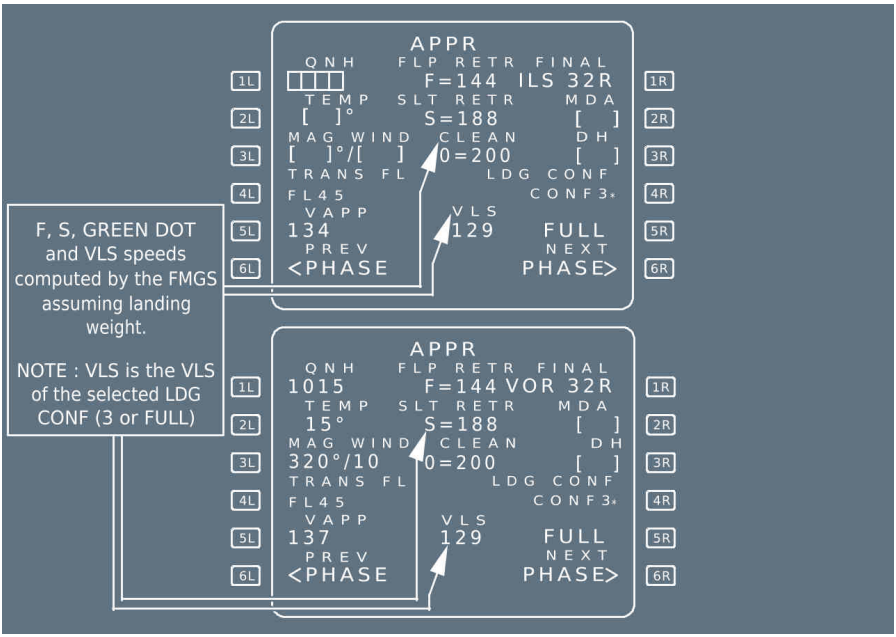
Displays the Transition Level, computed by the FMS based on the Transition Altitude (extracted from the database) and the QNH value entered in the [1L] field. It is rounded to the upper multiple of 5. By default, it is displayed in small blue font.
The crew can modify it (it is then displayed in large blue font).

[5L] VAPP	The FMGC computes this approach speed, using the formula: VAPP = VLS + 1/3 of the headwind components (limited to VLS + 5 as a minimum and VLS + 15 as a maximum). The flight crew can modify VAPP. A clear action reverts VAPP to the computed value. *Note: VLS = 1.23 VS1G of the selected landing configuration (full or 3).*
[6L] PREV PAGE	This field displays this legend, if the approach phase is inactive. Pressing this key calls up the descent performance page.
[1R] FINAL	Displays the approach specified in the flight plan. The flight crew cannot modify it from this field.
[2R] BARO (blue)	Displays the minimum descent altitude or decision altitude (or minimum descent height, or decision height, if the QFE pin program is activated), with associated brackets. The referenced altitude is barometric altitude. The flight crew inserts the value, that they can modify at any time. If the flight crew makes an entry in the [3R] field, or changes the approach, it clears this figure.
[3R] RADIO (blue)	If the flight plan includes an ILS approach, this field displays “RADIO” and empty brackets. For a CAT II or CAT III approach, the flight crew inserts the decision height. The decision height is a radio altimeter height. The system will accept an entry of “NO”. If the flight crew inserts a BARO value in [2R] field, this erases the decision height, and the field reverts to brackets. The RADIO range is from 0 to 700 ft.
[4R] LDG CONF CONF 3	The flight crew can select configuration 3 by pressing the 4R key. This moves the asterisk down to the [5R] field, that displays “FULL”.
[5R] FULL	The flight crew can use this key to select configuration FULL when necessary configuration FULL is the default landing configuration.
[6R] NEXT PHASE	Pressing this key calls up the PERF GO AROUND page.

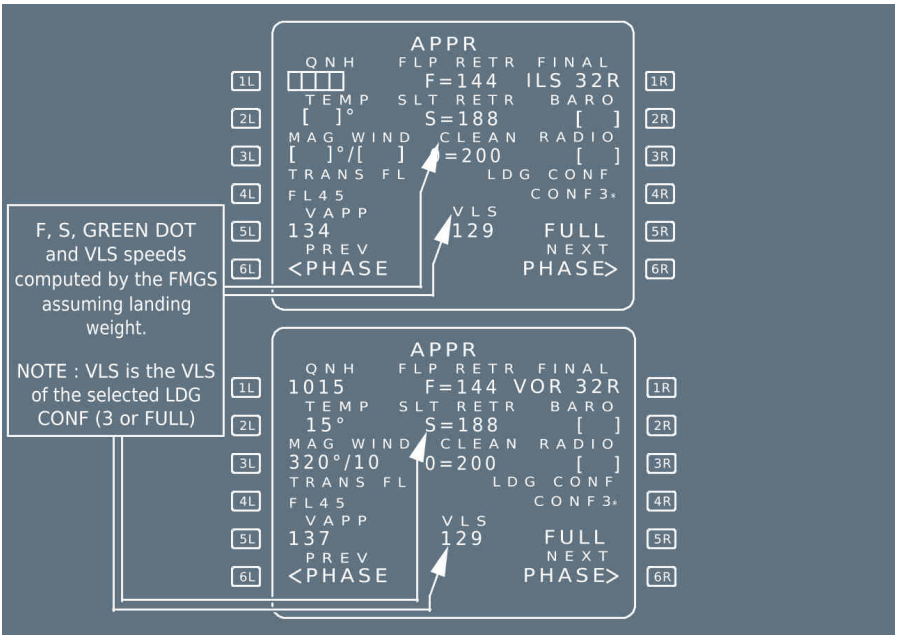
Ident.: DSC-22_20-50-10-28-E-00016135.0006001 / 24 FEB 15
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

PERF APPR PAGE

PERF APPR Page



PERF APPR Page (with BARO/RADIO ◁ option)



APPR is in large green font, if the approach phase is active, and in large white font, if it is inactive.

[1L] QNH

This field displays brackets, when the aircraft is more than 180 NM from the destination. Inside 180 NM, a mandatory amber box appears.

The flight crew must enter the QNH in hPa or in inches of mercury:
- For hPa, enter three or four digits.
- For inches of mercury, enter two digits followed by a decimal point and two additional digits.

The system interprets:
- 1 003 as 1 003 hPa
- 29.92 as 29.92 inHg.

Note: *When using inHg, on FMS standards prior to S7, a two digit value can be entered in the QNH field. In this case, an erroneous entry of an OAT in the QNH field, for example 22 °C, or a higher value, is accepted by the system and interpreted as 22.00 inHg.*

Note: *On FMS Standards S7 and higher, a four digits value can be entered for the QNH in inHg. For example, the system interprets 2900 as 29.00 inHg.*

The flight crew can modify this entry at any time.
The Cabin Pressure Controller (CPC) uses the QNH to compute the cabin repressurization segment. Therefore, an erroneous QNH entry may result in a cabin pressurization that is not appropriate.
The FMS uses the QNH:

- To compute the descent profile
- To compute the FLS beam on aircraft equipped with the FLS ◁ option.

[2L] TEMP

This field displays the temperature at destination. It displays brackets until the pilot enters the temperature. The pilot can modify this figure. The system uses this temperature to:

- Refine its computation of the descent profile (ISA model)
- Compute the FLS beam on aircraft equipped with the FLS ◁ option.

[3L] MAG WIND or TRUE WIND	In this field, the flight crew enters the magnetic wind at the destination in knots. The system transmits any entry made in this field to the vertical revision and flight plan B pages (which display wind direction as true, not magnetic).
[4L] TRANS FL	Displays the Transition Level, computed by the FMS based on the Transition Altitude (extracted from the database) and the QNH value entered in the [1L] field. It is rounded to the upper multiple of 5. By default, it is displayed in small blue font. The crew can modify it (it is then displayed in large blue font).
[5L] VAPP	The FMGC computes this approach speed, using the formula: VAPP = VLS + 1/3 of the headwind components (limited to VLS + 5 as a minimum and VLS + 15 as a maximum). The flight crew can modify VAPP. A clear action reverts VAPP to the computed value. *Note: VLS = 1.23 VS1G of the selected landing configuration (full or 3).*
[6L] PREV PAGE	This field displays this legend, if the approach phase is inactive. Pressing this key calls up the descent performance page.
[1R] FINAL	Displays the approach specified in the flight plan. The flight crew cannot modify it from this field.

[2R] MDA/MDH or BARO ◁✻	This field displays:
	- The Minimum Descent Altitude with associated brackets, or
	- The Minimum Descent Height with associated brackets, if:
	  - The QFE pin program is activated, or
	  - The FCU setting is QFE, on aircraft equipped with the BARO ◁✻ option.
	
	The flight crew inserts the value, that they can modify at any time.
	If the flight crew makes an entry in the [3R] field, or changes the approach, it clears this figure.

[3R] DH or RADIO ◁✻	If the flight plan includes an ILS (or MLS ◁✻) approach, this field displays "DH" or “RADIO" ◁✻ and empty brackets. For a CAT II or CAT III approach, the flight crew inserts the decision height. The decision height is a radio altimeter height. The system will accept an entry of “NO". If the flight crew inserts an MDA or an MDH (or a BARO ◁✻ value) in [2R] field, this erases the decision height, and the field reverts to brackets. The RADIO range is from 0 to 700 ft.

[4R] LDG CONF CONF 3	The flight crew can select configuration 3 by pressing the 4R key. This moves the asterisk down to the [5R] field, that displays “FULL".
[5R] FULL	The flight crew can use this key to select configuration FULL when necessary configuration FULL is the default landing configuration.
[6R] NEXT PHASE	Pressing this key calls up the PERF GO AROUND page.

Ident.: DSC-22_20-50-10-28-E-00000909.0002001 / 16 MAR 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

PERF GO AROUND

TITLE	GO AROUND is in large white font, if the go-around phase is not active; it is in large green font if it is.

[5L] THR RED ACC	This field displays the thrust reduction altitude and the acceleration altitude. **Thrust reduction altitude:** - Altitude at which thrust must be reduced from takeoff/go-around thrust to maximum climb thrust. - "CLB" or "LVR CLB" flashing on the flight mode annunciator. - Defaults to 1 500 ft above destination runway elevation, or to the altitude set by the airline. - Can be modified by the crew (minimum 400 ft above destination runway elevation). **Acceleration altitude:** - Altitude at which target speed increase to Green Dot speed (See the note below). - Defaults to 1 500 ft above the destination runway elevation, or to the altitude set by the airline. - Can be modified by the crew, but is always equal to or higher than the thrust reduction altitude.
[6L] PREV PHASE or	This field displays this legend, if the go-around phase is inactive. Pressing the key calls up the PERF APPR page.
ACTIVATE APPR PHASE	This field displays this legend, if the go-around phase is active. Pressing it once makes "CONFIRM APPR" appear. A second press activates the approach phase.
[5R] ENG OUT ACC	This display has the same characteristics as the display beside the 5R key on the takeoff page. It is for display only, and the pilot can modify it.
[6R] NEXT PHASE	Pressing this key calls up the PERF APPR page.
[1R] Blank or EO CLR*	This field is normally blank. EO CLR* is displayed when the GO AROUND phase is active, and an engine-out condition is detected.

Note: *When the go-around phase is active, if the pilot enables ALTN or if the pilot inserts a new destination in the active flight plan, the go-around phase automatically shifts into the climb phase. (The target speed jumps from green dot speed to initial climb speed).*

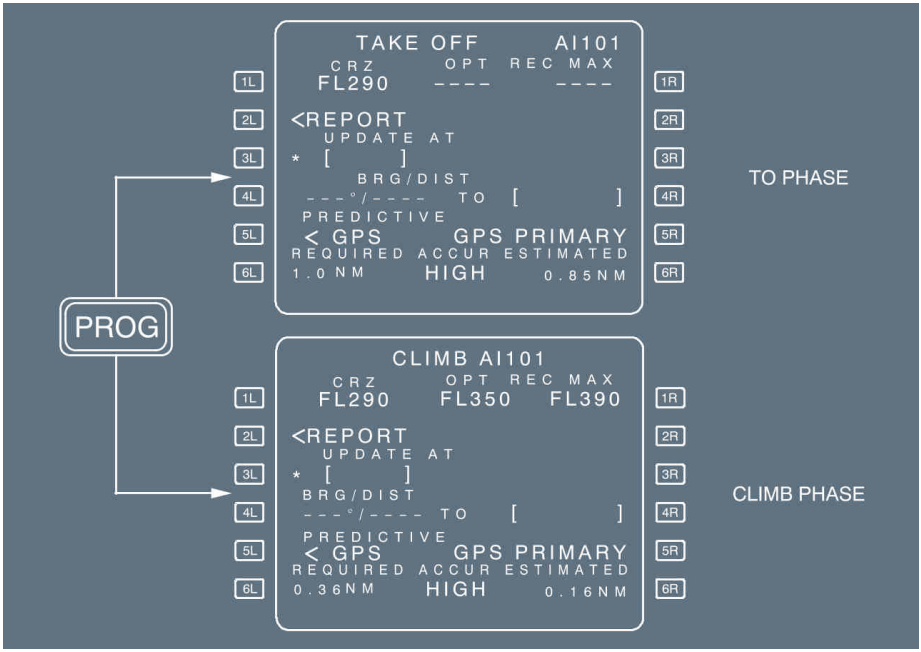
PROG PAGES

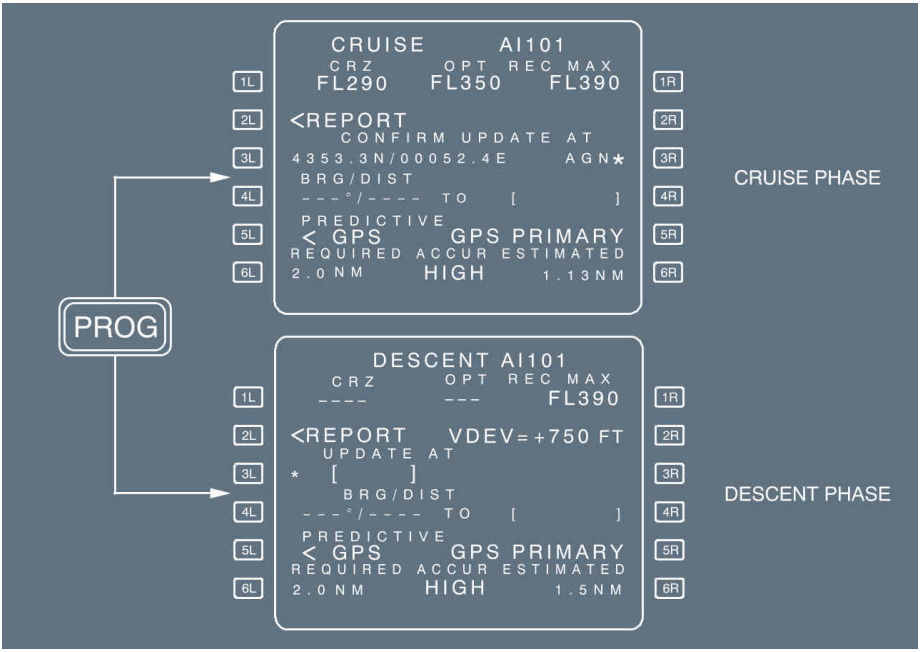
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Ident.: DSC-22_20-50-10-28-F-00000910.0030001 / 23 JUN 15

The progress page is a multifunction page that enables the pilot to:

- Select a new cruise flight level;
- Crosscheck the navigation accuracy of the Flight Management (FM) system and validate it;
- Update the FM position;
- Monitor the descent.





TITLE	Different for each flight phase (see above). The vertical phase is in large green font. The flight number is in large white font. EO is large amber font, if the engine-out condition is detected.
Line 1 CRZ (blue)	This line displays the cruise flight level, inserted on the INIT A page or directly in this field in blue. If the FCU is used to select an altitude that is higher than the one displayed, the system changes the displayed number to match the one selected by the FCU. In this line, the flight crew cannot insert a flight level that is lower than the FCU-selected altitude. This field shows dashes when the descent or approach phase is active.
OPT	This field displays the optimum flight level (in green), that is computed based on the current gross weight, cost index, temperature, wind This flight level requires a 5 min minimum cruise time at a minimum cruise flight level of FL 100. It displays dashes if an engine-out is detected:

REC MAX

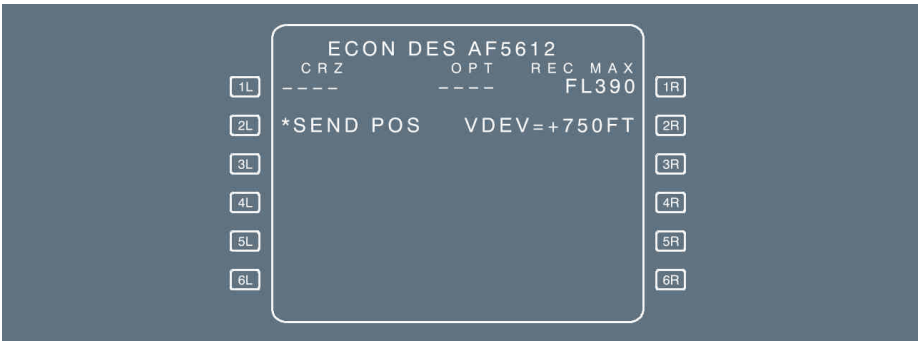
This field displays the recommended maximum altitude (in magenta), that is computed based on the current gross weight and temperature, and assuming that the anti-ice is off (Refer to QRH graphs, if icing conditions are expected). It provides the aircraft with a 0.3 g buffet margin, a minimum rate of climb at MAX CL thrust, and level flight at MAX CRZ thrust. This field is limited to FL 398.
If one engine is out, this field displays the recommended maximum engine-out altitude, that is computed based on the long-range cruise speed and assuming that anti-ice is off.

[2L] REPORT

This key calls up the REPORT PAGE.

[2R] VDEV

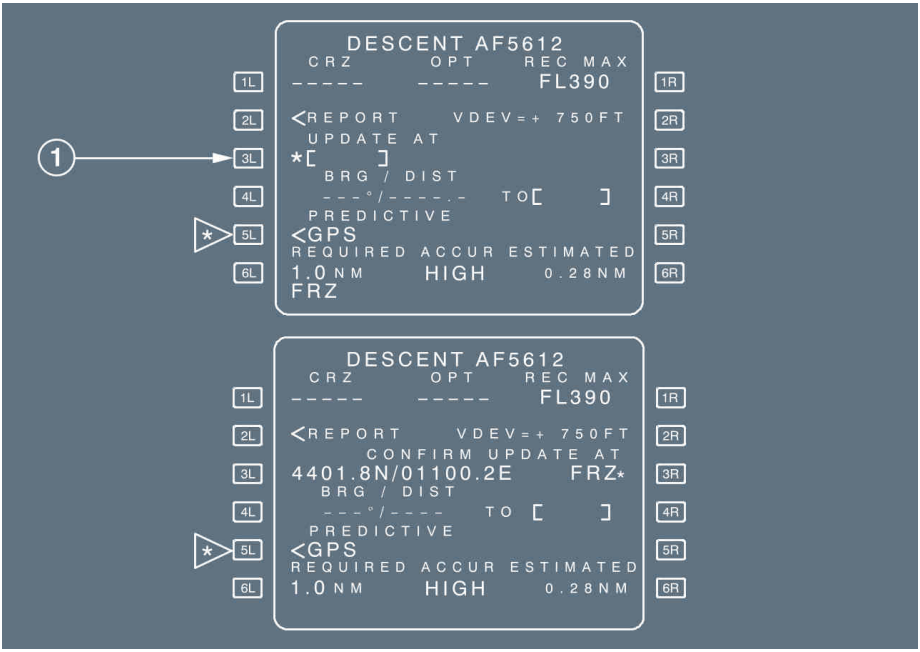
This field is displayed during the descent and approach phases, when NAV mode is engaged without crosstrack error limitation, or in HDG mode, provided that the crosstrack error (XTK) is less than 4 NM. In the particular case of a DIR TO RADIAL INBND, this field is displayed while the DIR TO RADIAL INBND is flown without crosstrack error (XTK) limitation. It displays the vertical deviation between the aircraft's current altitude and the FMGC-computed vertical profile.



Line 3 UPDATE AT

The flight crew can update the FMGC position via this field by entering either the IDENT of a waypoint, a NAVAID, an airport, a latitude and longitude, or a place/bearing/distance, or a place-bearing/place-bearing.
When the flight crew has entered this data, this field changes its format to: "CONFIRM UPDATE AT", followed by the latitude/longitude and IDENT of the inserted position with an asterisk.
The flight crew presses the right-hand key adjacent to the asterisk to confirm the update, when the aircraft overflies the inserted position.

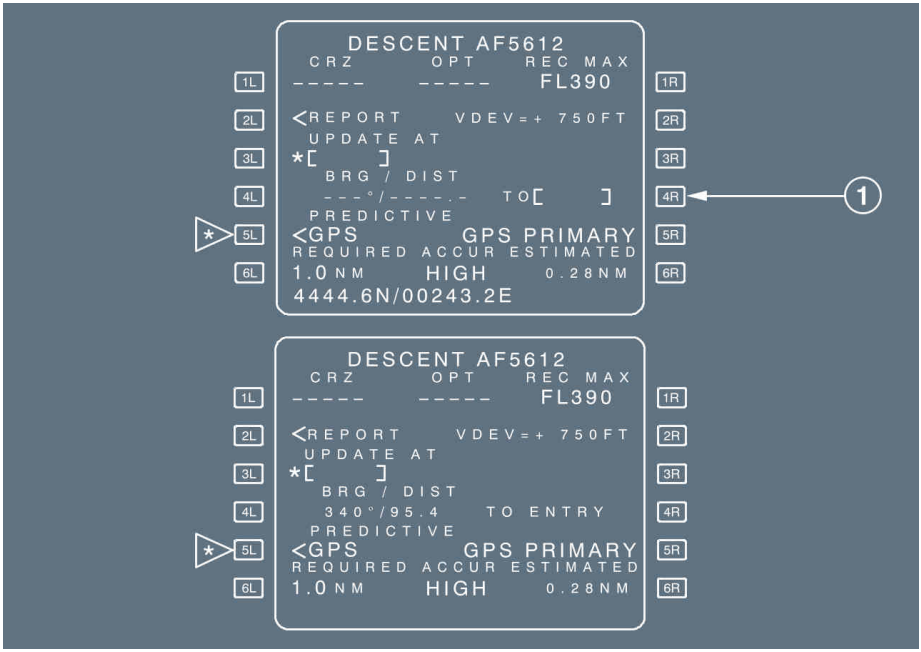
Note: *If no IDENT has been inserted, the field displays "ENTRY", instead of an IDENT.*



Line 4 BRG/DIST

On this line, the pilot can enter an airport, a waypoint, a NAVAID, or a runway. The pilot may enter each as an IDENT, a latitude/longitude (LL), a place/bearing/distance (PBD), or a place-bearing/place-bearing (PBX). The field then shows the FMGC-computed bearing and distance from this site to the aircraft's present position. The last distance digit is in 1/10 of a NM. If it does not have an IDENT, the point is called "ENTRY".

Example: BRG/DIST
340 °/95.4 to ENTRY



[5L] PREDICTIVE GPS ◁✻ — This prompt gives access to the PREDICTIVE GPS page.

[5R] GPS PRIMARY ◁✻ — This prompt is displayed when the FMS navigation mode is GPS PRIMARY. This field is blank, when GPS PRIMARY is unavailable, or the navigation mode is not GPS/IRS.

When the GPS PRIMARY function is not embedded, this field displays:
- The “REQD DIST TO LAND = ”
- The “DIR DIST TO DEST = “

The scratchpad displays the relevant “GPS PRIMARY″ message when this prompt appears, and “GPS PRIMARY LOST” when the field goes blank.

[6L] REQUIRED — This field displays the default value for the required navigation accuracy level. The pilot can modify it. Provided no pilot entry has been made, the default value changes according to the actual flight area (enroute, terminal, approach; *Refer to DSC-22_20-40-10 General*).

ACCUR HIGH/LOW	This field shows the flight management system's estimate of navigational accuracy. “HIGH” indicates that the FMS estimates that the navigational accuracy matches the accuracy criteria of the currently flown area. “LOW” indicates the criteria is not matched.
[6R] ESTIMATED	This field displays the current estimated navigation accuracy value (EPE), as computed by the FMS.

Ident.: DSC-22_20-50-10-28-F-00000911.0001001 / 04 DEC 18

PREDICTIVE GPS PAGE (IF INSTALLED)

Note: *1. This page is only displayed with Honeywell ADIRS.*
2. This page cannot be used as a substitute to determine pre-flight planning RAIM availability when required by operational regulations. Refer to PRO-NOR-SOP-02 GPS PRIMARY Availability (If Installed).

The pilot accesses this page by pressing the PREDICTIVE GPS prompt of the PROG page. This page displays information relative to predictive availability of GPS PRIMARY at destination and at any waypoint selected by the crew.

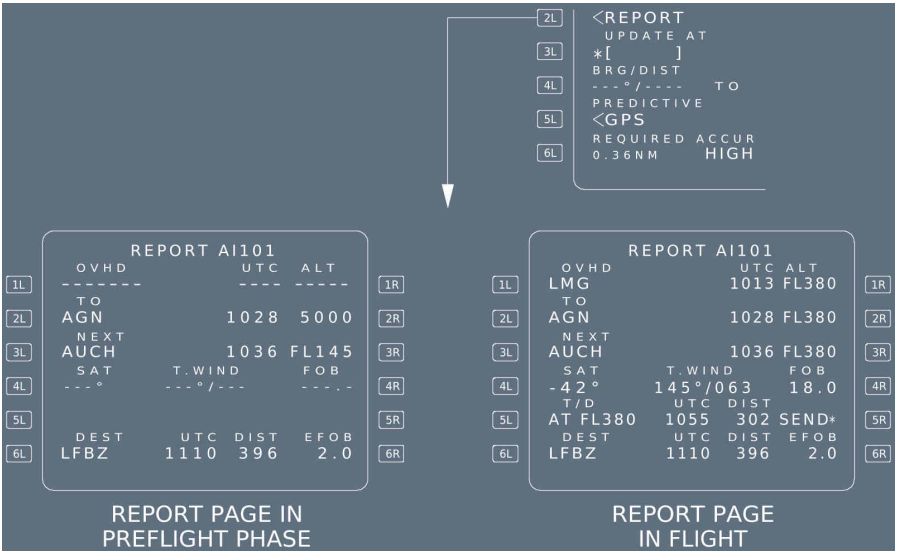
[1L] DEST	This field displays the destination airport, as currently selected in the active flight plan. It cannot be modified. Dashes appear in this field, when no destination airport exists.
[1R] ETA	This field is defaulted to the estimated arrival time, as computed by the FMS (small blue font). The pilot may enter a value in this field (large blue font). Amber boxes are displayed when no prediction exists, or when the crew entry has been cleared.

Line 2 PRIMARY Y/N	This line shows the predicted primary status at the destination airport for the following times: - Estimated time of arrival ± 5, 10, 15 min. - Availability of GPS PRIMARY at the corresponding times, is indicated by Y, if PRIMARY is predicted to be available and by N if GPS PRIMARY is predicted to be unavailable. - These fields are blank, when the destination [1L], or time [1R] field is not defined.
[3L] WPT	The pilot may enter a reference waypoint in this field. Blue brackets appear, when no entry has been made.
[3R] ETA	When a reference waypoint has been entered in the [3L] field, amber boxes appear. The crew is prompted to enter a reference time in this field.
Line 4 PRIMARY Y/N	Information equivalent to [2L]/[2R] is displayed for any pilot-selected waypoint. The corresponding arrival time is also displayed.
Line 5 DESELECTED SATELLITES and Line 6 SATELLITES	This line enables the pilot to deselect up to four satellites by inserting the corresponding satellite number. This number then appears in large blue font. When deactivated, the satellites are not considered for predictive GPS availability at the destination or at a selected waypoint. The deselection is cancelled when the entry is cleared (blue brackets appears), or when the field is overwritten by a different satellite number.

Ident.: DSC-22_20-50-10-28-F-00000912.0001001 / 16 MAR 11

REPORT PAGE

The pilot calls this page by pressing the [2L] key on the PROG page :



This page displays information related to the FROM, TO, NEXT, and DEST waypoints, as well as the current wind, temperature, distance and time to the next cruise profile change.

TITLE (White) — This field indicates the flight number. If an engine-out is detected, this line shows "EO" in amber.

[1L] OVHD (green) — Displays the last sequenced waypoint. This field never displays the pseudo-waypoints and the F-PLN markers (T-P, PPOS, IN-BND, OUT-BND).

[1R] UTC/TIME ALT (green) — Displays the time and altitude recorded at the time of sequence.

[2L]-[2R] TO (green) — Displays the active waypoint, predicted time of arrival, and predicted altitude at this waypoint.

Note: *Time and altitude values are identical to those values on the F-PLN pages.*

[3L]-[3R] NEXT (green) — Same information for the next waypoint.

[4L] [4R] SAT/T.WIND/FOB (green) — This field displays the static air temperature, the wind direction and velocity, and the FOB recorded at waypoint sequencing.

[5L] T/D/UTC/DIST (green) — This field displays the estimated time, and the distance to go to the next change of the cruise profile (T/D, S/C, S/D). This data is only displayed if the cruise phase is active.

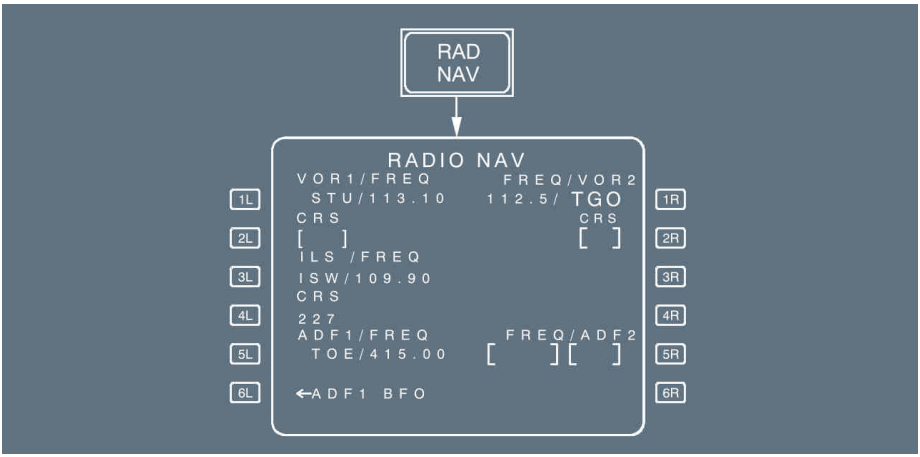
[5R] SEND* (blue)	The crew uses this prompt to downlink a position report. This field may be blank, depending on airline policy.
Line 6 DEST/UTC/DIST/EFOB	This field displays the estimated time of arrival, the distance along the F-PLN, and the estimated fuel on board at destination. This display is identical to the information on the F-PLN pages.

Note: *No data can be inserted or modified on the REPORT page.*

RADIO NAV PAGE

Ident.: DSC-22_20-50-10-28-00000913.0002001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

This page enables the pilot to select or verify the radio NAVAIDs, tuned for display purposes only.
These NAVAIDs include: VOR, VOR/DME, TAC, VORTAC, ILS, and ADF.
If either RMP is set on NAV, this page is blank on both MCDUs.



Line 1 VOR1/FREQ FREQ/VOR2	This line displays the identifiers and frequencies of VORs 1 and 2, whether they are automatically or manually tuned. To manually tune a VOR, the pilot inserts the IDENT or frequency. If the IDENT is not in the database, the new NAVAID page comes up. A “clear” action reverts the selection to the autotuned NAVAID.
Line 2 CRS	This line displays courses for the NAVAIDs in Line 1. The pilot can manually enter the courses from these fields.

[3L] ILS/FREQ	This field displays the IDENT and frequency of an ILS. It is autotuned, if the ILS is associated with the departure runway, or if the flight plan shows an ILS approach selected for the destination. The ILS may also be entered manually. When the manually-entered ILS differs from the ILS that would be autotuned, "RWY-ILS MISMATCH" appears.
[4L] CRS	This field displays the course associated with the ILS in Line 3. It comes up automatically if an ILS is autotuned, or if an ILS has been manually tuned via its IDENT. Otherwise, the course must be entered manually. The course may be backbeam (Bxxx) or frontbeam (Fxxx).
[4R] SLOPE CRS	In this field, the pilot enters the slope and course of the MLS. The course may be backbeam (Bxxx) or frontbeam (Fxxx).
Line 5 ADF1/FREQ FREQ/ADF2	This line displays the identifiers and frequencies of ADFs 1 and 2. The pilot can use the IDENT or the frequency to manually tune the ADF.
Line 6 ADF1/BFO BFO/ADF2	When an ADF is selected, these fields display an ADF/BFO prompt. The flight crew presses this key once to erase the arrow and revert ADF to BFO mode. A clear action recalls the arrow, and cancels BFO.

Note:
- *The autotune function only works for NAVAIDs stored in the database.*
- *When tuning manually, the Operator should use the IDENT, rather than the frequency, unless the NAVAID is not in the database.*
- *Manually-tuned frequencies are displayed in large font.*

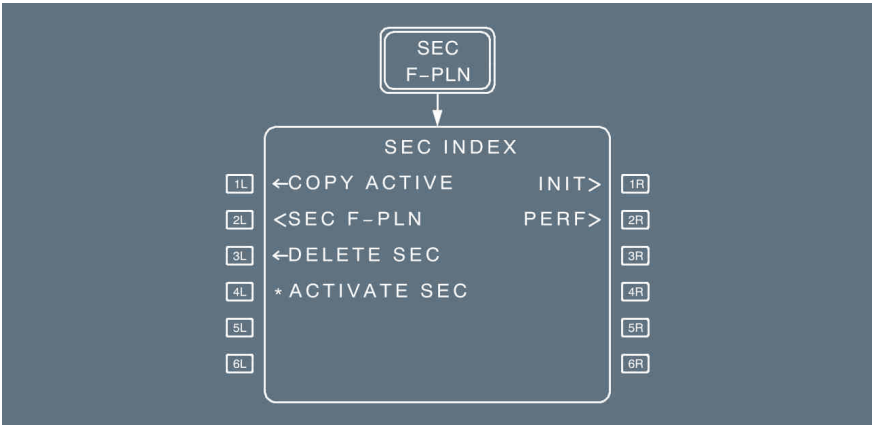
SECONDARY PAGES

Ident.: DSC-22_20-50-10-28-00000914.0021001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The SEC F-PLN key on the MCDU console allows the flight crew to call up the secondary index page and the secondary flight plan page. The secondary flight plan is generally used to prepare a diversion an alternate routing, for predictable runway changes at takeoff or landing, or for a next flight.
There are two types of secondary index page, depending on whether a secondary flight plan has already been defined.

SECONDARY INDEX PAGE

A SECONDARY FLIGHT PLAN IS ALREADY DEFINED



[1L] COPY ACTIVE (blue) The pilot presses this key to copy the active flight plan into the secondary flight plan, and to erase the previous secondary plan.

Note: *When created with a copy active, the FROM/TO pair of the secondary flight plan is not modifiable on SEC INIT A page. The SEC F-PLN is to be deleted before any FROM/TO modification.*

[2L] SEC F-PLN (white) The pilot presses this key to call up the secondary flight plan pages.

[3L] DELETE SEC (blue) The pilot presses this key to delete the current secondary flight plan.

[4L] ACTIVATE SEC (amber) The pilot presses this key to activate the secondary flight plan as the active flight plan. With such an action, activation is immediate and no temporary flight plan is created.

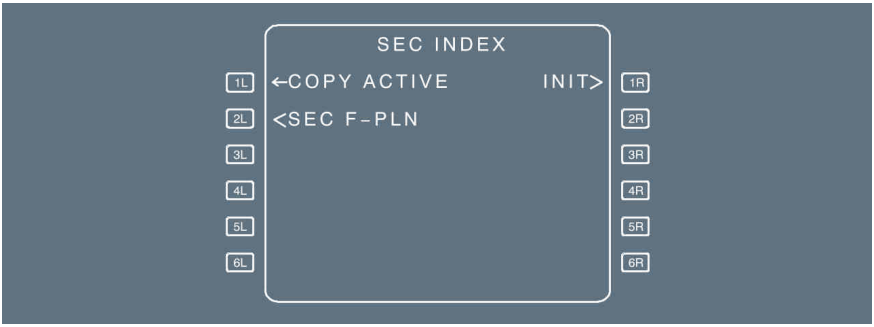
Note: *When flying in NAV mode, it is not possible to activate the SEC F-PLN, if the first leg of the SEC F-PLN is not compatible with the current active leg: If the crew presses the "ACTIVATE SEC" prompt, the SEC F-PLN activation is rejected and the "SELECT HDG/TRK FIRST" message is displayed in the scratchpad.*

- *The SEC F-PLN activation is rejected*
- *The "SELECT HDG/TRK FIRST" message is displayed in the scratchpad.*

[1R] INIT (white) This prompt is always displayed. It gives access to the SEC INIT A and B pages.

[2R] PERF (white) — The flight crew presses this key to call up the performance pages of the secondary flight plan.
In flight, when the active flight plan has been copied, this prompt only appears if the first lateral leg of the secondary flight plan is identical to the active leg of the primary flight plan. During preflight, this prompt is always displayed.

A SECONDARY FLIGHT PLAN IS NOT DEFINED



[1L] COPY ACTIVE (blue) — The pilot presses this key to copy the primary active flight plan into the secondary flight plan.

[2L] SEC F-PLN (white) — The pilot presses this key to call up the secondary flight plan pages.

[1R] INIT (white) — This prompt allows access to the SEC INIT A and B pages.
It is similar to the active INIT page, but blue brackets replace all the amber boxes.

SECONDARY FLIGHT PLAN PAGES

The secondary flight plan pages A and B are identical to those of the active flight plan. They are automatically sequenced, only when the secondary flight plan is copied from the primary one and their active legs are identical.
No temporary flight plan is created in a secondary flight plan: the lateral and vertical revisions are directly inserted into the secondary flight plan.
Moreover, the active and secondary flight plan pages differ from one another as follows:

SECONDARY LATERAL REVISION PAGES

- OFFSET and FIX INFO are not available.

SECONDARY INIT A AND B PAGES

- Blue brackets are displayed by default.

SECONDARY STEP ALTITUDE PAGES

These pages operate as the active STEP ALTS page.

SECONDARY WIND PAGES

Do not have a history wind page.

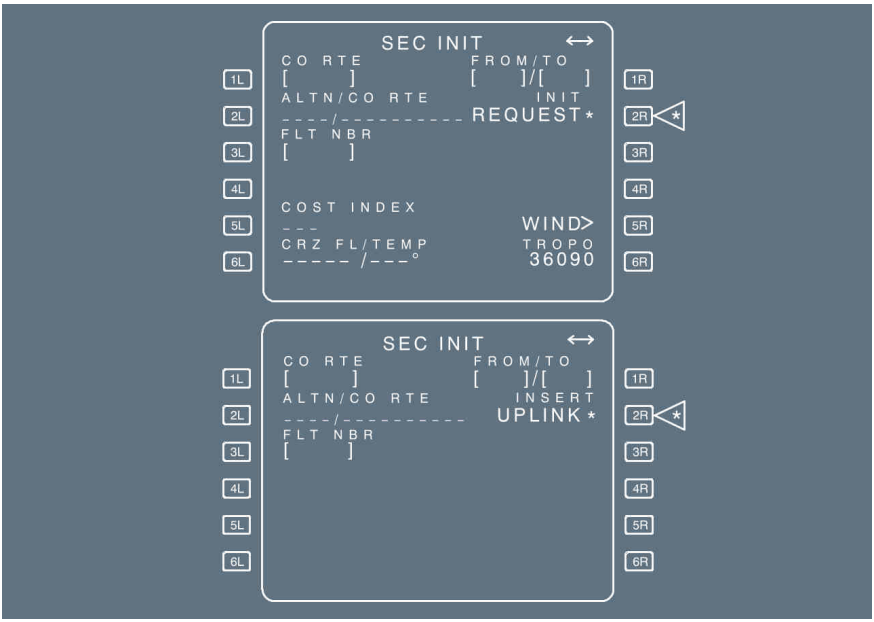
SECONDARY PERFORMANCE PAGES

- All boxes are replaced by blue brackets.
- Have neither an engine-out mode, nor an engine-out long-range cruise cost index.
- Have no expedite predictions.
- Have no ACTIVATE/CONFIRM APPROACH PHASE prompt.
- Have no PRED TO ALTN predictions on the PERF CLB and PERF DES pages.
- Have no top of descent, no cabin descent rate information on the PERF CRZ page.

The secondary flight plan does not have a FUEL PRED page.

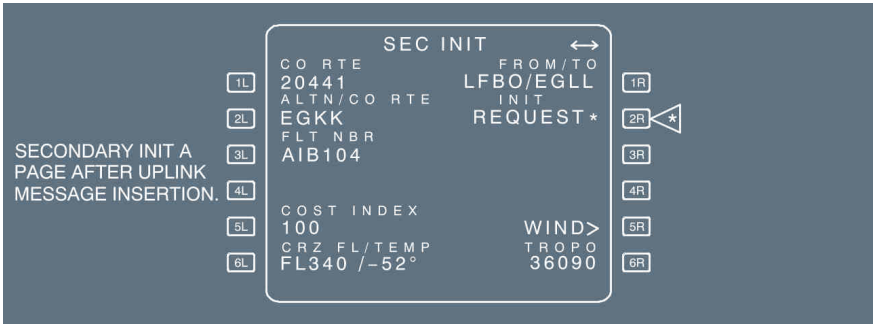
THE SECONDARY INIT A PAGE IS ALSO USED TO REQUEST OR DISPLAY AN UPLINK INIT MESSAGE RECEIVED AFTER ENGINE START.

This uplink INIT message can be cleared or inserted as SEC INIT data.



[2R] INIT REQUEST* This field enables INIT data to be requested from the ground.

[2R] INSERT UPLINK* An uplink message has been received following a request. The message can be cleared or entered on the SEC INIT page.

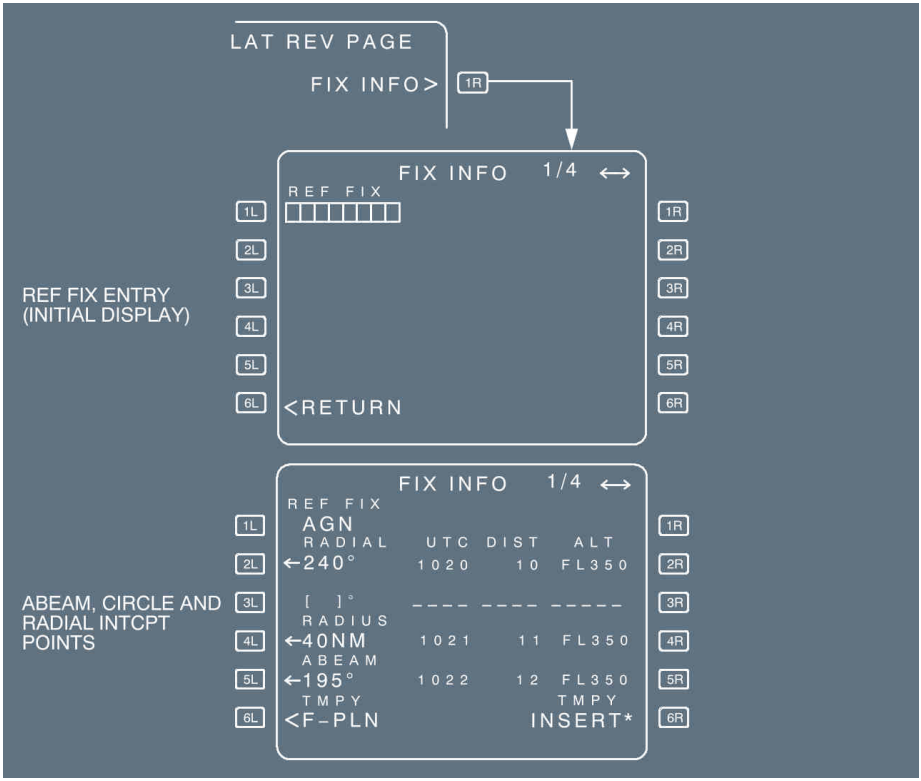


RADIAL FIX INFO PAGES

Ident.: DSC-22_20-50-10-28-00009559.0021001 / 14 MAY 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The FIX INFO pages provides access to the RADIAL, CIRCLE and ABEAM intercept functions.
The reference may be a given database fix or a pilot-defined element.
If the radial, circle or abeam intercepts the active or temporary flight plan, the intersection point can be converted to a waypoint and inserted into the flight plan.
The FIX INFO pages may be accessed from the LAT REV page, after performing a lateral revision at the origin airport, or at FROM or at any F-PLN waypoint of the primary flight plan (except Destination).



[1L] REF FIX (blue)

Enables entry of the REF FIX. This reference may be any database element (NAVAID, waypoint, NDB, airport, runway) or a pilot-defined element. Before entry, amber boxes are displayed.

[2L] – [2R] RADIAL (blue) and [3L] – [3R] (blue)

Enables entry of a radial from the REF FIX.
If the radial line intersects the active flight plan, the FMGS will compute the time, the along path DIST (Distance To Go), and the altitude at the intersection point (small green font). A large blue selection arrow is then displayed to insert the intersection waypoint into the temporary flight plan. This waypoint is not part of the pilot-stored elements.

It is automatically labelled:

"XXXNNN" XXX = First 3 letters of the REF FIX ident.
NNN = Value of the radial

[4L] - [4R] RADIUS (blue)	This function enables the flight crew to enter a radius that defines a circle around the REF FIX. When the circle intercepts the current flight path, the FMGS will compute the time, the along path distance and the altitude at the first intersection point, from the current aircraft position (small green front). A large blue selection arrow is then displayed to insert the intersection waypoint into the temporary flight plan. This waypoint is not part of the pilot stored element. The waypoint is automatically labelled: "DNNNXXX" NNN = Value of the radius XXX = First 3 letters of the REF FIX ident.
[5L] - [5R] ABEAM	This function enables the pilot to create a waypoint in the flight plan (primary or secondary) that is abeam the reference fix (REF FIX). Once computed, the page displays the radial number in large green font. The FMGS computes the time, the along path distance, and altitude at the abeam point (small green font). A large blue selection arrow is then displayed to insert the waypoint into the temporary flight plan. The waypoint is labelled: "AB" + the REF FIX ident, for example, with "TOU" VOR, "ABTOU".
[6L] TMPY F-PLN or RETURN	This field displays "TMPY F-PLN" in yellow font, if a temporary flight plan exists. It enables to return to the temporary flight plan page. Otherwise, the RETURN prompt is displayed and enables to return to the LAT REV page.
[6R] TMPY INSERT*	Activates the temporary flight plan.

Note: *Four FIX INFO pages, providing the capability to define four different REF FIX elements, are available.*

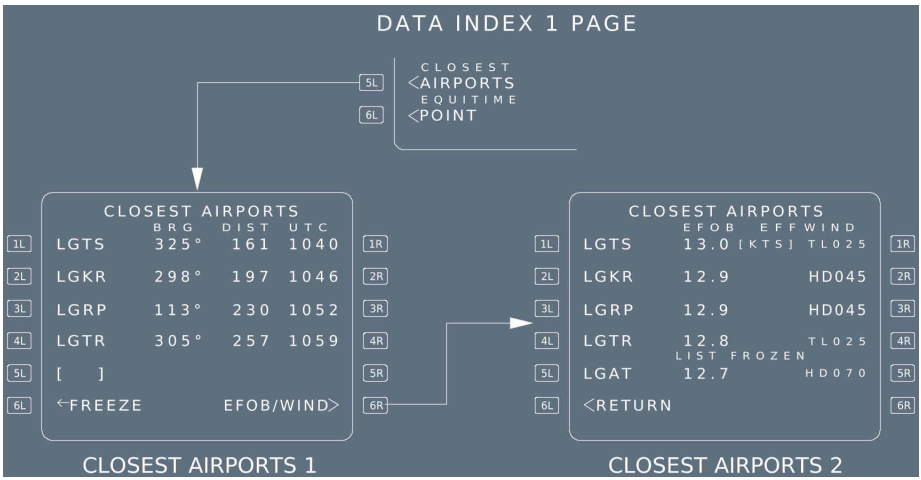
CLOSEST AIRPORTS PAGES

Ident.: DSC-22_20-50-10-28-00009560.0001001 / 16 MAR 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The FMS automatically selects the four closest airports from the current aircraft position, and displays them on the CLOSEST AIRPORT pages, ranked by distance. The flight crew can select an additional, fifth airport on this page.

- CLOSEST AIRPORTS page 1 displays the bearing, distance, and time to go to each airport
- CLOSEST AIRPORTS page 2 displays the Estimated Fuel On Board (EFOB) and enables the crew to check or modify the effective wind estimated to the corresponding airport.

The flight crew accesses the CLOSEST AIRPORTS page 1 by pressing the [5L] key on the DATA INDEX 1 page. They access the CLOSEST AIRPORTS page 2 by pressing the EFOB/WIND prompt (6R key) on page 1.



CLOSEST AIRPORTS 1 PAGE

[1L] - [1R] BRG/DIST/UTC (green) to [4L] - [4R]

The closest four airports are extracted from the database, and ranked by distance from the aircraft position.

- BRG — Displays the current bearing from the aircraft's position to the airport.
- DIST — Displays the current great-circle distance from the aircraft's position to the airport.
- UTC — Displays the predicted time of arrival at the airport, computed using the current wind or a wind vector entered on page 2, and the speed in accordance with the current mode (managed or selected).
  The time is only computed in cruise phase.

[5L]

The crew may enter a fifth airport in this field, using the 4–letter ICAO code. The field may be modified at any time, even when "LIST FROZEN" is displayed.

If the crew enters an airport that is not in the database, a “NOT IN DATABASE” message appears in the scratchpad.

[6L] FREEZE/UNFREEZE (cyan)	This prompt enables the pilot to freeze and unfreeze the list of four airports. The list is automatically frozen when accessing page 2. It will remain frozen until returning to page 1. The “LIST FROZEN” message is always displayed on page 2.
[6R] EFOB/WIND	Gives access to page 2. Pressing this prompt automatically freezes the list of the four closest airports.

CLOSEST AIRPORTS 2 PAGE:

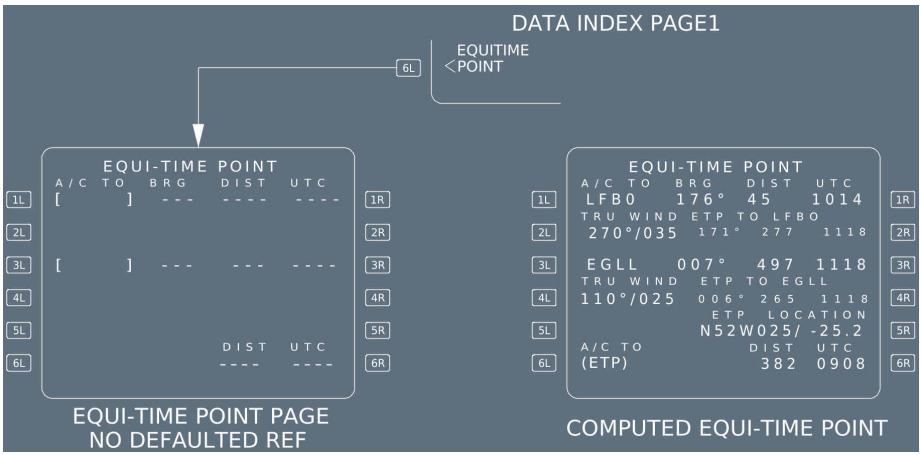
[1L] - [1R] EFOB (green) to [5L] - [5R] EFF WIND (cyan)	Displays the EFOB at each airport. The EFOB is only computed in cruise phase. Used to enter an estimated effective wind (headwind or tailwind) along the route to the airport. If the entry is preceded by “+”, “T”, or “TL”, a tailwind is assumed. If the entry is preceded by “–”, “H”, or “HD”, a headwind is assumed. This field displays in small font a default value, based on the current wind experienced by the aircraft. The crew can modify this value, it is then displayed in large font. The effective wind is used to compute the EFOB and time to reach the airport.
[6L] RETURN	Returns to page 1.

Note:
- *If the aircraft position becomes invalid, all BRG, DIST, UTC fields are dashed. The CLOSEST AIRPORTS page still displays the last available list of 4 closest airports and the last crew-defined airport (if any). FREEZE/UNFREEZE and EFOB/WIND prompts are removed, LIST FROZEN is displayed, and the A/C POSITION INVALID message is displayed in the scratchpad. Page 2 cannot be accessed.*
- *Predictions (EFOB, TIME) displayed on the CLOSEST AIRPORTS page assume:*
  - *ECON CRZ speed (managed) or current selected speed (selected) is kept;*
  - *CI (for managed speed only) and CRZ FL from the active F-PLN are kept*
  - *A constant wind value;*
  - *In case of engine out, the aircraft altitude is the minimum of (CRZ FL, EO MAX ALT);*
  - *Downpath steps are not considered;*
  - *Descent fuel burn is a conservative value which only depends on the difference between current CRZ ALT and the destination airport altitude.*

EQUI - TIME POINT PAGE

Ident.: DSC-22_20-50-10-28-00009561.0004001 / 18 MAR 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The flight crew uses this page to request an equi-time point computation between two different points (airport, NAVAID, runway, NDB or waypoint). This pseudo-waypoint (ETP) is displayed on the navigation display along the F-PLN. The EQUI-TIME POINT page is accessed by pressing the 6L key on the DATA INDEX 1 page:



[1L] A/C TO and [3L] (blue) Displays reference waypoint 1.
Displays reference waypoint 2.

Note: Origin and destination airports are used by default for respective reference points 1 and 2, until a pilot entry is made.

[1R] BRG/DIST/UTC and [3R] (green)	Displays the bearing, distance, time, from the aircraft's current position to the reference waypoint 1. Displays the bearing, distance, time, from the current position of the aircraft to the reference waypoint 2. BRG : Displays the current great-circle bearing from the position of the aircraft to the reference waypoint. DIST : Displays the current great-circle distance from the position of the aircraft to the reference waypoint. UTC : Displays the predicted time of arrival at the reference waypoint (computed using the current wind or a wind vector, entered by the crew). The time is only computed in cruise phase. In other phases, it is dashed.
[2L] and [4L] TRU WIND (blue)	The crew may enter the wind (direction/velocity) at the reference waypoint and CRZ FL: This wind value is used to calculate the time from the position of the aircraft to the reference waypoint, and to locate the equitime point. If no entry is made, the wind/velocity is assumed to be equal to zero.
[2R] and [4R] ETP TO XXXX (green)	Displays the bearing distance and the time from the Equi-Time Point (ETP) position to the reference waypoint.
[5R] ETP LOCATION	Displays the ident of the F-PLN waypoint following the equitime point. It provides the distance along the flight plan from the ETP to the indicated waypoint.
[6L] - [6R] A/C TO (ETP) DIST/UTC (green)	This field displays the distance from the current position of the aircraft to the ETP along the flight plan, and the estimated time of arrival at the ETP. If at least one reference waypoint exists, but no ETP exists, the field is blank and NO ETP is displayed in 6L.

Note: *The ETP computation is based on the cost index, managed speed (with SPD LIM).*
In case of engine-out, the EO LRC speed is assumed.
If the ETP fix is an airport, the ETP computation takes into account the descent towards this airport.

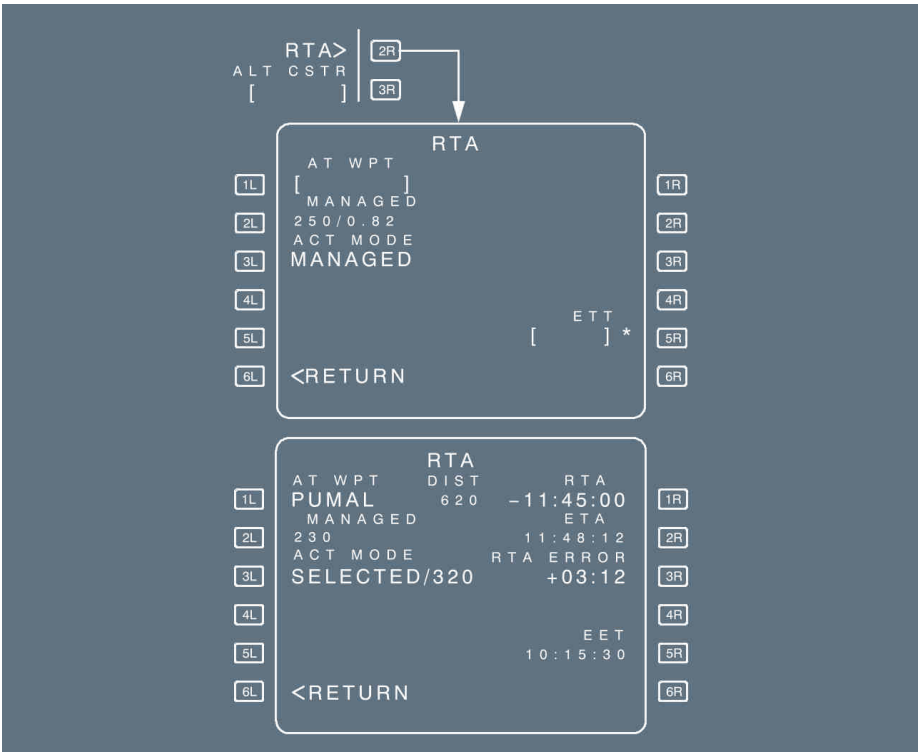
RTA PAGE

Ident.: DSC-22_20-50-10-28-00009562.0021001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The RTA (Required Time of Arrival) page enables to enter a time constraint on a given waypoint.
When an RTA has been defined at a waypoint, the RTA page provides the following information:

- Predicted ETA at the time-constrained waypoint
- Performance adjusted SPD target
- Time error
- Distance to time constrained waypoint
- Active speed mode.

The RTA page also allows to enter an Estimated Takeoff Time (ETT), or may display an FMS-computed ETT.
The flight crew calls up this page with the RTA prompt from the VERT REV page.



[1L] – [1R] AT WPT/DIST/RTA	This line displays AT WPT and empty blue brackets, when no waypoint has been specified, or AT WPT, DIST and RTA when a waypoint has been defined. The waypoint identifier is displayed in large blue font. If only the waypoint identifier has been defined and no RTA value, blue brackets and a blue star are displayed facing the 1R prompt. The flight crew enters the time constraint as “HHMMSS”, preceeded by: A “–“ sign for “at or before” A “+” sign for “at or after” no sign for “at”. DIST is displayed in yellow if a temporary flight plan exists.
[2L] MANAGED (yellow/green)	This field displays the FMGS-computed ECON speed/Mach (*Refer to DSC-22_20-40-10 General*) used to respect the RTA. Speed and/or Mach are displayed in yellow if a temporary flight plan exists. Otherwise they are displayed in green.
[3L] ACT MODE (green)	Displays the active speed mode: MANAGED or SELECTED/NNN (NNN is the selected target speed). The crew cannot modify the active speed mode via this field.
[6L] TMPY F-PLN (yellow) or RETURN (white)	The crew presses this key to revert the display to the VERT REV page. The TMPY F-PLN prompt accesses the temporary F-PLN page.
[2R] ETA (yellow/green)	When a required time at arrival has been defined, the 2R field displays the estimated time of arrival as “HHMMSS”. ETA is displayed in yellow if a temporary flight plan exists. Otherwise it is displayed in green.
[3R] RTA ERROR	This field is blank when the RTA is predicted as made. The RTA is predicted as missed, if the aircraft is expected to reach the point at RTA +30 s or later. In this case, “RTA ERROR” is displayed in small white font, and the calculated time error between the ETA and the RTA is displayed in small amber font.
[5R] ETT	The Estimated Takeoff Time (ETT) field is available in preflight phase. If no ETT has been entered, the 5R field displays blue brackets and a blue star. When an ETT has been entered, it is displayed in magenta. This field may also display an FMS-computed ETT, when an RTA has been defined. Entry of ETT does not lead to the creation of a temporary flight plan.
UTC	Universal time is displayed in green for takeoff, climb, cruise, descent and approach phases.

[6R] TMPY INSERT * Activates the temporary flight plan.

CONSTANT MACH PAGE

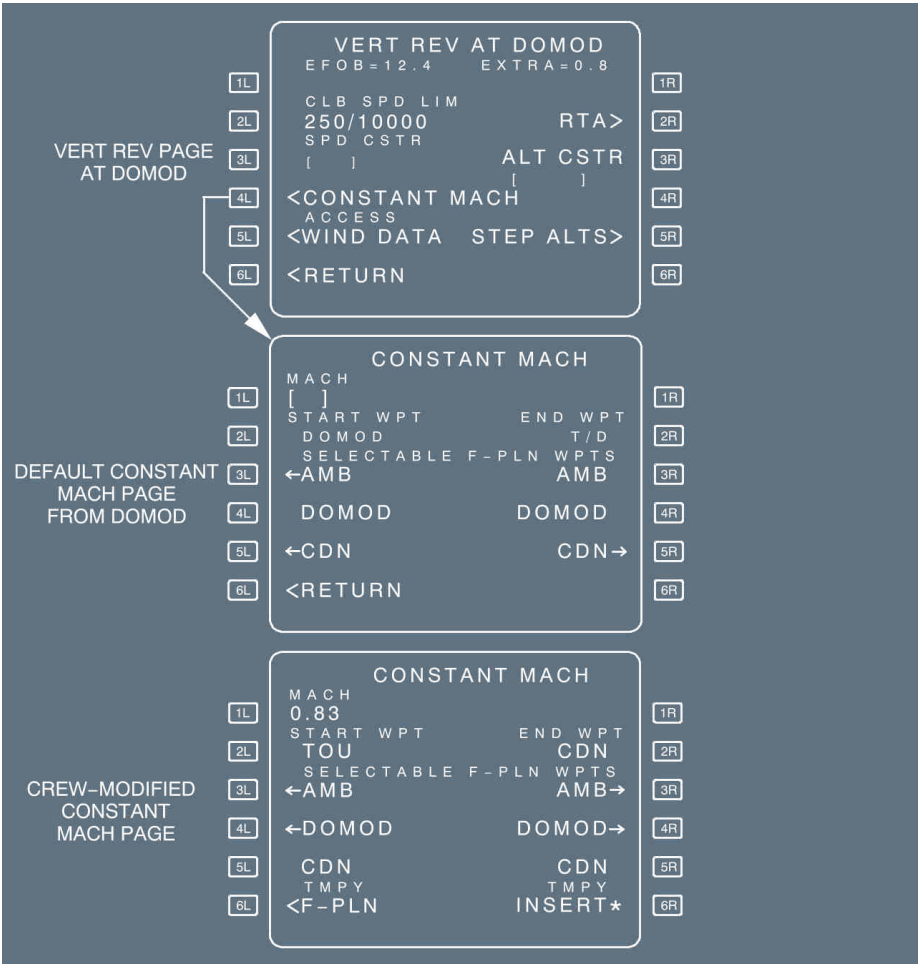
Ident.: DSC-22_20-50-10-28-00009563.0004001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The CONSTANT MACH page allows the crew to specify a constant Mach value to be kept during a given part of the cruise phase. The crew can specify on this page:
- The desired constant Mach value
- The Start and End waypoint of the constant Mach segment.

The constant Mach segment is flown in MANAGED speed mode. The FMS takes the crew-entered constant Mach into account to calculate the cruise predictions.

Note: A constant Mach may also be defined in the SEC F-PLN.

The CONSTANT MACH page is accessed by pressing the CONSTANT MACH prompt [4L] on the VERT REV page from any waypoint, including the FROM waypoint.
If the page is accessed from a VERT REV at the FROM, the proposed default start waypoint will be PPOS.
The CONSTANT MACH page is accessible in pre-flight, takeoff, climb and cruise phases. A constant Mach may only be defined cruise segment.



[1L] MACH (blue) — Enables the entry of the desired Mach value waypoint is displayed in large blue font.

[2L] START WPT (blue)	Enables the Start waypoint of the constant Mach segment to be specified. The default Start waypoint is the waypoint at which the vertical revision has been performed, if it belongs to the cruise phase. Otherwise, the field is blank. The default Start waypoint (if any) is displayed in small blue font. The crew may select a different Start waypoint in the list of selectable F-PLN waypoints. A crew-selected Start waypoint is displayed in large blue font.
SELECTABLE F-PLN WPTS (blue) [3L] – [3R] [4L] – [4R] [5L] – [5R]	This is the list of the F-PLN waypoints that can be selected as Start or End waypoint of the constant Mach segment. The FMS automatically displays the list of all downpath waypoints belonging to the cruise phase (before the T/D). The crew selects the Start waypoint in the list on the left side, and the End waypoint on the right side.
[6L] <RETURN (white) or <TMPY F-PLN (yellow)	If a temporary F-PLN exists, the prompt <TMPY F-PLN is displayed. This enables the crew to return to the TMPY F-PLN page. If no TMPY F-PLN exists, the <RETURN prompt is displayed. It enables a return to the VERT REV page.
[2R] END WPT (blue)	This field enables the End waypoint of the constant Mach segment to be specified. By default, the End waypoint is the Top of Descent (T/D). The default End waypoint is in small blue font. The crew may select a different End waypoint in the list of selectable F-PLN waypoints. A crew-selected End waypoint is displayed in large blue font.
[6R] TMPY INSERT*	Activates the temporary flight plan.

BACK UP NAV PAGES

Applicable to: MSN 03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Ident.: DSC-22_20-50-10-28-G-00013272.0006001 / 16 MAR 11

The MCDU features a back up navigation function which provides simplified point-to-point GPIRS and IRS based navigation in case of a dual FM failure.
The backup Navigation mode allows limited lateral flight planning within the MCDU, that can be used to drive the Navigation Display and provides relative path position information and auto-sequencing of the Backup Navigation flight plan. The Backup Navigation flight plan reflects, as much as possible, the active primary FM flight plan upon its initial activation.
During FM normal operation, the F-PLN is continuously downloaded in the MCDU memory: the BACK UP NAV function links the MCDU of the failed FM to its onside IRS. All navigation data related to the MCDU F-PLN are displayed on the associated ND.
BACK UP NAV function is activated on the MCDU MENU page by pressing the NAV B/UP prompt.

The MCDU back-up F-PLN may accept a maximum of 150 legs, including information such as waypoint position/identification, leg type, discontinuity, overfly and turn direction information (radial, pattern, heading leg... cannot be part of the MCDU F-PLN). No secondary or temporary F-PLN exists.

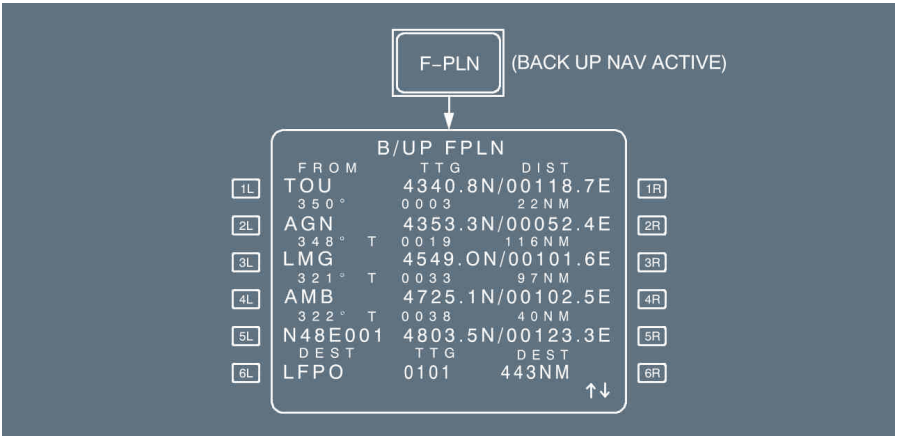
BACK UP NAV pages display the data related to the BACK UP NAV function. These are six pages available while BACK UP NAV is active:

- B/UP F-PLN
- B/UP F-PLN for DIRECT TO
- B/UP PROG
- B/UP IRS for onside IRS (1+2)
- B/UP IRS 3
- B/UP GPS (if the GPS is installed)

Ident.: DSC-22_20-50-10-28-G-00013273.0006001 / 23 JUL 12

B/UP F-PLN PAGE

The B/UP F-PLN page displays the MCDU F-PLN data. The pilot calls up this page by pressing the F-PLN MCDU key while B/UP NAV is active.



TITLE — B/UP F-PLN is displayed in a white large font

line 1 to line 5 Display consecutive waypoints with their associated latitude/longitude. If a waypoint is to be overflown, an overfly symbol (Δ) is displayed after the identifier.
If a turn is specified into the next leg, a large font arrow is displayed after the identifier.

Label lines contain the bearing, time to go and distance to the next waypoint displayed in small font.

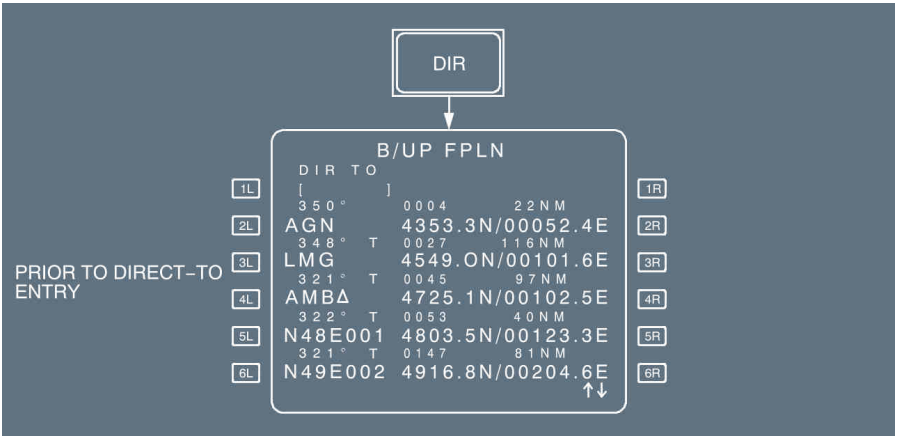
White	bearing
green	time to go and distance
BRG	Between FROM and TO waypoints: True or Mag depending on the TRUE pb-sw position. T is displayed when the bearing is true referenced. Between other waypoints: out bound true track of the great circle joining the 2 related waypoints, independant of TRUE pb-sw .
TTG	HHMM limited to 9 959. Time between the 2 related waypoints.
DIST	NM limited to 9 999.

line 6 DEST/TTG DIST: DEST airport identifier and Time To Go (TTG) to that waypoint. DIST to destination is computed as the direct distance from the aircraft to the active waypoint plus the along flight plan distances. Time to go to destination is computed as distance to destination divided by ground speed.
TTG and DEST are dashed if aircraft position is unavailable.

Ident.: DSC-22_20-50-10-28-G-00013275.0006001 / 14 MAY 12

B/UP F-PLN (DIR TO) PAGE

The pilot calls up this page using the DIR key on MCDU while BACK UP NAV is active and aircraft position is valid.

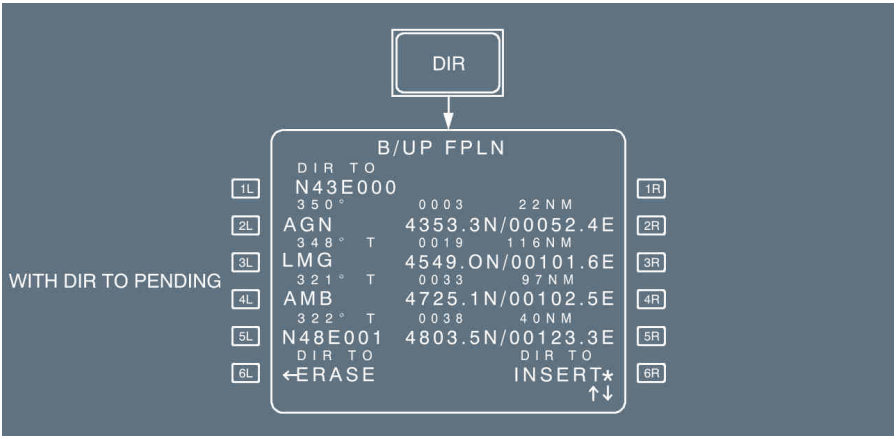


TITLE B/UP F-PLN is displayed in a white large font.

[1L] DIR TO Allows DIRECT TO selection to the desired waypoint. This waypoint can be selected from the F-PLN or manually entered through the scratchpad (IDENT/LAT/LONG or LAT/LONG)

line 2 to line 6 Display consecutive waypoints of the F-PLN.
Same as the B/UP F-PLN page.
The TO WAYPOINT is displayed in [2L].
Vertical slewing function is available

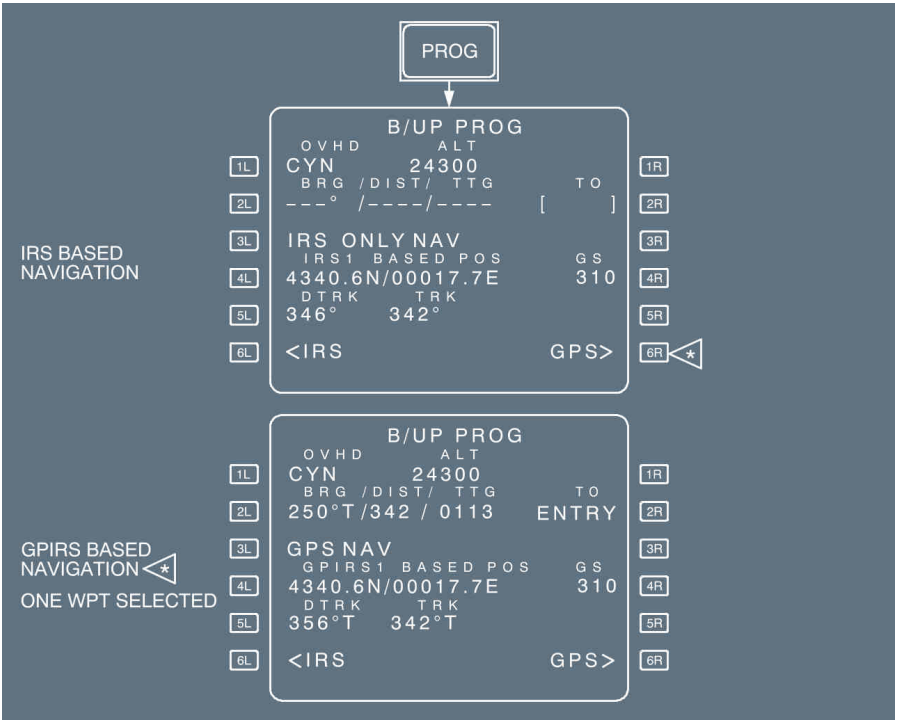
When a DIR TO is pending, the page displays the prompts “DIR TO INSERT” and “DIR TO ERASE” in line 6.



Ident.: DSC-22_20-50-10-28-G-00013276.0006001 / 21 MAR 16

B/UP PROG PAGE

It displays flight parameters relative to the F-PLN or a selected waypoint.
The flight crew calls up this page by pressing the PROG key on MCDU when BACK UP NAV is active.



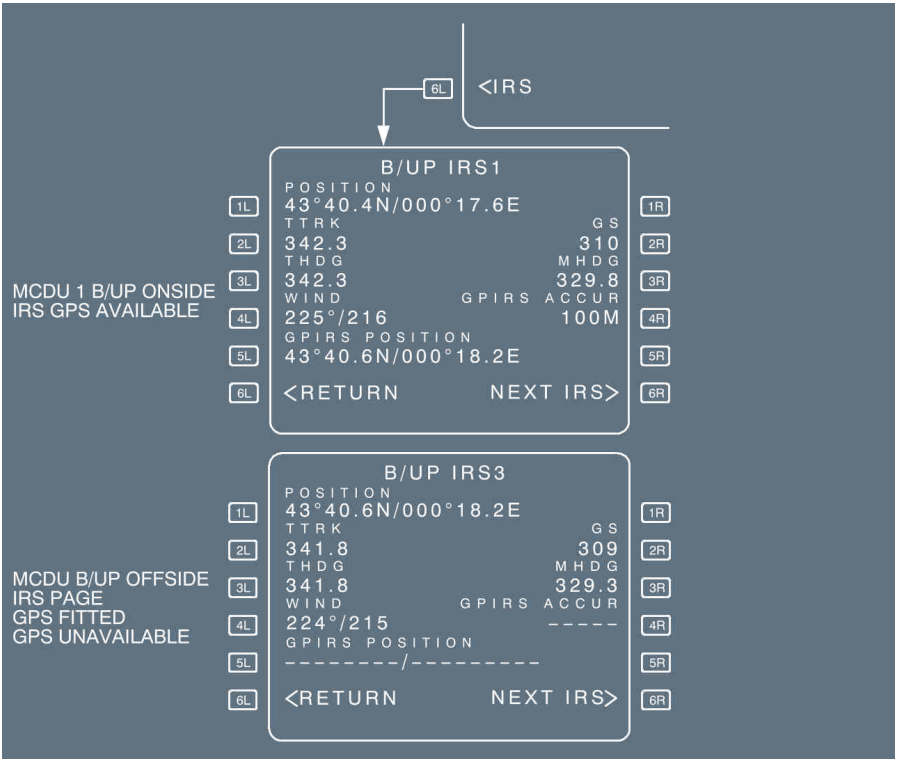
TITLE	B/UP PROG is displayed in a white large font.
line 1 OVHD/ALT	Displays the identifier of the last sequenced waypoint and the altitude at the time of the sequence.

line 2 BRG/DIST/TTG/TO	Allows the flight crew to enter an existing MCDU F-PLN waypoint identifier or LAT/LONG or IDENT/LAT/LONG. MCDU then computes bearing, distance and time to go to that waypoint from the present position. BRG : True or magnetic outbound track of the great circle joining aircraft present position to the entered waypoint: dependent on the TRUE pb-sw ◁ position. DIST : limited to 9 999. TTG : HHMM limited to 9 959. time to go to the entered position computed assuming current ground speed. These fields are displayed in a green small font. They are dashed if present position is unavailable.
[3L]	Means of navigation used by the Back-Up Navigation. If GPS is fitted and is the navigation source, “GPS NAV” is displayed, otherwise “IRS ONLY NAV” is displayed. If the GPS is not installed, this field is blank.
[4L] IRS 1 (2 or 3) BASED POS GPIRS 1 (2 or 3) (green)	Current aircraft position provided by the selected IRS GPIRS IRS 1 (or 3 if IRS 1 failed) on MCDU 1 IRS 2 (or 3 if IRS 2 failed) on MCDU 2 GPIRS 1 (or GPIRS 3) or MCDU 1 ◁ GPIRS 2 (or GPIRS 3) or MCDU 2 ◁
[4R] GS (green)	Current ground speed from the selected IRS or GPS ◁
[5L] DTRK/TRK (green)	Desired track of the MCDU F-PLN active leg and current aircraft track from the selected IRS/GPS (True or Mag). These tracks are true or magnetic depending on TRUE pb-sw ◁ position.
[6L] IRS 1 (2)	Gives access to onside B/UP IRS (1 or 2) page
[6R] GPS	Gives access to B/UP GPS page. This prompt only appears when the GPS is installed.

Ident.: DSC-22_20-50-10-28-G-00013278.0006001 / 14 MAY 12

B/UP IRS 1 OR 2 OR 3 PAGE

Display IRS 1, 2, 3 navigation data.
The pilot calls up this page from B/UP PROG page, by pressing the corresponding prompt.



TITLE	B/UP IRS 1, 2, 3 displayed in a white large font.
[1L] POSITION	Current aircraft position from selected IRS
[2L] T TRK	True track
[2R] GS	Ground speed
[3L] T HDG	True heading
[3R] M HDG	Magnetic heading Dashed when in polar area.
[4L] WIND	Wind direction and velocity Wind direction is always true referenced.
[4R] GPIRS ACCUR	GPS accuracy in meters as in the IRS page.
[5R] GPIRS POSITION	If GPS is installed, the GPS IRS position is provided as in the IRS page.

[6L] RETURN — Gives access to B/UP PROG page

[6R] NEXT IRS — Gives access to the next IRS page.
(Closed loop 1 → 2 → 3 → 1)

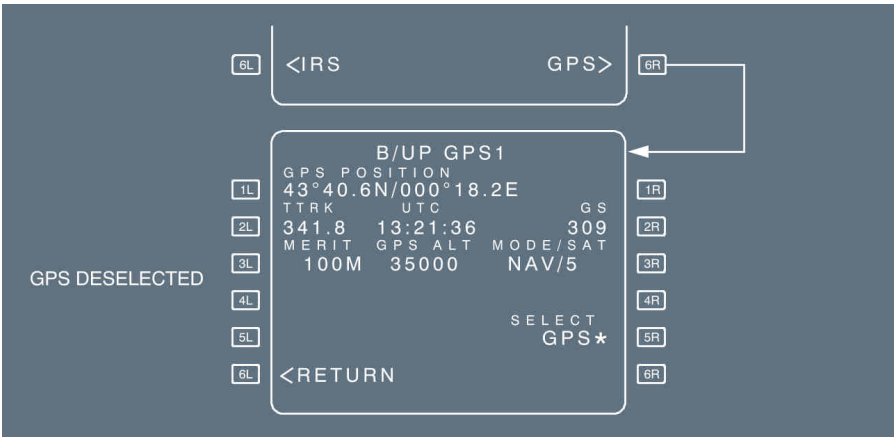
This page is not modifiable by the crew.

Note: *The fields [4R] and [5L] are blanked when the GPS is not installed.*

Ident.: DSC-22_20-50-10-28-G-00013279.0006001 / 14 MAY 12

B/UP GPS

Display GPS navigation data.
The flight crew calls up this page from B/UP PROG page, by pressing the corresponding prompt.



TITLE — B/UP GPS 1, 2 displayed in a white large font.

[1L] — GPS POSITION

Line 2 : — TTRK GPIRS position (latitude/longitude)
UTC: Time
GS: Ground Speed

Line 3 : — MERIT : GPS figure of merit
GPS ALT: GPS altitude
MODE/SAT: Navigation mode and number of tracked satellites. These values are displayed as in the FM GPS page.

[5R] — DESELECT/SELECT GPS: The flight crew may select and deselect the GPS for navigation Backup function. The default configuration is GPS selected.

FMS2 Honeywell

MCDU MESSAGE LIST

Ident.: DSC-22_20-50-20-35-00000918.0020001 / 05 JUN 18

1 **Applicable to: MSN 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

Messages displayed on the MCDU are of two types and displayed in two colors.

Type I : A direct result of a pilot action;

Type II : Information about a situation, or a call for pilot action;

Type II messages are stored in a first-in/first-out message queue (5 messages max)

They are suppressed, if correct data is entered or when they no longer apply

The flight crew can clear all messages by pressing the CLEAR key on the MCDU console.

Amber (A) : Important

White (W) : Less important

MESSAGE	TYPE/COLOR	CONDITIONS
A/C POSITION INVALID	II/A	The aircraft position has become invalid. If the message has been cleared and the flight crew attempts to call up the HOLD at PPOS or DIR TO page while the aircraft position is still invalid, then the message is displayed again.
ACT RTE UPLINK (ACARS msg)	II/W	A flight plan is stored in the active flight plan.
ALIGN IRS	II/A	Appears when the IRS are ready for alignment, but the INIT A page is not displayed on either side of the flight deck. The ALIGN IRS message requires that one of the flight crew call up the IRS INIT page, to align the IRS.
AREA RNP IS XX-XX	II/A	Displayed when the RNP value, manually-entered on the PROG page, is larger than the default RNP value associated to the current flight area and when there is no RNP value defined in the navigation database for the active leg or route.
AWY/WPT MISMATCH	I/W	The pilot entered VIA on the AIRWAYS page does not contain the revised point. If you enter a second airway IDENT, it must contain the first airway ending point.
BLOCK IGNORES RTA	II/W	A time constraint existing at initiation of flight planning, or an entry of a time constraint made after initiation of flight planning, are ignored by the fuel planning function.
CABIN RATE EXCEEDED	II/W	This message appears when the aircraft gets within 200 NM of the destination and the computed rate of descent makes it impossible for the cabin to be repressurized at the maximum rate.
CHECK ALTN WIND (ACARS msg)	II/W	The uplinked alternate cruise flight level differs from the defaulted alternate cruise flight level.

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MESSAGE	TYPE/COLOR	CONDITIONS
CHECK APPR SELECTION *EFIS PFD (FMA)	II/W	Displayed when a NON ILS approach is part of the F-PLN and an ILS is manually tuned on RAD NAV page. This message reminds the flight crew that available guidance modes for the approach are APP NAV/FINAL. Displayed when in cruise at less than 100 NM from the top of descent or in descent or approach phase.
CHECK CO RTE (ACARS msg)	II/W	The uplinked company route identifier differs from the one specified in the request.
CHECK DATA BASE CYCLE	II/W	The current date does not match the effective date of the active database, and someone attempts to enter a FROM/TO or CO RTE.
CHECK IRS 1(2)(3)/FM POSITION	II/A	Each IRS position is compared to the FM position. The difference is greater than a threshold function of time.
CHECK IRS/AIRPORT POS	I/A	The distance between ADIRS alignment position and the NAV Database Airport Reference Point is at least 5 NM
CHECK DEST DATA (ACARS msg)	II/A	The aircraft is at 180 NM from destination and the destination QNH, TEMP or WIND displayed on the PERF APPR page received by ACARS uplink has to be checked. If a modification of these parameters is performed creating a conflict with previous data, the message is triggered again.
CHECK FLT NBR (ACARS msg)	II/A	The uplinked flight number differs from the flight number specified in the request.
CHECK MIN DEST FOB	II/W	This message appears when the flight crew has manually entered the MIN DEST FOB value, and MIN DEST FOB < ALTN + FINAL, being FINAL an ALTN valid data.
CHECK NORTH REF * EFIS ND	II/A	The MAG/TRUE sw does not correspond to the airport MAG/TRUE bearing reference (as stored in the FMGS navigation database), either at the departure airport (during preflight), or at the destination airport (when entering the ARRIVAL area).
CHECK QFE	II/A	This appears at the transition from QNH to QFE reference, when the QFE altitude differs by more than 100 ft from the predicted altitude, with the QNH set on the MCDU by means of the airport elevation in the NAV database.
CHECK TAKEOFF DATA	II/A	Following a flight crew entry or modification of one of the take-off parameters, there may be an inconsistency between the take-off runway or the TO shift and V1, VR, V2, FLEX TO temperature or derated level. The flight crew activated the secondary F-PLN in PREFLIGHT or DONE phase.
CHECK WEIGHT	II/A	The gross weights (GW) computed by the flight management computer (FMC) and the flight augmentation computer (FAC) disagree by more than 7 t (7.7 US tons).

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MESSAGE	TYPE/COLOR	CONDITIONS
CLK IS TAKEOFF TIME	II/W	This appears when the flight crew has entered an Estimated Takeoff Time (ETT), and the actual time is equal to ETT.
CLOCK/GPS TIME DIFF XX	II/A	Aircraft clock time and GPS time differ by more than XX minutes.
CROSSLOAD ABORTED	II/W	Message displayed on the transmitting MCDU, indicating an error in the transmission process.
CROSSLOAD COMPLETE	II/W	The database crossload from one FMGC to the other was successfully completed.
CRZ FL ABOVE MAX FL	II/W	This appears when the flight crew enters a cruise altitude that is above the computed maximum altitude.
CSTR DEL ABOVE CRZ FL	II/W	This appears when a flight plan altitude constraint has been deleted because the flight crew has inserted a cruise flight level, or step-down altitude that is at or below the flight plan constraint.
CSTR DEL UP TO WPT 01	II/W	This appears when constraints get deleted because the aircraft transitions to a go-around flight phase, before the FMGS sequences the flight plan destination.
DECELERATE or T/D REACHED (Also displayed on PFD)	II/W	One of these messages appears when the aircraft has reached the T/D in managed speed and it has not yet begun the descent.
DELETING OFFSET	II/W	This appears when the system is deleting an offset automatically, which it does under certain specific conditions, such as: - Change of active leg due to lateral revision. - Termination of next leg at destination runway and the current distance to go is less than or equal to the distance required to reach the path, or the next leg is not a CF, FM or TF leg.
DEST/ALTN MISMATCH	I/W	The pilot attempts to enter an alternate CO RTE (which starts at an origin that is not the primary flight plan destination).
DEST EFOB BELOW MIN	II/A	The EFOB at destination calculated by the FMS is less than the MIN DEST FOB value specified on the FUEL PRED page, for more than 2 min. The message is triggered in flight, except during Takeoff and Climb phases.
DIR TO IN PROCESS	I/W	The flight crew calls up the vertical or lateral revision page on one MCDU while the direct to page is displayed on the other MCDU.
ENTER DEST DATA	II/A	The flight crew has not entered wind, QNH, or temperature for the destination, and the aircraft is 180 NM out.
ENTRY OUT OF RANGE	I/W	The flight crew attempts to enter data that is out of the range specified for the selected field.
FLT NBR UPLINK (ACARS msg)	II/W	A flight number has been added to the uplink flight plan without previous request.
F-PLN ELEMENT RETAINED	I/W	The flight crew attempts to delete stored NAVAIDs, waypoints or runways that are contained in any flight plan or that are being tuned.

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MESSAGE	TYPE/COLOR	CONDITIONS
F-PLN FULL	II/W	There is not enough memory in the flight plan allotment for the computer to accept more flight plan data.
FMS 1/FMS 2 A/C STS DIFF	II/W	This message always precedes a transition to independent mode, and appears at power-up if the system detects a difference in one of the following: - NAV database serial number - Performance database - FM operational program - Aircraft and airline program pins
FMS 1/FMS 2 GW DIFF	II/W	Onside and offside aircraft weight differ by 2 t or more.
FMS 1/FMS 2 PGM PIN DIFF	II/W	Onside and offside program pins are different.
FMS 1/FMS 2 POS DIFF	II/A	Onside and offside positions differ by 0.5 NM or more (5 NM when GPS is not installed).
FMS 1/FMS 2 SPD TGT DIFF	II/W	Onside and offside target speeds displayed on the PFD differ by 5 kt or more.
FORMAT ERROR	I/W	A data entry does not meet the specified entry format for a given field.
GPS PRIMARY LOST (also displayed on ND)	II/A	Displayed when GPS PRIMARY mode is lost.
GPS PRIMARY	II/W	Displayed when the FMS is transitioning to GPS PRIMARY
GPS IS DESELECTED	II/A	This message appears when GPS has been manually deselected and the aircraft is 80 NM before the top of descent or in approach phase.
INDEPENDENT OPERATION	II/A	The FMGCs operate independently of each other.
INITIALIZE WEIGHT/CG	II/A	The zero-fuel weight or block fuel (FOB) is undefined after engine start.
INVALID FLT NBR UPLINK (ACARS msg)	II/W	The uplink message contains a valid flight plan but no flight number.
INVALID PERF UPLINK (ACARS msg)	II/W	Performance uplink message has been rejected.
INVALID RTE UPLINK (ACARS msg)	II/W	An error was detected into the uplink message and it is rejected.
INVALID TAKEOFF UPLINK (ACARS msg)	II/W	The current uplink takeoff data message is rejected.
INVALID WIND UPLINK (ACARS msg)	II/W	The current uplink wind message is rejected.
LAT DISCONT AHEAD	II/A	The next leg is a discontinuity and the aircraft is 30 s from flying the leg.
LIST OF 10 IN USE	I/W	The flight crew has tried to enter more than ten stored runways into the database, and all of the first ten are included in a flight plan or a pilot-stored route.

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MESSAGE	TYPE/COLOR	CONDITIONS
LIST OF 20 IN USE	I/W	The flight crew has tried to create a PBD, LAT/LONG, or PBX, or store a pilot-defined waypoint or NAVAID when 20 are already in use (in a flight plan or pilot-stored routes).
MACH SEGMENT DELETED	II/W	A constant Mach segment of the active flight plan has been automatically deleted. This occurs when the secondary flight plan or the alternate is activated, or engine out is detected or when the flight phase changes from CRZ to another one.
MCDU OVERHEATED	II/A	This message is displayed for 15 s in case of MCDU overheating.
MORE DRAG (EFIS PFD)	II/W	DES mode is engaged, idle is selected and the aircraft must decelerate in order to recover the path, or to respect an altitude constraint, a speed limit or a speed constraint.
NAV ACCUR DOWNGRAD (also displayed on ND)	II/A	NAV accuracy has been downgraded from HIGH to LOW. (See FMGS principles for an explanation).
NAV ACCUR UPGRAD (*EFIS ND)	II/W	NAV accuracy has been upgraded from LOW to HIGH.
NEW ACC ALT-HHHH	II/W	The acceleration altitude has been changed.
NEW CRZ ALT-HHHHH	II/W	The cruise altitude has been changed.
NEW THR RED ALT-HHHH	II/W	The thrust reduction altitude has been changed.
NO ANSWER TO REQUEST (ACARS msg)	I/W	A crew request, was previously sent to the ground and no answer has been received for 4 min.
NO INTERSECTION FOUND	I/W	The system could not find any common waypoint nor intersection point through the airway.
NON UNIQUE ROUTE IDENT	I/W	The flight crew has tried to enter on the new route page a company route IDENT that is identical to an existing company route IDENT (pilot-defined or in the database).
NOT ALLOWED	I/W	Data entry is not allowed in the selected field, or a selection action is not allowed.
NOT ALLOWED IN NAV	I/W	An attempt to modify the TO waypoint is made while in NAV mode.
NO NAV INTERCEPT	II/A	It is triggered, when NAV mode is armed and, no INTERCEPT waypoint exists before the TO waypoint.
NOT IN DATA BASE	I/W	The pilot is trying to enter or call up a company route IDENT, a FROM/TO pair, a place defined by place-bearing-distance (PBD) or place-bearing/place-bearing (PBX) or an airport NAVAID, waypoint runway, or NAVAID frequency (including pilot-defined elements) that is not in the current database.
NOT XMITTED TO ACARS (ACARS msg)	II/W	A pilot request or a crew report was sent but the communication was not established or not acknowledged.
ONLY SPD ENTRY ALLOWED	I/W	The pilot is trying to enter a Mach number for a preselected speed value on the CLIMB page.

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MESSAGE	TYPE/COLOR	CONDITIONS
OPP FMGC IN PROCESS	II/W	The offside FMGC is unhealthy, and the FM system mode is SINGLE. The message indicates that the MCDU on which the message is displayed is being driven by the FMGC on the other side.
PAGE UPDATE IN PROCESS	I/W	The pilot presses a key on the flight plan page while predictions are being updated.
PERF DATA UPLINK (ACARS msg)	II/W	Performance data are received from ground.
PLACE/D IN TRANSITION	I/W	If a place/distance waypoint is defined within a pre-planned “fixed turn radius” transition, the entry is rejected and the “PLACE/D IN TRANSITION” scratchpad message is displayed.
PLEASE WAIT	I/W	Resynchronization between both FMGCs is in progress.
PROCEDURE RNP IS XX.XX	II/A	Displayed when the RNP value, manually-entered on the PROG page, is larger than the RNP value defined in the navigation database for the active leg or route.
PRINTER NOT AVAILABLE (ACARS msg)	II/W	A printer communication error has been detected while printing a report. The printing is terminated.
RADIONAV IS DESELECTED	II/A	Radio navaids have been manually deselected and the aircraft is 80 NM before the top of descent or in approach phase.
REF/GPS POS DIFF	I/A	This message is displayed when there is a discrepancy between the reference position entered by the pilot and the GPS position.
REF/LAST IRS POS DIFF	I/A	This message is displayed when there is a discrepancy between the reference position entered by the pilot and the last stored IRS position.
REVISIONS NOT STORED	II/W	This message, displayed when a pilot-defined route or company route (active or secondary flight plan) is stored, indicates that the following elements are not retained: - Pilot-entered holds - Offsets - Modifications to terminal area procedures - Pilot-entered constraints - Pseudo waypoints - Step at optimum.

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MESSAGE	TYPE/COLOR	CONDITIONS
RTA DELETED	II/W	A time constraint is automatically deleted: - In case of engine-out - When entering the holding pattern - In case of go-around - At phase transition from descent or approach to climb or cruise - When a time constraint is inserted in the same flight plan at a different waypoint - When the alternate flight plan is activated - When a DIR TO/ABEAM is performed, only if the time constrained waypoint is projected as an ABEAM waypoint - The time constrained waypoint is cleared or sequenced (regardless of active lateral mode) - Valid clock data is lost - The time constraint belongs to the active flight plan and the secondary flight plan is activated - The time constraint belongs to the secondary flight plan and COPY ACTIVE is performed.
RTA EXISTS	I/W	Displayed if the pilot tries to clear an estimated takeoff time defined by the system.
RTE DATALINK IN PROG (ACARS msg)	I/W	A flight plan modification is performed after a F-PLN INIT request has been sent. This message is displayed until the uplink is entirely received.
RWY/LS MISMATCH	II/A	- During climb, cruise, (ILS or MLS) descent approach, or go-around, the LS frequency entered on the RAD NAV page does not match the LS associated with the destination runway. - During preflight or takeoff, the LS frequency entered on the RAD NAV page does not match the LS associated with the takeoff runway.
SEC RTE UPLINK (ACARS msg)	II/W	A flight plan is stored in the secondary flight plan.
SELECT DESIRED SYSTEM	I/W	The MCDU displays its MENU page.
SELECT TRUE (also displayed on the ND)	II/A	The MAG/TRUE sw is set to MAG, while the IRS send true HDG/TRK.
SENSOR IS INVALID	I/W	- The pilot has selected FF or FQ, or FF + FQ, or FQ + FF on the FUEL PRED page and the sole sensor or both of the selected sensors are invalid, or - The flight crew has entered fuel on board only, and the FF sensor is invalid.

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MESSAGE	TYPE/COLOR	CONDITIONS
SET GREEN DOT SPEED ("SET GREEN DOT" displayed on PFD)	II/W (W)	This message appears when the following conditions are all met: - Engine-out condition - Aircraft in selected speed mode - FCU-selected speed equal to or greater than green-dot speed +10 kt, and ALT* or ALT not active, or FCU-selected speed equal to or less than green-dot speed -10 kt.
SET HOLD SPEED (also displayed on PFD)	II/W (W)	This instruction appears when the aircraft is in selected speed, the pilot has inserted a hold in the flight plan, the aircraft is 30 s or less from the point where it must start decelerating towards hold speed, and the selected speed differs from the hold speed by more than 5 kt.
SET MANAGED SPEED or CHECK SPEED MODE (Also displayed on PFD)	II/W (W)	The target speed is selected for the current phase, but there is no preselected speed for the next flight phase. When this is so, one of these messages is displayed at transitions from climb to cruise, and from climb or cruise to descent. The message is always displayed at the transition to descent from climb or cruise if selected speed is active. It is not displayed if managed speed is active.
SETTING SPD/RTA	II/W	Displayed when the system recomputes its managed speed target to satisfy the RTA constraints.
SPECIF NDB UNAVAIL	II/A	The NDB to be autotuned (specified for a NDB approach) is not available.
SPECIF VOR-D UNAVAIL (also displayed on ND)	II/A	- The VOR, VOR-DME, or VORTAC to be autotuned (specified for an RNAV or VOR approach) has previously been deselected by the flight crew, or - The bearing, the frequency, or the IDENT of the VOR (or VORDME or VORTAC) to be autotuned is invalid.
SPD ERROR AT WPT 01	II/W	In lateral managed flight, the system predicts that the aircraft will miss a speed constraint by more than 10 kt. When the prediction changes to bring the miss within 5 kt, the message is cleared.
SPD LIM EXCEEDED	II/A	The aircraft is more that 150 ft below the speed limit altitude and more than 10 kt over green dot or the speed limit (which ever is smaller).
STEP ABOVE MAX FL	II/W	The pilot has entered a step altitude that is above the predicted maximum altitude.
STEP AHEAD	II/W	Indicates that the aircraft is within 20 NM of the active step point.
STEP DELETED	II/W	A step has been automatically deleted.
STORED ROUTES FULL	I/W	The system already contains five pilot-defined routes. (Only five are allowed.)
TAKEOFF DATA UPLINK (ACARS msg)	II/W	A takeoff data message is received.

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MESSAGE	TYPE/COLOR	CONDITIONS
TEMPORARY F-PLN EXISTS	I/W	The flight crew has selected any key (except ERASE or INSERT) or attempted a flight planning operation on the secondary flight plan while the system is displaying a temporary flight plan.
TIME ERROR AT WPT 01	II/W	While the aircraft is in lateral managed flight the FMGC predicts that it will miss a time constraint.
TIME MARKER LIST FULL	I/W	The system already contains four time markers. (Only four are allowed).
TIME TO EXIT	II/A	The aircraft must leave holding immediately to satisfy fuel reserve requirements. (Extra fuel is zero).
TO SPEED TOO LOW	II/A	This message appears if the inserted V1, VR, V2 speeds do not satisfy the existing regulatory conditions regarding VMCG/VMCA and VS1G speeds.
TOO STEEP PATH AHEAD	II/A	The system displays this message in cruise phase if the aircraft is within 150 NM of its destination or in descent or approach phase and in NAV mode and the descent profile contains a segment that is too steep.
TUNE BBB FFF.FF	II/A	The system cannot autotune the VOR for approach or position because of a manual VOR selection.
TURN AREA EXCEEDANCE	II/A	This message is displayed 1.5 min before entry of the PI leg, when in NAV mode, if the PI lateral path exceed the protection envelope defined in the Navigation database.
UNKNOWN PROGRAM PIN	II/W	The system has been unable to initialize because of an incompatible or undefined aircraft pin program combination (A/C type, engine type, VMO/MMO parity) in the FMGC software.
UPLINK INSERT IN PROG (ACARS msg)	II/W	Displayed when an uplink message is currently inserted in the FMGS.
USING COST INDEX-NNN	I/W	This message is displayed when the system contains a flight plan, and the flight crew tries to enter a zero fuel weight or a gross weight into it before defining a Cost Index (CI). (In this case, the FMS defaults to the Cost Index from the last flight). It is also displayed when the flight crew inserts the ALTN F-PLN (in this case, the FMS defaults the cost index to 0).
V1/VR/V2 DISAGREE	II/A	This message is displayed when the entered V1, VR and V2 speeds do not satisfy the condition V1 ≤ VR ≤ V2.
WAIT FOR SYSTEM RESPONSE	I/W	During the time between a subsystem selection and the display of the subsystem page, the MCDU MENU page remains displayed with this message.
WIND DATA UPLINK (ACARS msg)	II/W	Uplink wind message has been received.
WIND UPLINK EXISTS (ACARS msg)	I/W	A flight plan modification (active or secondary) is attempted when uplink winds are not inserted yet.

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MESSAGE	TYPE/COLOR	CONDITIONS
WIND UPLINK PENDING (ACARS msg)	II/A	A temporary flight plan exists or a DIR TO page is displayed and a wind uplink is received and stored.
XXXX IS DESELECTED	I/W	The flight crew attempts to enter a deselected NAVAID, via the SELECTED NAVAID page, that has already been deselected.

MCDU MESSAGE LIST

Ident.: DSC-22_20-50-20-35-00000918.0009001 / 05 JUN 18
Applicable to: MSN 01767-01920, 02108, 02275-02334

Messages displayed on the MCDU are of two types and displayed in two colors.

Type I : A direct result of a pilot action;
Type II : Information about a situation, or a call for pilot action;
Type II messages are stored in a first-in/first-out message queue (5 messages max)
They are suppressed, if correct data is entered or when they no longer apply
The flight crew can clear all messages by pressing the CLEAR key on the MCDU console.
Amber (A) : Important
White (W) : Less important

MESSAGE	TYPE/COLOR	CONDITIONS
A/C POSITION INVALID	II/A	The aircraft position has become invalid. If the message has been cleared and the flight crew attempts to call up the HOLD at PPOS or DIR TO page while the aircraft position is still invalid, then the message is displayed again.
ACT RTE UPLINK (ACARS msg)	II/W	A flight plan is stored in the active flight plan.
ALIGN IRS	II/A	Appears when the IRS are ready for alignment, but the INIT A page is not displayed on either side of the flight deck. The ALIGN IRS message requires that one of the flight crew call up the IRS INIT page, to align the IRS.
AREA RNP IS XX-XX	II/A	Displayed when the RNP value, manually-entered on the PROG page, is larger than the default RNP value associated to the current flight area and when there is no RNP value defined in the navigation database for the active leg or route.
AWY/WPT MISMATCH	I/W	The pilot entered VIA on the AIRWAYS page does not contain the revised point. If you enter a second airway IDENT, it must contain the first airway ending point.
BLOCK IGNORES RTA	II/W	A time constraint existing at initiation of flight planning, or an entry of a time constraint made after initiation of flight planning, are ignored by the fuel planning function.
CABIN RATE EXCEEDED	II/W	This message appears when the aircraft gets within 200 NM of the destination and the computed rate of descent makes it impossible for the cabin to be repressurized at the maximum rate.

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MESSAGE	TYPE/COLOR	CONDITIONS
CHECK ALTN WIND (ACARS msg)	II/W	The uplinked alternate cruise flight level differs from the defaulted alternate cruise flight level.
CHECK APPR SELECTION (On PFD: "CHECK APP GUIDANCE" (A), or "CHECK APP SEL" (W) (if CPIP3)	II/W	Displayed when a NON ILS approach is part of the F-PLN and an ILS is manually tuned on RAD NAV page. This message reminds the flight crew that available guidance modes for the approach are APP NAV/FINAL. Displayed when in cruise at less than 100 NM from the top of descent or in descent or approach phase.
CHECK CO RTE (ACARS msg)	II/W	The uplinked company route identifier differs from the one specified in the request.
CHECK DATA BASE CYCLE	II/W	The current date does not match the effective date of the active database, and someone attempts to enter a FROM/TO or CO RTE.
CHECK IRS 1(2)(3)/FM POSITION	II/A	Each IRS position is compared to the FM position. The difference is greater than a threshold function of time.
CHECK IRS/AIRPORT POS	I/A	The distance between ADIRS alignment position and the NAV Database Airport Reference Point is at least 5 NM
CHECK DEST DATA (ACARS msg)	II/A	The aircraft is at 180 NM from destination and the destination QNH, TEMP or WIND displayed on the PERF APPR page received by ACARS uplink has to be checked. If a modification of these parameters is performed creating a conflict with previous data, the message is triggered again.
CHECK FLT NBR (ACARS msg)	II/A	The uplinked flight number differs from the flight number specified in the request.
CHECK MIN DEST FOB	II/W	This message appears when the flight crew has manually entered the MIN DEST FOB value, and MIN DEST FOB < ALTN + FINAL, being FINAL an ALTN valid data.
CHECK NORTH REF * EFIS ND	II/A	The MAG/TRUE sw does not correspond to the airport MAG/TRUE bearing reference (as stored in the FMGS navigation database), either at the departure airport (during preflight), or at the destination airport (when entering the ARRIVAL area).
CHECK QFE	II/A	This appears at the transition from QNH to QFE reference, when the QFE altitude differs by more than 100 ft from the predicted altitude, with the QNH set on the MCDU by means of the airport elevation in the NAV database.
CHECK TAKEOFF DATA	II/A	Following a flight crew entry or modification of one of the take-off parameters, there may be an inconsistency between the take-off runway or the TO shift and V1, VR, V2, FLEX TO temperature or derated level. The flight crew activated the secondary F-PLN in PREFLIGHT or DONE phase.

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MESSAGE	TYPE/COLOR	CONDITIONS
CHECK WEIGHT	II/A	The gross weights (GW) computed by the flight management computer (FMC) and the flight augmentation computer (FAC) disagree by more than 7 t (7.7 US tons).
CLK IS TAKEOFF TIME	II/W	This appears when the flight crew has entered an Estimated Takeoff Time (ETT), and the actual time is equal to ETT.
CLOCK/GPS TIME DIFF XX	II/A	Aircraft clock time and GPS time differ by more than XX minutes.
CROSSLOAD ABORTED	II/W	Message displayed on the transmitting MCDU, indicating an error in the transmission process.
CROSSLOAD COMPLETE	II/W	The database crossload from one FMGC to the other was successfully completed.
CRZ FL ABOVE MAX FL	II/W	This appears when the flight crew enters a cruise altitude that is above the computed maximum altitude.
CSTR DEL ABOVE CRZ FL	II/W	This appears when a flight plan altitude constraint has been deleted because the flight crew has inserted a cruise flight level, or step-down altitude that is at or below the flight plan constraint.
CSTR DEL UP TO WPT 01	II/W	This appears when constraints get deleted because the aircraft transitions to a go-around flight phase, before the FMGS sequences the flight plan destination.
DECELERATE or T/D REACHED (Also displayed on PFD)	II/W	One of these messages appears when the aircraft has reached the T/D in managed speed and it has not yet begun the descent.
DELETING OFFSET	II/W	This appears when the system is deleting an offset automatically, which it does under certain specific conditions, such as: - Change of active leg due to lateral revision. - Termination of next leg at destination runway and the current distance to go is less than or equal to the distance required to reach the path, or the next leg is not a CF, FM or TF leg.
DEST/ALTN MISMATCH	I/W	The pilot attempts to enter an alternate CO RTE (which starts at an origin that is not the primary flight plan destination).
DEST EFOB BELOW MIN	II/A	The EFOB at destination calculated by the FMS is less than the MIN DEST FOB value specified on the FUEL PRED page, for more than 2 min. The message is triggered in flight, except during Takeoff and Climb phases.
DIR TO IN PROCESS	I/W	The flight crew calls up the vertical or lateral revision page on one MCDU while the direct to page is displayed on the other MCDU.
ENTER DEST DATA	II/A	The flight crew has not entered wind, QNH, or temperature for the destination, and the aircraft is 180 NM out.
ENTRY OUT OF RANGE	I/W	The flight crew attempts to enter data that is out of the range specified for the selected field.
FLT NBR UPLINK (ACARS msg)	II/W	A flight number has been added to the uplink flight plan without previous request.

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MESSAGE	TYPE/COLOR	CONDITIONS
F-PLN ELEMENT RETAINED	I/W	The flight crew attempts to delete stored NAVAIDs, waypoints or runways that are contained in any flight plan or that are being tuned.
F-PLN FULL	II/W	There is not enough memory in the flight plan allotment for the computer to accept more flight plan data.
FMS 1/FMS 2 A/C STS DIFF	II/W	This message always precedes a transition to independent mode, and appears at power-up if the system detects a difference in one of the following: - NAV database serial number - Performance database - FM operational program - Aircraft and airline program pins
FMS 1/FMS 2 GW DIFF	II/W	Onside and offside aircraft weight differ by 2 t or more.
FMS 1/FMS 2 PGM PIN DIFF	II/W	Onside and offside program pins are different.
FMS 1/FMS 2 POS DIFF	II/A	Onside and offside positions differ by 0.5 NM or more (5 NM when GPS is not installed).
FMS 1/FMS 2 SPD TGT DIFF	II/W	Onside and offside target speeds displayed on the PFD differ by 5 kt or more.
FORMAT ERROR	I/W	A data entry does not meet the specified entry format for a given field.
GPS PRIMARY LOST (also displayed on ND)	II/A	Displayed when GPS PRIMARY mode is lost.
GPS PRIMARY	II/W	Displayed when the FMS is transitioning to GPS PRIMARY
GPS IS DESELECTED	II/A	This message appears when GPS has been manually deselected and the aircraft is 80 NM before the top of descent or in approach phase.
INDEPENDENT OPERATION	II/A	The FMGCs operate independently of each other.
INITIALIZE WEIGHT/CG	II/A	The zero-fuel weight or block fuel (FOB) is undefined after engine start.
INVALID FLT NBR UPLINK (ACARS msg)	II/W	The uplink message contains a valid flight plan but no flight number.
INVALID PERF UPLINK (ACARS msg)	II/W	Performance uplink message has been rejected.
INVALID RTE UPLINK (ACARS msg)	II/W	An error was detected into the uplink message and it is rejected.
INVALID TAKEOFF UPLINK (ACARS msg)	II/W	The current uplink takeoff data message is rejected.
INVALID WIND UPLINK (ACARS msg)	II/W	The current uplink wind message is rejected.
LAT DISCONT AHEAD	II/A	The next leg is a discontinuity and the aircraft is 30 s from flying the leg.

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MESSAGE	TYPE/COLOR	CONDITIONS
LIST OF 10 IN USE	I/W	The flight crew has tried to enter more than ten stored runways into the database, and all of the first ten are included in a flight plan or a pilot-stored route.
LIST OF 20 IN USE	I/W	The flight crew has tried to create a PBD, LAT/LONG, or PBX, or store a pilot-defined waypoint or NAVAID when 20 are already in use (in a flight plan or pilot-stored routes).
MACH SEGMENT DELETED	II/W	A constant Mach segment of the active flight plan has been automatically deleted. This occurs when the secondary flight plan or the alternate is activated, or engine out is detected or when the flight phase changes from CRZ to another one.
MCDU OVERHEATED	II/A	This message is displayed for 15 s in case of MCDU overheating.
MORE DRAG (EFIS PFD)	II/W	DES mode is engaged, idle is selected and the aircraft must decelerate in order to recover the path, or to respect an altitude constraint, a speed limit or a speed constraint.
NAV ACCUR DOWNGRAD (also displayed on ND)	II/A	NAV accuracy has been downgraded from HIGH to LOW. (See FMGS principles for an explanation).
NAV ACCUR UPGRAD (*EFIS ND)	II/W	NAV accuracy has been upgraded from LOW to HIGH.
NEW ACC ALT-HHHH	II/W	The acceleration altitude has been changed.
NEW CRZ ALT-HHHHH	II/W	The cruise altitude has been changed.
NEW THR RED ALT-HHHH	II/W	The thrust reduction altitude has been changed.
NO ANSWER TO REQUEST (ACARS msg)	I/W	A crew request, was previously sent to the ground and no answer has been received for 4 min.
NO INTERSECTION FOUND	I/W	The system could not find any common waypoint nor intersection point through the airway.
NON UNIQUE ROUTE IDENT	I/W	The flight crew has tried to enter on the new route page a company route IDENT that is identical to an existing company route IDENT (pilot-defined or in the database).
NOT ALLOWED	I/W	Data entry is not allowed in the selected field, or a selection action is not allowed.
NOT ALLOWED IN NAV	I/W	An attempt to modify the TO waypoint is made while in NAV mode.
NO NAV INTERCEPT	II/A	It is triggered, when NAV mode is armed and, no INTERCEPT waypoint exists before the TO waypoint.
NOT IN DATA BASE	I/W	The pilot is trying to enter or call up a company route IDENT, a FROM/TO pair, a place defined by place-bearing-distance (PBD) or place-bearing/place-bearing (PBX) or an airport NAVAID, waypoint runway, or NAVAID frequency (including pilot-defined elements) that is not in the current database.
NOT XMITTED TO ACARS (ACARS msg)	II/W	A pilot request or a crew report was sent but the communication was not established or not acknowledged.

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MESSAGE	TYPE/COLOR	CONDITIONS
ONLY SPD ENTRY ALLOWED	I/W	The pilot is trying to enter a Mach number for a preselected speed value on the CLIMB page.
OPP FMGC IN PROCESS	II/W	The offside FMGC is unhealthy, and the FM system mode is SINGLE. The message indicates that the MCDU on which the message is displayed is being driven by the FMGC on the other side.
PAGE UPDATE IN PROCESS	I/W	The pilot presses a key on the flight plan page while predictions are being updated.
PERF DATA UPLINK (ACARS msg)	II/W	Performance data are received from ground.
PLACE/D IN TRANSITION	I/W	If a place/distance waypoint is defined within a pre-planned “fixed turn radius” transition, the entry is rejected and the “PLACE/D IN TRANSITION” scratchpad message is displayed.
PLEASE WAIT	I/W	Resynchronization between both FMGCs is in progress.
PROCEDURE RNP IS XX.XX	II/A	Displayed when the RNP value, manually-entered on the PROG page, is larger than the RNP value defined in the navigation database for the active leg or route.
PRINTER NOT AVAILABLE (ACARS msg)	II/W	A printer communication error has been detected while printing a report. The printing is terminated.
RADIONAV IS DESELECTED	II/A	Radio navaids have been manually deselected and the aircraft is 80 NM before the top of descent or in approach phase.
REF/GPS POS DIFF	I/A	This message is displayed when there is a discrepancy between the reference position entered by the pilot and the GPS position.
REF/LAST IRS POS DIFF	I/A	This message is displayed when there is a discrepancy between the reference position entered by the pilot and the last stored IRS position.
REVISIONS NOT STORED	II/W	This message, displayed when a pilot-defined route or company route (active or secondary flight plan) is stored, indicates that the following elements are not retained: - Pilot-entered holds - Offsets - Modifications to terminal area procedures - Pilot-entered constraints - Pseudo waypoints - Step at optimum.

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MESSAGE	TYPE/COLOR	CONDITIONS
RTA DELETED	II/W	A time constraint is automatically deleted: - In case of engine-out - When entering the holding pattern - In case of go-around - At phase transition from descent or approach to climb or cruise - When a time constraint is inserted in the same flight plan at a different waypoint - When the alternate flight plan is activated - When a DIR TO/ABEAM is performed, only if the time constrained waypoint is projected as an ABEAM waypoint - The time constrained waypoint is cleared or sequenced (regardless of active lateral mode) - Valid clock data is lost - The time constraint belongs to the active flight plan and the secondary flight plan is activated - The time constraint belongs to the secondary flight plan and COPY ACTIVE is performed.
RTA EXISTS	I/W	Displayed if the pilot tries to clear an estimated takeoff time defined by the system.
RTE DATALINK IN PROG (ACARS msg)	I/W	A flight plan modification is performed after a F-PLN INIT request has been sent. This message is displayed until the uplink is entirely received.
RWY/LS MISMATCH	II/A	- During climb, cruise, (ILS or MLS) descent approach, or go-around, the LS frequency entered on the RAD NAV page does not match the LS associated with the destination runway. - During preflight or takeoff, the LS frequency entered on the RAD NAV page does not match the LS associated with the takeoff runway.
SEC RTE UPLINK (ACARS msg)	II/W	A flight plan is stored in the secondary flight plan.
SELECT DESIRED SYSTEM	I/W	The MCDU displays its MENU page.
SELECT TRUE (also displayed on the ND)	II/A	The MAG/TRUE sw is set to MAG, while the IRS send true HDG/TRK.
SENSOR IS INVALID	I/W	- The pilot has selected FF or FQ, or FF + FQ, or FQ + FF on the FUEL PRED page and the sole sensor or both of the selected sensors are invalid, or - The flight crew has entered fuel on board only, and the FF sensor is invalid.

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MESSAGE	TYPE/COLOR	CONDITIONS
SET GREEN DOT SPEED ("SET GREEN DOT" displayed on PFD)	II/W (W)	This message appears when the following conditions are all met: - Engine-out condition - Aircraft in selected speed mode - FCU-selected speed equal to or greater than green-dot speed +10 kt, and ALT* or ALT not active, or FCU-selected speed equal to or less than green-dot speed -10 kt.
SET HOLD SPEED (also displayed on PFD)	II/W (W)	This instruction appears when the aircraft is in selected speed, the pilot has inserted a hold in the flight plan, the aircraft is 30 s or less from the point where it must start decelerating towards hold speed, and the selected speed differs from the hold speed by more than 5 kt.
SET MANAGED SPEED or CHECK SPEED MODE (Also displayed on PFD)	II/W (W)	The target speed is selected for the current phase, but there is no preselected speed for the next flight phase. When this is so, one of these messages is displayed at transitions from climb to cruise, and from climb or cruise to descent. The message is always displayed at the transition to descent from climb or cruise if selected speed is active. It is not displayed if managed speed is active.
SETTING SPD/RTA	II/W	Displayed when the system recomputes its managed speed target to satisfy the RTA constraints.
SPECIF NDB UNAVAIL	II/A	The NDB to be autotuned (specified for a NDB approach) is not available.
SPECIF VOR-D UNAVAIL (also displayed on ND)	II/A	- The VOR, VOR-DME, or VORTAC to be autotuned (specified for an RNAV or VOR approach) has previously been deselected by the flight crew, or - The bearing, the frequency, or the IDENT of the VOR (or VORDME or VORTAC) to be autotuned is invalid.
SPD ERROR AT WPT 01	II/W	In lateral managed flight, the system predicts that the aircraft will miss a speed constraint by more than 10 kt. When the prediction changes to bring the miss within 5 kt, the message is cleared.
SPD LIM EXCEEDED	II/A	The aircraft is more that 150 ft below the speed limit altitude and more than 10 kt over green dot or the speed limit (which ever is smaller).
STEP ABOVE MAX FL	II/W	The pilot has entered a step altitude that is above the predicted maximum altitude.
STEP AHEAD	II/W	Indicates that the aircraft is within 20 NM of the active step point.
STEP DELETED	II/W	A step has been automatically deleted.
STORED ROUTES FULL	I/W	The system already contains five pilot-defined routes. (Only five are allowed.)
TAKEOFF DATA UPLINK (ACARS msg)	II/W	A takeoff data message is received.

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MESSAGE	TYPE/COLOR	CONDITIONS
TEMPORARY F-PLN EXISTS	I/W	The flight crew has selected any key (except ERASE or INSERT) or attempted a flight planning operation on the secondary flight plan while the system is displaying a temporary flight plan.
TIME ERROR AT WPT 01	II/W	While the aircraft is in lateral managed flight the FMGC predicts that it will miss a time constraint.
TIME MARKER LIST FULL	I/W	The system already contains four time markers. (Only four are allowed).
TIME TO EXIT	II/A	The aircraft must leave holding immediately to satisfy fuel reserve requirements. (Extra fuel is zero).
TO SPEED TOO LOW	II/A	This message appears if the inserted V1, VR, V2 speeds do not satisfy the existing regulatory conditions regarding VMCG/VMCA and VS1G speeds.
TOO STEEP PATH AHEAD	II/A	The system displays this message in cruise phase if the aircraft is within 150 NM of its destination or in descent or approach phase and in NAV mode and the descent profile contains a segment that is too steep.
TUNE BBB FFF.FF	II/A	The system cannot autotune the VOR for approach or position because of a manual VOR selection.
TURN AREA EXCEEDANCE	II/A	This message is displayed 1.5 min before entry of the PI leg, when in NAV mode, if the PI lateral path exceed the protection envelope defined in the Navigation database.
UNKNOWN PROGRAM PIN	II/W	The system has been unable to initialize because of an incompatible or undefined aircraft pin program combination (A/C type, engine type, VMO/MMO parity) in the FMGC software.
UPLINK INSERT IN PROG (ACARS msg)	II/W	Displayed when an uplink message is currently inserted in the FMGS.
USING COST INDEX-NNN	I/W	This message is displayed when the system contains a flight plan, and the flight crew tries to enter a zero fuel weight or a gross weight into it before defining a Cost Index (CI). (In this case, the FMS defaults to the Cost Index from the last flight). It is also displayed when the flight crew inserts the ALTN F-PLN (in this case, the FMS defaults the cost index to 0).
V1/VR/V2 DISAGREE	II/A	This message is displayed when the entered V1, VR and V2 speeds do not satisfy the condition V1 ≤ VR ≤ V2.
WAIT FOR SYSTEM RESPONSE	I/W	During the time between a subsystem selection and the display of the subsystem page, the MCDU MENU page remains displayed with this message.
WIND DATA UPLINK (ACARS msg)	II/W	Uplink wind message has been received.
WIND UPLINK EXISTS (ACARS msg)	I/W	A flight plan modification (active or secondary) is attempted when uplink winds are not inserted yet.

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MESSAGE	TYPE/COLOR	CONDITIONS
WIND UPLINK PENDING (ACARS msg)	II/A	A temporary flight plan exists or a DIR TO page is displayed and a wind uplink is received and stored.
XXXX IS DESELECTED	I/W	The flight crew attempts to enter a deselected NAVAID, via the SELECTED NAVAID page, that has already been deselected.

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FMS2 Thales

MCDU MESSAGE LIST

Ident.: DSC-22_20-50-20-38-00000919.0070001 / 23 JUN 15
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04384, 04399-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The MCDU displays two types in two colors:

Type I : Direct result of a pilot action;
Type II : Information about a situation, or a call for pilot action;
Type II messages are stored in a first-in/first-out message queue (5 messages MAX).
They are suppressed, if correct data is entered or when they no longer apply.
The flight crew can clear all messages by pressing the MCDU's CLEAR key.
Amber (A) : Important
White (W) : Less important

MESSAGE	TYPE/COLOR	CONDITIONS
ABEAM POINTS LIST FULL	II/W	It is displayed when the number of abeam points exceeds 50, which is the maximum number allowed.
A/C POSITION INVALID	II/A	The position of the aircraft has become invalid. If the message has been cleared and the flight crew attempts to call up the HOLD at PPOS or DIR TO page while the position of the aircraft is still invalid, the message will reappear.
ALIGN IRS	II/A	Appears when the IRS are ready for alignment, but the IRS INIT page is not displayed on either MCDU. The ALIGN IRS message requires that one flight crew member call up the IRS INIT page, to align the IRS.
ALTN F-PLN DELETED	II/W	The Alternate F-PLN has been automatically deleted. This occurs when the F-PLN memory is full, and the system attempts to free up some space.
AOC XXX F-PLN UPLINK (ACARS MSG)	II/W	A flight plan is stored in the active or secondary flight plan. XXX is 'ACT' or 'SEC'.
AREA RNP IS XX-XX	II/W	It is displayed when: The RNP value, manually-entered on the PROG page, is larger than the default RNP value associated to the current flight area; and, when there is no RNP value defined in the navigation database for the active leg or route.
AWY/WPT MISMATCH	I/W	The pilot-entered VIA on the AIRWAYS page does not contain the revised point. If a second airway IDENT is entered, it must contain the first airway ending point.
BLOCK IGNORES RTA	II/W	A time constraint existing at initiation of flight planning, or an entry of a time constraint made after initiation of flight planning, are ignored by the fuel planning function.

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MESSAGE	TYPE/COLOR	CONDITIONS
CABIN RATE EXCEEDED	II/W	The aircraft is within 200 NM of its destination, and the computed rate of descent makes it impossible for the cabin to be repressurized at the maximum rate.
CHECK ALTN WIND (ACARS MSG)	II/W	The uplinked alternate cruise flight level differs from the defaulted alternate cruise flight level.
CHECK APPR SELECTION (On PFD: "CHECK APP GUIDANCE" (A), or "CHECK APP SEL" (W) (if CPIP3 ◁)	II/W	A non ILS/GLS approach is part of the F-PLN and an ILS/GLS is manually-tuned on the RAD NAV page. It reminds the flight crew that APP NAV/FINAL are the available guidance modes for the approach. Displayed when in cruise at less than 100 NM from the top of descent, or in descent, or approach phase.
CHECK CO RTE (AOC MSG)	II/A	The uplinked company route identifier differs from the one specified in the request.
CHECK DATA BASE CYCLE	II/W	The current date does not match the effective date of the active database, and someone attempts to enter a FROM/TO or CO RTE.
CHECK DEST DATA (AOC MSG)	II/A	The aircraft is 180 NM from its destination and the destination QNH, TEMP or WIND displayed on the PERF APPR page, received by ACARS uplink, has to be checked. If a modification of these parameters is performed, creating a conflict with previous data, the message retriggers.
CHECK FLT NBR (AOC MSG)	II/A	The uplinked flight number differs from the flight number specified in the request.
CHECK IRS/AIRPORT POS	II/A	The distance between ADIRS alignment position and the NAV Database Airport Reference Point is at least 5 NM.
CHECK IRS 1(2)(3)/FM POSITION	II/A	Each IRS position is compared to the FM position. The difference is greater than a threshold function of time.
CHECK NORTH REF * EFIS ND	II/A	The MAG/TRUE switch does not correspond to the airport MAG/TRUE bearing reference (as stored in the FMGS navigation database), either at the departure airport (during preflight), or at the destination airport (when entering the ARRIVAL area).
CHECK MIN DEST FOB	II/W	This message appears when the flight crew has manually entered the MIN DEST FOB value, and MIN DEST FOB < ALTN + FINAL, being FINAL an ALTN valid data.
CHECK ONSIDE P/N	II/A	Appears when the FM displays the P/N STATUS page due to an onside incompatibility problem.
CHECK QFE	II/A	The transition from the QNH to the QFE reference, when the QFE altitude differs by more than 100 ft from the predicted altitude, with the QNH set on the MCDU by means of the airport elevation in the NAV database.

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MESSAGE	TYPE/COLOR	CONDITIONS
CHECK TAKEOFF DATA	II/A	After the flight crew enters or modifies one of the take-off parameters, there may be an inconsistency between the take-off runway, the TO shift or the flaps/THS and V1, V2, VR, FLEX TO temperature or derated level. The flight crew activated the secondary F-PLN in PREFLIGHT or DONE phase.
CHECK WEIGHT	II/A	The gross weights (GW) computed by the flight management computer (FMC) and the flight augmentation computer (FAC) disagree by more than 7 t (7.7 U.S tons).
CLK IS TAKEOFF TIME	II/W	The flight crew has entered an estimated takeoff time (ETT) and the actual time is equal to ETT.
CLOCK/GPS TIME DIFF XX	II/A	The aircraft clock time and GPS time differ by more than XX minutes.
CONSTANT MACH DELETED	II/W	A constant Mach segment of the active flight plan has been automatically deleted. This occurs when the secondary flight plan or the alternate is activated, an engine-out is detected, or when the flight phase changes from CRZ to another one.
CROSSLOAD ABORTED	II/W	The message displayed on the transmitting MCDU indicates an error in the transmitting process.
CROSSLOAD COMPLETE	II/W	The database crossloading from one FMGC to another was successfully completed.
CRZ FL ABOVE MAX FL	II/W	The flight crew enters a cruise altitude that is above the computed maximum altitude.
CSTR DEL ABOVE CRZ FL	II/W	A flight plan altitude constraint has been deleted because the flight crew has inserted a cruise flight level or step-down altitude that is at, or below, the flight plan constraint.
CSTR DEL UP TO WPT01	II/W	Constraints get deleted because the aircraft transitions to a go-around flight phase before the FMGS sequences the flight plan destination.
DECELERATE or T/D REACHED (Also displayed on PFD)	II/W	The aircraft is still in the cruise phase and managed speed, after it reaches the top of descent, and it has not started the descent.
DEFAULT STATE ASSUMED	II/W	This appears when all initialization data has been cleared after a very-long-term (VLT) power interruption. The flight crew should see this only when powering up a new MCDU.
XXXX IS DESELECTED	I/W	The pilot entered a NAVAID, via the RADNAV or PROG page, that has previously been deselected.
DEST/ALTN MISMATCH	I/W	The pilot attempts to enter an alternate CO RTE (which starts at an origin that is not the primary flight plan destination).
DEST EFOB BELOW MIN	II/A	The EFOB at destination calculated by the FMS is less than the MIN DEST FOB value specified on the FUEL PRED page, for more than 2 min. The message is triggered in flight, except during Takeoff and Climb phases.

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MESSAGE	TYPE/COLOR	CONDITIONS
DIR TO IN PROCESS	I/W	The flight crew calls up the vertical or lateral revision page on one MCDU, while the DIR TO page is displayed on the other MCDU.
ENTER DEST DATA	II/A	The flight crew has not entered wind, QNH, or temperature for the destination, and the aircraft is 180 NM out.
ENTRY OUT OF RANGE	I/W	The flight crew attempts to enter data that is outside the range specified for the selected field.
FLT NBR UPLINK (ACARS MSG)	II/W	A flight number has been added to the uplink flight plan without previous request.
FM DATALINK UNAVAIL (ACARS MSG)	II/W	No communication is possible between the ATSU and both FMS.
FM PREDICTIONS LOST	II/A	Due to resets, the predictions of the active F-PLN are unavailable.
FMS1/FMS2 A/C STS DIFF	II/W	Always precedes a transition to independent mode and appears at power-up, if the system detects a difference in one of the following: - NAV database serial number - Performance database - FM operational program - Aircraft and airline pin programs.
FMS1/FMS2 GW DIFF	II/W	Onside and offside aircraft weights differ by 2 t or more.
FMS1/FMS2 PGM PIN DIFF	II/W	Onside and offside pin programs are different.
FMS1/FMS2 POS DIFF	II/A	Onside and offside positions differ by 5 NM (0.5 NM, if GPS installed) or more.
FMS1/FMS2 SPD TGT DIFF	II/W	Onside and offside target speeds differ by 5 kt or more.
FORMAT ERROR	I/W	A data entry does not meet the specified entry format for a given field.
F-PLN DATALINK IN PROG (AOC MSG)	I/W	A flight plan modification is performed after a F-PLN INIT request has been sent. This message is displayed until the uplink is entirely received.
F-PLN FULL	II/W	As there is insufficient memory in the flight plan, the computer does not accept anymore flight plan data.
GPS PRIMARY ◁ LOST (also displayed on ND)	II/A	GPS PRIMARY mode is lost.
GPS PRIMARY ◁	II/W	The FMS is transitioning to GPS PRIMARY.
GPS ◁ IS DESELECTED	II/A	GPS has been manually deselected and the aircraft is 80 NM before the top of descent or in approach phase.
INDEPENDENT OPERATION	II/A	The FMGCs operate independently of each other.
INITIALIZE WEIGHTS	II/A	The zero-fuel weight or block fuel (FOB) is undefined after engine start.

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MESSAGE	TYPE/COLOR	CONDITIONS
INIT DATA UPLINK (AOC MSG)	II/W	Initialization data has been received from the ground.
INSERT/ERASE TMPY FIRST	I/W	When performing a DIRECT TO/INTERCEPT revision, if a temporary F-PLN already exists due to a revision other than the DIRECT TO/INTERCEPT revision, no F-PLN waypoint can be inserted from the DIR TO page.
INVALID FLT NBR UPLINK (AOC MSG)	II/W	The uplink message contains a valid flight plan but no flight number.
INVALID INIT UPLINK (AOC MSG)	II/W	The initialization uplink message has been rejected.
INVALID ROUTE UPLINK (AOC MSG)	II/W	As an error is detected in the uplink message, it is rejected.
INVALID TAKEOFF UPLINK (AOC MSG)	II/W	The current uplink takeoff data message is rejected.
INVALID WIND UPLINK (AOC MSG)	II/W	The current uplink wind message is rejected.
IRS ONLY NAVIGATION	II/A	The aircraft is neither in an approach or in a terminal area, and: - The aircraft has been in IRS mode for more than 10 min, or - The aircraft is in IRS mode and is starting the descent phase.
LAT DISCONT AHEAD	II/A	The next leg is a discontinuity, and the aircraft is 30 s away from flying the leg.
LIST OF 10 IN USE	I/W	The flight crew has tried to enter more than ten stored runways in the database, and all of the first ten are included in a flight plan, or a pilot-stored route.
LIST OF 20 IN USE	I/W	The flight crew has tried to create a PBD, LAT/LONG, or PB-PB, or store a pilot-defined waypoint or NAVAID when 20 are already in use (in a flight plan or pilot-stored routes).
MANUAL HOLD DELETED	II/W	A manually-entered hold has been deleted, due to a change of the arrival procedure.
MCDU OVERHEATED	II/A	This message is displayed for 15 s in case of MCDU overheating.
MORE DRAG (EFIS PFD)	II/A	DES mode is engaged, idle is selected and the aircraft must decelerate to recover the path, or to respect an altitude constraint, a speed limit or a speed constraint.
NAV ACCUR DOWNGRAD (also displayed on ND)	II/A	NAV accuracy downgrades from HIGH to LOW. (See FMGS principles for an explanation).
NAV ACCUR UPGRAD (*EFIS ND)	II/W	NAV accuracy upgrades from LOW to HIGH.
NEW ACC ALT-HHHH	II/W	The acceleration altitude has changed.
NEW CRZ ALT-HHHHH	II/W	The cruise altitude has changed.

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MESSAGE	TYPE/COLOR	CONDITIONS
NEW THR RED ALT-HHHH	II/W	The thrust reduction altitude has changed.
NO ANSWER TO REQUEST (ACARS MSG)	II/W	A crew request was previously sent to the ground, and no answer has been received for 4 min.
NO INTERSECTION FOUND	I/W	The system could not find any common waypoint or intersection point through the airway.
NO NAV INTERCEPT	II/A	It is triggered, when NAV mode is armed and, no INTERCEPT waypoint exists before the TO waypoint.
NO VERT PATH INTERCEPT	II/A	The message is displayed when FINAL mode is armed and the aircraft is flying level more than 250 ft above the FMS vertical profile.
NON UNIQUE ROUTE IDENT	I/W	The flight crew has tried to enter a company route IDENT on the new route page that is identical to an existing company route IDENT (pilot-defined, or in the database).
NOT ALLOWED	I/W	Data entry is not allowed in the selected field. A selection action is also not allowed.
NOT IN DATA BASE	I/W	The pilot is trying to enter or call up a company route IDENT, a FROM/TO pair, a place defined by place-bearing-distance (PBD) or place-bearing/ place-bearing (PB/PB) or an airport NAVAID, waypoint runway, or NAVAID frequency (including pilot-defined elements) that is not in the current database.
NOT XMITTED TO ACARS (AOC MSG)	II/W	A pilot request or crew report was sent, but communication was neither established nor acknowledged.
OFST DELETED IN TMPY	II/W	The system automatically deletes an offset from the temporary flight plan, if: - The first leg of the temporary F-PLN is no longer a TF, CF or FM - Termination of next leg at destination runway and the current distance to go to the ending offset waypoint is less than the distance required to reach the temporary offset path and return to the temporary parent path.
ONLY SPD ENTRY ALLOWED	I/W	The pilot is trying to enter a Mach number for a preselected speed value on the CLIMB page.
OPP FMGC IN PROCESS	II/A	The offside FMGC is unhealthy, and the FM system mode is SINGLE. The message indicates that the MCDU, on which the message is displayed, is being driven by the FMGC on the other side.
PAGE UPDATE IN PROCESS	I/W	The flight crew presses a key on the flight plan page while predictions are being updated.
PILOT ELEMENT RETAINED	I/W	A pilot element is either a waypoint, or a NAVAID, or a route, or a runway that has been stored by the pilot. This message appears when deleting one of these elements is not allowed.

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MESSAGE	TYPE/COLOR	CONDITIONS
PILOTS ROUTES FULL	I/W	The system already contains five pilot-defined routes. (only five routes are allowed)
PLACE/WPT MISMATCH	I/W	When using the Along Track Offset function, the entered PLACE is not identical to the revise point.
PLEASE WAIT	I/W	Resynchronization between both FMGCs is in progress.
PRINT ABORTED	II/A	This message informs the crew that the print task has been aborted due to an FMS reset.
PRINTER NOT AVAILABLE (ACARS MSG)	II/W	A printer communication error was detected while printing a report. The printing was terminated.
PROCEDURE RNP IS XX.XX	II/A	The RNP value, manually-entered on the PROG page, is larger than the RNP value defined in the navigation database for the active leg or route.
RADIONAV IS DESELECTED	II/A	Radio NAVAIDs have been manually deselected and the aircraft is 80 NM before the top of descent or in approach phase.
REF/GPS POS DIFF	II/A	This message is displayed when there is a discrepancy between the reference position entered by the flight crew and the GPS position.
REF/LAST IRS POS DIFF	II/A	This message is displayed when there is a discrepancy between the reference position entered by the flight crew and the last stored IRS position.
REVISION IN PROCESS	I/W	One MCDU displays an AIRWAY page and another revision is attempted from the other MCDU.
REVISIONS NOT STORED	II/A	This message, displayed when a pilot-defined route or company route (active or secondary flight plan) is stored, indicates that the following elements are not retained: - Pilot-entered holds - Offsets - Modifications to terminal area procedures - Pilot-entered constraints - Pseudo waypoints

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MESSAGE	TYPE/COLOR	CONDITIONS
RTA DELETED	II/W	A time constraint is automatically deleted: - In case of engine-out - When entering the holding pattern - In case of go-around - At phase transition from descent or approach to climb or cruise - When a time constraint is inserted in the same flight plan at a different waypoint - When the alternate flight plan is activated - When a DIR TO/ABEAM is performed, only if the time constrained waypoint is projected as an ABEAM waypoint - The time constrained waypoint is cleared or sequenced (regardless of active lateral mode) - Valid clock data is lost - The time constraint belongs to the active flight plan and the secondary flight plan is activated - The time constraint belongs to the secondary flight plan and COPY ACTIVE is performed
RTA EXISTS	I/W	Displayed if the pilot tries to clear an estimated takeoff time defined by the system.
RWY/LS MISMATCH	II/A	- During climb, cruise, descent, approach (ILS/GLS), or go-around, the LS frequency/channel entered on the RAD NAV page does not match the LS associated with the destination runway - During preflight or takeoff, the LS frequency/channel entered on the RAD NAV page does not match the LS associated with the takeoff runway.
SELECT DESIRED SYSTEM	I/W	The MCDU displays its MENU page.
SELECT HDG/TRK FIRST	I/W	- When in NAV mode, the temporary flight plan is inserted whilst the first leg of the temporary F-PLN does not match with the active leg. The same applies when in the SEC F-PLN. Then the temporary flight plan insertion is rejected, and the message is triggered.
SELECT TRUE (also displayed on the ND)	II/A	The MAG/TRUE switch is set to MAG, while the IRS send true HDG/TRK.

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MESSAGE	TYPE/COLOR	CONDITIONS
SENSOR IS INVALID	I/W	- The pilot has selected FF or FQ, or FF + FQ, or FQ + FF on the FUEL PRED page and the sole sensor or both of the selected sensors are invalid, or - The flight crew has entered fuel on board only, and the FF sensor is invalid.
SET GREEN DOT SPEED ("SET GREEN DOT" displayed on PFD)	II/W	This message appears when all of the following conditions are met: - Engine-out condition - Aircraft in selected speed mode - FCU-selected speed equal to, or greater than, green-dot speed +10 kt, and ALT* or ALT not active, or FCU-selected speed equal to or less than green-dot speed -10 kt.
SET HOLD SPEED (also displayed on PFD)	II/W	The aircraft is in selected speed, the pilot has inserted a hold in the flight plan, the aircraft is 30 s or less from the point where it must start decelerating towards hold speed, and the selected speed differs from the hold speed by more than 5 kt.
SET MANAGED SPEED or CHECK SPEED MODE (Also displayed on PFD)	II/W	The target speed is selected for the current phase, but there is no preselected speed for the next flight phase. When this is so, this message is displayed at transitions from climb to cruise, and from climb or cruise to descent. It is always displayed at the transition to descent from climb or cruise, if selected speed is active. It is not displayed, if managed speed is active.
SETTING SPD/RTA	II/W	Displayed when the system recomputes its managed speed target to satisfy the RTA constraints.
SPD ERROR AT WPT01	II/W	In lateral managed flight, the system predicts that the aircraft will miss a speed constraint by more than 10 kt. When the prediction changes, and brings the miss within 5 kt, the message is cleared.
SPD LIM EXCEEDED	II/A	The aircraft is more that 150 ft below the speed limit altitude, and more than 10 kt over the speed limit.
SPECIF NDB UNAVAIL	II/A	The NDB to be autotuned (specified for a NDB approach) is unavailable.
SPECIF VOR-D UNAVAIL (also displayed on ND)	II/A	- The VOR, VOR-DME, or VORTAC to be autotuned (specified for an RNAV or VOR approach) has previously been deselected by the flight crew, or - The bearing, the frequency, or the IDENT of the VOR (or VORDME or VORTAC) to be autotuned is invalid.
STEP ABOVE MAX FL	II/W	The pilot has entered a step altitude that is above the predicted maximum altitude.

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MESSAGE	TYPE/COLOR	CONDITIONS
STEP AHEAD	II/W	Indicates that the aircraft is within 20 NM of the active step point.
STEP DELETED	II/W	A step has been deleted for any reason, including sequencing.
SYSTEM NOT AVAILABLE	I/W	Displayed when an ATC communication via the ATSU has failed.
TAKEOFF DATA UPLINK (ACARS MSG)	II/W	A takeoff data message is received.
TO SPEED TOO LOW	II/A	The flight crew has entered on PERF Takeoff page one or several TO speeds (V1, VR or V2) too low compared with the minimum speeds (VMCG, VMCA or VS1G).
TMPY F-PLN EXISTS	I/W	The flight crew has selected any key (except ERASE or INSERT), or attempted a flight planning operation on the secondary flight plan while the system is displaying a temporary flight plan.
TIME ERROR AT WPT01	II/W	While the aircraft is in lateral managed flight, the FMGC predicts that it will miss a time constraint (*Refer to DSC-22_20-30-20-28 Time Constraint/RTA - General*).
TIME MARKER LIST FULL	I/W	The system already contains four time markers. (Only four are allowed).
TIME TO EXIT	II/A	The aircraft must leave holding immediately to satisfy fuel reserve requirements. (Extra fuel is zero).
TOO STEEP PATH AHEAD	II/A	This message is displayed in cruise, if the aircraft is within 150 NM of its destination or in descent or approach phase and in NAV mode and the descent profile contains a segment that is too steep.
TUNE BBB FFF.FF	II/A	The system cannot autotune the VOR for approach or position, because of a manual VOR selection.
TURN AREA EXCEEDANCE	II/A	This message is displayed 1.5 min before entry of the PI leg, when in NAV mode, if the PI lateral path exceeds the protection envelope defined in the navigation database.
UNKNOWN PROGRAM PIN	II/W	The system is unable to initialize, due to an incompatible or undefined aircraft pin program combination (A/C type, engine type, VMO/MMO parity) in the FMGC software.
UPLINK INSERT IN PROG (AOC MSG)	II/W	An uplink message is currently inserted in the FMGS.
USING COST INDEX NNN	I/W	This message is displayed when the system contains a flight plan, and the flight crew tries to enter a zero fuel weight or a gross weight into it before defining a Cost Index (CI). (In this case, the FMS defaults to the Cost Index from the last flight). It is also displayed when the flight crew inserts the ALTN F-PLN (in this case, the FMS defaults the cost index to 0).

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MESSAGE	TYPE/COLOR	CONDITIONS
V1/VR/V2 DISAGREE	II/A	This message is displayed when the entered V1, VR and V2 speeds do not satisfy the condition V1 ≤ VR ≤ V2
WAIT FOR SYSTEM RESPONSE	II/W	During the time between a subsystem selection and the display of the subsystem page, the MCDU MENU page remains displayed with this message.
WIND DATA UPLINK (AOC MSG)	II/W	Uplink wind message has been received.
WIND UPLINK EXISTS (AOC MSG)	I/W	A flight plan modification (active or secondary) is attempted when uplink winds are not yet inserted.
WIND UPLINK PENDING (AOC MSG)	II/A	A temporary flight plan exists, or a DIR TO page is displayed, and a wind uplink is received and stored.

MCDU MESSAGE LIST

Ident.: DSC-22_20-50-20-38-00000919.0058001 / 03 NOV 14
Applicable to: MSN 04393-04397

The MCDU displays two types in two colors:

Type I : Direct result of a pilot action;
Type II : Information about a situation, or a call for pilot action;
Type II messages are stored in a first-in/first-out message queue (5 messages MAX).
They are suppressed, if correct data is entered or when they no longer apply.
The flight crew can clear all messages by pressing the MCDU's CLEAR key.
Amber (A) : Important
White (W) : Less important

MESSAGE	TYPE/COLOR	CONDITIONS
ABEAM POINTS LIST FULL	II/W	It is displayed when the number of abeam points exceeds 50, which is the maximum number allowed.
A/C POSITION INVALID	II/A	The position of the aircraft has become invalid. If the message has been cleared and the flight crew attempts to call up the HOLD at PPOS or DIR TO page while the position of the aircraft is still invalid, the message will reappear.
ALIGN IRS	II/A	Appears when the IRS are ready for alignment, but the IRS INIT page is not displayed on either MCDU. The ALIGN IRS message requires that one flight crew member call up the IRS INIT page, to align the IRS.
ALTN F-PLN DELETED	II/W	The Alternate F-PLN has been automatically deleted. This occurs when the F-PLN memory is full, and the system attempts to free up some space.
AOC XXX F-PLN UPLINK (ACARS MSG)	II/W	A flight plan is stored in the active or secondary flight plan. XXX is 'ACT' or 'SEC'.

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MESSAGE	TYPE/COLOR	CONDITIONS
AREA RNP IS XX-XX	II/W	It is displayed when: The RNP value, manually-entered on the PROG page, is larger than the default RNP value associated to the current flight area; and, when there is no RNP value defined in the navigation database for the active leg or route.
AWY/WPT MISMATCH	I/W	The pilot-entered VIA on the AIRWAYS page does not contain the revised point. If a second airway IDENT is entered, it must contain the first airway ending point.
BLOCK IGNORES RTA	II/W	A time constraint existing at initiation of flight planning, or an entry of a time constraint made after initiation of flight planning, are ignored by the fuel planning function.
CABIN RATE EXCEEDED	II/W	The aircraft is within 200 NM of its destination, and the computed rate of descent makes it impossible for the cabin to be repressurized at the maximum rate.
CHECK ALTN WIND (ACARS MSG)	II/W	The uplinked alternate cruise flight level differs from the defaulted alternate cruise flight level.
CHECK APPR SELECTION *EFIS PFD (FMA)	II/W	A NON ILS approach is part of the F-PLN and an ILS is manually-tuned on the RAD NAV page. It reminds the flight crew that APP NAV/FINAL are the available guidance modes for the approach. Displayed when in cruise at less than 100 NM from the top of descent, or in descent, or approach phase.
CHECK CO RTE (AOC MSG)	II/A	The uplinked company route identifier differs from the one specified in the request.
CHECK DATA BASE CYCLE	II/W	The current date does not match the effective date of the active database, and someone attempts to enter a FROM/TO or CO RTE.
CHECK DEST DATA (AOC MSG)	II/A	The aircraft is 180 NM from its destination and the destination QNH, TEMP or WIND displayed on the PERF APPR page, received by ACARS uplink, has to be checked. If a modification of these parameters is performed, creating a conflict with previous data, the message retriggers.
CHECK FLT NBR (AOC MSG)	II/A	The uplinked flight number differs from the flight number specified in the request.
CHECK IRS/AIRPORT POS	II/A	The distance between ADIRS alignment position and the NAV Database Airport Reference Point is at least 5 NM.
CHECK IRS 1(2)(3)/FM POSITION	II/A	Each IRS position is compared to the FM position. The difference is greater than a threshold function of time.
CHECK NORTH REF * EFIS ND	II/A	The MAG/TRUE switch does not correspond to the airport MAG/TRUE bearing reference (as stored in the FMGS navigation database), either at the departure airport (during preflight), or at the destination airport (when entering the ARRIVAL area).

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MESSAGE	TYPE/COLOR	CONDITIONS
CHECK MIN DEST FOB	II/W	This message appears when the flight crew has manually entered the MIN DEST FOB value, and MIN DEST FOB < ALTN + FINAL, being FINAL an ALTN valid data.
CHECK ONSIDE P/N	II/A	Appears when the FM displays the P/N STATUS page due to an onside incompatibility problem.
CHECK QFE	II/A	The transition from the QNH to the QFE reference, when the QFE altitude differs by more than 100 ft from the predicted altitude, with the QNH set on the MCDU by means of the airport elevation in the NAV database.
CHECK TAKEOFF DATA	II/A	After the flight crew enters or modifies one of the take-off parameters, there may be an inconsistency between the take-off runway, the TO shift or the flaps/THS and V1, V2, VR, FLEX TO temperature or derated level. The flight crew activated the secondary F-PLN in PREFLIGHT or DONE phase.
CHECK WEIGHT	II/A	The gross weights (GW) computed by the flight management computer (FMC) and the flight augmentation computer (FAC) disagree by more than 7 t (7.7 U.S tons).
CLK IS TAKEOFF TIME	II/W	The flight crew has entered an estimated takeoff time (ETT) and the actual time is equal to ETT.
CLOCK/GPS TIME DIFF XX	II/A	The aircraft clock time and GPS time differ by more than XX minutes.
CONSTANT MACH DELETED	II/W	A constant Mach segment of the active flight plan has been automatically deleted. This occurs when the secondary flight plan or the alternate is activated, an engine-out is detected, or when the flight phase changes from CRZ to another one.
CROSSLOAD ABORTED	II/W	The message displayed on the transmitting MCDU indicates an error in the transmitting process.
CROSSLOAD COMPLETE	II/W	The database crossloading from one FMGC to another was successfully completed.
CRZ FL ABOVE MAX FL	II/W	The flight crew enters a cruise altitude that is above the computed maximum altitude.
CSTR DEL ABOVE CRZ FL	II/W	A flight plan altitude constraint has been deleted because the flight crew has inserted a cruise flight level or step-down altitude that is at, or below, the flight plan constraint.
CSTR DEL UP TO WPT01	II/W	Constraints get deleted because the aircraft transitions to a go-around flight phase before the FMGS sequences the flight plan destination.
DECELERATE or T/D REACHED (Also displayed on PFD)	II/W	The aircraft is still in the cruise phase and managed speed, after it reaches the top of descent, and it has not started the descent.

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MESSAGE	TYPE/COLOR	CONDITIONS
DEFAULT STATE ASSUMED	II/W	This appears when all initialization data has been cleared after a very-long-term (VLT) power interruption. The flight crew should see this only when powering up a new MCDU.
XXXX IS DESELECTED	I/W	The pilot entered a NAVAID, via the RADNAV or PROG page, that has previously been deselected.
DEST/ALTN MISMATCH	I/W	The pilot attempts to enter an alternate CO RTE (which starts at an origin that is not the primary flight plan destination).
DEST EFOB BELOW MIN	II/A	The EFOB at destination calculated by the FMS is less than the MIN DEST FOB value specified on the FUEL PRED page, for more than 2 min. The message is triggered in flight, except during Takeoff and Climb phases.
DIR TO IN PROCESS	I/W	The flight crew calls up the vertical or lateral revision page on one MCDU, while the DIR TO page is displayed on the other MCDU.
ENTER DEST DATA	II/A	The flight crew has not entered wind, QNH, or temperature for the destination, and the aircraft is 180 NM out.
ENTRY OUT OF RANGE	I/W	The flight crew attempts to enter data that is outside the range specified for the selected field.
FLT NBR UPLINK (ACARS MSG)	II/W	A flight number has been added to the uplink flight plan without previous request.
FM DATALINK UNAVAIL (ACARS MSG)	II/W	No communication is possible between the ATSU and both FMS.
FM PREDICTIONS LOST	II/A	Due to resets, the predictions of the active F-PLN are unavailable.
FMS1/FMS2 A/C STS DIFF	II/W	Always precedes a transition to independent mode and appears at power-up, if the system detects a difference in one of the following: - NAV database serial number - Performance database - FM operational program - Aircraft and airline pin programs.
FMS1/FMS2 GW DIFF	II/W	Onside and offside aircraft weights differ by 2 t or more.
FMS1/FMS2 PGM PIN DIFF	II/W	Onside and offside pin programs are different.
FMS1/FMS2 POS DIFF	II/A	Onside and offside positions differ by 5 NM (0.5 NM, if GPS installed) or more.
FMS1/FMS2 SPD TGT DIFF	II/W	Onside and offside target speeds differ by 5 kt or more.
FORMAT ERROR	I/W	A data entry does not meet the specified entry format for a given field.
F-PLN DATALINK IN PROG (AOC MSG)	I/W	A flight plan modification is performed after a F-PLN INIT request has been sent. This message is displayed until the uplink is entirely received.

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MESSAGE	TYPE/COLOR	CONDITIONS
F-PLN FULL	II/W	As there is insufficient memory in the flight plan, the computer does not accept anymore flight plan data.
GPS PRIMARY ◁✻ LOST (also displayed on ND)	II/A	GPS PRIMARY mode is lost.
GPS PRIMARY ◁✻	II/W	The FMS is transitioning to GPS PRIMARY.
GPS ◁✻ IS DESELECTED	II/A	GPS has been manually deselected and the aircraft is 80 NM before the top of descent or in approach phase.
INDEPENDENT OPERATION	II/A	The FMGCs operate independently of each other.
INITIALIZE WEIGHTS	II/A	The zero-fuel weight or block fuel (FOB) is undefined after engine start.
INIT DATA UPLINK (AOC MSG)	II/W	Initialization data has been received from the ground.
INSERT/ERASE TMPY FIRST	I/W	When performing a DIRECT TO/INTERCEPT revision, if a temporary F-PLN already exists due to a revision other than the DIRECT TO/INTERCEPT revision, no F-PLN waypoint can be inserted from the DIR TO page.
INVALID FLT NBR UPLINK (AOC MSG)	II/W	The uplink message contains a valid flight plan but no flight number.
INVALID INIT UPLINK (AOC MSG)	II/W	The initialization uplink message has been rejected.
INVALID ROUTE UPLINK (AOC MSG)	II/W	As an error is detected in the uplink message, it is rejected.
INVALID TAKEOFF UPLINK (AOC MSG)	II/W	The current uplink takeoff data message is rejected.
INVALID WIND UPLINK (AOC MSG)	II/W	The current uplink wind message is rejected.
IRS ONLY NAVIGATION	II/A	The aircraft is neither in an approach or in a terminal area, and: - The aircraft has been in IRS mode for more than 10 min, or - The aircraft is in IRS mode and is starting the descent phase.
LAT DISCONT AHEAD	II/A	The next leg is a discontinuity, and the aircraft is 30 s away from flying the leg.
LIST OF 10 IN USE	I/W	The flight crew has tried to enter more than ten stored runways in the database, and all of the first ten are included in a flight plan, or a pilot-stored route.
LIST OF 20 IN USE	I/W	The flight crew has tried to create a PBD, LAT/LONG, or PB-PB, or store a pilot-defined waypoint or NAVAID when 20 are already in use (in a flight plan or pilot-stored routes).
MANUAL HOLD DELETED	II/W	A manually-entered hold has been deleted, due to a change of the arrival procedure.

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MESSAGE	TYPE/COLOR	CONDITIONS
MCDU OVERHEATED	II/A	This message is displayed for 15 s in case of MCDU overheating.
MORE DRAG (EFIS PFD)	II/A	DES mode is engaged, idle is selected and the aircraft must decelerate to recover the path, or to respect an altitude constraint, a speed limit or a speed constraint.
NAV ACCUR DOWNGRAD (also displayed on ND)	II/A	NAV accuracy downgrades from HIGH to LOW. (See FMGS principles for an explanation).
NAV ACCUR UPGRAD (*EFIS ND)	II/W	NAV accuracy upgrades from LOW to HIGH.
NEW ACC ALT-HHHH	II/W	The acceleration altitude has changed.
NEW CRZ ALT-HHHHH	II/W	The cruise altitude has changed.
NEW THR RED ALT-HHHH	II/W	The thrust reduction altitude has changed.
NO ANSWER TO REQUEST (ACARS MSG)	II/W	A crew request was previously sent to the ground, and no answer has been received for 4 min.
NO INTERSECTION FOUND	I/W	The system could not find any common waypoint or intersection point through the airway.
NO NAV INTERCEPT	II/A	It is triggered, when NAV mode is armed and, no INTERCEPT waypoint exists before the TO waypoint.
NON UNIQUE ROUTE IDENT	I/W	The flight crew has tried to enter a company route IDENT on the new route page that is identical to an existing company route IDENT (pilot-defined, or in the database).
NOT ALLOWED	I/W	Data entry is not allowed in the selected field. A selection action is also not allowed.
NOT IN DATA BASE	I/W	The pilot is trying to enter or call up a company route IDENT, a FROM/TO pair, a place defined by place-bearing-distance (PBD) or place-bearing/ place-bearing (PB/PB) or an airport NAVAID, waypoint runway, or NAVAID frequency (including pilot-defined elements) that is not in the current database.
NOT XMITTED TO ACARS (AOC MSG)	II/W	A pilot request or crew report was sent, but communication was neither established nor acknowledged.
OFST DELETED IN TMPY	II/W	The system automatically deletes an offset from the temporary flight plan, if: - The first leg of the temporary F-PLN is no longer a TF, CF or FM - Termination of next leg at destination runway and the current distance to go to the ending offset waypoint is less than the distance required to reach the temporary offset path and return to the temporary parent path.
ONLY SPD ENTRY ALLOWED	I/W	The pilot is trying to enter a Mach number for a preselected speed value on the CLIMB page.

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MESSAGE	TYPE/COLOR	CONDITIONS
OPP FMGC IN PROCESS	II/A	The offside FMGC is unhealthy, and the FM system mode is SINGLE. The message indicates that the MCDU, on which the message is displayed, is being driven by the FMGC on the other side.
PAGE UPDATE IN PROCESS	I/W	The flight crew presses a key on the flight plan page while predictions are being updated.
PILOT ELEMENT RETAINED	I/W	A pilot element is either a waypoint, or a NAVAID, or a route, or a runway that has been stored by the pilot. This message appears when deleting one of these elements is not allowed.
PILOTS ROUTES FULL	I/W	The system already contains five pilot-defined routes. (only five routes are allowed)
PLACE/WPT MISMATCH	I/W	When using the Along Track Offset function, the entered PLACE is not identical to the revise point.
PLEASE WAIT	I/W	Resynchronization between both FMGCs is in progress.
PRINT ABORTED	II/A	This message informs the crew that the print task has been aborted due to an FMS reset.
PRINTER NOT AVAILABLE (ACARS MSG)	II/W	A printer communication error was detected while printing a report. The printing was terminated.
PROCEDURE RNP IS XX.XX	II/A	The RNP value, manually-entered on the PROG page, is larger than the RNP value defined in the navigation database for the active leg or route.
RADIONAV IS DESELECTED	II/A	Radio NAVAIDs have been manually deselected and the aircraft is 80 NM before the top of descent or in approach phase.
REF/GPS POS DIFF	II/A	This message is displayed when there is a discrepancy between the reference position entered by the flight crew and the GPS position.
REF/LAST IRS POS DIFF	II/A	This message is displayed when there is a discrepancy between the reference position entered by the flight crew and the last stored IRS position.
REVISION IN PROCESS	I/W	One MCDU displays an AIRWAY page and another revision is attempted from the other MCDU.
REVISIONS NOT STORED	II/A	This message, displayed when a pilot-defined route or company route (active or secondary flight plan) is stored, indicates that the following elements are not retained: - Pilot-entered holds - Offsets - Modifications to terminal area procedures - Pilot-entered constraints - Pseudo waypoints

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MESSAGE	TYPE/COLOR	CONDITIONS
RTA DELETED	II/W	A time constraint is automatically deleted: - In case of engine-out - When entering the holding pattern - In case of go-around - At phase transition from descent or approach to climb or cruise - When a time constraint is inserted in the same flight plan at a different waypoint - When the alternate flight plan is activated - When a DIR TO/ABEAM is performed, only if the time constrained waypoint is projected as an ABEAM waypoint - The time constrained waypoint is cleared or sequenced (regardless of active lateral mode) - Valid clock data is lost - The time constraint belongs to the active flight plan and the secondary flight plan is activated - The time constraint belongs to the secondary flight plan and COPY ACTIVE is performed
RTA EXISTS	I/W	Displayed if the pilot tries to clear an estimated takeoff time defined by the system.
RWY/LS MISMATCH	II/A	- During climb, cruise, descent, ILS approach, or go-around, the LS frequency entered on the RAD NAV page does not match the LS associated with the destination runway - During preflight or takeoff, the LS frequency entered on the RAD NAV page does not match the LS associated with the takeoff runway.
SELECT DESIRED SYSTEM	I/W	The MCDU displays its MENU page.
SELECT HDG/TRK FIRST	I/W	- When in NAV mode, the temporary flight plan is inserted whilst the first leg of the temporary F-PLN does not match with the active leg. The same applies when in the SEC F-PLN. Then the temporary flight plan insertion is rejected, and the message is triggered.
SELECT TRUE (also displayed on the ND)	II/A	The MAG/TRUE switch is set to MAG, while the IRS send true HD/TRK.
SENSOR IS INVALID	I/W	- The pilot has selected FF or FQ, or FF + FQ, or FQ + FF on the FUEL PRED page and the sole sensor or both of the selected sensors are invalid, or - The flight crew has entered fuel on board only, and the FF sensor is invalid.

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MESSAGE	TYPE/COLOR	CONDITIONS
SET GREEN DOT SPEED ("SET GREEN DOT" displayed on PFD)	II/W	This message appears when all of the following conditions are met: - Engine-out condition - Aircraft in selected speed mode - FCU-selected speed equal to, or greater than, green-dot speed +10 kt, and ALT* or ALT not active, or FCU-selected speed equal to or less than green-dot speed -10 kt.
SET HOLD SPEED (also displayed on PFD)	II/W	The aircraft is in selected speed, the pilot has inserted a hold in the flight plan, the aircraft is 30 s or less from the point where it must start decelerating towards hold speed, and the selected speed differs from the hold speed by more than 5 kt.
SET MANAGED SPEED or CHECK SPEED MODE (Also displayed on PFD)	II/W	The target speed is selected for the current phase, but there is no preselected speed for the next flight phase. When this is so, this message is displayed at transitions from climb to cruise, and from climb or cruise to descent. It is always displayed at the transition to descent from climb or cruise, if selected speed is active. It is not displayed, if managed speed is active.
SETTING SPD/RTA	II/W	Displayed when the system recomputes its managed speed target to satisfy the RTA constraints.
SPD ERROR AT WPT01	II/W	In lateral managed flight, the system predicts that the aircraft will miss a speed constraint by more than 10 kt. When the prediction changes, and brings the miss within 5 kt, the message is cleared.
SPD LIM EXCEEDED	II/A	The aircraft is more that 150 ft below the speed limit altitude, and more than 10 kt over the speed limit.
SPECIF NDB UNAVAIL	II/A	The NDB to be autotuned (specified for a NDB approach) is unavailable.
SPECIF VOR-D UNAVAIL (also displayed on ND)	II/A	- The VOR, VOR-DME, or VORTAC to be autotuned (specified for an RNAV or VOR approach) has previously been deselected by the flight crew, or - The bearing, the frequency, or the IDENT of the VOR (or VORDME or VORTAC) to be autotuned is invalid.
STEP ABOVE MAX FL	II/W	The pilot has entered a step altitude that is above the predicted maximum altitude.
STEP AHEAD	II/W	Indicates that the aircraft is within 20 NM of the active step point.
STEP DELETED	II/W	A step has been deleted for any reason, including sequencing.
SYSTEM NOT AVAILABLE	I/W	Displayed when an ATC communication via the ATSU has failed.
TAKEOFF DATA UPLINK (ACARS MSG)	II/W	A takeoff data message is received.

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MESSAGE	TYPE/COLOR	CONDITIONS
TMPY F-PLN EXISTS	I/W	The flight crew has selected any key (except ERASE or INSERT), or attempted a flight planning operation on the secondary flight plan while the system is displaying a temporary flight plan.
TIME ERROR AT WPT01	II/W	While the aircraft is in lateral managed flight, the FMGC predicts that it will miss a time constraint (*Refer to DSC-22_20-30-20-28 Time Constraint/RTA - General*).
TIME MARKER LIST FULL	I/W	The system already contains four time markers. (Only four are allowed).
TIME TO EXIT	II/A	The aircraft must leave holding immediately to satisfy fuel reserve requirements. (Extra fuel is zero).
TOO STEEP PATH AHEAD	II/A	This message is displayed in cruise, if the aircraft is within 150 NM of its destination or in descent or approach phase and in NAV mode and the descent profile contains a segment that is too steep.
TUNE BBB FFF.FF	II/A	The system cannot autotune the VOR for approach or position, because of a manual VOR selection.
TURN AREA EXCEEDANCE	II/A	This message is displayed 1.5 min before entry of the PI leg, when in NAV mode, if the PI lateral path exceeds the protection envelope defined in the navigation database.
UNKNOWN PROGRAM PIN	II/W	The system is unable to initialize, due to an incompatible or undefined aircraft pin program combination (A/C type, engine type, VMO/MMO parity) in the FMGC software.
UPLINK INSERT IN PROG (AOC MSG)	II/W	An uplink message is currently inserted in the FMGS.
USING COST INDEX NNN	I/W	This message is displayed when the system contains a flight plan, and the flight crew tries to enter a zero fuel weight or a gross weight into it before defining a Cost Index (CI). (In this case, the FMS defaults to the Cost Index from the last flight). It is also displayed when the flight crew inserts the ALTN F-PLN (in this case, the FMS defaults the cost index to 0).
V1/VR/V2 DISAGREE	II/A	This message is displayed when the entered V1, VR and V2 speeds do not satisfy the condition V1 ≤ VR ≤ V2
WAIT FOR SYSTEM RESPONSE	II/W	During the time between a subsystem selection and the display of the subsystem page, the MCDU MENU page remains displayed with this message.
WIND DATA UPLINK (AOC MSG)	II/W	Uplink wind message has been received.
WIND UPLINK EXISTS (AOC MSG)	I/W	A flight plan modification (active or secondary) is attempted when uplink winds are not yet inserted.
WIND UPLINK PENDING (AOC MSG)	II/A	A temporary flight plan exists, or a DIR TO page is displayed, and a wind uplink is received and stored.

MCDU DATA FORMAT LIST

Ident.: DSC-22_20-50-30-00000920.0051001 / 21 MAR 16

[1] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The following chart lists all the data the pilot may enter on the MCDU.
It also shows the acceptable format for the various data items, the acceptable range, the units of entry, and the MCDU pages on which the data can be entered.

The following codes are used to indicate various data formats:

A : letters
N : numbers
X : letters and numbers

DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
ACCEL ALT	See ALT		ft (MSL)	TAKEOFF (ACT/SEC (2)) GO AROUND (ACT/SEC (2))
ALT	NNNN or NNNNN (leading zeros must be included)	Max ALT = 39 000 Entry is rounded to the nearest 10 ft	ft (MSL)	PERF CLB PERF DES
ALT CSTR	See ALT	See ALT	ft (MSL)	VERT REV F-PLN A SEC F-PLN A
AIRWAYS (VIA)	XXXX	If not in data base "NOT IN DATA BASE" is displayed	N/A	LAT REV AIRWAYS ◁✠
ARPT	AAAA 1 character minimum. 4 maximum.	If AAAA is not in the database airport file, the New Runway page is displayed		INIT A (ACT/SEC (2)) LAT REV ALTN F-PLN A-B (ACT/SEC (2)) WAYPOINT DIR TO
BARO	Same as ALT	Ldg elevation to ldg elevation + 5000	ft (MSL)	PERF APPR (ACT/SEC(2))
BLOCK FUEL	NN.N leading zeros may be omitted.	0-80/0-175.2	Thousands of Kg or thousands of Lb	INIT B (ACT/SEC (2))
CABIN RATE	- NNN (- may be omitted)	100 - 999	ft/min	DES FORECAST or CRUISE PERF PAGE ◁✠
CG	NN.N	8.0 - 45.0	% MAC	INIT B. (ACT/SEC (2)) FUEL PRED
CHANNEL ◁✠	NNN	500 - 699		NEW NAVAID RAD NAV

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
CLASS (NAVAID)	AAAAAA (refer to RANGE for exact inputs allowed)	VOR DME VORDME VORTAC LOC, ILS NDB ILSDME MLS ◁ TACAN ◁	N/A	NEW NAVAID
CO RTE	XXXXXXX 7 or 10 characters (pin program)	If not in the NAVdatabase, a message will be displayed	N/A	INIT A ROUTE SELECTION NEW ROUTE ALTERNATE
COST INDEX	NNN may be entered as 1-3 digits; leading zeros lay be omitted	0 to 999	Kg/Min or 100 lb/Hr	INIT A (ACT/SEC (2)) PERF CLB (ACT/SEC (2)) PERF CRZ (ACT/SEC (2)) PERF DES (ALT/SEC (2))
CRS	See INB CRS	See INB CRS	degrees	RADIO NAV NEW NAVAID NEW RUNWAY
CRZ FL	Must be entered as FLIGHT LEVEL	Maximum FL (See FLIGHT LEVEL)	Hundred of ft	INIT A (ACT/SEC (2)) PROG
CRZ TEMP	See TEMP		See TEMP	INIT A (ACT/SEC (2)) FUEL PREDICTION
CRZ WIND	See WIND DIR/MAG	See WIND DIR/MAG	See WIND DIR/MAG	INIT A (ACT/SEC (2)) FUEL PREDICTION
DIST	NN.N leading and trailing 0's may be omitted.	0 - 99.9 or 0 - 999 (or 9999 ◁)	NM NM	HOLD ALTN
DRT TO ◁	"D"NN	Eight possible values		PERF TAKEOFF
EFF WIND ◁	± NNN "+" may be entered as "T" or "TL" "-" may be entered as "H" or "HD" Leading zeros may be omitted If no sign is input, "+" is taken	0 - 500	kts	CLOSEST AIRPORT EQUI-TIME INIT A SEC INT A

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
ELV	± NNNN if no sign, + assumed Leading 0's may be omitted	Entry displayed to nearest 10 ft -400 to 20 470 ft (RWY) (or - 1000 to 20 470 ft ◁) -2 000 to 20 470 (NAVAID)	ft (MSL)	NEW RUNWAY NEW NAVAID
ETT/RTA ◁	HH:MM:SS	00:00:00 to 23:59:59	Hour HH Min MM Sec SS	RTA
FF/FQ Sensors	One or both may be entered, Both - /FF + FQ or - / FQ + FF Fuel flow - /FF Fuel Quantity - / FQ		N/A	FUEL PREDICTION
FIG OF MERIT	N	0 - 3	N/A	NEW NAVAID
FINAL/TIME	Only one may be entered at a time. NN.N or (NNN.N ◁) for FINAL NNNN for TIME	FINAL 0 - 10.0 (or 0 - 100 ◁) or 0 - 22.0 0 - 90 TIME	Thousand of kg or Thousand of lb minutes	FUEL PRED INIT B
FLAPS		0, 1, 2, or 3		TAKEOFF
FLEX TO TEMP	1. If Derated TO option not implemented: same as TEMP 2. If Derated TO option is implemented: F NN		NN in degrees centigrade	TAKEOFF
FLIGHT LEVEL	FLNNN or NNN Leading zeros on NNN may be omitted	Max FL = 390 (or Max FL = 410 ◁)	Hundreds of ft (MSL)	F-PLN A-B, PROG VERT REV INIT A (ACT, SEC [2]) PERF CLB PERF DES STEP PRED STEP ALTS ◁

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
FLIGHT NUMBER	XXXXXXXX The 8 alphanumeric are not mandatory	N/A	N/A	INIT A F-PLN A-B
FOB	NN.N (leading zeros may be omitted)	See BLOCK	Thousands of kg or Thousands of Lb	FUEL PREDICTION
FREQ	NNN.NN ILS/VOR NNN.N NDB	108.00 - 117.95 190.0 - 1 750.0	MHz KHz	PROG. NEW NAVAID RADIO NAV
FROM/TO	AAAA /AAAA	AAAA must be in data base or message will be displayed	N/A	INIT A (ACT/SEC (2))
GW	NN.N Leading and trailing zeros may be omitted	35 - 99.9 or 77.2 - 218	Thousands of kg or Thousands of Lb	FUEL PREDICTION
IDLE FACTOR ⩤	± N.N Leading and trailing zeros may be omitted	-9.9. +9.9	%	A/C STATUS
INB CRS	NNN Leading zeros may be omitted. An entry of 360 is displayed as 0.	000 - 359	Degrees	HOLD
LAT	DDMM.MB or BDDMM.M DD - degrees, MM.M - minutes, B - direction. Leading zeros may be omitted but the direction (B) is necessary. Latitude is displayed as DDMM.MB	B: N or S 0 ≤ DD ≤ 90 0 ≤ MM.M ≤ 59.9	Degree minutes tenths of minutes	INIT A (ACT/SEC (2))
LAT/LONG	LAT/LONG See LAT and See LONG except both must be entered with "/" in between	See LAT and See LONG	See LAT and See LONG	F-PLN A-B (ACT/SEC (2)) PROG NEW WAYPOINT NEW NAVAID DIR TO LAT REV NEW RUNWAY

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
LENGTH	NNNN Leading zeros may be omitted	1 000 - 8 000 m 3 282 - 9 999 ft	Meters or feet	NEW RUNWAY
LONG	DDDMM.MB or BDDDMM.M DDD - degrees MM.M - minutes B - direction. Leading zeros may be omitted but the direction (B) is necessary	B: E or W 0 ≤ DDD ≤ 180 0 ≤ MM.M ≤ 59	Degree minutes tenths of minutes	INIT A
MACH	.NN The decimal point is necessary. Trailing zeros are not necessary	MAX = 0.82 MIN = 0.15	Mach Number	F-PLN A (ACT/SEC (2)) PERF CLB PERF CRZ PERF DES
MACH/SPD	MACH and SPD must be entered with "/" between (See MACH and See SPD formats)	See MACH and See SPD	See MACH and See SPD	PERF DES (ACT/SEC (2))
NAVAID	XXXX	Any alphanumeric	N/A	PROG NEW NAVAID NAVAID F-PLN A-B (ACT/SEC (2)) LAT REV DIR TO RADIO NAV SELECTED NAVAIDS
OFST	NNB or BNN NN offset distance B direction	B: L or R 1 < NN < 50	NM	LAT REV
PERF FACTOR	NN.N leading or trailing zeros may be omitted (± N.N)	-10.0 to +10.0 (or -9.9 - +9.9 ◁)	N/A	A/C STATUS

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
PLACE/BRG/DIST	PLACE can be any data base ARPT, NAVAID or WAYPOINT - BRG must be a 3 digit entry without decimal digit. An entry of BRG = 360 is displayed as 0.	PLACE - If not in data base, a message "NOT IN DATA BASE" is displayed BRG - 000 - 360	N/A degrees	LAT REV (ACT/SEC (2)) NEW WAYPOINT PROG DIR TO F-PLNA-B (ACT/SEC (2)) STEP ALTS ◁
	DIST is NNN.N where leading zeros may be omitted ; all 3 parameters must be entered with "/" between	DIST - 0 - 999.9	NM	
PLACE-BRG/ PLACE-BRG	See PLACE/BRG/ DIST A couple PLACE-BRG is entered with a dash in the middle. 2 couples have to be entered with "/" between	See PLACE/BRG/DIST	See PLACE/BRG/DIST	See PLACE/BRG/DIST
PLACE/DIST ◁	PLACE: See PLACE/ BRG/DIST DIST: See PLACE/ BRG/DIST	PLACE: See PLACE/ BRG/DIST DIST: 0 - 999.9	N/A NM	F-PLN A and B SEC F-PLN A and B LAT REV NEW WAYPOINT DIR TO STEP ALTS
QNH	NNNN (leading zero may be omitted).	950 - 1 050 (or 745 - 1050 ◁)	Hecto-Pascals (hPa)	PERF APPR (ACT/SEC (2))
	NN.NN (leading and trailing zeros may be omitted).	28.06 - 31.01 (or 22.00 - 31.00 ◁)	In.Hg	
RADIAL ◁	NNN(T) 3 digits entry	000 - 360	Degrees	FIX INFO 1 to 4
RADIAL IN ◁	NNN(T) 3 digits entry	000 - 360	Degrees	DIR TO
RADIAL OUT ◁	NNN(T) 3 digits entry	000 - 360	Degrees	DIR TO FIX INFO 1 to 4

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
RADIO	NNN	0–700 No is accepted if an ILS / GLS ◁ ; APPR is selected	ft	PERF APPR (ACT/SEC (2))
RADIUS ◁	DNNN 3 digits entry D is the identifiant of the circle radius	000 - 256	NM	FIX INFO 1 to 4
REF FIX ◁	See waypoint			FIX INFO 1 to 4
RTE RSV	may be entered as fuel or percentage of trip fuel	Fuel 0 - 10.0 0 - 21.7 % : 0 - 15.0	thousands of kg thousands of lb	INIT B (ACT/SEC (2)) FUEL PRED
RWY	AAAANND Where AAAA is See ARPT. NN is runway number (2 digits) must be entered D is L or R to be included only when there is more than one runway with the same number at ARPT.			RUNWAY NEW RUNWAY F-PLN A-B
SAT/ALT ◁	TEMP/ALT	See TEMP and See ALT	N/A	CRUISE WIND
SET HDG ◁	NNN/N (leading and trailing zeros may be omitted) will always be displayed as NNN/N	000.0 - 360.0	Degrees	IRS MONITOR
SLOPE ◁	NN.N	00.0 -90.0	Degrees	NEW NAVAID
SPD	NNN (leading zero may be omitted)	MAX = 350 kt MIN = 90 kt	kt (CAS)	SEC F-PLN A PERF CLB PERF CRZ (ACT, SEC (2)) PERF DES
SPD CSTR	See SPD	See SPD	kt (CAS)	F-PLN A (ACT/SEC (2)) VERT REV (ACT/SEC (2))

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
SPD LIM	SSS/NNNNN SSS is a speed NNNNN is an ALT or FLIGHT LEVEL (See ALT and See FLIGHT LEVEL)	SSS: See SPD	kt/ft (MSL)	VERT REV (ACT/SEC (2))
SPD/MACH	See MACH/SPD	See MACH and See SPD	See MACH and See SPD	PERF DES (ACT/SEC (2))
STATION DEC	NND Where NN is the declination and D is the direction. Leading zeros may be omitted. D is not required for an entry of zero declination.	NN: 01 - 99 D: E or W	Degrees	NEW NAVAID
STEP ALT ◁	SNNN or NNNS (where NNN is in Flight Level) or SNNNNN or NNNNNS (where NNNNN is in ALT) Leading zeros may be omitted	See FLIGHT LEVEL or See ALT	See FLIGHT LEVEL or See ALT	F-PLN A
TAXI	N.N Leading or trailing zeros may be omitted	0 - 9.9	Thousands of kg	INIT B (ACT/SEC (2))
TEMP	± NN If no sign, + assumed	± 99	Degrees celsius	INIT A (ACT/SEC (2)) FUEL PRED PERF APPR
THR RED ALT	See ALT	400 ft AGL mini	ft (MSL)	PERF TAKE OFF
THS	AAN.N or N.NAA where AA is UP or DN	max UP 7.0 max DN 5.0 increment 0.1	degrees	PERF TAKEOFF
TRANS ALT	See ALT			PERF GO AROUND
TIME	N.N	0 - 9.9	Minutes	HOLD
TIME MARK. ◁	HHMM	HH: 0 - 23 MM: 0 - 59	Hours Minutes	F-PLN A and B
T.O SHIFT	NNNN	1-Length of origin runway	m or ft	PERF TAKEOFF

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
TRIP WIND	See EFF WIND		kts	INIT A SET INIT A
TROPO	See ALT	See ALT (or 60 000 ◁✠)	ft	INIT A FUEL PREDICTION SEC FUEL PREDICTION
UTC CSTR	HH MM Where HH are hours and MM are minutes. Leading zeros may be omitted 1 or 2 digit entry is interpretated as minutes	HH: 0 - 23 MM: 0 - 59	Hours and minutes	VERT REV
V1	See SPD		kt (CAS)	PERF TAKEOFF (ACT/SEC (2))
V2	See SPD		kt (CAS)	PERF TAKEOFF (ACT/SEC (2))
VR	See SPD		kt (CAS)	PERF TAKEOFF (ACT/SEC (2))
WIND	See WIND DIR/ VELOCITY	See WIND DIR/ VELOCITY	See WIND DIR/ VELOCITY	F-PLN B (ACT/SEC (2)) FUEL PREDICTION
WAYPOINT	XXXXX - may be from . 1-5 (1-7 ◁✠) characters for waypoint. Acceptable as waypoint IDENT: ARPT NAVAID WAYPOINT LAT/LONG, PLACE BRG/ PLACE BRG and PLACE/BRG/ DIST PLACE/DIST ◁✠ may be entered to define a waypoint			WAYPOINT NEW WAYPOINT F-PLN A and B (ACT/SEC (2)) LAT REV PROG DIR TO FIX INFO ◁✠ 1 AND 2 EQUI-TIME POINT ◁✠ STEP ALTS ◁✠ PREDICTIVE GPS ◁✠

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
WIND DIR/WIND MAG	NNN/NNN Both must be entered ; leading zeros may be omitted. An entry of WIND DIR = 360 is displayed as 0.	WIND DIRECTION 0 - 360	Degrees	INIT A PERF APPR (ACT/SEC (2)) STEP PRED
		WIND MAG 0 - 200 (or 0 - 500 ◁✠)	Kt	WIND F-PLN B VERT REV
WIND DIRECTION/ MAG/ALT	NNN/NNN/FL NNN or NNN/NNN/NN NNN	Direction and Velocity as above Minimum ALT 1 000	FL in hundred of ft, ALT in ft	DES FORECAST WIND PAGES ◁✠
ZFW	NN.N OR NNN.N Leading and trailing zeros may be omitted	MIN ZFW See – Max ZFW See	Thousands of kg or thousands of Lb	INIT B (ACT/SEC (2))

(1) *As defined in the Performance Data Base.*

(2) *ACT/SEC = Active or Secondary*

MCDU DATA FORMAT LIST

Ident.: DSC-22_20-50-30-00000920.0078001 / 21 MAR 16
Applicable to: MSN 04393-04397

The following chart lists all the data the pilot may enter on the MCDU.
It also shows the acceptable format for the various data items, the acceptable range, the units of entry, and the MCDU pages on which the data can be entered.

The following codes are used to indicate various data formats:

A : letters
N : numbers
X : letters and numbers

DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
ACCEL ALT	See ALT		ft (MSL)	TAKEOFF (ACT/SEC(2)) GO AROUND (ACT/SEC (2))
ALT	NNNN or NNNNN (leading zeros must be included)	Max ALT = 39 000 Entry is rounded to the nearest 10 ft	ft (MSL)	PERF CLB PERF DES

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
ALT CSTR	See ALT	See ALT	ft (MSL)	VERT REV F-PLN A SEC F-PLN A
AIRWAYS (VIA)	XXXX	If not in data base "NOT IN DATA BASE" is displayed	N/A	LAT REV AIRWAYS ◁✠
ARPT	AAAA 1 character minimum. 4 maximum.	If AAAA is not in the database airport file, the New Runway page is displayed		INIT A (ACT/SEC (2)) LAT REV ALTN F-PLN A-B (ACT/SEC (2)) WAYPOINT DIR TO
BARO	Same as ALT	Ldg elevation to ldg elevation + 5000	ft (MSL)	PERF APPR (ACT/SEC)
BLOCK FUEL	NN.N leading zeros may be omitted.	0-80/0-175.2	Thousands of Kg or thousands of Lb	INIT B (ACT/SEC (2))
CABIN RATE	- NNN (- may be omitted)	100 - 999	ft/min	DES FORECAST or CRUISE PERF. PAGE ◁✠
CG	NN.N	8.0 - 45.0	% MAC	INIT B. (ACT/SEC (2)) FUEL PRED
CHANNEL ◁✠	NNN	500 - 699		NEW NAVAID RAD NAV
CLASS (NAVAID)	AAAAAA (refer to RANGE for exact inputs allowed)	VOR DME VORDME VORTAC LOC, ILS NDB ILSDME MLS ◁✠ TACAN ◁✠	N/A	NEW NAVAID
CO RTE	XXXXXXX 7 or 10 characters (pin program)	If not in the NAVdatabase, a message will be displayed	N/A	INIT A ROUTE SELECTION NEW ROUTE ALTERNATE
COST INDEX	NNN may be entered as 1-3 digits; leading zeros lay be omitted	0 to 999	Kg/Min or 100 lb/Hr	INIT A (ACT/SEC(2)) PERF CLB (ACT/SEC (2)) PERF CRZ (ACT/SEC (2)) PERF DES (ALT/SEC (2))

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
CRS	See INB CRS	See INB CRS	degrees	RADIO NAV NEW NAVAID NEW RUNWAY
CRZ FL	Must be entered as FLIGHT LEVEL	Maximum FL (See FLIGHT LEVEL)	Hundred of ft	INIT A (ACT/SEC [2]) PROG
CRZ TEMP	See TEMP	±99	Degrees celsius	INIT A (ACT/SEC[2]) FUEL PREDICTION
CRZ WIND	See WIND DIR/MAG	See WIND DIR/MAG	See WIND DIR/MAG	INIT A (ACT/SEC [2]) FUEL PREDICTION
DIST	NN.N leading and trailing 0's may be omitted.	0 - 99.9 or 0 - 999 (or 9999 ◁✻)	NM NM	HOLD ALTN
DRT TO ◁✻	"D"NN	Eight possible values		PERF TAKEOFF
EFF WIND ◁✻	±NNN "+" may be entered as "T" or "TL" "-" may be entered as "H" or "HD" Leading zeros may be omitted If no sign is input, "+" is taken	0 - 500	kts	CLOSEST AIRPORT EQUI-TIME INIT A SEC INT A
ELV	±NNNN if no sign, + assumed Leading 0's may be omitted	Entry displayed to nearest 10 ft -400 to 20 470 ft (RWY) (or - 1000 to 20 470 ft ◁✻) -2 000 to 20 470 (NAVAID)	ft (MSL)	 NEW RUNWAY NEW NAVAID
ETT/RTA ◁✻	HH:MM:SS	00:00:00 to 23:59:59	Hour HH Min MM Sec SS	RTA
FF/FQ Sensors	One or both may be entered, Both - /FF + FQ or - / FQ + FF Fuel flow - /FF Fuel Quantity - / FQ		N/A	FUEL PREDICTION
FIG OF MERIT	N	0 - 3	N/A	NEW NAVAID

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
FINAL/TIME	Only one may be entered at a time. NN.N or (NNN.N ◁) for FINAL NNNN for TIME	FINAL 0 - 10.0 (or 0 - 100 ◁) or 0 - 22.0 0 - 90 TIME	Thousand of kg or Thousand of lb minutes	FUEL PRED INIT B
FLAPS		0, 1, 2, or 3		TAKEOFF
FLEX TO TEMP	1. If Derated TO option not implemented: same as TEMP 2. If Derated TO option is implemented: F NN		NN in degrees centigrade	TAKEOFF
FLIGHT LEVEL	FLNNN or NNN Leading zeros on NNN may be omitted	Max FL = 390 (or Max FL = 410 ◁)	Hundreds of ft (MSL)	F-PLN A-B, PROG VERT REV INIT A (ACT, SEC(2)) PERF CLB PERF DES STEP PRED STEP ALTS ◁
FLIGHT NUMBER	XXXXXXXX The 8 alphanumeric are not mandatory	N/A	N/A	INIT A F-PLN A-B
FOB	NN.N (leading zeros may be omitted)	See BLOCK	Thousands of kg or Thousands of Lb	FUEL PREDICTION
FREQ	NNN.NN ILS/VOR NNN.N NDB	108.00 - 117.95 190.0 - 1 750.0	MHz KHz	PROG. NEW NAVAID RADIO NAV
FROM/TO	AAAA /AAAA	AAAA must be in data base or message will be displayed	N/A	INIT A (ACT/SEC (2))
GW	NN.N Leading and trailing zeros may be omitted	35 - 99.9 or 77.2 - 218	Thousands of kg or Thousands of Lb	FUEL PREDICTION
GND TEMP	±NN (if no sign, assume +)		See TEMP	INIT A, SEC INIT A

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
IDLE FACTOR ◁	± N.N Leading and trailing zeros may be omitted	-9.9. +9.9	%	A/C STATUS
INB CRS	NNN Leading zeros may be omitted. An entry of 360 is displayed as 0.	000 - 359	Degrees	HOLD
LAT	DDMM.MB DD - degrees, MM.M - minutes, B - direction. Leading zeros may be omitted but the direction (B) is necessary.	B: N or S 0 ≤ DD ≤ 90 0 ≤ MM.M ≤ 59.9	Degree minutes tenths of minutes	INIT A IRS INIT
LAT/LONG	LAT/LONG See LAT and See LONGexcept both must be entered with "/" in between	See LAT and See LONG	See LAT and See LONG	F-PLN A-B (ACT/SEC (2)) PROG NEW WAYPOINT NEW NAVAID DIR TO LAT REV NEW RUNWAY IRS INIT
LENGTH	NNNN Leading zeros may be omitted	1 000 - 8 000 m 3 282 - 9 999 ft	Meters or feet	NEW RUNWAY
LONG	DDDMM.MB or DDD - degrees MM.M - minutes B - direction. Leading zeros may be omitted but the direction (B) is necessary	B: E or W 0 ≤ DDD ≤ 180 0 ≤ MM.M ≤ 59	Degree minutes tenths of minutes	INIT A IRS INIT
MACH	.NN or 0.NN Trailing zeros are not necessary NN: Entry of two figures is necessary	MAX = .82 MIN = .15	Mach Number	F-PLN A (ACT/SEC (2)) PERF CLB PERF CRZ PERF DES

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
MACH/SPD	MACH and SPD must be entered with "/" between (See MACH and See SPD formats)	See MACH and See SPD	See MACH and See SPD	PERF DES (ACT/SEC (2))
MIN DEST FOB	NNN.N (leading zeros may be omitted)	0 - 80	Thousand of kg or lb (OPC option)	INIT B FUEL PRED (ATC/SEC)
NAVAID	XXXX	Any alphanumeric	N/A	PROG NEW NAVAID NAVAID F-PLN A-B (ACT/SEC (2)) LAT REV DIR TO RADIO NAV SELECTED NAVAIDS
OFST	NNB or BNN NN offset distance B direction	B: L or R 1 < NN < 50	NM	LAT REV
PERF FACTOR	NN.N leading or trailing zeros may be omitted (± N.N)	-10.0 to +10.0 (or -9.9 - +9.9 ◁)	N/A	A/C STATUS
PLACE/BRG/DIST	PLACE can be any data base ARPT, NAVAID or WAYPOINT - BRG must be a 3 digit entry without decimal digit. An entry of BRG = 360 is displayed as 0.	PLACE - If not in data base, a message "NOT IN DATA BASE" is displayed BRG - 000 - 360	N/A degrees	LAT REV(ACT/SEC (2)) NEW WAYPOINT PROG DIR TO F-PLNA-B (ACT/SEC (2)) STEP ALTS ◁
	DIST is NNN.N where leading zeros may be omitted ; all 3 parameters must be entered with "/" between	DIST - 0 - 999.9	NM	
PLACE-BRG/ PLACE-BRG	See PLACE/BRG/DIST A couple PLACE-BRG is entered with a dash in the middle. 2 couples have to be entered with "/" between	See PLACE/BRG/DIST	See PLACE/BRG/ DIST	See PLACE/BRG/DIST

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
PLACE/DIST ◁	PLACE: See PLACE/ BRG/DIST DIST: See PLACE/ BRG/DIST	PLACE: See PLACE/ BRG/DIST DIST: 0 - 999.9	N/A NM	F-PLN A and B SEC F-PLN A and B LAT REV NEW WAYPOINT DIR TO STEP ALTS
QNH	NNNN (leading zero may be omitted).	745 - 1 050 (or 745 - 1050 ◁)	Hecto-Pascals (hPa)	PERF APPR (ACT/SEC [2])
	NN.NN (leading and trailing zeros may be omitted).	28.06 - 31.01 (or 22.00 - 32.48 ◁)	In.Hg	
RADIAL ◁	NNN(T) 3 digits entry	000 - 360	Degrees	FIX INFO 1 to 4
RADIAL IN ◁	NNN(T) 3 digits entry	000 - 360	Degrees	DIR TO
RADIAL OUT ◁	NNN(T) 3 digits entry	000 - 360	Degrees	DIR TO FIX INFO 1 to 4
RADIO	NNN	0–700 No is accepted if an ILS / GLS ◁ ; APPR is selected	ft	PERF APPR (ACT/SEC)
RADIUS ◁	DNNN 3 digits entry D is the identifiant of the circle radius	000 - 256	NM	FIX INFO 1 to 4
REF FIX ◁	See waypoint			FIX INFO 1 to 4
RTE RSV	may be entered as fuel or percentage of trip fuel	Fuel 0 - 10.0 0 - 21.7 % : 0 - 15.0	thousands of kg thousands of lb	INIT B (ACT/SEC [2]) FUEL PRED
RWY	AAAANND Where AAAA is same as ARPT (See ARPT). NN is runway number (2 digits) must be entered D is L or R to be included only when there is more than one runway with the same number at ARPT.			RUNWAY NEW RUNWAY F-PLN A-B
SAT/ALT ◁	TEMP/ALT	See TEMP and See ALT	N/A	CRZ WIND

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
SET HDG ◁	NNN/N (leading and trailing zeros may be omitted) will always be displayed as NNN/N	000.0 - 360.0	Degrees	IRS MONITOR
SLOPE ◁	NN.N	00.0 -90.0	Degrees	NEW NAVAID
SPD	NNN (must be 3 numerics)	MAX = 350 kt MIN = 90 kt	kt (CAS)	SEC F-PLN A PERF CLB PERF CRZ (ACT, SEC (2)) PERF DES
SPD CSTR	See SPD	See SPD	kt (CAS)	F-PLN A (ACT/SEC (2)) VERT REV (ACT/SEC (2))
SPD LIM	SSS/NNNNN SSS is a speed NNNNN is an ALT or FLIGHT LEVEL (See ALT and See FLIGHT LEVEL)	SSS: See SPD	kt/ft (MSL)	VERT REV (ACT/SEC3 (2))
SPD/MACH	See MACH/SPD	See MACH and See SPD	See MACH and See SPD	PERF DES (ACT/SEC (2))
STATION DEC	NND Where NN is the declination and D is the direction. Leading zeros may be omitted. D is not required for an entry of zero declination.	NN: 01 - 99 D : E or W	Degrees	NEW NAVAID
STEP ALT ◁	SNNN or NNNS (where NNN is in Flight Level) or SNNNNN or NNNNNS (where NNNNN is in ALT) Leading zeros may be omitted	See FLIGHT LEVEL or See ALT	See FLIGHT LEVEL or See ALT	F-PLN A
TAXI	N.N Leading or trailing zeros may be omitted	0 - 9.9	Thousands of kg	INIT B (ACT/SEC (2))
TEMP	± NN If no sign, + assumed	±99	Degrees celsius	PERFTAKEOFF PERF APPR UPLINK TODATA REQ

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
THR RED ALT	See ALT	400 ft AGL mini	ft (MSL)	PERF TAKE OFF
THS	AAN.N or N.NAA where AA is UP or DN	max UP 7.0 max DN 5.0 increment .1	degrees	PERF TAKEOFF
TRANS ALT	See ALT			PERF TAKE OFF PERF GO AROUND
TRANS FL	See FLIGHT LEVEL			PERF APPR
TIME	N.N	0 - 9.9	Minutes	HOLD
TIME MARK. ◁	HHMM	HH: 0 - 23 MM : 0 - 59	Hours Minutes	F-PLN A and B
T.O SHIFT	NNNN	1-Length of origin runway	m or ft	PERF TAKEOFF
TRIP WIND	See EFF WIND		kts	INIT A SET INIT A
TROPO	See ALT	See ALT (or 60 000 ◁)	ft	INIT A FUEL PREDICTION SEC FUEL PREDICTION
UTC CSTR	HH MM Where HH are hours and MM are minutes. Leading zeros may be omitted 1 or 2 digit entry is interpretated as minutes	HH: 0 - 23 MM : 0 - 59	Hours and minutes	VERT REV
V1	See SPD		kt (CAS)	PERF TAKEOFF (ACT/SEC (2))
V2	See SPD		kt (CAS)	PERF TAKEOFF (ACT/SEC (2))
VR	See SPD		kt (CAS)	PERF TAKEOFF (ACT/SEC (2))
WIND	See WIND DIR/ VELOCITY	See WIND DIR/ VELOCITY	See WIND DIR/ VELOCITY	F-PLN B (ACT/SEC (2)) FUEL PREDICTION

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
WAYPOINT	XXXXX - may be from . 1-5 (1-7 ◁) characters for waypoint. Acceptable as waypoint IDENT : ARPT NAVAID WAYPOINT LAT/LONG, PLACE BRG/ PLACE BRG and PLACE/BRG/ DIST PLACE / DIST ◁ may be entered to define a waypoint			WAYPOINT NEW WAYPOINT F-PLN A and B (ACT/SEC(2)) LAT REV PROG DIR TO FIX INFO ◁ 1 AND 2 EQUI-TIME POINT ◁ STEP ALTS ◁ PREDICTIVE GPS ◁
WIND DIR/WIND MAG	NNN/NNN Both must be entered ; leading zeros may be omitted. An entry of WIND DIR = 360 is displayed as 0.	WIND DIRECTION 0 - 360	Degrees	INIT A PERF APPR (ACT/SEC (2)) STEP PRED
		WIND MAG 0 - 200	Kt	WIND F-PLN B VERT REV
WIND DIRECTION/ MAG/ALT	NNN/NNN/FL NNN or NNN/NNN/NN NNN	Direction and Velocity as above Minimum ALT 1 000	FL in hundred of ft, ALT in ft	DES FORECAST WIND PAGES ◁
ZFW	NN.N OR NNN.N Leading and trailing zeros may be omitted	Min ZFW See – Max ZFW See	Thousands of kg or thousands of Lb	INIT B (ACT/SEC (2))

(1) *As defined in the Performance Data Base.*

(2) *ACT/SEC = Active or Secondary*

MCDU DATA FORMAT LIST

Ident.: DSC-22_20-50-30-00000920.0082001 / 21 MAR 16

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04384, 04399-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The following chart lists all the data the pilot may enter on the MCDU.
It also shows the acceptable format for the various data items, the acceptable range, the units of entry, and the MCDU pages on which the data can be entered.

The following codes are used to indicate various data formats:

A : letters
N : numbers
X : letters and numbers

DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
ACCEL ALT	See ALT		ft (MSL)	TAKEOFF (ACT/SEC(2)) GO AROUND (ACT/SEC (2))
ALT	NNNN or NNNNN (leading zeros must be included)	Max ALT = 39 000 Entry is rounded to the nearest 10 ft	ft (MSL)	PERF CLB PERF DES
ALT CSTR	See ALT	See ALT	ft (MSL)	VERT REV F-PLN A SEC F-PLN A
AIRWAYS (VIA)	XXXX	If not in data base "NOT IN DATA BASE" is displayed	N/A	LAT REV AIRWAYS ◁✠
ARPT	AAAA 1 character minimum. 4 maximum.	If AAAA is not in the database airport file, the New Runway page is displayed		INIT A (ACT/SEC (2)) LAT REV ALTN F-PLN A-B (ACT/SEC (2)) WAYPOINT DIR TO
BARO	Same as ALT	Ldg elevation to ldg elevation + 5000	ft (MSL)	PERF APPR (ACT/SEC)
BLOCK FUEL	NN.N leading zeros may be omitted.	0-80/0-175.2	Thousands of Kg or thousands of Lb	INIT B (ACT/SEC (2))
CABIN RATE	- NNN (- may be omitted)	100 - 999	ft/min	DES FORECAST or CRUISE PERF. PAGE ◁✠
CG	NN.N	8.0 - 45.0	% MAC	INIT B. (ACT/SEC (2)) FUEL PRED
CHANNEL ◁✠	NNN	500 - 699		NEW NAVAID RAD NAV

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
CLASS (NAVAID)	AAAAAA (refer to RANGE for exact inputs allowed)	VOR DME VORDME VORTAC LOC, ILS NDB ILSDME MLS ◁ TACAN ◁	N/A	NEW NAVAID
CO RTE	XXXXXXX 7 or 10 characters (pin program)	If not in the NAVdatabase, a message will be displayed	N/A	INIT A ROUTE SELECTION NEW ROUTE ALTERNATE
COST INDEX	NNN may be entered as 1-3 digits; leading zeros lay be omitted	0 to 999	Kg/Min or 100 lb/Hr	INIT A (ACT/SEC(2)) PERF CLB (ACT/SEC(2)) PERF CRZ (ACT/SEC (2)) PERF DES (ALT/SEC (2))
CRS	See INB CRS	See INB CRS	degrees	RADIO NAV NEW NAVAID NEW RUNWAY
CRZ FL	Must be entered as FLIGHT LEVEL	Maximum FL (See FLIGHT LEVEL)	Hundred of ft	INIT A (ACT/SEC (2)) PROG
CRZ TEMP	See TEMP	±99	Degrees celsius	INIT A (ACT/SEC(2)) FUEL PREDICTION
CRZ WIND	See WIND DIR/MAG	See WIND DIR/MAG	See WIND DIR/MAG	INIT A (ACT/SEC (2)) FUEL PREDICTION
DIST	NN.N leading and trailing 0's may be omitted.	0 - 99.9 or 0 - 999 (or 9999 ◁)	NM NM	HOLD ALTN
DRT TO ◁	"D"NN	Eight possible values		PERF TAKEOFF
EFF WIND ◁	±NNN "+" may be entered as "T" or "TL" "-" may be entered as "H" or "HD" Leading zeros may be omitted If no sign is input, "+" is taken	0 - 500	kts	CLOSEST AIRPORT EQUI-TIME INIT A SEC INT A

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
ELV	±NNNN if no sign, + assumed Leading 0's may be omitted	Entry displayed to nearest 10 ft -400 to 20 470 ft (RWY) (or - 1000 to 20 470 ft ◁) -2 000 to 20 470 (NAVAID)	ft (MSL)	NEW RUNWAY NEW NAVAID
ETT/RTA ◁	HH:MM:SS	00:00:00 to 23:59:59	Hour HH Min MM Sec SS	RTA
FF/FQ Sensors	One or both may be entered, Both - /FF + FQ or - / FQ + FF Fuel flow - /FF Fuel Quantity - / FQ		N/A	FUEL PREDICTION
FIG OF MERIT	N	0 - 3	N/A	NEW NAVAID
FINAL/TIME	Only one may be entered at a time. NN.N or (NNN.N ◁) for FINAL NNNN for TIME	FINAL 0 - 10.0 (or 0 - 100 ◁) or 0 - 22.0 0 - 90 TIME	Thousand of kg or Thousand of lb minutes	FUEL PRED INIT B
FLAPS		0, 1, 2, or 3		TAKEOFF
FLEX TO TEMP	1. If Derated TO option not implemented: same as TEMP 2. If Derated TO option is implemented: F NN		NN in degrees centigrade	TAKEOFF
FLIGHT LEVEL	FLNNN or NNN Leading zeros on NNN may be omitted	Max FL = 390 (or Max FL = 410 ◁)	Hundreds of ft (MSL)	F-PLN A-B, PROG VERT REV INIT A (ACT, SEC(2)) PERF CLB PERF DES STEP PRED STEP ALTS ◁

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
FLIGHT NUMBER	XXXXXXXX The 8 alphanumeric are not mandatory	N/A	N/A	INIT A F-PLN A-B
FOB	NN.N (leading zeros may be omitted)	See BLOCK	Thousands of kg or Thousands of Lb	FUEL PREDICTION
FREQ	NNN.NN ILS/VOR NNN.N NDB	108.00 - 117.95 190.0 - 1 750.0	MHz KHz	PROG. NEW NAVAID RADIO NAV
FROM/TO	AAAA /AAAA	AAAA must be in data base or message will be displayed	N/A	INIT A (ACT/SEC [2])
GW	NN.N Leading and trailing zeros may be omitted	35 - 99.9 or 77.2 - 218	Thousands of kg or Thousands of Lb	FUEL PREDICTION
GND TEMP	±NN (if no sign, assume +)		See TEMP	INIT A, SEC INIT A
IDLE FACTOR ⋖	± N.N Leading and trailing zeros may be omitted	-9.9. +9.9	%	A/C STATUS
INB CRS	NNN Leading zeros may be omitted. An entry of 360 is displayed as 0.	000 - 359	Degrees	HOLD
LAT	DDMM.MB DD - degrees, MM.M - minutes, B - direction. Leading zeros may be omitted but the direction (B) is necessary.	B: N or S 0 ≤ DD ≤ 90 0 ≤ MM.M ≤ 59.9	Degree minutes tenths of minutes	INIT A IRS INIT
LAT/LONG	LAT/LONG See LAT and See LONGexcept both must be entered with "/" in between	See LAT and See LONG	See LAT and See LONG	F-PLN A-B (ACT/SEC [2]) PROG NEW WAYPOINT NEW NAVAID DIR TO LAT REV NEW RUNWAY IRS INIT
LENGTH	NNNN Leading zeros may be omitted	1 000 - 8 000 m 3 282 - 9 999 ft	Meters or feet	NEW RUNWAY

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
LONG	DDDMM.MB or DDD - degrees MM.M - minutes B - direction. Leading zeros may be omitted but the direction (B) is necessary	B: E or W 0 ≤ DDD ≤ 180 0 ≤ MM.M ≤ 59	Degree minutes tenths of minutes	INIT A IRS INIT
MACH	.NN or 0.NN Trailing zeros are not necessary NN: Entry of two figures is necessary	MAX = .82 MIN = .15	Mach Number	F-PLN A (ACT/SEC (2)) PERF CLB PERF CRZ PERF DES
MACH/SPD	MACH and SPD must be entered with "/" between (See MACH and See SPD formats)	See MACH and See SPD	See MACH and See SPD	PERF DES (ACT/SEC (2))
MIN DEST FOB	NNN.N (leading zeros may be omitted)	0 - 80	Thousand of kg or lb (OPC option)	INIT B FUEL PRED (ATC/SEC)
NAVAID	XXXX	Any alphanumeric	N/A	PROG NEW NAVAID NAVAID F-PLN A-B (ACT/SEC (2)) LAT REV DIR TO RADIO NAV SELECTED NAVAIDS
OFST	NNB or BNN NN offset distance B direction	B: L or R 1 < NN < 50	NM	LAT REV
PERF FACTOR	NN.N leading or trailing zeros may be omitted (± N.N)	-10.0 to +10.0 (or -9.9 - +9.9 ◁✻)	N/A	A/C STATUS

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
PLACE/BRG/DIST	PLACE can be any data base ARPT, NAVAID or WAYPOINT - BRG must be a 3 digit entry without decimal digit. An entry of BRG = 360 is displayed as 0.	PLACE - If not in data base, a message "NOT IN DATA BASE" is displayed BRG - 000 - 360	N/A degrees	LAT REV(ACT/SEC (2)) NEW WAYPOINT PROG DIR TO F-PLNA-B (ACT/SEC (2)) STEP ALTS ◁⋇
	DIST is NNN.N where leading zeros may be omitted ; all 3 parameters must be entered with "/" between	DIST - 0 - 999.9	NM	
PLACE-BRG/ PLACE-BRG	See PLACE/BRG/DIST A couple PLACE-BRG is entered with a dash in the middle. 2 couples have to be entered with "/" between	See PLACE/BRG/DIST	See PLACE/BRG/ DIST	See PLACE/BRG/DIST
PLACE/DIST ◁⋇	PLACE: See PLACE/ BRG/DIST DIST: See PLACE/ BRG/DIST	PLACE: See PLACE/ BRG/DIST DIST: 0 - 999.9	N/A NM	F-PLN A and B SEC F-PLN A and B LAT REV NEW WAYPOINT DIR TO STEP ALTS
QNH	NNNN (leading zero may be omitted).	745 - 1 050 (or 745 - 1050 ◁⋇)	Hecto-Pascals (hPa)	PERF APPR (ACT/SEC (2))
	NN.NN or NNNN (four digits are mandatory).	28.06 - 31.01 (or 22.00 - 32.48 ◁⋇)	In.Hg	
RADIAL ◁⋇	NNN(T) 3 digits entry	000 - 360	Degrees	FIX INFO 1 to 4
RADIAL IN ◁⋇	NNN(T) 3 digits entry	000 - 360	Degrees	DIR TO
RADIAL OUT ◁⋇	NNN(T) 3 digits entry	000 - 360	Degrees	DIR TO FIX INFO 1 to 4
RADIO	NNN	0–700 No is accepted if an ILS / GLS ◁⋇ ; APPR is selected	ft	PERF APPR (ACT/SEC)

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
RADIUS ◁	DNNN 3 digits entry D is the identifiant of the circle radius	000 - 256	NM	FIX INFO 1 to 4
REF FIX ◁	See WAYPOINT			FIX INFO 1 to 4
RTE RSV	may be entered as fuel or percentage of trip fuel	Fuel 0 - 10.0 0 - 21.7 % : 0 - 15.0	thousands of kg thousands of lb	INIT B (ACT/SEC (2)) FUEL PRED
RWY	AAAANND Where AAAA is same as ARPT (See ARPT). NN is runway number (2 digits) must be entered D is L or R to be included only when there is more than one runway with the same number at ARPT.			RUNWAY NEW RUNWAY F-PLN A-B
SAT/ALT ◁	TEMP/ALT	See TEMP and See ALT	N/A	CRZ WIND
SET HDG ◁	NNN/N (leading and trailing zeros may be omitted) will always be displayed as NNN/N	000.0 - 360.0	Degrees	IRS MONITOR
SLOPE ◁	NN.N	00.0 -90.0	Degrees	NEW NAVAID
SPD	NNN (must be 3 numerics)	MAX = 350 kt MIN = 90 kt	kt (CAS)	SEC F-PLN A PERF CLB PERF CRZ (ACT, SEC(2)) PERF DES
SPD CSTR	See SPD	See SPD	kt (CAS)	F-PLN A (ACT/SEC (2)) VERT REV (ACT/SEC (2))
SPD LIM	SSS/NNNNN SSS is a speed NNNNN is an ALT or FLIGHT LEVEL (See ALT and See FLIGHT LEVEL)	SSS: See SPD	kt/ft (MSL)	VERT REV (ACT/SEC3 (2))
SPD/MACH	See MACH/SPD	See MACH and See SPD	See MACH and See SPD	PERF DES (ACT/SEC (2))

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
STATION DEC	NND Where NN is the declination and D is the direction. Leading zeros may be omitted. D is not required for an entry of zero declination.	NN: 01 - 99 D : E or W	Degrees	NEW NAVAID
STEP ALT ◁	SNNN or NNNS (where NNN is in Flight Level) or SNNNNN or NNNNNS (where NNNNN is in ALT) Leading zeros may be omitted	See FLIGHT LEVEL or See ALT	See FLIGHT LEVEL or See ALT	F-PLN A
TAXI	N.N Leading or trailing zeros may be omitted	0 - 9.9	Thousands of kg	INIT B (ACT/SEC (2))
TEMP	± NN If no sign, + assumed	±99	Degrees celsius	PERFTAKEOFF PERF APPR UPLINK TODATA REQ
THR RED ALT	See ALT	400 ft AGL mini	ft (MSL)	PERF TAKE OFF
THS	AAN.N or N.NAA where AA is UP or DN	max UP 7.0 max DN 5.0 increment .1	degrees	PERF TAKEOFF
TRANS ALT	See ALT			PERF TAKE OFF PERF GO AROUND
TRANS FL	See FLIGHT LEVEL			PERF APPR
TIME	N.N	0 - 9.9	Minutes	HOLD
TIME MARK. ◁	HHMM	HH: 0 - 23 MM : 0 - 59	Hours Minutes	F-PLN A and B
T.O SHIFT	NNNN	1-Length of origin runway	m or ft	PERF TAKEOFF
TRIP WIND	See EFF WIND		kts	INIT A SET INIT A
TROPO	See ALT	See ALT (or 60 000 ◁)	ft	INIT A FUEL PREDICTION SEC FUEL PREDICTION

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
UTC CSTR	HH MM Where HH are hours and MM are minutes. Leading zeros may be omitted 1 or 2 digit entry is interpretated as minutes	HH: 0 - 23 MM : 0 - 59	Hours and minutes	VERT REV
V1	See SPD		kt (CAS)	PERF TAKEOFF (ACT/SEC (2))
V2	See SPD		kt (CAS)	PERF TAKEOFF (ACT/SEC (2))
VR	See SPD		kt (CAS)	PERF TAKEOFF (ACT/SEC (2))
WIND	See WIND DIR/ VELOCITY	See WIND DIR/ VELOCITY	See WIND DIR/ VELOCITY	F-PLN B (ACT/SEC (2)) FUEL PREDICTION
WAYPOINT	XXXXX - may be from . 1-5 (1-7 ⧏⧐) characters for waypoint. Acceptable as waypoint IDENT : ARPT NAVAID WAYPOINT LAT/LONG, PLACE BRG/ PLACE BRG and PLACE/BRG/ DIST PLACE / DIST ⧏⧐ may be entered to define a waypoint			WAYPOINT NEW WAYPOINT F-PLN A and B (ACT/SEC(2)) LAT REV PROG DIR TO FIX INFO ⧏⧐ 1 AND 2 EQUI-TIME POINT ⧏⧐ STEP ALTS ⧏⧐ PREDICTIVE GPS ⧏⧐
WIND DIR/WIND MAG	NNN/NNN Both must be entered ; leading zeros may be omitted. An entry of WIND DIR = 360 is displayed as 0.	WIND DIRECTION 0 - 360	Degrees	INIT A PERF APPR (ACT/SEC (2)) STEP PRED
		WIND MAG 0 - 200	Kt	WIND F-PLN B VERT REV

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DATA NAME	FORMAT	RANGE (X is input)	UNITS	DISPLAY PAGE
WIND DIRECTION/ MAG/ALT	NNN/NNN/FL NNN or NNN/NNN/NN NNN	Direction and Velocity as above Minimum ALT 1 000	FL in hundred of ft, ALT in ft	DES FORECAST WIND PAGES ◁
ZFW	NN.N OR NNN.N Leading and trailing zeros may be omitted	Min ZFW (1)– Max ZFW (1)	Thousands of kg or thousands of Lb	INIT B (ACT/SEC (2))

(1) *As defined in the Performance Data Base.*

(2) *ACT/SEC = Active or Secondary*

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GENERAL

Ident.: DSC-22_20-60-10-00000921.0001001 / 10 DEC 09
Applicable to: ALL

The baro reference selector of the EIS (Electronic Instrument System) allows the pilot to use the standard barometric reference (STD), sea level atmospheric pressure (QNH), or atmospheric pressure at airfield elevation (QFE option) for the barometer setting.
The selected value is displayed in the baro reference display window of the EFIS control panel and on the Primary Flight Display (PFD) below the altitude scale.
The barometer setting is used as a reference for the altimeter of the PFD and for the PFD target altitude. In flight, it affects the predicted altitudes on the MCDU and the descent path computation.

MCDU ALTITUDE PREDICTIONS

Ident.: DSC-22_20-60-10-A-00000922.0001001 / 10 DEC 09
Applicable to: ALL

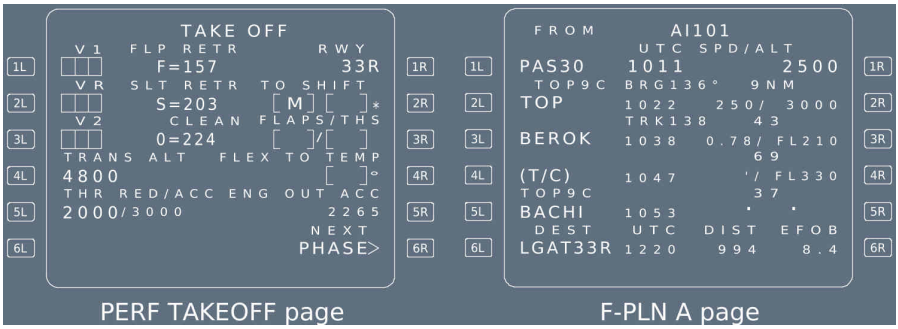
GENERAL

The FMGS predicts at each waypoint of the flight plan an altitude that is a function of all data in the lateral and vertical flight plans.

Ident.: DSC-22_20-60-10-A-00000927.0001001 / 10 DEC 09
Applicable to: ALL

ON THE GROUND

The altitude predicted at each waypoint is displayed as altitude in feet above mean sea level (AMSL) when it is below the transition altitude and as flight level when it is above the transition altitude. The altitude constraints are also displayed, and they follow the same rule (feet or flight level).
The predicted altitude is equal to the airport elevation plus the height you must attain in order to reach the waypoint in the applicable mode (climb or descent).



Ident.: DSC-22_20-60-10-A-00000924.0001001 / 16 FEB 11

1 **Applicable to: MSN 01767-01920, 02097-02670, 02737-03071, 03264-04216, 04312, 04328-04384, 04481-04506, 04518-09063**

IN FLIGHT

The predicted altitude is equal to the aircraft altitude (as a function of the barometer setting), plus or minus the height you must attain to reach the waypoint in the applicable mode (climb or descent).

- In climb:
  Altitude predictions and constraints are displayed as altitude in feet above mean sea level (AMSL) at, or below, the transition altitude, and as the flight level above it.
  For example : If the transition altitude is 5 000 ft and you insert an altitude constraint as 8 000 ft, the MCDU F-PLN A page displays it as FL 80
- In descent:
  If “STD” is selected on the EIS control panel, altitude predictions and constraints above the transition level are displayed as flight levels, and those below the transition level are displayed as altitude AMSL.
  If sea level standard pressure (QNH), or field elevation pressure (QFE option), is selected on the EIS control panel, altitude predictions and constraints are displayed as altitudes AMSL, regardless of the transition altitude.
  For example: If the transition level is FL 50 and you insert an altitude constraint of 8 000 ft into the MCDU, the MCDU F-PLNS A page will display it as FL 80, if “STD” is selected, and as 8 000 ft, if “QNH” (or “QFE” option) F-PLN A page is selected.

Ident.: DSC-22_20-60-10-A-00000924.0002001 / 16 FEB 11
Applicable to: MSN 01957, 02712, 03138, 04294, 04314, 04393-04438, 04510

IN FLIGHT

The predicted altitude is equal to the aircraft altitude (as a function of the barometer setting), plus or minus the height you must attain to reach the waypoint in the applicable mode (climb or descent).

- In climb:
  Altitude predictions and constraints are displayed as altitude in feet above mean sea level (AMSL) at, or below, the transition altitude, and as the flight level above it.
  For example : If the transition altitude is 5 000 ft and you insert an altitude constraint as 8 000 ft, the MCDU F-PLN A page displays it as FL 80
- In descent:
  If “STD” is selected on the EIS control panel, altitude predictions and constraints above the transition level are displayed as flight levels, and those below the transition level are displayed as altitude AMSL.
  If sea level standard pressure (QNH), or field elevation pressure (QFE option), is selected on the EIS control panel, altitude predictions and constraints are displayed as altitudes AMSL, regardless of the transition altitude.
  For example: If the transition level is FL 50 and you insert an altitude constraint of 8 000 ft into the MCDU, the MCDU F-PLN A page will display it as FL 80, if “STD” is selected. If “QNH” (or “QFE” option) is selected, the MCDU F-PLN A page will display the barometric corrected altitude constraint.

TARGET ALTITUDE ON PFD

Ident.: DSC-22_20-60-10-00000925.0001001 / 01 OCT 12
[2] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The PFD target altitude may either be:

- The altitude selected on the FCU, or
- A flight management altitude constraint, if the climb mode or descent mode is engaged and the system predicts a level-off at a constraint that comes before reaching the FCU altitude.

The PFD target altitude depends on the barometer setting:

- If “STD” is selected, the target is a flight level
- If “QNH” or “QFE” is selected, the target is an altitude or height.

The aircraft will level off accordingly.

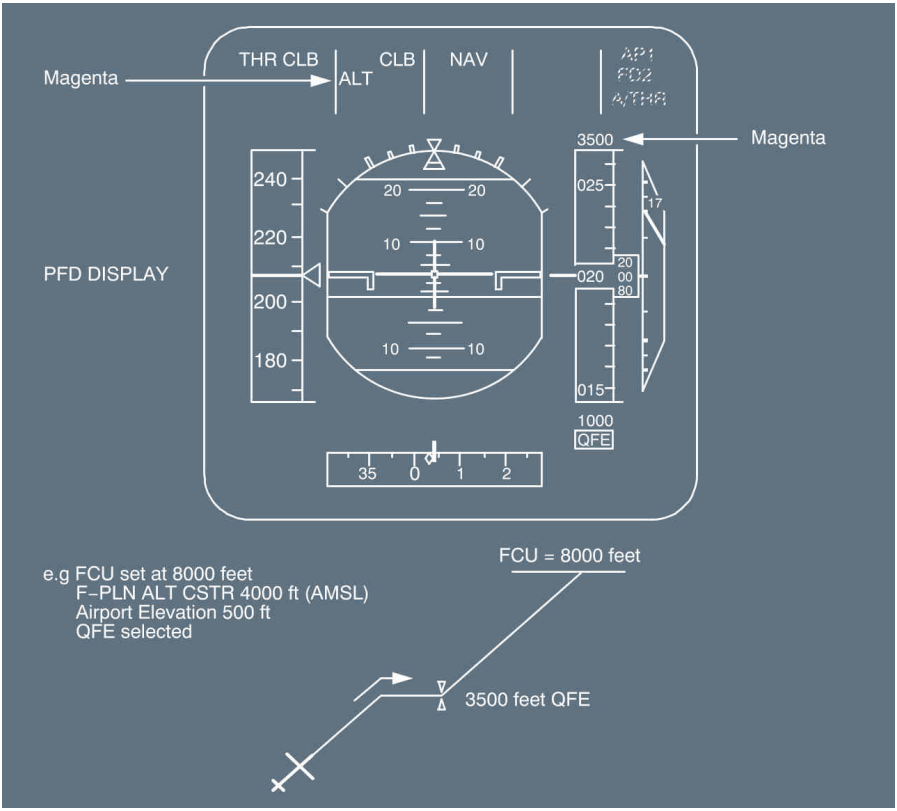
Note: - *If the pilot changes the barometer setting during ALT* or ALT CST*, the aircraft may overshoot the target altitude, because the current value has been changed. However, the ALT* and ALT CST* modes allow the aircraft to regain the FCU altitude. As a general rule, avoid changing the barometer setting when in ALT* or ALT CST**

- *In aircraft equipped to use field elevation pressure (QFE option), switching from STD to QFE (or vice versa) in ALT CST* green changes the target value and may revert the vertical mode into V/S mode.*

NOTE FOR AIRCRAFT WITH QFE (FIELD ELEVATION PRESSURE) PIN PROGRAM

If you select "QFE" on the EFIS control panel:

- The MCDU predictions follow the basic rules (altitudes are AMSL below the transition level, flight levels above it)
- The altitude constraints on the MCDU follow the basic rules
- The target altitude on the PFD is QFE related:
  - If the target altitude has been selected by the FCU, the aircraft will level off there.
  - If the target altitude is an altitude constraint, the PFD automatically shows that constraint as corrected by the airport elevation.



TARGET ALTITUDE ON PFD

Ident.: DSC-22_20-60-10-00000925.0002001 / 01 OCT 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The PFD target altitude may either be:

- The altitude selected on the FCU, or
- A flight management altitude constraint, if the climb mode or descent mode is engaged and the system predicts a level-off at a constraint that comes before reaching the FCU altitude.

The PFD target altitude depends on the barometer setting:

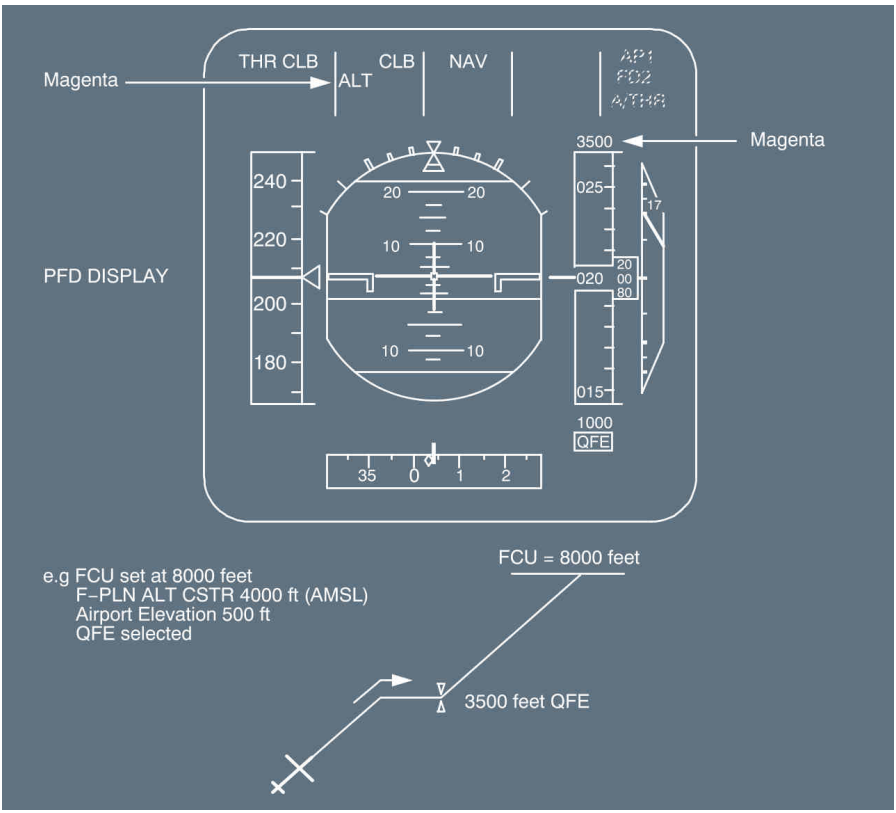
- If “STD” is selected, the target is a flight level
- If “QNH” or “QFE” is selected, the target is an altitude or height.

The aircraft will level off accordingly.

NOTE FOR AIRCRAFT WITH QFE (FIELD ELEVATION PRESSURE) PIN PROGRAM

If you select "QFE" on the EFIS control panel:

- The MCDU predictions follow the basic rules (altitudes are AMSL below the transition level, flight levels above it)
- The altitude constraints on the MCDU follow the basic rules
- The target altitude on the PFD is QFE related:
  - If the target altitude has been selected by the FCU, the aircraft will level off there.
  - If the target altitude is an altitude constraint, the PFD automatically shows that constraint as corrected by the airport elevation.



PROCEDURES

Ident.: DSC-22_20-60-10-00000928.0001001 / 16 FEB 11
Applicable to: ALL

a. The altitude constraints in departure and arrival procedures should be defined in the navigation database or by the pilot on the MCDU:
   - in terms of altitude AMSL below the transition altitude
   - in terms of flight level above the transition altitude

   If a departure procedure defines an altitude constraint as an AMSL altitude above the transition altitude, you must convert it to STD, because the system and guidance will treat it as a flight level whenever you select the standard barometer setting.

b. In climb you should switch from QNH (or QFE) to STD on both EFIS control panels simultaneously when you reach the transition altitude.
   All MCDU altitude predictions and altitude constraints and all PFD altitude targets will be displayed as flight levels.

c. In descent, when ATC clears you to an altitude below the transition altitude, you can select QNH (or QFE) on both EFIS control panels simultaneously.
   All MCDU altitude predictions and contraints and PFD targets are now altitude AMSL.

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CLEARING THE SCRATCHPAD OF DATA OR MESSAGES

Ident.: DSC-22_20-60-20-00000929.0001001 / 16 FEB 11
Applicable to: ALL

Press the “CLR” key with a single brief touch to erase the last alphanumeric character inserted in the scratchpad.
Press the key for more than three seconds to erase all the data inserted in the scratchpad. If the scratchpad is empty, it displays “CLR”.

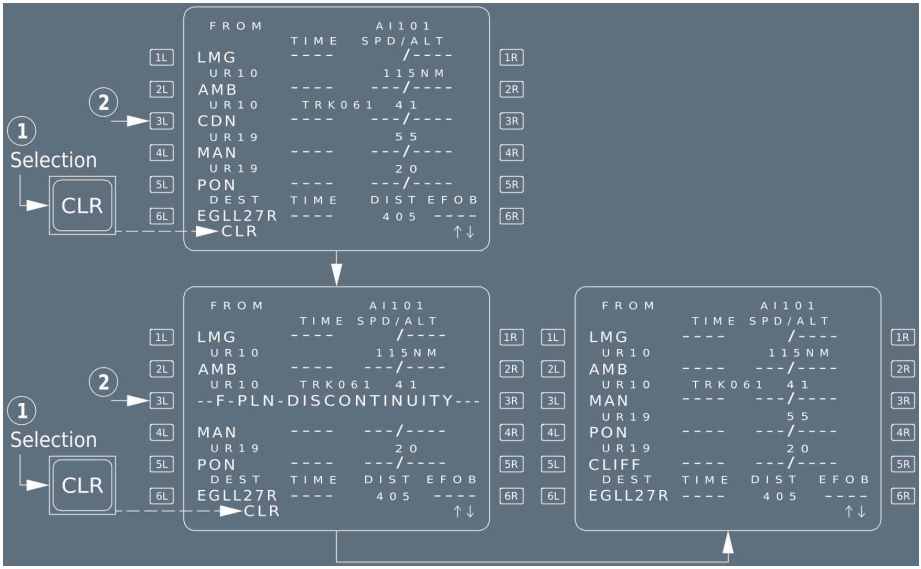
CLEARING DATA FIELDS

Ident.: DSC-22_20-60-20-00000930.0001001 / 16 FEB 11

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

Clear a data field by pressing the “CLR” key, the scratchpad displays CLR, then select the prompt for the field you want to clear (3L for example).

- You cannot clear all data fields:
  - If the field contains data that has a default value or a value computed by the FMGC, the data reverts to this value.
  - Any attempt to clear the defaulted value has no effect.
- Clearing a constraint on the F-PLN page deletes both the speed constraint and the altitude constraint associated with the waypoint
- If you clear a data field that is a waypoint in the flight plan (primary or secondary), you delete this waypoint from the flight plan and create a discontinuity. The discontinuity can also be cleared in a similar way.



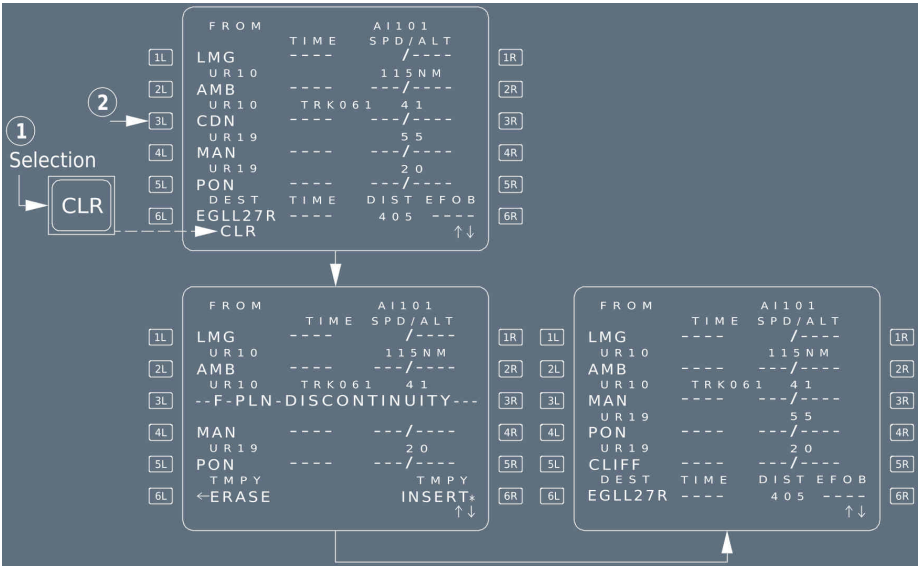
CLEARING DATA FIELDS

Ident.: DSC-22_20-60-20-00000930.0002001 / 16 FEB 11

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Clear a data field by pressing the “CLR” key, the scratchpad displays CLR, then select the prompt for the field you want to clear (3L for example). This results in the creation of a temporary F-PLN. The function has no effect on the active F-PLN until the temporary is inserted.

- You cannot clear all data fields:
  - If the field contains data that has a default value or a value computed by the FMGC, the data reverts to this value.
  - Any attempt to clear the defaulted value has no effect.
- Clearing a constraint on the F-PLN page deletes both the speed constraint and the altitude constraint associated with the waypoint.
- If you clear a data field that is a waypoint in the flight plan (primary or secondary), you delete this waypoint from the flight plan and create a discontinuity. The discontinuity can also be cleared in a similar way.


1
Selection
CLR
2
FROM AI101
TIME SPD/ALT
LMG ---- /----
UR10 115NM
AMB ---- ---/----
UR10 TRK061 41
CDN ---- ---/----
UR19 55
MAN ---- ---/----
UR19 20
PON ---- ---/----
DEST TIME DIST EFOB
EGLL27R ---- 405 ----
CLR
--F-PLN-DISCONTINUITY---
TMPY TMPY
←ERASE INSERT*
CLIFF ---- ---/----
1L 2L 3L 4L 5L 6L 1R 2R 3R 4R 5R 6R

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GENERAL

Ident.: DSC-22_20-60-30-00000932.0002001 / 16 FEB 11
Applicable to: ALL

Various features are provided to the crew in order to execute a diversion:
- The EQUITIME POINT
- The CLOSEST AIRPORTS pages
- The SECONDARY F-PLN
- The ENABLE ALTN function
- The NEW DEST revision

DIVERSION TO PREPLANNED ALTERNATE AIRPORT

Ident.: DSC-22_20-60-30-00000933.0003001 / 16 FEB 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

This would probably occur at the end of the cruise phase, during descent or go-around. The pilot can use this method for diverting if the primary flight plan includes an alternate flight plan from destination to a suitable alternate airport.

When decided to divert to the alternate airport from a given waypoint, simply execute an “ENABLE ALTN” (enable alternate) revision:

SELECT “LAT REV” at a given waypoint
PRESS the “ENABLE ALTN” key
CHECK the temporary flight plan (TMPY F-PLN) and INSERT.
USE the DIR TO function to go to the required waypoint.

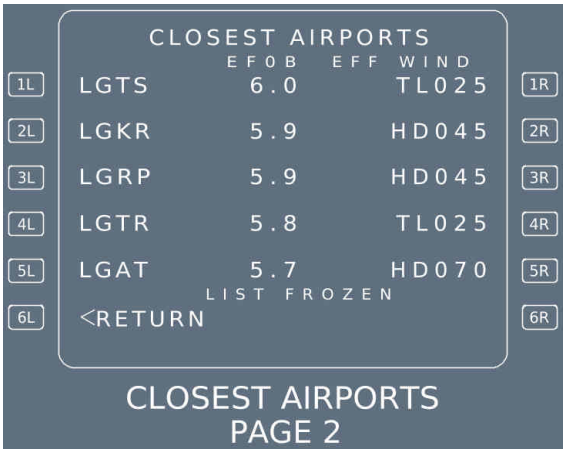
Note: *In most cases, the LAT REV shall be selected at the TO waypoint. This will facilitate the subsequent selection of the DIR TO waypoint.*

EN ROUTE DIVERSION WITH SEVERAL AIRPORTS AVAILABLE

Ident.: DSC-22_20-60-30-00009508.0002001 / 16 FEB 11

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

SELECT the CLOSEST AIRPORTS page.



SELECT the EFOB/WIND prompt.
INSERT the effective wind at selected airport.
CHECK the predictions and CHOOSE the adequate diversion airport.
PREPARE the diversion flight plan on the SEC F-PLN.

Note: *Fuel/time predictions on the CLOSEST AIRPORTS page assume managed speed profile.*

EN ROUTE DIVERSION WITH SEVERAL AIRPORTS AVAILABLE

Ident.: DSC-22_20-60-30-00009508.0004001 / 16 FEB 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

SELECT the CLOSEST AIRPORTS page.

SELECT the EFOB/WIND prompt, to access the CLOSEST AIRPORTS Page 2.
CHECK/INSERT the effective wind at the selected airports.
CHECK the predictions and CHOOSE the adequate diversion airport.
PREPARE the diversion flight plan on the SEC F-PLN.

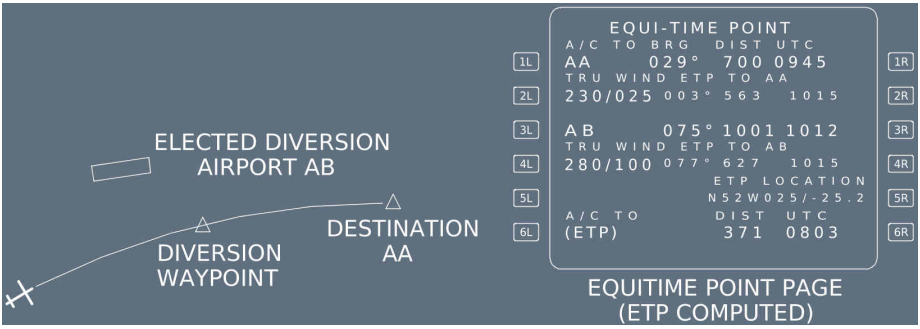
Note: *Fuel/time predictions on the CLOSEST AIRPORTS page assume managed speed is used.*

EN ROUTE DIVERSION OVER OCEANIC OR DESERTIC AREA

Ident.: DSC-22_20-60-30-00009528.0001001 / 16 FEB 11
Applicable to: ALL

The diversion airports are usually determined before departure or using the CLOSEST AIRPORTS data.

SELECT the EQUI-TIME POINT page.



ENTER the airport idents in 1L and 3L fields.
ENTER the associated winds in 2L and 4L fields.
CHECK the ETP position and time.
ENTER a predicted time at ETP as time marker.
PREPARE a diversion flight plan on the secondary flight plan.

DIVERSION PREPARATION ON THE SECONDARY FLIGHT PLAN

Ident.: DSC-22_20-60-30-00009530.0002001 / 16 FEB 11

[2] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The following procedure shall be applied for all diversion cases, once the diversion airport has been selected, as well as the “most probable diversion point of the F-PLN”:

PRESS the SEC F-PLN key
PRESS the COPY ACTIVE prompt
SELECT a lateral revision at diversion waypoint
ENTER the ident of the diversion airport in the NEW DEST field.

Then finalize the flight plan between the diversion point and the diversion airport. When the diversion airport is no longer applicable or ETP is sequenced, repeat the same procedure for the next diversion airport.

MISCELLANEOUS

Ident.: DSC-22_20-60-30-00009531.0002001 / 16 FEB 11

[3] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

In some cases, the diversion airport may be simply chosen using the airports displayed on ND when AIRPORT is selected on the EIS control panel.

During oceanic or desertic area flights, the flight crew may use the PROG page, as follows:

ENTER the ident of the diversion airport in the 4R field of MCDU 1
ENTER the next diversion airport in the 4R field of MCDU 2
Then, the FMS continuously calculated the BRG/DIST to the selected diversion airports.
UPDATE the PROG pages when sequencing the ETP.

EXECUTION OF THE DIVERSION

Ident.: DSC-22_20-60-30-00009532.0001001 / 16 FEB 11

[4] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

When the crew decides to divert:

PRESS the SEC F-PLN key.
SELECT the ACTIVATE SEC prompt.
SELECT DIR TO required point.

DIVERSION TO THE ALTERNATE AIRPORT

Ident.: DSC-22_20-60-30-00009537.0001001 / 16 FEB 11

[5] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The primary F-PLN includes an alternate flight plan from destination to the preferred alternate airport. All fuel prediction and management (EXTRA fuel) take the alternate flight plan into consideration. If the crew decides to divert at the end of the cruise, or beyond the last ETP, or in the descent or go-around phases, this will most probably be to the alternate airport.

When the crew decides to divert:

SELECT a lateral revision at suitable waypoint
SELECT ENABLE ALTN prompt
CHECK the temporary flight plan and INSERT
SELECT DIR TO required waypoint

Note: - *In most cases, the LAT REV shall be selected at the TO WPT. This will facilitate the subsequent selection of the DIR TO waypoint.*
- *The ALTN flight plan shall be finalized, whenever the landing runway is known by the crew (before approach briefing).*
In most cases, this will ensure that the most probable flight plan is displayed on the MCDU once ENABLE ALTN is selected.

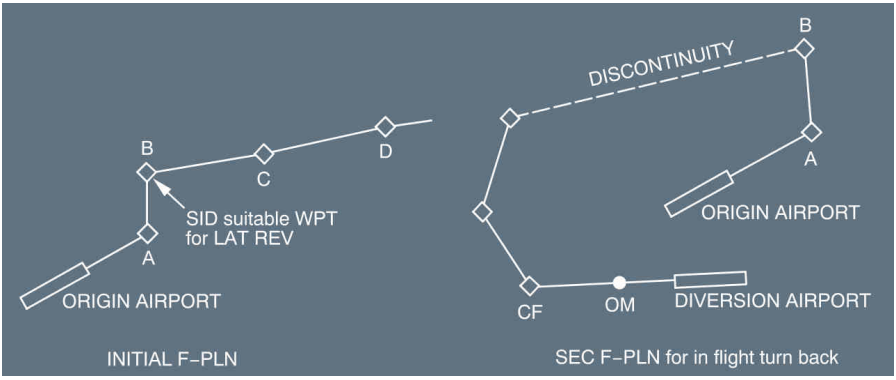
USING THE SECONDARY FLIGHT PLAN FUNCTION

Ident.: DSC-22_20-60-30-00000935.0002001 / 19 DEC 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Use the SEC F-PLN function if a secondary flight plan for diversion has been prepared:

WHILE THE AIRCRAFT IS ON THE GROUND,

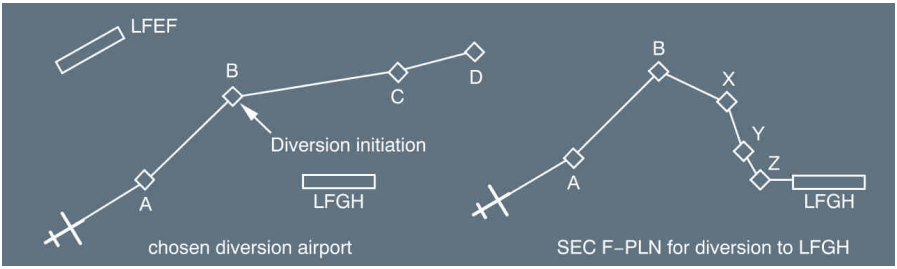
you have prepared the lateral path you would expect to use in case of an early in flight turn back (major failure after takeoff or during initial climbout), or the lateral path you would expect to use to land at a nearby diversion airport (weather at origin airport requires a takeoff alternate).



SELECT the “SEC F-PLN” key on the MCDU.
DEPRESS the “COPY ACTIVE” key.
SELECT “LAT REV” at a waypoint with a suitable SID.
ENTER the ident of the diversion airport as the new destination.
ENTER the expected approach and route.
DEPRESS the PERF prompt on SEC INDEX page.
SELECT the PERF APP page of the secondary F-PLN.
ENTER the QNH and wind.
SELECT the landing configuration.

TO PREPARE A DIVERSION, IN CRUISE PHASE

The flight crew should consider the adequate diversion airports as the aircraft proceeds along the route of the active flight plan. For this purpose, the CLOSEST AIRPORTS page, EQUI-TIME POINT function, or EFIS “Airports” feature on the ND may be used.
Once selected, the flight crew should enter the diversion airport as the destination of the secondary flight plan, and adjust the routing as required.



SELECT the “SEC F-PLN” function key on MCDU.
PRESS the “COPY ACTIVE” prompt.
USE the CLOSEST AIRPORTS page, the EQUI-TIME POINT function, or the “AIRPORT” display on the ND.

Choose an adequate diversion airport and diversion initial waypoint.

SELECT “LAT REV” at the chosen waypoint.
ENTER the new destination (NEW DEST field).
MODIFY/COMPLETE the lateral flight plan.

To initiate the prepared diversion:

The flight crew may initiate the diversion prepared in the SEC F-PLN, as follows:

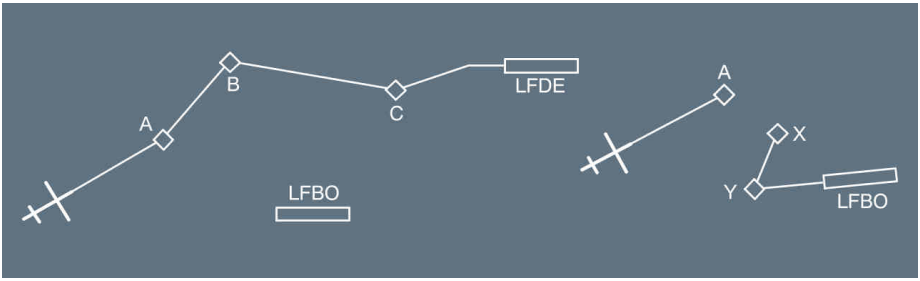
SELECT the “SEC F-PLN” key on the MCDU.
PRESS the “ACTIVE SEC” prompt [4L].

PERFORM a DIR TO to the desired waypoint in the new active flight plan.

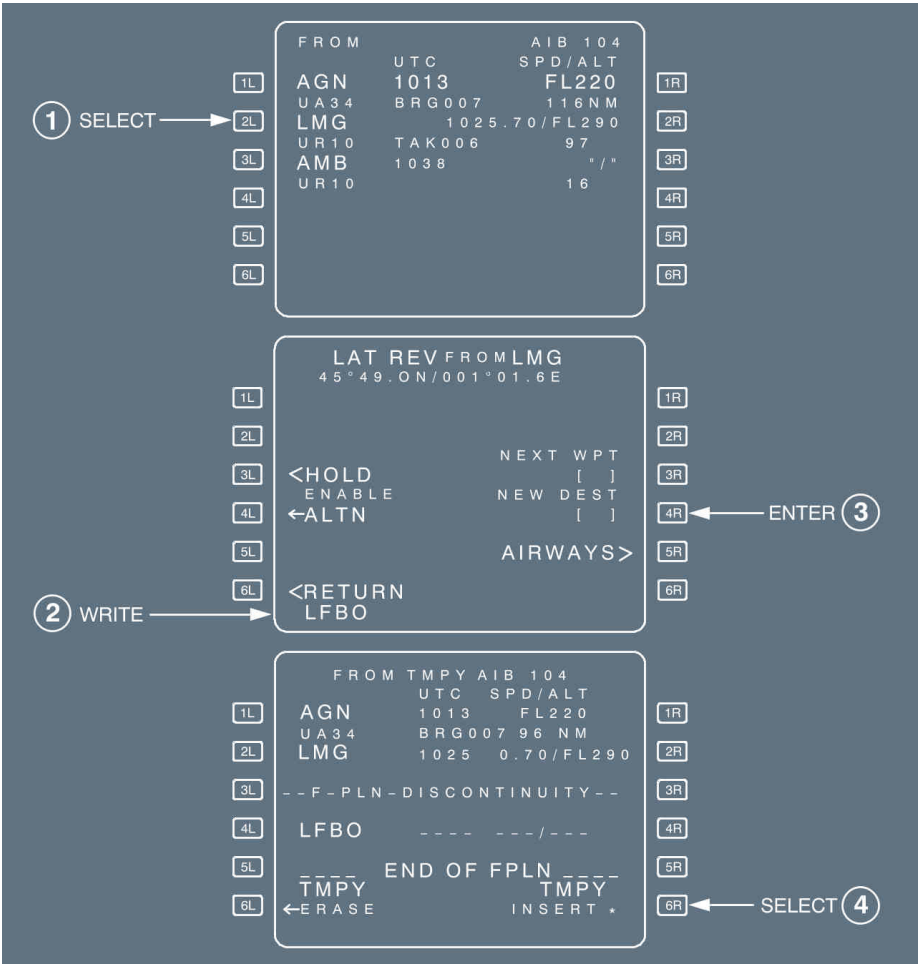
USING NEW DESTINATION FUNCTION

Ident.: DSC-22_20-60-30-00000936.0004001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

If the crew has not prepared a diversion in the SEC F-PLN, the “NEW DEST” function allows to make the required change on the active flight plan.
Because the crew will probably have to initiate the diversion quickly, the revision waypoint will probably be the “TO” waypoint.
The crew will have to adjust the resulting active flight plan in order to have the correct routing to destination and have the applicable performance data entered.



SELECT “LAT REV” at the “TO” waypoint.
ENTER the ident for the new destination in the NEW DEST field (4R).
In the TMPY F-PLN, COMPLETE the lateral flight plan to the diversion airport.
CHECK the TMPY F-PLN, and INSERT.
ENTER/CHECK performance data as applicable.
When the diversion is initiated, USE a “DIR TO” to the appropriate waypoint.



Note: *The temporary flight plan is displayed if the new destination airport is either in the Navigation Database, or in the pilot-defined runway file. Otherwise, the NEW RUNWAY page will appear so that the pilot can store a new runway.*

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GENERAL

Ident.: DSC-22_20-60-40-00000937.0001001 / 16 FEB 11
Applicable to: ALL

When the FMGS detects an engine-out condition, the following occurs:

FLIGHT MANAGEMENT PART

Ident.: DSC-22_20-60-40-00000938.0002001 / 16 FEB 11
Applicable to: MSN 02388

- The managed target speeds is immediately set to a value that depends upon the flight phase
- All preselected speeds entered in the MCDU are deleted
- Step climb (or step descent), if entered, is deleted
- The time constraint is deleted
- The PROG page shows the engine-out maximum recommended (EO MAX REC) altitude
- The system automatically calls up the current performance page, which has the EO CLR (engine-out clear) prompt displayed in the 1R field (except during takeoff, before the diversion point is reached).
  If the crew presses the EO CLR, the 2 engine predictions and performance will be restored. Reverting back to one engine-out performance is not possible, unless the system detects a new EO condition. Therefore, the pilot should not press the EO CLR key, if an actual engine-out is detected
- It is not permitted to use the autopilot to perform non precision approaches in engine-out in the following modes: FINAL APP, NAV V/S, NAV/FPA. Only FD use is authorized.

FLIGHT MANAGEMENT PART

Ident.: DSC-22_20-60-40-00000938.0026001 / 16 MAR 11
1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

- The managed target speeds is immediately set to a value that depends upon the flight phase
- All preselected speeds entered in the MCDU are deleted
- Step climb (or step descent), if entered, is deleted
- The time constraint is deleted

- The PROG page shows the engine-out maximum recommended (EO MAX REC) altitude
- The system automatically calls up the current performance page, which has the EO CLR (engine-out clear) prompt displayed in the 1R field (except during takeoff, before the diversion point is reached).
  If the crew presses the EO CLR, the 2 engine predictions and performance will be restored. Reverting back to one engine-out performance is not possible, unless the system detects a new EO condition. Therefore, the pilot should not press the EO CLR key, if an actual engine-out is detected

FLIGHT MANAGEMENT PART

Ident.: DSC-22_20-60-40-00000938.0020001 / 16 FEB 11
Applicable to: MSN 02443, 02914, 03264-03330

- The managed target speeds is immediately set to a value that depends upon the flight phase
- The following pilot entries are deleted: preselected speeds, steps, time constraints
- No predictions are available for the ALTN flight plan, and the associated fields are dashed
- Predictions on the secondary flight plan are lost, if it is a copy of the active flight plan
- The PROG page shows the engine-out maximum recommended (EO MAX REC) altitude
- The system automatically calls up the current performance page, which has the EO CLR (engine-out clear) prompt displayed in the 1R field (except during takeoff, before the diversion point is reached).
  If the crew presses the EO CLR, the 2 engine predictions and performance will be restored. Reverting back to one engine-out performance is not possible, unless the system detects a new EO condition. Therefore, the pilot should not press the EO CLR key, if an actual engine-out is detected
- It is not permitted to use the autopilot to perform non precision approaches in engine-out in the following modes: FINAL APP, NAV V/S, NAV/FPA. Only FD use is authorized.

FLIGHT MANAGEMENT PART

Ident.: DSC-22_20-60-40-00000938.0030001 / 16 MAR 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405, 02482, 02712, 02908, 03071-03138, 03357-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

- The managed target speeds is immediately set to a value that depends upon the flight phase
- The following pilot entries are deleted: preselected speeds, steps, time constraints
- No predictions are available for the ALTN flight plan, and the associated fields are dashed
- Predictions on the secondary flight plan are lost, if it is a copy of the active flight plan

- The PROG page shows the engine-out maximum recommended (EO MAX REC) altitude
- The system automatically calls up the current performance page, which has the EO CLR (engine-out clear) prompt displayed in the 1R field (except during takeoff, before the diversion point is reached).
  If the crew presses the EO CLR, the 2 engine predictions and performance will be restored. Reverting back to one engine-out performance is not possible, unless the system detects a new EO condition. Therefore, the pilot should not press the EO CLR key, if an actual engine-out is detected

FLIGHT GUIDANCE PART

Ident.: DSC-22_20-60-40-00000939.0002001 / 04 JUL 17
Applicable to: ALL

- All selected modes remain available (the “HDG/TRK”, “V/S”, and “OPEN” modes, for example)
- In the speed reference system (SRS) mode, the takeoff speed target is V2, or the current speed if it is higher but no more than V2 +15. The magenta triangle indicates V2 in all cases. The GO Around speed target is VAPP, or the current speed if higher, limited to VLS +15 kt
- The system limits autopilot (AP) and flight director (FD) bank angles during takeoff and approach phases as follows:
  - 15 ° when the aircraft speed is below the maneuvering speeds (F, S, or Green Dot speed) -10 kt , and then
  - In selected lateral guidance:
    - Linear increase to 25 ° up to maneuvering speeds (F, S, or Green Dot speed) -3 kt
    - 25 ° above maneuvering speeds (F, S, or Green Dot speed) -3 kt .
  - In managed lateral guidance:
    - Linear increase to 30 ° up to maneuvering speeds (F, S, or Green Dot speed) -3 kt
    - 30 ° above maneuvering speeds (F, S, or Green Dot speed) -3 kt .

Note: *The engine-out bank angle limits apply, when the FG part of the FMGS has detected an engine-out. It cannot be cleared by the crew through the MCDU EO CLEAR prompt.*

AUTOTHRUST

Ident.: DSC-22_20-60-40-00000940.0001001 / 16 FEB 11
Applicable to: ALL

The system extends the active range of the active engine from idle to maximum continuous thrust (MCT instead of CL thrust).

The Flight Mode Annunciator requests maximum continuous thrust on the live engine at a time that depends on when the engine-out occurs.

ENGINE-OUT CONDITIONS

Ident.: DSC-22_20-60-40-00000941.0001001 / 16 FEB 11

2 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The FMGS considers the aircraft to be in an engine-out condition, when one of the following conditions is present and the aircraft has commenced takeoff or is in flight:

- One engine master switch off, or
- N2 below idle, or
- One thrust lever angle is below 5 ° with the other above 22 °, or
- The FADEC shows an engine fault.

ENGINE-OUT CONDITIONS

Ident.: DSC-22_20-60-40-00000941.0002001 / 16 FEB 11

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The FMGS considers the aircraft to be in an engine-out condition, when one of the following conditions is present and the aircraft has commenced takeoff or is in flight:

- One engine master switch off for CFM engines, one engine shut down for IAE engines,
- N2 below idle, or
- One thrust lever angle is below 5 ° with the other above 22 °, or
- The FADEC shows an engine fault.

ENGINE-OUT SID

Ident.: DSC-22_20-60-40-A-00000942.0001001 / 14 MAY 12

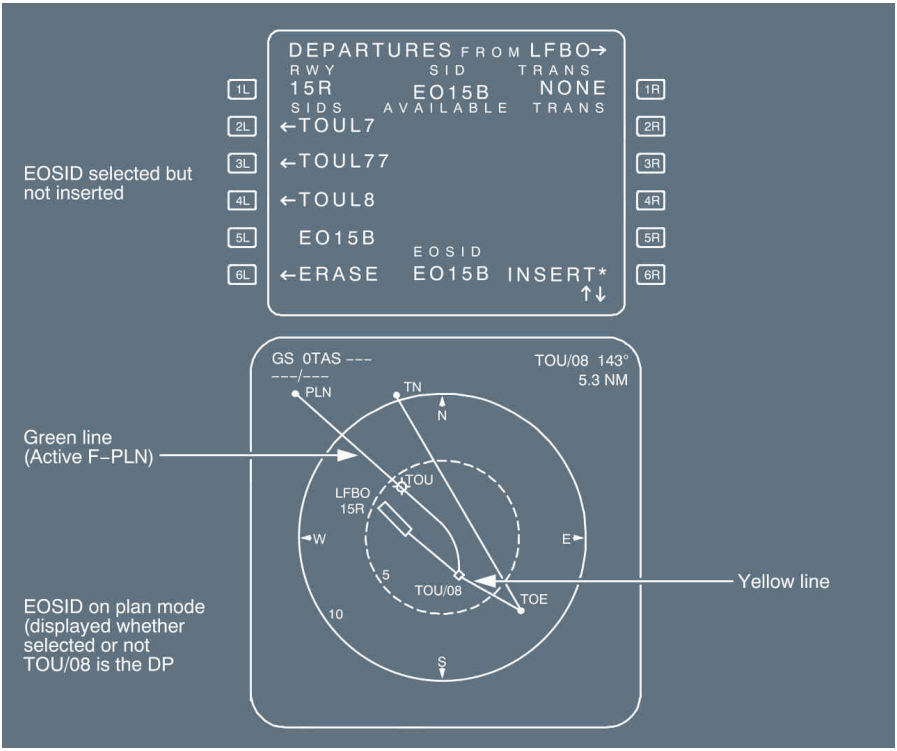
3 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

GENERAL

An engine-out standard instrument departure (EOSID), when defined in the database, is always for a specific runway. It is indicated on the bottom line of the SID page for that runway, and you can select it manually.

The pilot can review the SID either by selecting the PLAN mode on the navigation display (solid yellow line), or by selecting it on the SID page. In the latter case, the navigation display shows the SID as a temporary flight plan.

The last point, if any, that is common to both the SID and engine-out SID is called the diversion point (DP).



Ident.: DSC-22_20-60-40-A-00000942.0002001 / 18 NOV 13
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

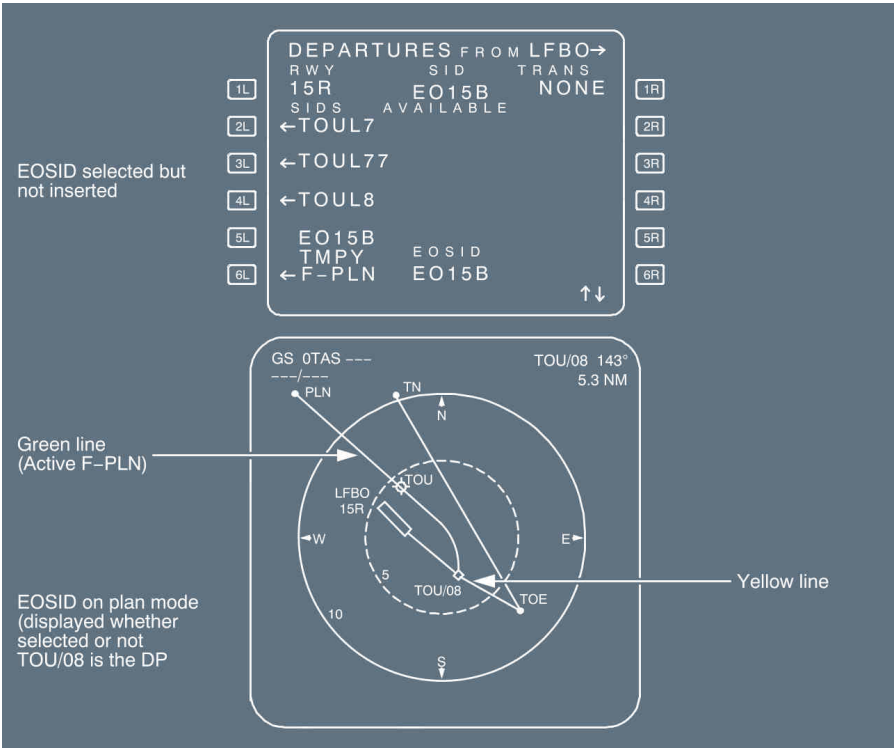
GENERAL

An engine-out standard instrument departure (EOSID), when defined in the database, is always for a specific runway. It is indicated on the bottom line of the SID page for that runway, and you can select it manually.

The pilot can review the SID either by selecting the PLAN mode on the navigation display (solid yellow line), or by selecting it on the SID page. In the latter case, the navigation display shows the SID as a temporary flight plan.

The last point, if any, that is common to both the SID and engine-out SID is called the diversion point (DP).

Note: When several EOSID exist for a specific runway, the FMS only considers the first EOSID in alphabetical order in case of engine-out, whatever the EOSID previously selected.



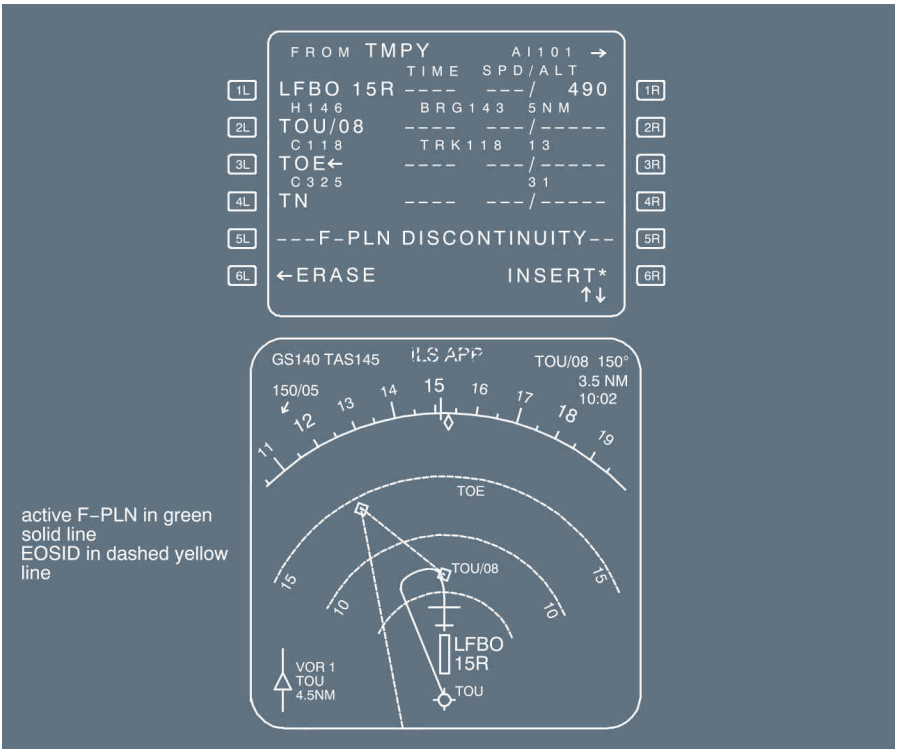
Ident.: DSC-22_20-60-40-A-00000943.0001001 / 14 MAY 12

[4] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

WHEN AN ENGINE-OUT CONDITION OCCURS BEFORE THE DIVERSION POINT

The MCDU automatically shows the engine-out SID as a temporary flight plan on the F-PLN page and on the ND. The EOSID can be inserted or erased.

Note: *The EOSID Diversion Point is the waypoint at which the EOSID diverges from the active SID.*
If there is no common leg between the SID and the EOSID in the navigation database, the diversion point is by default the runway threshold. Therefore the SID and EOSID common leg(s) before the flight paths separation must be the same type and nature.

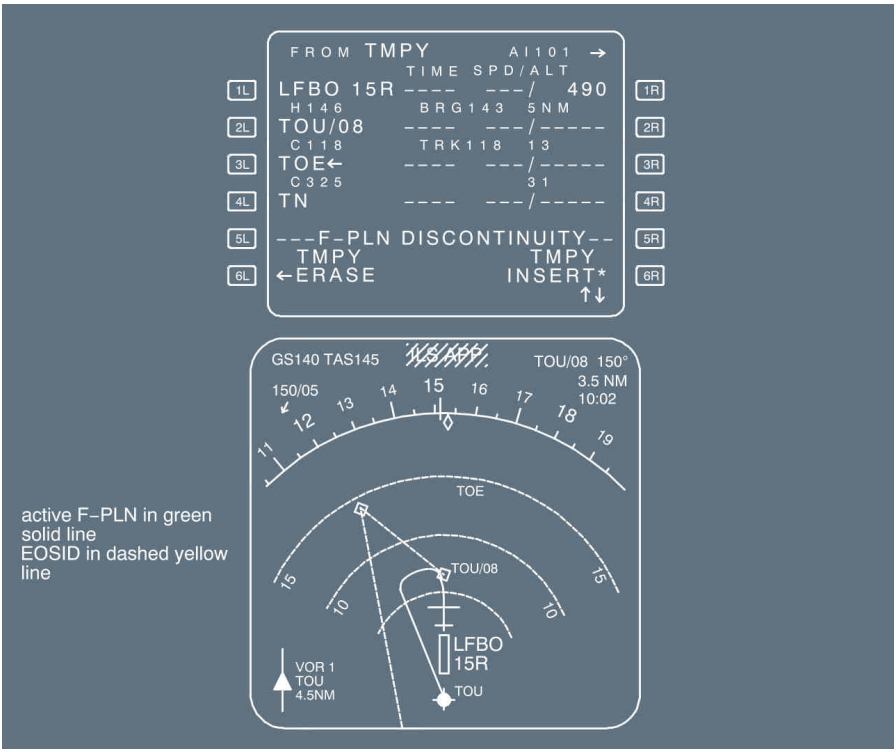


Ident.: DSC-22_20-60-40-A-00000943.0002001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

WHEN AN ENGINE-OUT CONDITION OCCURS BEFORE THE DIVERSION POINT

The MCDU automatically shows the engine-out SID as a temporary flight plan on the F-PLN page and on the ND. The EOSID can be inserted or erased.

Note: *The EOSID Diversion Point is the waypoint at which the EOSID diverges from the active SID.*
If there is no common leg between the SID and the EOSID in the navigation database, the diversion point is by default the runway threshold. Therefore the SID and EOSID common leg(s) before the flight paths separation must be the same type and nature.

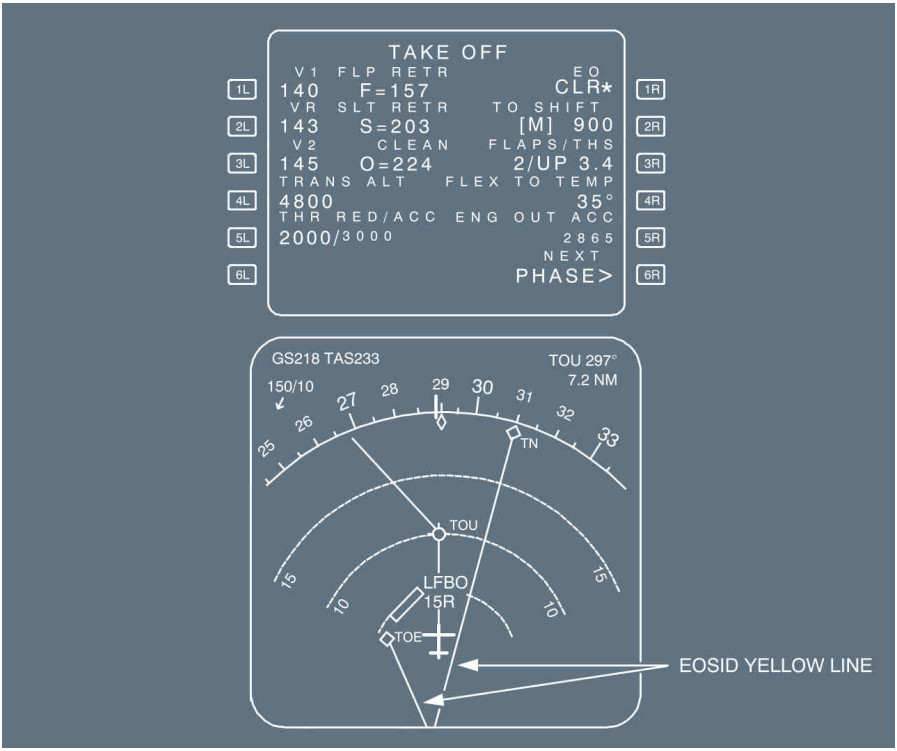


Ident.: DSC-22_20-60-40-A-00000944.0001001 / 14 MAY 12
Applicable to: ALL

WHEN AN ENGINE-OUT CONDITION OCCURS AFTER THE DIVERSION POINT

REMAIN on the SID path

Note: *The navigation display shows the engine-out SID as a yellow line for your information. Directing the aircraft to the EOSID should not be performed unless it allows obstacle clearance and the flight crew considers it is the best strategy for a particular case.*

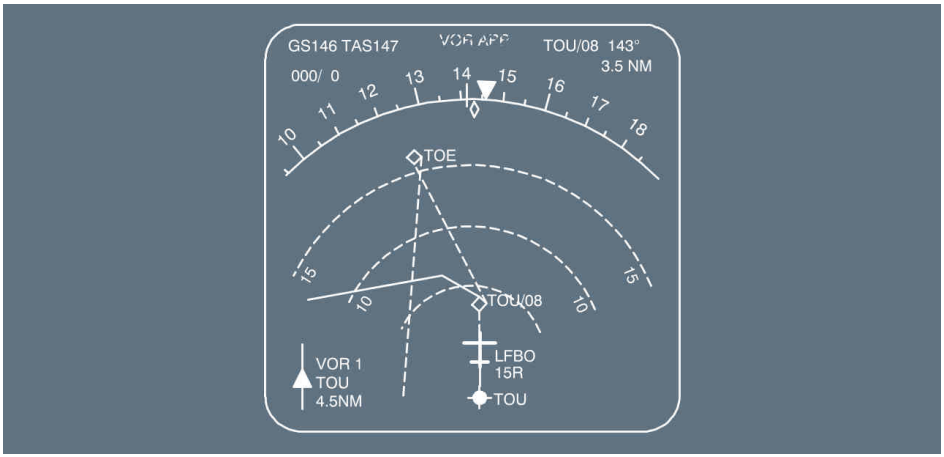


Ident.: DSC-22_20-60-40-A-00000945.0002001 / 14 MAY 12
Applicable to: ALL

BELOW THRUST-REDUCTION (THR RED) ALTITUDE

- The managed target speed changes to V2
- The PROG page displays the engine-out maximum recommended altitude

- The PERF TO page comes up on the display automatically with the “EO CLR” prompt in the 1R field
- The MCDU and the navigation display show the engine-out SID as a temporary flight plan, or the navigation display shows it for information only, depending upon the diversion point location.



PROCEDURE

- **When the aircraft reaches the engine-out acceleration altitude**
  PUSH in the V/S knob to level off.
  CLEAN up your configuration as the speed increases toward target speed.
  When the aircraft is clean and has reached Green Dot speed, “LVR MCT” flashes on the FMA,
  PULL out the altitude selector knob to resume the climb.
  The OP CLB. mode engages.
  MOVE the thrust lever for the live engine to “MCT” detent.

Ident.: DSC-22_20-60-40-A-00000946.0006001 / 16 FEB 11
Applicable to: ALL

ABOVE THRUST REDUCTION (THR RED) ALTITUDE

- The managed target speed changes to V2
- “LVR MCT” flashes amber on the flight mode annunciator
- The PROG page displays the engine-out maximum recommended altitude
- The PERF TO page displays the “EO CLR*” prompt in the 1R field
- The navigation display shows the EO SID.

PROCEDURE

MOVE the thrust lever of the active engine to the MCT detent.

- **When the aircraft reaches the engine-out acceleration altitude:**
  PUSH the V/S knob, in order to level off.
  CLEAN UP configuration as the speed increases.
- **When the aircraft reaches Green Dot speed:**
  PULL the ALT knob to resume the climb.

Note: If necessary, move the thrust lever of the active engine to the TOGA detent. The Flight Mode Annunciator will display "LVR MCT", flashing in white, when the aircraft reaches Green Dot speed.

ENGINE-OUT IN CLB PHASE (ABOVE ACCELERATION ALTITUDE)

Ident.: DSC-22_20-60-40-B-00000947.0003001 / 16 FEB 11
Applicable to: ALL

ENGINE-OUT OCCURS WHILE AIRCRAFT IS ACTUALLY CLIMBING

- The managed target speed changes to Green Dot speed
- "LVR MCT" flashes white on the Flight Mode Annunciator
- The climb mode reverts to open climb (OP CLB) and the aircraft slowly decelerates down to Green Dot speed
- The MCDU shows the PERF CLB page with an "EO CLR*" (clear engine-out) prompt
- The PROG page shows the engine-out maximum recommended altitude (EO MAX REC ALT).

PROCEDURE

MOVE the thrust lever of the active engine to the MCT detent.
SET the altitude on the Flight Control Unit to an altitude below the engine-out maximum recovery altitude, as cleared by ATC.
INITIATE a diversion, when cleared to do so.

Ident.: DSC-22_20-60-40-B-00000948.0001001 / 16 FEB 11
[5] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

ENGINE-OUT OCCURS WHILE THE AIRCRAFT IS FLYING IN ALT MODE AT AN ALTITUDE SET ON THE FLIGHT CONTROL UNIT

- The target speed is set to engine-out cruise speed (EO CRZ SPD), computed at the altitude set on the Flight Control Unit, but limited by the limit speed (SPD LIM), if there is one.

Other consequences and procedures are similar to previous engine out climb.

ENGINE-OUT IN CRUISE PHASE

Ident.: DSC-22_20-60-40-00000949.0001001 / 21 MAR 17

6 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

- The system sets the managed target speed to the higher of engine-out cruise Mach number or speed, or current speed.
- "LVR MCT" (or MCT) flashes on the Flight Mode Annunciator.
- The PERF CRZ page appears with the "EO CLR*" (clear engine-out) prompt.
- The PROG page displays the engine-out maximum recommended altitude (EO MAX REC ALT).

PROCEDURE

Perform engine out abnormal procedure. *Refer to PER-OEI-GEN INTRODUCTION* "SINGLE ENGINE OPERATIONS"

- *For standard strategy, Refer to FCTM/PR-AEP-ENG Engine Failure During Cruise*
- *For obstacle strategy, Refer to FCTM/PR-AEP-ENG Engine Failure During Cruise*
- *For fixed strategy, Refer to FCTM/PR-AEP-ENG Engine Failure During Cruise*

Initiate a diversion if necessary.

Note: *The engine-out descent strategy requires disconnection of the autothrust, and descent in OPEN DES mode.*
Disconnecting the autothrust prevents an automatic setting of THR IDLE; therefore, the autopilot will fly the target speed in OP DES mode, with a thrust manually selected by the crew.
When reaching the FCU-selected altitude, or whenever normal descent is resumed to a lower altitude, reengage the autothrust.

ENGINE-OUT IN CRUISE PHASE

Ident.: DSC-22_20-60-40-00000949.0002001 / 21 MAR 17

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

- The system sets the managed target speed to the higher of engine-out cruise Mach number or speed, or current speed.
- "LVR MCT" (or MCT) flashes on the Flight Mode Annunciator.
- The PERF CRZ page appears with the "EO CLR*" (clear engine-out) prompt.
- The PROG page displays the engine-out maximum recommended altitude (EO MAX REC ALT).

PROCEDURE

Perform engine out abnormal procedure. *Refer to PER-OEI-GEN INTRODUCTION* "SINGLE ENGINE OPERATIONS"

- *For standard strategy, Refer to FCTM/PR-AEP-ENG Engine Failure During Cruise*
- *For obstacle strategy, Refer to FCTM/PR-AEP-ENG Engine Failure During Cruise*
- *For fixed strategy, Refer to FCTM/PR-AEP-ENG Engine Failure During Cruise*

Initiate a diversion if necessary.

Note: *The engine-out descent strategy requires disconnection of the autothrust, and descent in OPEN DES mode.*
Disconnecting the autothrust prevents an automatic setting of THR IDLE; therefore, the autopilot will fly the target speed in OP DES mode, with a thrust manually selected by the crew.
When reaching the FCU-selected altitude, or whenever normal descent is resumed to a lower altitude, reengage the autothrust.

CHECK the MIN DEST FOB value on the FUEL PRED page.
If necessary, update the ALTN fuel value, according to the chosen flight strategy.

ENGINE-OUT IN DESCENT PHASE

Ident.: DSC-22_20-60-40-00000951.0001001 / 16 FEB 11

7 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

- The managed target speed remains unchanged (ECON DES Mach number or speed, with any speed limitations).
- "LVR MCT" (or MCT) flashes on the Flight Mode Annunciator.
- The PERF DES page appears, showing the "EO CLR*" prompt.
- The PROG page displays the engine-out maximum recommended altitude (EO MAX REC ALT).
- The descent mode (if engaged) reverts to V/S, if the aircraft is above the EO REC MAX. If not, the descent mode is maintained.

PROCEDURE

MOVE the thrust lever for the live engine to the MCT detent.
If necessary, SELECT a suitable flight mode for descent.
DISCONNECT the autothrust and ADJUST thrust if necessary.

ENGINE-OUT IN DESCENT PHASE

Ident.: DSC-22_20-60-40-00000951.0004001 / 16 FEB 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

- The managed target speed remains unchanged (ECON DES Mach number or speed, with any speed limitations).
- “LVR MCT” (or MCT) flashes on the Flight Mode Annunciator.
- The PERF DES page appears, showing the “EO CLR*” prompt.
- The PROG page displays the engine-out maximum recommended altitude (EO MAX REC ALT).

PROCEDURE

MOVE the thrust lever for the live engine to the MCT detent.
If necessary, SELECT a suitable flight mode for descent.
DISCONNECT the autothrust and ADJUST thrust if necessary.

ENGINE-OUT IN APPROACH PHASE

Ident.: DSC-22_20-60-40-00000952.0001001 / 04 JUL 17
Applicable to: ALL

- The aircraft maintains approach speed (VAPP).
- “LVR MCT”(or MCT) flashes on the Flight Mode Annunciator.
- The PERF APPR page appears, showing the “EO CLR*” prompt.
- The progress page displays the engine-out maximum recommended altitude (EO MAX REC ALT).

PROCEDURE

MOVE the thrust lever for the live engine to the MCT detent.

CAUTION	Below maneuvering speed (F, S, Green Dot) – 10 kt, the autopilot or flight director (AP/FD) cannot order a bank angle greater than 15 °. Above maneuvering speed – 10 kt, this limit linearly increases until it reaches: - In selected lateral guidance: 25 ° at maneuvering speed – 3 kt. The limit is then 25 ° for all speeds above maneuvering speed – 3 kt. - In managed lateral guidance: 30 ° at maneuvering speed – 3 kt. The limit is then 30 ° for all speeds above maneuvering speed – 3 kt.

ENGINE-OUT IN GO-AROUND PHASE

Ident.: DSC-22_20-60-40-00000953.0002001 / 16 FEB 11
Applicable to: ALL

The results and procedures for takeoff phase apply, except that the displays do not show the engine-out SID.

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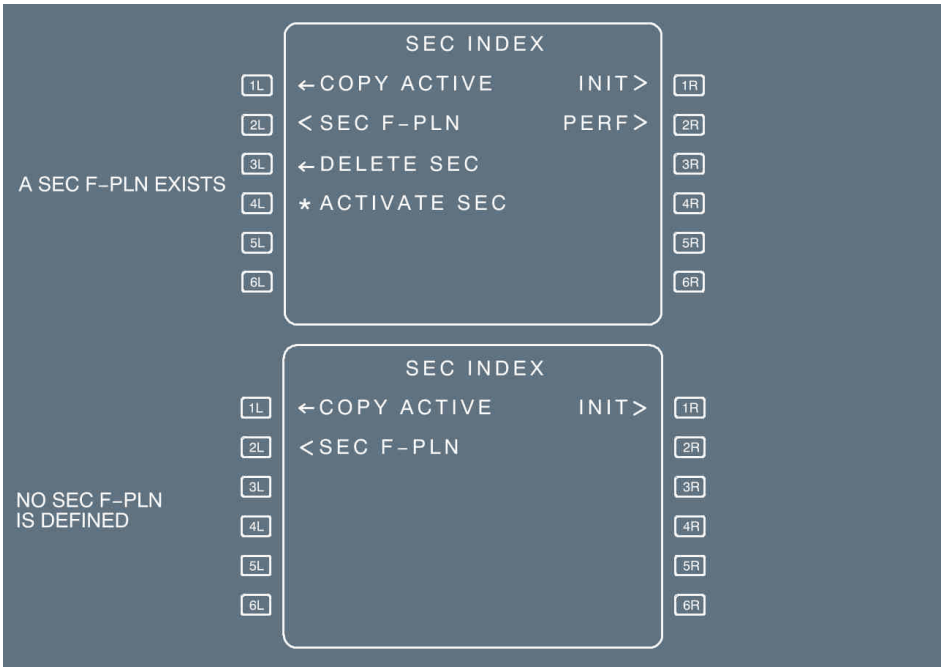
SECONDARY FLIGHT PLAN

Ident.: DSC-22_20-60-50-00000954.0004001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The secondary flight plan (SEC F-PLN) is an alternative flight plan which can be activated when required.
It may include all the vertical elements except history wind data.

The flight crew can:
- Create a secondary flight plan independently from the active flight plan (a secondary flight plan can be created while a temporary flight plan exists).
- Copy it from the active flight plan.
- Delete it completely.
- Activate it, when the “ACTIVATE SEC” prompt is displayed: The secondary flight plan becomes the active flight plan.



- The screen displays the “ACTIVATE SEC” prompt in flight if:
  - HDG (or TRK) mode is engaged, or
  - NAV mode is engaged, and the active leg of the primary and secondary flight plans is the same.
- The screen displays the “INIT” prompt in all cases.
  The FMS sequences the secondary flight plan the same way as the active flight plan, when it is a copy of the active flight plan.

The navigation display shows the secondary flight plan in white. In PLAN mode, the crew can use the slew keys to review the secondary flight plan (as for the primary flight plan).

PREDICTIONS

The FMGS computes predictions using the same performance methods and performance factor it uses for the active flight plan. However, it predicts pseudo waypoints only for the MCDU not for the Navigation Display (ND).
The FMGS does not provide any prediction in the secondary flight plan for the DESCENT, APPROACH and GO AROUND phases.

- **When the flight crew initializes the secondary flight plan with the SEC INIT function:**
  The FMGS computes the secondary flight plan predictions as if the aircraft were on ground before engine start. The FMGS computes these predictions one time and does not update them to indicate the progress of the flight (aircraft position, fuel consumption, etc.).
- **When the flight crew initializes the secondary flight plan with the COPY ACTIVE function:**
  - The FMGS computes the secondary flight plan predictions as for the active flight plan. However:
    - The FMGS stops the update of the predictions if the first leg of the active flight plan is no longer the same as the active leg (i.e. if both flight plans diverge). The flight phase is the same as the flight phase at the time of the divergence.

      Note: *This does not apply to the preflight phase, when the FMGS computes the predictions if the departure airports are the same, even if the takeoff runways are different.*
    - The FMGS stops the update and the display of the predictions when the aircraft reaches the Top of Descent of the primary flight plan, or the Top of Descent of the secondary flight plan, whichever the aircraft reaches first.
  - In the SEC F-PLN, the computed distance between the "TO" waypoint, and the following waypoints may be erroneous when:
    - The SEC F-PLN is created using the COPY ACTIVE function
    - Lateral modifications are performed in either the active, or the SEC F-PLN
    - The "TO" waypoint and/or the following waypoints differ between the ACTIVE, and the SEC F-PLN.

    Note: *1. As a result, in the SEC F-PLN, fuel and time predictions are also erroneous because they are computed using the erroneous distance.*
    2. If the SEC F-PLN is activated, the resulting ACTIVE F-PLN is not affected: distances and fuel/time computations in the active F-PLN are correct.

- **The flight crew may use the secondary flight plan in the following cases:**
  - At takeoff when an alternate takeoff runway is probable
  - On ground to initialize the FMGS again if the flight that the flight crew initially prepared is replaced by another flight (*Refer to PRO-NOR-SRP-01-05 Introduction*)
  - In flight to prepare a diversion
  - In flight when an alternate landing runway is probable
  - To prepare the next flight.

SECONDARY FLIGHT PLAN

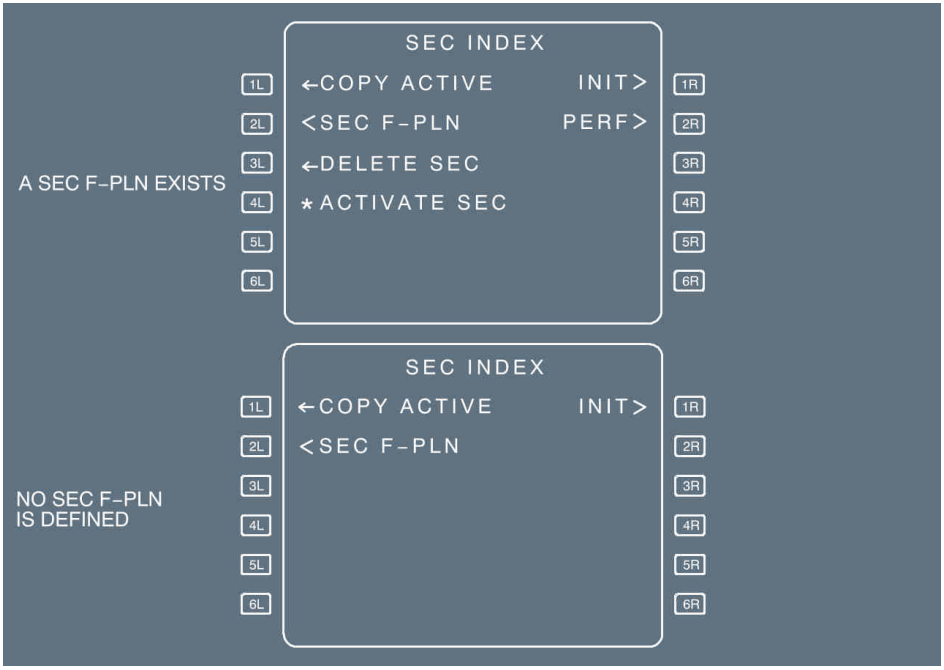
Ident.: DSC-22_20-60-50-00000954.0011001 / 14 MAY 12

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The secondary flight plan (SEC F-PLN) is an alternative flight plan which can be activated when required.
It may include all the vertical elements except history wind data.

The flight crew can:
- Create a secondary flight independently from the active flight plan (a secondary flight plan can be created while a temporary flight plan exists).
- Copy it from the active flight plan.
- Delete it completely.

- Activate it, when the “ACTIVATE SEC” prompt is displayed: The secondary flight plan becomes the active flight plan.



- The screen displays the “ACTIVATE SEC” prompt in flight if:
  - HDG (or TRK) mode is engaged, or
  - NAV mode is engaged, and the active leg of the primary and secondary flight plans is the same.

  The FMS sequences the secondary flight plan the same way as the active flight plan, when it is a copy of the active flight plan.

The navigation display shows the secondary flight plan in white. In PLAN mode, the crew can use the slew keys to review the secondary flight plan (as for the primary flight plan).

PREDICTIONS

The FMGS computes predictions using the same performance methods and performance factor it uses for the active flight plan. However, it predicts pseudo waypoints only for the MCDU not for the Navigation Display (ND).

- **When the flight crew initializes the secondary flight plan with the SEC INIT function:**
  The FMGS computes the secondary flight plan predictions as if the aircraft were on ground before engine start. The FMGS computes these predictions one time and does not update them to indicate the progress of the flight (aircraft position, fuel consumption, etc.).
- **When the flight crew initializes the secondary flight plan with the COPY ACTIVE function:**

  The FMGS computes the secondary flight plan predictions as for the active flight plan. However:
  - The FMGS stops the update of the predictions if the first leg of the active flight plan is no longer the same as the active leg (i.e. if both flight plans diverge). The flight phase is the same as the flight phase at the time of the divergence.

    Note: *This does not apply to the preflight phase, when the FMGS computes the predictions if the departure airports are the same, even if the takeoff runways are different.*

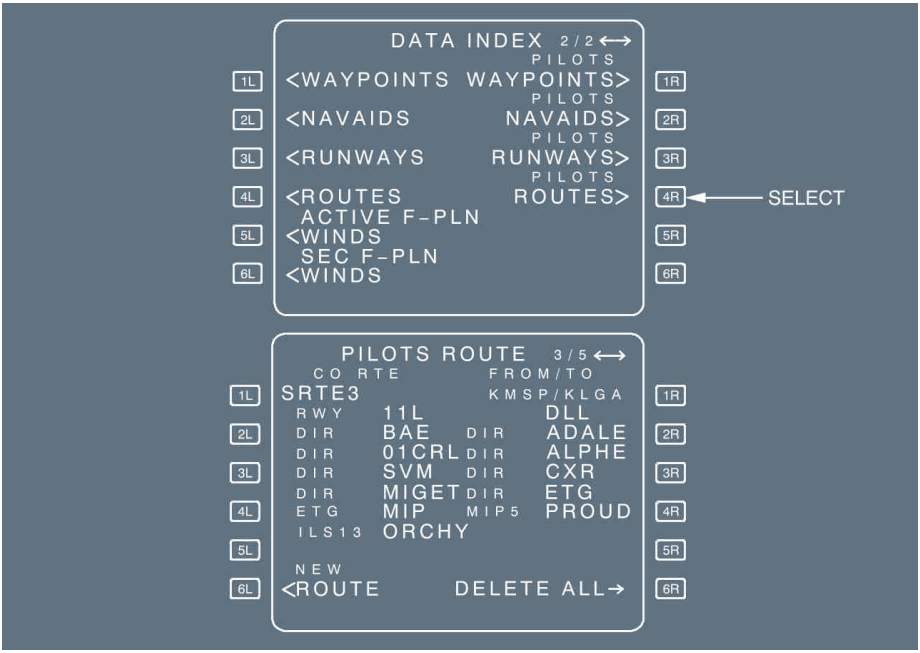
- **The flight crew may use the secondary flight plan in the following cases:**
  - At takeoff when an alternate takeoff runway is probable
  - On ground to initialize the FMGS again if the flight that the flight crew initially prepared is replaced by another flight (*Refer to PRO-NOR-SRP-01-05 Introduction*)
  - In flight to prepare a diversion
  - In flight when an alternate landing runway is probable
  - To prepare the next flight.

PILOTS ROUTE FUNCTION

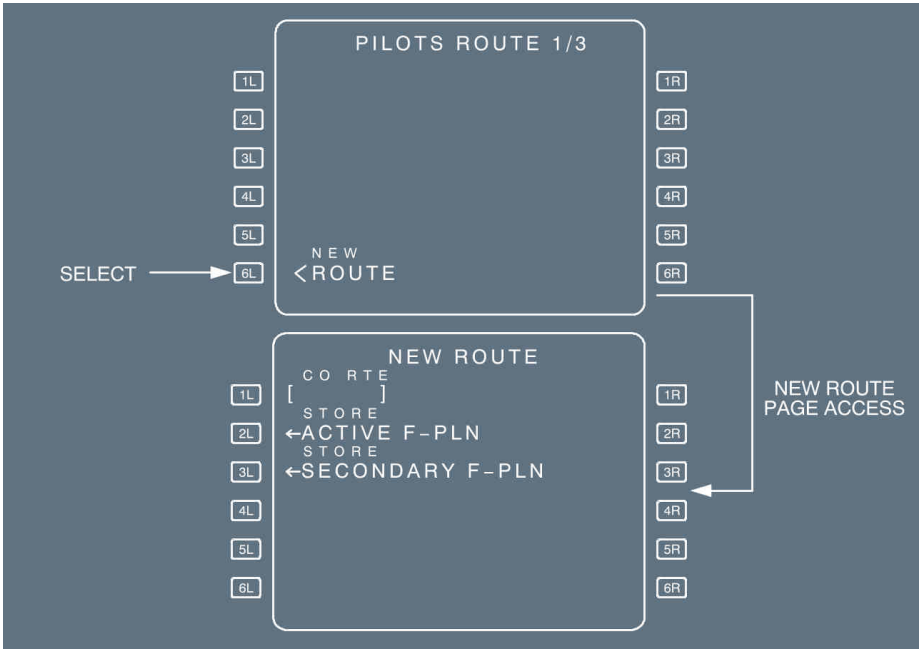
Ident.: DSC-22_20-60-60-00000955.0003001 / 01 OCT 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The pilot's route function allows the pilot to store or review as many as five different routes defined in an active or secondary flight plan.
This also allows the pilot to store a company route that is not yet in the database, but is expected to be flown several times (a charter route, for example).
Access the PILOTS ROUTES page from the DATA INDEX page.

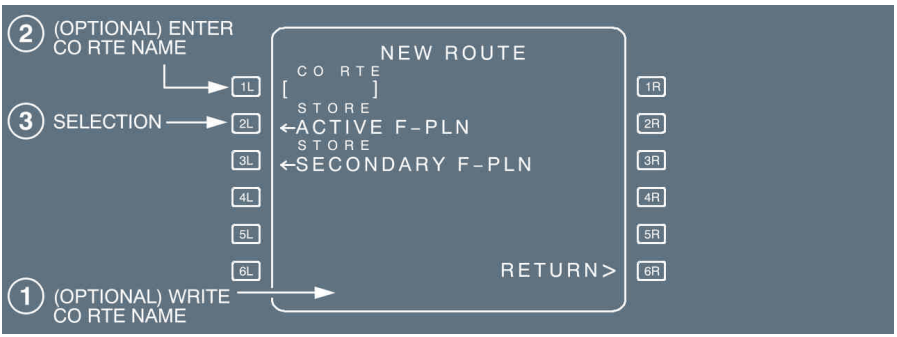


A stored route can be reviewed by using the slew key.
In order to store a new route, first define the route through the active flight plan (on the ground only) or the secondary flight plan (on the ground or in flight) then proceed as described below.



HOW TO STORE THE ACTIVE FLIGHT PLAN (DURING PREFLIGHT ONLY)

SELECT the DATA key on MCDU
PRESS the “PILOTS ROUTES” key
PRESS the “NEW ROUTE” key
ENTER the name of the company route (optional).
PRESS the “STORE ACTIVE F-PLN” key



HOW TO STORE THE SECONDARY FLIGHT PLAN

SELECT the DATA key on MCDU
PRESS the “PILOTS ROUTES” key
PRESS the “NEW ROUTE” key
ENTER the company route name (optional)
PRESS the “STORE SECONDARY F-PLN” key

Note:
1. *In either case, you may only store a company route if the active or secondary flight plan is complete from origin to destination.*
2. *If you do not enter a name, the FMGS automatically names the stored route as “SRTE 1 (or 2, ...)” when it is stored.*
3. *The system does not retain several elements of the flight plans, when they are stored:*
   - *Pilot-entered holds*
   - *Offsets*
   - *Pilot-entered constraints*
   - *Modifications to a terminal procedure*
   - *Pseudo waypoints*

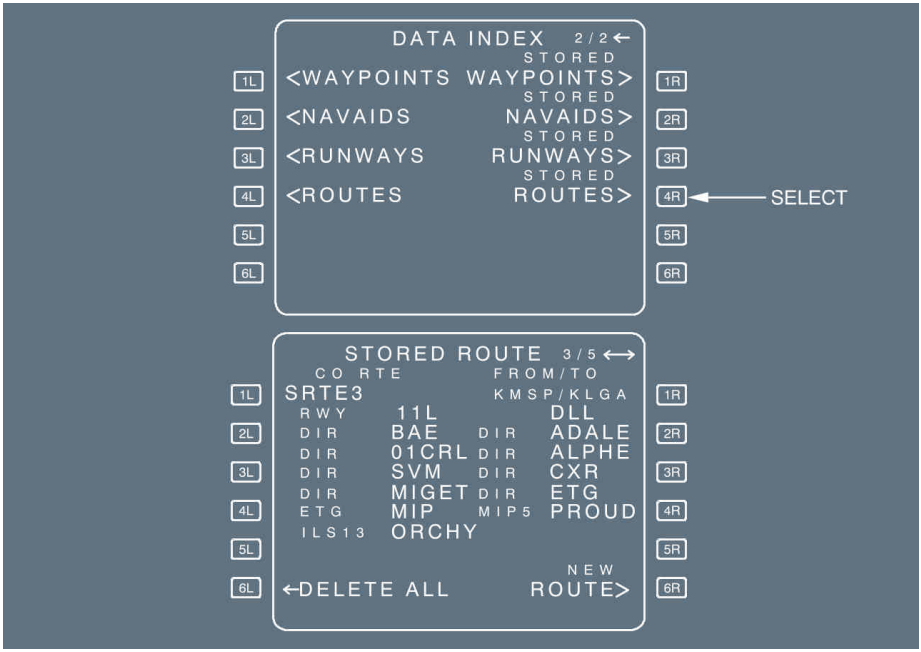
   When this happens, it displays “REVISIONS NOT STORED”.
4. *If five routes are already stored the system will reject a new entry and display “PILOTS ROUTES FULL” on the MCDU. Delete one stored route by clearing the CO RTE name before inserting a new one.*

STORED ROUTE FUNCTION

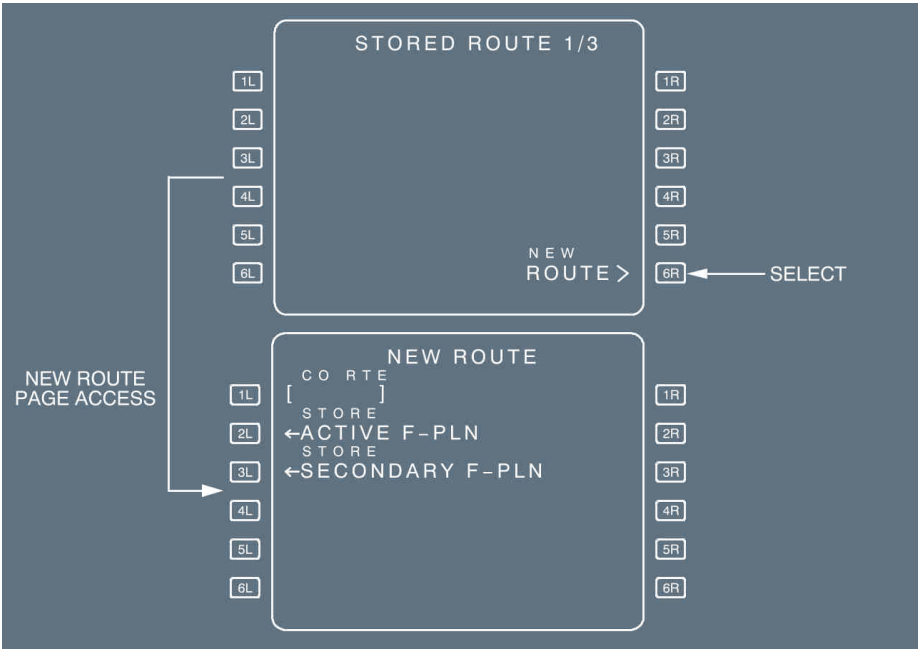
Ident.: DSC-22_20-60-60-00000955.0002001 / 01 OCT 12

[1] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The stored route function allows the pilot to store or review as many as five different routes defined in an active or secondary flight plan.
This also allows the pilot to store a company route that is not yet in the database, but is expected to be flown several times (a charter route, for example).
Access the STORED ROUTES page from the DATA INDEX page.

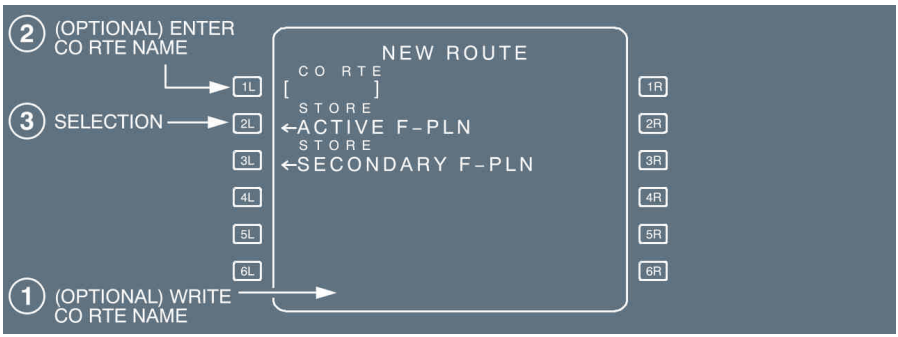


A stored route can be reviewed by using the slew key.
In order to store a new route, first define the route through the active flight plan (on the ground only) or the secondary flight plan (on the ground or in flight) then proceed as described below.



HOW TO STORE THE ACTIVE FLIGHT PLAN (DURING PREFLIGHT ONLY)

SELECT the DATA key on MCDU
PRESS the “STORED ROUTES” key
PRESS the “NEW ROUTE” key
ENTER the name of the company route (optional).
PRESS the “STORE ACTIVE F-PLN” key



HOW TO STORE THE SECONDARY FLIGHT PLAN

SELECT the DATA key on MCDU
PRESS the “STORED ROUTES” key
PRESS the “NEW ROUTE” key
ENTER the company route name (optional)
PRESS the “STORE SECONDARY F-PLN” key

Note:
1. *In either case, you may only store a company route if the active or secondary flight plan is complete from origin to destination.*
2. *If you do not enter a name, the FMGS automatically names the stored route as “SRTE 1 (or 2 ...)” when it is stored.*
3. *The system does not retain several elements of the flight plans, when they are stored:*
   - *Pilot-entered holds*
   - *Offsets*
   - *Pilot-entered constraints*
   - *Modifications to a terminal procedure*
   - *Pseudo waypoints*

   When this happens, it displays “REVISIONS NOT STORED”.
4. *If five routes are already stored the system will reject a new entry and display “STORED ROUTES FULL” on the MCDU. Delete one stored route by clearing the CO RTE name before inserting a new one.*

GENERAL

Ident.: DSC-22_20-60-70-00006017.0001001 / 16 FEB 11
Applicable to: ALL

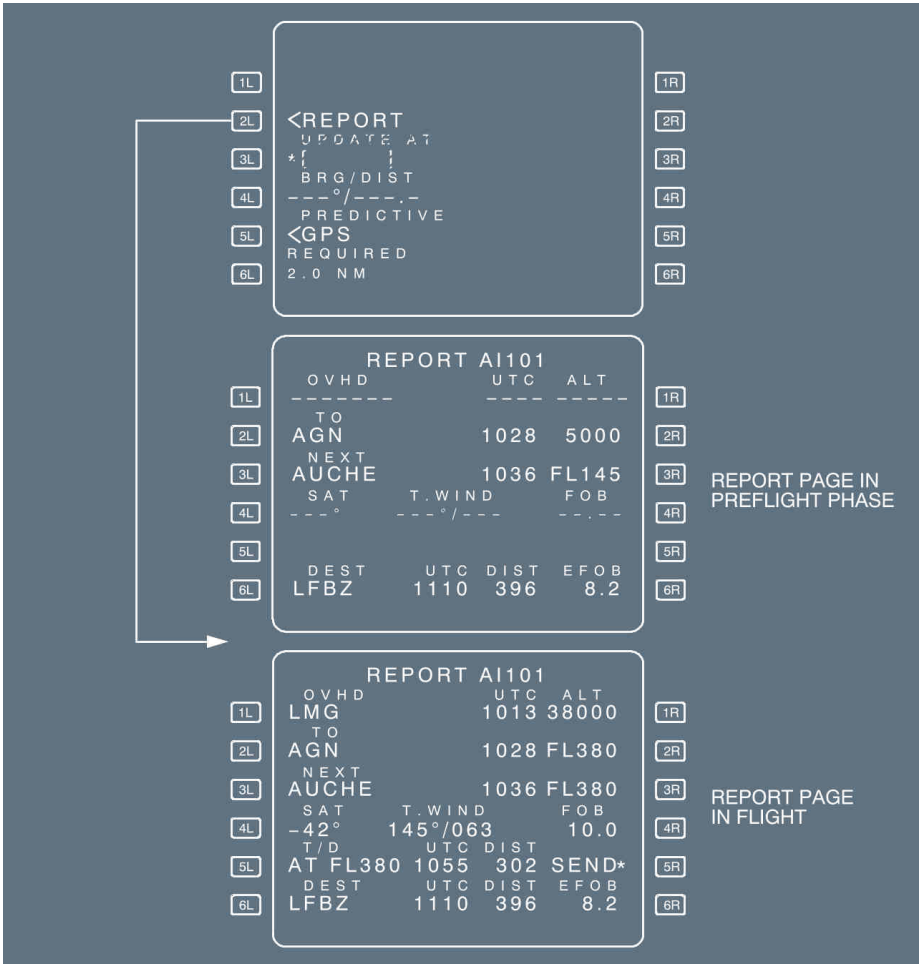
The REPORT page allows the crew to achieve the position reporting.

REPORT PAGE ACCESS

Ident.: DSC-22_20-60-70-00009524.0008001 / 29 SEP 15

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The report page is accessed from the PROG PAGE.



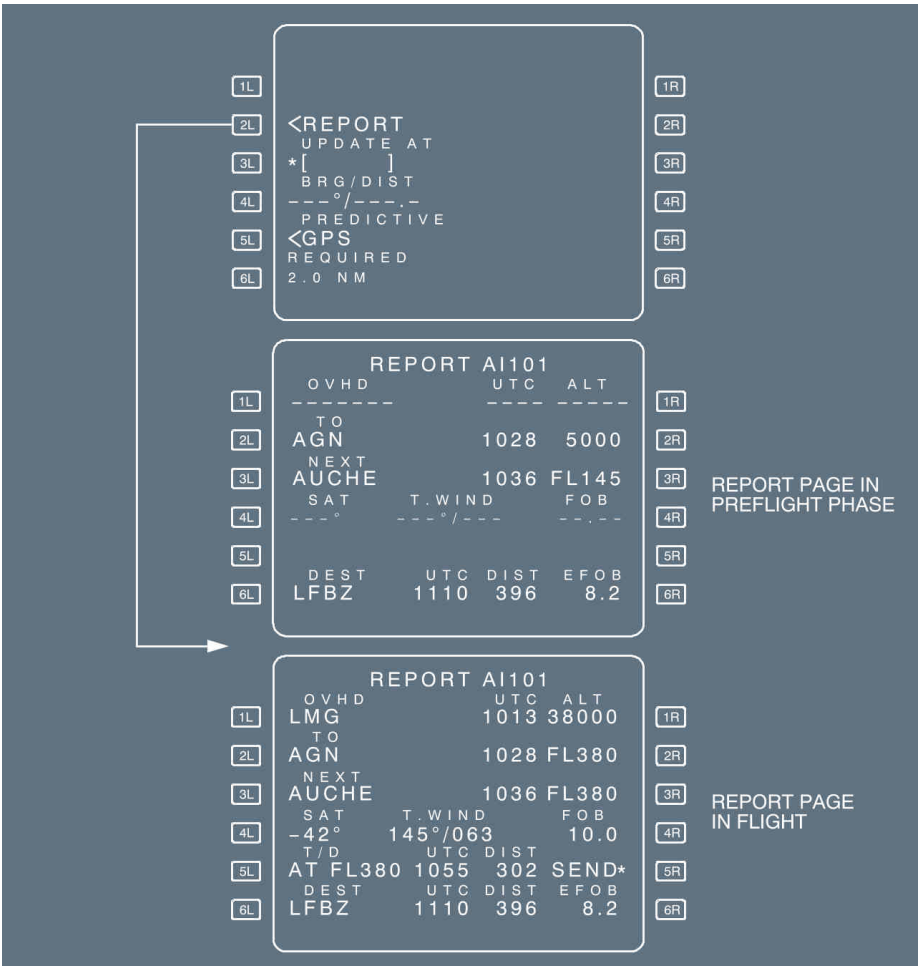
Note: *In case a DIR TO with ABEAM WPTs is achieved, or in case a FIX INFO with ABEAM or RADIAL/CIRCLE intersection is inserted in the F-PLN, the TO WPT (provided on the REPORT page) will be the ABEAM WPT or the RADIAL/CIRCLE intersect waypoint, if any, as on the F-PLN page.*

REPORT PAGE ACCES

Ident.: DSC-22_20-60-70-00009524.0010001 / 14 MAY 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The report page is accessed from the PROG PAGE.



Note: *In case a DIR TO with ABEAM WPTs is achieved, the TO WPT (provided on the REPORT page) will be the ABEAM WPT if any, as on the F-PLN page.*
Or in case a FIX INFO with ABEAM or RADIAL/CIRCLE intersection is inserted in the F-PLN, the TO WPT (provided on the REPORT page) will be the ABEAM WPT or the RADIAL/CIRCLE intersect waypoint, if any, as on the F-PLN page.

CLOSEST AIRPORTS

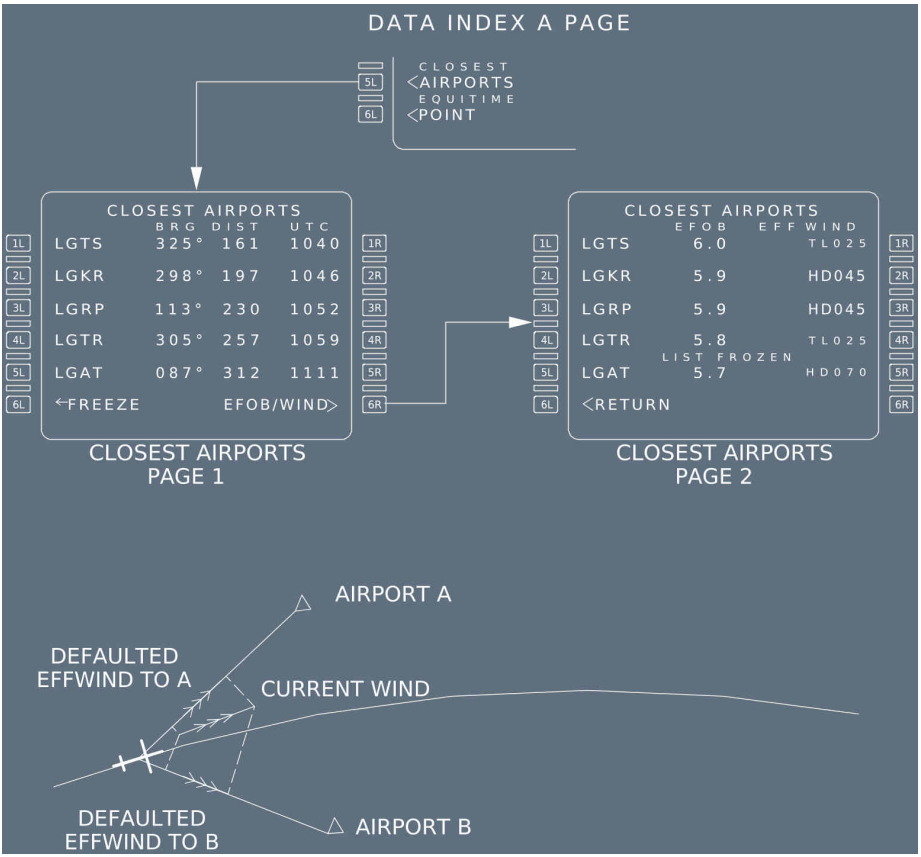
Ident.: DSC-22_20-60-80-00006018.0001001 / 07 APR 11

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The CLOSEST AIRPORTS page displays the four closest airports, from the position of the aircraft, found in the navigation database (*Refer to DSC-22_20-50-10-25 Closest Airports Pages*for the page description), and the 5th airport, as selected by the crew.

For each airport, the FM computes:

- The BRG/DIST/ESTIMATED UTC from the position of the aircraft to the corresponding airport.
- The EFOB at the airport, assuming an EFFECTIVE WIND (defaulted or entered by the pilot).



Note: *When the CLOSEST AIRPORTS page 2 is selected, the list of airports is automatically frozen, as indicated on the page.*

The FUEL/TIME predictions to the closest airports use simplified assumptions:
- Managed speed profile in cruise, with the effective wind from the CLOSEST AIRPORTS page 2. In case of EO, Engine Out condition is considered.
- Continuous descent from CRZ FL down to the airport elevation.

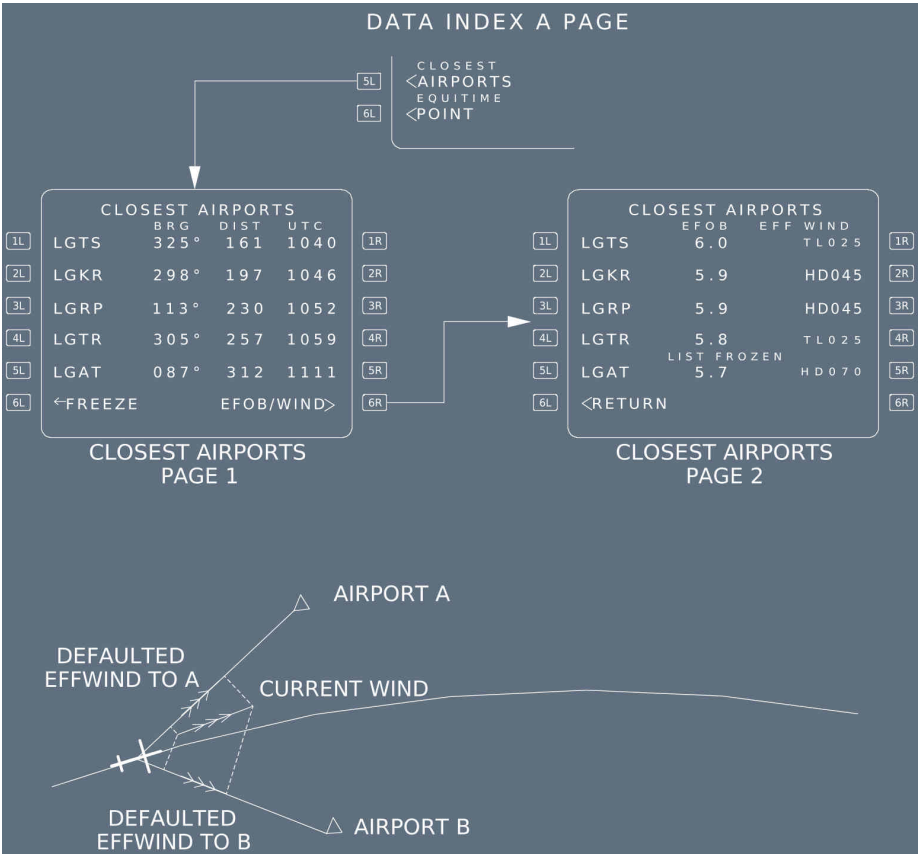
Note: *In case SELECTED SPD is used, the CLOSEST AIRPORTS page still provides good use to choose the applicable closest airport for diversion purposes. However, when SELECTED SPD is significantly different from MANAGED SPD, the predictions in terms of time and fuel must be disregarded since they are misleading.*
The predictions may then be checked on the SEC F-PLN.

CLOSEST AIRPORTS

Ident.: DSC-22_20-60-80-00006018.0002001 / 23 MAR 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The CLOSEST AIRPORTS page displays the four closest airports, from the position of the aircraft, found in the navigation database (*Refer to DSC-22_20-50-10-28 CLOSEST AIRPORTS Pages* for the page description), and the 5th airport, as selected by the crew.

For each airport, the FM computes:
- The BRG/DIST/ESTIMATED UTC from the position of the aircraft to the corresponding airport.
- The EFOB at the airport, assuming an EFFECTIVE WIND (defaulted or entered by the pilot).



Note: *When the CLOSEST AIRPORTS page 2 is selected, the list of airports is automatically frozen, as indicated on the page.*

The FUEL/TIME predictions to the closest airports use simplified assumptions:

- Managed speed profile in cruise, with the effective wind from the CLOSEST AIRPORTS page 2. In case of EO, Engine Out condition is considered.
- Continuous descent from CRZ FL down to the airport elevation.

Note: *In case SELECTED SPD is used, the CLOSEST AIRPORTS page still provides good use to choose the applicable closest airport for diversion purposes. However, when SELECTED SPD is significantly different from MANAGED SPD, the predictions in terms of time and fuel must be disregarded since they are misleading.*
The predictions may then be checked on the SEC F-PLN.

GENERAL

Ident.: DSC-22_20-60-90-00006019.0001001 / 16 FEB 11
Applicable to: ALL

The crew can enter a time marker in the F-PLN A or B page. Once entered, the FMGS displays a pseudo waypoint along the flight plan on the MCDU and on the Navigation Display. This pseudo waypoint shows the predicted location of the aircraft at the entered time.

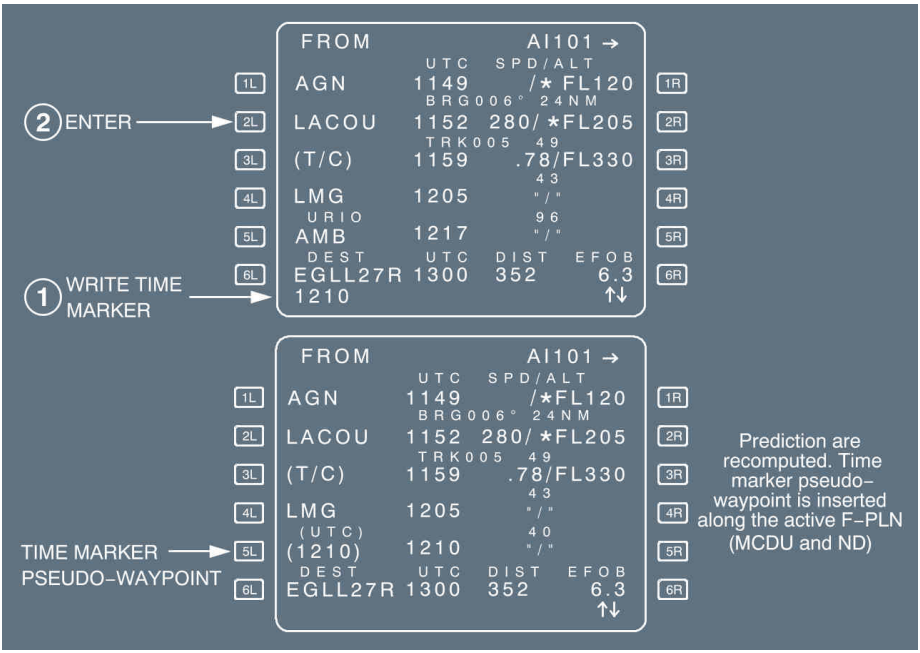
HOW TO INSERT A TIME MARKER

Ident.: DSC-22_20-60-90-00009522.0001001 / 01 OCT 12

[1] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

WRITE the time marker in the scratchpad. The entry format is HHMM.
SELECT any left key of the F-PLN A or B page, to insert the time marker in the active flight plan.

The time marker is inserted in the flight plan according to time criteria, irrespective of the key chosen for entry.

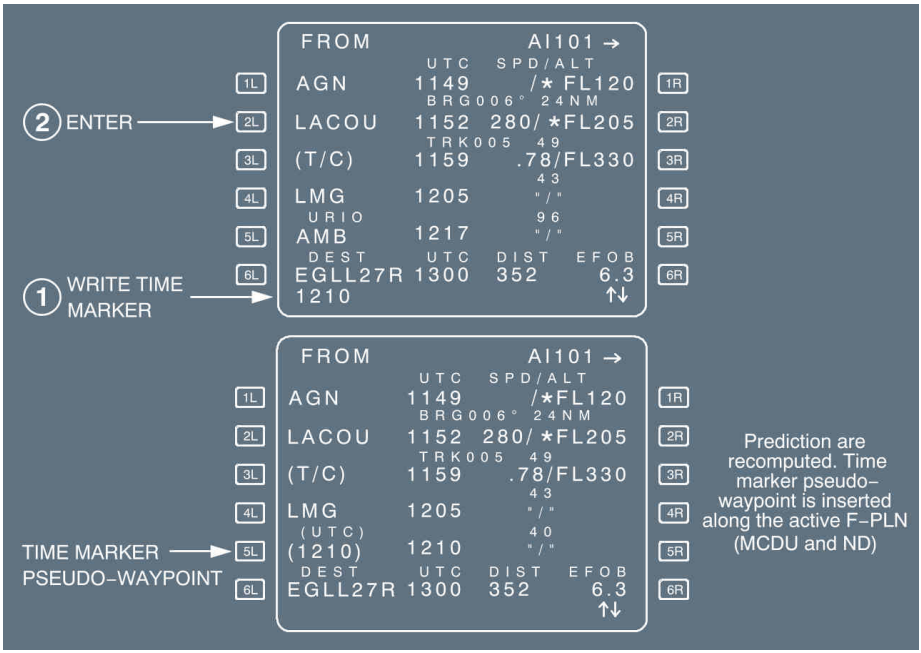


Up to four time markers may exist at a time. An attempt to enter a fifth time marker will cause the "TIME MARKER LIST FULL" message to appear on the scratchpad.
The FMGS updates the time marker position with the predictions.
When the current clock time equals or exceeds the time marker entry, the FMGS sequences the time marker (even in preflight).

HOW TO INSERT A TIME MARKER

Ident.: DSC-22_20-60-90-00009522.0002001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

WRITE the time marker in the scratchpad. The entry format is HHMM.
SELECT any left key of the F-PLN A or B page, to insert the time marker in the active flight plan.
The time marker is inserted in the flight plan according to time criteria, irrespective of the key chosen for entry.



Up to four time markers may exist in the F-PLN at a time. An attempt to enter a fifth time marker will cause the "TIME MARKER LIST FULL" message to appear on the scratchpad.
The FMGS updates the time marker position with the predictions.

When the current clock time equals or exceeds the time marker entry, the FMGS sequences the time marker (even in preflight).

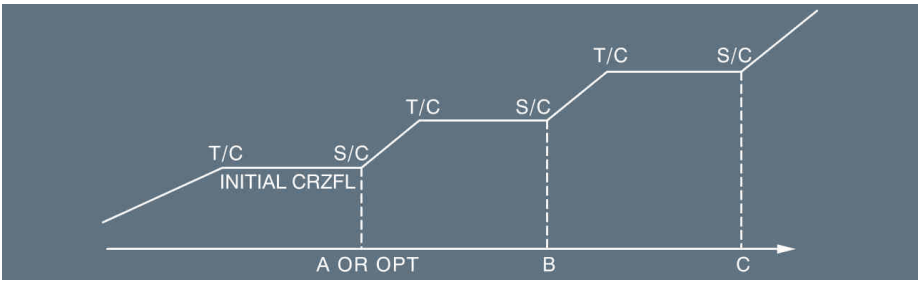
Intentionally left blank

STEP CLIMB/STEP DESCENT

Ident.: DSC-22_20-60-100-00006020.0012001 / 12 APR 17

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The STEP ALTS function enables to define the successive cruise Flight Levels. The optimum position to initiate a climb, from the initial (or current) cruise Flight Level to the next one, can also be determined.



PRINCIPLE

GEOGRAPHIC STEPS

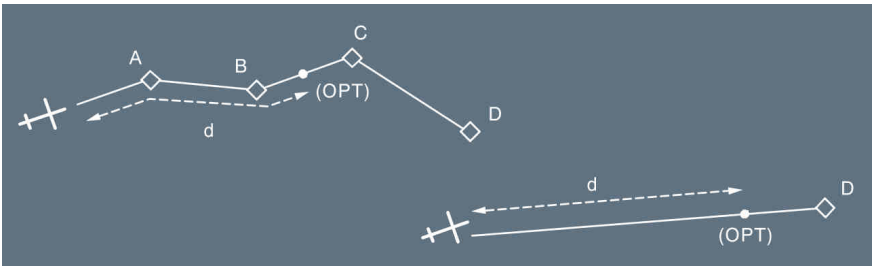
Up to four geographic steps may be defined on the STEP ALTS page. These steps are initiated at the geographical position, along the F-PLN.

Rules

- The minimum step size is 1 000 ft.
- A Step Climb (S/C) cannot follow a Step Descent (S/D).
- A STEP is automatically cleared, if:
  - The S/C (S/D) is sequenced without any level change done by the crew.
  - The crew achieves a LAT REV, which deletes the associated waypoint from the F-PLN
  - By EO condition.
- A STEP is manually cleared:
  - On the STEP ALTS page, by CLEARING the corresponding field.
  - On the F-PLN page, by CLEARING the (S/C) or (S/D) pseudo-waypoints.
- A STEP entry is IGNORED, if the remaining CRZ distance is less than about 50 NM.
- Once the steps are inserted in the F-PLN, they are displayed:
  - On the MCDU, as (S/C), (S/D), (T/C), (T/D) pseudo waypoints.
  - On the ND, by associated , , , white symbols.

OPTIMUM STEP

When geographic steps are inserted, or an altitude is entered, the FM proposes an OPTIMUM STEP start of climb position for the first step climb altitude ahead. Predicted FUEL and TIME savings are displayed when calculated to be greater than 100 kg or 1 min respectively. If no savings are found, no optimum step is proposed.
The OPT STEP is not automatically inserted. The crew must insert it, if appropriate. Once inserted, the OPT STEP point (OPT) becomes a fixed geographical point.
If some F-PLN parameters are subsequently changed (e.g. winds, new waypoints), an update of the optimum position relative to the previous one may be proposed. If savings exist, this new optimum may be inserted to replace the previous optimum step point.
Once an OPT STEP is inserted in the F-PLN, and the crew achieves a lateral F-PLN revision, the FM keeps the (OPT) along the new F-PLN, at the same distance from the aircraft's position, as previously determined.



Rules

- The OPT STEP is only computed by the FM, if data required for the prediction computation are inserted : F-PLN, CRZ FL, CI, GW, CG at least.
- The search of the OPT STEP begins 20 NM beyond (T/C) before Cruise, or ahead of the aircraft's position.
- The search of the OPT STEP ends 20 NM before the next STEP POINT, or 300 NM before the (T/D).
- Only one OPT STEP is computed at a time.

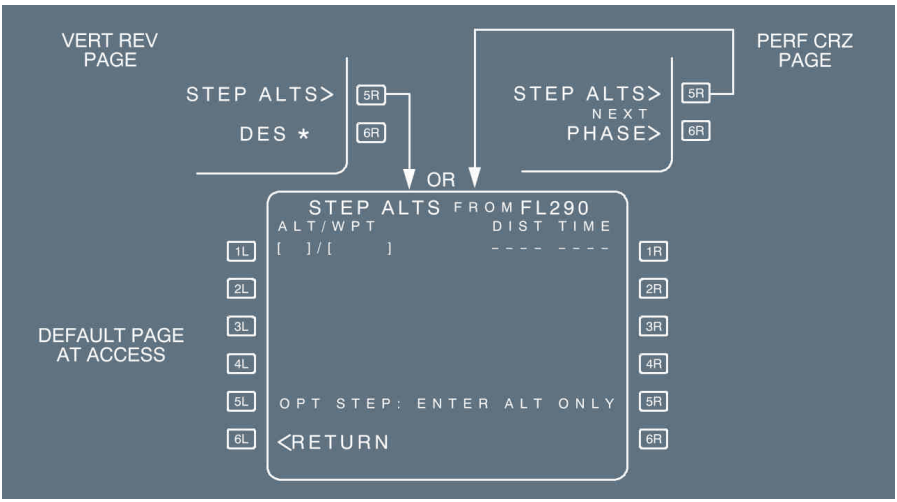
Guidance

When reaching the step point, the steps must be initiated by the crew by selecting the new CRZ FL, and pressing the FCU ALT selector knob. If sequenced without any crew action, the step is automatically deleted.

If the crew initiates the step:
- The CRZ FL is automatically reassigned to its new value.
- The guidance is THR CLB/CLB for a step climb.
  THR IDLE/DES with V/S = -1 000 ft/min for a step descent.

STEP ENTRY

The STEP ALTS page is either accessed from the : - The VERT REV page, or
- PERF CRZ page.



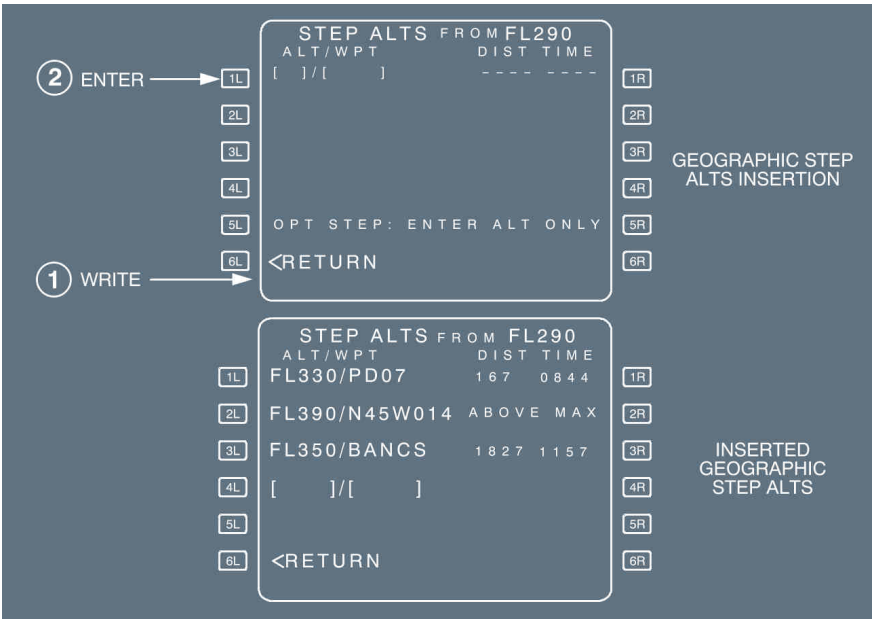
FOR GEOGRAPHIC STEP:

PRESS the F-PLN or PERF key.
SELECT vertical revision at a cruise waypoint.
SELECT the STEP ALTS prompt.

WRITE the ALT/WPT in the scratchpad, and ENTER it in [1L] to [4L].

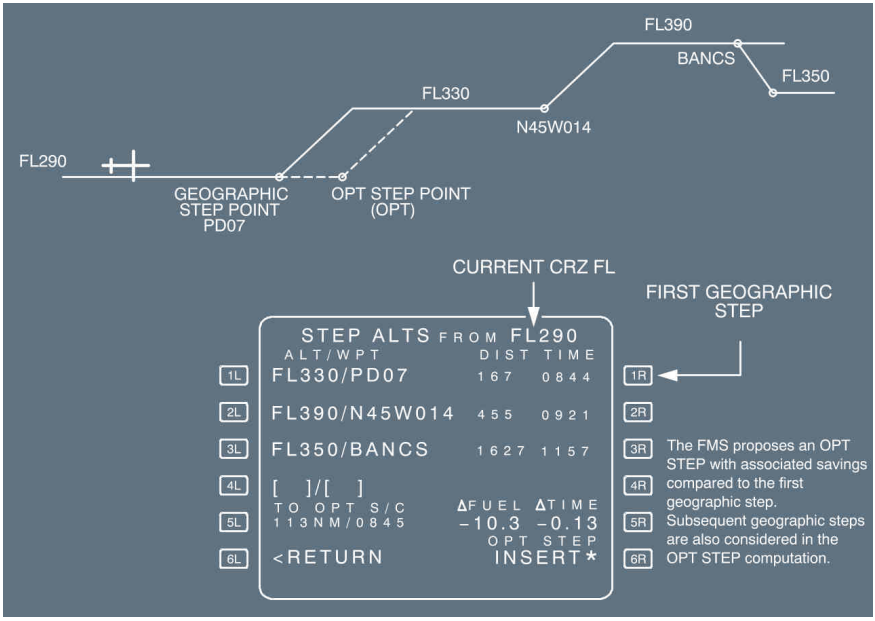
Note:
- *The position may be a waypoint ident, PBD, PD.*
- *The pilot may enter FL 350/LMG/–20. The FM will compute the geographic step 20 NM before LMG to FL 350.*
- *To modify an inserted STEP:*
  - *To modify the CRZ FL only, enter it in the left key, as "FLXXX".*
  - *To modify the position only, enter it in the left key, as "/XXX".*
  - *To modify both, modify the position first, and then the CRZ FL (it is not possible to modify both in a single entry).*

CHECK the PREDICTIONS.



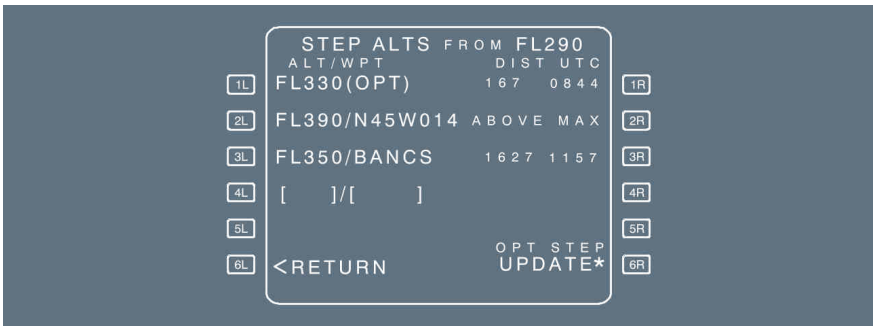
FOR OPTIMAL STEP

Once all geographical steps are inserted, and the predictions are available, the STEP ALTS page displays the FUEL/TIME savings for the first step climb. If no significant savings are predicted, the NO OPTIMAL message is displayed.



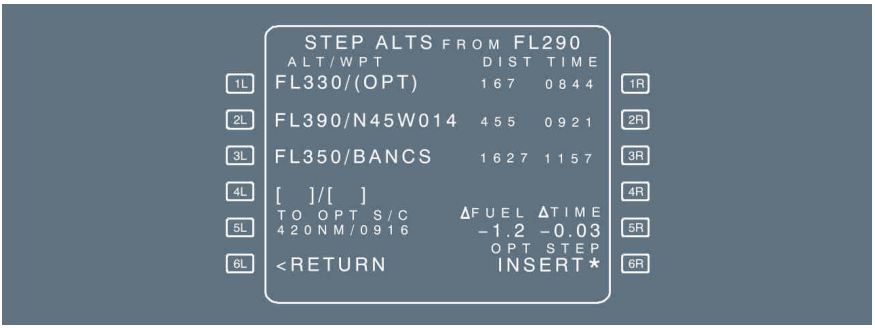
To INSERT the proposed OPT STEP displayed in [5L]:

SELECT the INSERT* prompt in [6R].



The computed (OPT) step replaces the initially inserted step position, and is then considered at a fixed geographic position. Savings are no longer displayed, and the UPDATE* prompt replaces the INSERT* prompt. This prompt allows the crew to update the (OPT) step position, considering possible F-PLN or inserted wind changes.

If pressed, a new OPT point is proposed, with the associated SAVINGS and INSERT prompt, or NO OPTIMAL.
UPDATE prompt has been pressed, the new OPT STEP point gives additional savings:



THERE ARE ONLY 2 CRZ FLS IN THE F-PLN:

The pilot may obtain the OPT position of the STEP point, as follows:

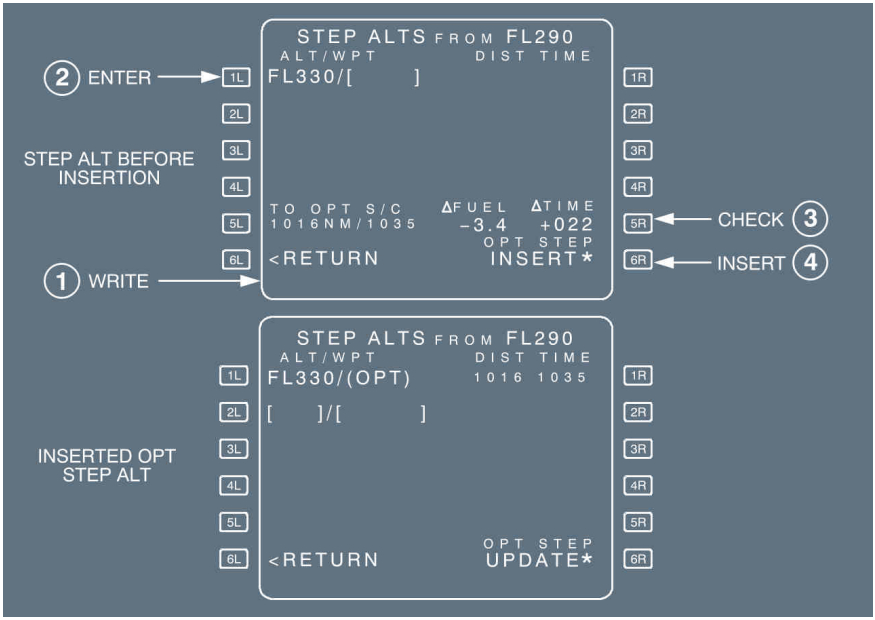
INSERT the initial cruise FL on the INIT A page.
ENSURE that the ZFW, ZFWCG and BLOCK fuel are inserted on the INIT B page.
WRITE the new CRZ FL in the STEP ALTS page, in the [1L] field.

Distance and time to optimum point and fuel/time saving are displayed.

CHECK the fuel and time savings and prediction on the [5R] field.

Savings are computed by comparing the entered step altitude, and the origin altitude of the step.

INSERT, if suitable.



Note: *No OPT STEP is available in the SEC F-PLN.*

MESSAGES

Messages may be displayed in the DIST/TIME field:

- "ABOVE MAX", if the inserted step altitude exceeds the REC MAX ALT.
  The "STEP ABOVE MAX FL" scratchpad message is associated to the "ABOVE MAX" message.
- "IGNORED"

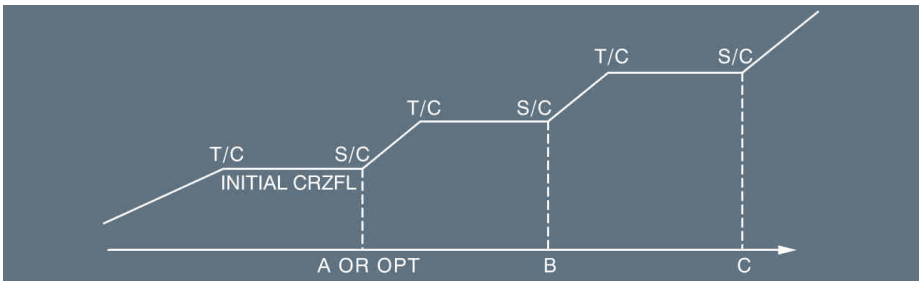
  This message is displayed in the following cases:
  - Step climb is located prior to the top of climb, or after the top of descent.
  - Step end is at less than 50 NM from the top of descent. An optimum step point, < 200 NM from top of descent, cannot be inserted

- "STEP AHEAD", when the distance to the step point is less than 20 NM . A "STEP AHEAD" scratchpad message is also displayed.
  The following message may be displayed in the scratchpad:
- "NOT ALLOWED", if:
  - Four steps already exist in the F-PLN, and an additionnal entry is attempted.
  - Any attempt to enter a step at the FROM waypoint, or at a pseudo waypoint is done.
  - Two consecutive steps are entered at the same waypoint (e.g. step climb after step descent).

STEP CLIMB/STEP DESCENT

Ident.: DSC-22_20-60-100-00006020.0011001 / 12 APR 17
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The STEP ALTS function enables to define the successive cruise Flight Levels. The optimum position to initiate a climb, from the initial (or current) cruise Flight Level to the next one, can also be determined.



PRINCIPLE

GEOGRAPHIC STEPS

Up to four geographic steps may be defined on the STEP ALTS page. These steps are initiated at the geographical position, along the F-PLN.

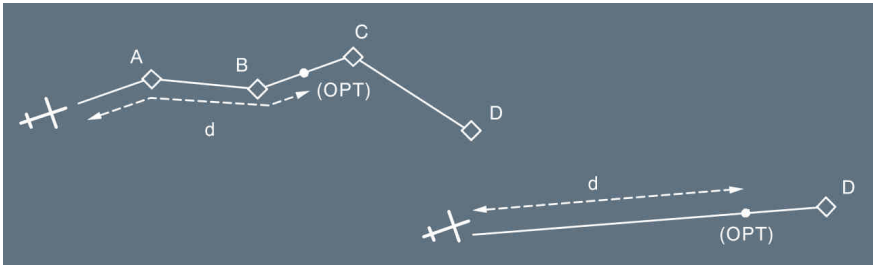
Rules

- The minimum step size is 500 ft.
- A Step Climb (S/C) cannot follow a Step Descent (S/D).
- A STEP is automatically cleared, if:
  - The S/C (S/D) is sequenced without any level change done by the crew.
  - The crew achieves a LAT REV, which deletes the associated waypoint from the F-PLN
  - By EO condition.

- A STEP is manually cleared:
  - On the STEP ALTS page, by CLEARING the corresponding field.
  - On the F-PLN page, by CLEARING the (S/C) or (S/D) pseudo-waypoints.
- A STEP entry is IGNORED, if the remaining CRZ distance is less than about 50 NM.
- Once the steps are inserted in the F-PLN, they are displayed:
  - On the MCDU, as (S/C), (S/D), (T/C), (T/D) pseudo waypoints.
  - On the ND, by associated , , , white symbols.

OPTIMUM STEP

When geographic steps are inserted, or an altitude is entered, the FM proposes an OPTIMUM STEP start of climb position for the first step climb altitude ahead. Predicted FUEL and TIME savings are displayed when calculated to be greater than 100 kg or 1 min respectively. If no savings are found, no optimum step is proposed.
The OPT STEP is not automatically inserted. The crew must insert it, if appropriate. Once inserted, the OPT STEP point (OPT) becomes a fixed geographical point.
If some F-PLN parameters are subsequently changed (e.g. winds, new waypoints), an update of the optimum position relative to the previous one may be proposed. If savings exist, this new optimum may be inserted to replace the previous optimum step point.
Once an OPT STEP is inserted in the F-PLN, and the crew achieves a lateral F-PLN revision, the FM keeps the (OPT) along the new F-PLN, at the same distance from the aircraft's position, as previously determined.



Rules

- The OPT STEP is only computed by the FM, if data required for the prediction computation are inserted : F-PLN, CRZ FL, CI, GW, CG at least.
- The search of the OPT STEP begins 20 NM beyond (T/C) before Cruise, or ahead of the aircraft's position.
- The search of the OPT STEP ends 20 NM before the next STEP POINT, or 300 NM before the (T/D).
- Only one OPT STEP is computed at a time.

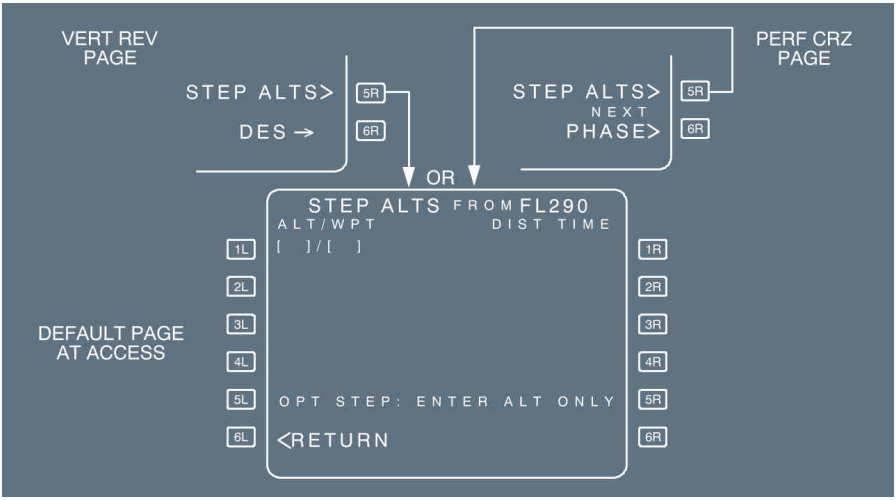
Guidance

When reaching the step point, the steps must be initiated by the crew by selecting the new CRZ FL, and pressing the FCU ALT selector knob. If sequenced without any crew action, the step is automatically deleted.

If the crew initiates the step:
- The CRZ FL is automatically reassigned to its new value.
- The guidance is THR CLB/CLB for a step climb.
  THR IDLE/DES with V/S = -1 000 ft/min for a step descent.

STEP ENTRY

The STEP ALTS page is either accessed from the :
- The VERT REV page, or
- PERF CRZ page.



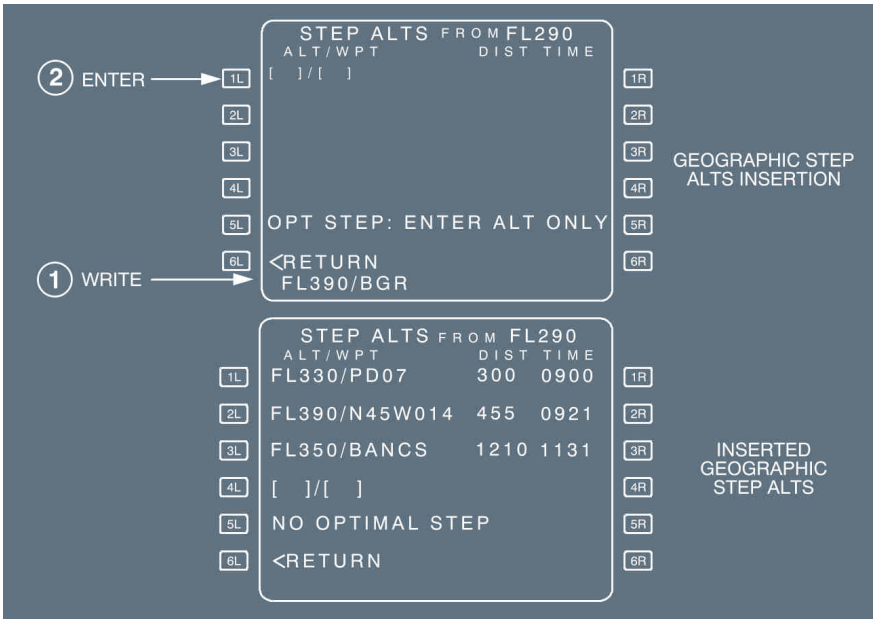
FOR GEOGRAPHIC STEP:

PRESS the PERF key, or PRESS the F-PLN key and SELECT VERT REV at a cruise waypoint.
SELECT the STEP ALTS prompt.

WRITE the ALT/WPT in the scratchpad, and ENTER it in [1L] to [4L].

Note:
- *The position may be a waypoint ident, PBD, PD.*
- *The crew may enter LMG/–20/350. The FMS will compute the geographic step to FL 350 20 NM before LMG.*
- *To modify an inserted STEP:*
  - *To modify the CRZ FL only, enter it in the left key, as "FLXXX".*
  - *To modify the position only, enter it in the left key, as "/XXX".*
  - *To modify both, modify the position first, and then the CRZ FL (it is not possible to modify both in a single entry).*

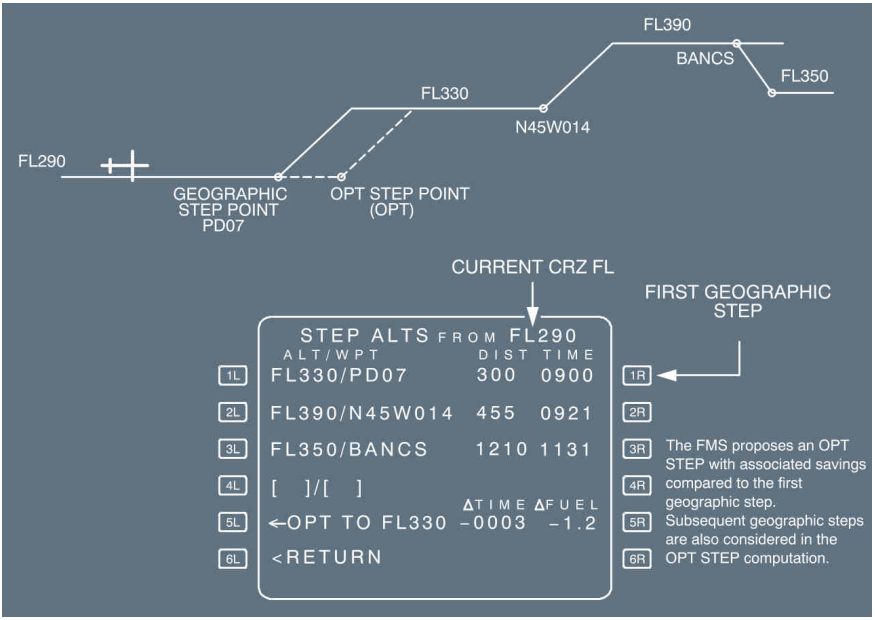
CHECK the PREDICTIONS.



FOR OPTIMAL STEP

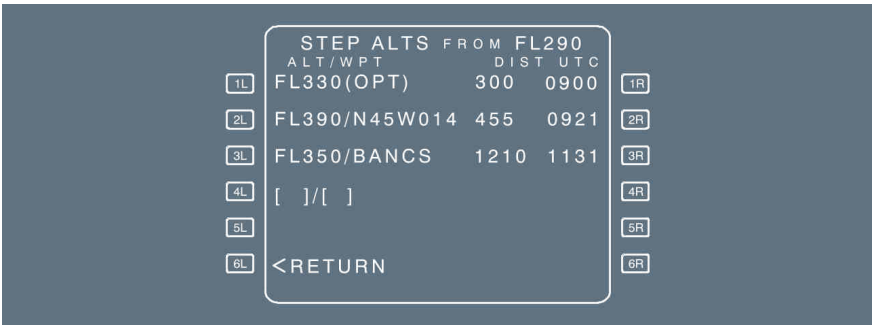
Once the geographic steps are inserted, and the predictions are available, the FMGS computes an optimal location for the first step, and the STEP ALTS page displays the associated FUEL/TIME savings.

Note: *If the FMGS cannot determine an optimal step for the selected altitude, "NO OPTIMAL STEP" is displayed in the [5L] field.*



To INSERT the proposed OPT STEP:

SELECT the [5L] prompt.



The computed (OPT) step replaces the initially inserted step position. Once inserted, the time and fuel savings associated to the optimal step are no longer displayed. The optimum step position is regularly updated until the aircraft is within 20 NM of the optimum step point.

Note: *If the circumstances lead to a situation where the entered optimal step is no longer optimal, "NO OPTIMAL" is displayed in the [1R] field.*

TO DETERMINE THE OPTIMAL STEP LOCATION WHEN THERE ARE ONLY 2 CRZ FLS IN THE F-PLN:

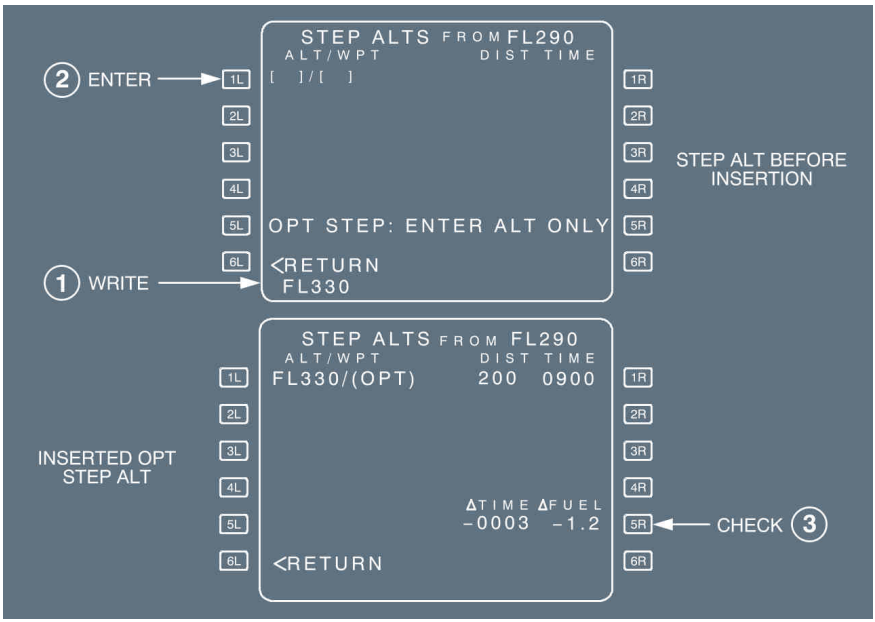
The crew may obtain the optimal position for the STEP as follows:

INSERT the initial CRZ FL on the INIT A page.
ENSURE that the ZFW, ZFWCG and BLOCK fuel are inserted on the INIT B page.
ENTER the new CRZ FL in the STEP ALTS page in the [1L] field.

If an optimal step can be determined, the FMGS automatically computes the optimal position of the step, with associated fuel/time savings.

CHECK the fuel and time savings and prediction on the [6R] field.

Savings are computed by comparing the entered step altitude, and the origin altitude of the step.



Note: *No OPT STEP can be computed in the SEC F-PLN.*

MESSAGES

Messages may be displayed in the DIST/TIME field:

- "ABOVE MAX", if the inserted step altitude exceeds the REC MAX ALT.
  The "STEP ABOVE MAX FL" scratchpad message is associated to the "ABOVE MAX" message.
- "IGNORED" displayed in the following cases:
  - Step climb is located prior to the top of climb, or after the top of descent.
  - Step end is at less than 50 NM from the top of descent. An optimum step point, < 200 NM from top of descent, cannot be inserted.
- "STEP AHEAD", when the distance to the step point is less than 20 NM. A "STEP AHEAD" scratchpad message is also displayed.
- A "NOT ALLOWED" message is displayed in the scratchpad, if:
  - Four steps already exist in the F-PLN, and an additional step is entered.
  - A step is entered at the FROM waypoint, or at a pseudo-waypoint.
  - Two consecutive steps are entered at the same waypoint (e.g. step climb after step descent).

GENERAL

Ident.: DSC-22_20-60-110-00006021.0001001 / 01 OCT 12

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

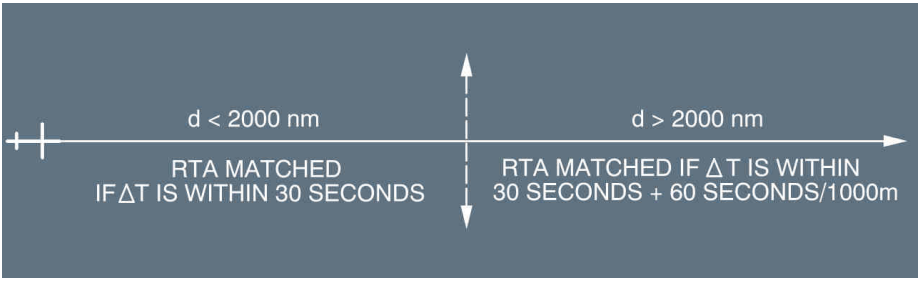
A time constraint (RTA) may be assigned at any waypoint of the F-PLN, downpath of the origin and the FROM waypoint. It can be an "AT", "AT OR BEFORE", or "AT OR AFTER" constraint.
The FMS computes a new managed speed profile from the aircraft position to the constrained waypoint, in order to match the 30 s difference (ΔT) between the time predicted at the constrained waypoint and the RTA. This modified managed speed profile can be checked using the speed prediction, displayed for each waypoint of the F-PLN page.
The RTA function uses a speed range between Green Dot speed and VMO - 10 (or MMO - 0.02).
When the constrained waypoint is sequenced, the ECON SPD/MACH is resumed unless the constrained waypoint is located in a descent segment.

Note: *The FM does not compute a new managed speed profile when a RTA is entered in the descent profile while the aircraft is in cruise within 40 NM from the top of descent.*

The time constraint is inserted on the RTA page. A time constraint may be inserted at any waypoint of the primary or secondary flight plan.
If an engine-out condition is detected, the time constraint is automatically deleted and RTA DELETED message on scratchpad.
If the aircraft enters a holding pattern, the downpath time constraint is deleted.
Once inserted in the F-PLN, the RTA is displayed in magenta on the F-PLN page, as long as no predictions are available.

Once the predictions are available, the time constraint is replaced by the new predicted time at the associated waypoint, and highlighted by a star: (*)
- The (*) is magenta, if the time constraint is matched with the 30 s criteria.
- The (*) is amber, if the time constraint is missed.

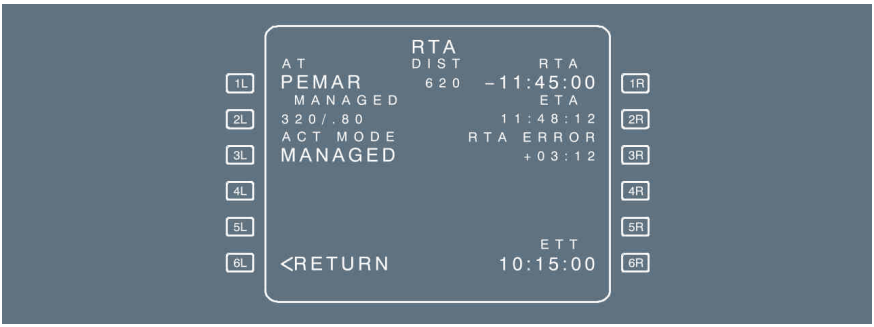
Time constraint matching criteria:



Note: *ΔT is the time difference between the time predicted at the constrained waypoint and the RTA.*

TIME CSTR ENTRY

PRESS the F-PLN key.
SELECT vertical revision at the revised waypoint.
SELECT the RTA key.
ENTER a waypoint at which a time constraint is to be defined.
WRITE the time constraint (+/–HHMMSS) into the scratchpad and ENTER
The display automatically reverts to the F-PLN A page.



Note:
- *The TIME CSTR can be directly cleared on the F-PLN A page, using the CLR key.*
- *The time constraint is automatically deleted in the following cases:*
  - *Engine out, or*
  - *When entering a holding pattern, or*
  - *In case of Go-Around, or*
  - *A time constraint is entered at another waypoint, while another time constraint already exists.*

A scratchpad "RTA DELETED" message is displayed.

GENERAL

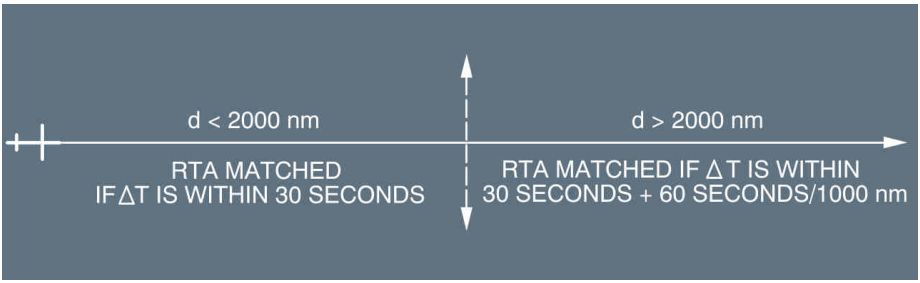
Ident.: DSC-22_20-60-110-00006021.0011001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

A time constraint (RTA) may be assigned at any waypoint of the F-PLN, downpath of the origin and the FROM waypoint. It can be an "AT", "AT OR BEFORE", or "AT OR AFTER" constraint.
The FMS computes a new managed speed profile from the aircraft position to the constrained waypoint, in order to match the 30 s difference (ΔT) between the time predicted at the constrained

waypoint and the RTA. This modified managed speed profile can be checked using the speed prediction, displayed for each waypoint of the F-PLN page.
The RTA function uses a speed range between Green Dot speed and VMO - 10 (or MMO - 0.02).
When the constrained waypoint is sequenced, the ECON SPD/MACH is resumed unless the constrained waypoint is located in a descent segment.
The time constraint is inserted on the RTA page. A time constraint may be inserted at any waypoint of the active or secondary flight plan.
If an engine-out condition is detected, the time constraint is automatically deleted and RTA DELETED message on scratchpad.
If the aircraft enters a holding pattern, the downpath time constraint is deleted.
Once inserted in the F-PLN, the RTA is displayed in magenta on the F-PLN page, as long as no predictions are available. On the PERF page, the Cost Index value is replaced by “RTA CI”.

Once the predictions are available, the time constraint is replaced by the new predicted time at the associated waypoint, and highlighted by a star: (*)
- The (*) is magenta, if the time constraint is matched with the 30 s criteria.
- The (*) is amber, if the time constraint is missed.

Time constraint matching criteria:



Note: *ΔT is the time difference between the time predicted at the constrained waypoint and the RTA. It is used to define the “missed” or “made” status.*

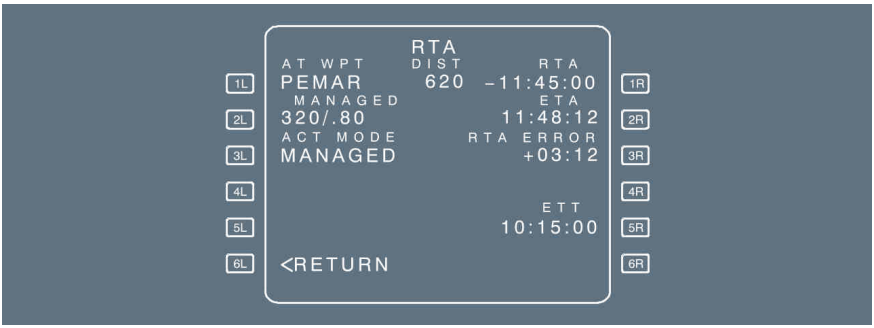
ENTRY OF A REQUIRED TIME OF ARRIVAL

PRESS the F-PLN key.
SELECT VERT REV at any waypoint.
SELECT the RTA prompt [2R].
ENTER the waypoint at which a time constraint is to be defined in the [1L] field

When accessing the RTA page, the [1L] field is defaulted to the waypoint at which the vertical revision has been performed.

WRITE the RTA in the scratchpad and ENTER in the [1R] field.

The format to be used is:
- *"HHMMSS" for "AT HHMMSS" (ex : "124500")*
- *"+HHMMSS" for "AT OR AFTER HHMMSS" (ex : "+124500")*
- *"-HHMMSS" for "AT OR BEFORE HHMMSS" (ex : "-124500")*



Note: - *The RTA can be directly cleared on the F-PLN A page, using the CLR key.*

The time constraint is automatically deleted in the following cases:
- *Engine out, or*
- *When entering a holding pattern, or*
- *In case of Go-Around, or*
- *A time constraint is entered at another waypoint, while another time constraint already exists.*
- *The waypoint where the RTA was entered is deleted.*

In case a time constraint is deleted, the "RTA DELETED" scratchpad message is displayed.

ESTIMATED TAKEOFF TIME (ETT)

Ident.: DSC-22_20-60-110-00009523.0001001 / 23 JUN 15

2 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The Estimated Takeoff Time (ETT) may be entered by the pilot during the preflight phase at the origin airport. This time is used as the initialization time for predictions.
The entry is accepted in the preflight phase, if the ETT is greater than the clock time.

PROCEDURE

PRESS the F-PLN key

SELECT a vertical revision at origin
SELECT the RTA page
WRITE the ETT into the scratchpad, and ENTER in the ETT field.
The display automatically reverts to the F-PLN A page.

Note:
- *If the current time exceeds the ETT entry, the CLK IS TAKE OFF TIME message is displayed ; the ETT is replaced by the clock time.*
- *At takeoff, the takeoff time is automatically updated using the actual clock time.*
- *An ETT entry is automatically deleted, if the origin airport is modified, or if the clock is inoperative.*
- *If a time constraint is entered at a waypoint in the F-PLN, the takeoff time required to match the constraint is automatically computed by the FM. This result is displayed in magenta as ETT at the origin.*

USE OF TIME/ETT CONSTRAINT

During preflight :
- If an ETT has been entered, time predictions are based on the entered value (or clock time, if greater).
- If both an ETT and a time constraint have been entered, time predictions are based on the entered ETT value (or clock time, if greater). The managed speed profile is computed to match the time constraint, as closely as possible, using a pseudo cost index value. (Not displayed).
- If only a time constraint has been entered:
  - Optimum speeds are computed to determine the ETT, so as to satisfy the time constraint.
  - If necessary, flight time (based on optimum speeds) plus clock time (current) is greater than the time constraint ; optimum speeds are modified to match the time constraint as closely as possible.

After Takeoff : The predictions are based on the current time.
Speeds are adjusted to satisfy the time constraint.

ESTIMATED TAKEOFF TIME (ETT)

Ident.: DSC-22_20-60-110-00009523.0011001 / 23 JUN 15
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The Estimated Takeoff Time (ETT) may be entered by the pilot during the preflight phase at the origin airport. This time is used as the initialization time for predictions.
The entry is accepted in the preflight phase, if the ETT is greater than the clock time.
No temporary flight plan is created upon insertion or modification of an ETT

PROCEDURE

PRESS the F-PLN key
SELECT VERT REV at departure
SELECT the RTA prompt [2R]
ENTER the ETT in the [5R] field of RTA page

Note:
- *If the current time exceeds the ETT entry, the CLK IS TAKE OFF TIME message is displayed ; the ETT is replaced by the clock time.*
- *At takeoff, the takeoff time is automatically updated using the actual clock time.*
- *An ETT entry is automatically deleted, if the origin airport is modified, or if the clock is inoperative.*
- *If a time constraint is entered at a waypoint in the F-PLN, the takeoff time required to match the constraint is automatically computed by the FM. This result is displayed in magenta as ETT at the origin.*

USE OF TIME/ETT CONSTRAINT

During preflight :
- If an ETT has been entered, time predictions are based on the entered value (or clock time, if greater).
- If both an ETT and a time constraint have been entered, time predictions are based on the entered ETT value (or clock time, if greater). The managed speed profile is computed to match the time constraint, as closely as possible, using a pseudo cost index value. (Not displayed).
- If only a time constraint has been entered:
  - Optimum speeds are computed to determine the ETT, so as to satisfy the time constraint.
  - If necessary, flight time (based on optimum speeds) plus clock time (current) is greater than the time constraint ; optimum speeds are modified to match the time constraint as closely as possible.

After Takeoff : The predictions are based on the current time.
Speeds are adjusted to satisfy the time constraint.

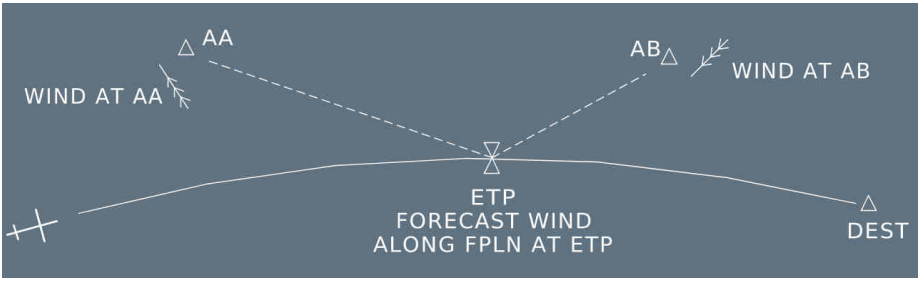
EQUITIME POINT

Ident.: DSC-22_20-60-120-00006015.0001001 / 16 MAR 11

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The equitime point page displays the ETP, computed along the F-PLN route between two referenced positions (airports, waypoints or navaids), defined by the pilot (*Refer to DSC-22_20-50-10-25 Equi - Time Point Page* for the page description).
When first accessing the page, the FMS proposes origin and destination airfields, as defaulted positions.
The pilot may overwrite these two positions and insert the wind in their vicinity at the applicable CRZ FL.
The FMS then computes the resulting ETP, using the managed or selected speed, and blending the forecasted winds along the F-PLN route with the inserted winds.

The FMS provides:
- TIME and DIST from the aircraft position (or origin on ground) to the ETP
- The BRG/DIST from the ETP to the defined positions
- TIME overhead each position, assuming the aircraft flies from the present position to the defined position via the ETP
- (ETP) pseudo waypoint is displayed on the ND along the F-PLN
- ETP location in relation to the subsequent waypoint.



EQUITIME POINT

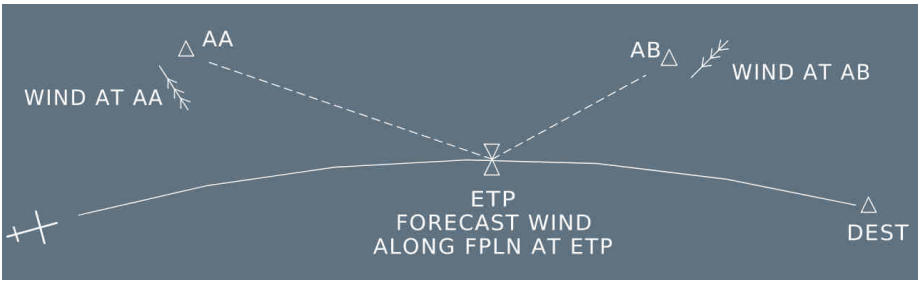
Ident.: DSC-22_20-60-120-00006015.0002001 / 18 MAR 11

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The EQUI-TIME POINT page displays the ETP, computed along the F-PLN route between two referenced positions (airports, waypoints or navaids), defined by the crew (*Refer to DSC-22_20-50-10-28 EQUI - TIME POINT Page* for the page description).

When first accessing the page, the FMS proposes origin and destination airfields, as defaulted positions.
The pilot may overwrite these two positions and insert the wind in their vicinity at the applicable CRZ FL.
The FMS then computes the resulting ETP, using the managed or selected speed, and blending the forecasted winds along the F-PLN route with the inserted winds.

The FMS provides:
- TIME and DIST from the aircraft position (or origin on ground) to the ETP
- The BRG/DIST from the ETP to the defined positions
- TIME overhead each position, assuming the aircraft flies from the present position to the defined position via the ETP
- (ETP) pseudo waypoint is displayed on the ND along the F-PLN
- ETP location in relation to the subsequent waypoint.

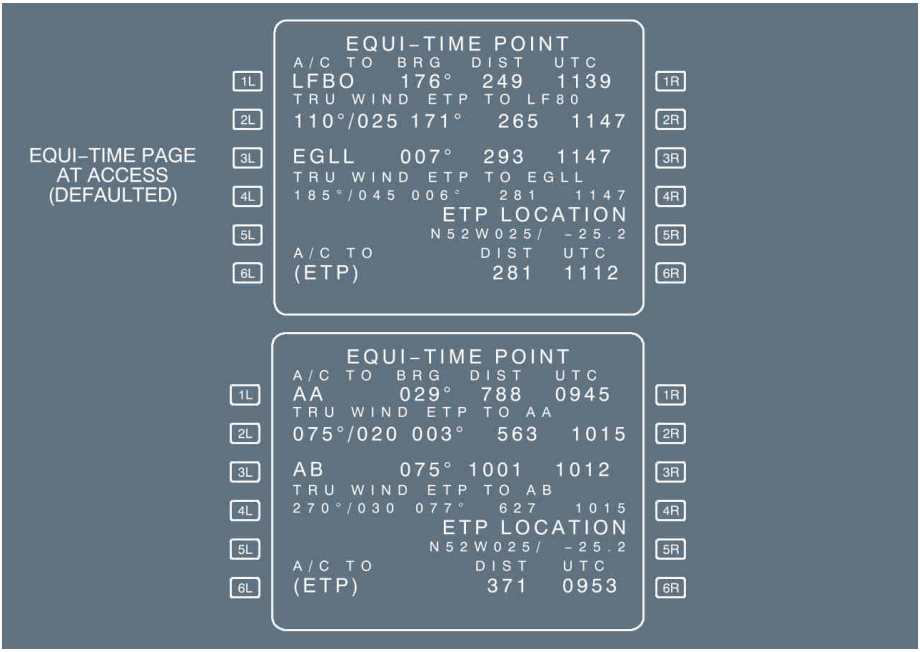


EQUITIME POINT ENTRY

Ident.: DSC-22_20-60-120-00009536.0001001 / 01 OCT 12

2 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

PRESS the DATA key.
SELECT the EQUI-TIME POINT prompt.
The EQUI-TIME POINT page is displayed. The origin and destination airports are used by default.
ENTER the REF POINT 1 in the [1L] field.
ENTER the associated wind in the [2L] field.
The wind to be inserted is the wind in the vicinity of the reference point at the CRZ FL.
ENTER the REF POINT 2 in the [3L] field.
ENTER the associated wind in the [4L] field.
The system displays the ETP location with regards to the next waypoint of the active flight plan following the ETP in the [5R] field, and the A/C TO (ETP) predictions in the [6R] field.



Note: - *The ETP pseudo-waypoint is not displayed on the MCDU F-PLN page. In order to easily locate it, or when closing the applicable ETP, the TIME MARKER may be used; this allows the crew to visualize it in advance on the F-PLN page or, to prepare the next applicable ETP on the Equi-time Point page*

- *The ETP is computed using speed according to the current mode (managed or selected).*

EQUITIME POINT ENTRY

Ident.: DSC-22_20-60-120-00009536.0002001 / 01 OCT 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

PRESS the DATA key.

SELECT the EQUI-TIME POINT prompt.

The EQUI-TIME POINT page is displayed. The origin and destination airports are used by default.

ENTER the REF POINT 1 in the [1L] field.

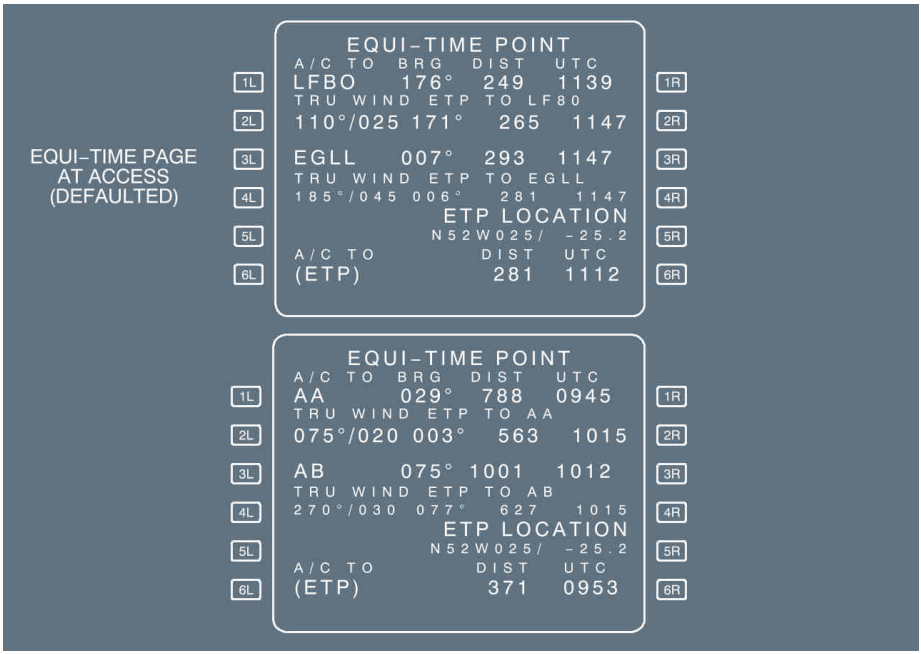
ENTER the associated wind in the [2L] field.

The wind to be inserted is the wind in the vicinity of the reference point at the CRZ FL.

ENTER the REF POINT 2 in the [3L] field.

ENTER the associated wind in the [4L] field.

The FMS computes the ETP location (ETP coordinates, and distance between the ETP and the following waypoint on the F-PLN) and displays it in the [5R] field. The FMS also computes predictions related to the ETP (the distance to go, and the predicted time at the ETP) and displays them in the [6R] field.



Note: - *The ETP pseudo-waypoint is not displayed on the MCDU F-PLN page. In order to easily locate it, or when closing the applicable ETP, the TIME MARKER may be used; this allows the crew to visualize it in advance on the F-PLN page or, to prepare the next applicable ETP on the Equi-time Point page*

- *The ETP is computed using speed according to the current mode (managed or selected).*

GENERAL

Ident.: DSC-22_20-60-130-00012906.0011001 / 24 FEB 14

[1] **Applicable to: MSN 03618-09063**

The MCDU NAV B/UP allows to link a MCDU to its associated IRS in order to allow the flight crew to monitor the navigation and to be provided with some basic flight planning functions in case of FM 1 + 2 failure.

CAUTION	The MCDU NAV B/UP is to be used only in case of FM 1 + 2 failure. It can be selected temporarily in case of FM1 or 2 only failure, in order to ensure that the function is available on the failed side. When in MCDU NAV B/UP on both sides, one FG at least must be available to engage AP and A/THR.

The MCDU NAV B/UP function provides:
- Aircraft position using onside IRS or IRS 3
- Aircraft position using GPIRS ⋖ position
- F-PLN as memorized in the MCDU
- F-PLN display on ND
- F-PLN automatic sequencing
- Limited lateral revisions
- Mag (True) bearing depending on the pilot selection, from aircraft position to the TO WPT and associated distance
- True track between waypoints
- Time estimates computed with current GS from onside IRS
- Total time and distance to destination

The following features are not provided:
- No DATA BASE available:
  - No autotuning, NAVAIDS must be selected on RMP
  - No radio position
  - No EFIS CTL PANEL options
  - No LDG ELEV (must be manually selected on overhead panel).
- No performance data:
  - No CLB/DES/APP NAV/FINAL modes
  - No SPEED MANAGED
  - No automatic SPD/MACH change over.
- Most of predictions are lost:
  - No EFOB
  - No XTRA
  - No ETA at DEST.
- No multiple lateral F-PLN

- No AP/FD managed modes
- No crosstalk between MCDUs: F-PLN revisions have to be achieved on both MCDUs.

BACK UP NAV SELECTION

Applicable to: MSN 03618-09063

Ident.: DSC-22_20-60-130-A-00012907.0011001 / 16 FEB 11

2

FM F-PLN DOWNLOAD IN MCDU

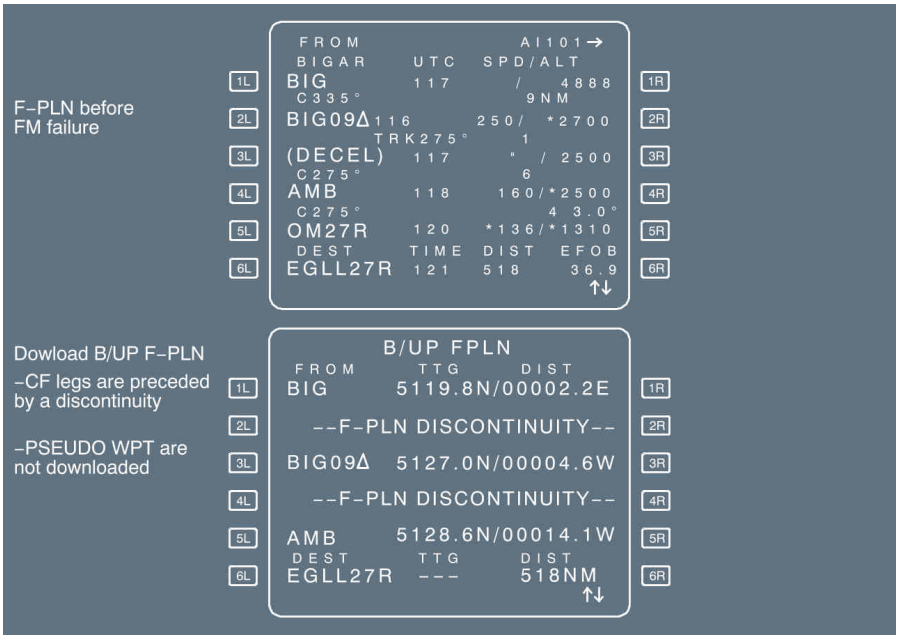
While BACK UP NAV is not active, the FM downloads permanently a condensed form of the F-PLN in the MCDU.

Downloaded information include:
- Waypoint position
- Waypoint identifier
- Leg type
- Discontinuity
- Overfly
- Turn direction.

Heading legs, course to fix legs, ..., computed INTCPT positions, pseudo waypoints, ..., cannot be downloaded.
They are replaced by discontinuities.
Maximum of 150 waypoints are downloaded.

3

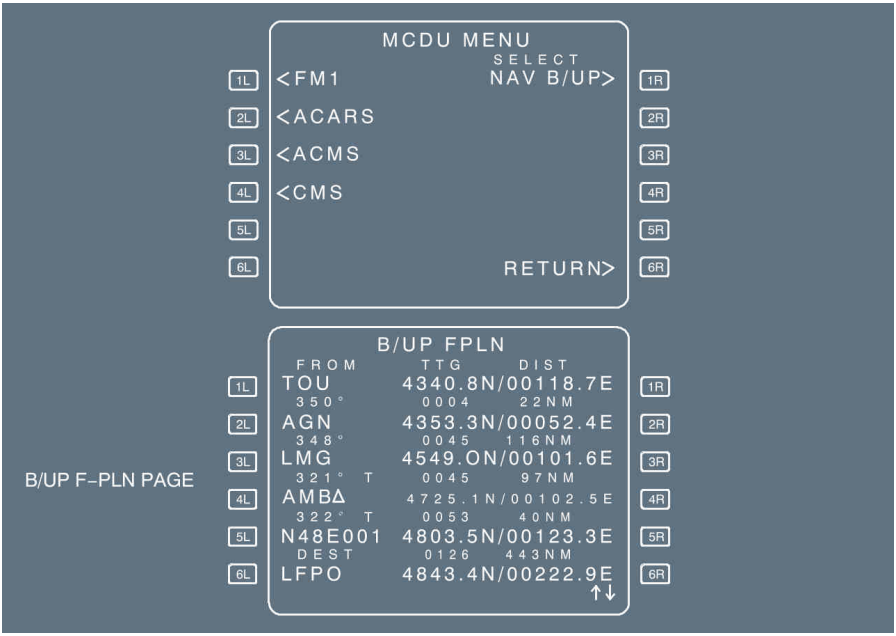
EXAMPLE OF DOWNLOADED F-PLN

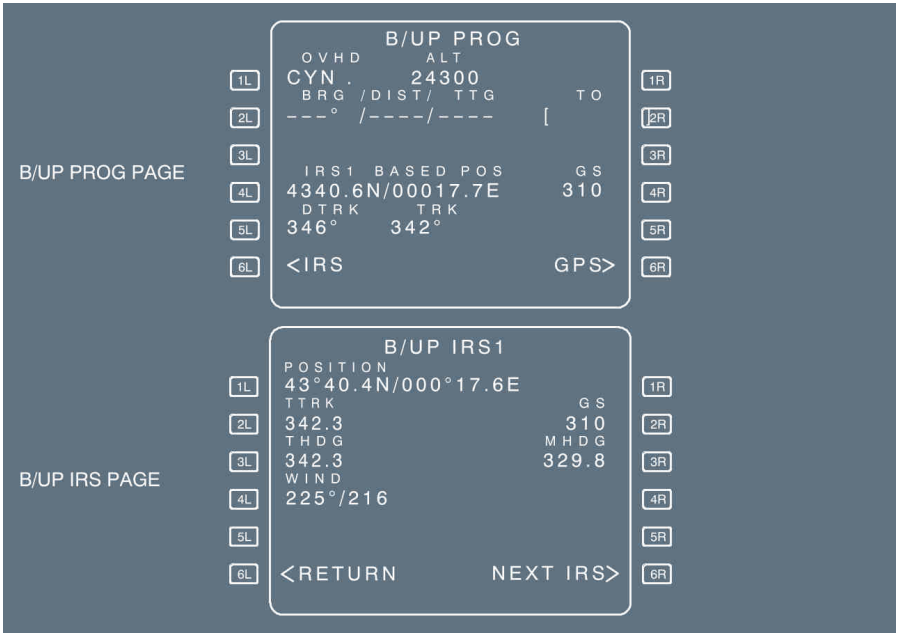


In that procedure, all the legs are coded as CF (Course to Fix) legs. This explains all the discontinuities resulting in the B/UP F-PLN.
These discontinuities may be cleared.
When the second FM fails

REENGAGE and SELECT the required AP and A/THR modes (if disconnected).
SELECT the NAV B/UP prompt on both MCDU.
SELECT NAV on both RMP

Tune the required navaids


MCDU MENU
SELECT
1L <FM1
NAV B/UP> 1R
2L <ACARS 2R
3L <ACMS 3R
4L <CMS 4R
5L 5R
6L RETURN> 6R
B/UP FPLN
FROM TTG DIST
1L TOU 4340.8N/00118.7E 1R
350° 0004 22NM
2L AGN 4353.3N/00052.4E 2R
348° 0045 116NM
3L LMG 4549.ON/00101.6E 3R
321° T 0045 97NM
4L AMBΔ 4725.1N/00102.5E 4R
322° T 0053 40NM
5L N48E001 4803.5N/00123.3E 5R
DEST 0126 443NM
6L LFPO 4843.4N/00222.9E 6R
↑↓
B/UP F-PLN PAGE



- Only MCDU MENU
  - F-PLN key
  - PROG key
  - DIR key
- B/UP F-PLN page
  - B/UP PROG page
  - B/UP IRS 1, 2, 3 pages are available when BACK UP NAV is selected.
- B/U GPS (if GPS is installed).

BACK UP NAV OPERATION

Ident.: DSC-22_20-60-130-B-00012909.0011001 / 16 FEB 11

[4] **Applicable to: MSN 03618-09063**

AP AND A/THR

One FG at least must be available to allow the engagement of AP/FD and A/THR. All FM managed modes are lost as well as managed speed.

As a consequence:
- LAT F-PLN is flown in HDG/TRK modes
- VERT F-PLN is flown in OPEN/V/S/FPA modes
- SPD TARGET is manually SELECTED on the FCU
- SPD/MACH crossover is manually SELECTED on the FCU.

It is recommended to use the TRK/FPA modes:

SELECT the required TRK on FCU at waypoint sequencing (as no AP/FD coupling exists in NAV B/UP). F-PLN sequencing is automatic.
MONITOR the track of the next leg prior reaching the TO waypoint (track between TO and next waypoints is true track).
ADJUST the track to follow the F-PLN with X-TRK = 0
USE OP DES or FPA to descend as suitable.

FPA allows easy altitudes predictions:
DNM = △(FL)/FPA°

Ident.: DSC-22_20-60-130-B-00012910.0011001 / 16 FEB 11
5 **Applicable to: MSN 03618-09063**

NAVIGATION MONITORING

The navigation accuracy check must be achieved periodically using the same principle as with FM navigation:

COMPARE computed data with raw data
SELECT ON RMP the applicable navaid
PRESS the [PROG] key

B/UP PROG page is displayed

WRITE in the scratchpad then ENTER the navaid LAT/LONG
SELECT associated navaid needle on the EFIS control panel.
COMPARE computed BRG/DIST with RAW DATA on ND

- *If the crosscheck is POSITIVE the ND may be used in ROSE NAV/MAP modes with raw data*
- *If the crosscheck is NEGATIVE the ND must be used in ROSE VOR/ROSE ILS modes.*

Note: B/UP IRS ◁ and B/UP GPS ◁ pages may also be used to check the position.

Ident.: DSC-22_20-60-130-B-00012911.0011001 / 16 FEB 11
6 **Applicable to: MSN 03618-09063**

FLIGHT PLANNING

The following revisions may be achieved:
- WPT insertion/deletion
- OVERFLY insertion/deletion

- DIR TO a waypoint
- CLR waypoints/discontinuities.

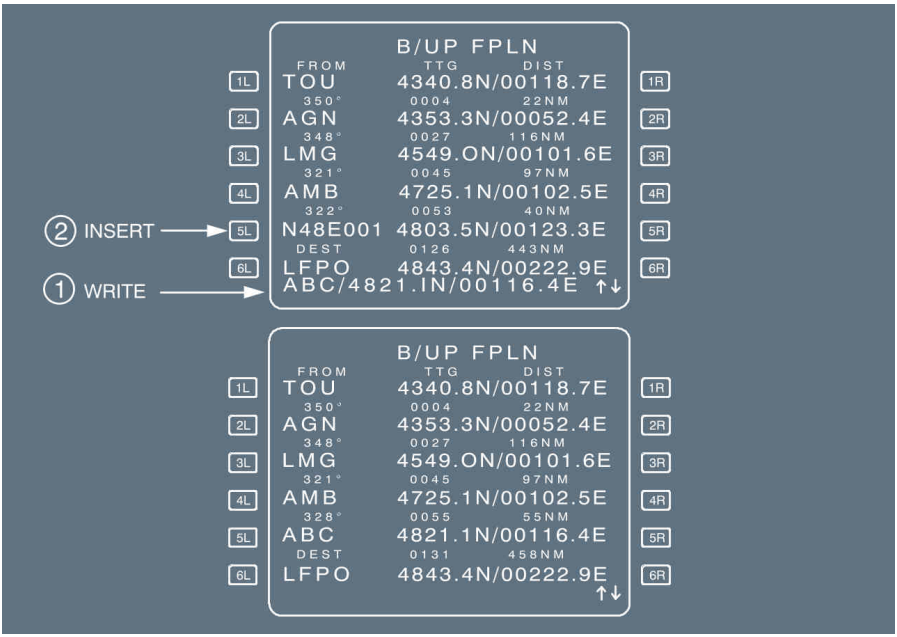
Waypoint identifiers are either published waypoint identifiers if present in the MCDU active F-PLN, or coded LAT/LONG identifiers resulting from flight crew entries.
All flight planning functions are directly applied on active F-PLN without LAT REV page.

Ident.: DSC-22_20-60-130-B-00012912.0011001 / 23 JUN 15

7 **Applicable to: MSN 03618-09063**

WAYPOINT INSERTION

Waypoint insertion into the F-PLN is performed via the B/UP F-PLN page by selecting the line key adjacent to the desired point of insertion, whenever a pre-existing waypoint identifier or valid IDENT/LAT/LONG or LAT/LONG entry is displayed in the scratchpad.
Any waypoint entry which causes the number of legs in the route to exceed the maximum allowed results in the “F-PLN FULL” message.



Note: - *If the inserted waypoint is entered only with LAT/LONG, its identifier would be : N48E001*
- *If the flight crew writes a waypoint IDENT/LAT/LONG with an IDENT already used in the F-PLN, a message "NOT ALLOWED" is displayed.*

Ident.: DSC-22_20-60-130-B-00012913.0011001 / 16 FEB 11
8 **Applicable to: MSN 03618-09063**

WAYPOINT DELETION

Waypoint and discontinuity may be deleted from the B/UP F-PLN page by using the CLR key.

Ident.: DSC-22_20-60-130-B-00012914.0011001 / 16 FEB 11
9 **Applicable to: MSN 03618-09063**

OVERFLY INSERTION/DELETION

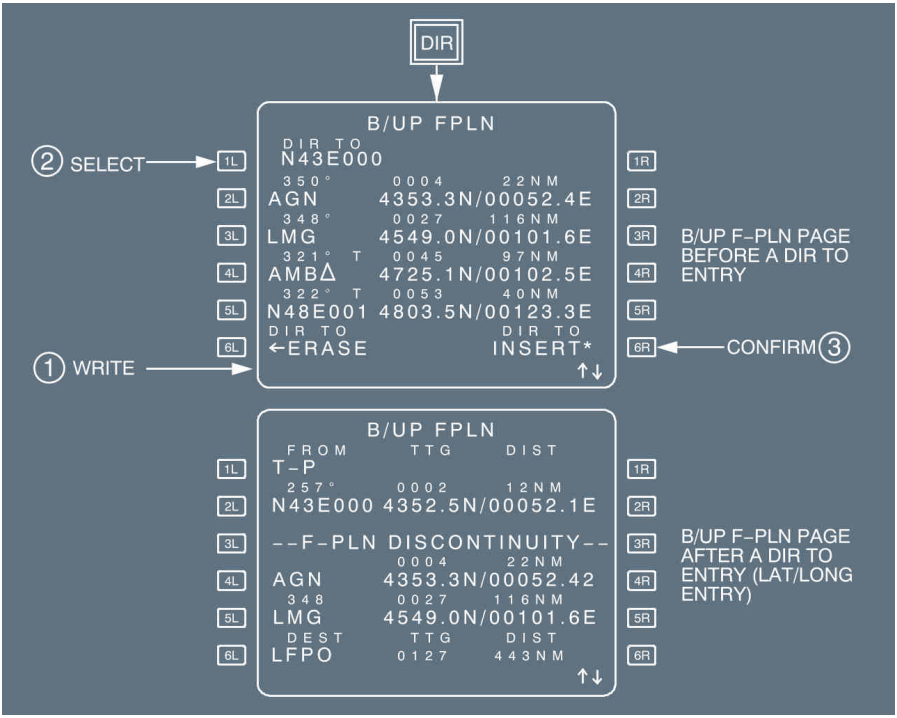
Same as for the FM F-PLN.

Ident.: DSC-22_20-60-130-B-00012915.0006001 / 23 JUN 15
Applicable to: MSN 03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

DIRECT TO A WAYPOINT

The DIR TO function operates as for the normal F-PLN, except that RADIAL INTERCEPT and ABEAM functions are not available.

PRESS the DIR key, then SELECT the downpath waypoint
WRITE LAT/LONG (or IDENT/LAT/LONG) on the scratchpad then INSERT in [1L].
Confirm the DIR TO [6R].
SELECT the correct track on the FCU in order for the aircraft to turn toward the new TO waypoint.



In this example, the entered DIR TO waypoint is a LAT/LONG waypoint.
Due to the fact that this new waypoint is not identical to any waypoint in the F-PLN, a direct leg to that waypoint is created and followed by a discontinuity.
When the DIR TO function is completed, the B/UP F-PLN page is displayed with the DIR TO waypoint as the TO waypoint and the T-P waypoint as the FROM waypoint.
If a DIR TO function is achieved for a waypoint that belongs to the B/UP F-PLN, no F-PLN discontinuity is created.

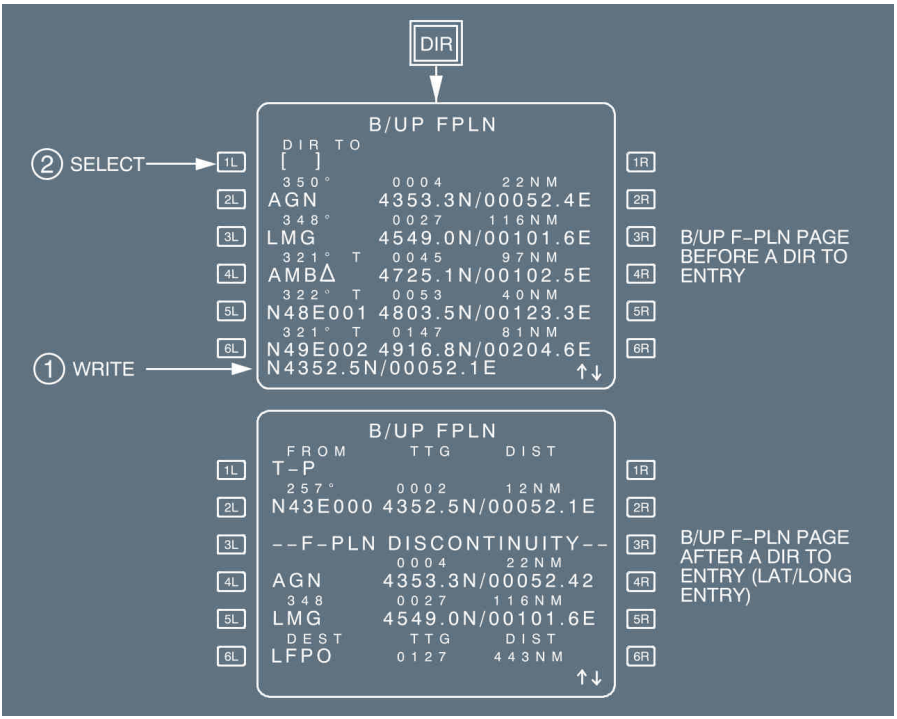
Note: - *In case of a DIR TO waypoint associated with an OVERFLY condition, the OVERFLY is kept.*

Ident.: DSC-22_20-60-130-B-00012915.0011001 / 23 JUN 15
10 **Applicable to: MSN 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

DIRECT TO A WAYPOINT

The DIR TO function operates as for the normal F-PLN, except that RADIAL INTERCEPT and ABEAM functions are not available.

PRESS the DIR key.
WRITE LAT/LONG (or IDENT/LAT/LONG) on the scratchpad then INSERT in [1L].
SELECT the correct track on the FCU in order for the aircraft to turn toward the new TO waypoint.



In this example, the entered DIR TO waypoint is a LAT/LONG waypoint.
Due to the fact that this new waypoint is not identical to any waypoint in the F-PLN, a direct leg to that waypoint is created and followed by a discontinuity.
When the DIR TO function is completed, the B/UP F-PLN page is displayed with the DIR TO waypoint as the TO waypoint and the T-P waypoint as the FROM waypoint.
If a DIR TO function is achieved for a waypoint that belongs to the B/UP F-PLN, no F-PLN discontinuity is created.

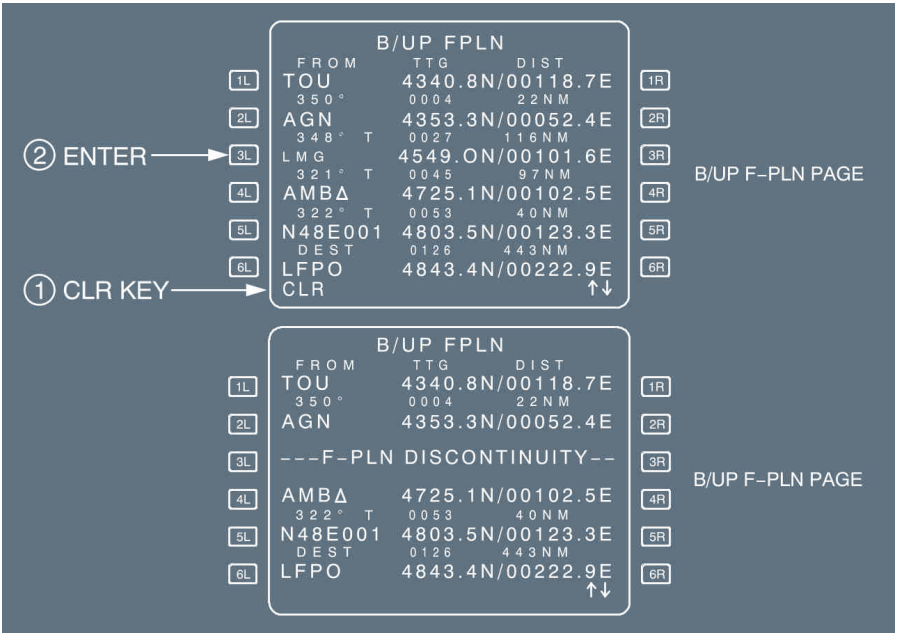
Note: - *In case of a DIR TO waypoint associated with an OVERFLY condition, the OVERFLY is kept.*

Ident.: DSC-22_20-60-130-B-00012916.0011001 / 14 MAY 12

11 **Applicable to: MSN 03618-09063**

CLR WAYPOINT/DISCONTINUITY

CLR as for normal operation.



Ident.: DSC-22_20-60-130-B-00012917.0011001 / 23 DEC 14

12 **Applicable to: MSN 03618-09063**

APPROACHES

- ND display selection rule
  As per normal operation, it depends upon the result of NAV ACCY CROSS CHECK.
  Furthermore it depends also whether the F-PLN is complete, including the approach.

F-PLN	NAV ACCY CHECK	ND	
		PF	PM

Continued on the following page

Continued from the previous page

Complete with appropriate approach	Positive	ARC or ROSE NAV Ref navaid Raw data	
	Negative	ROSE VOR/ILS	ARC or ROSE NAV or ROSE VOR/ILS Ref Navaid Raw Data
Incomplete	Positive or Negative	ROSE VOR/ILS	

Ident.: DSC-22_20-60-130-B-00012918.0011001 / 16 FEB 11
13 **Applicable to: MSN 03618-09063**

END OF DESCENT

ADJUST manually the landing elevation on the overhead panel.
SET the MDA on the standby altimeter.

Ident.: DSC-22_20-60-130-B-00012919.0011001 / 23 JUN 15
14 **Applicable to: MSN 03618-09063**

NON ILS APPROACHES

SELECT on RMP the approach reference navaids.

The autopilot and flight director available modes are TRK-FPA and HDG/VS
The autothrust available speed target is selected speed.

Ident.: DSC-22_20-60-130-B-00012920.0011001 / 16 FEB 11
15 **Applicable to: MSN 03618-09063**

ILS APPROACHES

Only CAT 1 approaches may be flown since the DH indication is not available.

CHECK the ILS frequency and course on the RMP.
PUSH the LS pb on the EIS control panel.

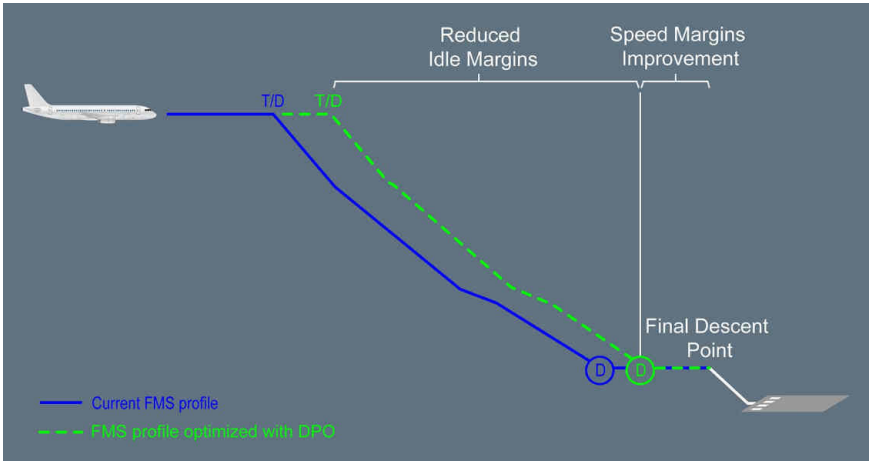
The autopilot and flight director available modes are APP (LOC – G/S – LAND)
The autothrottle available speed target is selected speed

CHECK VAPP in the QRH.

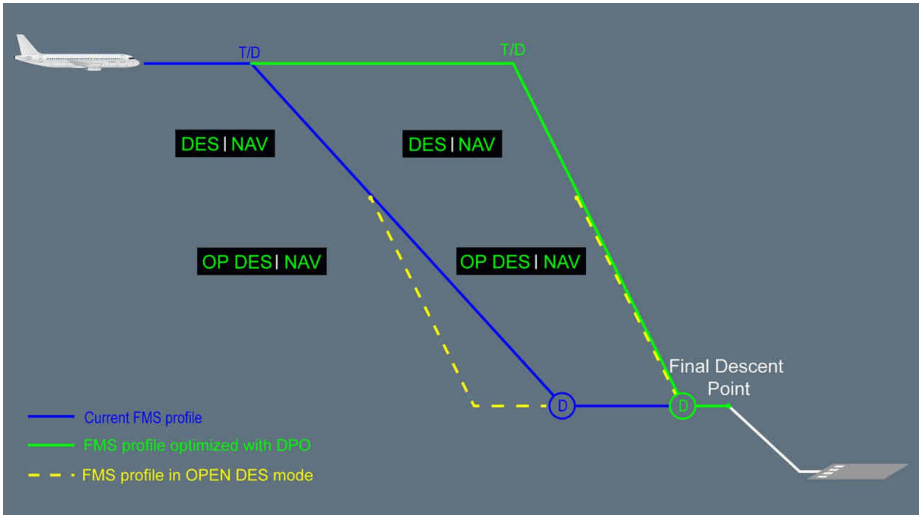
DESCENT PROFILE OPTIMIZATION ◁

Ident.: DSC-22_20-60-150-00019723.0001001 / 07 JUN 16
Applicable to: ALL

During the idle segment in descent, margins are added to the idle thrust to have more flexibility to maintain the aircraft on the computed descent profile in case of external perturbations such as important wind change.
The Descent Profile Optimization (DPO ◁) optimizes the computed vertical profile. It decreases the idle thrust margins in descent and the speed margins in approach to reduce fuel burn in descent phase.
With DPO ◁ , the computed vertical profile is steeper. The T/D is reached later. Before the final approach, the deceleration level-off is shorter.



With DPO ◁ , along the idle segment, without altitude constraint, the descent profile computed by the FMS is the same as the one flown in OPEN DES mode. Therefore, reverting in OPEN DES mode during the descent does not change the descent rate.



With DPO ◁, the FMGS has less flexibility to maintain the aircraft on the computed vertical profile in case of difference between wind entry and effective wind. Therefore, the accurate winds have to be entered in the FMGS before descent.
During descent, the VDEV should be closely monitored. If the aircraft goes above the flight descent profile, the flight crew may have to extend speed brakes to go back on the computed descent profile.
If ENG ANTI ICE or ENG ANTI ICE + WING ANTI ICE are used during descent (inducing an increased idle thrust), the flight crew may have to extend speed brakes to stay on the computed descent profile.

FLIGHT PLAN INITIALIZATION THROUGH ACARS

Ident.: DSC-22_20-70-00000956.0007001 / 01 OCT 12

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

REQUEST FOR ACTIVE FLIGHT PLAN INITIALIZATION BEFORE ENGINE START

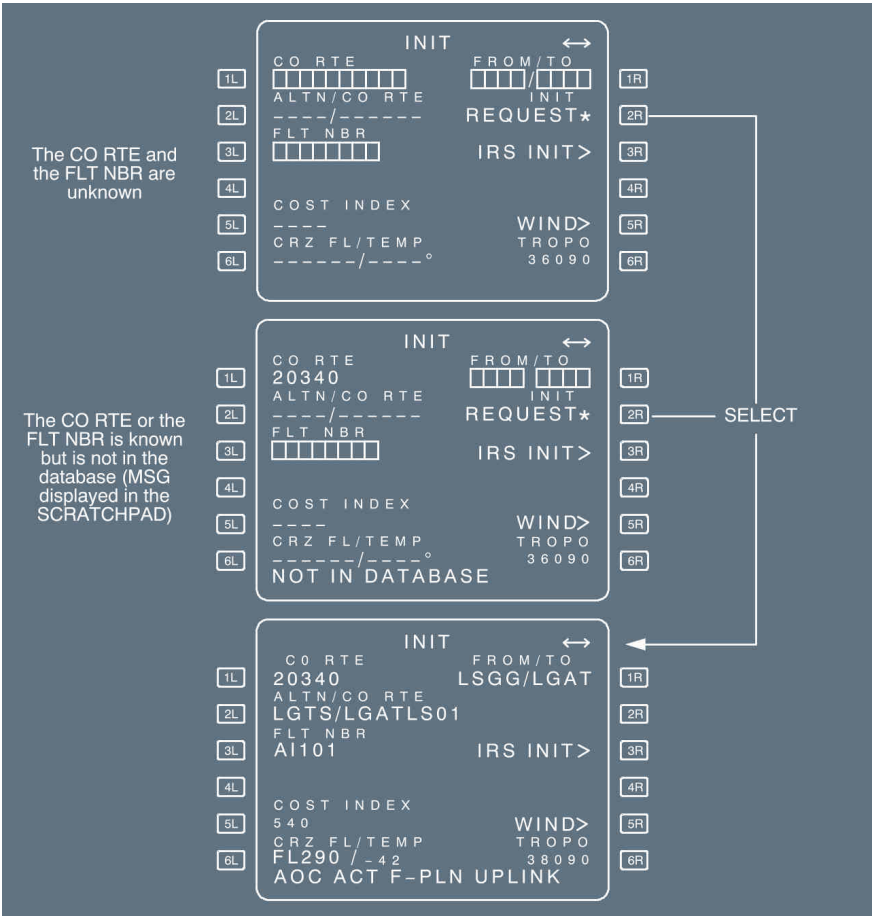
Before engine start, the crew may request a route for the active flight plan. When the route is received, “AOC ACT F-PLN UPLINK” message is displayed on the MCDU indicating that the flight plan has been received and automatically inserted.
After engine start, it is not possible to initialize directly the active flight plan since the received flight plan is automatically routed into the secondary, and the MDCU displays “AOC SEC F-PLN UPLINK”.

PROCEDURE

PRESS the INIT REQUEST * prompt.

The star (*) disappears, all data fields are dashed except:
- *CO RTE, FLT NBR if previously displayed and*
- *Ddefault values.*

The star is not displayed when the FMGS cannot communicate with the ACARS. No request can be sent.
When an active flight plan exists, INIT REQUEST prompt is removed from the active INIT page and no request can be sent for the active flight plan. If a flight plan is entered manually after the request, the uplink message is routed to the secondary.



REQUEST FOR SECONDARY FLIGHT PLAN

A request for a secondary flight plan can be initiated anytime. Any flight plan received after engine start is automatically routed into the secondary flight plan.

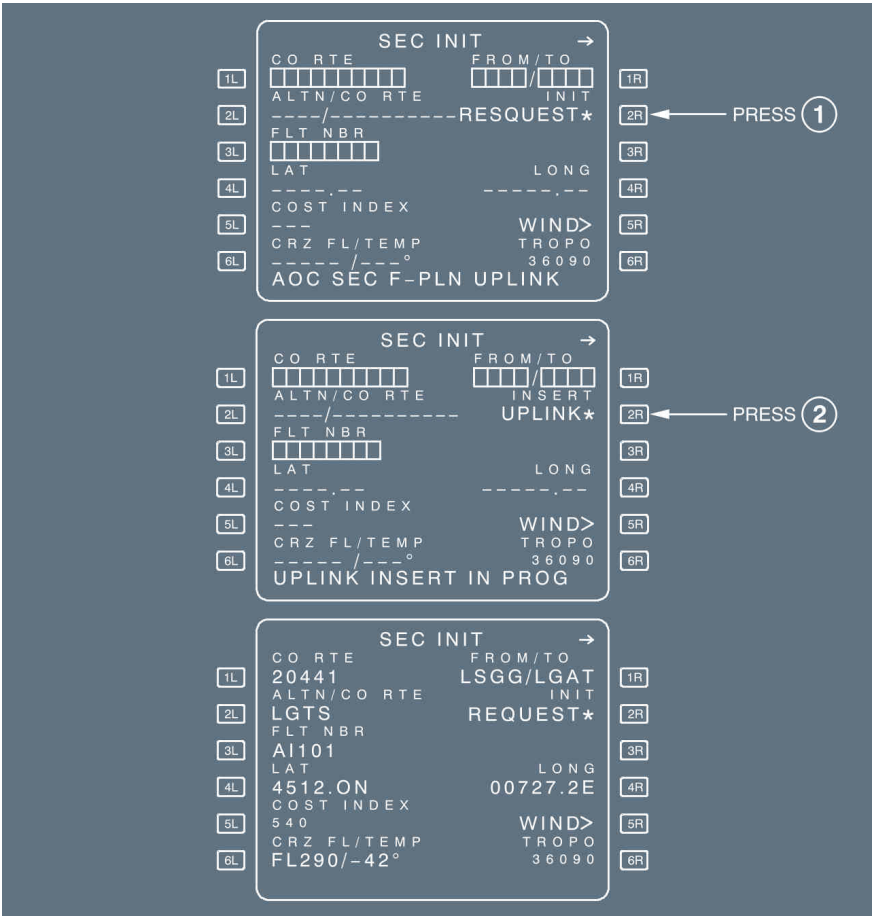
When the flight plan is received, a message “AOC SEC F-PLN UPLINK” is displayed on the MCDU scratchpad.

Before engine start, and if the SEC F-PLN is empty, any uplinked flight plan is automatically inserted into the secondary flight plan, and no flight crew action is required.

After engine start, or if the SEC F-PLN is not empty, the flight crew must manually insert the uplinked flight plan via INSERT UPLINK prompt.

PROCEDURE TO INSERT OR REJECT A SECONDARY FLIGHT PLAN

When the uplink message is received, the INIT REQUEST prompt of the INIT A page is replaced by INSERT UPLINK (2R field). Pressing the 2R key will insert the flight plan into the secondary. Clearing the prompt will reject it.
If a temporary flight plan or a DIR TO is in progress, the uplink insertion is not accepted until the temporary flight plan or the DIR TO is completed.



FLIGHT PLAN INITIALIZATION THROUGH ACARS (IF INSTALLED)

Ident.: DSC-22_20-70-00000956.0014001 / 01 OCT 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

REQUEST FOR ACTIVE FLIGHT PLAN INITIALIZATION BEFORE ENGINE START

Before engine start, the crew may request a route for the active flight plan. When the route is received, “AOC ACT F-PLN UPLINK” message is displayed on the MCDU indicating that the flight plan has been received and automatically inserted.

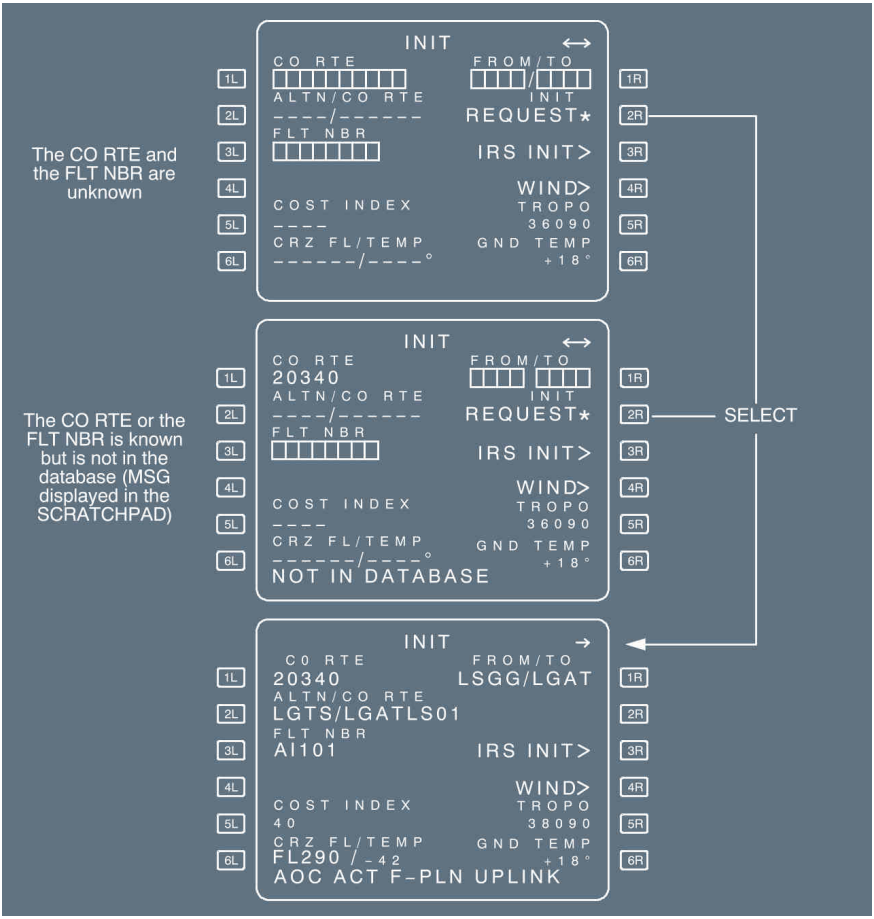
After engine start, it is not possible to initialize directly the active flight plan since the received flight plan is automatically routed into the secondary, and the MDCU displays “AOC SEC F-PLN UPLINK”.

PROCEDURE

PRESS the INIT REQUEST * prompt.

The star (*) disappears, all data fields are dashed except:
- *CO RTE, FLT NBR if previously displayed and*
- *Ddefault values.*

The star is not displayed when the FMGS cannot communicate with the ACARS. No request can be sent.
When an active flight plan exists, INIT REQUEST prompt is removed from the active INIT page and no request can be sent for the active flight plan. If a flight plan is entered manually after the request, the uplink message is routed to the secondary.



REQUEST FOR SECONDARY FLIGHT PLAN

A request for a secondary flight plan can be initiated anytime. Any flight plan received after engine start is automatically routed into the secondary flight plan.

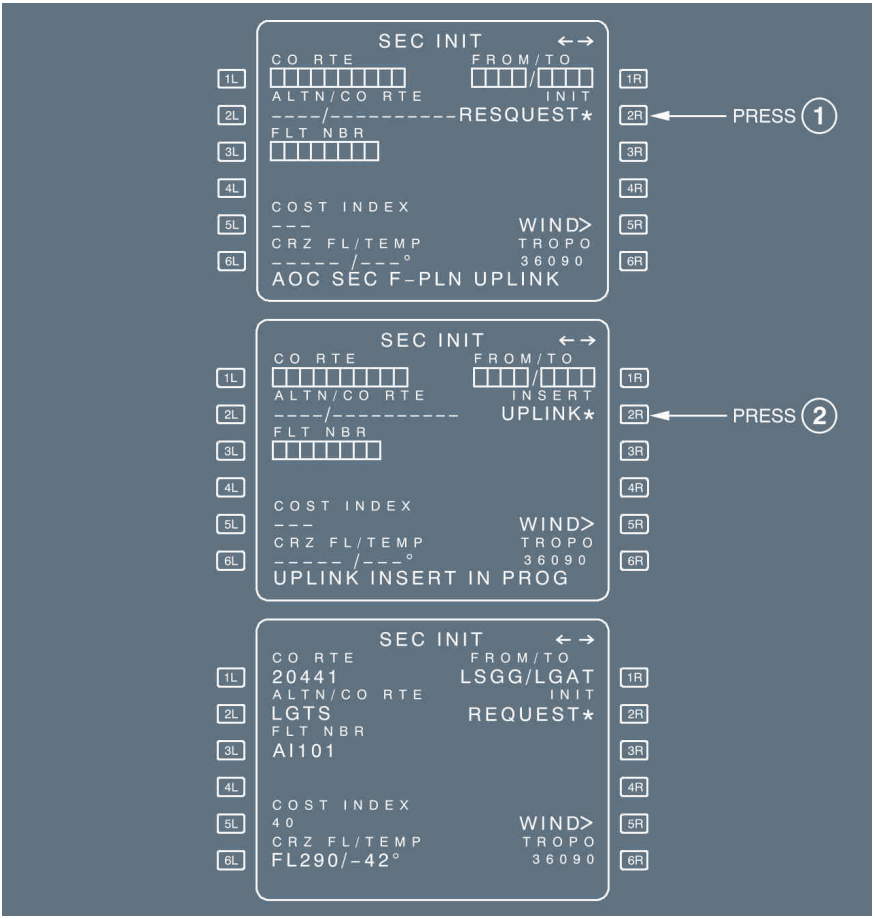
When the flight plan is received, a message “AOC SEC F-PLN UPLINK” is displayed on the MCDU scratchpad.

Before engine start, and if the SEC F-PLN is empty, any uplinked flight plan is automatically inserted into the secondary flight plan, and no flight crew action is required.

After engine start, or if the SEC F-PLN is not empty, the flight crew must manually insert the uplinked flight plan via INSERT UPLINK prompt.

PROCEDURE TO INSERT OR REJECT A SECONDARY FLIGHT PLAN

When the uplink message is received, the INIT REQUEST prompt of the INIT A page is replaced by INSERT UPLINK (2R field). Pressing the 2R key will insert the flight plan into the secondary. Clearing the prompt will reject it.
If a temporary flight plan or a DIR TO is in progress, the uplink insertion is not accepted until the temporary flight plan or the DIR TO is completed.



TAKEOFF DATA

Ident.: DSC-22_20-70-A-00000957.0001001 / 15 FEB 11
Applicable to: ALL

GENERAL

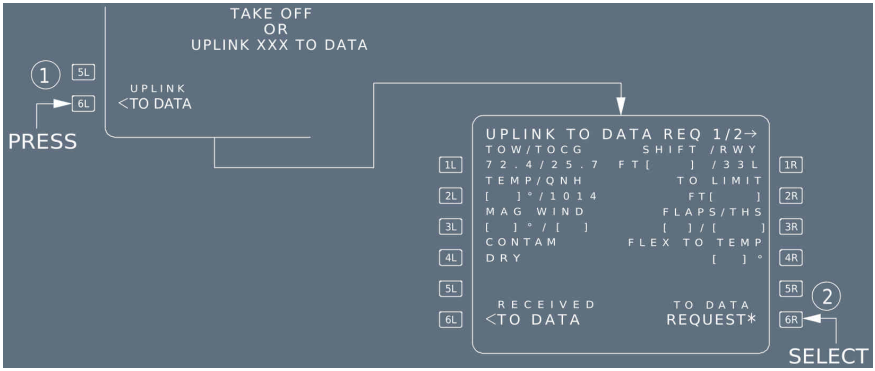
The takeoff data may be requested in preflight or done phase for the active flight plan only. It is always associated with the active flight plan message.

Ident.: DSC-22_20-70-A-00000958.0006001 / 15 FEB 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

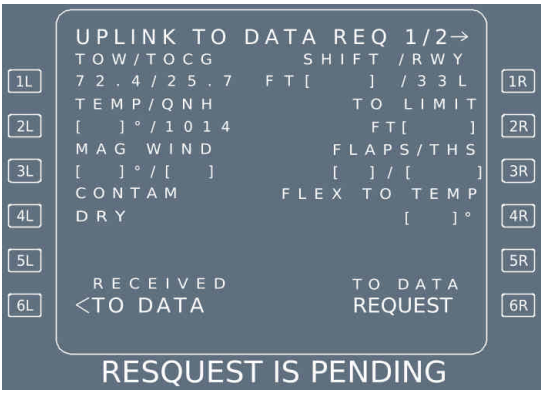
REQUEST FOR TAKEOFF DATA

In order to obtain takeoff data from the ground station:

SELECT UPLINK TO DATA [6L] key.
SEND the request by pressing the “TO DATA REQUEST” [6R] key.



When TO DATA REQUEST is sent, data of the TO DATA REQ page are locked in and the star displayed in the 6R field is removed.

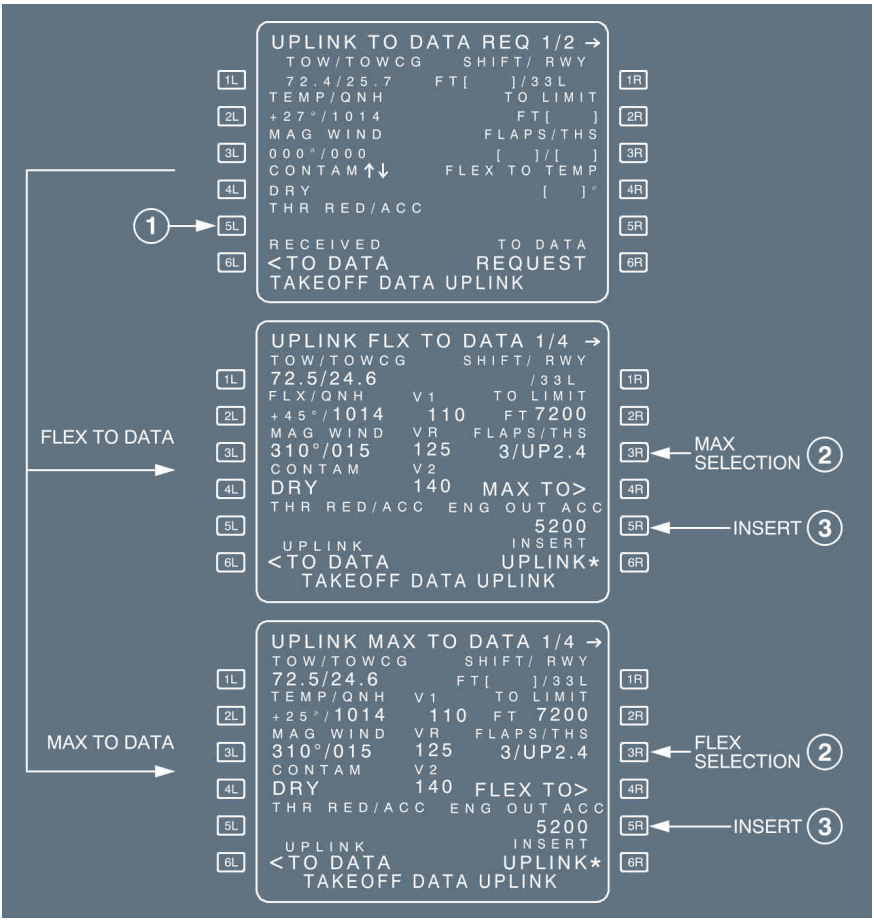


Ident.: DSC-22_20-70-A-00000959.0001001 / 23 JUN 15

2 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

PROCEDURE TO INSERT UPLINK TAKEOFF DATA

PRESS the 6L key “RECEIVED TO DATA” when the message TAKEOFF DATA UPLINK is displayed.



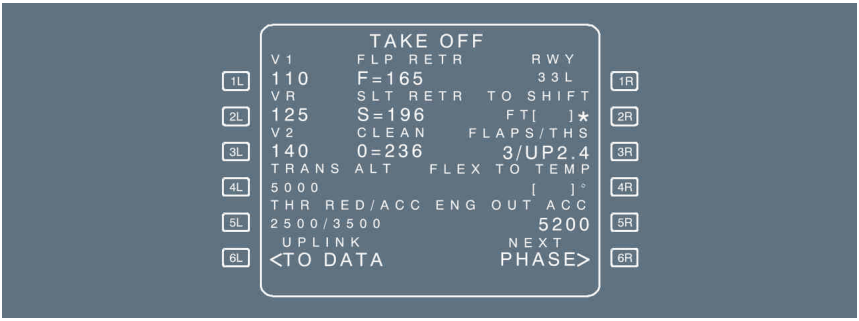
This displays the uplink data on 2 different pages: *UPLINK MAX TO DATA*
UPLINK FLX TO DATA

SELECT the data corresponding to the thrust to be used (MAX or FLEX) by pressing [4R].
SELECT the active runway data by slewing the pages (1/4... 4/4).
PRESS the [6R] key “INSERT UPLINK”.

UPLINK MAX TO DATA and UPLINK FLX TO DATA pages are not modifiable.

- **If the takeoff data displayed on this page are not relevant to the active runway entered in the flight plan** , the INSERT UPLINK prompt is not displayed.

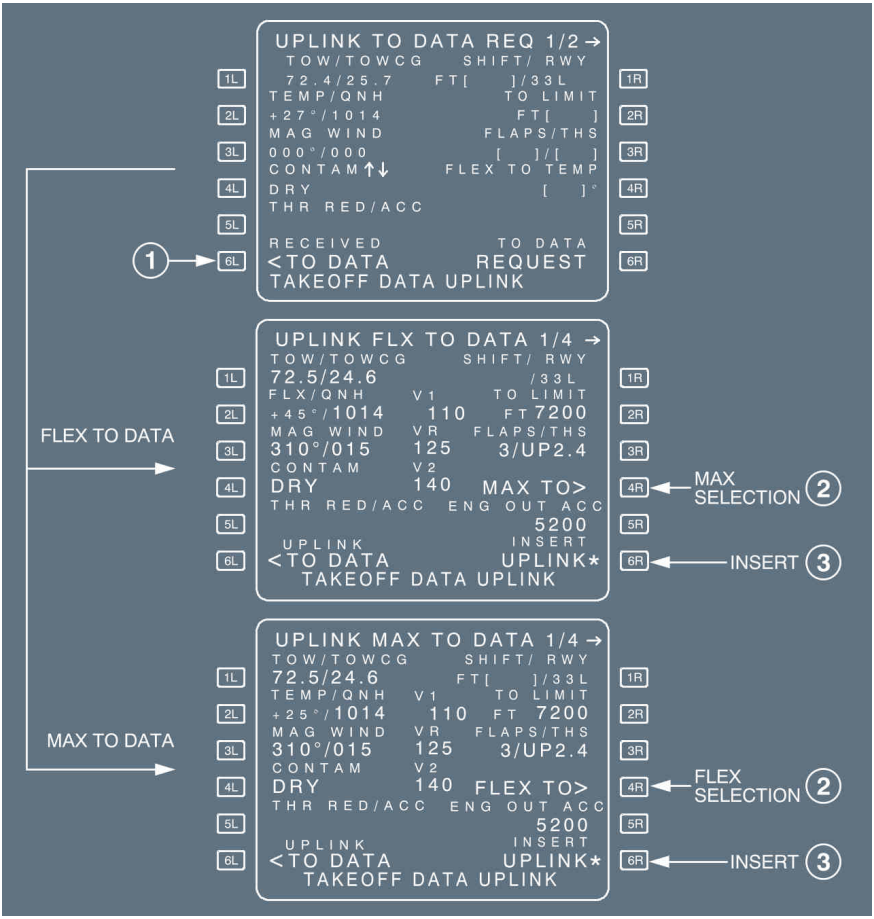
- **When the takeoff data have been inserted** , the PERF TO page is amended of the new data.



Ident.: DSC-22_20-70-A-00000959.0005001 / 23 JUN 15
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

PROCEDURE TO INSERT UPLINK TAKEOFF DATA

PRESS the 6L key “RECEIVED TO DATA” when the message TAKEOFF DATA UPLINK is displayed.



This displays the uplink data on 2 different pages: *UPLINK MAX TO DATA*
UPLINK FLX TO DATA

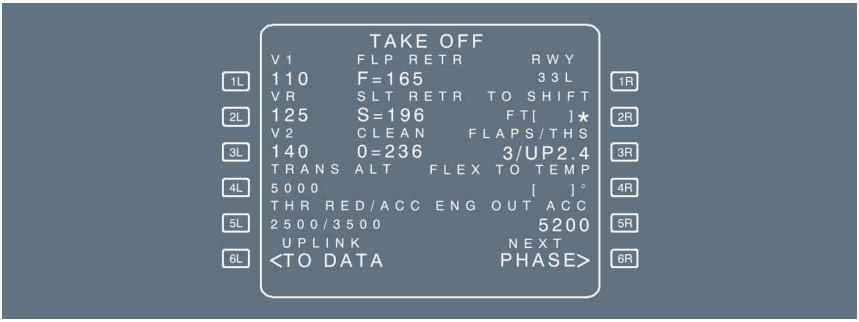
SELECT the data corresponding to the thrust to be used (MAX or FLEX) by pressing [4R].
SELECT the active runway data by slewing the pages (1/4... 4/4).
PRESS the [6R] key “INSERT UPLINK”.

UPLINK MAX TO DATA and UPLINK FLX TO DATA pages are not modifiable.

Note: The “INSERT UPLINK” prompt is not displayed:
- *If the uplinked runway is different from the active runway*
- *If the uplinked TOW differs from the FMS-estimated TOW by more than 1 t*
- *If the uplinked TOCG differs from the FMS-estimated TOCG by more than 0.5 %*
- *If the uplink is incomplete.*

● **When the takeoff data have been inserted**

, the PERF TO page is amended of the new data.



WIND DATA

Ident.: DSC-22_20-70-B-00000961.0001001 / 01 OCT 12

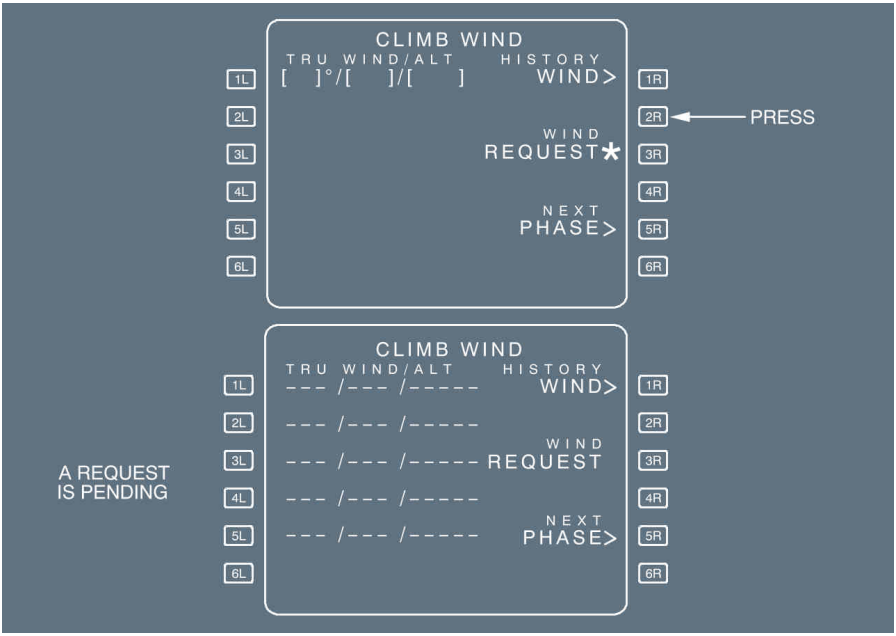
3 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

REQUEST FOR WIND DATA

To send a wind request, press the “WIND REQUEST” selection key of any wind pages. This request is automatically sent to the ground for one or more flight phases and for the selected flight plan (primary or secondary). The content of the wind request message is not dependent on the selected wind page (CLIMB, CRUISE or DESCENT) but on the flight phase in progress.

- For active flight plan or secondary flight plan that is a “COPY ACTIVE”, a wind request sent by the crew:
  - during preflight or takeoff phase, initiates a demand for climb, cruise, descent and alternate winds.
  - during climb and cruise phase, initiates a demand for cruise, descent and alternate winds.
  - during descent/approach and go around, no wind request is possible.
- For secondary flight plan that is not a “COPY ACTIVE” there is no restriction linked to flight phase.

Before engine start, and if data has not been entered in any WIND page for the flight plan, the uplinked wind data is automatically inserted into the flight plan, and no flight crew action is required.
If the uplinked wind message is received after engine start, or if data has been entered in any WIND page of the flight plan, the flight crew must manually insert the uplinked wind data via the INSERT UPLINK prompt.



When the amber star following the “WIND REQUEST” is not displayed, the FM is not able to communicate with the ACARS and the pilot cannot send any request.

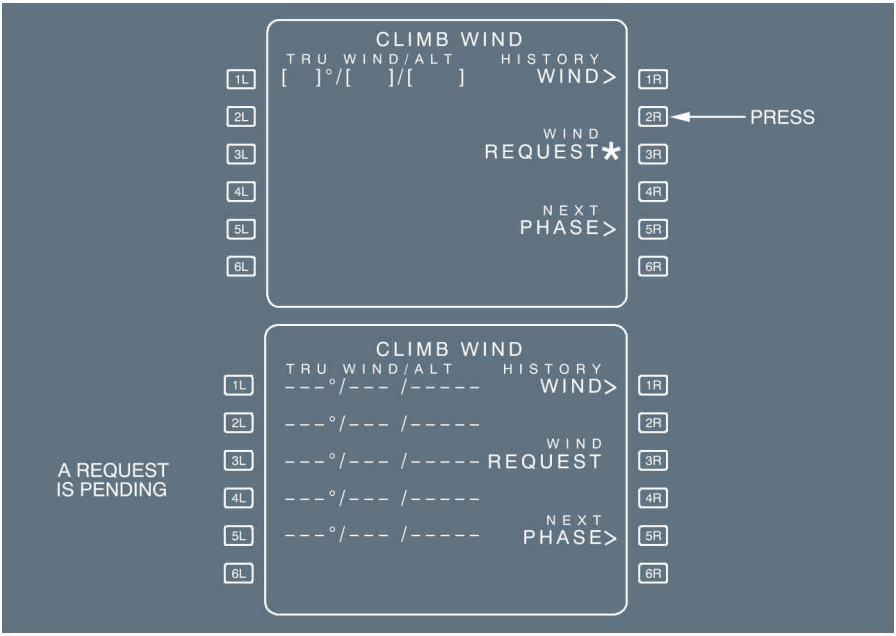
Ident.: DSC-22_20-70-B-00000961.0006001 / 01 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

REQUEST FOR WIND DATA

To send a wind request, press the “WIND REQUEST” selection key of any wind pages. This request is automatically sent to the ground for one or more flight phases and for the selected flight plan (primary or secondary). The content of the wind request message is not dependent on the selected wind page (CLIMB, CRUISE or DESCENT) but on the flight phase in progress.

- For active flight plan or secondary flight plan that is a “COPY ACTIVE”, a wind request sent by the crew:
  - during preflight or takeoff phase, initiates a demand for climb, cruise, descent and alternate winds.
  - during climb and cruise phase, initiates a demand for cruise, descent and alternate winds.
  - during descent/approach and go around, no wind request is possible.
- For secondary flight plan that is not a “COPY ACTIVE” there is no restriction linked to flight phase.

If the uplinked wind message is received after engine start, or if data has been entered in any WIND page of the flight plan, the flight crew must manually insert the uplinked wind data via the INSERT UPLINK prompt.



When the amber star following the “WIND REQUEST” is not displayed, the FM is not able to communicate with the ACARS and the pilot cannot send any request.

Ident.: DSC-22_20-70-B-00000962.0020001 / 14 MAY 12

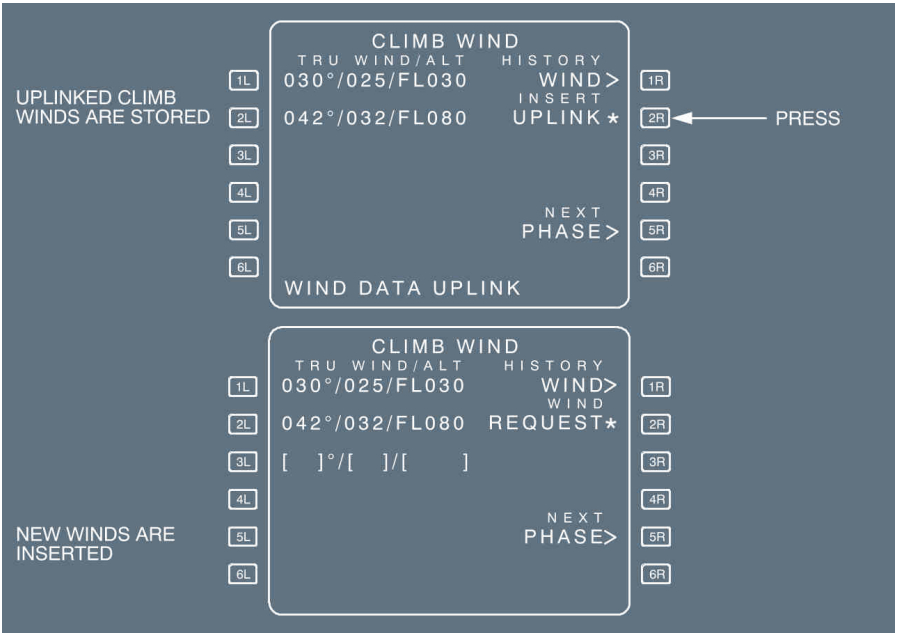
4 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

PROCEDURE TO INSERT WIND DATA

When the uplink message is received, the 2R field is modified, the amber “WIND REQUEST” is replaced by the blue “INSERT UPLINK*”. This prompt, when pressed, enables the flight crew to insert the uplink wind data, phase by phase.

To access, review, insert or delete the uplink wind data of other phases, the crew uses “NEXT PHASE” or “PREV PHASE” key.

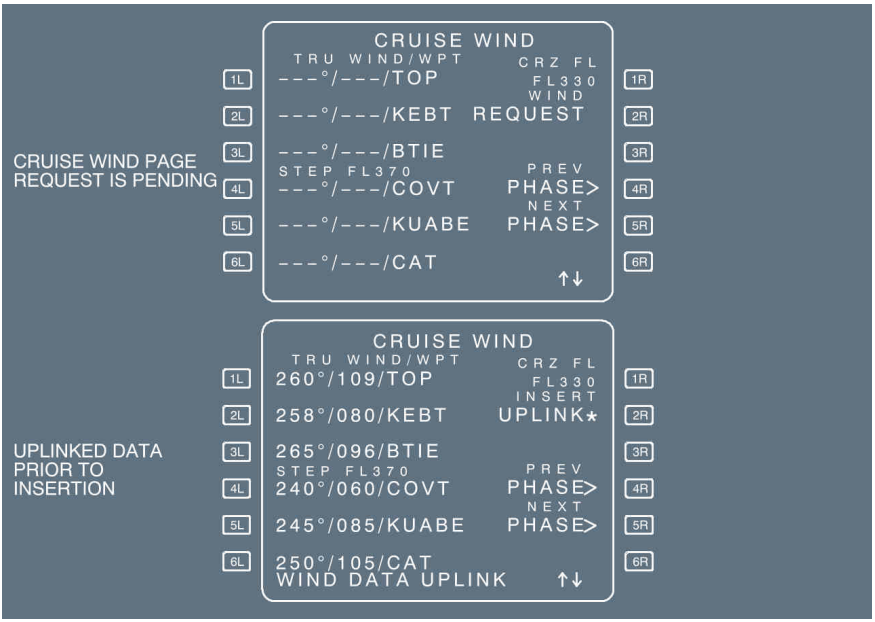
If the crew is not satisfied with the uplink winds, the flight crew will delete the winds, phase by phase clearing the “INSERT UPLINK” prompt. This will delete all the uplinked winds of the selected flight phase.



CLIMB WIND PAGE

When a request is pending, the history WIND page cannot be accessed.
When the climb phase is active, the crew cannot request neither modify the climb winds of the active flight plan or secondary flight plan if it is a copy active.

CRUISE WIND PAGE



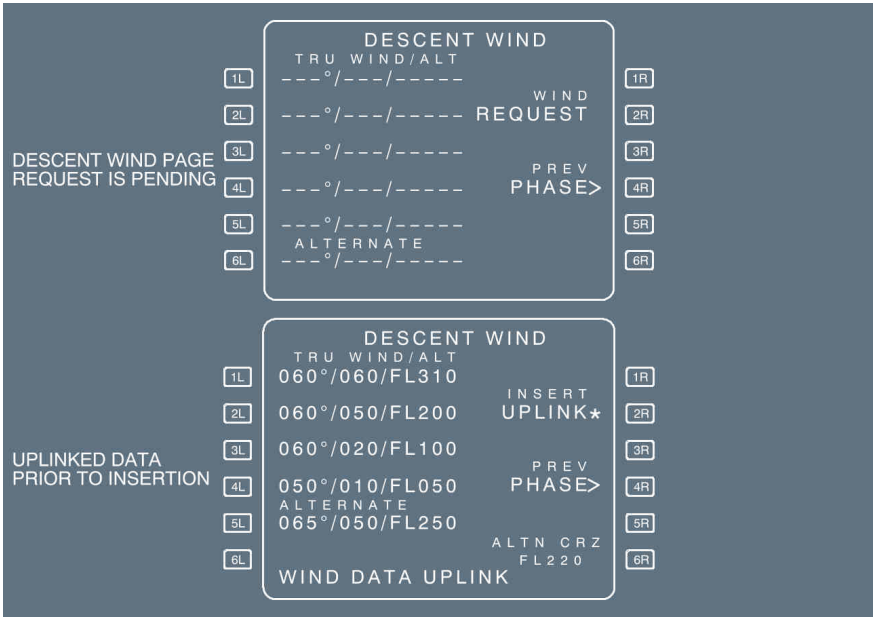
A wind request sent during cruise phase will apply for downpath waypoints of the cruise, descent, approach and alternate phases.

- If the uplink message contains more data and waypoints than the flight plan, the winds at extra waypoints are not considered and automatically discarded. This is transparent to the pilot
- Clearing the INSERT UPLINK* prompt deletes all uplink wind data of the cruise phase. Cruise page reverts to the previous data.

Note: *During cruise, whenever uplink wind data is received and not inserted or cancelled on the CRUISE WIND page, access to the DIR TO function is not possible. The "WIND UPLINK EXISTS" message is displayed on the MCDU scratchpad. Insert or cancel the uplinked wind message first and then access the DIR TO function.*

DESCENT WIND PAGE

The procedures to insert, review or delete descent winds during preflight, climb or cruise phase are described in the above wind general procedure.



If the alternate wind is not available, dashes are displayed in the field.

In descent, approach or go around phases, the pilot cannot request or modify the descent winds of the active flight plan or secondary flight plan if it is a “COPY ACTIVE”.

Ident.: DSC-22_20-70-B-00000962.0022001 / 14 MAY 12

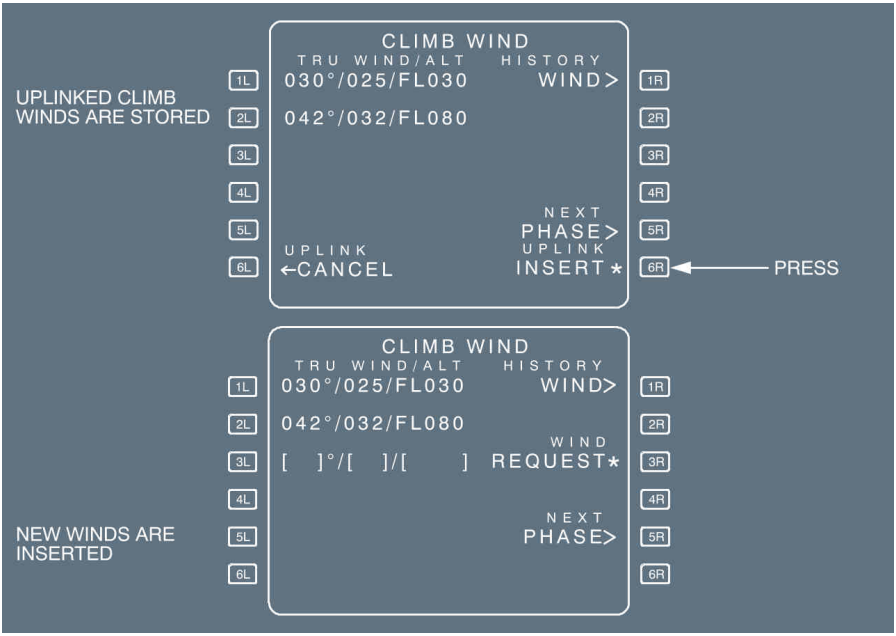
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

PROCEDURE TO INSERT WIND DATA

When the uplink message is received, “WIND REQUEST” disappears from the 3R field and “UPLINK” is displayed in large yellow font next to the title.

To access, review, insert or delete the uplink wind data of other phases, the crew uses “NEXT PHASE” or “PREV PHASE” key.

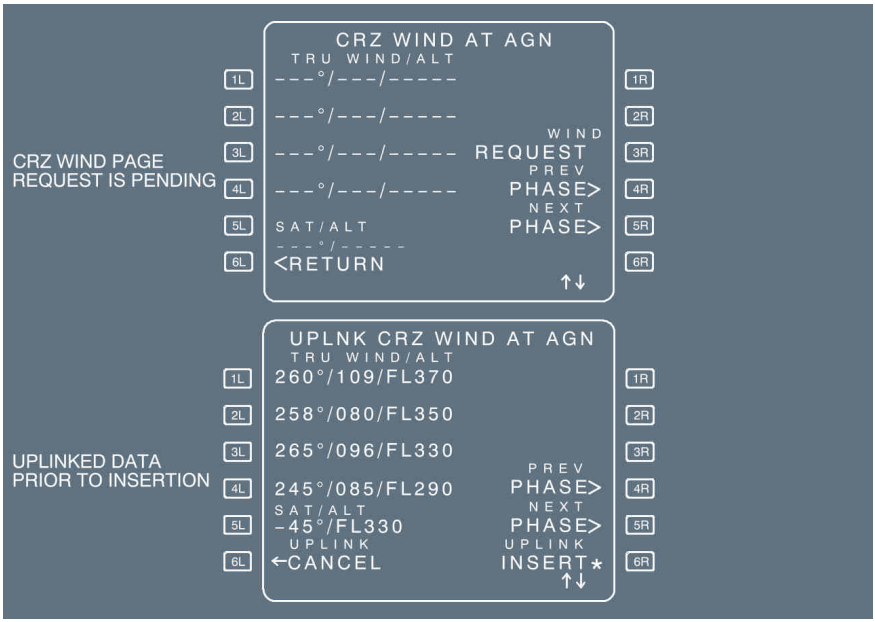
If the crew is not satisfied with the uplink winds, he can delete them using the "UPLINK CANCEL" prompt (6L field). This will delete all unplinked winds



CLIMB WIND PAGE

When a request is pending, the history WIND page cannot be accessed.
When the climb phase is active, the crew cannot request neither modify the climb winds of the active flight plan or secondary flight plan if it is a copy active.

CRUISE WIND PAGE

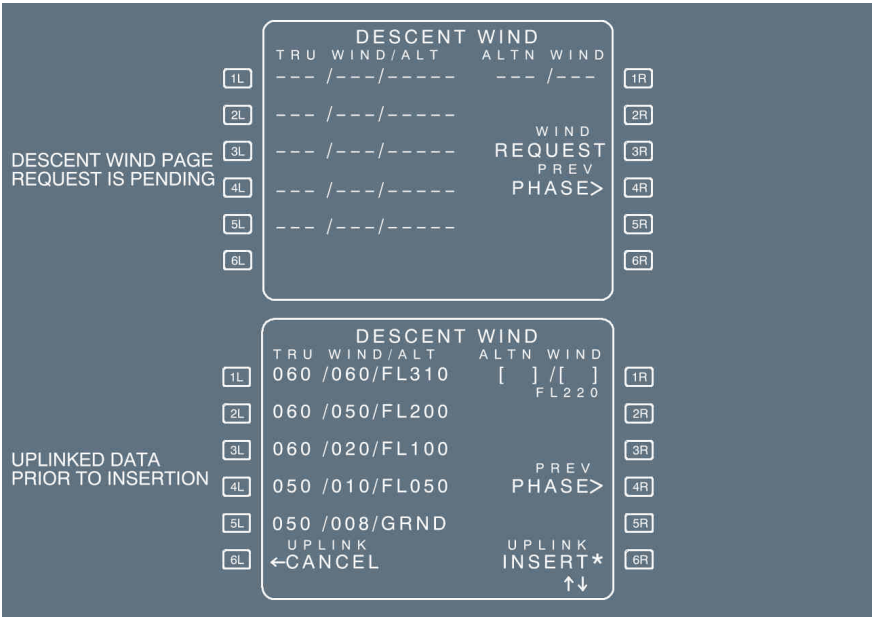


A wind request sent during cruise phase will apply for downpath waypoints of the cruise, descent, approach and alternate phases.

- If the uplink message contains more data and waypoints than the flight plan, the winds at extra waypoints are not considered and automatically discarded. This is transparent to the pilot
- Clearing the INSERT UPLINK* prompt deletes all uplink wind data of the cruise phase. Cruise page reverts to the previous data.

DESCENT WIND PAGE

The procedures to insert, review or delete descent winds during preflight, climb or cruise phase are described in the above wind general procedure.



If the alternate wind is not available, dashes are displayed in the field.
In descent, approach or go around phases, the pilot cannot request or modify the descent winds of the active flight plan or secondary flight plan if it is a “COPY ACTIVE”.

PRINT FUNCTION

Ident.: DSC-22_20-80-00000964.0011001 / 18 MAR 11

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The PRINT function allows various reports to be printed either automatically (when linked to ACARS ◁ or ATSU ◁) or manually.

The manual PRINT function allows printing of FM-generated flight reports and additional data:

F-PLN	INITialization data
T.O.	Data
WIND	Data
PREFLIGHT	REPORT
IN FLIGHT	REPORT
POSTFLIGHT	REPORT

A detailed description of the PRINT FUNCTION pages is provided in *Refer to DSC-22_20-50-10-28 PRINT FUNCTION Pages*.

The print function is available if ACARS ◁ or ATSU ◁ are available or not.

The various flight reports contain most of the prediction information required by the flight crew to monitor the progress of the flight. The resulting documents can therefore be used as realistic master documents, based on the latest data provided by the flight crew to the computer, in terms of ATC clearances and weather information.

PRINT FUNCTION

Ident.: DSC-22_20-80-00000964.0009001 / 18 MAR 11

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The PRINT function allows various reports to be printed either automatically (when linked to ACARS ◁ or ATSU ◁) or manually.

The manual PRINT function allows printing of FM-generated flight reports and additional data:

F-PLN	INITialization data
T.O.	Data
WIND	Data
PREFLIGHT	REPORT
IN FLIGHT	REPORT
POSTFLIGHT	REPORT

A detailed description of the PRINT FUNCTION pages is provided in *Refer to DSC-22_20-50-10-25 Print Function Pages*.

The print function is available if ACARS ◁ or ATSU ◁ are available or not.

The various flight reports contain most of the prediction information required by the flight crew to monitor the progress of the flight. The resulting documents can therefore be used as realistic master documents, based on the latest data provided by the flight crew to the computer, in terms of ATC clearances and weather information.

PRINT FUNCTION ACCESS

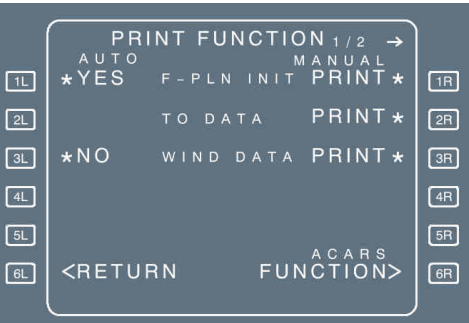
Ident.: DSC-22_20-80-00000965.0004001 / 01 OCT 12

2 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

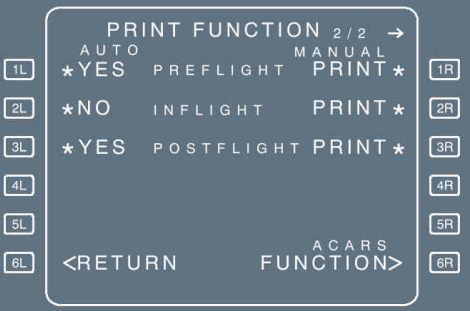
The PRINT FUNCTION page is accessed:

- From the DATA INDEX A PAGE, or
- From the AOC FUNCTION page (if ACARS).

PRINT FUNCTION PAGE 1



PRINT FUNCTION PAGE 2



Note: *For an automatic printing, "time" is the time of the reception of the message. For a manual printing, "time" is the time of the print request.*

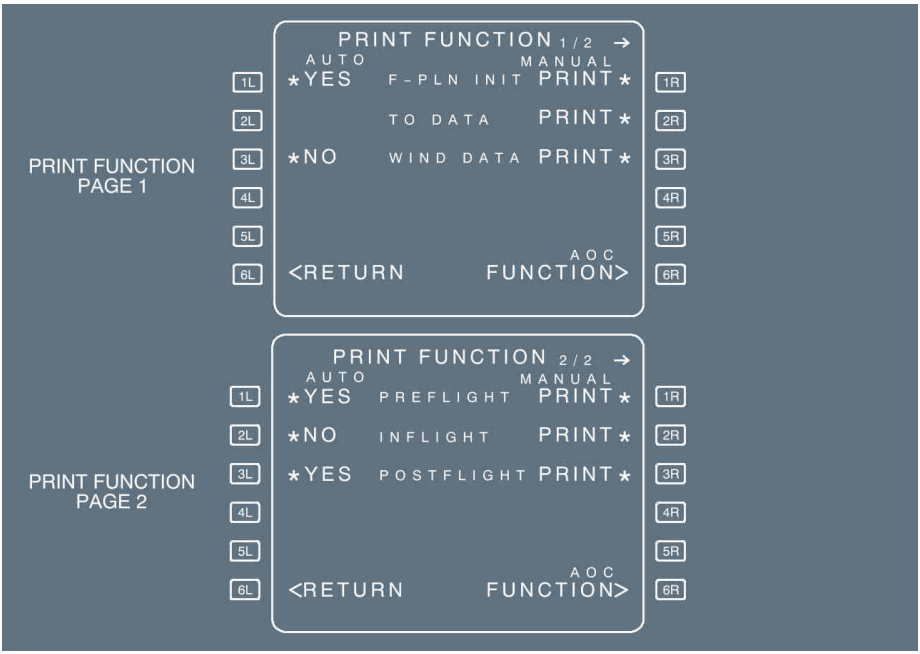
PRINT FUNCTION ACCESS

Ident.: DSC-22_20-80-00000965.0018001 / 01 OCT 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The PRINT FUNCTION page is accessed:

- From the DATA INDEX A PAGE, or
- From the AOC FUNCTION page (if ACARS).



Note: For an automatic printing, "time" is the time of the reception of the message. For a manual printing, "time" is the time of the print request.

ON GROUND BEFORE ENGINE START

Ident.: DSC-22_20-80-00000966.0001001 / 23 JUN 15

3 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

When the overall F-PLN data (lateral, vertical including winds, steps, constraints) and the ZFW and ZFWCG values have been inserted:

SELECT the FUEL PLANNING prompt [3R],

- **If the computed BLOCK fuel does not correspond to the actual block fuel required for the flight:**
  ENTER the actual block required for the flight in the [2R] field,
  PRINT the PREFLIGHT report.
  The flight crew may then use the PREFLIGHT report to monitor the progress of the flight.

  Note: Before printing the PREFLIGHT report, the flight crew must check that the F-PLNis complete (all F-PLN discontinuities must be cleared) and that all the F-PLN elements (including winds, steps, constraints, alternate airport) have been inserted, in order to obtain an accurate PREFLIGHT report.

ON GROUND BEFORE ENGINE START

Ident.: DSC-22_20-80-00000966.0008001 / 18 MAR 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

When the overall F-PLN data (lateral, vertical including winds, steps, constraints) and the ZFW and ZFWCG values have been inserted:

SELECT the FUEL PLANNING prompt [3R],

- **If the computed BLOCK fuel does not correspond to the actual block fuel required for the flight :**
  ENTER the actual block required for the flight in the [2R] field,

PRINT the PREFLIGHT report.

The flight crew may then use the PREFLIGHT report to monitor the progress of the flight.

Note: 1. Before printing the PREFLIGHT report, the flight crew must check that the F-PLN is complete (all F-PLN discontinuities must be cleared) and that all the F-PLN elements (including winds, steps, constraints, alternate airport) have been inserted, in order to obtain an accurate PREFLIGHT report.

2. The following anomalies are known on Thales/Smiths FMS PREFLIGHT reports:

- *Head trip wind values are always printed as 000 ° and Tail trip wind values as 180 °.*
- *The name of PLANA waypoint may erroneously be replaced with “SAURA”.*

EXAMPLE (FM PREFLIGHT REPORT)

Ident.: DSC-22_20-80-00000967.0001001 / 18 MAR 11
Applicable to: ALL

FM PREFLIGHT REPORT

DATE : 24 OCT 06
TIME : 07 : 24

A/C TYPE	: A320-200	DATABASE	: AB49402001
ENG TYPE	: CFM56-5B4	CYCLE	: 29 SEP-26 OCT
FLT NUMBER	: AIB 105	FROM/TO	: EINN/LFBO
CO RTE	:	ALTN	: LFBP
ALTN CO RTE	:		
PERF FACTOR	: +1.5	COST INDEX	: 100
IDLE FACTOR	: +0.0		
CRUISE FL/STEP START WPT			
CRZ FL 1	: FL410		

FLIGHT PLAN DATA

	DIST	TIME	CRZ FL
DEST-LFBO	: 714	01:32	FL410
ALTN-LFBP	: 80	01:52	FL220
DEP RWY	: 24		ARV PRC : . . . . .
DEP PRC	:		APR PRC : . . . . .
			ARV RWY : . . . . .

WPT	TIME	SPD/ALT	FOB	T. WIND	TAS	SAT	CRS	DIST
PREDICTED VALUES								
EINN24	00:00	133/-95	13.6	TL/040	-	+11	183	0
1520	00:00	159/1574	13.2	TL/040	163	+12	240	2
SHA	00:02	190/FL70	13.0	TL/040	211	+01	059	3
CRK	00:10	295/FL300	11.4	TL/040	459	-44	173	55
TIVLI	00:16	.82/FL400	11.2	TL/040	467	-57	140	50
LND	00:27	.84/FL410	11.0	TL/040	482	-57	140	99
NAKID	00:33	.84/FL410	10.9	TL/040	482	-57	130	46
LIZAD	00:34	.84/FL410	9.2	TL/040	482	-57	129	14
BALOT	00:38	.84/FL410	8.7	TL/040	482	-57	130	37
BERAT	00:41	.84/FL410	8.2	TL/040	482	-57	129	23
DIN	00:46	.84/FL410	7.6	TL/040	482	-57	128	47
NTS	00:56	.84/FL410	7.3	TL/040	482	-57	173	88
MINEL	01:02	.84/FL410	7.1	TL/040	482	-57	153	46
VENAR	01:05	.84/FL410	6.6	TL/040	482	-57	152	25
CGC	01:08	.84/FL410	6.1	TL/040	482	-57	153	34
VELIN	01:14	320/FL280	5.9	TL/040	482	-41	158	45
AGN	01:25	250/FL60	5.2	TL/040	274	+02	157	72
LFBO	01:32	128/550	5.2	TL/040	129	+14	001	27

FUEL PREDICTIONS			
TAXI :	0.2	ZFWCG	: 25.0 %
TRIP (DEST) :	8.4	ZFW	: 51.2
RSV :	1.3	TOW	: 66.5
ALTN :	0.6	LW	: 55.9
FINAL :	1.8	CG	: —.-
EXTRA :	0.8		
BLOCK :	15.5		
MISC PERF DATA			
TROPOPAUSE :	36090		
CLB TRANS :	5000		
CRZ TEMP :	-60		

IN FLIGHT

Ident.: DSC-22_20-80-00000968.0012001 / 18 MAR 11

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Once the aircraft has reached the CRZ FL once, all the latest ATC clearances have been inserted in the FM, when all the WINDS/STEPS have been properly updated:

ACCESS the PRINT FUNCTION page
PRINT the INFLIGHT REPORT

The inflight report provides the list of all the overflown F-PLN waypoints (HISTORY VALUES) with their associated data (Time, ALT, Fuel, ...), and the predictions to all the downpath waypoints (PREDICTED VALUES).
This new document replaces the PREFLIGHT report, since it carries all the latest expected F-PLN changes. It is the new applicable master document used to monitor the progress of the flight.
The inflight report will be printed after each important F-PLN modification.

Note: The following anomalies are known on Thales/Smiths FMS IN FLIGHT reports:

- *Winds not yet inserted with the UPDATE INSERT prompt are erroneously printed on the INFLIGHT print as if they had been inserted.*
- *The distance on the last sequenced waypoint is erroneous.*
- *Head trip wind values are always printed as 000 ° and Tail trip wind values as 180 °.*
- *The TO waypoint of a DIR TO with ABEAM is not printed.*
- *The name of PLANA waypoint may erroneously be replaced with "SAURA".*

IN FLIGHT

Ident.: DSC-22_20-80-00000968.0007001 / 18 MAR 11

4 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

Once the aircraft has reached the CRZ FL once, all the latest ATC clearances have been inserted in the FM, when all the WINDS/STEPS have been properly updated:

ACCESS the PRINT FUNCTION page
PRINT the INFLIGHT REPORT

The inflight report provides the list of all the overflown F-PLN waypoints (HISTORY VALUES) with their associated data (Time, ALT, Fuel, ...), and the predictions to all the downpath waypoints (PREDICTED VALUES).
This new document replaces the PREFLIGHT report, since it carries all the latest expected F-PLN changes. It is the new applicable master document used to monitor the progress of the flight.
The inflight report will be printed after each important F-PLN modification.

Note: *If the selected Fuel Unit option is pounds, the HISTORY FOB values may be incorrectly printed in tons on the INFLIGHT REPORT. The CURRENT and PREDICTED FOB values, however, are correctly printed in pounds.*

EXAMPLE (FM INFLIGHT REPORT)

Ident.: DSC-22_20-80-00000969.0001001 / 18 MAR 11
Applicable to: ALL

FM INFLIGHT REPORT

DATE : 24 OCT 06
TIME : 09 : 24

A/C TYPE	: A320-200	DATABASE	: AB49402001
ENG TYPE	: CFM56-5B4	CYCLE	: 29 SEP-26 OCT
FLT NUMBER	: AIB 105	FROM/TO	: LFBO/EINN
CO RTE	:	ALTN	: EIDW
ALTN CO RTE	:		
PERF FACTOR	: +1.5	COST INDEX	: 90
IDLE FACTOR	: +0.0		
CRUISE FL/STEP START WPT			
CRZ FL 1	: FL390		
FLIGHT PLAN DATA			

	DIST	TIME	CRZ FL	
DEST-EINN	: 730	10:24	FL390	
ALTN-EIDW	: 106	10:50	FL220	
DEP RWY	: 14R		ARV PRC	: . . . . .
DEP PRC	: LMG3A		APR PRC	: . . . . .
			ARV RWY	: . . . . .

WPT	TIME	SPD/ALT	FOB	T. WIND	TAS	SAT	CRS	DIST
HISTORY VALUES								
LFB014R	08:29	126/536	13.6	HD/070	-	+12	142	0
1000	08:30	141/982	13.2	056°/003	141	+10	143	2
CURRENT POSITION : N43-37.9/E001-22.0								
	08:32	252FL63	13.6	HD/070	297	-11	350	10
PREDICTED VALUES								
OSKAM	08:34	320/FL130	10.4	HD/070	387	-11	350	14
LMG	08:52	.84/FL390	10.2	HD/070	482	-57	359	119
VERAC	08:59	.84/FL390	10.0	HD/070	482	-57	310	48
MAIXE	09:01	.84/FL390	9.9	HD/070	482	-57	310	18
NTS	09:11	.84/FL390	8.2	HD/070	482	-57	310	70
DIN	09:24	.84/FL390	7.7	HD/070	482	-57	352	88
BERAT	09:31	.84/FL390	7.2	HD/070	482	-57	309	47
BALOT	09:34	.84/FL390	6.6	HD/070	482	-57	309	23
LIZAD	09:40	.84/FL390	6.3	HD/070	482	-57	310	37
NAKID	09:42	.84/FL390	6.1	HD/070	482	-57	309	14
LND	09:48	.84/FL390	5.6	HD/070	482	-57	309	46
TIVLI	10:03	.84/FL390	5.1	HD/070	482	-57	322	99
CRK	10:10	320/FL170	4.9	HD/070	407	-19	319	50
SHA	10:23	128/900	4.2	HD/070	130	+13	353	55
EINN	10:24	128/100	4.2	HD/070	128	+15	001	2

FUEL INFORMATION AT 08:32

WEIGHT	CG	FOB	RSV/RSW%	FINAL	EXTRA
65.0	37.3%	13.6	0.4/5.0%	3.1	2.8

Note: In case of a major failure such as an engine out, a new print will be done when time permits.

REACHING THE GATE AFTER LANDING

Ident.: DSC-22_20-80-00000970.0012001 / 18 MAR 11

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The POSTFLIGHT REPORT gives a complete list of all the overflown waypoints during the flight (HISTORY VALUES).

Furthermore it provides:
- FUEL/TIME summary
- IRS Drift and G/S

Once at the gate, after engine shutdown:
- ACCESS the PRINT FUNCTION page
- PRINT the POSTFLIGHT REPORT

Note: The following anomalies are known on Thales/Smiths FMS POST FLIGHT reports:
- *The IRS Drift value on the POST FLIGHT REPORT may be erroneous.*
- *Some ABEAM waypoints may not be printed on the POST FLIGHT REPORT.*
- *Head trip wind values are always printed as 000 ° and Tail trip wind values as 180 °.*
- *The name of PLANA waypoint may erroneously be replaced with "SAURA".*

REACHING THE GATE AFTER LANDING

Ident.: DSC-22_20-80-00000970.0007001 / 18 MAR 11

5 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The POSTFLIGHT REPORT gives a complete list of all the overflown waypoints during the flight (HISTORY VALUES).

Furthermore it provides:
- FUEL/TIME summary
- IRS Drift and G/S

When at the gate, after engine shutdown:
- ACCESS the PRINT FUNCTION page
- PRINT the POSTFLIGHT REPORT

Note: If the selected Fuel Unit option is pounds, the HISTORY FOB values may be incorrectly printed in tons on the POSTFLIGHT REPORT.

EXAMPLE (FM POSTFLIGHT REPORT)

Ident.: DSC-22_20-80-00000971.0001001 / 18 MAR 11
Applicable to: ALL

FM POSTFLIGHT REPORT

DATE : 24 OCT 06
TIME : 12 : 05

A/C TYPE	: A320-200	DATABASE	: AB49402001
ENG TYPE	: CFM56-5B4	CYCLE	: 29 SEP-26 OCT
FLT NUMBER	: AIB 105	FROM/TO	: EINN/LFBO
CO RTE	:	ALTN	: LFBP
ALTN CO RTE	:		
PERF FACTOR	: +1.5	COST INDEX	: 90
IDLE FACTOR	: +0.0		

FLIGHT PLAN DATA

	DIST	TIME	CRZ FL		
DEST-LFBO	: —	11:52	FL—		
ALTN/——	: —	—:—	FL—		
DEP RWY	: 06		ARV PRC	: AGN2T	
DEP PRC	:		APR PRC	: VOR32L	
			ARV RWY	: 32L	

WPT	TIME	SPD/ALT	FOB	T. WIND	TAS	SAT	CRS	DIST
HISTORY VALUES								
EINN06	10:17	134/44	17.0	043/005	-	+11	053	0
1550	10:18	163/1536	16.9	235'/019	165	+08	050	2
SHA	10:18	161/1691	16.9	236'/019	163	+08	049	0
ABCRK	10:27	305/FL280	15.1	295'/049	459	-41	149	53
TIVLI	10:33	.80/FL330	14.8	298'/057	448	-64	143	46
LND	10:44	.84/FL330	14.1	320'/034	477	-61	129	111
ABLIZAD	10:51	.84/FL330	13.6	326'/034	474	-61	141	47
ABBERAT	10:58	.84/FL330	12.4	313'/029	480	-59	141	21
ABOIN	11:03	.84/FL330	12.2	326'/030	479	-60	142	44
ABNTS	11:13	.84/FL330	12.0	330'/034	481	-60	142	126
ABVENAR	11:21	.84/FL330	10.2	335'/028	479	-60	143	24
CGC	11:25	.84/FL330	9.7	339'/031	476	-61	150	33
VELIN	11:31	.84/FL330	9.2	352'/028	476	-60	154	45
AGN	11:40	312/FL220	8.6	050'/024	429	-26	149	72
SOTAK	11:40	321/FL190	8.3	052'/025	425	-20	141	5
D191K	11:44	253/FL90	8.1	347'/015	288	+00	137	24
D165R	11:46	253/4360	7.6	309'/014	265	+04	103	11
CD32L	11:49	175/2967	6.9	293'/009	180	+05	322	5
FD32L	11:50	253/FL1609	6.2	308'007	132	+08	323	4
LFB032L	11:52	132/674	6.2	326'/006	131	+11	321	3

FUEL AND TIME SUMMARY

START UP		SHUT DOWN	
FUEL : 17.0		FUEL	: 4.2
WEIGHT : 75.8		WEIGHT	: 65.0
TIME : 10.09		TIME	: 12:01
TO TIME : —.-		LDG TIME	: 11:52

IRS DATA AT : LFB032L

	IRS 1	IRS2	IRS 3
AVERAGE DRIFT	- 00.3 NM/H	00.4 NM/H	00.3 NM/H
RESIDUAL GND SPD	- 01.0 KTS	03.0 KTS	1.0 KTS

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INSERTION OF APPROACH MINIMA

Ident.: DSC-22_20-85-A-00015220.0001001 / 21 MAR 17
Applicable to: MSN 01920, 02195-02204, 02359, 02405, 02482

QNH USE FOR AIRCRAFT NOT EQUIPPED WITH QFE OPTION

This table explains how the flight crew must insert the approach minimum on the MCDU PERF APPR page.

		Guidance Modes			
		LOC G/S CAT II & CAT III approaches	LOC G/S CAT I approaches	FINAL APP	NAV FPA LOC FPA LOC B/C FPA ◁✻ TRK FPA
MCDU PERF APPR page	MDA field	---	DA	DA or MDA	MDA
	DH field	DH or RA	---		
FMA display		"DH XXX"	"MDA XXXX"		

Ident.: DSC-22_20-85-A-00015220.0011001 / 21 MAR 17
1 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-02626, 02670-09063**

QNH USE FOR AIRCRAFT NOT EQUIPPED WITH QFE OPTION

This table explains how the flight crew must insert the approach minimum on the MCDU PERF APPR page.

		Guidance Modes			
		LOC G/S CAT II & CAT III approaches	LOC G/S CAT I approaches	FINAL APP	NAV FPA LOC FPA LOC B/C FPA ◁✻ TRK FPA
MCDU PERF APPR page	BARO field	---	DA	DA or MDA	MDA
	RADIO field	DH or RA	---		
FMA display		"RADIO XXX"	"BARO XXXX"		

Ident.: DSC-22_20-85-A-00015221.0002001 / 21 MAR 17
Applicable to: MSN 01767, 02108, 02275-02334

QNH USE FOR AIRCRAFT EQUIPPED WITH QFE OPTION

This table explains how the flight crew must insert the approach minimum on the MCDU PERF APPR page.

		Guidance Modes			
		LOC G/S CAT II & CAT III approaches	LOC G/S CAT I approaches	FINAL APP	NAV FPA LOC FPA LOC B/C FPA ✲ TRK FPA
MCDU PERF APPR page	MDH field	---	DA	DH(2) or MDH(2)	MDA(1)
	DH field	DH or RA	---		
FMA display		"DH XXX"	"MDH XXXX"		

(1) - *The "Minimum" and "Hundred Above" autocallouts and the change of color (amber) of the altitude indication on PFD are correctly triggered at MDA.*
- *FMA displays "MDH XXXX" while the displayed value is the MDA.*

Note: *If the MDA is greater than 5 000 ft, the value is not accepted and the message OUT OF RANGE is displayed on the MCDU. In such a case, the MDH field remains blank and the PM should announce the callouts.*

(2) - *The "Minimum" and "Hundred Above" autocallouts and the change of color (amber) of the altitude indication on PFD are triggered too late, depending on the airfield elevation.*

CAUTION	*The airline must establish procedures and train the flight crew to have the PM announce the "Hundred Above" and "Minimum" callout.*

- *The AP will correctly disconnect and the FD will revert to HDG-V/S or TRK-FPA mode at an altitude equal to MDH + airport elevation – 50 ft.*
- *FMA reading is correct.*

Ident.: DSC-22_20-85-A-00015221.0020001 / 21 MAR 17
Applicable to: MSN 02649

QNH USE FOR AIRCRAFT EQUIPPED WITH QFE OPTION

This table explains how the flight crew must insert the approach minimum on the MCDU PERF APPR page.

		Guidance Modes			
		LOC G/S CAT II & CAT III approaches	LOC G/S CAT I approaches	FINAL APP	NAV FPA LOC FPA LOC B/C FPA ✲ TRK FPA
MCDU PERF APPR page	BARO field	---	DA	DA or MDA	MDA
	RADIO field	DH or RA	---		
FMA display		"RADIO XXX"	"BARO XXXX"		

Ident.: DSC-22_20-85-A-00015222.0001001 / 21 MAR 17

2 **Applicable to: MSN 01920-02097, 02121-02204, 02359-02626, 02670-09063**

QFE USE FOR AIRCRAFT NOT EQUIPPED WITH QFE OPTION

The crew should not use QFE on aircraft with a “QNH only” pin programming (incorrect profile computation of the managed vertical modes CLB, DES and FINAL APPR, possible false GPWS warnings in mountainous areas).

Ident.: DSC-22_20-85-A-00015223.0002001 / 21 MAR 17

Applicable to: MSN 01767, 02108, 02275-02334

QFE USE FOR AIRCRAFT EQUIPPED WITH QFE OPTION

This table explains how the flight crew must insert the approach minimum on the MCDU PERF APPR page.

		Guidance Modes			
		LOC G/S CAT II & CAT III approaches	LOC G/S CAT I approaches	FINAL APP	NAV FPA LOC FPA LOC B/C FPA TRK FPA
MCDU PERF APPR page	MDH field	---	DH	DH or MDH	MDH
	DH field	DH or RA	---		
FMA display		“DH XXX”	“MDH XXXX”		

Ident.: DSC-22_20-85-A-00015223.0020001 / 21 MAR 17

Applicable to: MSN 02649

QFE USE FOR AIRCRAFT EQUIPPED WITH QFE OPTION

This table explains how the flight crew must insert the approach minimum on the MCDU PERF APPR page.

		Guidance Modes			
		LOC G/S CAT II & CAT III approaches	LOC G/S CAT I approaches	FINAL APP	NAV FPA LOC FPA LOC B/C FPA TRK FPA
MCDU PERF APPR page	BARO field	---	DH	DH or MDH	MDH
	RADIO field	DH or RA	---		
FMA display		“RADIO XXX”	“BARO XXXX”		

Intentionally left blank

AUTOMATIC FMGC RESET AND RESYNCHRONIZATION

Ident.: DSC-22_20-90-10-A-00012661.0001001 / 07 MAR 13

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

FM RESET

When the FM software cannot work properly or receives instructions to perform impossible operations, it automatically resets itself. A resynchronization with the other FM always follows. When the reset is a minor one, the system will recover by itself. One single reset lasts 2 to 3 s maximum followed by 25 s of resynchronization.

When the reset is a major one:
- Resets recur at short intervals (several in 2 or 3 min)
- The memories are cleared, leading to the loss of F-PLN, GW, CI, CRZ FL, MCDU-entered speeds and NAVAIDs and to database switching.

Note: If three dual FM resets occur in 2 min, pilot-entered data is lost. If a dual reset is identified, it is recommended that the flight crew does not perform again the last MCDU actions for 1 min (in order to avoid a potential second dual reset, leading to the loss of pilot-entered data).

Ident.: DSC-22_20-90-10-A-00012661.0003001 / 10 JAN 11

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

FM RESET

When the FM software cannot work properly or receives instructions to perform impossible operations, it automatically resets itself. A resynchronization with the other FM always follows. When the reset is a minor one, the system will recover by itself. One single reset lasts 2 to 3 s maximum followed by a resynchronization.

When the reset is a major one:
- Resets recur at short intervals (several in 1 min)
- The memories are cleared, leading to the loss of F-PLN, GW, CI, CRZ FL, MCDU-entered speeds and NAVAIDs.

Note: If four dual FM resets occur in 3 min, pilot-entered data is lost. If a dual reset is identified, it is recommended that the flight crew does not perform again the last MCDU actions for 1 min (in order to avoid a potential second dual reset, leading to the loss of pilot-entered data).

Ident.: DSC-22_20-90-10-A-00012662.0001001 / 10 JAN 11

2 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

FM RESYNCHRONIZATION

An FM resynchronization automatically occurs after an FM reset but it may occur independently each time self comparisons between FM1 and FM2 reveal discrepancies.
One single resynchronization lasts approximately 25 s.
If 5 several resynchronizations occur within 5 min, independent mode commences.

Ident.: DSC-22_20-90-10-A-00012662.0002001 / 19 AUG 10

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

FM RESYNCHRONIZATION

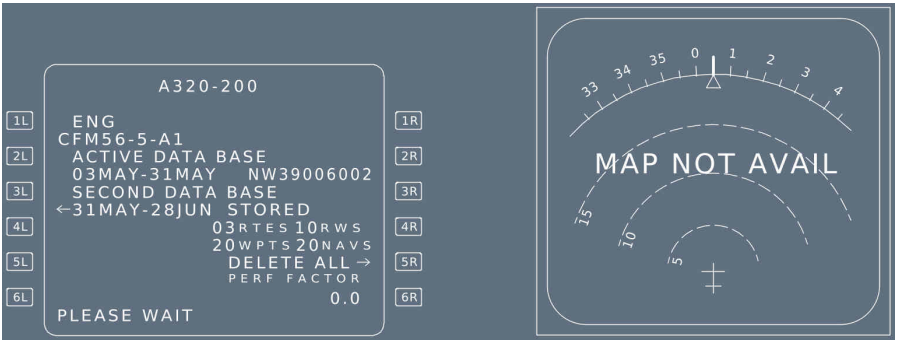
An FM resynchronization automatically occurs after an FM reset. But, it may occur independently each time self-comparisons between the FM1 and FM2 reveal discrepancies.
If three successive resynchronizations fail, independent mode commences.

Ident.: DSC-22_20-90-10-A-00012663.0001001 / 29 SEP 15

3 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

FMGC STATUS DURING A RESET/RESYNCHRONIZATION

While a RESET/RESYNCH occurs:
- The ND shows “MAP NOT AVAIL”
- The MCDU reverts to the A/C STATUS page, with “PLEASE WAIT” displayed in the scratchpad
- Autotuning of Navaids (VOR, DME, ADF) are lost on the failed side
- AP and managed modes may be transiently lost (reversion to HDG/V/S or TRK/FPA)
- If the pilot presses a key while the scratchpad is showing “PLEASE WAIT”, there is no change at MCDU level. This is normal, and the crew should not respond by pulling the MCDU circuit breaker.

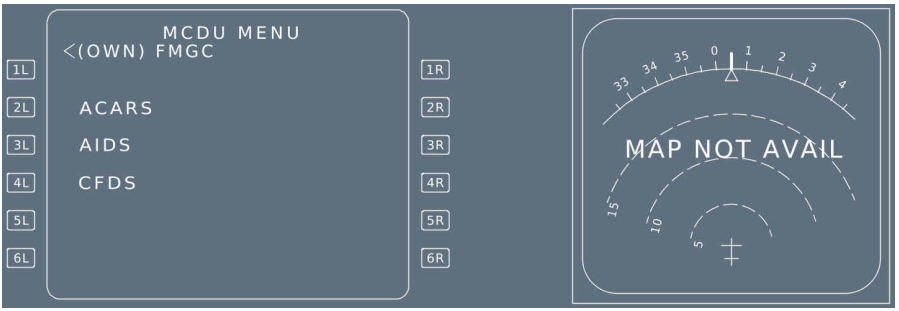


Ident.: DSC-22_20-90-10-A-00012663.0002001 / 10 JAN 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

FMGC STATUS DURING A RESET/RESYNCHRONIZATION

While a RESET/RESYNCH occurs:

- The ND shows “MAP NOT AVAIL”
- The MCDU may revert to the MCDU MENU page
- Autotuning of Navaids (VOR, DME, ADF) are lost on the failed side
- AP/FD /A/THR modes may be transiently lost
- A reversion to basic modes (HDG/V/S or TRK/FPA) occurs if the FM1 (FM2) resets while AP1 (AP2) is engaged.



Ident.: DSC-22_20-90-10-A-00012664.0001001 / 10 JAN 11
Applicable to: MSN 01767-01920, 02108, 02275-02334

SINGLE RESET OR DUAL RESET WITH AUTORECOVERY

If the RESET/RESYNCH succeeds, all functions are recovered.

Note: When an FMGC is recovered, its FD if previously engaged, is also recovered and its status is displayed on the FMA.

PROCEDURE

RESELECT the convenient MCDU page.
REENGAGE managed modes and the AP.

WAIT 1 min after the "PLEASE-WAIT" message has disappeared, before engaging the AP/FD of the failed FMGC.

If "MAP NOT AVAIL" remains displayed, along with "SET OFFSIDE RNG/MODE" on one ND, temporarily SELECT a different mode on the corresponding EIS control panel.

Ident.: DSC-22_20-90-10-A-00012664.0002001 / 10 JAN 11
4 **Applicable to: MSN 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

SINGLE RESET OR DUAL RESET WITH AUTORECOVERY

If the RESET/RESYNCH succeeds, all functions are recovered.

Note: When an FMGC is recovered, its FD if previously engaged, is also recovered and its status is displayed on the FMA.

PROCEDURE

RESELECT the convenient MCDU page.
REENGAGE managed modes and the AP.

WAIT 1 min after the "PLEASE-WAIT" message has disappeared, before engaging the AP/FD of the failed FMGC.

If both "MAP NOT AVAIL" and "SET OFFSIDE RNG/MODE" remain displayed on one ND, or if "OFFSIDE FM CONTROL" remains displayed, temporarily SELECT a different mode or range on the corresponding EIS control panel.

Ident.: DSC-22_20-90-10-A-00012664.0003001 / 10 JAN 11
Applicable to: MSN 02195-02204, 02359, 02405, 02482

SINGLE RESET OR DUAL RESET WITH AUTORECOVERY

If the RESET/RESYNCH succeeds, all functions are recovered.

Note: When an FMGC is recovered, its FD if previously engaged, is also recovered and its status is displayed on the FMA.

PROCEDURE

RESELECT the convenient MCDU page.
REENGAGE managed modes, and the AP and A/THR, if necessary.

If “MAP NOT AVAIL” remains displayed, along with “SET OFFSIDE RNG/MODE” on one ND, temporarily SELECT a different mode on the corresponding EIS control panel.

Ident.: DSC-22_20-90-10-A-00012664.0019001 / 10 JAN 11
Applicable to: MSN 01957-02097, 02121-02139, 02443, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

SINGLE RESET OR DUAL RESET WITH AUTORECOVERY

If the RESET/RESYNCH succeeds, all functions are recovered.

Note: When an FMGC is recovered, its FD if previously engaged, is also recovered and its status is displayed on the FMA.

PROCEDURE

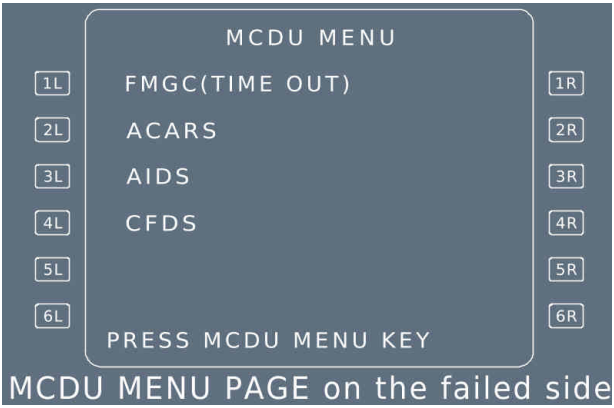
RESELECT the convenient MCDU page.
REENGAGE managed modes, and the AP and A/THR, if necessary.
If both “MAP NOT AVAIL” and “SET OFFSIDE RNG/MODE” remain displayed on one ND, or if “OFFSIDE FM CONTROL” remains displayed, temporarily SELECT a different mode or range on the corresponding EIS control panel.

Ident.: DSC-22_20-90-10-A-00012665.0001001 / 10 JAN 11
Applicable to: MSN 01767-01920, 02108, 02275-02334

SINGLE LATCH

If five successive resets occur, the failing FMGC will latch, and single mode operation will start.

While failed, the following occurs:
- The failed ND side displays “MAP NOT AVAIL” and “SELECT OFFSIDE RNG/MODE” (if the NDs are not both in the same mode or range)
- The MCDU reverts to the MENU PAGE and shows an “FMGC TIME OUT” prompt
- If the AP and FD were previously engaged on the failed side, the AP and FD disengage and the right-hand column of the FMA shows that the operating FD is offside. The ECAM displays the “AP OFF” warning, and the master warning light and audio remind the pilot of the AP disengagement
- All functions are restored on the operative side.



PROCEDURE

Select the same range and mode on both NDs to give the failed ND side something to display.
Select any function key on the affected FMGC MCDU. (The page will display “OPP FMGC IN PROGRESS”).

Both MCDUs are now driven by the other FMGC, and only one AP/FD is available. The system works in SINGLE Mode.

Perform a manual reset of the failed FMGC, when convenient.

Ident.: DSC-22_20-90-10-A-00012665.0002001 / 16 NOV 11

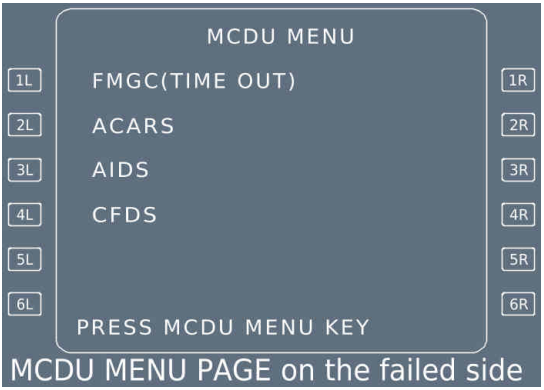
5 **Applicable to: MSN 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

SINGLE LATCH

If five successive resets occur, the failing FMGC will latch, and single mode operation will start.

While failed, the following occurs:

- On the ND usually associated with the failed FMGC:
  If the NDs are not both in the same mode or range, the associated ND displays “MAP NOT AVAIL” and “SET OFFSIDE RNG/MODE”. If the NDs are in the same mode and range, the associated ND displays the “OFFSIDE FM CONTROL” amber message
- The MCDU reverts to the MENU PAGE and shows an “FMGC TIME OUT” prompt
- If the AP and FD were previously engaged on the failed side, the AP and FD disengage and the right-hand column of the FMA shows that the operating FD is offside. The ECAM displays the “AP OFF” warning, and the master warning light and audio remind the pilot of the AP disengagement.
- All functions are restored on the operative side.



PROCEDURE

Select the same range and mode on both NDs to give the failed ND side something to display. Select any function key on the affected FMGC MCDU. (The page will display "OPP FMGC IN PROGRESS").

Both MCDUs are now driven by the other FMGC, and only one AP/FD is available. The system works in SINGLE Mode.

Perform a manual reset of the failed FMGC, when convenient.

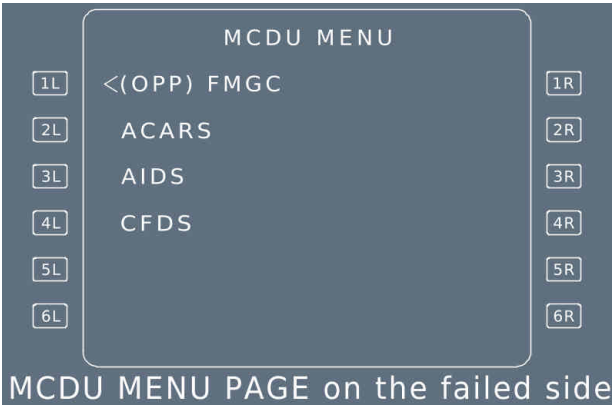
Ident.: DSC-22_20-90-10-A-00012665.0026001 / 10 JAN 11
Applicable to: MSN 02195-02204, 02359, 02405, 02482

SINGLE LATCH

If five successive resets occur in 4 min, the failing FMGC will latch, and single mode operation will start.

While failed, the following occurs:

- The failed ND side displays "MAP NOT AVAIL" and "SELECT OFFSIDE RNG/MODE" (if the NDs are not both in the same mode or range)
- The MCDU reverts to the MENU PAGE and shows an "(OPP) FMGC" prompt
- If the AP and FD were previously engaged on the failed side, the AP and FD disengage and the right-hand column of the FMA shows that the operating FD is offside. The ECAM displays the "AP OFF" warning, and the master warning light and audio remind the pilot of the AP disengagement
- All functions are restored on the operative side.



PROCEDURE

Select the same range and mode on both NDs to give the failed ND side something to display.
Select any function key on the affected FMGC MCDU. (The page will display “OPP FMGC IN PROCESS”).

Both MCDUs are now driven by the other FMGC, and only one AP/FD is available. The system works in SINGLE Mode.

Perform a manual reset of the failed FMGC, when convenient.

Ident.: DSC-22_20-90-10-A-00012665.0033001 / 10 JAN 11
Applicable to: MSN 01957-02097, 02121-02139, 02443, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

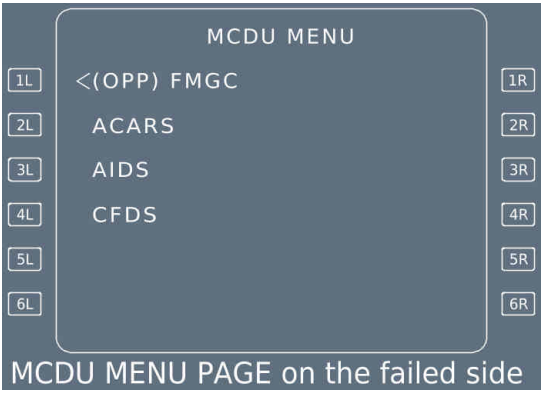
SINGLE LATCH

If five successive resets occur in 4 min, the failing FMGC will latch, and single mode operation will start.

While failed, the following occurs:

- On the ND usually associated with the failed FMGC:
  If the NDs are not both in the same mode or range, the associated ND displays “MAP NOT AVAIL” and “SET OFFSIDE RNG/MODE”. If the NDs are in the same mode and range, the associated ND displays the “OFFSIDE FM CONTROL” amber message
- The MCDU reverts to the MENU PAGE and shows an “(OPP) FMGC” prompt

- If the AP and FD were previously engaged on the failed side, the AP and FD disengage and the right-hand column of the FMA shows that the operating FD is offside. The ECAM displays the “AP OFF” warning, and the master warning light and audio remind the pilot of the AP disengagement
- All functions are restored on the operative side.



PROCEDURE

Select the same range and mode on both NDs to give the failed ND side something to display.
Select any function key on the affected FMGC MCDU. (The page will display “OPP FMGC IN PROCESS”).

Both MCDUs are now driven by the other FMGC, and only one AP/FD is available. The system works in SINGLE Mode.

Perform a manual reset of the failed FMGC, when convenient.

Ident.: DSC-22_20-90-10-A-00014936.0001001 / 21 MAR 17
Applicable to: MSN 04393-04397

SINGLE LATCH WITH AP AND FD STILL AVAILABLE IN MANAGED MODES ON BOTH SIDES

In some cases, one FMS may fail and latch (no auto-recovery), but the FMS may continue to send valid but frozen guidance targets to the FG. These frozen guidance targets correspond to the last valid targets sent by the FMS before the failure.
In that case, the FG does not see the FMS failure.
Both AP and FD may remain available. If the AP is engaged on the affected side, the failed FMGC continues to guide the aircraft in managed mode (speed, vertical and lateral) with the frozen targets.
When the FMGC fails, the cockpit effects are as follows:

PFD

- There is no change on the FMA:
  - No mode reversion, no automatic AP disconnection, and no automatic A/THR disconnection
  - "1FD2" may remain displayed on both FMA
- The FD orders are erroneous on the side of the failed FMGC, since based on the frozen guidance targets
- The FD orders are still available and correct on the opposite side.

ND

The flight crew may encounter one of the following two situations:

- Situation 1: The ND associated to the failed FMGC displays "MAP NOT AVAIL" in red, and "GPS PRIMARY LOST" in amber
- Situation 2: The ND associated to the failed FMGC displays either:
  - The map coming from the opposite FMS and "OFFSIDE FM CONTROL" in amber, if both NDs are in the same range and mode, or
  - "MAP NOT AVAIL" in red and "SET OFFSIDE RNG/MODE" in amber, if both NDs are not in the same range and mode.

MCDU

- The MCDU of the failed FMGC is frozen
- The other MCDU displays "INDEPENDENT OPERATION" in amber.

ECAM

- The FWS may trigger the ECAM alert "CAB PR LDG ELEV FAULT".

PROCEDURE

DISREGARD the information coming from the failed side
DO NOT USE the AP on the affected side

- **If the AP is engaged on the affected side:**
  FLY the aircraft back on the intended path
  ENGAGE the AP on the operative side, according to the Recommended Practice for Autopilot Engagement (*Refer to FCTM/AS-FG-10-1 Recommended Practice for Autopilot (AP) Engagement*)
- **If time permits:**
  PERFORM a long reset of the failed FMGC
- **If the failure affects FMGC1, and if the FMGC1 is still failed and latched before the approach:**
  DO NOT USE AP1 for the approach

- **Before disconnecting AP2:**
  REVERT to selected speed
  DISCONNECT A/THR

  Note: *It prevents the A/THR from switching to the frozen speed target of the failed FMGC1 when the flight crew disconnects the AP2 for landing.*

Ident.: DSC-22_20-90-10-A-00012666.0001001 / 10 JAN 11
Applicable to: MSN 01767-01920, 02108, 02275-02334

DUAL RESET WITH LOSS OF DATA AND AUTORECOVERY

Three successive dual resets without result erases all pilot-entered data (F-PLN, GW, CRZ FL, CI...).

When FMGS recovery is obtained:
- Database cycle may have switched
- The FM position bias is lost. The FM position returns to the MIX IRS position
- Autotuning the VOR/DME is restored, based on the aircraft's IRS position
- FMGS tuning of the ILS and ADF is not possible
- Lateral and vertical managed mode cannot reengage
- The "CAB PR LDG ELEV FAULT" ECAM message is displayed
- A map display may be lost on one ND.

PROCEDURE

When the system has recovered:

SELECT the initial database.
SELECT DIR TO the required downpath waypoint.
SELECT LAT REV at the downpath waypoint, and redefine the DESTINATION.
SELECT the FUEL PRED page, and enter GW.
SELECT the PROG page, and enter CRZ FL.
SELECT the PERF page, and enter CI.
CHECK or reengage (as appropriate) the relevant speed/Mach target and vertical mode.

Redefine the flight plan for the remainder of the flight, as the opportunity presents itself.

If "MAP NOT AVAIL" remains displayed, along with "SET OFFSIDE RNG/MODE" on one ND, temporarily SELECT a different mode on the corresponding EFIS control panel.
PERFORM a NAV accuracy check, when possible.

A manual FM position update should be considered, if MIX IRS and actual positions differ by more than 20 NM.

Ident.: DSC-22_20-90-10-A-00012666.0012001 / 10 JAN 11

6 **Applicable to: MSN 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

DUAL RESET WITH LOSS OF DATA AND AUTORECOVERY

Three successive dual resets without result erases all pilot-entered data (F-PLN, GW, CRZ FL, CI...).

When FMGS recovery is obtained:
- Database cycle may have switched
- The FM position bias is lost. The FM position returns to the MIX IRS position
- Autotuning the VOR/DME is restored, based on the aircraft's IRS position
- FMGS tuning of the ILS and ADF is not possible
- Lateral and vertical managed mode cannot reengage
- The "CAB PR LDG ELEV FAULT" ECAM message is displayed
- A map display may be lost on one ND.

PROCEDURE

When the system has recovered:

SELECT the initial database.
SELECT DIR TO the required downpath waypoint.
SELECT LAT REV at the downpath waypoint, and redefine the DESTINATION.
SELECT the FUEL PRED page, and enter GW.
SELECT the PROG page, and enter CRZ FL.
SELECT the PERF page, and enter CI.
CHECK or reengage (as appropriate) the relevant speed/Mach target and vertical mode.

Redefine the flight plan for the remainder of the flight, as the opportunity presents itself.

If both "MAP NOT AVAIL" and "SET OFFSIDE RNG/MODE" remain displayed on one ND, or if "OFFSIDE FM CONTROL" remains displayed, temporarily SELECT a different mode or range on the corresponding EFIS control panel.
PERFORM a NAV accuracy check, when possible.

A manual FM position update should be considered, if MIX IRS and actual positions differ by more than 20 NM.

Ident.: DSC-22_20-90-10-A-00012666.0045001 / 01 APR 11

Applicable to: MSN 02195-02204, 02359, 02405, 02482

DUAL RESET WITH LOSS OF DATA AND AUTORECOVERY

Four successive dual resets in 3 min erases all pilot-entered data (F-PLN, GW, CRZ FL, CI...).

When FMGS recovery is obtained:
- The FM position bias is lost. The FM position returns to the MIX IRS position
- Autotuning the VOR/DME is restored, based on the aircraft's IRS position

- FMGS tuning of the ILS and ADF is not possible
- Lateral and vertical managed mode cannot reengage
- The "CAB PR LDG ELEV FAULT" ECAM message is displayed
- A map display may be lost on one ND.

PROCEDURE

When the system has recovered:

SELECT DIR TO the required downpath waypoint.
SELECT LAT REV at the downpath waypoint and redefine the DESTINATION.
SELECT the FUEL PRED page, and ENTER the ZFW and ZFWCG values.
SELECT the PROG page, and enter CRZ FL.
SELECT the PERF page, and enter CI.
CHECK or reengage (as appropriate) the relevant speed/Mach target and vertical mode.

Redefine the flight plan for the remainder of the flight, as the opportunity presents itself.

If "MAP NOT AVAIL" remains displayed, along with "SET OFFSIDE RNG/MODE" on one ND, temporarily SELECT a different mode on the corresponding EFIS control panel.
PERFORM a NAV accuracy check, when possible.

A manual FM position update should be considered, if MIX IRS and actual positions differ by more than 20 NM.

Ident.: DSC-22_20-90-10-A-00012666.0059001 / 16 NOV 11
Applicable to: MSN 01957-02097, 02121-02139, 02443, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

DUAL RESET WITH LOSS OF DATA AND AUTORECOVERY

Four successive dual resets in 3 min erases all pilot-entered data (F-PLN, GW, CRZ FL, CI...).

When FMGS recovery is obtained:
- The FM position bias is lost. The FM position returns to the MIX IRS position
- Autotuning the VOR/DME is restored, based on the aircraft's IRS position
- FMGS tuning of the ILS and ADF is not possible
- Lateral and vertical managed mode cannot reengage
- The "CAB PR LDG ELEV FAULT" ECAM message is displayed
- A map display may be lost on one ND.

PROCEDURE

When the system has recovered:

SELECT DIR TO the required downpath waypoint.
SELECT LAT REV at the downpath waypoint and redefine the DESTINATION.
SELECT the FUEL PRED page, and ENTER the ZFW and ZFWCG values.
SELECT the PROG page, and enter CRZ FL.

SELECT the PERF page, and enter CI.
CHECK or reengage (as appropriate) the relevant speed/Mach target and vertical mode.

Redefine the flight plan for the remainder of the flight, as the opportunity presents itself.

If both "MAP NOT AVAIL" and "SET OFFSIDE RNG/MODE" remain displayed on one ND, or if "OFFSIDE FM CONTROL" remains displayed, temporarily SELECT a different mode or range on the corresponding EFIS control panel.
PERFORM a NAV accuracy check, when possible.

A manual FM position update should be considered, if MIX IRS and actual positions differ by more than 20 NM.

Ident.: DSC-22_20-90-10-A-00012667.0001001 / 10 JAN 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

FMS DEGRADED MODE

In some remote cases (several automatic resets in a row on one or both FMS), the affected FMS(s) may enter a "degraded mode", with no predictions.
The intent of this degraded mode is to keep maximum use of the FMS and related functions.

The characteristics of this FMS degraded mode are the following:
- The predictions are lost on the affected FMS(s). All predictions are replaced by dashes on MCDU pages
- The vertical profile and managed speed computations are lost on the affected FM(s) (in Approach phase, VAPP is correctly computed and managed speed is available)
- Managed vertical guidance and managed speed (if previously used) are lost and revert to selected mode
- Lateral path computation and guidance remain available
- The MCDU displays the "FM PREDICTIONS LOST" message.

Note: *1. If predictions are lost on one FMS only, all managed modes are available when using the other side AP.*
2. The Approach phase must be activated manually.

PROCEDURE

- **If the message "FM PREDICTIONS LOST" is displayed:**

  - If vertical managed guidance and/or prediction are not deemed necessary, keep using the FMS as needed for Lateral navigation only. Use selected modes for vertical and speed guidance.

    Note: If only one FMS has entered the degraded mode, consider using the other AP.

  - If vertical managed guidance and/or predictions are required, RE-ENTER a Cost Index (CI) value on INIT A or PERF page (predictions for the active flight plan are then recomputed).

    Note: In approach phase, a direct CI entry is not allowed : it is then not possible to recover predictions. However, entry of the current altitude in the CRZ FL field will force the CRZ phase and thus, allow to reenter the CI. The approach phase may then be re-activated again.

Ident.: DSC-22_20-90-10-A-00012668.0001001 / 17 MAR 17
Applicable to: MSN 01767-03541

DUAL LATCH

- Both FMGCs are inoperative. FM and FG capability are lost
- Both NDs display "MAP NOT AVAILABLE". NAVAID tuning is not performed
- AP/FD, A/THR are lost
- FMGC (TIME OUT) subsystem page is displayed on both MCDUs
- The following messages are displayed on the ECAM:
  "CAB PR LDG ELEV FAULT"
  "AUTO FLT AP OFF", if AP was engaged
  "AUTO FLT A/THR OFF", if A/THR was engaged.

PROCEDURE

FLY raw data.
TUNE necessary NAVAIDs using the RMPs.
PERFORM a manual reset of both FMGCs.

Note: A recovery will result in the loss of all pilot-entered data.

Note for all FMGC automatic resets

- A single or double FM auto-reset does not affect an ILS approach below 700 ft AGL. ILS frequency is locked and AP/FDs remain engaged
- Above 700 ft , the loss of ILS tuning due to a dual reset will cause a loss of LOC and G/S, and the disengagement of APs and FDs
- During a non ILS approach, if the master FMGC fails, AP/FD and managed modes are lost and FDs engage in basic modes.

Ident.: DSC-22_20-90-10-A-00012668.0013001 / 17 MAR 17

7 **Applicable to: MSN 03618-09063**

DUAL LATCH

- Both FMGCs are inoperative. FM and FG capability are lost
- Both NDs display “MAP NOT AVAILABLE”. NAVAID tuning is not performed
- AP/FD, A/THR are lost
- FMGC (TIME OUT) subsystem page is displayed on both MCDUs
- The following messages are displayed on the ECAM:
  “CAB PR LDG ELEV FAULT”
  “AUTO FLT AP OFF”, if AP was engaged
  “AUTO FLT A/THR OFF”, if A/THR was engaged.

PROCEDURE

FLY raw data.
TUNE necessary NAVAIDs using the RMPs.
PERFORM a manual reset of both FMGCs.

■ **If successful, refer to dual reset with loss of data and auto recovery:**

Note: *A recovery will result in the loss of all pilot-entered data.*

■ **If unsuccessful:**
FLY raw data.
Select the NAV B/UP prompt on both MCDU DATA pages.
(Refer to DSC-22_20-60-130 General HOW TO USE, concerning navigation backup operation).
SET the landing elevation of the destination on the overhead panel.

Note for all FMGC automatic resets

- A single or double FM auto-reset does not affect an ILS approach below 700 ft AGL. ILS frequency is locked and AP/FDs remain engaged
- Above 700 ft , the loss of ILS tuning due to a dual reset will cause a loss of LOC and G/S, and the disengagement of APs and FDs
- During a non ILS approach, if the master FMGC fails, AP/FD and managed modes are lost and FDs engage in basic modes.

MANUAL FMGC RESET

Ident.: DSC-22_20-90-10-B-00012669.0001001 / 10 JAN 11

8 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

On rare occasions, the FMGC may require manual resetting.
If this occurs in flight, reset one FMGC at a time.

Ident.: DSC-22_20-90-10-B-00012669.0002001 / 01 APR 14

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

On rare occasions, the FMGC may require manual resetting.
If this occurs in flight, reset one FMGC at a time.

The flight crew can perform two types of FMGC reset:

- A short FMGC reset of 10 s
  The FMS re-initializes data processing. However the data entered by the flight crew are memorized (F-PLN, INIT and PERF data)
- A long FMGC reset of 15 min
  All the memory is cleared and the FMS re-initializes all data and processing.

Ident.: DSC-22_20-90-10-B-00020857.0001001 / 17 MAR 17

Applicable to: ALL

Refer to System Reset Table - AUTO FLT
for the manual reset procedure of the FMGC.

Ident.: DSC-22_20-90-10-B-00012671.0001001 / 17 MAR 17

Applicable to: ALL

MANUAL RESET OF BOTH FMGC

When the aircraft is on ground with the engines stopped, the flight crew may attempt a double and simultaneous CB reset when a single CB reset has failed.

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"CHECK WEIGHT" MESSAGE

Ident.: DSC-22_20-90-20-00012677.0001001 / 17 MAR 17
Applicable to: ALL

DESCRIPTION

The "CHECK WEIGHT" message appears on the MCDU when the Gross Weight (GW) computed by the FMGC and the GW computed by the FAC disagree by more than 7 t (16 055 lb).

PROCEDURE

When this message appears:

FMS FOB.....CHECK

CALL UP the MCDU FUEL PRED page and compare the FOB to the FOB from the Computerized F-PLN. Correct it if necessary.

FMS ZFW value..... CHECK

CALL UP the MCDU FUEL PRED page and compare the ZFW to the ZFW on the loadsheet.

- **If the FMS ZFW on the MCDU is not correct:**
  FMS ZFW..... CORRECT/RE-INSERT
  The entry of a correct ZFW will clear the MCDU message.

- **If the FMS ZFW on the MCDU is correct:**
  VLS, F, S, GREEN DOT (PFD)..... DISREGARD
  If the FMS GW is correct, the characteristic speeds computed by the FAC (displayed on PFD) may not be correct.
  QRH OPERATING SPEEDS..... USE
  Refer to QRH/OPS Operating Speeds

Intentionally left blank

MISALIGNMENT OF FMS F-PLN LEGS FOR ILS APPROACHES

Ident.: DSC-22_20-100-20-00013650.0001001 / 23 JUN 15

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

For the F-PLN legs belonging to an ILS approach, the FMS incorrectly uses its own Magnetic Variation table instead of the Magnetic Variation of the ILS associated to the approach (coded in the Navigation Data Base). This misbehaviour occurs when the Navaid used for the ILS approach is a DME.

In some cases, it may happen that magnetic variation of the airport differs by a few degrees from the ILS navaid. Thus, the FMS F-PLN does not match with the actual beam of the ILS beam.

When the ILS approach is coded with successive legs, these legs may also appear as not matching with intermediate approach waypoint.

For all approaches affected by this behaviour, the FMS will display an incorrect trajectory on ND for the LS approach. The guidance would also be wrong if the approach legs are flown in NAV instead of LOC mode.

INCORRECT MANAGEMENT OF ETA ENTRY ON PREDICTIVE GPS PAGE

Ident.: DSC-22_20-100-20-00013652.0001001 / 22 MAY 12

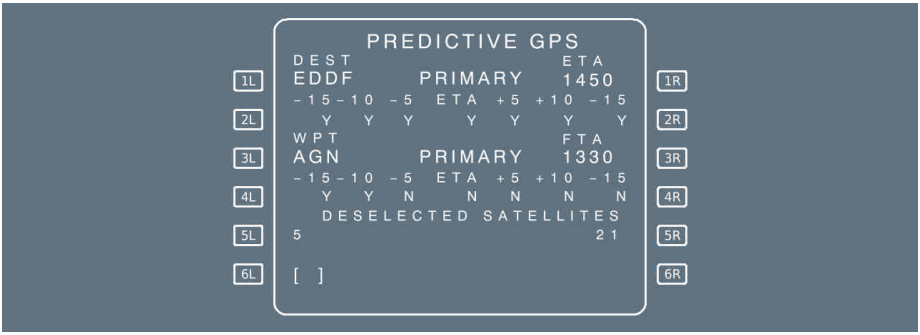
2 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

During pre-flight, when a destination airport exists but the FMS does not compute predictions, amber boxes are displayed in the MCDU field ETA of the predicitve GPS page. When the flight crew manually enters an ETA, the value should be displayed in large cyan font.

With the current H2 standard, the FMS does not take into account the manual entry of an ETA (field 1R) for the destination (DEST, field 1L).

The FMS validates the manual entry only when an ETA is already computed by the FMS, when predictions are available (necessary conditions to have some predictions are : entry of a GW, CRZ FL, CI and F-PLN).

This anomaly does not impact the ETA of the WPT field (3L and 3R). An ETA can be entered in the field 3L even if no predictions are computed.



FLIGHT NUMBER ERASED UPON AOC FLIGHT PLAN UPLINK

Ident.: DSC-22_20-100-20-00013653.0001001 / 16 MAR 11

3 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

When a Flight Plan (F-PLN) uplink is performed, if the uplinked F-PLN is inserted as the active F-PLN but does not contain a Flight Number, the previously entered Flight Number is erased. In such a case, the flight crew needs to re-enter the correct Flight Number on the INIT A page.

ERRONEOUS FUEL PREDICTION IN THE CASE OF DESCENT WITH TWO ALTITUDE CONSTRAINTS

Ident.: DSC-22_20-100-20-00013655.0001001 / 16 MAR 11

4 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

DESCRIPTION:

If the flight plan has two altitude constraints for the descent, the flight crew may notice erroneous FMS fuel predictions.

EXPLANATION

If the flight plan has two altitude constraints for the descent, the FMS may define a geometric segment between both altitude constraints. If there is a deceleration required within the geometric segment, the FMS may consider that the geometric segment is too steep to fly without speedbrakes. In this case, the FMS tags the entire geometric segment as a speedbrake segment : The FMS assumes that during the entire segment half of the speedbrakes are extended, even for the parts where no deceleration is planned. As a consequence, the FMS will predict an increased thrust for the entire geometric segment. This may lead to erroneous fuel predictions. (a long geometric segment (e.g. above 100 NM) may lead to an error of 1.5 t for the fuel prediction at destination).

Note: When flying the geometric segment, the predictions become better as the aircraft approaches the end of the geometric segment, and turn back to normal when the aircraft has sequenced the second altitude constraint.

PROCEDURE:

If the flight crew suspects this behavior in preflight, or during the flight, they can delete and enter again one altitude constraint in descent and compare the fuel predictions of the flight plan with and without the geometric segment. This allows the flight crew to evaluate the impact of the geometric segment on the fuel predictions.
It is not recommended to permanently delete altitude constraints that are stored in the navigation database.

UNEXPECTED SWITCH OF SPEED TARGET WHEN RTA IS USED

Ident.: DSC-22_20-100-20-00013659.0001001 / 16 NOV 11

5 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

An anomaly could be experienced when the RTA (Requested Time of Arrival) function is used.
The MCDU and the PFD could suddenly display an erroneous speed target at the transition altitude when a RTA is entered and if the flight crew performs an action (Vapp entry or altitude constraint modification) that causes a F-PLN profile recomputation.
This scenario could also occur if the flight crew has inserted a RTA and then deleted this RTA (the FMS may erroneously retain the RTA target).
Some cases could happen while the aircraft is in descent (DES mode) in managed speed. This speed target change is significant at high altitude if the RTA speed target is lower than the speed target used before the beginning of the descent.

PROCEDURE

If an erroneous speed target is displayed at high altitude, the flight crew can manually select a speed to continue the descent.

VOR/DME AND VOR/TACAN NOT AUTOMATICALLY TUNED

Ident.: DSC-22_20-100-20-00014440.0001001 / 04 MAY 12

6 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

In case there is no NAVAID in the flight plan, nor any recommended NAVAID coded in the inserted procedure, the FMS may not automatically tune the expected Terminal or Low Altitude VOR/DME or VOR/TACAN.
The FMS may not automatically tune the expected NAVAID, if the aircraft is above 12 000 ft for a Terminal VOR/DME or VOR/TACAN, and above 18 000 ft for a Low Altitude NAVAID.

As a consequence, the ND and the MCDU RAD NAV page may not display the NAVAID information.

OPERATIONAL RECOMMENDATIONS

If the flight crew encounters the misbehavior during the flight, the flight crew can manually tune the expected VOR/DME or VOR/TACAN to recover the display on the ND.
As a manual tuning overrides any automatic tuning, the flight crew must clear the manual tuning, when the NAVAID is no longer required, in order to revert to the automatic NAVAID tuning.

OPTIMUM TARGET SPEEDS NOT UPDATED FOLLOWING THE AUTOMATIC DELETION OF A STEP CLIMB

Ident.: DSC-22_20-100-20-00014756.0001001 / 18 DEC 12

7 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

During the FMS climb phase, if the flight crew selects an altitude on the FCU that is above the Cruise Flight Level (CRZ FL) displayed on the PROG page, the altitude selected on the FCU becomes the new CRZ FL.
If this new CRZ FL is at or above the altitude of a Step Climb of the flight plan, the FMS automatically deletes the Step Climb. The FMS displays the "STEP DELETED" message.
As the optimum target speeds (ECON CLIMB speed/Mach and ECON CRUISE speed/Mach) depend on the CRZ FL, the FMS should immediately update the ECON CLIMB speed/Mach and the ECON CRUISE speed/Mach.
Due to a FMS misbehavior, the FMS may not correctly manage the automatic deletion of the Step Climb when the CRZ FL is automatically set to the altitude selected on the FCU. The FMS may not update the ECON CLIMB speed/Mach and the ECON CRUISE speed/Mach accordingly.
If the ECON CRUISE speed/Mach was not correctly updated, the FMS updates the ECON CRUISE speed/Mach when the aircraft reaches the new CRZ FL. However the FMS updates the ECON CRUISE speed/Mach with a rate of 0.01 Mach/min, in order to avoid a sudden increase of the speed target. Therefore the aircraft may take several minutes to reach the new ECON CRUISE speed/Mach.

OPERATIONAL RECOMMENDATIONS

If the flight crew suspects this misbehavior during the flight:
REENTER the Cruise Flight Level (CRZ FL) on the PROG page, or the Cost Index (CI) on the PERF page, in order to activate an immediate update of the optimum target speeds (ECON CLIMB speed/Mach and ECON CRUISE speed/Mach).

ERRONEOUS LATERAL GUIDANCE IN NAV MODE WITH LOC MODE ARMED DURING APPROACH

Ident.: DSC-22_20-100-20-00015035.0001001 / 03 DEC 13

[8] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

During approach, the FMS may guide the aircraft along a specific track instead of along the F-PLN with NAV mode green on the FMA, because of the LOC Convergence function (*Refer to DSC-22_30-80-30-10 Precision Approach Modes - APPR Mode*).
The logics of the LOC Convergence function is as follows:

- **If NAV mode is engaged, and LOC mode is armed,**
  and
  The aircraft is within 20 NM of the destination runway,
  and
  The difference between the aircraft track and the QFU is less than 20 °.

  The aircraft is guided with a converging track of 20 ° from the LOC axis.

  The NAV mode remains engaged. However the aircraft no longer follows the F-PLN, but converges towards the LOC axis.

- **If the difference between the aircraft track and the QFU becomes more than 20 ° when the LOC Convergence function is active:**

  The FMS deactivates the LOC Convergence function, and the aircraft follows back the F-PLN.

  It may lead to slight oscillations, since the FMS may successively activate and deactivate the LOC Convergence function.

OPERATIONAL RECOMMENDATIONS

- **If the flight crew considers that the LOC Convergence function may affect the guidance along the F-PLN trajectory in NAV mode:**

  On the intercept trajectory for the LOC axis, the flight crew should push the APPR pb (or the LOC pb-sw) when appropriate.

- **If the flight crew detects that the aircraft does not follow the intended trajectory:**

  The flight crew should revert to HDG/TRK mode, and intercept the LOC axis with the HDG/TRK mode engaged and the LOC mode armed.

UNDUE REDUCTION OF THE SPEED TARGET IN CASE OF DIR TO/ABEAM WHILE FLYING A CONSTANT MACH SEGMENT

Ident.: DSC-22_20-100-20-00015532.0003001 / 18 MAR 14

9 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The FMS may erroneously command a Mach target of 0, when the following conditions are met:
- The aircraft is flying a Constant Mach Segment (CMS), and
- The TO waypoint is the end of the CMS, and
- The aircraft is close to the TO waypoint, i.e. about 1 NM, and
- The flight crew performs a DIR TO/ABEAM to a waypoint that is not part of the CMS.

In that case, the FMS does not create the abeam of the TO waypoint (end of the CMS), since it is too close from the aircraft.
In addition, the FMS erroneously keeps the CMS until the abeam of the next waypoint, and defines 0 as Mach target on the CMS. The FMS correctly computes the speed target once the abeam of the next waypoint is sequenced.

OPERATIONAL RECOMMENDATIONS

The flight crew should manually clear the CMS on the MCDU VERT REV page.

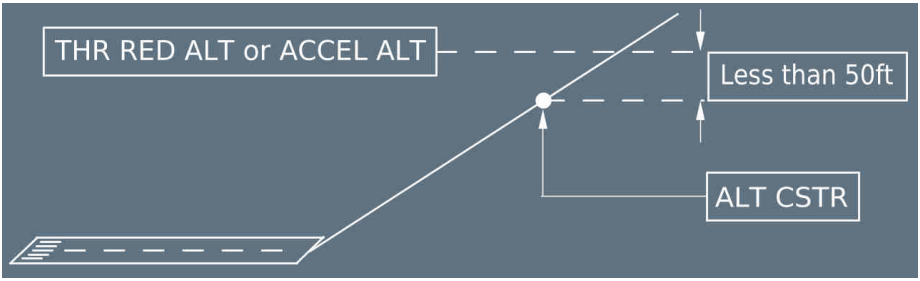
LOSS OF FUEL AND TIME PREDICTIONS DURING TAKEOFF DATA INSERTION

Ident.: DSC-22_20-100-20-00015602.0001001 / 05 AUG 14

10 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The flight crew may lose fuel and time prediction when the altitude of the first constraint is less than 50 ft below either the THR RED ALT or the ACC ALT, the update of fuel and time computation predictions may last a long time. The flight crew may think that the predictions are lost (the DEST EFOB and TRIP FUEL are also dashed on the FUEL PRED page).

The flight crew may encounter the situation described above, if one of the following occurs:
- The first altitude constraint of the SID is less than 50 ft below either the THR RED ALT or the ACC ALT.
- The flight crew inserts a THR RED ALT or an ACC ALT less than 50 ft above the first altitude constraint of the F-PLN.
- The flight crew modifies the F-PLN to insert an AT or an AT OR BELOW altitude constraint less than 50 ft below the THR RED ALT or the ACC ALT.



OPERATIONAL RECOMMENDATION:

The flight crew can recover the fuel and time predictions if the flight crew sets the THR RED ALT or ACC ALT value on the PERF TAKEOFF page to the same value as the first altitude constraint of the F-PLN.

ERRONEOUS TRAJECTORY DURING PROCEDURES WITH A TURN DIRECTION ON A LEG WITH AN ALTITUDE TERMINATION

Ident.: DSC-22_20-100-20-00015748.0001001 / 09 SEP 14

11 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

In some very specific operational conditions that depend on the coding in the Navigation Database of the procedure, and on various performance conditions (aircraft weight, flaps, thrust setting, temperature, wind...), the FMS may compute an erroneous trajectory on some Standard Instrument Departures (SID), and on some Missed Approach procedures.

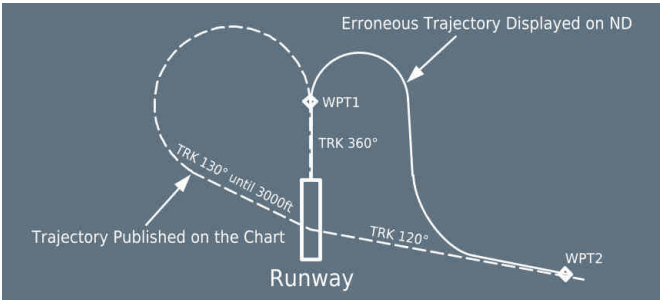
The SIDs and the Missed Approach procedures that may be affected are coded in the Navigation Database with a leg that has a turn direction and an altitude termination. The leg can be one of the following:

- A Course-to-an-Altitude (CA) leg that defines a course to follow to an altitude
- A Fix-to-an-Altitude (FA) leg that defines a track to follow from a waypoint to an altitude
- A Heading-to-an-Altitude (VA) leg that defines a heading to follow to an altitude
- A Holding-to-an-Altitude (HA) leg that defines a holding pattern to an altitude

The turn direction (left or right) that is coded on a leg indicates that the aircraft has to execute a turn in the specified direction to intercept the leg.
In some very specific operational conditions (aircraft weight, wind...), the FMS may predict that the aircraft will reach the altitude that terminates the leg, before the initiation of the leg. In that case, the FMS ignores the leg, and the associated turn direction.
The FMS computes a new trajectory to directly join the next leg. The trajectory may not be consistent with the published trajectory.

Example:

- Leg 1: a Course-to-Fix (CF) leg that defines a track (360 °) to a waypoint (WPT1)
- Leg 2: a Course-to-an-Altitude (CA) leg that defines a track (130 °) to intercept an altitude (3 000 ft). The leg is coded in the Navigation Database with a turn direction (left). The end of the leg depends on the aircraft performance. The turn direction is indicated by an arrow on the line of leg 1 on the MCDU
- Leg 3: a CF leg that defines a track (120 °) to a waypoint (WPT2)



Depending on the aircraft performance, the FMS may predict that the aircraft will reach 3 000 ft before WPT1. In that case, the FMS ignores the leg 2 (CA leg) because the aircraft is already above the altitude that ends leg 2, before the beginning of leg 2. The FMS also ignores the turn direction that is coded on the leg.
As a result, the FMS computes again the trajectory from the end of leg 1, directly to leg 3. As shown on the above illustration, this trajectory includes a right turn, instead of a left turn, because it induces the shortest course change to intercept leg 3 (CF leg).
If the NAV mode is engaged, the aircraft follows this erroneous trajectory.

OPERATIONAL RECOMMENDATIONS

The flight crew should pay particular attention to the check of the flight plan during the Cockpit Preparation, and during the Descent Preparation.

CAUTION	Even if the flight plan is correct during the Cockpit Preparation or during the Descent Preparation, the FMS may compute and display an erroneous trajectory when the FMS updates its predictions after takeoff or after go-around initiation.

If the flight crew detects that the lateral flight plan does not agree with the published trajectory, the flight crew should revert to the HDG/TRK mode, and monitor NAVAID raw data as appropriate.
The flight crew should reengage the NAV mode when the lateral flight plan is consistent with the published trajectory.

ERRONEOUS VERTICAL PROFILE DURING LOC B/C APPROACHES WITH A MAP LOCATED BEFORE THE RUNWAY THRESHOLD

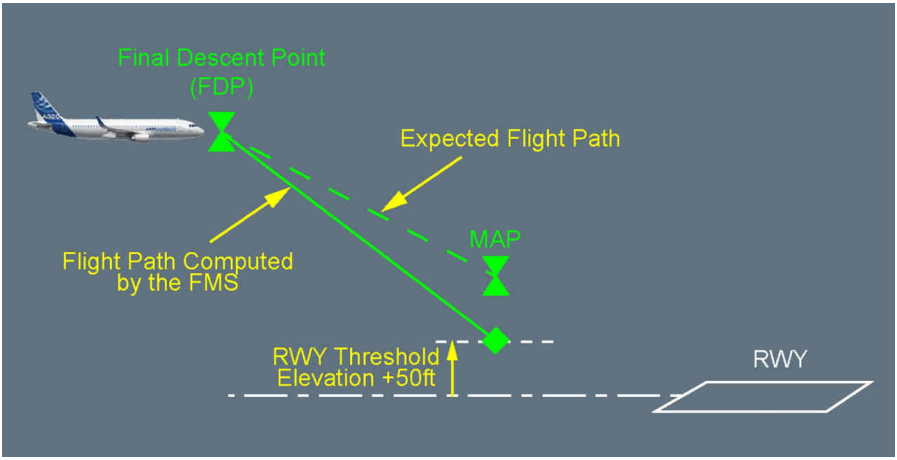
Ident.: DSC-22_20-100-20-00019782.0001001 / 25 JUL 16

12 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

DESCRIPTION

When the flight crew selects a LOC Back Course (LOC B/C) approach in the arrival page of the MCDU, if the Missed Approach Point (MAP) is located before the runway threshold, the FMS builds the final approach vertical flight path assuming that there is an altitude constraint at the MAP, equal to the runway (RWY) threshold elevation plus 50 ft, disregarding the actual coded MAP altitude.

As a result, the FMS computes an erroneous vertical flight path for the final approach, an erroneous crossing altitude at the MAP, and displays an erroneous vertical deviation indication (V/DEV symbol on the PFD and V/DEV value on MCDU PROG page), when flying the approach.



Therefore, the flight crew must fly the LOC B/C approaches in selected vertical guidance mode (FPA or V/S mode), and they must disregard the V/DEV displayed on the PFD and MCDU PROG page.

PROCEDURE

For LOC B/C approaches, check the position of the MAP on the approach chart:

- **If the MAP is located at the runway threshold:**
  V/DEV symbol can be used to assist the flight crew in flying the vertical flight path in selected mode. Crosscheck the final descent with the published chart using altitude versus distance, as per Standard Operating Procedures (SOPs).
- **If the MAP is located before the runway threshold:**
  DISREGARD the V/DEV symbol, and crosscheck the final descent using the altitude versus the distance to the MAP.

WAYPOINT NOT SEQUENCED AFTER DIR TO RADIAL IN

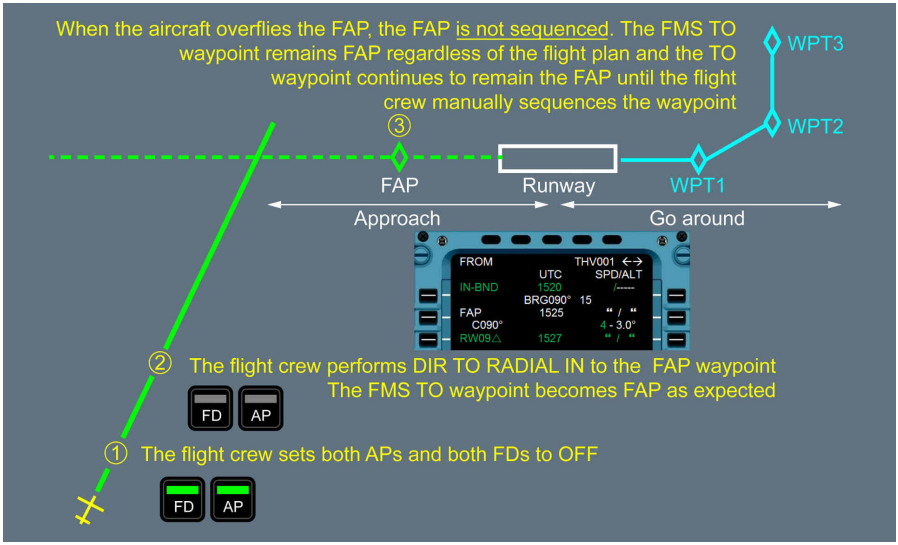
Ident.: DSC-22_20-100-30-00022530.0001001 / 18 SEP 18
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

DESCRIPTION

If the flight crew performs a DIR TO RADIAL IN with both APs and both FDs set to OFF, the FMS correctly computes the "DIR TO RADIAL IN waypoint" as the TO waypoint. The correct computation is confirmed by correct display on Navigation Display (ND) and Multipurpose Control and Display Unit (MCDU). However, the FMS will not sequence the newly-created TO waypoint when the aircraft overflies it. The FMS keeps it as the TO waypoint until the flight crew performs a manual sequencing.

Note: If the flight crew performs the DIR TO RADIAL IN before they set both APs and both FDs to OFF, the FMS will correctly sequence the waypoint.

The illustration below provides a typical example of the abnormal behavior:



MCDU FROZEN AFTER THE FLIGHT CREW ACCESSES THE "DIR TO", "HOLD" OR "OFFSET" FUNCTION

Ident.: DSC-22_20-100-30-00012686.0001001 / 21 MAR 17
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

When the flight crew attempts to access the “DIR TO” function (via the DIR), the “HOLD” function (via the HOLD prompt on the LAT REV MCDU page) or the "OFFSET" function (via the OFFSET prompt on the LAT REV MCDU page), the corresponding MCDU may remain frozen.
In such a case, the MCDU simultaneously displays an “A/C POSITION INVALID” scratchpad message, in white (note that in other cases of display, the “A/C POSITION INVALID” message is amber).

PROCEDURE

If the MCDU is frozen after the flight crew accesses the “DIR TO”, “HOLD” or "OFFSET" function:

APPLY the manual reset procedure provided (*Refer to procedure*) to successively reset both FMGCs.

ERRONEOUS OFFSET

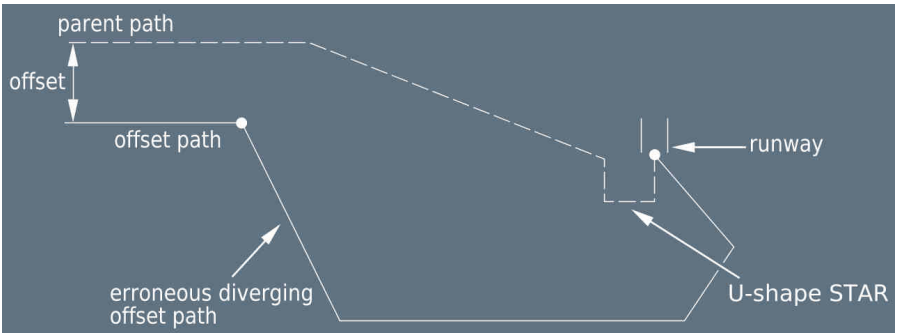
Ident.: DSC-22_20-100-30-00013637.0001001 / 23 JUN 15
Applicable to: MSN 04393-04397

In some cases, the FMS does not compute correctly the offset path when the flight crew enters an offset in the flight plan. In such case, the offset path does not remain parallel to the parent path, but diverges at a certain point. After the point at which this erroneous diversion starts, the offset path is very different from the intended parallel path and the flight crew must therefore not follow this diverging path.
The Estimated Fuel On Board (EFOB) will also be erroneous, because the EFOB computation will be based on this erroneous (and often longer) offset path. When the offset is cancelled, the EFOB becomes again correct.
This anomaly can occur when the flight plan contains a succession of legs with important change in course (e.g. U-Shape, Step-shape,...). These shapes are mainly found in STARs and VIAs.
However, the point at which the diversion start may be well before this U-shape/Step-shape (e.g. 100 NM).

Note: *For a given flight plan, the correctness of the offset path depends on the value of offset:*

- *with a smaller offset value, the FMS computes a correct offset path*
- *with a bigger offset value the FMS computes an erroneous offset path.*

FIGURE:



PROCEDURE:

When the offset trajectory becomes unsatisfactory, the flight crew should cancel the offset in the FMS. If the offset is still needed, the flight crew can fly the offset in lateral selected guidance.

ERRONEOUS FUEL PREDICTIONS IN THE CASE OF DESCENT WITH TWO ALTITUDE CONSTRAINTS

Ident.: DSC-22_20-100-30-00013638.0001001 / 16 MAR 11

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

DESCRIPTION:

If the flight plan has two altitude constraints for the descent, the flight crew may notice erroneous FMS fuel predictions.

EXPLANATION:

If the flight plan has two altitude constraints for the descent, the FMS may define a geometric segment between both altitude constraints. If there is a deceleration required within the geometric segment, the FMS may consider that the geometric segment is too steep to fly without speedbrakes. In this case, the FMS tags the entire geometric segment as a speedbrake segment : The FMS assumes that during the entire segment half of the speedbrakes are extended, even for the parts where no deceleration is planned. As a consequence, the FMS will predict an increased thrust for the entire geometric segment. This may lead to erroneous fuel predictions. (a long geometric segment (e.g. above 100 NM) may lead to an error of 1.5 t for the fuel prediction at destination).

Note: When flying the geometric segment, the predictions become better as the aircraft approaches the end of the geometric segment, and turn back to normal when the aircraft has sequenced the second altitude constraint.

PROCEDURE:

If the flight crew suspects this behavior in preflight, or during the flight, they can delete and enter again one altitude constraint in descent and compare the fuel predictions of the flight plan with and without the geometric segment. This allows the flight crew to evaluate the impact of the geometric segment on the fuel predictions. It is not recommended to permanently delete altitude constraints that are stored in the navigation database.

"FM PREDICTIONS LOST" MESSAGE WHEN USING THE FUEL PLANNING FUNCTION

Ident.: DSC-22_20-100-30-00013663.0001001 / 16 MAR 11
Applicable to: MSN 04393-04397

In some cases, in particular when several altitude steps have been entered in the F-PLN, the FUEL PLANNING function may be unable to compute the required BLOCK fuel. When this happens, the system stops computing the predictions and the "FM PREDICTIONS LOST" amber message appears in the scratchpad.

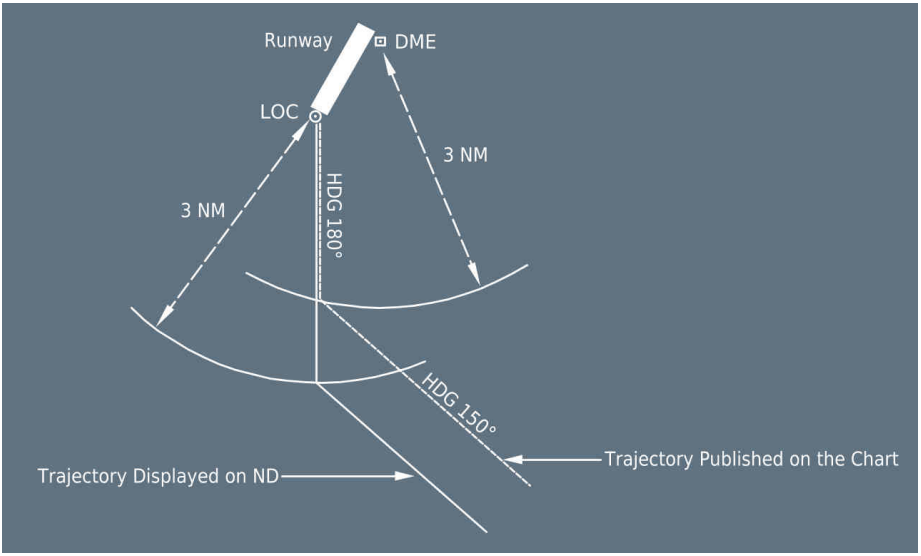
PROCEDURE

- **If the "FM PREDICTIONS LOST" message appears after using the FUEL PLANNING function:**
  DO NOT RE-USE the FUEL PLANNING function
  ENTER the planned BLOCK fuel in the [2R] field on INIT B page
  RE-ENTER the Cost Index (CI) on INIT A page.
  This will re-start the computation of the FMS predictions.

ERRONEOUS LATERAL GUIDANCE IN NAV MODE DURING PROCEDURES THAT USE NOT COLLOCATED NAVAIDS

Ident.: DSC-22_20-100-30-00014439.0001001 / 04 MAY 12
Applicable to: MSN 04393-04397

The FMS may compute an erroneous trajectory when the expected procedure is built on ILS/DME distance or ILS/DME arc leg. In that case, the FMS computes the distances using the position of the localizer instead of the position of the DME.
See the following example that illustrates the misbehavior with a SID that uses not collocated ILS/DME:



Note: *1. This misbehavior may also impact procedures that use not collocated ILS/TACAN, VOR/DME, VOR/TACAN and MLS/DME*

2. This misbehavior does not impact RNAV procedures.

OPERATIONAL RECOMMENDATIONS

The flight crew should pay particular attention to the check of the flight plan during the Cockpit Preparation and the Descent Preparation.

In the case of an erroneous trajectory, the flight crew should revert to the HDG/TRK mode and use NAVAID raw data.

The flight crew should reengage the NAV mode when the lateral flight plan is consistent with the published trajectory.

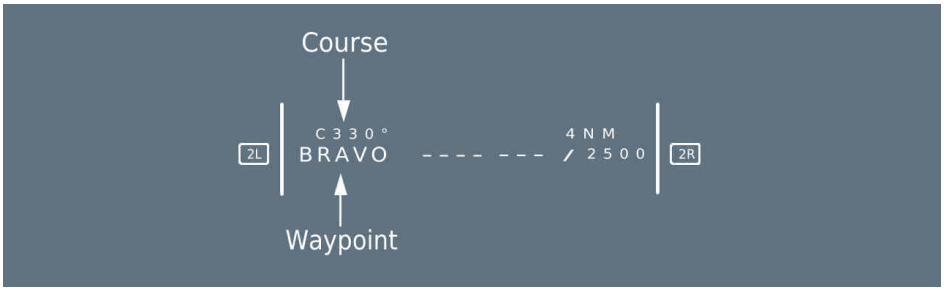
ERRONEOUS TRAJECTORY DURING DEPARTURE PROCEDURES WITH A COURSE-TO-FIX LEG AND AN ARC LEG

Ident.: DSC-22_20-100-30-00014820.0001001 / 21 DEC 12
Applicable to: MSN 04393-04397

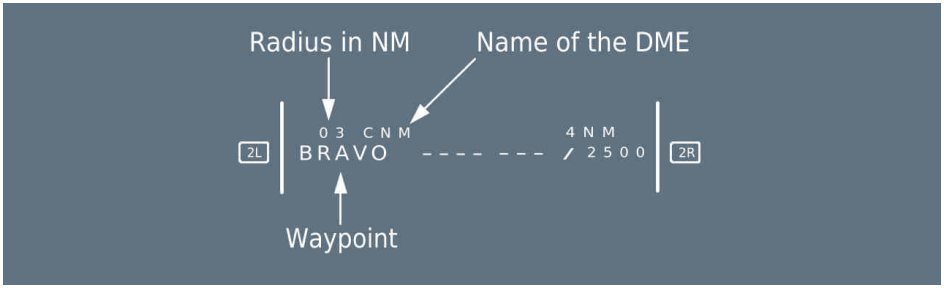
In some very specific operational conditions, the FMS may compute an erroneous trajectory on some Standard Instrument Departures (SID).

The SIDs that may be affected are coded in the Navigation Database with the following sequence of legs:

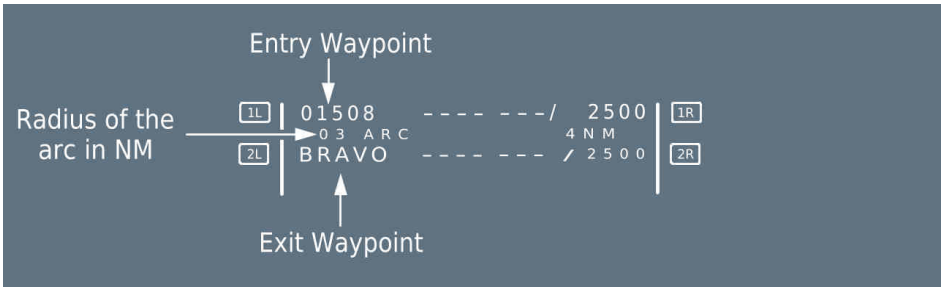
- Leg 1: any type of leg
- Leg 2: a Course-to-Fix (CF) leg that defines a course to a waypoint.
  On the MCDU F-PLN page, a CF leg is represented as follows:



- Leg 3: an Arc leg that can be either
  - An Arc-to-Fix (AF) leg that is defined by a constant distance from a DME to a waypoint.
    On the MCDU F-PLN page, an AF leg is represented as follows:

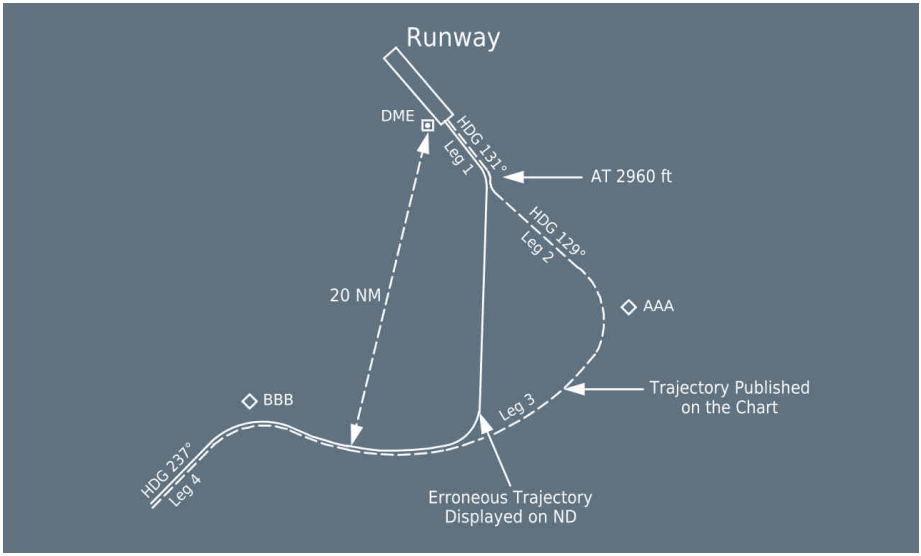


  - Or a Constant Radius Arc (RF leg) that is defined by two waypoints (entry point and exit point), a center and a radius.
    On the MCDU F-PLN page, a RF leg is represented as follows:



Note: *This misbehavior is not expected on procedures with RF legs since the previous leg is usually at a tangent to the inbound course of the RF leg. This prevents the misbehavior from occurring.*

The following example illustrates the behavior with the following sequence of legs:
- Leg 1: a Fix-to-Altitude (FA) leg that defines a track (131 °) from the runway to 2 960 ft. The end of the leg depends on the aircraft performance
- Leg 2: a CF leg that defines a course (129 °) to AAA
- Leg 3: an AF leg that defines an arc at 20 NM from the DME to BBB
- Leg 4: a CF leg that defines a course (237 °) to a waypoint.



When the distance between the end of leg 1, that depends on the aircraft performance, and the beginning of leg 2 is larger than 800 ft, the course of leg 1 is kept until the intersection with leg 2. Then, as leg 1 converges slowly toward leg 2, the end of the transition between leg 1 and leg 2 may be located beyond the beginning of the transition between leg 2 and leg 3. The trajectory is not continuous. Therefore, the FMS computes again the trajectory. In this case, the FMS may compute the trajectory from the end of leg 1, directly to the beginning of leg 3 (bypass transition).
However when the FMS computes the transition between leg 1 and leg 3, the FMS limits the course change to capture leg 3.
In order to comply with this limitation of course change, the FMS may delay the transition to leg 3 as shown on the above illustration. In some other cases, the FMS may compute another bypass transition, directly from leg 1 to leg 4.
If the NAV mode is engaged, the aircraft follows this erroneous trajectory.
This FMS misbehavior may occur in some very specific conditions that depend on the configuration and coding in the Navigation Database of the procedure, and on various performance conditions (takeoff weight, flaps, thrust setting, temperature, wind...).

OPERATIONAL RECOMMENDATIONS

The flight crew should pay particular attention to the check of the flight plan during the Cockpit Preparation.

CAUTION	Even if the flight plan is correct during the Cockpit Preparation, the FMS may compute and display an erroneous trajectory when the FMS updates its predictions after takeoff.

If the flight crew detects that the lateral flight plan does not agree with the published trajectory, the flight crew should revert to the HDG/TRK mode, and monitor NAVAID raw data as appropriate. The flight crew should reengage the NAV mode when the lateral flight plan is consistent with the published trajectory.

ERRONEOUS LATERAL GUIDANCE IN NAV MODE WITH LOC MODE ARMED DURING APPROACH

Ident.: DSC-22_20-100-30-00015036.0001001 / 05 JUN 18

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

During approach, the FMS may guide the aircraft along a specific track instead of along the F-PLN with NAV mode green on the FMA, because of the LOC Convergence function.
The logics of the LOC Convergence function is as follows:

- **If NAV mode is engaged, and LOC mode is armed,**
  and
  The aircraft is within 20 NM of the destination runway,
  and
  The difference between the aircraft track and the QFU is less than 20 °.

  The aircraft is guided with a converging track of 20 ° from the LOC axis.

  The NAV mode remains engaged. However the aircraft no longer follows the F-PLN, but converges towards the LOC axis.

OPERATIONAL RECOMMENDATIONS

- **If the flight crew considers that the LOC Convergence function may affect the guidance along the F-PLN trajectory in NAV mode:**

  On the intercept trajectory for the LOC axis, the flight crew should push the APPR pb (or the LOC pb-sw) when appropriate.

- **If the flight crew detects that the aircraft does not follow the intended trajectory:**

  The flight crew should revert to HDG/TRK mode, and intercept the LOC axis with the HDG/TRK mode engaged and the LOC mode armed.

ERRONEOUS TRAJECTORY COMPUTATION WHILE IN HDG/TRK MODE DURING PROCEDURES WITH A TURN DIRECTION ON A LEG WITH AN ALTITUDE TERMINATION

Ident.: DSC-22_20-100-30-00019778.0001001 / 08 JUL 16

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

In some specific conditions that depend on the coding in the Navigation Database of the procedure, and on climb performance of the aircraft, the FMS may compute an erroneous trajectory on some Standard Instrument Departures (SID), and on some Missed Approach procedures, when the aircraft is in HDG/TRK mode.

The SIDs and the Missed Approach procedures that may be affected are coded in the Navigation Database with a leg that has both a turn direction and an altitude termination. The leg can be one of the following:

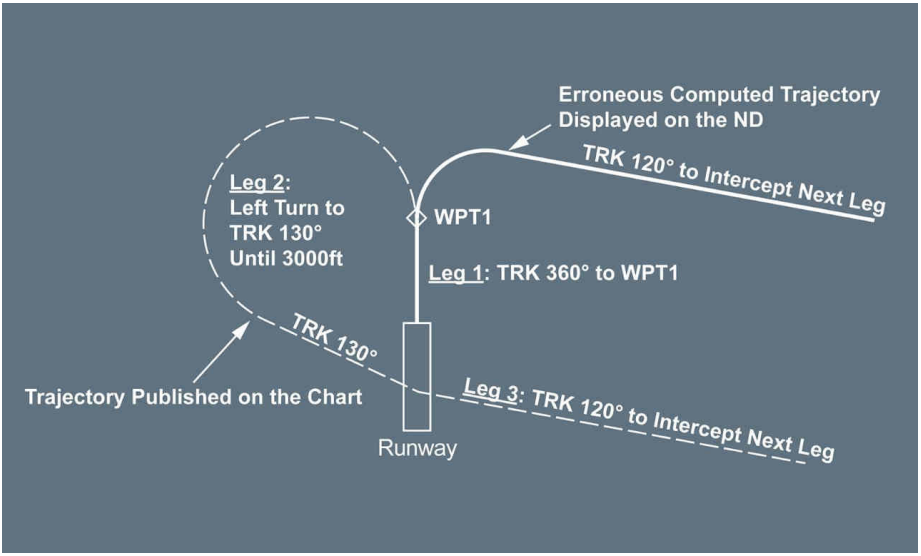
- A Course-to-an-Altitude (CA) leg that defines a course to follow to an altitude
- A Fix-to-an-Altitude (FA) leg that defines a track to follow from a waypoint to an altitude
- A Heading-to-an-Altitude (VA) leg that defines a heading to follow to an altitude

The turn direction (left or right) that is coded on a leg indicates that the aircraft has to execute a turn in the specified direction to intercept the leg.
In some specific operational conditions (light aircraft weight, strong headwind...), the FMS may predict that the aircraft will reach the altitude that terminates the leg, before the initiation of the leg. In that case, if the aircraft is in HDG/TRK selected mode, the FMS ignores the leg and the associated turn direction, and computes a new trajectory to join the next leg.
The trajectory may therefore not be consistent with the published trajectory.

Note: The erroneous computation may happen only if the aircraft is in HDG/TRK mode. The erroneous computation does not happen as long as the aircraft stays in NAV mode.

Example:

- Leg 1: a Course-to-Fix (CF) leg that defines a track (360 °) to a waypoint (WPT1)
- Leg 2: a Course-to-an-Altitude (CA) leg that defines a track (130 °) to intercept an altitude (3 000 ft). The leg is coded in the Navigation Database with a turn direction (left). The end of the leg depends on the aircraft performance. The turn direction is indicated by an arrow on the line of leg 1 on the MCDU
- Leg 3: a Course-to-Intercept (CI) leg that defines a track of 120 ° to follow until the interception of the next leg.



Depending on the aircraft performance and the external conditions, the FMS may predict that the aircraft will reach 3 000 ft before WPT1. In that case, if the HDG/TRK mode is engaged, the FMS ignores the leg 2 (CA leg) because the aircraft is already above the altitude that ends leg 2, before the beginning of leg 2. The FMS also ignores the turn direction that is coded on the leg.
As a result, the FMS re-computes the trajectory from the end of leg 1, directly to leg 3. As shown on the above illustration, this trajectory includes a right turn, instead of a left turn, because it induces the shortest course change to intercept leg 3 (CI leg).
If the NAV mode is re-engaged after the new computation, the aircraft follows an erroneous trajectory.

OPERATIONAL RECOMMENDATIONS

The flight crew should pay particular attention to the check of the flight plan during the Cockpit Preparation, and during the Descent Preparation.

CAUTION	Even if the flight plan is correct during the Cockpit Preparation or during the Descent Preparation, the FMS may compute and display an erroneous trajectory when the FMS updates its predictions after takeoff or after go-around initiation.

When in HDG/TRK mode after takeoff or go around initiation, if the flight crew detects that the lateral flight plan does not agree with the published trajectory, the flight crew should stay in HDG/TRK selected mode, and monitor NAVAID raw data as appropriate.

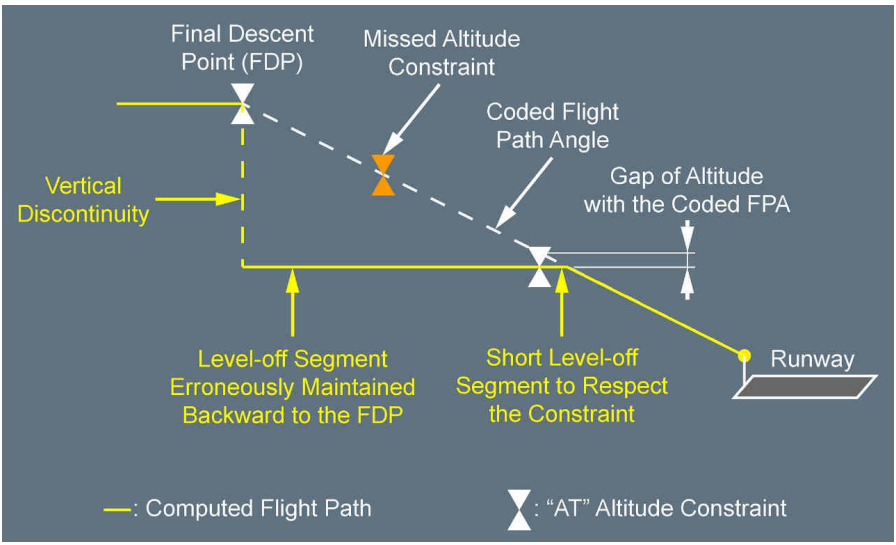
The flight crew should only reengage the NAV mode when the lateral flight plan is consistent with the published trajectory.

ERRONEOUS VERTICAL PROFILE IN FINAL APPROACH

Ident.: DSC-22_20-100-30-00020387.0001001 / 20 SEP 16
Applicable to: MSN 01957-02097, 02121, 02138, 02204, 02405-02443, 02482, 02712, 03138-03308, 03497, 03943, 04216-04312, 04384, 04399-04481, 04510, 04630, 04752, 04947, 05262, 05829, 05898

BACKGROUND

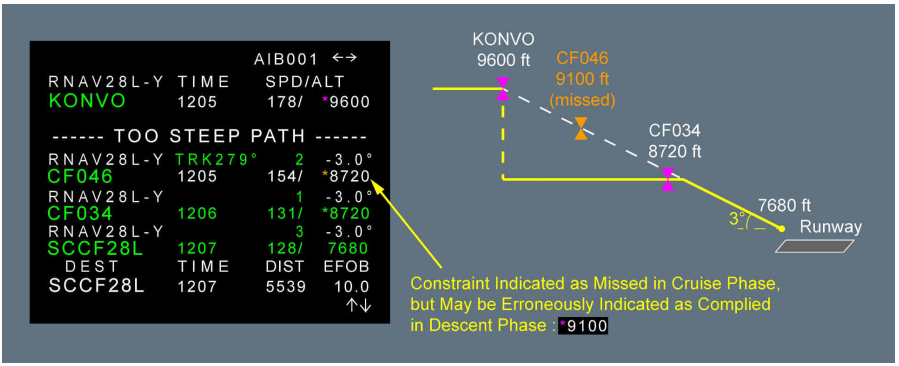
The FMS builds the vertical profile of the final approach backward from an anchor point that may be the Missed Approach Point (MAP) or the Runway threshold (RWY), up to the Final Descent Point (FDP).
In the Final Approach path, if there is a conflict between an “AT" altitude constraint and the flight path angle coded in the Navigation Database at a step-down fix, the FMS inserts a short level-off segment to comply with the altitude constraint (refer to the following illustration).
On affected approaches, the FMS erroneously maintains the level-off segment backwards to the FDP.
For Non Precision Approaches (NPAs), the level-off may be maintained either to the FDP or to the Final Approach Fix (FAF), when the FAF is not located at the FDP. Altitude constraints along the erroneous level-off may be missed, even if they are erroneously indicated as complied on the MCDU/ND during descent or approach phase.



The misbehavior does not appear when the altitude constraints coded at the step-down fixes are "AT OR ABOVE" constraints.

EFFECTS FOR ALL APPROACHES

As soon as the flight crew selects an affected approach, the MCDU F-PLN page displays a "-------- TOO STEEP PATH --------" message after the FDP.



When the aircraft reaches the vertical discontinuity, the vertical deviation (V/DEV) or the yoyo (linear deviation) jumps down and follows the erroneous profile.

EFFECTS FOR NON PRECISION APPROACHES (VOR, NDB, RNAV, LOC ONLY)

FINAL APP GUIDANCE

If FINAL APP is used, at FINAL APP mode engagement, the AP commands a steep pitch down towards the erroneous level-off segment, with possible missed constraints.

FLS ⋘ GUIDANCE

For aircraft equipped with the FLS ⋘ option, the FLS ⋘ beam computation is not affected by the misbehavior. Therefore, the aircraft follows the correct FLS ⋘ beam.

EFFECTS FOR PRECISION APPROCHES (ILS, MLS ⋘ OR GLS ⋘)

LOC G/S GUIDANCE

ILS, MLS ⋘ and GLS ⋘ beams are not affected by the issue.
The aircraft correctly captures and follows the G/S beam.

RECOMMENDATIONS

MODIFICATION OF THE NAVIGATION DATABASE

To solve this misbehavior for affected NPAs Airbus recommends, when possible, to replace the “AT" altitude constraints coded at the step down fixes in the navigation database, by “AT OR ABOVE" altitude constraints.
When the coding of an affected approach cannot be modified, Airbus recommends that the operators ensure that the flight crew will not fly the approach with FINAL APP guidance mode, or remove the approach from the navigation database.

DISPATCH CONSIDERATIONS

Operators must provide information to their flight crews during dispatch about NPAs in their navigation database that are affected by the misbehavior. Operators must not authorize the use FINAL APP guidance for these approaches.
Due to the fact that FINAL APP guidance is not available, RNAV approaches with LNAV/VNAV minima are no longer available.

FLIGHT CREW RECOMMENDATIONS

As per SOP the FINAL APP mode must not be used in a NPA, when the MCDU F-PLN page displays a "--------- TOO STEEP PATH --------" in the final segment (between the FDP and the MAP). If this message appears, the flight crew must perform the approach with selected vertical guidance, and disregard the FMS V/DEV or linear deviation (yoyo) information on the PFD.

UNCOMMANDED CLIMB AT TOP OF DESCENT (T/D)

Ident.: DSC-22_20-100-30-00021871.0001001 / 25 JUL 17
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

DESCRIPTION

An unexpected climb may occur when the following conditions are satisfied:

- Tropopause altitude is equal to final FMS cruise flight level (tropopause altitude can be manually entered on MCDU/INIT A page or received via an AOC uplink).
- DES mode is engaged before the Top of Descent (T/D).

If this unexpected climb occurs, the aircraft pitches up and A/THR commands a thrust increase but speed may decrease.

EXPLANATION

When the inserted tropopause altitude is equal to the final FMS cruise flight level, the FMS can erroneously compute a very steep segment in the FMS vertical profile. A guidance anomaly can then order a pitch up to capture this steep segment while in DES mode.

PROCEDURE

■ **How to avoid unexpected climb at top of descent:**

The tropopause altitude entered or uplinked on MCDU/INIT A page must be different from the final FMS cruise flight level by at least 10 ft. The altitude of the final FMS cruise flight level is the flight plan altitude at the Top of Descent (T/D). As the flight level may be selected on MCDU or FCU with an accuracy of 100 ft, tropopause altitude must be set to a value that is not a multiple of 100 ft.

For example, if the tropopause altitude is 37 000 ft, then the value 37 010 ft or 36 990 ft must be entered or uplinked on MCDU/INIT A page.

■ **How to manage an unexpected climb at Top of Descent (T/D):**

In the case the aircraft unexpectedly climbs at Top of Descent (T/D), the flight crew must disengage the DES mode or disconnect the AP/FD. DES mode can then be re-engaged when the aircraft is back on the FMS vertical profile.

ERRONEOUS ALTITUDE CONSTRAINT AFTER SID OR STAR SELECTION CHANGE

Ident.: DSC-22_20-100-30-00022414.0001001 / 24 AUG 18
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

DESCRIPTION

When the flight crew changes the SID or the STAR procedure, the FMS may keep a constraint of the previous procedure after the change.
The condition of occurrence is that both SID(STAR) procedures have the same last(first) waypoint but with different associated altitude constraints.
At the first SID(STAR) selection, the waypoint is linked to the en-route flight plan and the FMS considers this waypoint as the first(last) en-route waypoint.
When the SID(STAR) is changed, the FMS may keep the constraint of the first(last) en-route waypoint rather than the constraint of the new selected SID(STAR).

Note: *The issue may also appear if the altitude constraint was inserted manually in the previous SID(STAR).*

PROCEDURE

As per SOP, the flight crew must compare the inserted SID(STAR), including constraints, with the charts and make corrections if necessary.

ERRONEOUS PREDICTIONS

Ident.: DSC-22_20-100-40-00012672.0001001 / 17 MAR 17

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The FMGS may display temporary erroneous predictions that can affect such data as ECON speed/Mach, optimum flight level, fuel or time predictions.

PROCEDURE

If erroneous predictions are observed:

ON GROUND, OR IN FLIGHT

Check the cruise temperature (sign and value), the gross weight, and the cruise flight level.
REENTER the same cost index to restart a computation (In descent or approach, a cost index change does not restart a computation), or
MAKE a COPY ACTIVE, then activate the secondary, or
MAKE a DIR TO the “TO” waypoint.

ERRONEOUS PREDICTIONS

Ident.: DSC-22_20-100-40-00012672.0002001 / 17 MAR 17

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The FMGS may display temporary erroneous predictions that can affect such data as ECON speed/Mach, optimum flight level, fuel or time predictions.

PROCEDURE

If erroneous predictions are observed:

ON GROUND, OR IN FLIGHT

Check the cruise temperature (sign and value), the gross weight, and the cruise flight level.
REENTER the same cost index to restart a computation, or
MAKE a COPY ACTIVE, then activate the secondary, or
MAKE a DIR TO the “TO” waypoint.

SPURIOUS ENGINE OUT INDICATION

Ident.: DSC-22_20-100-40-00012673.0001001 / 17 MAR 17

Applicable to: ALL

PROCEDURE

If a spurious engine-out is detected:

PRESS the EO CLR prompt of the MCDU PERF page
RE-ENGAGE previous vertical mode
RE-ENTER preselected speeds (if any). No other consequences are to be expected.

AIRCRAFT SYSTEMS

AUTO FLIGHT - FLIGHT GUIDANCE

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DSC-22_30-10 General

General....A
Mode Reversions....B
Guidance Modes....C
Mode Selection....D
Lateral Modes....E
Vertical Modes....F
Interaction between AP/FD and A/THR Modes....G

DSC-22_30-20 Flight Director

General....A
Flight Director (FD) Engagement....B
Flight Director (FD) Disengagement....C
Automatic FD Removal....D
FD Warnings....E

DSC-22_30-30 Autopilot (AP)

General....A
AP Engagement....B
AP Disengagement....C
AP Warnings....D
Autoland Warning....E

DSC-22_30-40 Speed/Mach Control

General....A
Managed Speed/Mach Target....B
Selected Speed/Mach Target....C
Auto SPD....D
Speed/Mach Switching....E
Managed Speed Target Memorization....F
Speed/Mach FCU Window Synchronization....G

DSC-22_30-50 AP/FD Modes General

AP/FD Modes General....A

DSC-22_30-60 AP/FD Lateral Modes

Heading or Track: HDG - TRK....A
HDG/TRK Preset....B
Navigation (NAV)....C
Localizer Mode through the LOC Pushbutton....D

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DSC-22_30-70 AP/FD Vertical Modes

DSC-22_30-70-10 Principles
- General....A
- Principles....B

DSC-22_30-70-20 Climb Mode
- General....A
- Arming Conditions....B
- Disarming Conditions....C
- Engagement Conditions....D
- Disengagement Conditions....E
- Guidance....F

DSC-22_30-70-30 Open Climb Mode
- General....A
- Engagement Conditions....B
- Disengagement Conditions....C
- Guidance....D

DSC-22_30-70-50 Descent Mode
- General....A
- Arming Conditions....B
- Disarming Conditions....C
- Engagement Conditions....D
- Disengagement Conditions....E
- Repressurization Segment....F
- Descent Speed Profile....G
- Guidance in DES Mode....H
- DES Mode Profile....I

DSC-22_30-70-60 Open Descent Mode
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- Engagement Conditions....B
- Disengagement Conditions....C
- Guidance....D

DSC-22_30-70-65 Altitude Acquire Mode
- General....A
- Engagement Conditions....B
- Disengagement Conditions....C
- Guidance....D

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DSC-22_30-70-70 Altitude Hold Mode
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Arming Conditions....B
Engagement Conditions....C
Disengagement Conditions....D
Guidance....E
Soft Altitude Mode (Cruise)....F

DSC-22_30-70-80 Vertical Speed Mode - Flight Path Angle Mode (V/S - FPA)
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Engagement Conditions....B
Disengagement Conditions....C
Guidance....D

DSC-22_30-70-85 TCAS Mode
General....A
TCAS Mode Inhibition Conditions....B
Arming Conditions (When a Traffic Advisory is triggered)....C
Disarming Conditions....D
Engagement Conditions (When a Resolution Advisory is triggered)....E
Disengagement Conditions....F
Guidance....G

DSC-22_30-70-90 Expedite
General....A
Engagement Conditions....B
Disengagement Conditions....C
Guidance....D

DSC-22_30-75 Mode Reversions
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Interaction between Lateral Modes, Vertical Modes, and Managed Speed Profile....B
Mode Reversion due to FCU Altitude Change....C
Reversion with Global Speed Protection....D
Mode Reversions (Summary)....E

DSC-22_30-80 AP/FD Common Modes
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General....A

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DSC-22_30-80-20 Takeoff
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SRS (Speed Reference System)....B
Runway (RWY)....C

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DSC-22_30-80-30-05 General
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DSC-22_30-80-30-10 Precision Approach
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Speed Control....B
Typical ILS Approach....C
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DSC-22_30-80-30-20 Non Precision Approach
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Arming Conditions....C
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Engagement Conditions....E
Disengagement Conditions....F
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DSC-22_30-80-40 Go Around (GA)
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Engagement Conditions....B
Disengagement Conditions....C
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DSC-22_30-90 Autothrust
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Thrust Levers....B
A/THR Arming Conditions....C
A/THR Activation....D
A/THR Disconnection....E
Thrust Lock Function....F
A/THR Disconnection Caution....G
A/THR Modes....H
SPEED Mode in Approach Phase....I

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DSC-22_30-100 Flight Mode Annunciator (FMA)

Flight Mode Annunciator (FMA)..... A
Autothrust Annunciations (FMA Column 1)..... B
Autobrake Modes (FMA Column 1)..... C
AP/FD Vertical Modes (FMA Column 2)..... D
AP/FD Lateral Modes (FMA Column 3)..... E
AP/FD Common Modes (FMA Columns 2 and 3)..... F
Approach Capabilities (FMA Column 4)..... G
AP/FD - A/THR Engagement Status (FMA Column 5)..... H
Special Messages (FMA Columns 2 and 3)..... I

DSC-22_30-110 Temporary Abnormal Behaviors

Unexpected G/S mode armed..... A
CAT 3 Dual Inoperative..... B
Left Turn Not Expected while in HDG or TRK Mode..... C
Spurious CAT 2 INOP..... D

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Localization Title	Toc Index	ID	Reason
DSC-22_30-10 Guidance Modes	C	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-10 Guidance Modes	C	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-10 Lateral Modes	E	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-10 Vertical Modes	F	4	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-10 Vertical Modes	F	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-10 Interaction between AP/FD and A/THR Modes	G	6	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-10 Interaction between AP/FD and A/THR Modes	G	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-20 Flight Director (FD) Engagement	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-20 Flight Director (FD) Engagement	B	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-30 AP Engagement	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-30 AP Disengagement	C	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-40 Managed Speed/Mach Target	B	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-40 Managed Speed/Mach Target	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-50 AP/FD Modes General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-50 AP/FD Modes General	A	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-60 Heading or Track: HDG - TRK	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-60 HDG/TRK Preset	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-22_30-60 Navigation (NAV)	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-70-20 Disengagement Conditions	E	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-70-30 Engagement Conditions	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-70-50 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-70-50 Disengagement Conditions	E	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-70-50 Repressurization Segment	F	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-70-50 Descent Speed Profile	G	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-70-50 Guidance in DES Mode - During the Descent	H	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-70-50 DES Mode Profile - General	I	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-70-50 DES Mode Profile - Intercept Point	I	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-70-60 Disengagement Conditions	C	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-70-65 Disengagement Conditions	C	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-70-80 Engagement Conditions	B	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-70-80 Engagement Conditions	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
DSC-22_30-70-80 Disengagement Conditions	C	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-70-80 Disengagement Conditions	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-70-85 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-70-85 TCAS Mode Inhibition Conditions	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-70-85 Arming Conditions (When a Traffic Advisory is triggered)	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-70-85 Disarming Conditions	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-70-85 Engagement Conditions (When a Resolution Advisory is triggered) - General	E	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-70-85 Engagement Conditions (When a Resolution Adivisory is triggered) - Auto Pilot/Flight Director (AP/FD) Engagement Status	E	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-70-85 Engagement Conditions (When a Resolution Advisory is triggered) - Lateral Mode	E	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-70-85 Engagement Conditions (When a Resolution Advisory is triggered) - Vertical Mode	E	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-70-85 Engagement Conditions (When a Resolution Advisory is triggered) - Auto Thrust Behavior	E	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-70-85 Disengagement Conditions - General	F	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-70-85 Disengagement Conditions - Lateral Mode	F	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-70-85	F	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
Disengagement Conditions - Vertical Mode			
DSC-22_30-70-85 Guidance	G	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-70-90 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-70-90 Engagement Conditions	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-70-90 Disengagement Conditions	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-70-90 Guidance	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-75 Interaction between Lateral Modes, Vertical Modes, and Managed Speed Profile	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-75 Mode Reversion due to FCU Altitude Change	C	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-75 Reversion with Global Speed Protection - Automatic Speed Mode Protection in Climb	D	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-75 Reversion with Global Speed Protection - Automatic Speed Protection in V/S (or FPA) Mode in Climb	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-75 Reversion with Global Speed Protection - Automatic Speed Mode Protection in Descent	D	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-75 Reversion with Global Speed Protection - Automatic Speed Protection in V/S (or FPA) Mode in Descent	D	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-22_30-75 Reversion with Global Speed Protection - Automatic Speed Protection in TCAS Mode	D	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-75 Mode Reversions (Summary)	E	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-75 Mode Reversions (Summary)	E	9	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-80-10 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-80-20 SRS (Speed Reference System) - Disengagement Conditions	B	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-80-20 SRS (Speed Reference System) - Disengagement Conditions	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-80-30-05 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-80-30-10 Precision Approach Modes - APPR Mode	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-80-30-10 Precision Approach Modes - APPR Mode	A	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-80-30-10 Autoland Warning Light	D	3	Effectivity update: The information now also applies to MSN 09063.
DSC-22_30-80-30-10 Autoland Warning Light	D	4	Effectivity update: The information now also applies to MSN 08961, 09031.
DSC-22_30-80-30-10 Autoland Warning Light	D	5	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-80-30-20 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-80-30-20 Disarming Conditions	D	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-80-30-20 Disarming Conditions	D	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
DSC-22_30-80-30-20 Engagement Conditions	E	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-80-30-20 Disengagement Conditions	F	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-80-30-20 Disengagement Conditions	F	6	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-80-30-20 Guidance	G	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-80-40 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-80-40 Engagement Conditions	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-80-40 Disengagement Conditions	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-80-40 Disengagement Conditions	C	4	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-90 A/THR Arming Conditions	C	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-90 A/THR Arming Conditions	C	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-90 A/THR Activation - General	D	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-90 A/THR Activation - General	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-90 A/THR Modes - ALPHA FLOOR	H	5	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-90 A/THR Modes - ALPHA FLOOR	H	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-90 SPEED Mode in Approach Phase - MANAGED SPEED TARGET COMPUTATION	I	7	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-90 SPEED Mode in Approach Phase - MANAGED SPEED TARGET COMPUTATION	I	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
DSC-22_30-100 Flight Mode Annunciator (FMA) - General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09063. The information no longer applies to MSN 05449.
DSC-22_30-100 Flight Mode Annunciator (FMA) - The Fourth Column	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-100 Autothrust Annunciations (FMA Column 1) - First Line	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-100 Autothrust Annunciations (FMA Column 1) - First Line	B	4	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-100 Autothrust Annunciations (FMA Column 1) - Third Line	B	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-100 Autothrust Annunciations (FMA Column 1) - Third Line	B	6	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-100 Autobrake Modes (FMA Column 1) - First Line	C	7	Effectivity update: The information now also applies to MSN 09063.
DSC-22_30-100 Autobrake Modes (FMA Column 1) - Second Line	C	8	Effectivity update: The information now also applies to MSN 09063.
DSC-22_30-100 Autobrake Modes (FMA Column 1) - Third Line	C	9	Effectivity update: The information now also applies to MSN 09063.
DSC-22_30-100 AP/FD Vertical Modes (FMA Column 2) - First Line	D	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-100 AP/FD Vertical Modes (FMA Column 2) - First Line	D	11	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-100 AP/FD Vertical Modes (FMA Column 2) - Third Line	D	12	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-100 AP/FD Vertical Modes (FMA Column 2) - Third Line	D	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
DSC-22_30-100 Approach Capabilities (FMA Column 4) - Third Line	G	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-22_30-100 Special Messages (FMA Columns 2 and 3)	I	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_30-100 Special Messages (FMA Columns 2 and 3)	I	16	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_30-110 Spurious CAT 2 INOP	D	1	Effectivity update: The information no longer applies to MSN 05449.

GENERAL

Ident.: DSC-22_30-10-00011031.0001001 / 17 AUG 10
Applicable to: ALL

The Flight Guidance (FG) part of the FMGS controls:
- The Flight Director (FD)
- The Autopilot (AP)
- The Autothrust (A/THR).

MODE REVERSIONS

Ident.: DSC-22_30-10-00011032.0001001 / 17 AUG 10
Applicable to: ALL

There are several types of mode reversions. Each one observes a specific logic that is described in the "Mode Reversions" section. (*Refer to DSC-22_30-75 General*).

GUIDANCE MODES

Ident.: DSC-22_30-10-00011033.0006001 / 18 MAR 11
1 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

Two types of autopilot and flight director modes are available to guide the aircraft:
- Managed modes, which steer the aircraft along the lateral, vertical, and speed profiles according to the data the pilot inserts into the MCDU. Flight Management (in the Flight Management and Guidance Computer) computes the corresponding guidance targets.
- Selected modes, which steer the aircraft according to target values that the pilot selects and the FCU windows display

GUIDANCE	MANAGED modes	SELECTED modes
LATERAL	NAV, APP NAV LOC*, LOC RWY RWY TRK GA TRK ROLL OUT	HDG-TRK
VERTICAL	SRS (TO and GA) CLB, DES ALT CST, ALT CST* ALT CRZ G/S*, G/S FINAL, FINAL APP FLARE TCAS	OP CLB, OP DES V/S, FPA ALT*, ALT EXPEDITE
SPEED	FMGC REFERENCE (ECON, Auto SPD, SPD LIM) EXPEDITE	FCU REFERENCE

GUIDANCE MODES

Ident.: DSC-22_30-10-00011033.0002001 / 23 JUN 15

2 **Applicable to: MSN 01767-06868, 06914, 06952-07053, 07252-07396**

Two types of autopilot and flight director modes are available to guide the aircraft:

- Managed modes: When the aircraft is using managed targets, the Flight Management and Guidance System (FMGS) guides it along lateral and vertical flight paths and speed profiles computed by the Flight Management function (FM) from data in the MCDU. FM manages the guidance targets.
- Selected modes: When the flight crew is using selected targets, the FMGS guides the aircraft along lateral and vertical flight paths and speed profiles to meet targets that the flight crew has selected manually on the FCU. The flight crew selects the guidance targets.

GUIDANCE	MANAGED modes	SELECTED modes
LATERAL	NAV, APP NAV LOC*, LOC RWY RWY TRK GA TRK ROLL OUT	HDG-TRK
VERTICAL	SRS (TO and GA) CLB, DES ALT CST, ALT CST* ALT CRZ G/S*, G/S FINAL, FINAL APP FLARE	OP CLB, OP DES V/S, FPA ALT*, ALT EXPEDITE
SPEED	FMGC REFERENCE (ECON, Auto SPD, SPD LIM) EXPEDITE	FCU REFERENCE

MODE SELECTION

Ident.: DSC-22_30-10-00011034.0001001 / 23 JUN 15
Applicable to: ALL

MANAGED MODES

- At takeoff, the managed modes engage automatically when the flight crew sets the thrust levers at the TO or FLX detent.
- During flight, the flight crew can arm or engage the managed modes (if the aircraft meets engagement conditions) by pushing in the appropriate knobs on the Flight Control Unit (FCU).
- The flight crew pushes the DIR TO key on the MCDU to insert a DIR TO leg. It engages or maintains the NAV mode.
- The flight crew pushes the APPR pb on the FCU to arm or engage the localizer and glide slope or “APP NAV-FINAL”, depending upon the approach type insert in the flight plan.
- The LOC pb arms or engages only the localizer mode.

SELECTED MODES

The flight crew can engage the selected modes by pulling out the appropriate FCU selection knobs.

LATERAL MODES

Ident.: DSC-22_30-10-00011035.0001001 / 23 JUN 15
Applicable to: MSN 01767-03541

MODE	TYPE	GUIDANCE	REMARK
RWY	MANAGED	Mode used at takeoff to guide the aircraft along the runway centerline, using LOC.	Triggered by the thrust levers at FLX or TOGA position.
RWY TRK	MANAGED	Mode used to guide the aircraft along the track the aircraft was following at mode engagement.	
NAV	MANAGED	Mode used to guide the aircraft along the lateral F-PLN. Available above 30 ft after takeoff.	Automatically armed at takeoff, unless HDG/TRK is preset. In that case, RWY TRK engages after takeoff.
HDG-TRK	SELECTED	Mode used to guide the aircraft on a heading or a track selected by the flight crew. The target value is displayed in the FCU window.	*Note:* *HDG/TRK is called "basic mode" because it is a backup mode for certain situations:* - *F-PLN discontinuity entry* - *AP engagement with no FD* - *Loss of F-PLN.*
LOC* **LOC** **APP NAV**	MANAGED	Mode used to guide the aircraft on the lateral approach path (LOC or F-PLN approach path).	Selected by pressing APPR pb on the FCU ; the mode that engages depends upon the selected approach in the F-PLN. *Note:* *For LOC only approach, do not select the FCU's APPR pb, but rather the LOC pb.*

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MODE	TYPE	GUIDANCE	REMARK
LAND	MANAGED	Common mode engaged below 400 ft RA during an automatic ILS approach.	Engaged only if LOC mode and G/S mode are already engaged.
GA TRK	MANAGED	Mode used to guide the aircraft along the track the aircraft was following at mode engagement.	Triggered by the thrust levers at TOGA with Slats/Flaps in at least CONF 1.
ROLL OUT	MANAGED	Mode used to guide the aircraft on the runway, following an automatic landing.	FD rollout symbol is displayed on the PFD at touchdown.

LATERAL MODES

Ident.: DSC-22_30-10-00011035.0003001 / 23 JUN 15

3 **Applicable to: MSN 03618-09063**

MODE	TYPE	GUIDANCE	REMARK
RWY	MANAGED	Mode used at takeoff to guide the aircraft along the runway centerline, using LOC.	Triggered by the thrust levers at FLX or TOGA position.
RWY TRK	MANAGED	Mode used to guide the aircraft along the track the aircraft was following at mode engagement.	
NAV	MANAGED	Mode used to guide the aircraft along the lateral F-PLN. Available above 30 ft after takeoff.	Automatically armed at takeoff, unless HDG/TRK is preset. In that case, RWY TRK engages after takeoff.

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MODE	TYPE	GUIDANCE	REMARK
HDG-TRK	SELECTED	Mode used to guide the aircraft on a heading or a track selected by the flight crew. The target value is displayed in the FCU window.	*Note:* *HDG/TRK is called "basic mode" because it is a backup mode for certain situations:* - *F-PLN discontinuity entry* - *AP engagement with no FD* - *Loss of F-PLN* - *MCDU NAV BACK UP.*
LOC* **LOC** **APP NAV**	MANAGED	Mode used to guide the aircraft on the lateral approach path (LOC or F-PLN approach path).	Selected by pressing APPR pb on the FCU ; the mode that engages depends upon the selected approach in the F-PLN. *Note:* *For LOC only approach, do not select the FCU's APPR pb, but rather the LOC pb.*
LAND	MANAGED	Common mode engaged below 400 ft RA during an automatic ILS approach.	Engaged only if LOC mode and G/S mode are already engaged.
GA TRK	MANAGED	Mode used to guide the aircraft along the track the aircraft was following at mode engagement.	Triggered by the thrust levers at TOGA with Slats/Flaps in at least CONF 1.
ROLL OUT	MANAGED	Mode used to guide the aircraft on the runway, following an automatic landing.	FD rollout symbol is displayed on the PFD at touchdown.

VERTICAL MODES

Ident.: DSC-22_30-10-00011036.0002001 / 23 JUN 15

[4] **Applicable to: MSN 01767-06868, 06914, 06952-07053, 07252-07396**

MODE	TYPE	GUIDANCE	REMARK
SRS	MANAGED	Mode used at takeoff or go-around to maintain SRS speed (V2, V2+10, VAPP...).	Triggered by the thrust levers at FLX or TOGA position. Disengages automatically at ACC ALT or when another VERT mode is engaged.
CLB	MANAGED	Mode used to climb towards FCU selected altitude along VERT F-PLN taking into account ALT CSTR. Available only if NAV mode engaged. The A/THR is in thrust mode (CLB).	The speed target may be either selected or managed. If managed, SPD CSTR, SPD LIM and HOLD SPD are taken into account. ALT mode is always armed ; displayed in magenta if the next level off is predicted at an ALT CSTR, and in blue if the next level off is predicted at the FCU selected altitude.
DES	MANAGED	Mode used to descend towards FCU selected altitude along the computed descent path taking into account ALT CSTR. Available only if NAV mode engaged. The A/THR may be in THRUST or SPD mode.	
OP CLB **OP DES**	SELECTED	Mode used to climb/descent directly to the FCU selected altitude. These modes disregard all ALT CSTR. The A/THR is in THRUST mode (CLB/IDLE).	The speed target may be either selected or managed. ALT mode is systematically armed and blue. Altitude target is blue on PFD.
EXPEDITE ⩤	SELECTED	Mode used to increase the vertical speed by selecting green dot in climb or 0.80/340 kt in descent.	Used to expedite a climb or descent towards a specific level.
ALT CST* **ALT CST**	MANAGED	Mode automatically engaged when reaching an ALT CSTR before the FCU selected altitude.	CLB/DES mode are systematically armed (blue).
ALT* **ALT** **ALT CRZ**	SELECTED	Mode used to maintain a level flight at the FCU selected altitude.	Soft ALT mode engages when FCU selected altitude = CRZ FL. Soft ALT is part of the managed guidance.

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MODE	TYPE	GUIDANCE	REMARK
V/S-FPA	SELECTED	Mode used to guide the aircraft along a vertical speed or a selected flight path angle.	Altitude target is blue on PFD. V/S-FPA is a basic mode. (*Refer to DSC-22_30-10 Lateral Modes*).
G/S* G/S FINAL	MANAGED	Mode used to guide the aircraft along the final approach path (G/S or non ILS)	Selected by depressing the APPR pb on the FCU. The mode engaged depends upon the selected approach in the F-PLN. Linked to APPR common mode (APPR pb).
FLARE	MANAGED	Common mode which provides the alignment to the runway center line on the yaw axis and the flare on the pitch axis.	Engages below 50 ft RA as a function of the current vertical speed.

VERTICAL MODES

Ident.: DSC-22_30-10-00011036.0066001 / 20 SEP 16

[5] **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

MODE	TYPE	GUIDANCE	REMARK
SRS	MANAGED	Mode used at takeoff or go-around to maintain SRS speed (V2, V2+10, VAPP...).	Triggered by the thrust levers at FLX or TOGA position. Disengages automatically at ACC ALT or when another VERT mode is engaged.
CLB	MANAGED	Mode used to climb towards FCU selected altitude along VERT F-PLN taking into account ALT CSTR. Available only if NAV mode engaged. The A/THR is in thrust mode (CLB).	The speed target may be either selected or managed. If managed, SPD CSTR, SPD LIM and HOLD SPD are taken into account. ALT mode is always armed ; displayed in magenta if the next level off is predicted at an ALT CSTR, and in blue if the next level off is predicted at the FCU selected altitude.
DES	MANAGED	Mode used to descend towards FCU selected altitude along the computed descent path taking into account ALT CSTR. Available only if NAV mode engaged. The A/THR may be in THRUST or SPD mode.	
OP CLB **OP DES**	SELECTED	Mode used to climb/descent directly to the FCU selected altitude. These modes disregard all ALT CSTR. The A/THR is in THRUST mode (CLB/IDLE).	The speed target may be either selected or managed. ALT mode is systematically armed and blue. Altitude target is blue on PFD.
EXPEDITE ⩤	SELECTED	Mode used to increase the vertical speed by selecting green dot in climb or 0.80/340 kt in descent.	Used to expedite a climb or descent towards a specific level.
ALT CST* **ALT CST**	MANAGED	Mode automatically engaged when reaching an ALT CSTR before the FCU selected altitude.	CLB/DES mode are systematically armed (blue).
ALT* **ALT** **ALT CRZ**	SELECTED	Mode used to maintain a level flight at the FCU selected altitude.	Soft ALT mode engages when FCU selected altitude = CRZ FL. Soft ALT is part of the managed guidance.

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MODE	TYPE	GUIDANCE	REMARK
V/S-FPA	SELECTED	Mode used to guide the aircraft along a vertical speed or a selected flight path angle.	Altitude target is blue on PFD. V/S-FPA is a basic mode. (*Refer to DSC-22_30-10 Lateral Modes*).
G/S* G/S FINAL	MANAGED	Mode used to guide the aircraft along the final approach path (G/S or non ILS)	Selected by depressing the APPR pb on the FCU. The mode engaged depends upon the selected approach in the F-PLN. Linked to APPR common mode (APPR pb).
FLARE	MANAGED	Common mode which provides the alignment to the runway center line on the yaw axis and the flare on the pitch axis.	Engages below 50 ft RA as a function of the current vertical speed.
TCAS	MANAGED	Mode used to guide the A/C in the case of a TCAS RA.	Automatically engages when a RA is triggered.

INTERACTION BETWEEN AP/FD AND A/THR MODES

Ident.: DSC-22_30-10-00011037.0002001 / 23 JUN 15

6 **Applicable to: MSN 01767-06868, 06914, 06952-07053, 07252-07396**

The AP and FD pitch modes can control a target SPD/MACH or a vertical trajectory, and the A/THR mode can control a fixed thrust or a target SPD/MACH. However, the AP/FD and the A/THR cannot both control a target SPD/MACH simultaneously.

Therefore the AP/FD pitch modes and A/THR mode are coordinated as follows:

- If an AP/FD pitch mode controls a vertical trajectory, the A/THR mode controls the target SPD/MACH.
- If an AP/FD pitch mode controls a target SPD or MACH, the A/THR mode controls the thrust.
- If no AP/FD pitch mode is engaged, the A/THR mode reverts to controlling the SPD/MACH mode.

In other words, the selection of an AP/FD pitch mode determines which mode the A/THR controls.

AP/FD pitch modes	A/THR modes
V/S - FPA DES (geometric path) ALT*, ALT ALT CRZ*, ALT CRZ ALT CST*, ALT CST G/S*, G/S FINAL, FINAL APP	SPEED/MACH MODE
AP/FD OFF	
CLB/DES (idle path) OP CLB/OP DES EXP CLB/EXP DES SRS	THR (CLB, IDLE) MODE
FLARE	RETARD (IDLE)

INTERACTION BETWEEN AP/FD AND A/THR MODES

Ident.: DSC-22_30-10-00011037.0004001 / 23 JUN 15

7 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

The AP and FD pitch modes can control a target SPD/MACH or a vertical trajectory, and the A/THR mode can control a fixed thrust or a target SPD/MACH. However, the AP/FD and the A/THR cannot both control a target SPD/MACH simultaneously.

Therefore the AP/FD pitch modes and A/THR mode are coordinated as follows:

- If an AP/FD pitch mode controls a vertical trajectory, the A/THR mode controls the target SPD/MACH.
- If an AP/FD pitch mode controls a target SPD or MACH, the A/THR mode controls the thrust.
- If no AP/FD pitch mode is engaged, the A/THR mode reverts to controlling the SPD/MACH mode.

In other words, the selection of an AP/FD pitch mode determines which mode the A/THR controls.

AP/FD pitch modes	A/THR modes
V/S - FPA DES (geometric path) ALT*, ALT ALT CRZ*, ALT CRZ ALT CST*, ALT CST G/S*, G/S FINAL, FINAL APP TCAS	SPEED/MACH MODE
AP/FD OFF	

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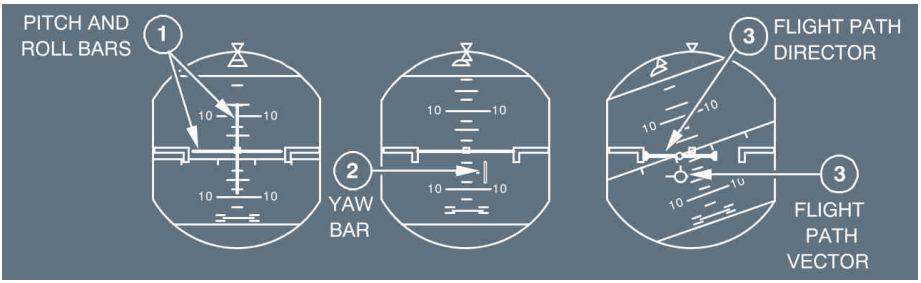
AP/FD pitch modes	A/THR modes
CLB/DES (idle path) OP CLB/OP DES EXP CLB/EXP DES ◁ SRS	THR (CLB, IDLE) MODE
FLARE	RETARD (IDLE)

GENERAL

Ident.: DSC-22_30-20-00012468.0001001 / 14 MAY 12
Applicable to: ALL

The Flight Director (FD) displays guidance commands from the Flight Management and Guidance Computer (FMGC) on the Primary Flight Display (PFD).
The flight crew may manually fly the aircraft, following FMGC guidance commands, or crosscheck the FMGC orders when the autopilot is engaged.
In normal operations, FD1 displays FMGC1 orders on the PFD1 and FD2 displays FMGC2 orders on the PFD2.
The FDs use their respective onside FMGCs.

On the PFD:
1. The FD pitch and roll crossbars show pitch and roll demands.
2. Below 30 ft during landing and takeoff, when a localizer is available, the vertical bar is replaced by a yaw bar that gives lateral orders.
3. The Flight Path Director (FPD) symbol relates to the Flight Path Vector (FPV).



The HDG V/S – TRK FPA pb on the FCU enables the flight crew to select either type of reference and display.
The FD pb on the Electronic Flight Instrument System (EFIS) control panel allows the FD bars to be displayed or removed.

FD BARS (HDG V/S SELECTED ON THE FCU)

- The pitch bar is displayed if a vertical mode is engaged. It gives pitch orders for the vertical guidance
- The roll bar is displayed if a lateral mode is engaged. It gives roll orders for lateral guidance.

FLIGHT PATH DIRECTOR (TRK FPA SELECTED ON THE FCU)

The display is an alternate way of transmitting flight director commands.

- The Flight Path Vector (FPV) symbol illustrates the track and flight path angle actually being flown
- The Flight Path Director (FPD) symbol shows the flight crew how to intercept the required vertical and lateral flight trajectory. When the flight crew superimposes the FPV and the FPD symbols, the aircraft is flying the required trajectory.

YAW BAR

The yaw bar is displayed in RWY mode on takeoff and in FLARE and ROLL OUT modes at landing.

FLIGHT DIRECTOR (FD) ENGAGEMENT

Ident.: DSC-22_30-20-00012469.0019001 / 01 OCT 12

1 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

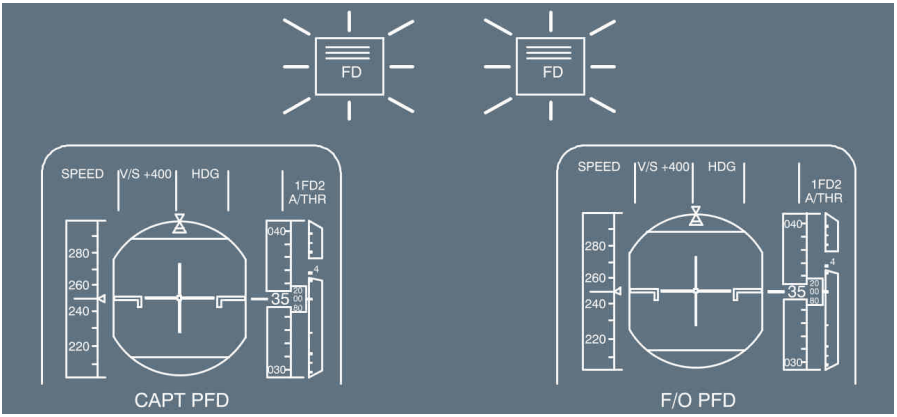
The FDs are engaged automatically when the FMGC powers up.

GROUND ENGAGEMENT

- The "1FD2" symbol appears on both PFDs
- No FD bars appear on the PFDs. (The PFD displays FD orders when a mode is active on the corresponding axis)
- The FCU windows display dashes.

MANUAL FLIGHT ENGAGEMENT

The two FDs engage in the HDG V/S or TRK FPA modes (basic modes).



AUTOMATIC FLIGHT ENGAGEMENT

- FD bars are automatically restored in SRS/GA TRK modes at go-around engagement. If FPV/FPD was previously selected, it reverts to FD bars
- FD bars are automatically engaged in the case of a TCAS Resolution Advisory.

FLIGHT DIRECTOR (FD) ENGAGEMENT

Ident.: DSC-22_30-20-00012469.0008001 / 01 OCT 12

2 **Applicable to: MSN 01767-06868, 06914, 06952-07053, 07252-07396**

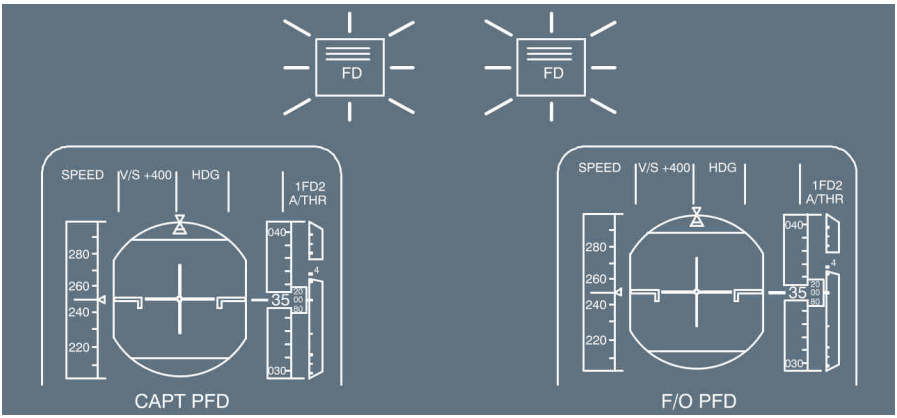
The FDs are engaged automatically when the FMGC powers up.

GROUND ENGAGEMENT

- The "1FD2" symbol appears on both PFDs
- No FD bars appear on the PFDs. (The PFD displays FD orders when a mode is active on the corresponding axis)
- The FCU windows display dashes.

MANUAL FLIGHT ENGAGEMENT

The two FDs engage in the HDG V/S or TRK FPA modes (basic modes).



AUTOMATIC FLIGHT ENGAGEMENT

FD bars are automatically restored in SRS/GA TRK modes at go-around engagement. If FPV/FPD was previously selected, it reverts to FD bars.

FLIGHT DIRECTOR (FD) DISENGAGEMENT

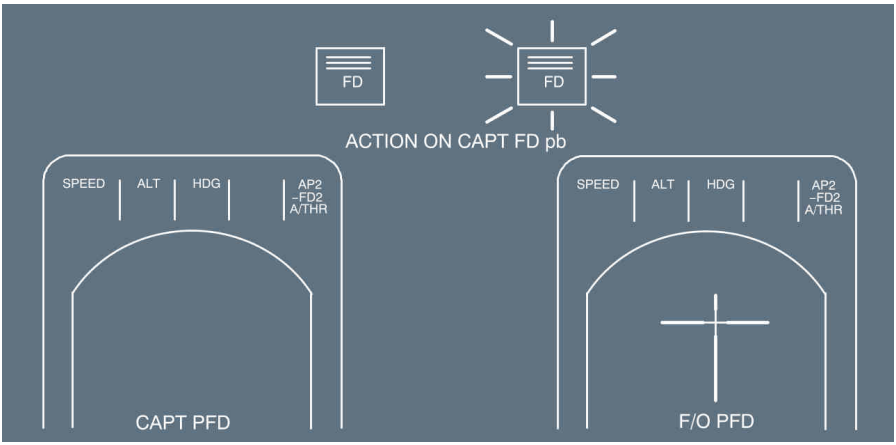
Ident.: DSC-22_30-20-00012470.0006001 / 05 JUN 18
Applicable to: ALL

The flight crew may disengage one or two FDs manually, or FDs may disengage automatically if there is a failure.

MANUAL DISENGAGEMENT

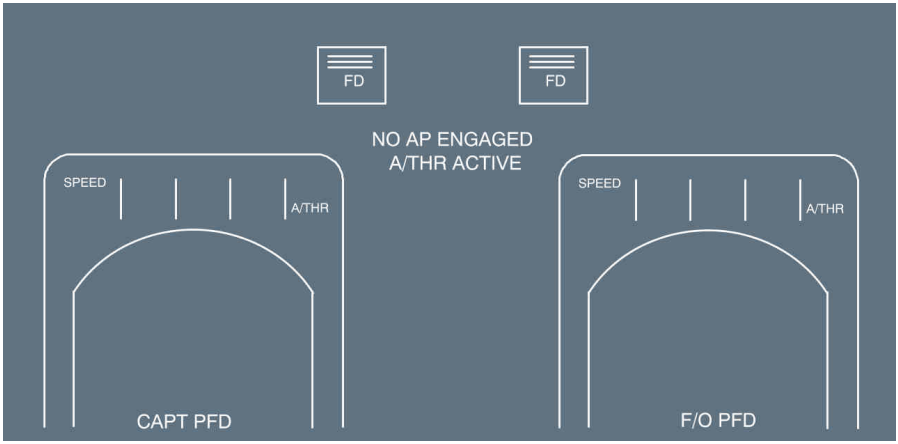
One FD OFF:

- The FD bars no longer appear on the associated PFD.
- The corresponding FD is disengaged.



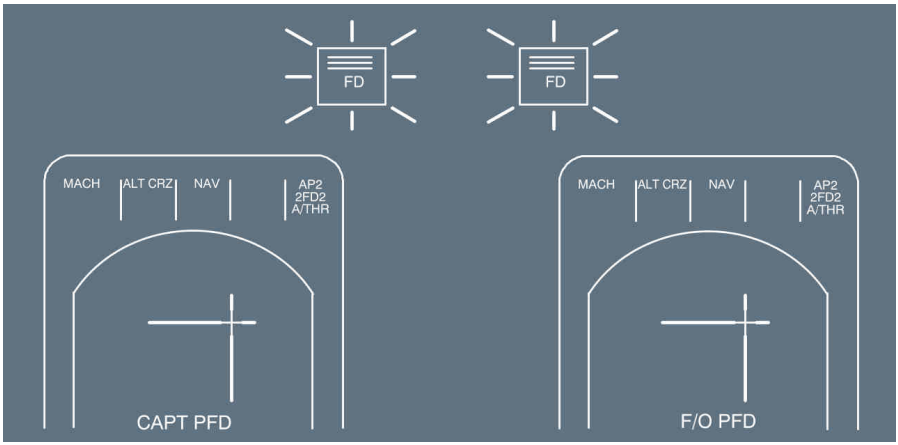
Both FDs OFF:

- The FD bars disappear from both PFDs.
- If no AP was engaged, lateral and vertical modes disengage. The A/THR, if active, automatically reverts to (or remains in) SPEED/MACH mode.
- If one AP was engaged when FDs are switched OFF, this AP remains engaged in the active modes but the FDs are no longer displayed.



AUTOMATIC DISENGAGEMENT

If one FD fails or one FMGC is not valid, both PFDs display the remaining FD.



AUTOMATIC DISENGAGEMENT DUE TO SPEED PROTECTION

When APs are not engaged and the flight crew does not follow the FD bars to maintain the commanded trajectory in climb with CLB or OP CLB (or EXP CLB ◁) engaged or in descent with DES or OP DES (or EXP DES ◁) engaged, the FDs will disengage at the activation of the automatic speed mode protection.

AUTOMATIC FD REMOVAL

Ident.: DSC-22_30-20-00012472.0001001 / 28 JAN 14
Applicable to: ALL

- The FD pitch bar is removed when no vertical mode is engaged or when ROLL OUT mode is engaged.
- The FD roll bar is removed when no lateral mode is engaged or when the RWY or ROLL OUT mode is engaged.
- Both FDs are removed when the aircraft pitch exceeds 25 ° up or 13 ° down, or bank angle exceeds 45 °.

FD WARNINGS

Ident.: DSC-22_30-20-00012473.0001001 / 16 MAR 11
Applicable to: ALL

FD bar WARNINGS	CONDITIONS
Pitch FD bar (or FPV) flashes 10 s and then remains steady	- If the ALT* mode is lost further to FCU altitude reference change of more than 250 ft. - When in APPR mode (G/S*, G/S, LAND, FINAL), FD reverts to V/S mode (flight crew action or loss of vertical approach mode). - One AP or one FD is engaged while both AP/FD were previously OFF.
Pitch FD bar (or FPV) flashes permanently	Transmission of the GLIDE data is interrupted when in G/S, G/S* or LAND modes above 100 ft RA.
Roll FD bar (or FPV) flashes 10 s and then remains steady	- When in APPR mode (LOC*, LOC, LAND, APP NAV), FD reverts to HDG mode (flight crew action or loss of lateral approach mode). - One AP or one FD is engaged while both AP/FD were previously OFF.
Roll FD bar (or FPV) flashes permanently	Transmission of the LOC data is interrupted when in LOC, LOC* or LAND modes above 15 ft RA.

GENERAL

Ident.: DSC-22_30-30-00011816.0001001 / 17 AUG 10
Applicable to: ALL

The AP:
- Stabilizes the aircraft around its center of gravity
- Acquires and tracks a flight path
- Flies the aircraft to an automatic landing or go-around.

The AP commands the:
- Position of the flight control surfaces for pitch, roll and yaw
- Nose wheel position.

AP ENGAGEMENT

Ident.: DSC-22_30-30-00011817.0003001 / 17 AUG 10
Applicable to: MSN 01767-03541

The flight crew can engage AP1 or AP2 by pressing the corresponding pushbutton on the FCU if the aircraft has been airborne for at least 5 s.
When one AP is engaged, the corresponding FCU pushbutton comes on and AP1 (or 2) is displayed on the FMAs.

- One AP can be engaged on ground if the engines are not running. It disengages when one engine is started.
- Two APs may be engaged at a time (AP1 active, AP2 in standby), when the localizer/glide-slope or roll out or go-around mode is armed or engaged.
  Only one AP can be engaged at a time in all other cases.
- If one AP pb is set to ON with both FDs OFF, the AP engages in HDG V/S or TRK FPA mode, depending upon which mode the flight crew has selected on the FCU.
- If one AP pb is set to ON with at least one FD already ON, the AP engages in the current active FD modes.
- At takeoff, the AP cannot be engaged below 100 ft.

AP engagement increases the break out force on the sidestick controllers and on the rudder pedals.
AP engagement is indicated by the lighting of the corresponding FCU pushbutton and by the appearance of AP1 (or 2) on the PFD's FMA.

AP ENGAGEMENT

Ident.: DSC-22_30-30-00011817.0014001 / 16 MAR 11
[1] **Applicable to: MSN 03618-09063**

The flight crew can engage AP1 or AP2 by pressing the corresponding pushbutton on the FCU if the aircraft has been airborne for at least 5 s.

When one AP is engaged, the corresponding FCU pushbutton comes on and AP1 (or 2) is displayed on the FMAs.
In BACK–UP NAV, AP can be engaged in selected modes if the FG part is available.

- One AP can be engaged on ground if the engines are not running. It disengages when one engine is started.
- Two APs may be engaged at a time (AP1 active, AP2 in standby), when the localizer/glide-slope or roll out or go-around mode is armed or engaged.
  Only one AP can be engaged at a time in all other cases.
- If one AP pb is set to ON with both FDs OFF, the AP engages in HDG V/S or TRK FPA mode, depending upon which mode the flight crew has selected on the FCU.
- If one AP pb is set to ON with at least one FD already ON, the AP engages in the current active FD modes.
- At takeoff, the AP cannot be engaged below 100 ft.

AP engagement increases the break out force on the sidestick controllers and on the rudder pedals.
AP engagement is indicated by the lighting of the corresponding FCU pushbutton and by the appearance of AP1 (or 2) on the PFD's FMA.

AP DISENGAGEMENT

Ident.: DSC-22_30-30-00011818.0009001 / 04 NOV 13

2 **Applicable to: MSN 01957-02359, 02405, 02457-02482, 02609-03618, 03782-04384, 04399-09063**

AP1 or 2 disengages when:
- The flight crew presses the takeover pb on the sidestick, or
- The flight crew presses the corresponding AP pb on the FCU, or
- The flight crew pushes on the sidestick harder than a defined threshold, or moves on the rudder pedals beyond a defined threshold, or
- The flight crew moves the pitch trim wheel beyond a defined threshold, or
- The other AP is engaged, except when localizer/glideslope modes are armed or engaged, or when the rollout or go-around mode is engaged, or
- Both thrust levers are set above the MCT detent and the aircraft is on ground, or
- One of the engagement conditions is lost.

In addition, in normal law with all protections available, the AP will disengage when:
- High speed protection activates, or
- Angle-of-attack protection activates:
  - From the liftoff to 100 ft RA during the landing, when α prot +1 ° is reached, or
  - Below 100 ft RA during the landing, when α MAX is reached, or
- Pitch attitude exceeds 25 ° up, or 13 ° down, or bank angle exceeds 45 °, or
- A rudder pedal deflection is more than 10 ° out of trim.

The standard manner for the flight crew to disengage the AP is to press the takeover pb on the sidestick.
When the AP is OFF, the associated pushbutton on the FCU goes off, and AP1 (or AP2) disappears from the FMA.

AP DISENGAGEMENT

Ident.: DSC-22_30-30-00011818.0008001 / 04 NOV 13
Applicable to: MSN 01767-01920, 02388, 02443, 02584, 03750, 04393-04397

AP1 or 2 disengages when:
- The flight crew presses the takeover pb on the sidestick, or
- The flight crew presses the corresponding AP pb on the FCU, or
- The flight crew pushes on the sidestick harder than a defined threshold, or moves on the rudder pedals beyond a defined threshold, or
- The flight crew moves the pitch trim wheel beyond a defined threshold, or
- The other AP is engaged, except when localizer/glideslope modes are armed or engaged, or when the rollout or go-around mode is engaged, or
- Both thrust levers are set above the MCT detent and the aircraft is on ground, or
- In a non-precision approach, the aircraft reaches the Missed Approach Point (MAP) with FINAL APP mode engaged, or
- One of the engagement conditions is lost.

In addition, in normal law with all protections available, the AP will disengage when:
- High speed protection activates, or
- Angle-of-attack protection activates:
  - From the liftoff to 100 ft RA during the landing, when α prot +1 ° is reached, or
  - Below 100 ft RA during the landing, when α MAX is reached, or
- Pitch attitude exceeds 25 ° up, or 13 ° down, or bank angle exceeds 45 °, or
- A rudder pedal deflection is more than 10 ° out of trim.

The standard manner for the flight crew to disengage the AP is to press the takeover pb on the sidestick.
When the AP is OFF, the associated pushbutton on the FCU goes off, and AP1 (or AP2) disappears from the FMA.

AP WARNINGS

Ident.: DSC-22_30-30-00011819.0001001 / 17 AUG 10
Applicable to: ALL

When the AP is disengaged, the system warns the flight crew:

- If the flight crew disengages it with the takeover pb on the sidestick, the warnings are temporary
- If the disengagement results from a failure, from the flight crew pushing the pushbutton on the FCU, or from a force on the sidestick, the visual and audio warnings are continual.

		AP DISENGAGEMENT	
		TAKEOVER pb on SIDESTICK	**BY OTHER MEANS**
CONSEQUENCE	**MASTER WARNING light**	Flashing red during 3 s maximum	Flashing red
	ECAM	AP OFF red message 9 s maximum	AUTO FLT AP OFF red warning
	AUDIO	Cavalry charge 0.5 s minimum 1.5 s maximum	Continuous cavalry charge 1.5 s minimum
	CLR pb on ECAM CONTROL PANEL	Extinguished	Illuminated
ACTION	**MASTER WARNING light**	- Extinguishes Master Warning light - Erases ECAM warning - Stops audio if pressed within 1.5 s	- Extinguishes Master Warning light - Stops audio after 1.5 s
	CLR pb on ECAM CONTROL PANEL	No effect	- Extinguishes CLR pb - Erases ECAM message - Calls status
	TAKEOVER pb	- Extinguishes Master Warning light - Erases ECAM warning - Stops audio if pressed within 1.5 s	- Extinguishes Master Warning light - Stops audio after 1.5 s
ECAM STATUS MESSAGE		NO	YES

AUTOLAND WARNING

Ident.: DSC-22_30-30-00011820.0001001 / 09 APR 15
Applicable to: ALL

Below 200 ft RA, an Autoland red light flashes in case of failures that require the interruption of an automatic landing.
Refer to DSC-22_30-80-30-10 Autoland Warning Light for the detailed conditions triggering the Autoland warning.

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GENERAL

Ident.: DSC-22_30-40-00011893.0001001 / 17 AUG 10
Applicable to: ALL

In flight, either the AP/FD pitch control, or autothrust may acquire and hold a target speed or Mach number, depending on the engaged modes.

Speed control is:
- Managed when the target comes from the FMGS
- Selected when the target comes from the SPD/MACH FCU window.

MANAGED SPEED/MACH TARGET

Ident.: DSC-22_30-40-00011894.0001001 / 01 DEC 14
1 **Applicable to: MSN 01767-06868, 06914, 06952-07053, 07252-07396**

When the speed target is managed, the SPD/MACH window of the FCU shows dashes, and the corresponding dot is lighted. The PFD speed scale shows the speed target in magenta.

ENGAGEMENT CONDITIONS

The SPD target is managed, whenever AP or FD is engaged, and one of the following occurs:
- The flight crew pushes in the SPD/MACH knob
- EXPEDITE mode is engaged
- V2 is inserted in the MCDU
- The speed reference system (SRS) is engaged (takeoff or go-around mode).

Note: At takeoff, SRS will not engage if V2 is not available.

DISENGAGEMENT CONDITIONS

Managed speed disengages any time the flight crew selects a speed target on the FCU, or if the speed was preselected.

SPEED PROFILE

The form of the managed SPD profile depends on the lateral NAV mode.

- **If NAV mode is engaged, the SPD profile takes into account all the constraints linked to the flight plan.**
  The SPD profile is:
  V2 - SPD LIM - SPD CSTR (if applicable) - ECON CLB SPD/MACH - ECON CRZ MACH - ECON or preset DES MACH/SPD -SPD LIM - SPD CSTR (if applicable) - HOLD SPD (if applicable) - VAPP.
- **If NAV mode is not engaged, the SPD/MACH constraints are not considered.**
  The SPD profile is:

V2 - SPD LIM - ECON CLB SPD/MACH - ECON CRZ MACH - ECON or preset DES MACH/SPD - SPD LIM - VAPP.

Note:
1. *When both AP/FDs are OFF, A/THR reverts to selected SPEED mode, except when the approach phase is activated on MCDU where both managed and selected SPD are available.*
2. *When expedite mode is engaged, the system disregards SPD LIM and SPD CSTR no matter what lateral mode is engaged.*
3. *The managed speed/Mach target may be set below maneuvering speed but as long as the speed target is managed, the FMGS limits the aircraft to the maneuvering speed of the current slats/flaps configuration (VAPP, F, S, Green Dot).*
4. *If the managed speed/Mach target is set above VMAX (VFE, VMO, MMO), the FMGS automatically limits the speed to VMAX.*
5. *If a SPD/MACH constraint has already been taken into account, it remains applied (until a more restrictive constraint applies).*

MINI GROUND SPEED

In approach phase, the managed speed target is the Mini Ground Speed target computed by the Flight Guidance (FG) part of the FMGS. *Refer to DSC-22_30-90 General* for details.

MANAGED SPEED/MACH TARGET

Ident.: DSC-22_30-40-00011894.0002001 / 01 DEC 14

2 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

When the speed target is managed, the SPD/MACH window of the FCU shows dashes, and the corresponding dot is lighted. The PFD speed scale shows the speed target in magenta.

ENGAGEMENT CONDITIONS

The SPD target is managed, whenever AP or FD is engaged, and one of the following occurs:
- The flight crew pushes in the SPD/MACH knob
- EXPEDITE mode is engaged
- V2 is inserted in the MCDU
- The speed reference system (SRS) is engaged (takeoff or go-around mode)
- The TCAS mode is engaged.

Note: *At takeoff, SRS will not engage if V2 is not available.*

DISENGAGEMENT CONDITIONS

Managed speed disengages any time the flight crew selects a speed target on the FCU, or if the speed was preselected.

SPEED PROFILE

The form of the managed SPD profile depends on the lateral NAV mode.

- **If NAV mode is engaged, the SPD profile takes into account all the constraints linked to the flight plan.**
  The SPD profile is:
  V2 - SPD LIM - SPD CSTR (if applicable) - ECON CLB SPD/MACH - ECON CRZ MACH - ECON or preset DES MACH/SPD -SPD LIM - SPD CSTR (if applicable) - HOLD SPD (if applicable) - VAPP.
- **If NAV mode is not engaged, the SPD/MACH constraints are not considered.**
  The SPD profile is:
  V2 - SPD LIM - ECON CLB SPD/MACH - ECON CRZ MACH - ECON or preset DES MACH/SPD - SPD LIM - VAPP.

Note:
1. *When both AP/FDs are OFF, A/THR reverts to selected SPEED mode, except when the approach phase is activated on MCDU where both managed and selected SPD are available.*
2. *When expedite mode is engaged, the system disregards SPD LIM and SPD CSTR no matter what lateral mode is engaged.*
3. *The managed speed/Mach target may be set below maneuvering speed but as long as the speed target is managed, the FMGS limits the aircraft to the maneuvering speed of the current slats/flaps configuration (VAPP, F, S, Green Dot).*
4. *If the managed speed/Mach target is set above VMAX (VFE, VMO, MMO), the FMGS automatically limits the speed to VMAX.*
5. *If a SPD/MACH constraint has already been taken into account, it remains applied (until a more restrictive constraint applies).*

MINI GROUND SPEED

In approach phase, the managed speed target is the Mini Ground Speed target computed by the Flight Guidance (FG) part of the FMGS. *Refer to DSC-22_30-90 General* for details.

SELECTED SPEED/MACH TARGET

Ident.: DSC-22_30-40-00011895.0002001 / 17 AUG 10
Applicable to: ALL

To use a selected speed/Mach target, the flight crew uses the knob on the FCU to set the target speed, which is then displayed in the FCU window. It is also displayed in blue on the PFD speed scale.

Note: *The selected speed/Mach target may be set beyond VLS or VMAX, but when autothrust is active, the guidance limits the speed to VLS or VMAX.*

Selected speed has priority over managed speed. The only automatic change-over from selected to managed speed target may occur at go-around mode engagement.
In flight, if the situation calls for managed speed, both the PFD and the MCDU display a message proposing a manual change to managed speed (for example, SET MANAGED SPEED, SET HOLD SPEED, or SET GREEN DOT SPEED).

ENGAGEMENT CONDITIONS

The aircraft has a selected speed target under any one of the following conditions:
- The flight crew pulls out the SPD/MACH knob (5 s after lift-off)
- Both AP/FDs are OFF (except in APPR phase)
- The FM speed target is lost (except in SRS, G/S, LAND, and GO AROUND modes)
- The MCDU has a preselected speed for the next phase, and the aircraft transitions into that phase
- The FMGC is powered up in flight.

DISENGAGEMENT CONDITIONS

The selected speed target disengages:
- When the managed SPD engages
- When the aircraft is on ground at engine start.

Note: With engines running, the flight crew can select a speed on the FCU only after takeoff.

AUTO SPD

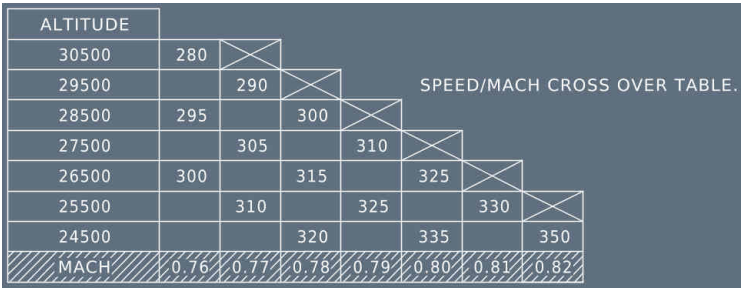
Ident.: DSC-22_30-40-00011896.0001001 / 17 AUG 10
Applicable to: ALL

The flight crew may insert the AUTO SPD (speed or Mach) on the PERF DES page to replace the ECON DES SPD.
In this case, the managed speed profile takes into account the selected value. The top of descent and the descent path are computed on AUTO SPD assumption.

SPEED/MACH SWITCHING

Ident.: DSC-22_30-40-00011897.0001001 / 16 MAR 11
Applicable to: ALL

In managed speed, at the crossover altitude, the FMGC automatically changes the managed speed target to the corresponding MACH target. The FCU displays the Mach number corresponding to the speed at the switching altitude.



Note: *When the speed is selected, the flight crew has to perform the switching manually by pressing the SPD/MACH pb on the FCU. The FCU then displays the aircraft Mach number.*

When the target speed is managed, the FMGC commands the switchover automatically as a function of the ECON MACH value.

MANAGED SPEED TARGET MEMORIZATION

Ident.: DSC-22_30-40-00011898.0001001 / 13 JAN 14
Applicable to: ALL

A dual FM failure has different consequences when it occurs in different phases of the flight.

The system handles target speed and SPD mode as follows:
- During approach with LOC and G/S engaged and radio height < 700 ft, the target speed is set to VAPP as previously memorized, and managed SPD target is maintained.
- At go-around, the target speed becomes the memorized go-around speed, which is the higher of VAPP or the speed when go-around was initiated. Managed SPD target is maintained.
- In all other cases, managed target speed reverts to selected, the value being the speed at the moment of the failure.

SPEED/MACH FCU WINDOW SYNCHRONIZATION

Ident.: DSC-22_30-40-00011899.0001001 / 17 AUG 10
Applicable to: ALL

When the target SPD is managed, the SPD/MACH display of the FCU shows dashes.

However, the window displays the target SPD or MACH in the following situations:
- The flight crew turns the SPD/MACH knob.
  If the flight crew does not pull the knob within 10 s after turning it, the selection reverts to dashes.
- The flight crew manually engages a selected SPD target.

- If the flight crew has manually preselected a speed or Mach number for the next phase on the MCDU PERF page, that preselected SPD/MACH engages when the aircraft enters that phase and the FCU window then displays as the target the preselected speed or Mach.
- If the FMGS is powered up in flight, the synchronized speed/Mach value is the current aircraft speed or Mach number.
- If no V2 is entered at takeoff, the V/S mode engages 5 s after lift-off (no speed reference system). The FCU speed target is the speed at V/S mode engagement. (A/THR becomes active when the thrust levers are set in the active range).

AP/FD MODES GENERAL

Ident.: DSC-22_30-50-00011767.0012001 / 23 JUN 15

[1] **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

The FMGS has guidance parameters for both AP/FD lateral and vertical modes.

The AP/FD lateral modes are

RWY, RWY TRK	Runway, Runway track mode
NAV	Nav mode
HDG, TRK	Heading, track mode. Also called basic modes
APP NAV	Approach Nav mode
LOC*, LOC	Loc capture, Loc track mode
LAND	Land mode. Managed submode that includes LOC and G/S modes below 400 ft RA
FINAL APP	Final approach mode. Managed submode that includes APP NAV and FINAL modes during non precision approach
ROLL OUT	Roll out mode (Autoland)
GA TRK	Go-around track mode.

The AP/FD vertical modes are

SRS	SRS mode used for takeoff and go-around
CLB	Climb mode
DES	Descent mode
OP CLB	Open Climb mode
OP DES	Open Descent mode
EXP CLB	Expedite mode in climb
EXP DES	Expedite mode in descent
V/S or FPA	Vertical Speed mode or Flight Path Angle mode. Also called basic modes
ALT*	Altitude capture
ALT	Altitude Hold mode
ALT CST*	Altitude constraint capture
ALT CST	Altitude constraint hold mode
ALT CRZ	Altitude hold of the cruise flight level
G/S*	Glide slope capture
G/S	Glide slope mode
FINAL	Final mode (Non precision approach)
FLARE	Flare mode (Autoland)
TCAS	TCAS mode

AP/FD MODES GENERAL

Ident.: DSC-22_30-50-00011767.0007001 / 23 JUN 15

[2] **Applicable to: MSN 01767-06868, 06914, 06952-07053, 07252-07396**

The FMGS has guidance parameters for both AP/FD lateral and vertical modes.

The AP/FD lateral modes are:

RWY, RWY TRK	Runway, Runway track mode
NAV	Nav mode
HDG, TRK	Heading, track mode. Also called basic modes
APP NAV	Approach Nav mode
LOC*, LOC	Loc capture, Loc track mode
LAND	Land mode. Managed submode that includes LOC and G/S modes below 400 ft RA
FINAL APP	Final approach mode. Managed submode that includes APP NAV and FINAL modes during non precision approach
ROLL OUT	Roll out mode (Autoland)
GA TRK	Go-around track mode

The AP/FD vertical modes are:

SRS	SRS mode used for takeoff and go-around
CLB	Climb mode
DES	Descent mode
OP CLB	Open Climb mode
OP DES	Open Descent mode
EXP CLB	Expedite mode in climb
EXP DES	Expedite mode in descent
V/S or FPA	Vertical Speed mode or Flight Path Angle mode. Also called basic modes
ALT*	Altitude capture
ALT	Altitude Hold mode
ALT CST*	Altitude constraint capture
ALT CST	Altitude constraint hold mode
ALT CRZ	Altitude hold of the cruise flight level
G/S*	Glide slope capture
G/S	Glide slope mode
FINAL	Final mode (Non precision approach)
FLARE	Flare mode (Autoland)

HEADING OR TRACK: HDG - TRK

Ident.: DSC-22_30-60-00012328.0013001 / 29 MAR 12

[1] **Applicable to: MSN 01767, 01957-02195, 02275-02443, 02482-02626, 02670, 02737-02908, 03071-03138, 03308, 03357-04384, 04399-09063**

These modes guide the aircraft laterally along a heading or track selected by the flight crew. The HDG/TRK window of the FCU displays the target heading or track. The flight crew uses the HDG V/S -TRK FPA pb to select heading or track.

ENGAGEMENT CONDITIONS

HDG or TRK is engaged when one of the following conditions is met:
- The flight crew pulls out the HDG/TRK knob (not sooner than 5 s after lift-off)
- NAV, APP NAV or FINAL APP modes are disengaged, either by the loss of the lateral flight plan or when the flight crew enters a flight plan discontinuity
- LOC or LOC* mode is lost
- The flight crew engages the AP/FD with no other mode already engaged (basic mode of AP/FD engagement)
- The flight crew presses the LOC pb, when APP NAV or FINAL APP modes are already engaged

HDG engages if the flight crew initiates a go-around below 100 ft and HDG or TRK was already engaged. When the aircraft is at 100 ft or above, HDG or TRK are no longer engaged.

DISENGAGEMENT CONDITIONS

The engagement of any other lateral mode disengages HDG or TRK.

SYNCHRONIZING THE HDG/TRK WINDOW OF THE FCU

The lateral window of the FCU displays a heading or a track value when:
- The HDG/TRK mode is engaged. The displayed value is the current HDG/TRK or the manually selected value of the target
- The flight crew turns the HDG/TRK knob. The value in the window first synchronizes with the current HDG/TRK, then displays the manual selection. It remains displayed for 10 s or 45 s depending upon FCU standard, then vanishes if the flight crew does not pull the knob (except in HDG preset)
- A HDG/TRK is preset (*Refer to DSC-22_30-60 HDG/TRK Preset*)
- AP/FD is lost. The value becomes that of the aircraft current heading or track.

Note: *If HDG is switched to TRK (or vice versa), the value displayed in the window switches from heading to track (or vice versa).*

HEADING OR TRACK: HDG - TRK

Ident.: DSC-22_30-60-00012328.0011001 / 29 MAR 12
Applicable to: MSN 01920, 02204, 02457, 02649, 02712, 02914, 03264, 03330

These modes guide the aircraft laterally along a heading or track selected by the flight crew. The HDG/TRK window of the FCU displays the target heading or track. The flight crew uses the HDG V/S -TRK FPA pb to select heading or track.

ENGAGEMENT CONDITIONS

HDG or TRK is engaged when one of the following conditions is met:
- The flight crew pulls out the HDG/TRK knob (not sooner than 5 s after lift-off)
- NAV, APP NAV or FINAL APP modes are disengaged, either by the loss of the lateral flight plan or when the flight crew enters a flight plan discontinuity
- LOC or LOC* mode is lost
- The flight crew engages the AP/FD with no other mode already engaged (basic mode of AP/FD engagement)
- The flight crew presses the LOC pb, when APP NAV or FINAL APP modes are already engaged

DISENGAGEMENT CONDITIONS

The engagement of any other lateral mode disengages HDG or TRK.

SYNCHRONIZING THE HDG/TRK WINDOW OF THE FCU

The lateral window of the FCU displays a heading or a track value when:
- The HDG/TRK mode is engaged. The displayed value is the current HDG/TRK or the manually selected value of the target
- The flight crew turns the HDG/TRK knob. The value in the window first synchronizes with the current HDG/TRK, then displays the manual selection. It remains displayed for 10 s or 45 s depending upon FCU standard, then vanishes if the flight crew does not pull the knob (except in HDG preset)
- A HDG/TRK is preset (*Refer to DSC-22_30-60 HDG/TRK Preset*)
- AP/FD is lost. The value becomes that of the aircraft current heading or track.

Note: If HDG is switched to TRK (or vice versa), the value displayed in the window switches from heading to track (or vice versa).

HEADING OR TRACK: HDG - TRK

Ident.: DSC-22_30-60-00012328.0005001 / 18 MAR 11
Applicable to: MSN 04393-04397

These modes guide the aircraft laterally along a heading or track selected by the flight crew. The HDG/TRK window of the FCU displays the target heading or track. The flight crew uses the HDG V/S -TRK FPA pb to select heading or track.

ENGAGEMENT CONDITIONS

HDG or TRK is engaged when one of the following conditions is met:
- The flight crew pulls out the HDG/TRK knob (not sooner than 5 s after lift-off)
- NAV is disengaged, either by the loss of the lateral flight plan or by the flight crew entering a flight plan discontinuity
- FINAL mode (armed or engaged) is lost when the FMS profile validity is lost (e.g. overflying the MAP)
- LOC or LOC* mode is lost
- The flight crew engages the AP/FD with no other mode already engaged (basic mode of AP/FD engagement)
- The flight crew presses the LOC pb, when APP NAV or FINAL APP modes are already engaged

HDG engages if the flight crew initiates a go-around below 100 ft and HDG or TRK was already engaged. When the aircraft is at 100 ft or above, HDG or TRK are no longer engaged.

DISENGAGEMENT CONDITIONS

The engagement of any other lateral mode disengages HDG or TRK.

SYNCHRONIZING THE HDG/TRK WINDOW OF THE FCU

The lateral window of the FCU displays a heading or a track value when:
- The HDG/TRK mode is engaged. The displayed value is the current HDG/TRK or the manually selected value of the target
- The flight crew turns the HDG/TRK knob. The value in the window first synchronizes with the current HDG/TRK, then displays the manual selection. It remains displayed for 10 s or 45 s depending upon FCU standard, then vanishes if the flight crew does not pull the knob (except in HDG preset)
- A HDG/TRK is preset (*Refer to DSC-22_30-60 HDG/TRK Preset*)
- AP/FD is lost. The value becomes that of the aircraft current heading or track.

Note: *If HDG is switched to TRK (or vice versa), the value displayed in the window switches from heading to track (or vice versa).*

HDG/TRK PRESET

Ident.: DSC-22_30-60-00012329.0009001 / 29 MAR 12

[2] **Applicable to: MSN 01767, 01957-02195, 02275-02443, 02482-02626, 02670, 02737-02908, 03071-03138, 03308, 03357-04384, 04399-09063**

The system has a HDG/TRK preset function for takeoff and go-around.
If the flight crew chooses not to fly the flight plan after takeoff or go-around, they may preset a HDG or a TRK on the FCU by turning the HDG/TRK knob. The value they set remains displayed in the FCU HDG/TRK window until they pull the knob.

OPERATION AT TAKEOFF

HDG/TRK preset is available before takeoff and up to 30 ft RA. Turning the HDG/TRK knob before 30 ft sets the desired HDG/TRK. As a consequence:
- NAV is disarmed
- At 30 ft, RWY TRK is annunciated until the HDG/TRK knob is pulled.

OPERATION AT GO-AROUND

Whenever the LOC*, LOC, LAND or GA modes are engaged, the HDG preset is available. If the flight crew rotates the HDG/TRK knob to set the value, it will remain displayed in the window. Pull out the HDG/TRK knob to activate the mode and turn the aircraft to the preset value.
When overflying the MAP, HDG/TRK will synchronize with the current value. The HDG/TRK preset function is no longer available.

CANCELLATION

The flight crew can cancel a preset HDG/TRK by:
- Engaging the NAV mode using the DIR TO
- Pushing in the HDG/TRK knob (arming NAV mode)
- Disengaging AP/FD.

HDG/TRK PRESET

Ident.: DSC-22_30-60-00012329.0010001 / 29 MAR 12
Applicable to: MSN 01920, 02204, 02457, 02649, 02712, 02914, 03264, 03330

The system has a HDG/TRK preset function for takeoff and go-around.
If the flight crew chooses not to fly the flight plan after takeoff or go-around, they may preset a HDG or a TRK on the FCU by turning the HDG/TRK knob. The value they set remains displayed in the FCU HDG/TRK window until they pull the knob.

OPERATION AT TAKEOFF

HDG/TRK preset is available before takeoff and up to 30 ft RA. Turning the HDG/TRK knob before 30 ft sets the desired HDG/TRK. As a consequence:
- NAV is disarmed
- At 30 ft, RWY TRK is annunciated until the HDG/TRK knob is pulled.

OPERATION AT GO-AROUND

Whenever the LOC*, LOC, LAND or GA modes are engaged, the HDG preset is available. If the flight crew rotates the HDG/TRK knob to set the value, it will remain displayed in the window. Pull out the HDG/TRK knob to activate the mode and turn the aircraft to the preset value.

CANCELLATION

The flight crew can cancel a preset HDG/TRK by:
- Engaging the NAV mode using the DIR TO
- Pushing in the HDG/TRK knob (arming NAV mode)
- Disengaging AP/FD.

HDG/TRK PRESET

Ident.: DSC-22_30-60-00012329.0002001 / 17 AUG 10
Applicable to: MSN 04393-04397

The system has a HDG/TRK preset function for takeoff and go-around.
If the flight crew chooses not to fly the flight plan after takeoff or go-around, they may preset a HDG or a TRK on the FCU by turning the HDG/TRK knob. The value they set remains displayed in the FCU HDG/TRK window until they pull the knob.

OPERATION AT TAKEOFF

HDG/TRK preset is available before takeoff and up to 30 ft RA. Turning the HDG/TRK knob before 30 ft sets the desired HDG/TRK. As a consequence:
- NAV is disarmed
- At 30 ft, RWY TRK is annunciated until the HDG/TRK knob is pulled.

OPERATION AT GO-AROUND

Whenever the LOC*, LOC, LAND, FINAL APP, or GA modes are engaged, the HDG preset is available. If the flight crew rotates the HDG/TRK knob to set the value, it will remain displayed in the window. Pull out the HDG/TRK knob to activate the mode and turn the aircraft to the preset value.
When overflying the MAP, HDG/TRK will synchronize with the current value. The HDG/TRK preset function is no longer available.

CANCELLATION

The flight crew can cancel a preset HDG/TRK by:
- Engaging the NAV mode using the DIR TO
- Pushing in the HDG/TRK knob (arming NAV mode)
- Disengaging AP/FD.

NAVIGATION (NAV)

Ident.: DSC-22_30-60-00012330.0005001 / 23 JUN 15

[3] **Applicable to: MSN 01767, 01957-02195, 02275-02443, 02482-02626, 02670, 02737-02908, 03071-03138, 03308, 03357-09063**

NAV mode is a managed mode that steers the aircraft laterally along the flight plan defined in the FMGS. It is designed to have a zero cross-track error. The flight crew can arm or engage the NAV mode if the MCDU contains a lateral flight plan.

ARMING CONDITIONS

Satisfying one of the following conditions arms NAV:

- The aircraft is on ground with no HDG/TRK preset and no other lateral mode except runway mode
- The flight crew pushes in the HDG/TRK knob, unless the LOC mode is engaged
- The flight crew presses the APPR pb, if a non-ILS approach is selected
- A go-around is initiated, unless HDG/TRK is already preset.

DISARMING CONDITIONS

NAV mode disarms if one of the following occurs:

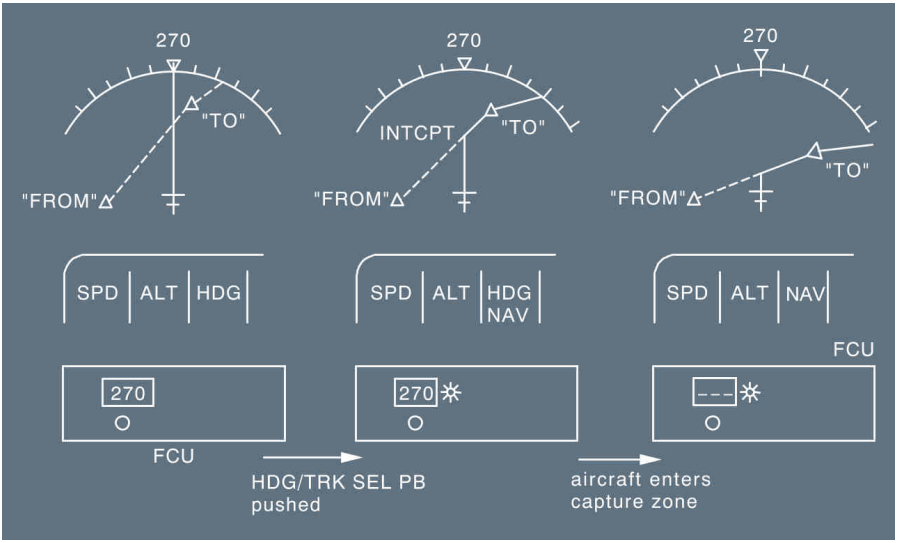
- The flight crew pulls out the HDG/TRK knob
- The flight crew selects a preset HDG/TRK (TO or GA)
- The flight crew arms the LOC mode by pressing the LOC pb
- LAND mode has engaged
- The flight crew presses the APPR pb, if an XLS approach is selected.

ENGAGEMENT CONDITIONS

NAV mode engages:

- Automatically at 30 ft RA after takeoff (if armed on the ground)
- When the flight crew orders “DIR TO" (except below 700 ft RA in LOC mode)
- When the flight crew pushes in the HDG/TRK knob when the aircraft is close to (within ~1 NM of) the active flight plan leg
- Automatically in flight when NAV is armed and the aircraft reaches the capture zone for the active flight plan leg
- Automatically during a go-around, when the aircraft is above 100 ft RA, and within the capture zone for the active flight plan leg, unless a HDG/TRK was preset.

Note: *During a go-around, when the approach was previously flown in NAV, APP NAV or FINAL APP modes, the NAV mode remains engaged, unless a HDG/TRK was preset.*



CAUTION	When NAV is armed, it will automatically engage if: - The aircraft track line intercepts the flight plan before the TO waypoint, and - The intercept waypoint (INTCP) is displayed on the ND, and - The aircraft reaches the active flight plan leg.

Note: *The TO waypoint is displayed in white on NDs and MCDUs.*

DISENGAGEMENT CONDITIONS

The NAV mode disengages when:
- Any other lateral mode is engaged
- The flight plan is lost or the aircraft enters a flight plan discontinuity.

INTERACTIONS WITH VERTICAL MODES

When NAV mode is engaged, the vertical managed modes CLB or DES or FINAL take into account altitude and speed constraints linked to waypoints on the lateral flight plan. If NAV mode is disengaged, the vertical managed modes are not available and all downpath altitude and speed constraints are ignored.

NAVIGATION (NAV)

Ident.: DSC-22_30-60-00012330.0002001 / 23 JUN 15
Applicable to: MSN 01920, 02204, 02457, 02649, 02712, 02914, 03264, 03330

NAV mode is a managed mode that steers the aircraft laterally along the flight plan defined in the FMGS. It is designed to have a zero cross-track error. The flight crew can arm or engage the NAV mode if the MCDU contains a lateral flight plan.

ARMING CONDITIONS

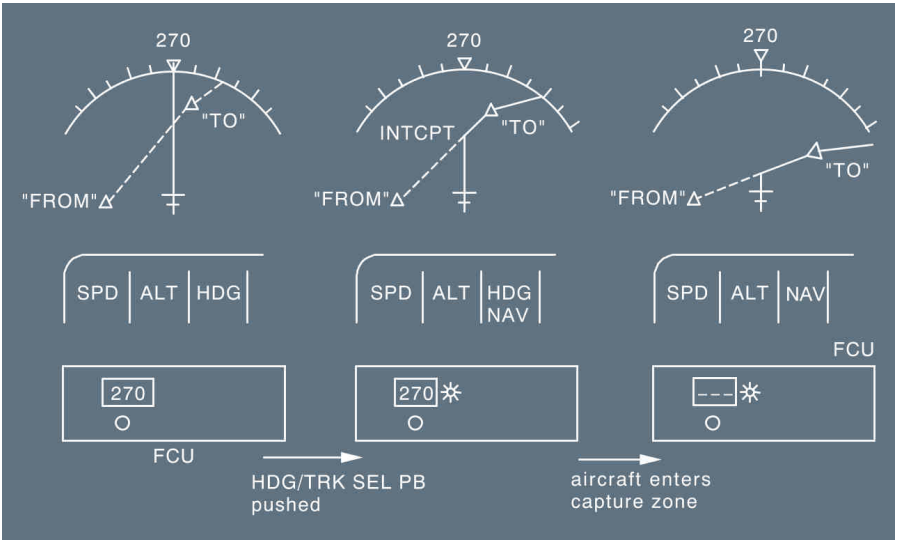
Satisfying one of the following conditions arms NAV:
- The aircraft is on ground with no HDG/TRK preset and no other lateral mode except runway mode
- The flight crew pushes in the HDG/TRK knob, unless the LOC mode is engaged
- The flight crew presses the APPR pb, if a non-ILS approach is selected.

DISARMING CONDITIONS

NAV mode disarms if one of the following occurs:
- The flight crew pulls out the HDG/TRK knob
- The flight crew selects a preset HDG/TRK (TO or GA)
- The flight crew arms the LOC mode by pressing the LOC pb
- The flight crew selects GA mode
- LAND mode has engaged
- The flight crew presses the APPR pb, if an XLS approach is selected.

ENGAGEMENT CONDITIONS

NAV mode engages:
- Automatically at 30 ft RA after takeoff (if armed on the ground)
- When the flight crew orders “DIR TO" (except below 700 ft RA in LOC mode)
- When the flight crew pushes in the HDG/TRK knob when the aircraft is close to (within ~1 NM of) the active flight plan leg
- Automatically in flight when NAV is armed and the aircraft reaches the capture zone for the active flight plan leg.



CAUTION	When NAV is armed, it will automatically engage if: - The aircraft track line intercepts the flight plan before the TO waypoint, and - The intercept waypoint (INTCP) is displayed on the ND, and - The aircraft reaches the active flight plan leg.

Note: The TO waypoint is displayed in white on NDs and MCDUs.

DISENGAGEMENT CONDITIONS

The NAV mode disengages when:
- Any other lateral mode is engaged
- The flight plan is lost or the aircraft enters a flight plan discontinuity.

INTERACTIONS WITH VERTICAL MODES

When NAV mode is engaged, the vertical managed modes CLB or DES or FINAL take into account altitude and speed constraints linked to waypoints on the lateral flight plan. If NAV mode is disengaged, the vertical managed modes are not available and all downpath altitude and speed constraints are ignored.

LOCALIZER MODE THROUGH THE LOC PUSHBUTTON

Ident.: DSC-22_30-60-00012331.0001001 / 17 AUG 10
Applicable to: ALL

This mode captures and tracks a localizer beam independently of the glide path beam. Flight crew use it to fly localizer-only approaches or to initiate an ILS approach when intercepting the glide slope from above.

ARMING CONDITIONS

The flight crew arms the LOC mode by pressing the LOC pb, provided that:
- An ILS is tuned (frequency and runway course)
- The aircraft is above 400 ft RA
- TO or GA mode is not engaged.

DISARMING CONDITIONS

LOC mode is disarmed by:
- Pressing the LOC pb when LOC is armed
- Arming the NAV mode
- Engaging the GA mode.

Note: *Engaging NAV mode by selecting DIR TO does not disarm the LOC mode.*

ENGAGEMENT CONDITIONS

The LOC mode engages automatically when capture conditions are met.

DISENGAGEMENT CONDITIONS

The LOC mode disengages:
- When another lateral mode is engaged
- When the flight crew presses the LOC pb again (engaging the HDG/TRK mode on the current HDG/TRK).

GENERAL

Ident.: DSC-22_30-70-10-00010507.0001001 / 17 AUG 10
Applicable to: ALL

Vertical modes guide the aircraft in the vertical plan.

PRINCIPLES

Ident.: DSC-22_30-70-10-00010508.0001001 / 17 AUG 10
Applicable to: ALL

To leave an FCU selected altitude for another target altitude, the flight crew must turn the Altitude (ALT) knob in order to display the new target altitude and either:

- Pull out the ALT knob to engage the OPEN CLB/DES mode, or
- Push in the ALT knob to engage the CLB/DES mode, or
- Select a target vertical speed (V/S) and pull out the V/S or FPA knob to engage V/S mode, or
- Select EXPEDITE .

This arms ALT mode.

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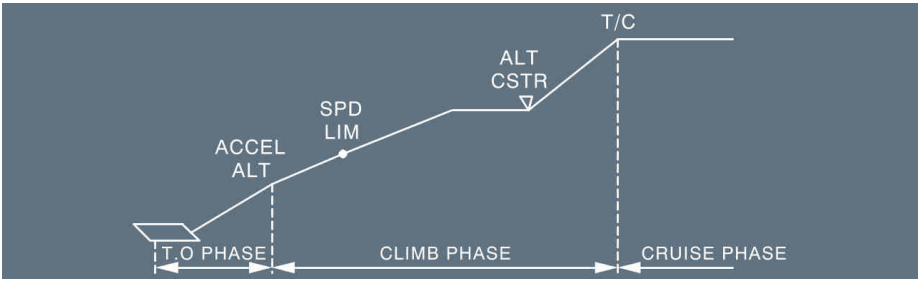
GENERAL

Ident.: DSC-22_30-70-20-00010509.0001001 / 01 OCT 12
Applicable to: ALL

CLB mode guides the aircraft in a managed climb, at either a managed or a selected target speed, to an FCU selected altitude, taking into account altitude constraints at waypoints.
The system also considers speed constraints if the target speed is managed. The vertical flight path may include several segments:



The flight crew can arm the CLB mode during the takeoff, go-around, climb, and cruise phases and engage it during the climb and cruise phases.

ARMING CONDITIONS

Ident.: DSC-22_30-70-20-00010510.0001001 / 17 AUG 10
Applicable to: ALL

The CLB mode is armed:

- On ground or when SRS mode is engaged (TO or GA) if the following conditions are met:
  - No other vertical mode is engaged
  - The ACCEL ALT (defined on the PERF TO or GA MCDU pages) is below the FCU selected altitude and the lowest altitude constraint.
- In flight, when the climb or go-around phase is active, and the following conditions are met:
  - The lateral NAV mode is engaged
  - The FCU selected altitude is above the aircraft's present altitude and the aircraft captures or flies an altitude constraint.

DISARMING CONDITIONS

Ident.: DSC-22_30-70-20-00010511.0002001 / 23 JUN 15
Applicable to: ALL

The CLB mode is disarmed, if one of the following conditions is met:
- Another vertical mode is engaged
- The FCU selected altitude is lower than the present aircraft level
- The FCU selected altitude is set at the altitude constraint while ALT CST* or ALT CST mode is engaged
- The aircraft transitions to DES or APPR phase
- Arming requirements are no longer met
- Vertical flight path validity is lost, or NAV mode is lost while ALT CST* or ALT CST mode is engaged.

ENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-20-00010512.0001001 / 17 AUG 10
Applicable to: ALL

The CLB mode can be engaged, if the following conditions are all met:
- The aircraft has been in flight for more than 5 s
- The selected FCU level is above the present aircraft level
- The descent, approach, or go-around phase is not active
- NAV mode is engaged
- Glideslope (G/S) mode is not engaged.

CLB mode automatically engages when the aircraft reaches ACC ALT, or sequences a waypoint with an altitude constraint while the CLB mode is armed.
CLB mode manually engages when the flight crew pushes in the ALT knob, with the CLB mode not armed and the current altitude is not an effective altitude constraint of the flight plan.

Note: *When CLB mode is engaged:*
- *The V/S (FPA) window of the FCU shows dashes*
- *The managed LVL/CH dot on the FCU lights up*
- *The Flight Mode Annunciator displays “CLB” in Column 2.*

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-20-00010513.0001001 / 17 AUG 10
Applicable to: MSN 01920

The CLB mode disengages, if one of the following conditions is met:
- NAV mode is lost or disengaged (OP CLB engages)
- Another vertical mode engages
- The flight crew selects an altitude on the FCU that is lower than the present aircraft altitude. V/S (FPA) engages on the current V/S (FPA).

DISENGAGEMENT CONDITIONS

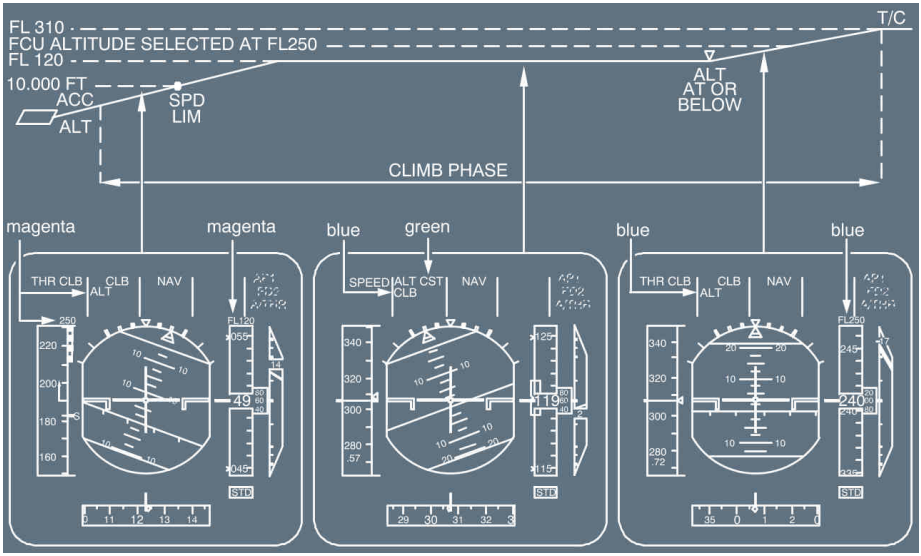
Ident.: DSC-22_30-70-20-00010513.0002001 / 17 AUG 10
[1] **Applicable to: MSN 01767, 01957-09063**

The CLB mode disengages, if one of the following conditions is met:
- NAV mode is lost or disengaged (OP CLB engages). In this case, the reversion to OP CLB is accompanied by a triple click aural warning
- Another vertical mode engages
- The flight crew selects an altitude on the FCU that is lower than the present aircraft altitude. V/S (FPA) engages on the current V/S (FPA).

GUIDANCE

Ident.: DSC-22_30-70-20-00010514.0002001 / 01 OCT 12
Applicable to: ALL

Climb mode gives the aircraft managed vertical guidance to the FCU selected altitude. It meets altitude constraints at waypoints either with managed speed incorporating speed constraints or with selected speed as target speed. The AP/FD pitch controls the speed or Mach number target and the A/THR is in thrust mode (CLB) corresponding to maximum climb thrust. The flight path may include several segments.



- When CLB mode is engaged, the system arms ALT and displays the applicable target altitude on the ALT scale.
  - If the next predicted level-off is an ALT CSTR, ALT is magenta on the FMA and the ALT CSTR is displayed in magenta on the altitude scale
  - If the next predicted level-off is the FCU altitude, ALT is blue on the FMA and the FCU selected altitude is displayed in blue on the altitude scale.

  Note: *The system takes into account all constraints defined by the database or manually entered by the flight crew. Nevertheless this mode has the following particularity: When the aircraft is in CLB mode and the system predicts that it will miss an altitude constraint, it will not modify the target speed in an attempt to meet it. In this case, the flight crew may select an appropriate speed in order to meet the ALT CSTR.*

- The guidance does not modify the target speed in order to satisfy an altitude constraint. Therefore the constraint may not be met and may be predicted as missed
- When the aircraft levels off at the ALT CSTR, CLB mode arms automatically, then engages when the aircraft passes the constrained waypoint (if the FCU altitude is above the constraint altitude).

GENERAL

Ident.: DSC-22_30-70-30-00010515.0001001 / 17 AUG 10
Applicable to: ALL

The OPEN CLB mode is a selected mode. It uses the AP/FD pitch mode to maintain a SPD/MACH (selected or managed) while the autothrust (if active) maintains maximum climb thrust.

ENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-30-00010516.0001001 / 16 MAR 11
Applicable to: MSN 01920

The OPEN CLB mode can only be engaged, if all of the following conditions are met:
- The aircraft is in flight for more than 5 s
- The LAND mode is not engaged
- The FCU selected altitude is higher than the aircraft's present altitude.

The OPEN CLB mode is engaged, if one of the following conditions occurs:
- The flight crew pulls out the ALT knob
- The flight crew pulls out the SPD/MACH knob, when TOGA mode or EXPED CLB is engaged
- Acceleration altitude is reached, with CLB armed, and NAV mode not engaged
- Guidance reverts to ensure speed protection
- NAV mode is lost (or disengaged), when previously in CLB mode (*Refer to DSC-22_30-75 General*).

Note: *When OPEN CLB is engaged:*
- *The FMA displays "OP CLB"*
- *The managed LVL/CH dot on the FCU goes out.*

Typical FMA in OPEN CLIMB

ENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-30-00010516.0002001 / 16 MAR 11

1 **Applicable to: MSN 01767, 01957-09063**

The OPEN CLB mode can only be engaged, if all of the following conditions are met:
- The aircraft is in flight for more than 5 s
- The LAND mode is not engaged
- The FCU selected altitude is higher than the aircraft's present altitude.

The OPEN CLB mode is engaged, if one of the following conditions occurs:
- The flight crew pulls out the ALT knob
- The flight crew pulls out the SPD/MACH knob, when TOGA mode or EXPED CLB is engaged
- Acceleration altitude is reached, with CLB armed, and NAV mode not engaged
- Guidance reverts to ensure speed protection
- NAV mode is lost (or disengaged), when previously in CLB mode. Reversion to OPEN CLB is accompanied by a triple click aural warning (*Refer to DSC-22_30-75 General*).

Note: *When OPEN CLB is engaged:*
- *The FMA displays "OP CLB"*
- *The managed LVL/CH dot on the FCU goes out.*

Typical FMA in OPEN CLIMB

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-30-00010517.0001001 / 17 AUG 10

Applicable to: ALL

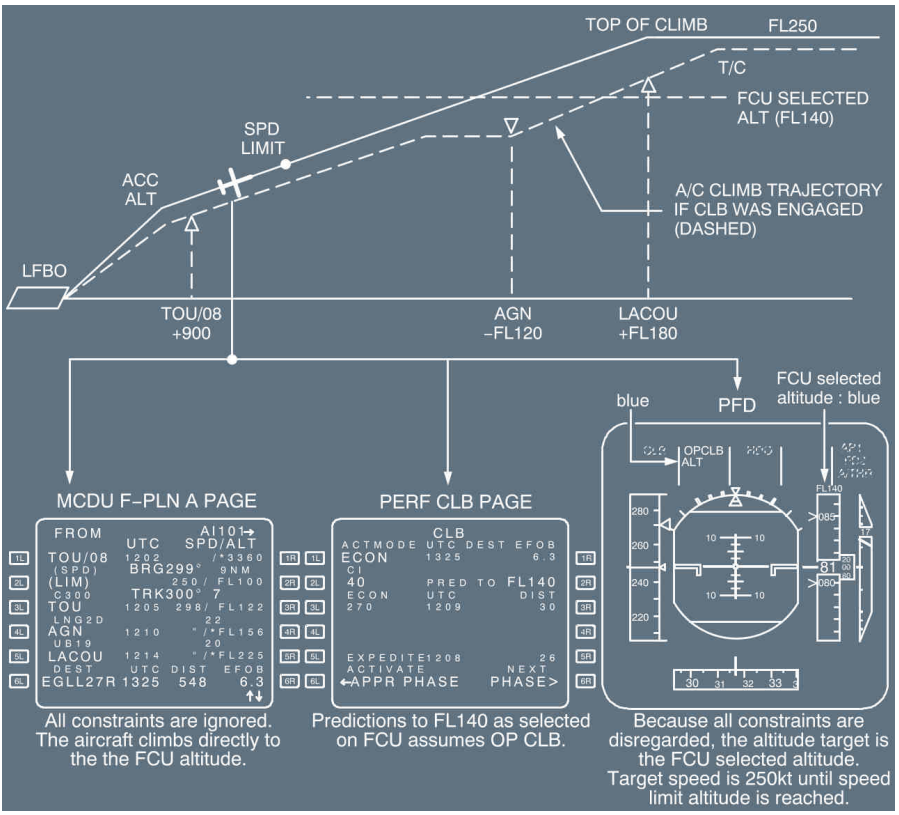
The OPEN CLB mode is disengaged by one of the following conditions:
- Engagement of any other vertical mode
- Reversion to V/S mode (*Refer to DSC-22_30-75 General*)
- Selection of a lower altitude than the current aircraft altitude. V/S (FPA) engages on the current V/S (FPA).

GUIDANCE

Ident.: DSC-22_30-70-30-00010518.0001001 / 01 OCT 12
Applicable to: ALL

When OPEN CLB is engaged, the target speed/Mach is maintained by adjusting the pitch with the elevator, whereas thrust is maintained either by the A/THR, or manually by the flight crew. Speed target may either be selected or managed.
The OPEN CLB mode disregards all altitude constraints up to the FCU selected altitude.

OPEN CLB MODES, MANAGED SPEED



Note: *If the change is less than 1 200 ft in OPEN CLB mode, the aircraft responds with a rate of climb of 1 000 ft/min.*

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GENERAL

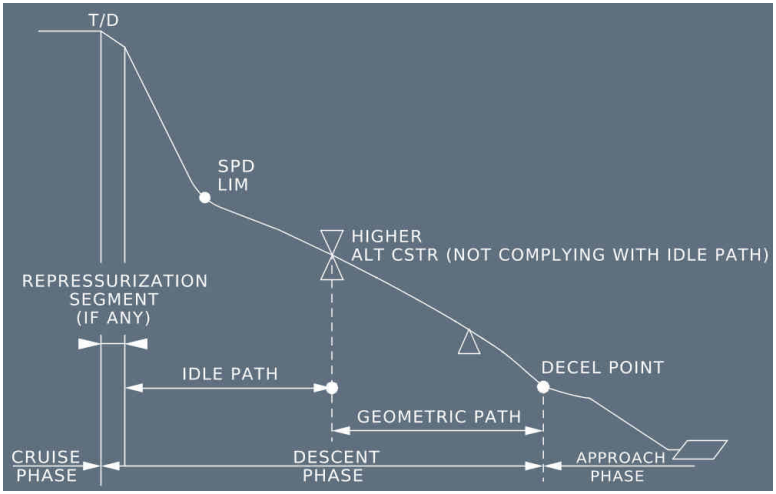
Ident.: DSC-22_30-70-50-00010521.0001001 / 17 AUG 10

[1] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The DES mode guides the aircraft along the descent path computed by the FMGS. The system computes this flight path backwards from the deceleration point up to the top of descent (T/D), with respect to the speed and altitude constraints at the deceleration point, the guidance begins the deceleration to VAPP, to be reached at 1 000 ft above touchdown on the final descent path.
Internally, the computer divides the descent path into various segments, depending on the relative positions of the constraints. It starts at top of descent (T/D) by setting up an “idle” segment that takes the aircraft down to the first constraint, and follows this with “geometric” segments between constraints.
The descent profile takes into account wind data and data from the lateral and vertical flight plans, and it is based upon the managed descent speed profile. It does not take holding patterns into consideration.

The descent profile has several segments:

- A repressurization segment. When necessary, this produces a repressurization rate for the cabin during descent. It is a function of the destination airport altitude and the selected cabin rate (defaulted to -350 ft/min but this can be modified)
- Idle path segment. The AP/FD controls the speed and the autothrust stays at idle thrust. The guidance computes this profile from the top of descent or the end of the repressurization segment to the first vertical constraint that cannot be flown at idle thrust
- Geometric path segments. The AP/FD controls the vertical path, and autothrust controls the speed. These segments take the aircraft from the first constraint to the deceleration point.



The descent mode is a managed mode that may be engaged during cruise. It can be armed or engaged in descent and approach phases (except if the FCU selected altitude is higher than the present aircraft altitude).

GENERAL

Ident.: DSC-22_30-70-50-00010521.0002001 / 17 AUG 10
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

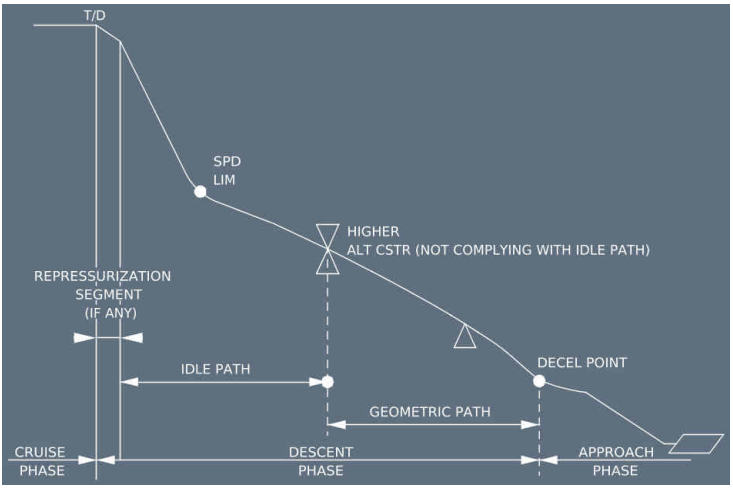
The DES mode guides the aircraft along the descent path computed by the FMGS. The system computes this flight path backwards from the deceleration point up to the top of descent (T/D), with respect to the speed and altitude constraints at the deceleration point, the guidance begins the deceleration to VAPP, to be reached at 1 000 ft above touchdown on the final descent path. Internally, the computer divides the descent path into various segments, depending on the relative positions of the constraints. It starts at top of descent (T/D) by setting up an “idle” segment that takes the aircraft down to the first constraint, and follows this with “geometric” segments between constraints.

The current geometric path segment can be replaced by an idle path segment in case of:
- Modification of CI
- Entry or modification of DES auto MACH/SPD on PERF DES page
- Insertion of a DIR TO (including ABEAM, RADIAL IN and RADIAL OUT)
- Entry or modification of an attitude constraint on the active segment.

The descent profile takes into account wind data and data from the lateral and vertical flight plans, and it is based upon the managed descent speed profile. It does not take holding patterns into consideration.

The descent profile has several segments:

- A repressurization segment. When necessary, this produces a repressurization rate for the cabin during descent. It is a function of the destination airport altitude and the selected cabin rate (defaulted to -350 ft/min but this can be modified)
- Idle path segment. The AP/FD controls the speed and the autothrust stays at idle thrust. The guidance computes this profile from the top of descent or the end of the repressurization segment to the first vertical constraint that cannot be flown at idle thrust
- Geometric path segments. The AP/FD controls the vertical path, and autothrust controls the speed. These segments take the aircraft from the first constraint to the deceleration point.



The descent mode is a managed mode that may be engaged during cruise. It can be armed or engaged in descent and approach phases (except if the FCU selected altitude is higher than the present aircraft altitude).

ARMING CONDITIONS

Ident.: DSC-22_30-70-50-00010522.0001001 / 17 AUG 10
Applicable to: ALL

The DES mode is armed when an ALT CSTR is captured and all the following conditions are met:

- FCU selected altitude is lower than present altitude
- NAV, LOC* or LOC mode is engaged

- Takeoff or go-around phase is not active
- Flight profile is available.

DISARMING CONDITIONS

Ident.: DSC-22_30-70-50-00010523.0002001 / 23 JUN 15
Applicable to: ALL

The DES mode is disarmed if one of the following conditions is met:
- Engagement of another vertical mode
- FCU selected altitude is set above the aircraft current altitude
- Loss of NAV, LOC*, or LOC mode
- Switching to the go-around phase
- Loss of vertical flight path validity
- Setting the FCU selected altitude at an altitude constraint while ALT CST* was engaged. (ALT* engages and DES mode disarms).

ENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-50-00010524.0002001 / 23 JUN 15
Applicable to: ALL

The DES mode can be engaged, when the following conditions are met:
- The FCU selected altitude is lower than present altitude
- NAV, LOC*, or LOC mode is engaged
- Takeoff, climb, or go-around phase is not active
- Vertical flight path is valid
- TO, G/S, LAND, FINAL or GA mode is not engaged, and:
  - The aircraft sequences a waypoint with an ALT CSTR, and DES mode is armed. The DES mode engages automatically, or
  - The flight crew presses the ALT knob, while ALT CST* or ALT CST is not engaged, or
  - The flight crew presses the ALT knob, while ALT* or ALT is engaged, but the current altitude is not an effective altitude constraint of the F-PLN.

Note: *When DES mode is engaged:*
- *The V/S - FPA window of the FCU shows dashes*
- *The managed LVL/CH dot on the FCU lights up.*

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-50-00010525.0001001 / 17 AUG 10
Applicable to: MSN 01920

The DES mode is disengaged, if one of the following conditions is met:
- The NAV mode is lost or disengaged and the V/S or FPA mode engages
- Another vertical mode engages
- The flight crew selects an altitude on the FCU that is higher than the aircraft present altitude and the V/S (FPA) engages on current V/S (FPA)
- NAV mode is lost due to a discontinuity in the descent profile. AP/FD reverts to basic mode.

Refer to DSC-22_30-75 General.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-50-00010525.0002001 / 17 AUG 10
2 **Applicable to: MSN 01767, 01957-09063**

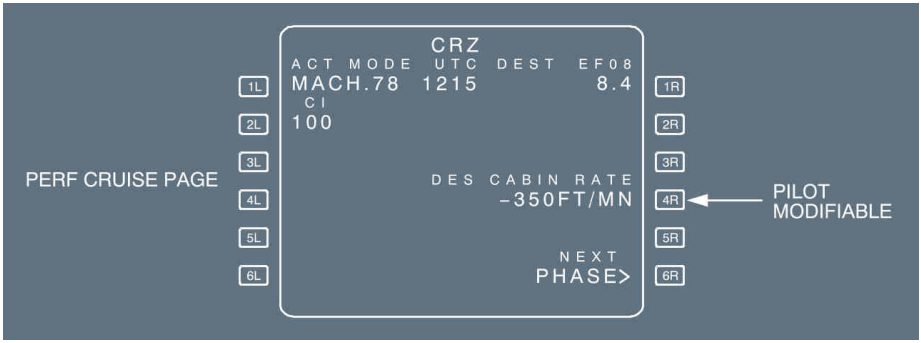
The DES mode is disengaged, if one of the following conditions is met:
- The NAV mode is lost or disengaged and the V/S or FPA mode engages. A triple click aural warning will sound
- Another vertical mode engages
- The flight crew selects an altitude on the FCU that is higher than the aircraft present altitude and the V/S (FPA) engages on current V/S (FPA). Same triple click logic, as for the OP DES case
- NAV mode is lost due to a discontinuity in the descent profile. AP/FD reverts to basic mode, and a triple click aural warning sounds. The vertical mode is boxed in white for 10 s.

Refer to DSC-22_30-75 General.

REPRESSURIZATION SEGMENT

Ident.: DSC-22_30-70-50-00010559.0002001 / 14 MAY 12
3 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The top of descent (T/D) may be updated if the flight crew modifies the cabin rate of descent (default rate is -350 ft/min).
If the flight crew enters a lower cabin rate, the system computes a repressurization segment that takes into account the additional time needed for repressurization.



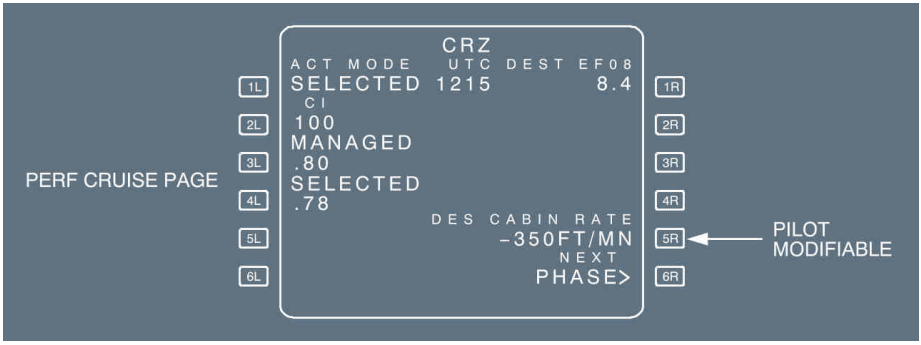
REPRESSURIZATION SEGMENT

Ident.: DSC-22_30-70-50-00010559.0004001 / 01 OCT 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The top of descent (T/D) may be updated if the flight crew modifies the cabin rate of descent (default rate is -350 ft/min).

If the flight crew enters a lower cabin rate, the system computes a repressurization segment that takes into account the additional time needed for repressurization.



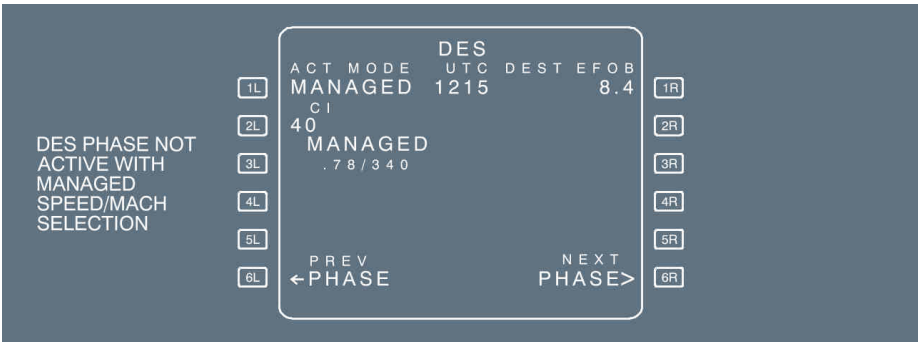
DESCENT SPEED PROFILE

Ident.: DSC-22_30-70-50-00012563.0002001 / 14 MAY 12

4 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The descent speed profile is usually the ECON SPD profile, amended by any speed constraints and speed limit contained in the flight plan.

Before the descent phase is active, if flight crew does not intend to fly the ECON speed/Mach profile, a different speed or Mach can be entered to amend the speed profile.
It is obtained by entering a Mach number and/or a speed in the MANAGED field of the PERF DES MCDU page (3L key).



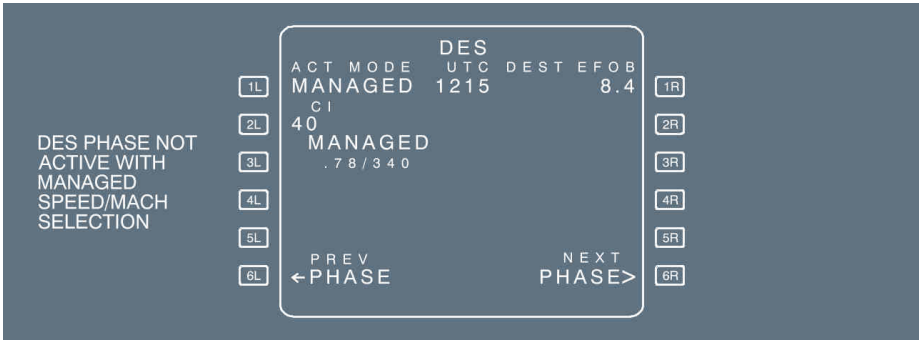
If the flight crew reverts to the SELECTED speed/MACH mode during descent, the profile is not modified and the aircraft flies the same profile at the FCU selected speed/MACH value.

Basic managed SPD/MACH profile in DES mode is:
- ECON MACH, or SELECTED Mach
- ECON SPD, or SELECTED Speed
- SPD CSTR (if any)
- SPD LIMIT
- Green Dot/S/F/VAPP
- VAPP TARGET.

DESCENT SPEED PROFILE

Ident.: DSC-22_30-70-50-00012563.0014001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The descent speed profile is usually the ECON SPD profile, amended by any speed constraints and speed limit contained in the flight plan.
If flight crew does not intend to fly the ECON speed/Mach profile, a different speed or Mach can be entered to amend the speed profile.
It is obtained by entering a Mach number and/or a speed in the MANAGED field of the PERF DES MCDU page (3L key).



If the flight crew reverts to the SELECTED speed/MACH mode during descent, the profile is not modified and the aircraft flies the same profile at the FCU selected speed/MACH value.

Basic managed SPD/MACH profile in DES mode is:
- ECON MACH, or AUTO MACH
- ECON SPD, or AUTO SPD
- SPD CSTR (if any)
- SPD LIMIT
- Green Dot/S/F/VAPP
- VAPP TARGET.

GUIDANCE IN DES MODE

Ident.: DSC-22_30-70-50-A-00010575.0001001 / 17 AUG 10
Applicable to: ALL

DESCENT INITIATION

The aircraft will not start its descent automatically when reaching the top of descent (T/D). In order to initiate the descent, the flight crew sets the clearance altitude by turning the ALT knob then pushes the ALT knob.

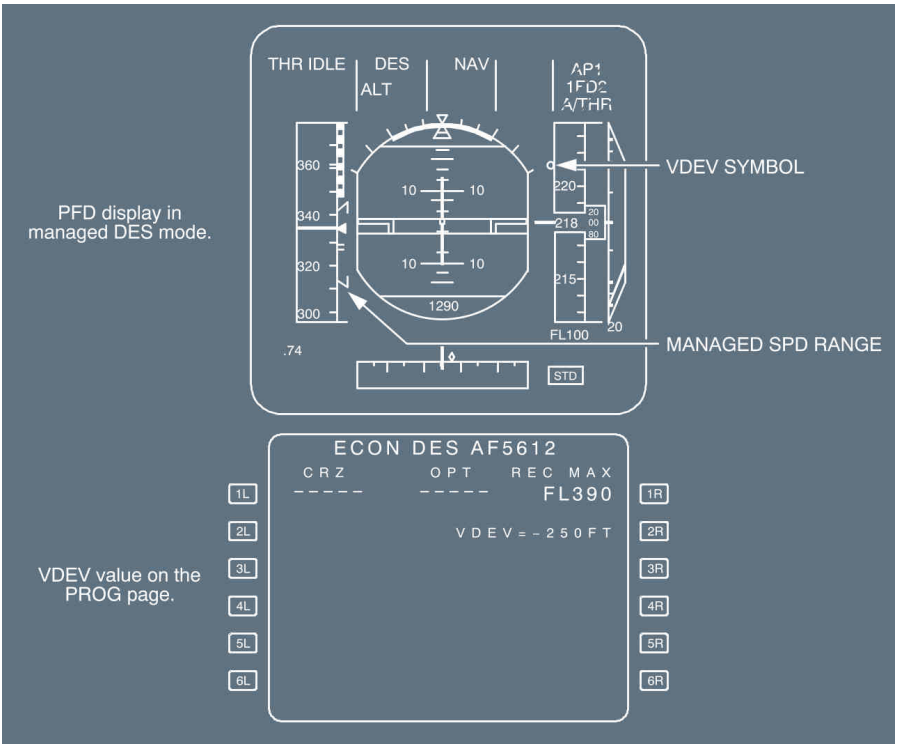
The aircraft will descend immediately:
- If the top of descent is not reached, the aircraft descends at a constant V/S converging on the descent path
- If the aircraft is at or beyond the T/D, it descends at idle thrust.

Ident.: DSC-22_30-70-50-A-00010563.0002001 / 01 OCT 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

DURING THE DESCENT

The flight crew will see a vertical deviation symbol (VDEV) along the ALT scale on the PFD and a VDEV value on the PROG page, so that the aircraft's vertical position can be monitored versus the calculated descent profile.

The aircraft may deviate from the DES profile while DES mode is engaged if:
- Unexpected wind conditions are encountered
- Anti-icing is turned on
- The lateral flight plan is changed.



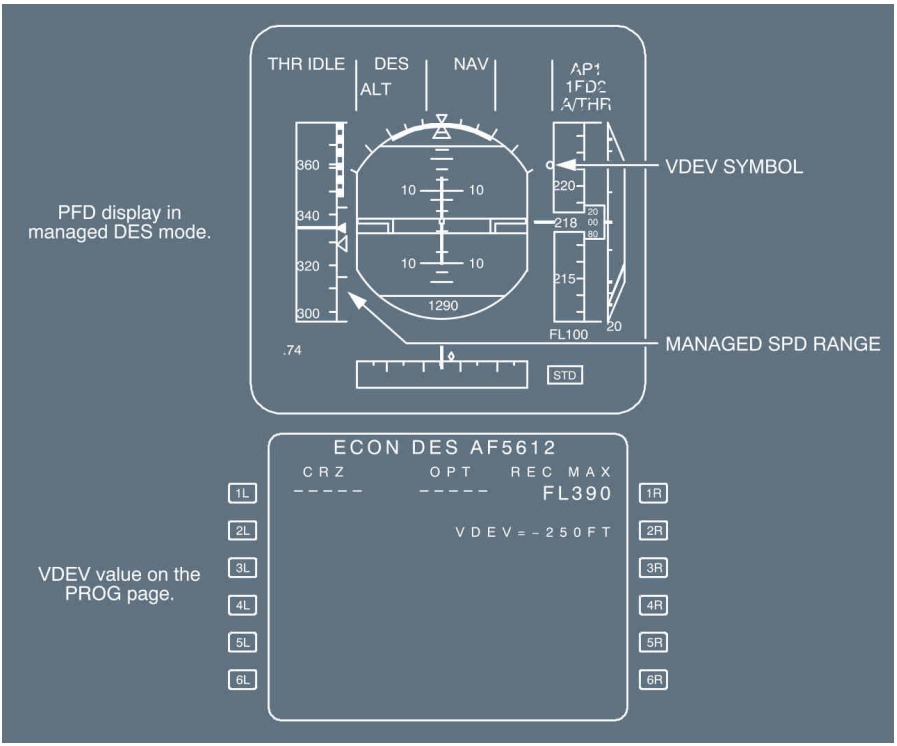
When the speed is managed, a target speed range displayed on the PFD defines acceptable speed variations around the nominal descent speed target.

Ident.: DSC-22_30-70-50-A-00010563.0005001 / 01 OCT 12
5 Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063

DURING THE DESCENT

The flight crew will see a vertical deviation symbol (VDEV) along the ALT scale on the PFD and a VDEV value on the PROG page, so that the aircraft's vertical position can be monitored versus the calculated descent profile.

The aircraft may deviate from the DES profile while DES mode is engaged if:
- Unexpected wind conditions are encountered
- Anti-icing is turned on
- The lateral flight plan is changed.



When the speed is managed, a target speed range displayed on the PFD defines acceptable speed variations around the nominal descent speed target.

Ident.: DSC-22_30-70-50-A-00010565.0001001 / 19 DEC 12
Applicable to: ALL

FMA DISPLAY

When DES mode is engaged, the system arms ALT and displays the applicable target altitude on the PFD altitude scale.

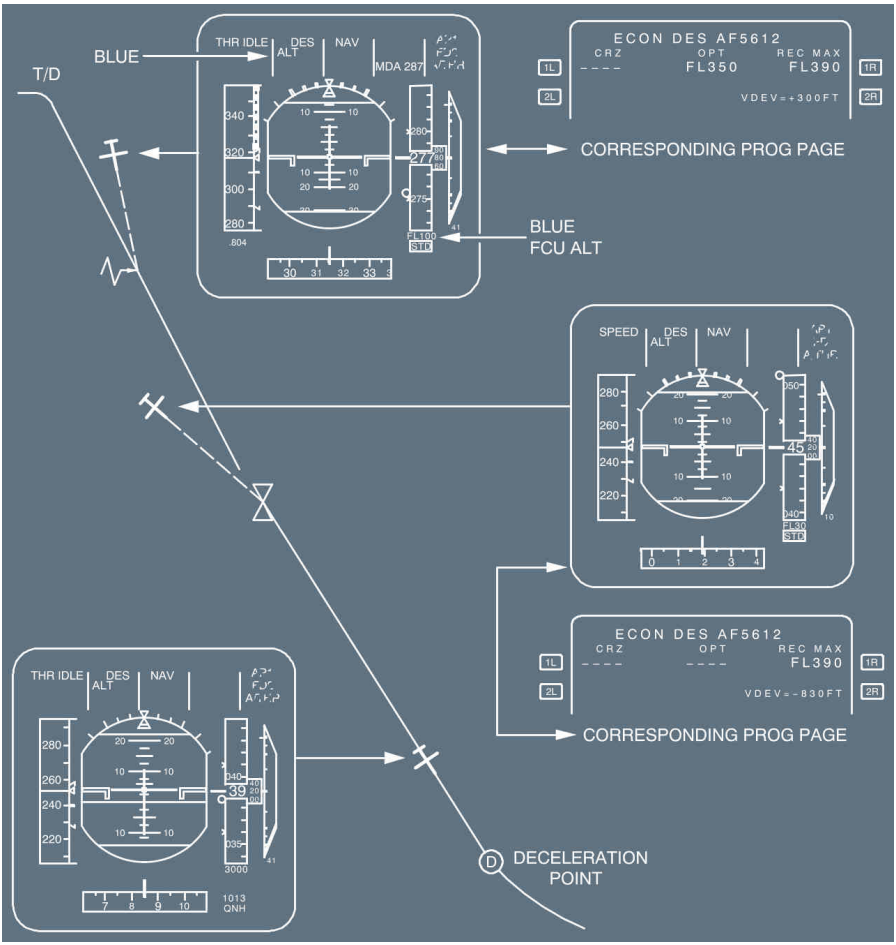
- If the next predicted level-off is an altitude constraint, ALT is magenta on the FMA second line and the PFD displays the altitude constraint magenta above the altitude scale.
  When the aircraft flies at the altitude constraint (ALT CSTR), the system arms DES blue.
  When the aircraft meets the constraint, DES engages again automatically.
- If the next predicted level-off is the FCU altitude, ALT is blue on the FMA and the PFD displays the altitude selected altitude in blue.

Typical FMA in DES

DES MODE PROFILE

Ident.: DSC-22_30-70-50-B-00010567.0002001 / 01 OCT 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

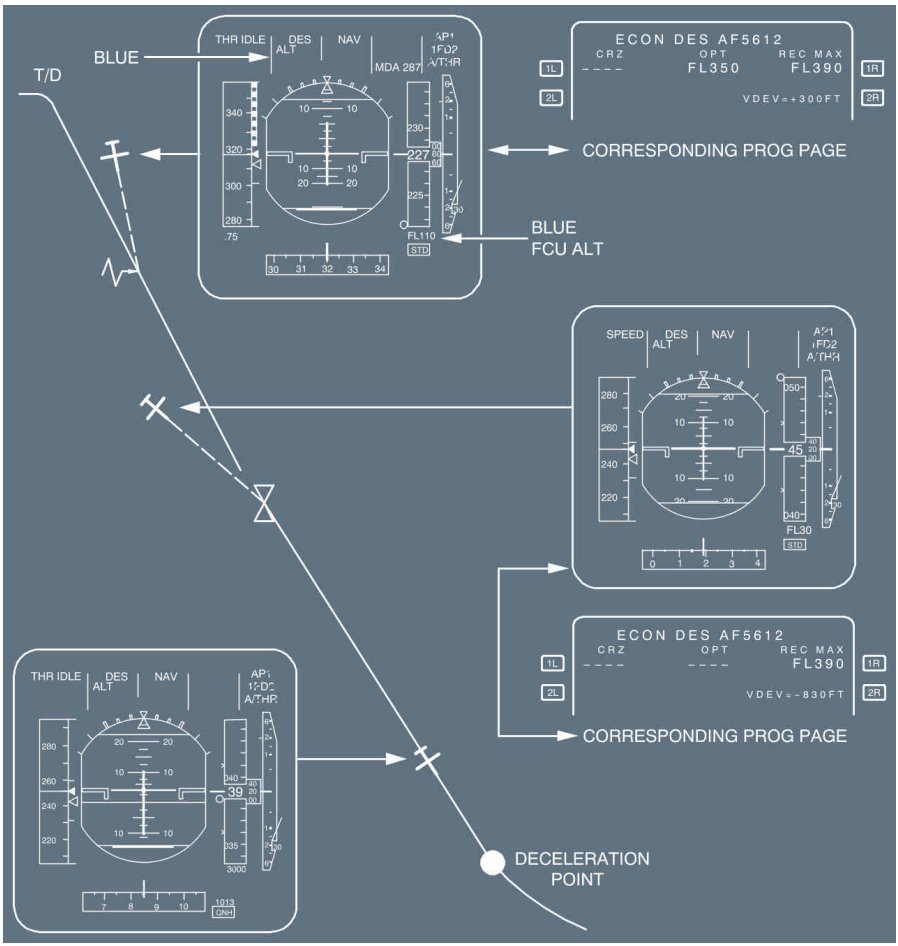
GENERAL



Ident.: DSC-22_30-70-50-B-00010567.0005001 / 01 OCT 12

6 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

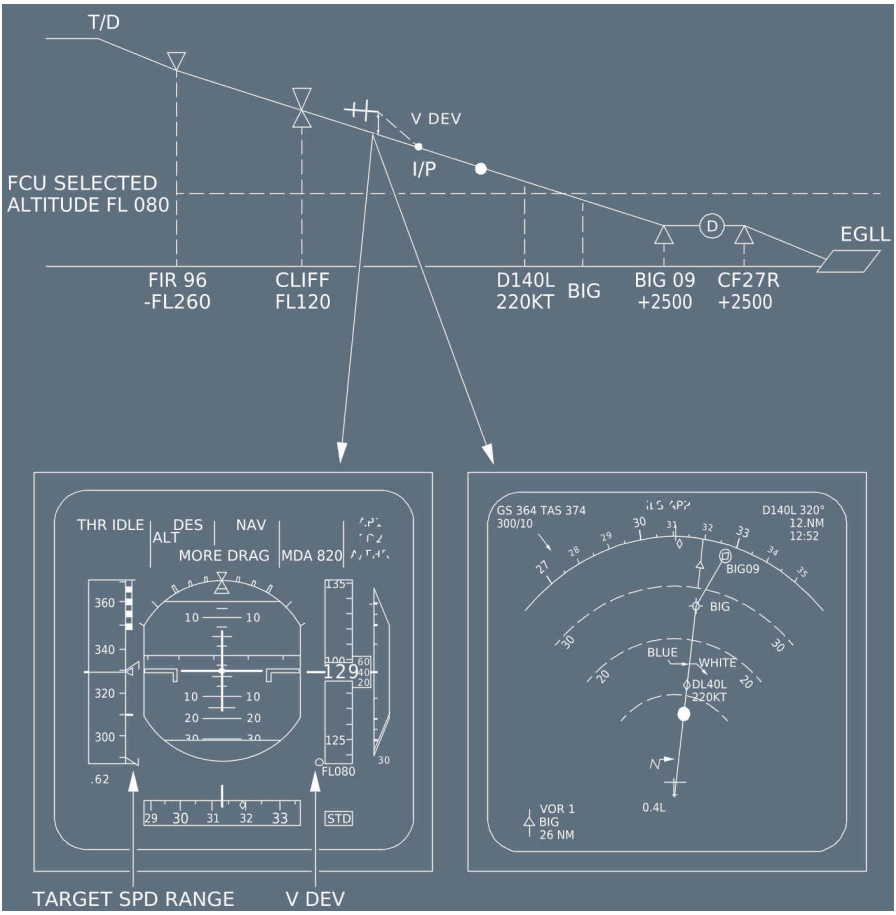
GENERAL



Ident.: DSC-22_30-70-50-B-00010568.0002001 / 17 AUG 10
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

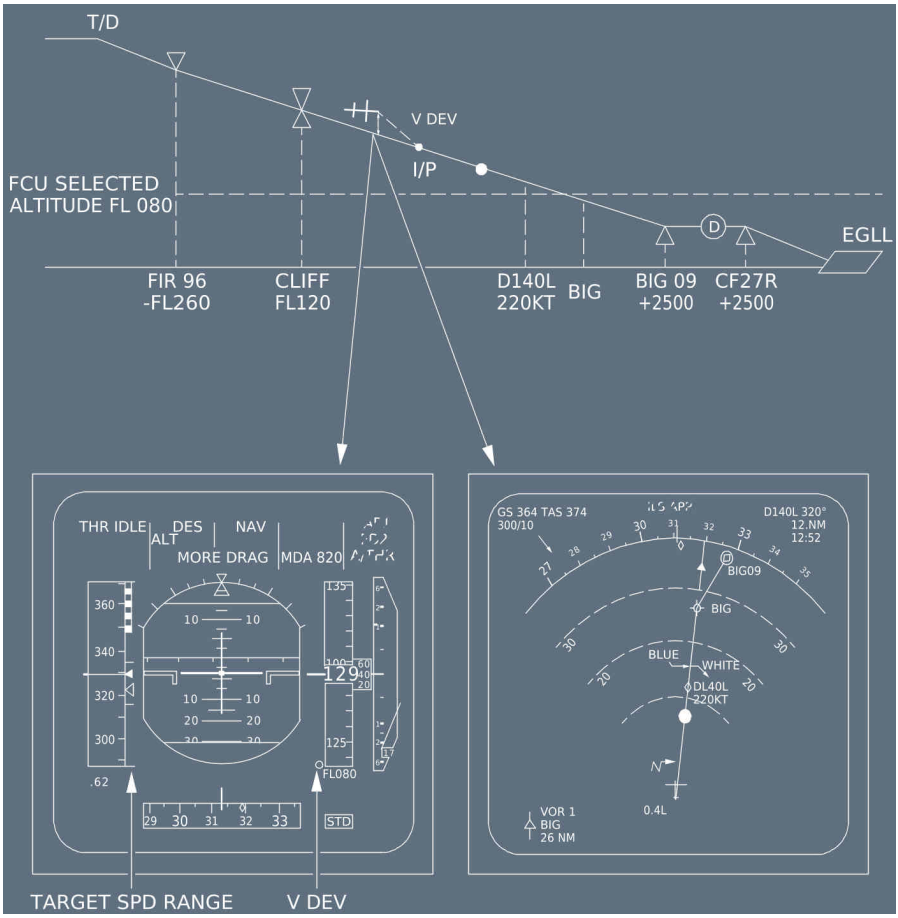
INTERCEPT POINT

Associated with the VDEV displayed on PFD, the ND shows an intercept point ( ) on the flight plan. It indicates the position where the system predicts that the aircraft will intercept the descent profile.



INTERCEPT POINT

Associated with the VDEV displayed on PFD, the ND shows an intercept point ( ) on the flight plan. It indicates the position where the system predicts that the aircraft will intercept the descent profile.



Ident.: DSC-22_30-70-50-B-00010569.0002001 / 01 OCT 12
Applicable to: ALL

AIRCRAFT ABOVE THE DESCENT PROFILE

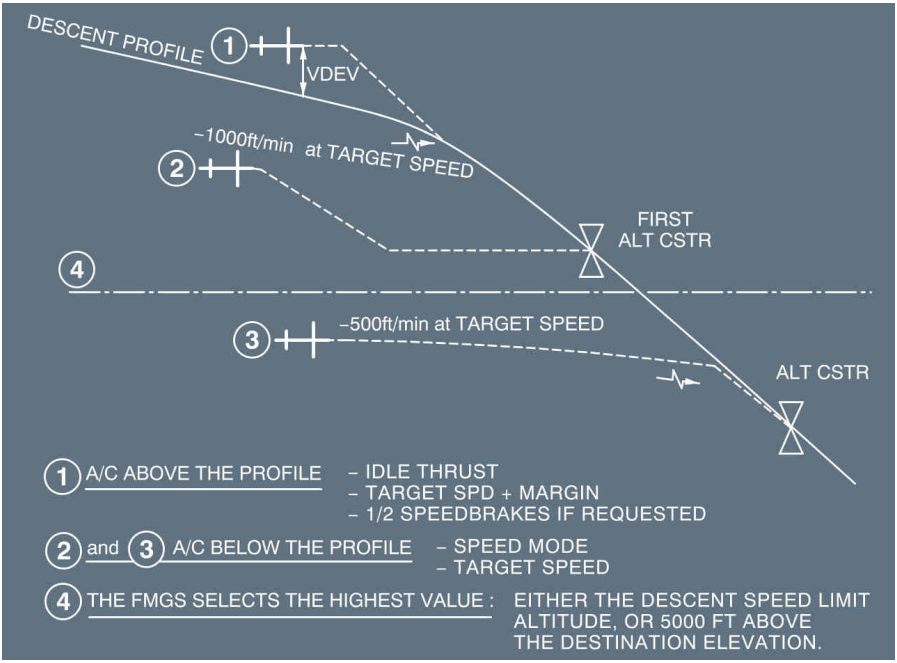
If the aircraft is above the descent profile, the speed will increase toward the upper limit of the managed speed range. If the speed reaches the upper limit, the aircraft will maintain the speed but will deviate from the profile (autothrust at idle).

The navigation display presents a pseudo waypoint (intercept point) along the flight plan that assumes the aircraft will return to the profile using:

- Idle thrust
- 1/2 speedbrake extension
- ECON speed plus a margin (until intercepting the profile).

If necessary, the message “AIRBRAKES” (old FMGC standard) or “MORE DRAG” comes up on the PFD and the MCDU, and remains there as long as more drag (speedbrakes) is still required. The flight crew should respond to this message by deploying half speedbrakes.
Whenever the intercept point is predicted to be close to a constrained waypoint, the PFD and MCDU display an “AIRBRAKES” or “MORE DRAG” message depending upon the FMGS standard.

Note: *With DES mode engaged, the speedbrakes extension will not necessarily increase the descent rate. It increases only if the aircraft is above path.*



Ident.: DSC-22_30-70-50-B-00010570.0002001 / 17 AUG 10
Applicable to: ALL

AIRCRAFT BELOW THE DESCENT PROFILE

If the aircraft is below the descent profile, its speed will be maintained at target speed until it reaches the descent profile. The lower margin becomes effective when the aircraft is on the descent profile but has to loose speed in order to stay on it.
The intercept point on the navigation display is based on the following assumptions:

- **If the aircraft is flying at an altitude that is higher than both the descent speed limit altitude and the destination elevation +5 000 ft:**
  The FMGS maintains the V/S at -1 000 ft/min and the target speed, until the aircraft reaches the altitude constraint, or intercepts the descent profile.
- **If the aircraft is flying at an altitude that is lower than either the descent speed limit altitude, or the destination elevation +5 000 ft:**
  The FMGS maintains the V/S at -500 ft/min and the target speed, until the aircraft reaches the altitude constraint or intercepts the descent profile.

Ident.: DSC-22_30-70-50-B-00010571.0003001 / 16 MAR 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

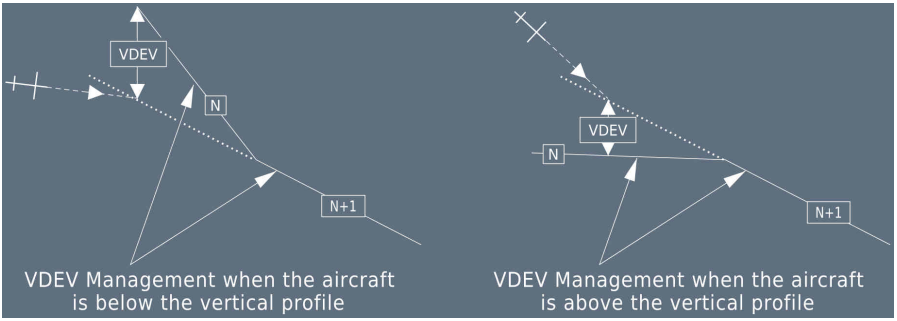
VERTICAL DEVIATION (VDEV) MANAGEMENT CHARACTERISTIC

In some cases, when the aircraft is above or below the vertical profile, the ND may not display any intercept point (pseudo waypoint), even if the VDEV appears on both the MCDUs and PFDs. In addition, the FMS guidance may not immediately attempt to decrease this VDEV (contrary to flight crew expectations).

This is due to the fact that the FMS guides the aircraft along the extension of the subsequent segment (N+1), when all of the following conditions are met:

- The aircraft is above or below the descent profile
- The DES mode is active, or the FINAL APP mode is armed
- The aircraft intercepts the extension of the subsequent segment (N+1) of the vertical profile, before the aircraft reaches the initially expected segment (N), as illustrated below.

The VDEV will gradually decrease until the aircraft reaches the beginning of the subsequent segment.



Note: *For the particular case of FINAL APP mode armed, the FMS guides the aircraft along the extension of the subsequent segment only if the VDEV is less than 150 ft.*

Ident.: DSC-22_30-70-50-B-00010572.0001001 / 17 AUG 10
Applicable to: ALL

LEVELING OFF AT A CONSTRAINT

If the aircraft levels off at an ALT CSTR, the DES mode arms and remains armed until the aircraft passes the constraint, then reengages (if the FCU altitude is set below the altitude of the constraint).

If the FCU selected altitude is that of a constraint, the flight crew may continue the descent below that altitude by turning the ALT knob and pushing it in. This arms the DES mode, which reengages when the aircraft passes the constraint waypoint.

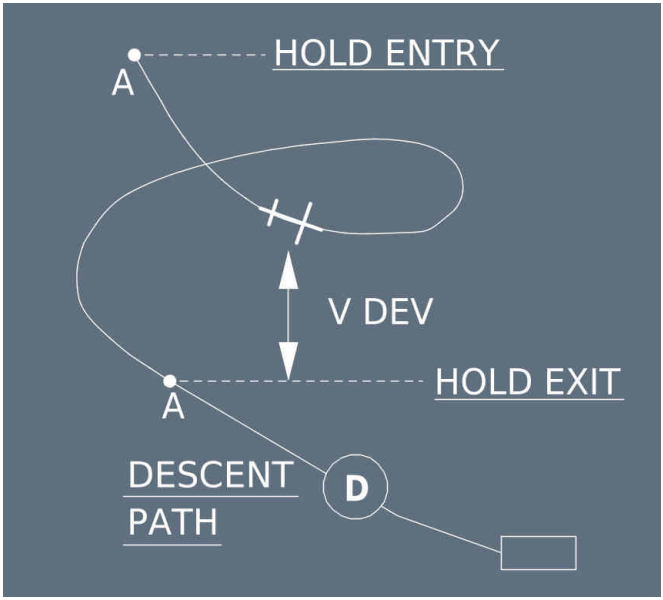
Ident.: DSC-22_30-70-50-B-00010573.0002001 / 17 AUG 10
Applicable to: ALL

GUIDANCE IN A HOLD

Just before the aircraft enters a holding pattern, the speed target becomes the holding speed. In the holding pattern, the DES mode commands V/S = -1 000 ft/min while A/THR maintains the holding speed. The aircraft will level off at the next altitude constraint if it is reached during the hold.

The current vertical deviation VDEV is based on the altitude at which the aircraft is supposed to cross the exit fix in order to be properly positioned on the descent profile.

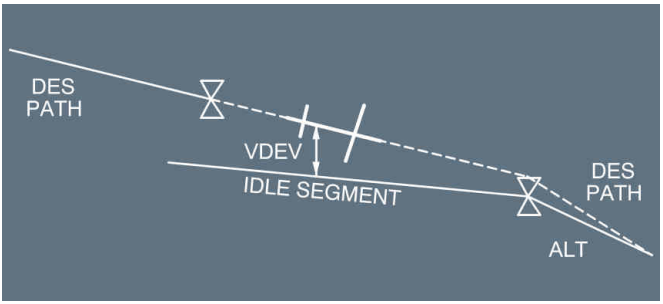
Until the flight crew exits the hold, the FMGS in DES mode will maintain V/S = -1 000 ft/min considering downpath vertical constraint. This means that the aircraft will not descent below the next altitude constraint, neither the FCU selected altitude. If the aircraft reaches the next altitude constraint it will level off and ALT CST mode will engage.



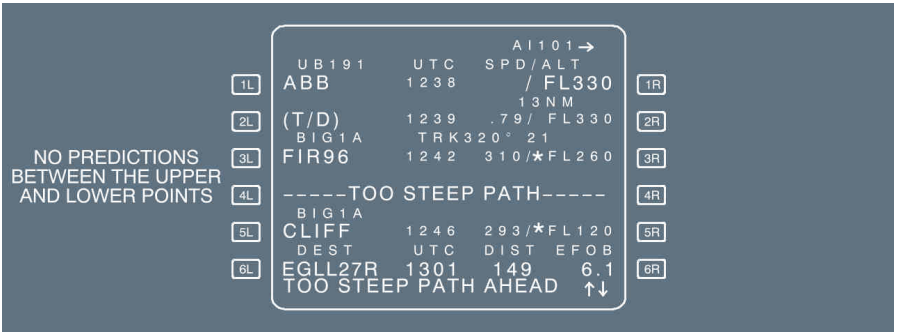
Ident.: DSC-22_30-70-50-B-00010574.0001001 / 01 OCT 12
Applicable to: ALL

TOO STEEP PATH

A descent segment is called “too steep path” when FM predicts that the descent segment between two constraint waypoints is impossible to fly at the planned descent speed with half speedbrakes extended.



When this occurs, the MCDU displays no predictions between the upper and the lower points of the too steep path. Relevant message “TOO STEEP PATH” is displayed on MCDU.



When the aircraft reaches the beginning of the too steep path segment, the FM recomputes the VDEV using an idle segment from the end of the too steep path segment.

GENERAL

Ident.: DSC-22_30-70-60-00010576.0001001 / 17 AUG 10
Applicable to: ALL

The OPEN DES mode is a selected mode. It maintains a SPD/MACH (selected or managed) with the AP/FD pitch mode while autothrust (if active) maintains IDLE thrust.
It is not to be used for final approach.

ENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-60-00010577.0002001 / 17 AUG 10
Applicable to: ALL

The OPEN DES mode can be engaged only if the following conditions are met:
- The aircraft has been in flight for more than 5 s
- LAND mode is not engaged
- The FCU selected altitude is lower than present altitude.

The OPEN DES mode is engaged by one of the following:
- Pulling out the ALT knob
- Selecting a manual speed when EXP mode ◁ is engaged.

Note: *When OP DES is engaged:*
- *The FMA displays "OP DES"*
- *The managed LVL/CH dot on the FCU goes out*
- *The system arms the ALT mode.*

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-60-00010578.0002001 / 17 AUG 10
Applicable to: MSN 01920

The OPEN DES mode is disengaged by one of the following conditions:
- Manual engagement of another vertical mode
- Selection of an altitude higher than present altitude. V/S (FPA) engages on current V/S (FPA).

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-60-00010578.0003001 / 17 AUG 10

1 **Applicable to: MSN 01767, 01957-09063**

The OPEN DES mode is disengaged by one of the following conditions:

- Manual engagement of another vertical mode
- Selection of an altitude higher than present altitude. V/S (FPA) engages on current V/S (FPA). The vertical mode is boxed white. If within 5 s after the reversion to V/S, the flight crew does not confirm the altitude target change by another expected action, a triple click aural warning sounds, and the V/S (FPA) is boxed white and flashes for 10 s.

GUIDANCE

Ident.: DSC-22_30-70-60-00010579.0002001 / 16 MAR 11

Applicable to: ALL

When OPEN DES is engaged, pitch control maintains the target speed/Mach number, and autothrust maintains idle thrust (or the flight crew maintains it manually). The speed target may be either selected or managed.

The OPEN DES mode disregards all altitude constraints.

Typical FMA in OPEN DES

GENERAL

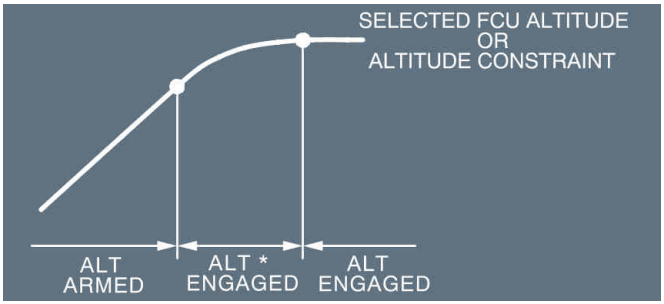
Ident.: DSC-22_30-70-65-00010580.0002001 / 07 APR 17
Applicable to: ALL

ALT* mode guides the aircraft to acquire the FCU selected altitude.
ALT CST* guides the aircraft to acquire an altitude constraint provided by Flight Management. Once the aircraft has reached the altitude, the altitude mode (ALT or ALT CST) engages.

ENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-65-00010581.0002001 / 09 NOV 17
Applicable to: ALL

The mode engages when the aircraft reaches the altitude capture zone, defined by the aircraft vertical speed (among other parameters).

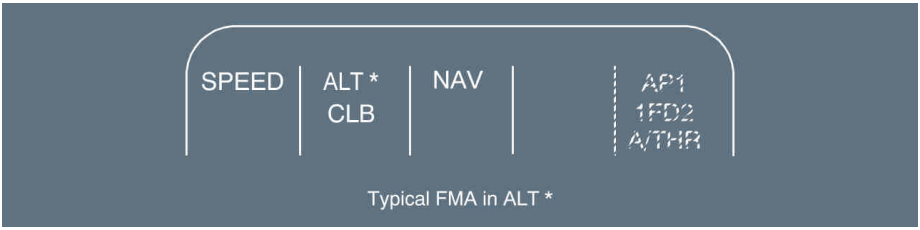


Note: *1. ALT* and ALT CST* cannot be engaged below 400 ft, if either the takeoff or the go-around mode is engaged.*
2. ALT and ALT CST* engagement is inhibited during 3 s after the selected altitude is changed on the FCU .*

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-65-00010582.0003001 / 19 DEC 12
Applicable to: MSN 01920

The mode is disengaged by one of the following conditions:
- Engagement of V/S mode on current vertical speed by turning the FCU ALT knob by more than 250 ft.
- Engagement of another vertical mode provided the FCU altitude has been changed by more than 250 ft.



DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-65-00010582.0008001 / 19 DEC 12

1 **Applicable to: MSN 01767, 01957-09063**

The mode is disengaged by one of the following conditions:

- Engagement of V/S mode on current vertical speed by turning the FCU ALT knob by more than 250 ft.

  If within 5 s after reversion to V/S (FPA) the flight crew does not confirm the altitude target change by:
  - Pulling the ALT knob, or
  - Setting a new V/S (FPA) target, or
  - Pushing the V/S or FPA knob on the FCU,

  then, a triple click aural warning sounds, and the V/S (FPA) is boxed white for additional 10 s.
- Engagement of another vertical mode provided the FCU altitude has been changed by more than 250 ft.

GUIDANCE

Ident.: DSC-22_30-70-65-00010583.0006001 / 07 APR 17

Applicable to: ALL

The ALT* and ALT CST* mode have internal V/S guidance that is a direct function of the difference between present altitude and the altitude target.

The system switches automatically to ALT (altitude hold) when the altitude deviation becomes less than 20 ft.
ALT* and ALT CST* modes have internal protections that decreases the vertical speed when VLS or VMAX is reached (VLS or VMAX becomes the priority target).

Note:
- *If the baro setting is changed during ALT* mode, this may lead to an FCU target overshoot due to the change of the current value of the altitude. However ALT* mode will allow the FCU altitude to be regained.*
- *For aircraft equipped with QFE option, a switching from STD to QFE (or vice versa) in ALT CST* mode, will change the target value and a reversion to V/S may occur if the target value is modified of 250 ft or more.*

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GENERAL

Ident.: DSC-22_30-70-70-00010584.0001001 / 17 AUG 10
Applicable to: ALL

The ALT mode maintains a target altitude. This target altitude is either the FCU selected altitude or an altitude constraint delivered by Flight Management.

ARMING CONDITIONS

Ident.: DSC-22_30-70-70-00010585.0001001 / 17 AUG 10
Applicable to: ALL

The ALT mode arms automatically whenever the aircraft climbs or descends toward the target altitude.

Note: *The ALT mode arms only if the difference between the current altitude and the FCU selected altitude is at least 250 ft.*

When ALT is armed, the FMA displays the ALT message on its second line:
- Blue when the target altitude is the FCU selected altitude
- Magenta if the target altitude is an altitude constraint.

ENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-70-00010586.0002001 / 17 AUG 10
Applicable to: ALL

The ALT mode is engaged automatically when the difference between present altitude and the target altitude becomes less than 20 ft with ALT* engaged.

Note: *The ALT mode is displayed on the FMA when the V/S knob is pushed in or is pulled out with V/S-FPA target set to zero but V/S mode is still active. In other words, if V/S knob is dialled up or down, the aircraft will climb or descend without any pulling action.*

DISENGAGEMENT CONDITIONS

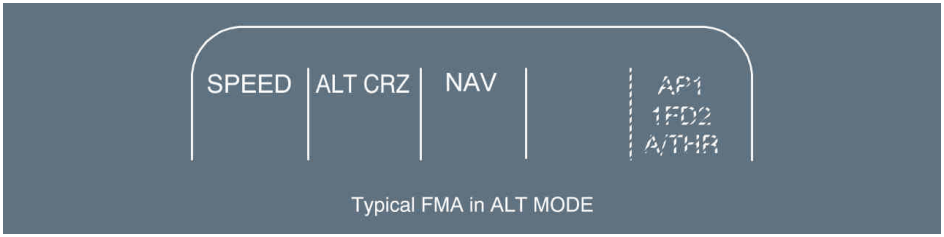
Ident.: DSC-22_30-70-70-00010587.0001001 / 17 AUG 10
Applicable to: ALL

The ALT mode disengages when any other vertical mode engages.

GUIDANCE

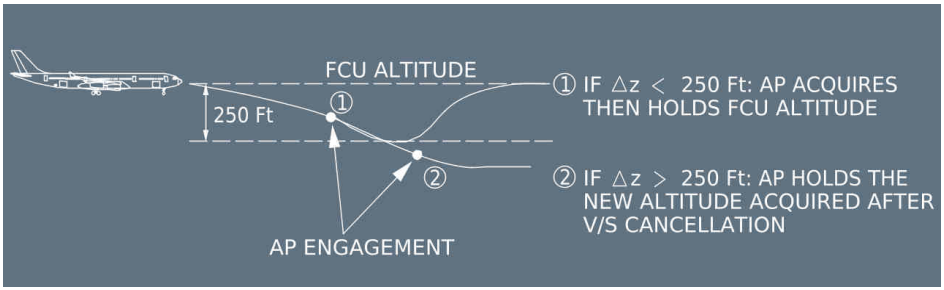
Ident.: DSC-22_30-70-70-00010588.0002001 / 23 JUN 15
Applicable to: ALL

- The altitude that ALT mode holds is the altitude it memorized when engaged. It is not affected by a change of reference in the ALT window or by a change in the barometric correction.
- When ALT is engaged, the FMA displays ALT in green (FCU altitude hold) or ALT CST in green if it is an altitude constraint.



Typical FMA in ALT MODE

- If the AP is engaged while FD is already engaged in ALT mode at the FCU selected altitude, the autopilot:
  - Acquires and holds the FCU altitude if present altitude is within 250 ft of it, or
  - Commands a level-off if present altitude is more than 250 ft from the FCU altitude.



SOFT ALTITUDE MODE (CRUISE)

Ident.: DSC-22_30-70-70-00010589.0002001 / 19 DEC 12
Applicable to: ALL

The soft altitude mode engages when the aircraft reaches the FCU altitude set as the cruise flight level (entered in the F-PLN or on PROG page).
The soft altitude mode corrects minor deviations from the Mach target by allowing a ±50 ft variation from the CRZ FL. This feature improves fuel efficiency and passenger comfort and minimizes the changes in thrust.

FMA in SOFT ALT HOLD MODE

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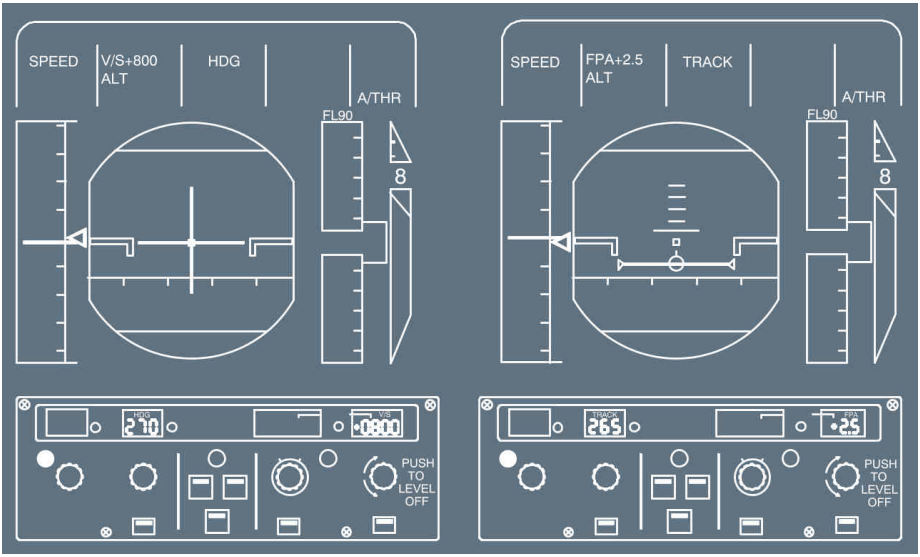
GENERAL

Ident.: DSC-22_30-70-80-00010611.0004001 / 19 DEC 12
Applicable to: ALL

The V/S - FPA mode is a selected mode. It acquires and holds the vertical speed or the flight path angle displayed in the V/S - FPA window of the FCU.
The HDG V/S -TRK FPA pb on the FCU allows the flight crew to select either type of reference to be used for guidance and for display on the PFD.



ENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-80-00010612.0003001 / 17 AUG 10
[1] **Applicable to: MSN 01767-06868, 06914, 06952-07053, 07252-07396**

The flight crew can engage the mode manually as follows:
- Pull out the V/S or FPA knob (at least 5 s after lift-off) or push it in for an immediate level off (V/S=0)
- Engage the AP and/or FD if AP and FD are not engaged (basic mode of AP/FD engagement)
- Select a different altitude (more than 250 ft from present altitude) when in ALT* mode
- Select a higher altitude than present altitude when in DES, OP DES modes or EXP DES ◁ mode
- Select a lower altitude than present altitude when in CLB, OP CLB modes or EXP CLB ◁ mode.

The mode engages automatically:
- 5 s after lift-off, if no other vertical mode is engaged
- Upon loss of G/S* or G/S mode
- Upon loss of FINAL mode
- Upon loss of LOC* or LOC mode
- Upon loss of NAV mode when DES mode is engaged
- Upon loss of vertical flight path in DES mode.

ENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-80-00010612.0009001 / 18 MAR 11

2 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

The flight crew can engage the mode manually as follows:
- Pull out the V/S or FPA knob (at least 5 s after lift-off) or push it in for an immediate level off (V/S=0)
- Engage the AP and/or FD if AP and FD are not engaged (basic mode of AP/FD engagement)
- Select a different altitude (more than 250 ft from present altitude) when in ALT* mode
- Select a higher altitude than present altitude when in DES, OP DES modes or EXP DES mode
- Select a lower altitude than present altitude when in CLB, OP CLB modes or EXP CLB mode.

The mode engages automatically:
- 5 s after lift-off, if no other vertical mode is engaged
- Upon loss of G/S* or G/S mode
- Upon loss of FINAL mode
- Upon loss of LOC* or LOC mode
- Upon loss of NAV mode when DES mode is engaged
- Upon loss of vertical flight path in DES mode
- Upon TCAS mode disengagement.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-80-00010592.0002001 / 17 AUG 10

3 **Applicable to: MSN 01767-06868, 06914, 06952-07053, 07252-07396**

The flight crew can disengage the V/S mode manually by:
- Pulling or pushing the Altitude knob, or
- Pushing the EXPED pb , or
- Initiating a go-around.

It disengages automatically:
- When the aircraft reaches the FCU altitude, or
- Upon G/S* engagement.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-80-00010592.0004001 / 18 MAR 11

4 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

The flight crew can disengage the V/S mode manually by:
- Pulling or pushing the Altitude knob, or
- Pushing the EXPED pb, or
- Initiating a go-around.

It disengages automatically:
- When the aircraft reaches the FCU altitude, or
- Upon G/S* engagement, or
- Upon TCAS mode engagement.

GUIDANCE

Ident.: DSC-22_30-70-80-00010593.0009001 / 04 JUL 17

Applicable to: ALL

The FMGC pitch mode guides the aircraft to the target V/S or FPA. The corresponding A/THR mode is SPEED or MACH. The FMA displays V/S (FPA).
The V/S (FPA) guidance has priority over the speed guidance. If the selected target V/S or FPA is too high (relative to the current thrust condition and speed), the FMGC will steer the aircraft to the target V/S or FPA, but the aircraft will also accelerate or decelerate.
When the speed reaches its authorized limit, V/S or FPA automatically decreases to maintain the minimum (or maximum) speed limit.

Note: *If the flight crew sets V/S = 0 or pushes the V/S or FPA knob to level off, it automatically sets V/S or FPA target to zero and the aircraft levels off and maintains its altitude.*

Note: *If AP is engaged while a V/S is selected with only FD ON, the V/S will synchronise on the current aircraft V/S.*

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GENERAL

Ident.: DSC-22_30-70-85-00013718.0001001 / 18 MAR 11

1 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

The TCAS mode is an Auto Flight System (AFS) guidance mode that provides vertical guidance in the case of a Traffic Alert and Collision Avoidance System (TCAS) Resolution Advisory (RA).
When a Traffic Advisory (TA) is triggered, the TCAS mode arms.
When a RA is triggered, the TCAS mode engages. The TCAS mode provides vertical guidance in accordance with the TCAS RA order.
When clear of conflict (the “CLEAR OF CONFLICT” aural alert sounds), the TCAS mode disengages. The AFS provides guidance toward the latest target altitude set on the FCU.

TCAS MODE INHIBITION CONDITIONS

Ident.: DSC-22_30-70-85-00013719.0001001 / 13 JAN 14

2 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

The TCAS mode is not available, when:
- The TCAS system is failed (NAV TCAS FAULT)
- The TCAS mode is failed (AUTO FLT TCAS MODE FAULT)
- The TCAS system is in TA mode
- FDs are inoperative.

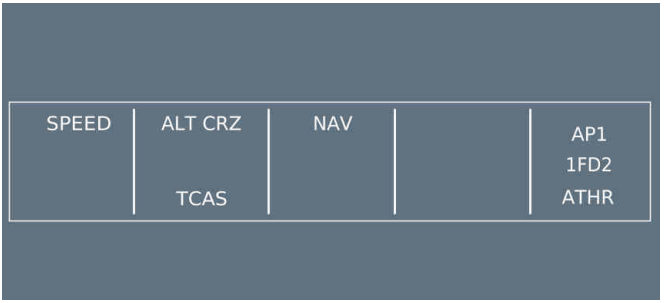
The TCAS mode arming and engagement are inhibited when:
- The TA mode is manually selected (on the TCAS control panel)
- The aircraft is below 900 ft radio height
- The EGPWS, WINDSHEAR or STALL warning is triggered.

ARMING CONDITIONS (WHEN A TRAFFIC ADVISORY IS TRIGGERED)

Ident.: DSC-22_30-70-85-00013720.0001001 / 18 MAR 11

3 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

The TCAS mode arms, when a TCAS TA is triggered.
The TCAS mode arms, even if both APs, and both FDs are disengaged. In this case, the APs and FDs remain disengaged.
When the TCAS mode arms, the FMA displays TCAS (in blue) on the third line of the second column (vertical modes)



If the TCAS mode arms, when another vertical mode is armed (or engaged), this vertical mode remains armed (or engaged).

DISARMING CONDITIONS

Ident.: DSC-22_30-70-85-00013721.0001001 / 18 MAR 11

4 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

The TCAS mode disarms, when one of the following occurs:
- The TCAS TA is cancelled (the intruder becomes white on the ND)
- The TCAS mode engages upon a TCAS RA
- The TCAS mode is lost (*Refer to DSC-22_30-70-85 TCAS Mode Inhibition Conditions*).

ENGAGEMENT CONDITIONS (WHEN A RESOLUTION ADVISORY IS TRIGGERED)

Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063

Ident.: DSC-22_30-70-85-A-00013722.0001001 / 18 MAR 11

5

The TCAS mode engages, when a TCAS RA is triggered.

Ident.: DSC-22_30-70-85-A-00013723.0001001 / 18 MAR 11

6

AUTO PILOT/FLIGHT DIRECTOR (AP/FD) ENGAGEMENT STATUS

The TCAS mode engages even if both APs and both FDs are disengaged.

When the TCAS mode engages:
- The AP engagement status does not change
- If both FD X-bars (V-bars) are disengaged, the FD X-bars (V-bars) automatically engage.

Ident.: DSC-22_30-70-85-A-00013724.0001001 / 18 MAR 11

7

LATERAL MODE

If the TCAS mode engages, when a lateral mode is engaged, this lateral mode remains engaged.

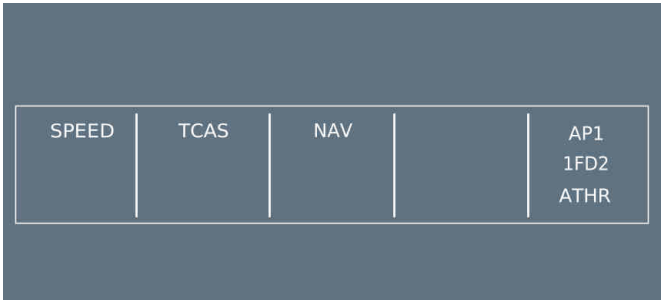
If the TCAS mode engages when both APs and both FDs are disengaged, HDG automatically engages. The heading target is the aircraft heading at HDG engagement.
If the TCAS mode engages when in TRK, HDG automatically engages. When the TCAS mode disengages, the FMA displays the TRK FPA DESELECTED message to inform the flight crew that the flying reference has changed.

Ident.: DSC-22_30-70-85-A-00013725.0001001 / 18 MAR 11

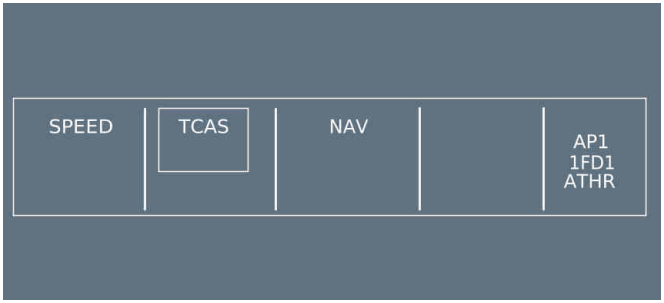
8

VERTICAL MODE

If the TCAS mode engages, when a vertical mode is engaged, this vertical mode disengages.



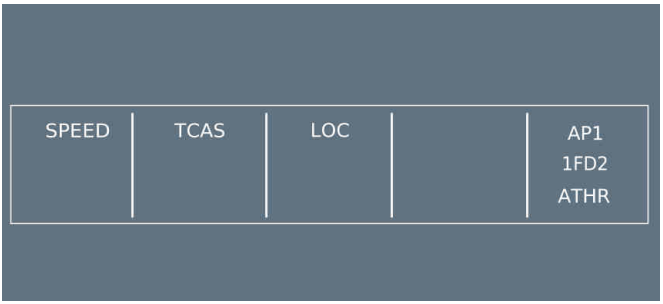
If the TCAS mode engages, when a vertical mode is armed (different than ALT or ALT CRZ), the vertical mode disarms. In this case the FMA displays a white box for 10 s around the first and second FMA lines (to call flight crew attention on disarming of the vertical mode at TCAS mode engagement).



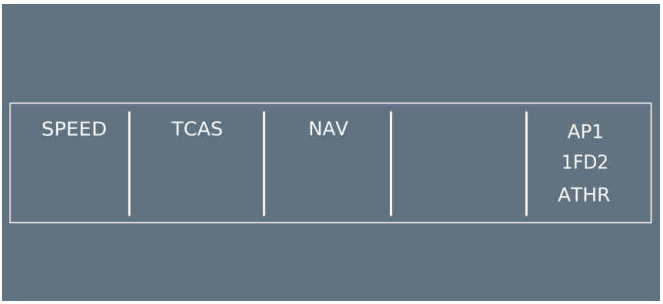
If the TCAS mode engages, when ALT (ALT CRZ) is armed:
- ALT (ALT CRZ) remains armed, if the TCAS vertical speed order is similar to the vertical speed mode that was previously engaged
- ALT (ALT CRZ) disarms, if the TCAS vertical speed order is not similar to the vertical speed mode that was previously engaged.

Note: *If ALT capture conditions occur during the TCAS RA maneuver, and ALT (ALT CRZ) is armed, the TCAS mode captures the FCU selected altitude (without ALT* indicated on the FMA).*

If the TCAS mode engages, when G/S is engaged:
- G/S disengages
- LOC remains engaged
- The APPR pb comes off, and the LOC pb comes on. The approach can be armed again by pushing the APPR pb on the FCU.



If the TCAS mode engages, when FINAL APP is engaged:
- FINAL disengages
- Managed lateral guidance remains engaged. NAV displayed on FMA
- The APPR pb comes off. The approach can be re-armed by pushing the APPR pb on the FCU.



Note: *If the approach is re-armed and if the capture conditions are fulfilled the corresponding approach mode engages. The TCAS mode disengages (even if not clear of conflict). A RA may be triggered again.*

Ident.: DSC-22_30-70-85-A-00013726.0001001 / 18 MAR 11

9

AUTO THRUST BEHAVIOR

When the TCAS mode engages, the SPEED/MACH mode engages:

- If the A/THR is disconnected, when the TCAS mode engages, the A/THR becomes armed or active, depending on the thrust lever position (*Refer to DSC-22_30-90 A/THR Activation - General*)
- If the A/THR is active, the speed/Mach target becomes the aircraft speed/Mach at the occurrence of the TCAS RA
- If the A/THR is armed, the thrust target does not change. When the flight crew activates the A/THR, the speed/Mach target becomes the aircraft speed/Mach at the A/THR activation.

Note: *At THR RED ALT, the LVR CLB message on the FMA is inhibited if the TCAS RA rate of climb is greater than 500 ft/min.*
If the speed reaches VFE-20 kt the LVR CLB message is displayed even below the THR RED ALT.
If the TCAS RA rate of climb is equal or below 500 ft/min the LVR CLB message is displayed even below the THR RED ALT.

DISENGAGEMENT CONDITIONS

Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063

Ident.: DSC-22_30-70-85-B-00013727.0001001 / 18 MAR 11

10

The TCAS mode disengages, when one of the following occurs:

- The TCAS RA is cancelled (the “CLEAR OF CONFLICT” aural alert sounds)
- The flight crew engages another vertical mode
- The TCAS mode is lost (*Refer to DSC-22_30-70-85 TCAS Mode Inhibition Conditions*). In this case the FMA displays the TCAS RA INHIBITED message to inform the flight crew of the reason of the loss of the TCAS mode.

Ident.: DSC-22_30-70-85-B-00013728.0001001 / 18 MAR 11

11

LATERAL MODE

If the TCAS mode disengages, when a lateral mode is engaged, this lateral mode remains engaged.

Ident.: DSC-22_30-70-85-B-00013729.0001001 / 18 MAR 11

12

VERTICAL MODE

When the TCAS mode disengages (the “CLEAR OF CONFLICT” aural alert sounds), one of the following modes engages: V/S, ALT*, ALT, ALT CRZ* or ALT CRZ.

When the TCAS mode reverts to V/S, the following occurs:
- ALT or ALT CRZ arms
- A triple click aural alert sounds, and the pitch bar flashes for 10 s
- The vertical speed target depends on whether a preventive TCAS RA or a corrective TCAS RA occurred. In the case of a preventive TCAS RA, the vertical speed target remains the vertical speed target at the triggering of the TCAS RA.

  In the case of a corrective TCAS RA, the vertical speed target becomes:
  - +500 ft/min, if the aircraft is at, or above 30 000 ft, and the FCU selected altitude is above the aircraft
  - ± 1 000 ft/min, in all other cases.

If the TCAS mode is lost while engaged, the vertical mode reverts to V/S. The vertical speed target is:
- 0 ft/min if the TCAS target was negative
- The TCAS vertical speed target at the time of the failure, if it was positive.

GUIDANCE

Ident.: DSC-22_30-70-85-00013730.0001001 / 18 MAR 11

13 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

In the case of a preventive TCAS RA, the vertical speed target is the aircraft vertical speed at the engagement of the TCAS mode.
In the case of a corrective TCAS RA, the TCAS mode vertical speed target is ± 200 ft/min above (respectively below) the limit between the green and red area of the vertical speed scale. If the TCAS RA order changes, the TCAS mode follows the new target.

Note: When the TCAS mode is engaged, the vertical speed target is not adjustable by the flight crew consequently the V/S FCU window is dashed.

The TCAS mode ensures that the aircraft speed remains between VLS - 5 kt (VLS - 2 kt in landing configuration), and VMAX.

Alpha floor is temporarily inhibited when TCAS mode is engaged:
- If all thrust levers are in CLB when the Resolution Advisory is triggered, Alpha floor is inhibited while the TCAS mode is engaged.
- If at least one thrust lever is below CLB when the Resolution Advisory is triggered, Alpha floor is inhibited during 5 s, then:
  - If all thrust levers are set to CLB (LVR CLB flashes on the FMA), Alpha floor inhibition is maintained while TCAS mode is engaged
  - If at least one thrust lever remains below CLB, Alpha floor is reactivated.

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GENERAL

Ident.: DSC-22_30-70-90-00010223.0001001 / 17 AUG 10

1 **Applicable to: MSN 01767-02195, 02275-02405, 02457-02649, 02712-02737, 02908-03138, 03308, 03357-09063**

Expedite mode is an OPEN mode used in climb or descent to reach the desired altitude with the maximum vertical gradient.

ENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-90-00010594.0001001 / 17 AUG 10

2 **Applicable to: MSN 01767-02195, 02275-02405, 02457-02649, 02712-02737, 02908-03138, 03308, 03357-09063**

The flight crew can engage EXPEDITE if:
- The aircraft has been in flight for more than 5 s
- Managed speed is available.

The flight crew engages EXPEDITE manually by pushing the EXPED pb on the FCU:
- If the FCU selected altitude is higher than present altitude, EXP CLB mode engages
- If the FCU selected altitude is lower than present altitude, EXP DES mode engages.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-90-00010595.0001001 / 17 AUG 10
Applicable to: MSN 01920

The flight crew can disengage EXPEDITE manually by:
- Pulling out the V/S or FPA knob to engage the V/S or FPA mode
- Pulling out the ALT knob to engage OP CLB or OP DES
- Pulling out the SPD/MACH knob to activate the selected speed target and engage OP CLB or OP DES
- Pushing in the ALT knob to engage the CLB or DES mode, provided that the engagement conditions are met
- Selecting a higher altitude than present altitude when in EXP DES
- Selecting a lower altitude than present altitude when in EXP CLB
- Activating a reversion to V/S to protect the aircraft from exceeding VLS or VMAX.

Note: In FD mode only, it the flight crew does not follow the FD orders, a reversion to V/S occurs when reaching VMAX + 4 in EXP CLB or VLS - 2 in EXP DES (VLS - 17 with speedbrakes). Refer to DSC-22_30-75 General.

EXPEDITE disengages automatically with ALT* engagement.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-70-90-00010595.0003001 / 17 AUG 10

[3] **Applicable to: MSN 01767, 01957-02195, 02275-02405, 02457-02649, 02712-02737, 02908-03138, 03308, 03357-09063**

The flight crew can disengage EXPEDITE manually by:

- Pulling out the V/S or FPA knob to engage the V/S or FPA mode
- Pulling out the ALT knob to engage OP CLB or OP DES
- Pulling out the SPD/MACH knob to activate the selected speed target and engage OP CLB or OP DES. A white box appears around the longitudinal mode and flashes for 10 s. A triple click sounds
- Pushing in the ALT knob to engage the CLB or DES mode, provided that the engagement conditions are met
- Selecting a higher altitude than present altitude when in EXP DES. If this action is not followed by another expected flight crew action within 5 s, a triple click sounds. A steady white box appears around the longitudinal mode, then flashes for 10 s after the triple click
- Selecting a lower altitude than present altitude when in EXP CLB. If this action is not followed by another expected flight crew action within 5 s, a triple click sounds. A steady white box appears around the longitudinal mode, then flashes for 10 s after the triple click
- Activating a reversion to V/S to protect the aircraft from exceeding VLS or VMAX. A white box appears around the longitudinal mode and flashes for 10 s. A triple click sounds.

Note: *In FD mode only, it the flight crew does not follow the FD orders, a reversion to V/S occurs when reaching VMAX + 4 in EXP CLB or VLS - 2 in EXP DES (VLS - 17 with speedbrakes).* *Refer to DSC-22_30-75 General.*

EXPEDITE disengages automatically with ALT* engagement.

GUIDANCE

Ident.: DSC-22_30-70-90-00010610.0002001 / 19 DEC 12

[4] **Applicable to: MSN 01767-02195, 02275-02405, 02457-02649, 02712-02737, 02908-03138, 03308, 03357-09063**

When the aircraft is in EXP CLB, the target speed is Green Dot, which is maintained with pitch control. Autothrust, if active, sets the thrust at CLB THRUST automatically.
When the aircraft is in EXP DES, the target speed is 340 kt or M 0.8 which is maintained with pitch control. Autothrust, if active, sets the thrust at IDLE automatically.
When EXPEDITE is engaged, the system disregards SPD CSTR, ALT CSTR, and SPD LIM.

THR CLB
EXP CLB
ALT
NAV
AP1
1FD2
A/THR
FMA in EXP CLB

Intentionally left blank

GENERAL

Ident.: DSC-22_30-75-00010633.0001001 / 17 MAR 17
Applicable to: ALL

Mode reversions are automatic mode changes that unexpectedly occur, but are designed to ensure coherent AP, FD and A/THR operations, in conjunction with flight crew input (or when entering a F-PLN discontinuity).
Due to the unexpected nature of their occurrence, the FMA should be closely monitored for mode reversions.

INTERACTION BETWEEN LATERAL MODES, VERTICAL MODES, AND MANAGED SPEED PROFILE

Ident.: DSC-22_30-75-00012054.0002001 / 17 MAR 17
Applicable to: MSN 01920

- **When NAV mode is engaged:**

  The FMGS guides the aircraft along the flight plan and considers the constraints attached to the F-PLN waypoints. As a result:
  - Managed CLB and DES modes are available
  - The managed speed profile includes: V2 - SPD CSTR (if applicable) - SPD LIM - ECON CLB SPD/MACH - ECON CRZ MACH - ECON DES (MANAGED SPD) - SPD/MACH - SPD CSTR - SPD LIM - HOLD SPD - VAPP/GS MIN.

  It is valid for all vertical modes, except EXPEDITE .

- **When NAV mode is not engaged:**

  The FMGS considers that the flight plan is not followed, and ignores all speed and altitude constraints linked to the F-PLN waypoints. As a result:
  - The managed vertical CLB and DES modes are not available
  - The managed SPD profile disregards the speed constraints and includes: V2 - SPD LIM - ECON CLB - ECON CRZ - ECON DES (MANAGED SPD) - SPD LIM - VAPP/GS MIN target.

As a consequence, when NAV mode disengages (manual or automatic):
- CLB mode, when engaged, reverts to OPEN CLB
- DES mode, when engaged, reverts to V/S (FPA) mode on current value
  This reversion to V/S (FPA) mode on the current V/S target does not modify the pitch behavior of the aircraft. It is the flight crew's responsibility to adapt pitch, if necessary.
- Speed and altitude constraints are disregarded (but speed limit is retained).

INTERACTION BETWEEN LATERAL MODES, VERTICAL MODES, AND MANAGED SPEED PROFILE

Ident.: DSC-22_30-75-00012054.0006001 / 17 MAR 17

1 **Applicable to: MSN 01767, 01957-09063**

- **When NAV mode is engaged:**

  The FMGS guides the aircraft along the flight plan and considers the constraints attached to the F-PLN waypoints. As a result:
  - Managed CLB and DES modes are available
  - The managed speed profile includes: V2 - SPD CSTR (if applicable) - SPD LIM - ECON CLB SPD/MACH - ECON CRZ MACH - ECON DES (MANAGED SPD) - SPD/MACH - SPD CSTR - SPD LIM - HOLD SPD - VAPP/GS MIN.

  It is valid for all vertical modes, except EXPEDITE ⩤ .

- **When NAV mode is not engaged:**

  The FMGS considers that the flight plan is not followed, and ignores all speed and altitude constraints linked to the F-PLN waypoints. As a result:
  - The managed vertical CLB and DES modes are not available
  - The managed SPD profile disregards the speed constraints and includes: V2 - SPD LIM - ECON CLB - ECON CRZ - ECON DES (MANAGED SPD) - SPD LIM - VAPP/GS MIN target.

As a consequence, when NAV mode disengages (manual or automatic):

- CLB mode, when engaged, reverts to OPEN CLB. The lateral mode is boxed white for 10 s. The vertical mode is boxed white.

  If within 5 s, the disengagement of the NAV mode is not confirmed by one of the following flight crew actions:
  - FCU altitude change
  - Level-off
  - Selection of the V/S mode

  then, a triple click aural warning sounds. In addition, a white box flashes around the vertical mode for additional 10 s.
- DES mode, when engaged, reverts to V/S mode on current value.

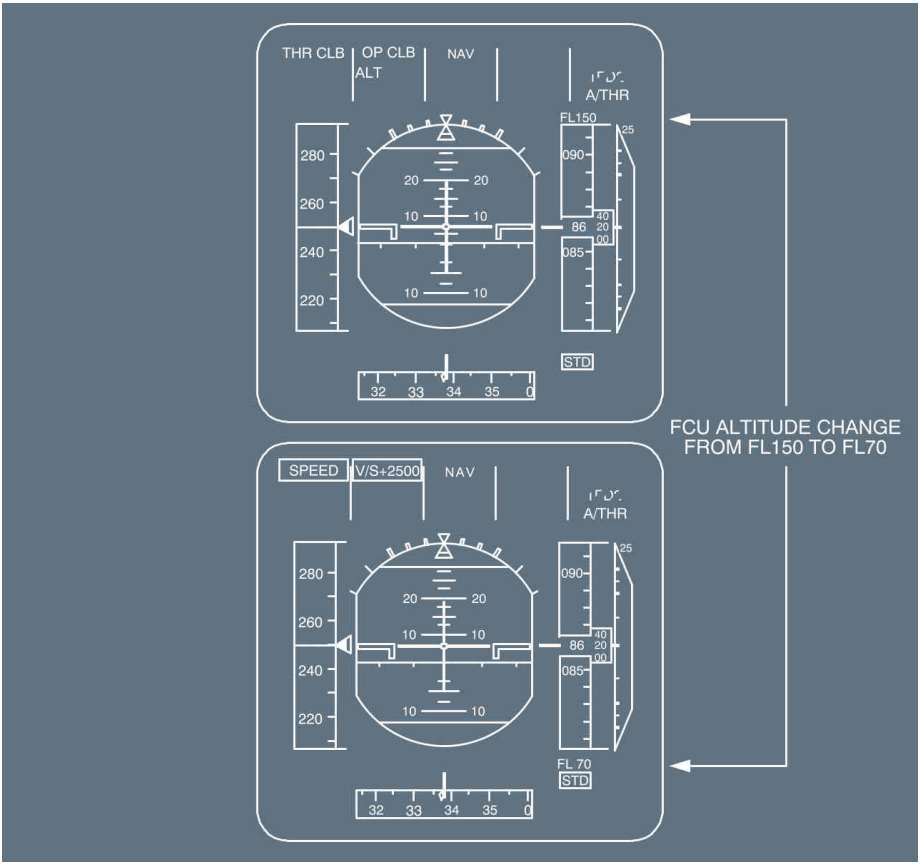
  If within 5 s, the disengagement of the NAV mode is not confirmed by one of the following flight crew actions:
  - FCU altitude change
  - Level-off
  - Selection of the V/S mode

  then, a triple click aural warning sounds. In addition, a white box flashes around the vertical mode for additional 10 s.
  This reversion to V/S (FPA) mode on the current V/S target does not modify the pitch behavior of the aircraft. It is the flight crew's responsibility to adapt pitch, if necessary.
- Speed and altitude constraints are disregarded (but speed limit is retained).

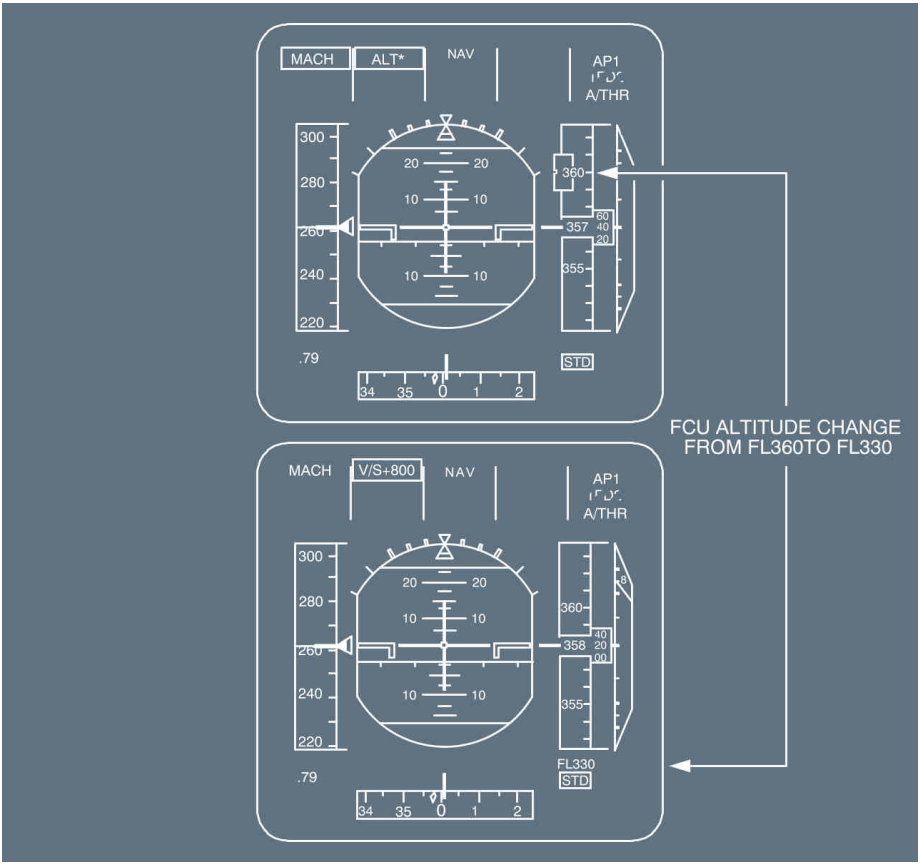
MODE REVERSION DUE TO FCU ALTITUDE CHANGE

Ident.: DSC-22_30-75-00012053.0003001 / 01 OCT 12
Applicable to: MSN 01920

When an OPEN mode is engaged, the aircraft climbs or descends towards the altitude set on the FCU. If the flight crew sets the FCU altitude to a target not compatible with the active open mode, a mode reversion occurs and V/S (or FPA) engages on current V/S (or FPA).
This reversion applies to CLB, OP CLB, DES, OP DES, EXP DES ◁ , EXP CLB ◁ .
Example: Reversion from OP CLB to V/S:



With ALT* engaged, the target altitude is changed by any value greater than 250 ft, V/S (or FPA) engages on currents V/S (or FPA). *Refer to DSC-22_30-75 Mode Reversions (Summary)*.

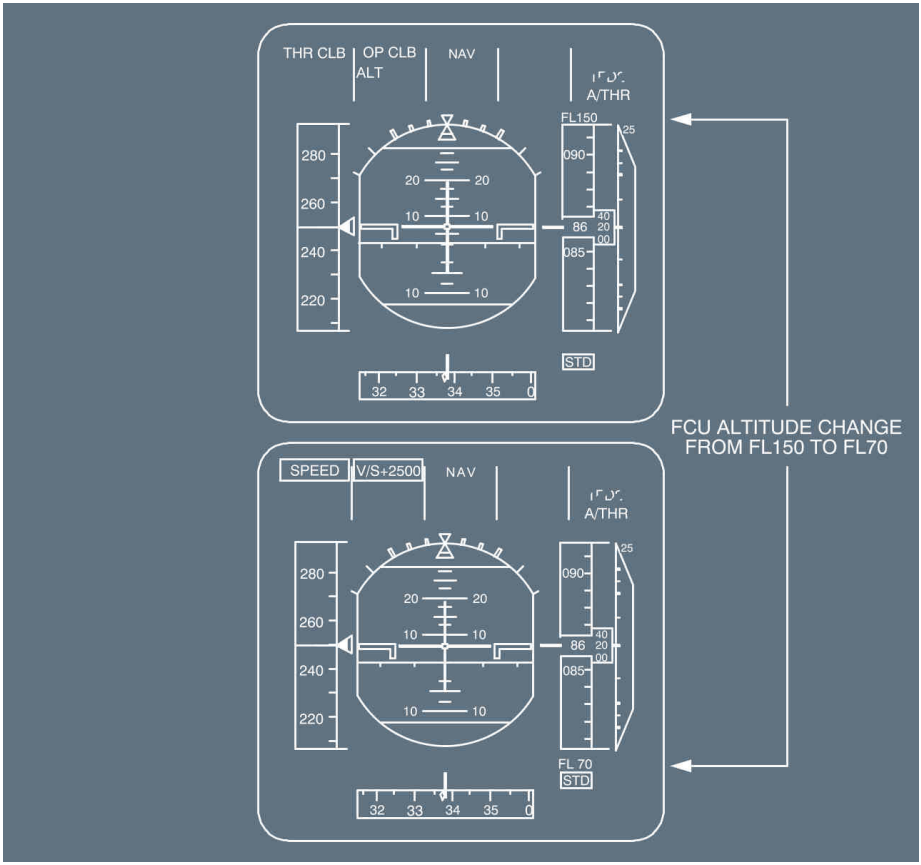


MODE REVERSION DUE TO FCU ALTITUDE CHANGE

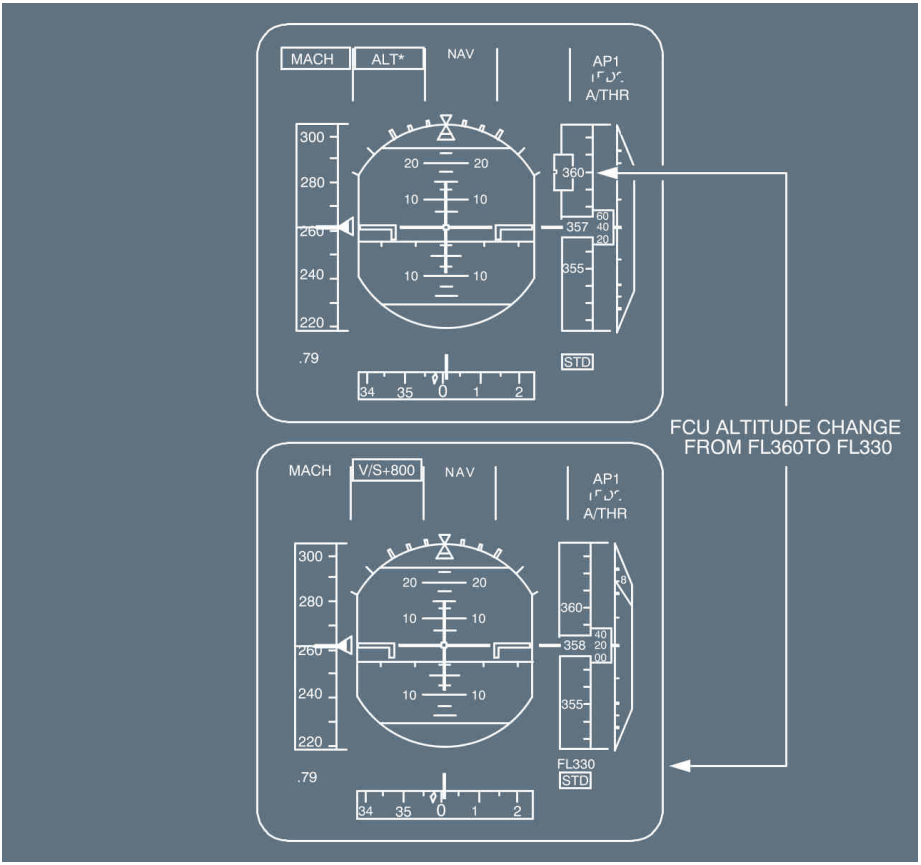
Ident.: DSC-22_30-75-00012053.0006001 / 01 OCT 12

Applicable to: MSN 01767, 01957-09063

When an OPEN mode is engaged, the aircraft climbs or descends towards the altitude set on the FCU. If the flight crew sets the FCU altitude to a target not compatible with the active open mode, a mode reversion occurs and V/S (or FPA) engages on current V/S (or FPA).
This reversion applies to CLB, OP CLB, DES, OP DES, EXP DES, EXP CLB.
Example: Reversion from OP CLB to V/S:



With ALT* engaged, the target altitude is changed by any value greater than 250 ft, V/S (or FPA) engages on currents V/S (or FPA). *Refer to DSC-22_30-75 Mode Reversions (Summary)*.



If within 5 s after the reversion to V/S (FPA), the flight crew does not confirm the altitude target change by:

- Pulling the ALT knob, or
- Setting a new V/S (or FPA) target, or
- Pushing the V/S or FPA knob on the FCU,

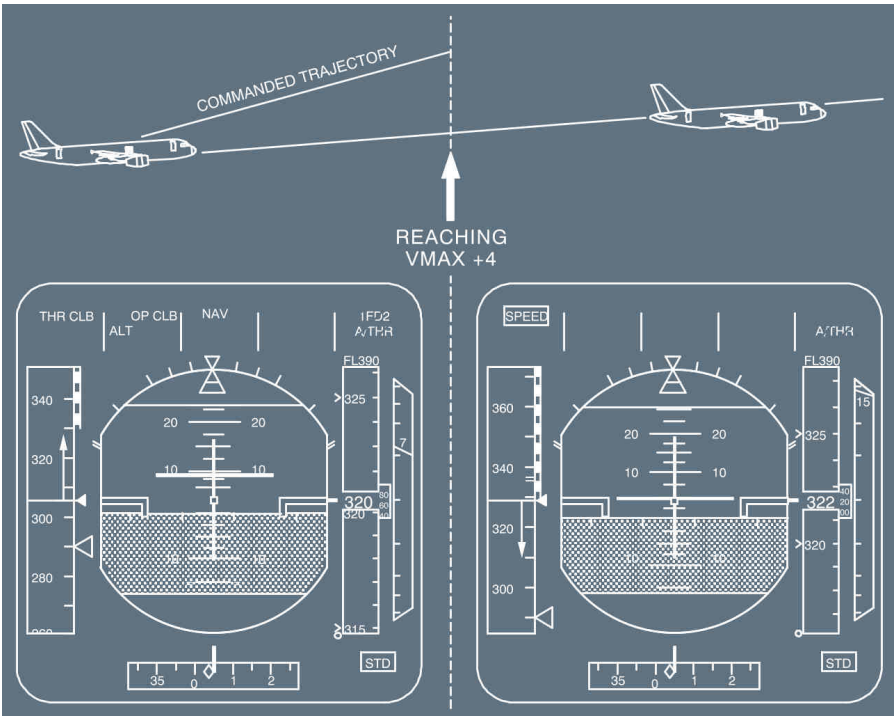
then, a triple click sounds, and the V/S (FPA) is boxed white for additional 10 s.

REVERSION WITH GLOBAL SPEED PROTECTION

Ident.: DSC-22_30-75-A-00012055.0005001 / 19 DEC 12
Applicable to: MSN 01920

AUTOMATIC SPEED MODE PROTECTION IN CLIMB

FDs are engaged in an OPEN mode in climb with AP not engaged.
If FDs are engaged in CLIMB or OPEN CLIMB mode or EXP CLB ◁ and the flight crew does not follow the FD bars to maintain the commanded climb (pitch too low and autothrust in maximum climb thrust), the aircraft accelerates.
Both FDs disengage when VMAX+4 is reached (VMAX being VMO, VLE or VFE). If the A/THR is active, it reverts to SPEED mode and reduces the thrust to recover the speed target.

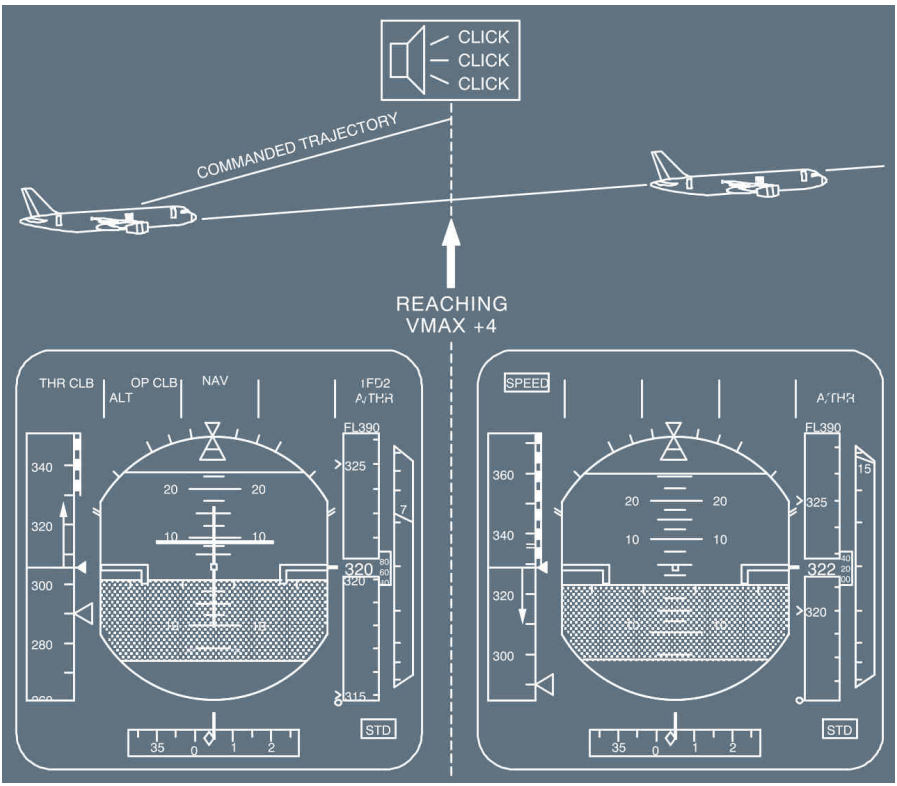


Ident.: DSC-22_30-75-A-00012055.0010001 / 19 DEC 12
3 **Applicable to: MSN 01767, 01957-09063**

AUTOMATIC SPEED MODE PROTECTION IN CLIMB

FDs are engaged in an OPEN mode in climb with AP not engaged.

If FDs are engaged in CLIMB or OPEN CLIMB mode or EXP CLB and the flight crew does not follow the FD bars to maintain the commanded climb (pitch too low and autothrust in maximum climb thrust), the aircraft accelerates.
Both FDs disengage when VMAX+4 is reached (VMAX being VMO, VLE or VFE). If the A/THR is active, it reverts to SPEED mode and reduces the thrust to recover the speed target.
A triple click aural warning sounds.

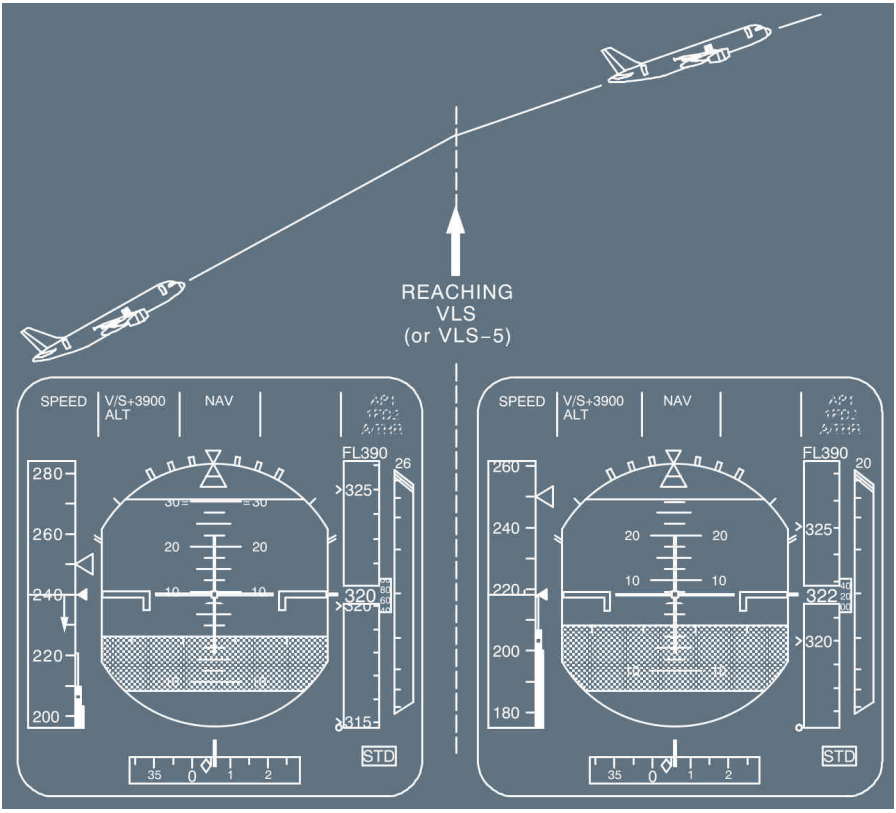


Ident.: DSC-22_30-75-A-00012056.0005001 / 01 OCT 12
Applicable to: MSN 01920

AUTOMATIC SPEED PROTECTION IN V/S (OR FPA) MODE IN CLIMB

When climbing with V/S mode engaged: If the selected V/S value is excessive (with regards to thrust and speed), the FMGS maintains the V/S target, but the airspeed decreases. When reaching VLS (or VLS-5, if the speed target is VLS), the AP temporarily abandons the V/S target,

and automatically decreases the vertical speed to maintain VLS. The same applies if FPA mode is used with an excessive FPA target.



V/S mode remains engaged. The V/S target does not change, but is no longer followed.

Note: *When flying with FD bars only (AP OFF), the FMGS adjusts the pitch bar so that VLS is maintained.*

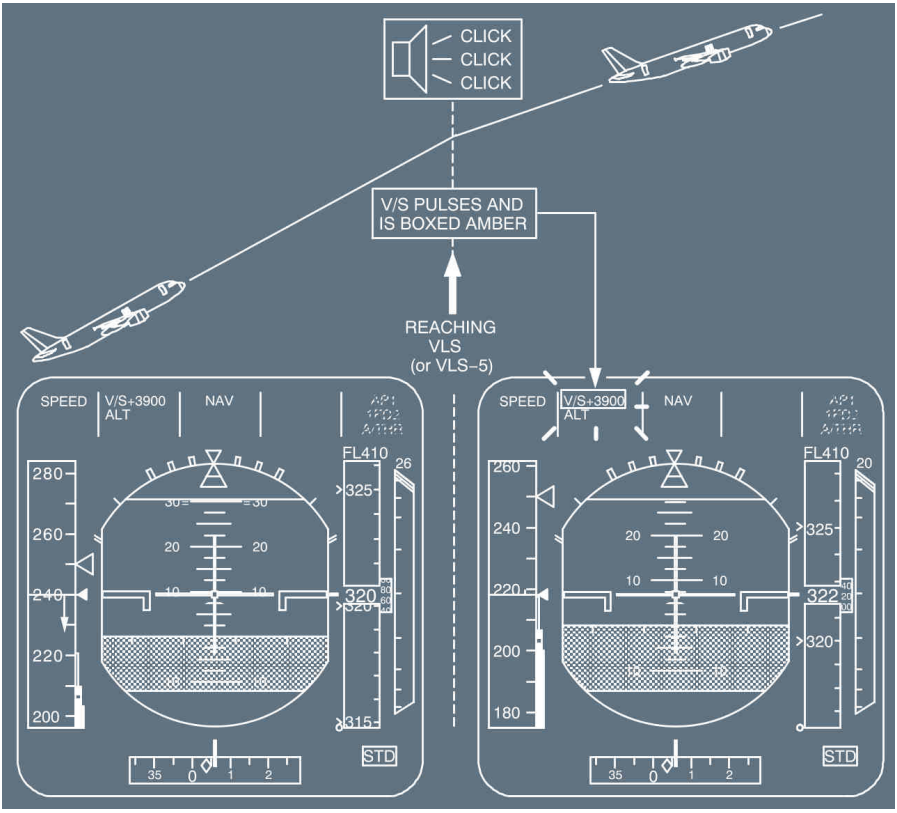
Ident.: DSC-22_30-75-A-00012056.0010001 / 01 OCT 12

4 **Applicable to: MSN 01767, 01957-09063**

AUTOMATIC SPEED PROTECTION IN V/S (OR FPA) MODE IN CLIMB

When climbing with V/S mode engaged: If the selected V/S value is excessive (with regards to thrust and speed), the FMGS maintains the V/S target, but the airspeed decreases. When reaching VLS (or VLS-5, if the speed target is VLS), the AP temporarily abandons the V/S target,

and automatically decreases the vertical speed to maintain VLS. The same applies if FPA mode is used with an excessive FPA target.



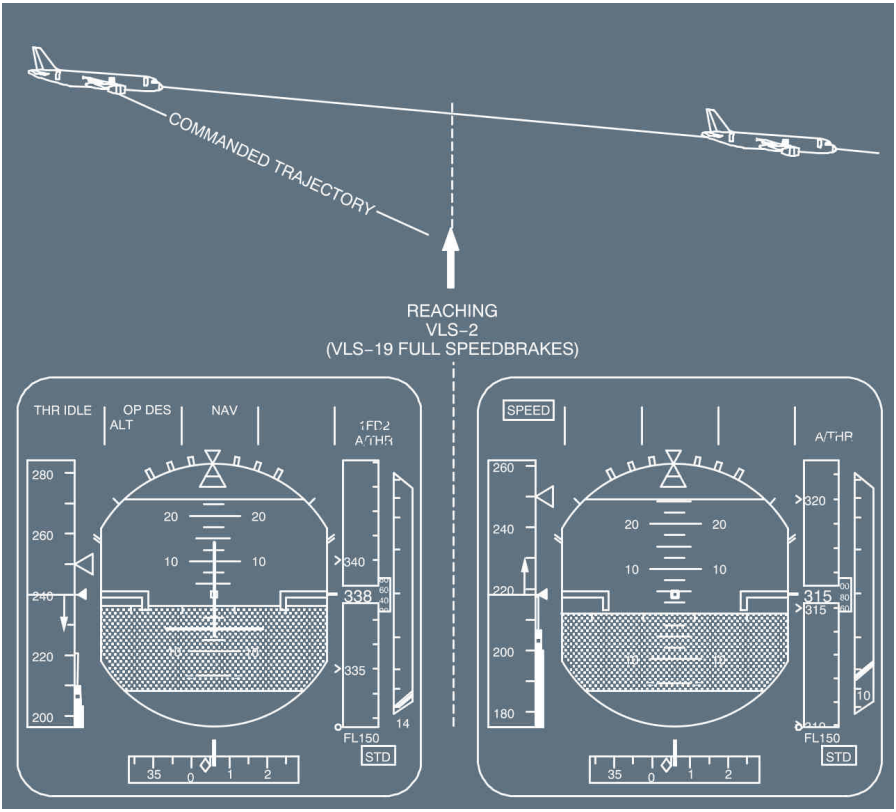
V/S mode remains engaged.
On the FMA, the V/S target is boxed with a flashing amber rectangle, and the V/S value pulses. Besides, an aural triple click is generated.

Note: *When flying with FD bars only (AP OFF), the FMGS adjusts the pitch bar so that VLS is maintained. However, no triple click is generated and the V/S target display on the FMA remains unchanged.*

Ident.: DSC-22_30-75-A-00012057.0005001 / 01 OCT 12
Applicable to: MSN 01920

AUTOMATIC SPEED MODE PROTECTION IN DESCENT

FDs are engaged in an OPEN mode in descent with the AP not engaged.
If the FDs are engaged in DES, or OP DES mode, or EXP DES and, if the flight crew does not follow the FD bars to maintain the commanded pitch, the aircraft decelerates (insufficient descent rate and idle thrust).
If the airspeed reaches VLS-2, both FDs disengage. (If speedbrakes are extended, the FDs disengage between VLS-2 and VLS-19, depending on the position of the speedbrakes).
The A/THR, if active, reverts to SPEED mode upon FDs disengagement, and increases thrust to recover the speed target.

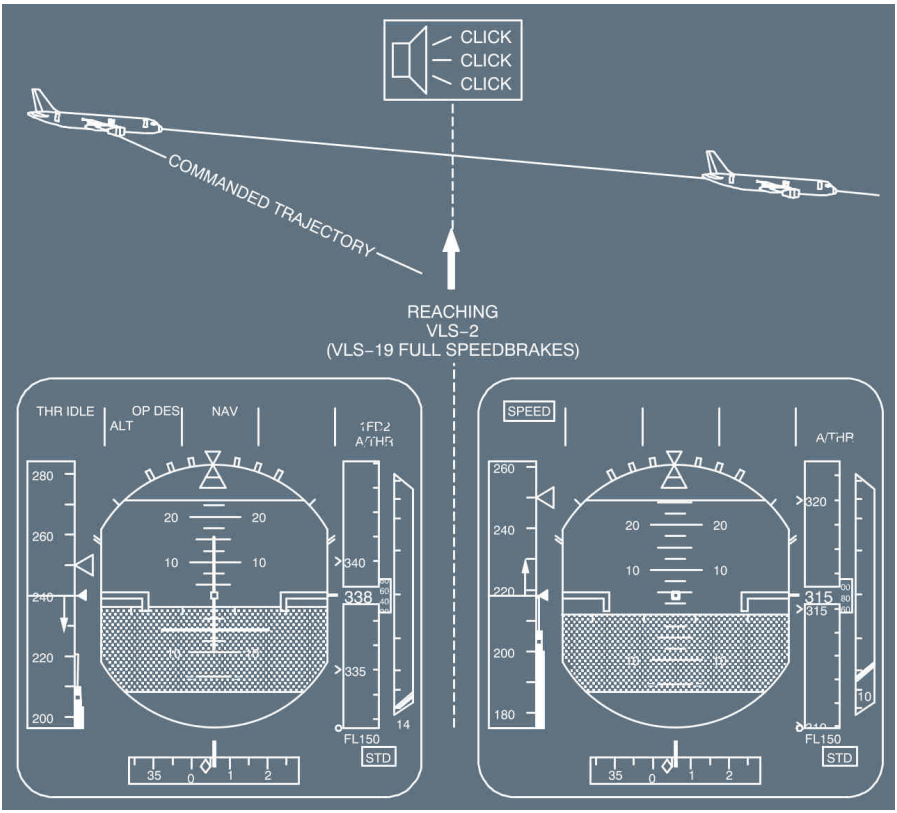


Ident.: DSC-22_30-75-A-00012057.0010001 / 01 OCT 12

5 **Applicable to: MSN 01767, 01957-09063**

AUTOMATIC SPEED MODE PROTECTION IN DESCENT

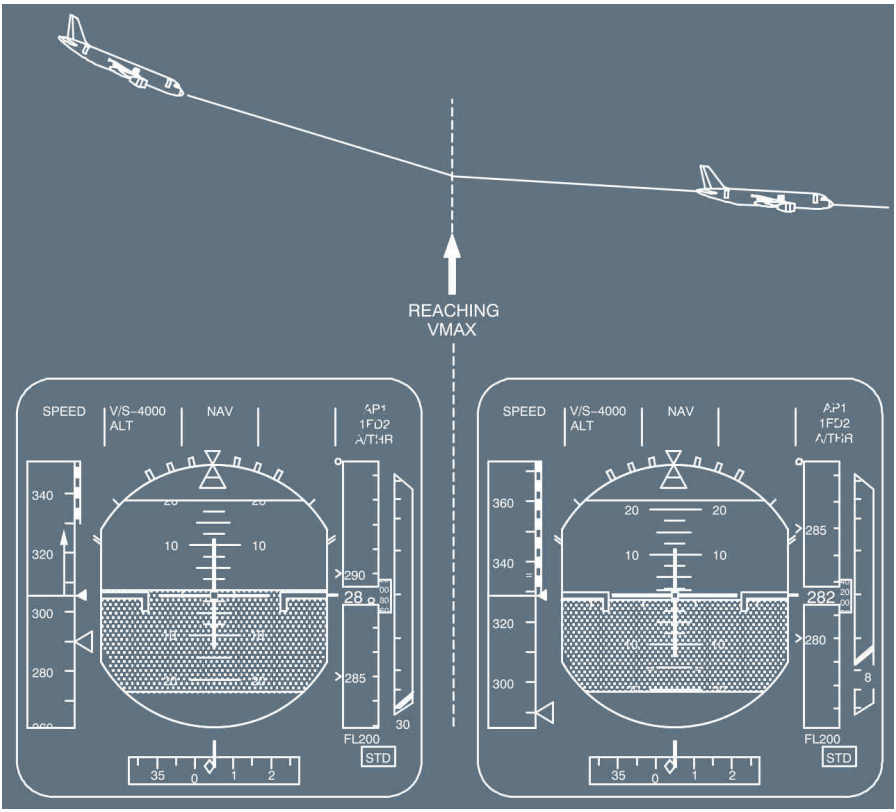
FDs are engaged in an OPEN mode in descent with the AP not engaged.
If the FDs are engaged in DES, or OP DES mode, or EXP DES and, if the flight crew does not follow the FD bars to maintain the commanded pitch, the aircraft decelerates (insufficient descent rate and idle thrust).
If the airspeed reaches VLS-2, both FDs disengage. (If speedbrakes are extended, the FDs disengage between VLS-2 and VLS-19, depending on the position of the speedbrakes).
The A/THR, if active, reverts to SPEED mode upon FDs disengagement, and increases thrust to recover the speed target.
A triple-click aural warning sounds.



Ident.: DSC-22_30-75-A-00012058.0005001 / 01 OCT 12
Applicable to: MSN 01920

AUTOMATIC SPEED PROTECTION IN V/S (OR FPA) MODE IN DESCENT

When descending with V/S mode engaged: If the selected V/S value is excessive (with regards to thrust and speed), the FMGS maintains the V/S target, but the airspeed increases. When reaching VMAX (VMO or VLE in clean, or VFE+4 kt), the AP temporarily abandons the V/S target, and automatically decreases the vertical speed to maintain VMAX.
The same applies if FPA mode is used with an excessive FPA target.



V/S mode remains engaged. The V/S target does not change, but is no longer followed.

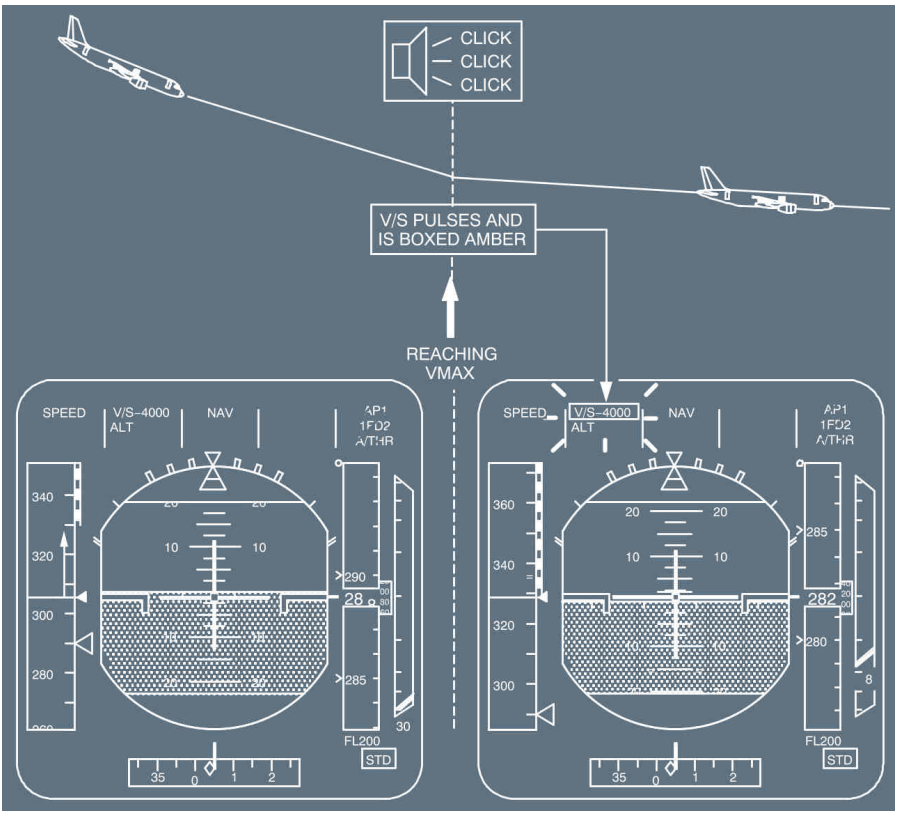
Note: *When flying with FD bars only (AP OFF), the FMGS adjusts the pitch bar so that VMAX is maintained.*

Ident.: DSC-22_30-75-A-00012058.0010001 / 01 OCT 12

6 **Applicable to: MSN 01767, 01957-09063**

AUTOMATIC SPEED PROTECTION IN V/S (OR FPA) MODE IN DESCENT

When descending with V/S mode engaged: If the selected V/S value is excessive (with regards to thrust and speed), the FMGS maintains the V/S target, but the airspeed increases. When reaching VMAX (VMO or VLE in clean, or VFE+4 kt), the AP temporarily abandons the V/S target, and automatically decreases the vertical speed to maintain VMAX.
The same applies if FPA mode is used with an excessive FPA target.



V/S mode remains engaged.
On the FMA, the V/S target is boxed with a flashing amber rectangle, and the V/S values pulses.
Besides, an aural triple click is generated.

Note: When flying with FD bars only (AP OFF), the FMGS adjusts the pitch bar so that VMAX is maintained. However, no triple click is generated and the V/S target display on the FMA remains unchanged.

Ident.: DSC-22_30-75-A-00013731.0001001 / 18 MAR 11

7 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

AUTOMATIC SPEED PROTECTION IN TCAS MODE

IN CLIMB

When climbing with TCAS mode engaged: If the TCAS RA vertical speed target is excessive (with regards to thrust and speed), the FMGS maintains the TCAS RA vertical speed target, but the airspeed decreases.
When reaching VLS (VLS - 5 kt, if the airspeed target is VLS. VLS - 2 kt, if the airspeed target is VLS and in landing configuration), the AP temporarily no longer follows the TCAS RA vertical speed target, and automatically decreases the current vertical speed to maintain VLS.
The TCAS mode remains engaged. No aural triple click is generated.

Note: When flying with FD bars only (AP OFF), the FMGS adjust the pitch bar so that the VLS is maintained.

IN DESCENT

When descending with TCAS mode engaged: If the TCAS RA vertical speed target is excessive (with regards to thrust and speed), the FMGS maintains the TCAS RA vertical speed target, but the airspeed increases.
When reaching VMAX, the AP temporarily no longer follows the TCAS RA vertical speed target, and automatically decreases the current vertical speed to maintain VMAX.
The TCAS mode remains engaged. No aural triple click is generated.

Note: When flying with FD bars only (AP OFF), the FMGS adjust the pitch bar so that the VMAX is maintained.

MODE REVERSIONS (SUMMARY)

Ident.: DSC-22_30-75-00012052.0010001 / 23 JUN 15

8 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

There are only 2 types of vertical mode reversions on aircraft equipped with global speed protection.

REVERSION DUE TO A CHANGE OF THE FCU SELECTED ALTITUDE

Vertical Mode Engaged	FCU Altitude Selection Change	Vertical Mode Switches to
CLB - OP CLB EXP CLB	Below aircraft altitude	V/S on current V/S
DES - OP DES EXP DES	Above aircraft altitude	
ALT* ACTIVE	Any change	

REVERSION DUE TO THE LOSS OF NAV MODE (MANUAL OR AUTOMATIC)

CONDITIONS	EVENT	CONSEQUENCE
CLB engaged	Loss of NAV mode	OP CLB engages
DES engaged		V/S engages

SPEED PROTECTION WHEN FD ORDERS ARE NOT FOLLOWED BY THE FLIGHT CREW (AP NOT ENGAGED)

CONDITIONS	EVENT	CONSEQUENCE
- FD engaged only (no AP), and - OP DES or EXP DES or DES engaged - A/THR active (IDLE thrust)	IAS = VLS-2 (if speedbrakes are extended between VLS-2 and VLS-19)	FD bars disappear. If A/THR active, automatic engagement of SPEED mode on the A/THR. Thrust increases to recover the speed target.
- FD engaged only (no AP), and - OP CLB or EXP CLB or CLB engaged - A/THR active (CLIMB thrust)	IAS = VMAX+4 VMAX = VFE or VLE or VMO/MMO	FD bars disappear. If A/THR active, automatic engagement of SPEED mode on the A/THR. Thrust decreases to recover the speed target.

SPEED PROTECTION DUE TO EXCESSIVE V/S

CONDITIONS	EVENT	CONSEQUENCE
Excessive V/S or FPA selected in climb	IAS = VLS (or VLS-5, if target = VLS)	The selected V/S (or FPA) target is temporarily abandoned to maintain VLS in climb or VMAX in descent.
- Excessive V/S or FPA selected in descent, and - Clean configuration	IAS = VMAX	
- Excessive V/S or FPA < 0 selected in descent, and - Configuration other than clean	IAS = VMAX	

SPEED PROTECTION DUE TO EXCESSIVE V/S TARGET (TCAS MODE ENGAGED)

CONDITIONS	EVENT	CONSEQUENCE
Excessive V/S target in climb	IAS reaching VLS = (or VLS - 5, or VLS - 2)	The TCAS RA V/S target is temporarily no longer followed to maintain VLS in climb or VMAX in descent.
Excessive V/S target in descent	IAS reaching VMAX	

ENHANCED MODE REVERSION ALERTNESS

The following sequences, or mode reversions, are highlighted by a triple click:

- V/S selection in ALT*
- SPD selection in SRS
- CLB (or EXP CLB ◁) to OP CLB, upon lateral flight crew action while climbing toward a constraint
- ALT* to V/S, upon ALT target change
- FD disengagement in OPEN modes
- Alerting FMA display when V/S-(FPA) target is not held
- CLB to OP CLB reversion, upon profile loss
- Automatic FD re-engagement in basic mode
- DES to V/S upon flight plan loss
- FINAL DES to V/S, upon NAV loss
- Reversion to V/S when selected ALT crosses the current altitude
- NAV to HDG, upon NAV loss
- TCAS mode reverts to V/S.
- AP/ FD reversion to basic modes due to the selection of a new approach, while approach mode is already armed or engaged.

MODE REVERSIONS (SUMMARY)

Ident.: DSC-22_30-75-00012052.0008001 / 23 JUN 15

9 **Applicable to: MSN 01767, 01957-04384, 04399-06868, 06914, 06952-07053, 07252-07396**

There are only 2 types of vertical mode reversions on aircraft equipped with global speed protection.

REVERSION DUE TO A CHANGE OF THE FCU SELECTED ALTITUDE

Vertical Mode Engaged	FCU Altitude Selection Change	Vertical Mode Switches to
CLB - OP CLB EXP CLB ◁	Below aircraft altitude	V/S on current V/S
DES - OP DES EXP DES ◁	Above aircraft altitude	
ALT* ACTIVE	Any change	

REVERSION DUE TO THE LOSS OF NAV MODE (MANUAL OR AUTOMATIC)

CONDITIONS	EVENT	CONSEQUENCE
CLB engaged	Loss of NAV mode	OP CLB engages
DES engaged		V/S engages

SPEED PROTECTION WHEN FD ORDERS ARE NOT FOLLOWED BY THE FLIGHT CREW (AP NOT ENGAGED)

CONDITIONS	EVENT	CONSEQUENCE
- FD engaged only (no AP), and - OP DES or EXP DES or DES engaged - A/THR active (IDLE thrust)	IAS = VLS-2 (if speedbrakes are extended between VLS-2 and VLS-19)	FD bars disappear. If A/THR active, automatic engagement of SPEED mode on the A/THR. Thrust increases to recover the speed target.
- FD engaged only (no AP), and - OP CLB or EXP CLB or CLB engaged - A/THR active (CLIMB thrust)	IAS = VMAX+4 VMAX = VFE or VLE or VMO/MMO	FD bars disappear. If A/THR active, automatic engagement of SPEED mode on the A/THR. Thrust decreases to recover the speed target.

SPEED PROTECTION DUE TO EXCESSIVE V/S

CONDITIONS	EVENT	CONSEQUENCE
Excessive V/S or FPA selected in climb	IAS = VLS (or VLS-5, if target = VLS)	The selected V/S (or FPA) target is temporarily abandoned to maintain VLS in climb or VMAX in descent.
- Excessive V/S or FPA selected in descent, and - Clean configuration	IAS = VMAX	
- Excessive V/S or FPA < 0 selected in descent, and - Configuration other than clean	IAS = VMAX	

ENHANCED MODE REVERSION ALERTNESS

The following sequences, or mode reversions, are highlighted by a triple click:

- V/S selection in ALT*
- SPD selection in SRS
- CLB (or EXP CLB) to OP CLB, upon lateral flight crew action while climbing toward a constraint
- ALT* to V/S, upon ALT target change
- FD disengagement in OPEN modes
- Alerting FMA display when V/S-(FPA) target is not held

- CLB to OP CLB reversion, upon profile loss
- Automatic FD re-engagement in basic mode
- DES to V/S upon flight plan loss
- FINAL DES to V/S, upon NAV loss
- Reversion to AP/FD basic modes due to the selection of a new approach, while approach mode is already armed or engaged
- NAV to HDG, upon NAV loss.

MODE REVERSIONS (SUMMARY)

Ident.: DSC-22_30-75-00012052.0005001 / 23 JUN 15
Applicable to: MSN 04393-04397

There are only 2 types of vertical mode reversions on aircraft equipped with global speed protection.

REVERSION DUE TO A CHANGE OF THE FCU SELECTED ALTITUDE

Vertical Mode Engaged	FCU Altitude Selection Change	Vertical Mode Switches to
CLB - OP CLB EXP CLB	Below aircraft altitude	V/S on current V/S
DES - OP DES EXP DES	Above aircraft altitude	
ALT* ACTIVE	Any change	

REVERSION DUE TO THE LOSS OF NAV MODE (MANUAL OR AUTOMATIC)

CONDITIONS	EVENT	CONSEQUENCE
CLB engaged	Loss of NAV mode	OP CLB engages
DES engaged		V/S engages

SPEED PROTECTION WHEN FD ORDERS ARE NOT FOLLOWED BY THE FLIGHT CREW (AP NOT ENGAGED)

CONDITIONS	EVENT	CONSEQUENCE
- FD engaged only (no AP), and - OP DES or EXP DES or DES engaged - A/THR active (IDLE thrust)	IAS = VLS-2 (if speedbrakes are extended between VLS-2 and VLS-19)	FD bars disappear. If A/THR active, automatic engagement of SPEED mode on the A/THR. Thrust increases to recover the speed target.
- FD engaged only (no AP), and - OP CLB or EXP CLB or CLB engaged - A/THR active (CLIMB thrust)	IAS = VMAX+4 VMAX = VFE or VLE or VMO/MMO	FD bars disappear. If A/THR active, automatic engagement of SPEED mode on the A/THR. Thrust decreases to recover the speed target.

SPEED PROTECTION DUE TO EXCESSIVE V/S

CONDITIONS	EVENT	CONSEQUENCE
Excessive V/S or FPA selected in climb	IAS = VLS (or VLS-5, if target = VLS)	The selected V/S (or FPA) target is temporarily abandoned to maintain VLS in climb or VMAX in descent.
- Excessive V/S or FPA selected in descent, and - Clean configuration	IAS = VMAX	
- Excessive V/S or FPA < 0 selected in descent, and - Configuration other than clean	IAS = VMAX	

ENHANCED MODE REVERSION ALERTNESS

The following sequences, or mode reversions, are highlighted by a triple click:

- V/S selection in ALT*
- SPD selection in SRS
- CLB (or EXP CLB) to OP CLB, upon lateral flight crew action while climbing toward a constraint
- ALT* to V/S, upon ALT target change
- FD disengagement in OPEN modes
- Alerting FMA display when V/S-(FPA) target is not held
- CLB to OP CLB reversion, upon profile loss
- Automatic FD re-engagement in basic mode
- DES to V/S upon flight plan loss
- FINAL DES to V/S, upon NAV loss
- Reversion to V/S when selected ALT crosses the current altitude
- NAV to HDG, upon NAV loss.

MODE REVERSIONS (SUMMARY)

Ident.: DSC-22_30-75-00012052.0002001 / 23 JUN 15
Applicable to: MSN 01920

There are only 2 types of vertical mode reversions on aircraft equipped with global speed protection.

REVERSION DUE TO A CHANGE OF THE FCU SELECTED ALTITUDE

Vertical Mode Engaged	FCU Altitude Selection Change	Vertical Mode Switches to
CLB - OP CLB EXP CLB	Below aircraft altitude	V/S on current V/S
DES - OP DES EXP DES	Above aircraft altitude	
ALT* ACTIVE	Any change	

REVERSION DUE TO THE LOSS OF NAV MODE (MANUAL OR AUTOMATIC)

CONDITIONS	EVENT	CONSEQUENCE
CLB engaged	Loss of NAV mode	OP CLB engages
DES engaged		V/S engages

SPEED PROTECTION WHEN FD ORDERS ARE NOT FOLLOWED BY THE FLIGHT CREW (AP NOT ENGAGED)

CONDITIONS	EVENT	CONSEQUENCE
- FD engaged only (no AP), and - OP DES or EXP DES or DES engaged - A/THR active (IDLE thrust)	IAS = VLS-2 (if speedbrakes are extended between VLS-2 and VLS-19)	FD bars disappear. If A/THR active, automatic engagement of SPEED mode on the A/THR. Thrust increases to recover the speed target.
- FD engaged only (no AP), and - OP CLB or EXP CLB or CLB engaged - A/THR active (CLIMB thrust)	IAS = VMAX+4 VMAX = VFE or VLE or VMO/MMO	FD bars disappear. If A/THR active, automatic engagement of SPEED mode on the A/THR. Thrust decreases to recover the speed target.

SPEED PROTECTION DUE TO EXCESSIVE V/S

CONDITIONS	EVENT	CONSEQUENCE
Excessive V/S or FPA selected in climb	IAS = VLS (or VLS-5, if target = VLS)	The selected V/S (or FPA) target is temporarily abandoned to maintain VLS in climb or VMAX in descent.
- Excessive V/S or FPA selected in descent, and - Clean configuration	IAS = VMAX	
- Excessive V/S or FPA < 0 selected in descent, and - Configuration other than clean	IAS = VMAX	

GENERAL

Ident.: DSC-22_30-80-10-00011875.0001001 / 17 AUG 10
Applicable to: MSN 01920, 02204, 02457, 02649, 02712, 02914, 03264, 03330

These modes are called “common” because they are related to both the lateral and the vertical axes.

The AP/FD common modes are:
- On takeoff: Runway/Runway track associated to SRS vertical modes
- In approach: ILS approach (LAND) or non-ILS approach (APP NAV FINAL)
- In go around: Go around track associated to SRS vertical modes.

These modes are engaged simultaneously on both axes.

<table>
<tr><th colspan="2">COMMON MODES</th><th>VERTICAL</th><th>LATERAL</th></tr>
<tr><td colspan="2">TAKEOFF</td><td>SRS</td><td>RWY
RWY TRK</td></tr>
<tr><td rowspan="3">APPROACH
MODES</td><td rowspan="2">ILS
APPROACH</td><td>G/S*
G/S</td><td>LOC*
LOC</td></tr>
<tr><td colspan="2">LAND, FLARE,
ROLL OUT</td></tr>
<tr><td>NON-ILS
APPROACH</td><td>FINAL</td><td>APP NAV</td></tr>
<tr><td colspan="2">GO AROUND
(GA)</td><td>SRS</td><td>GA TRK</td></tr>
</table>

GENERAL

Ident.: DSC-22_30-80-10-00011875.0003001 / 16 MAR 11
[1] **Applicable to: MSN 01767, 01957-02195, 02275-02443, 02482-02626, 02670, 02737-02908, 03071-03138, 03308, 03357-09063**

These modes are called “common” because they are related to both the lateral and the vertical axes.

The AP/FD common modes are:
- On takeoff: Runway/Runway track associated to SRS vertical modes
- In approach: ILS approach (LAND) or non-ILS approach (APP NAV FINAL)
- In go around: NAV or Go around track associated to SRS vertical modes.

These modes are engaged simultaneously on both axes.

COMMON MODES		VERTICAL	LATERAL
TAKEOFF		SRS	RWY RWY TRK
APPROACH MODES	ILS APPROACH	G/S* G/S	LOC* LOC
		LAND, FLARE, ROLL OUT	
	NON-ILS APPROACH	FINAL	APP NAV
GO AROUND (GA)		SRS	GA TRK NAV

GENERAL

Ident.: DSC-22_30-80-20-00012253.0001001 / 17 AUG 10
Applicable to: ALL

Takeoff mode combines the SRS (Speed Reference System) vertical mode with the RWY lateral mode. Both are simultaneously engaged, but may be disengaged separately.

Takeoff mode is available:
- During the takeoff run and initial climb for FD bars guidance
- 5 s after lift-off for AP use.

SRS (SPEED REFERENCE SYSTEM)

Ident.: DSC-22_30-80-20-A-00012260.0001001 / 17 AUG 10
Applicable to: ALL

GENERAL

The SRS mode controls pitch to steer the aircraft along a path in the vertical plan at a speed defined by the SRS guidance law.

Ident.: DSC-22_30-80-20-A-00012256.0001001 / 27 OCT 17
Applicable to: ALL

ENGAGEMENT CONDITIONS

The SRS mode engages automatically when the thrust levers are set to the TOGA or FLX/MCT detent (when a Flex takeoff temperature or Derated takeoff ◁ has been selected), providing:
- V2 has been inserted in the MCDU PERF TAKEOFF page
- The slats are extended
- The aircraft has been on ground for at least 30 s.

Ident.: DSC-22_30-80-20-A-00012258.0001001 / 23 JUN 15
Applicable to: MSN 01920

DISENGAGEMENT CONDITIONS

The SRS mode disengages:
- Automatically, at the acceleration altitude (ACC ALT), or if ALT* or ALT CST* mode engages (above 400 ft RA)
- If the flight crew engages another vertical mode.

Note: *In Engine Out conditions, the SRS mode does not automatically disengage at EO ACC ALT. Refer to DSC-22_20-60-40 General.*

Ident.: DSC-22_30-80-20-A-00012258.0002001 / 23 JUN 15

1 **Applicable to: MSN 01767, 01957-06868, 06914, 06952-07053, 07252-07396**

DISENGAGEMENT CONDITIONS

The SRS mode disengages:
- Automatically, at the acceleration altitude (ACC ALT), or if ALT* or ALT CST* mode engages (above 400 ft RA)
- If the flight crew engages another vertical mode
- If the flight crew selects a speed while in SRS mode: SRS reverts to OP CLB mode, and a triple-click aural warning is heard.

Note: *In Engine Out conditions, the SRS mode does not automatically disengage at EO ACC ALT.* *Refer to DSC-22_20-60-40 General.*

Ident.: DSC-22_30-80-20-A-00012258.0003001 / 23 JUN 15

2 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

DISENGAGEMENT CONDITIONS

The SRS mode disengages:
- Automatically, at the acceleration altitude (ACC ALT), or if ALT* or ALT CST* mode engages (above 400 ft RA)
- If the flight crew engages another vertical mode
- If the flight crew selects a speed while in SRS mode: SRS reverts to OP CLB mode, and a triple-click aural warning is heard
- If the TCAS mode engages.

Note: *In Engine Out conditions, the SRS mode does not automatically disengage at EO ACC ALT.* *Refer to DSC-22_20-60-40 General.*

Ident.: DSC-22_30-80-20-A-00012259.0011001 / 25 JAN 18

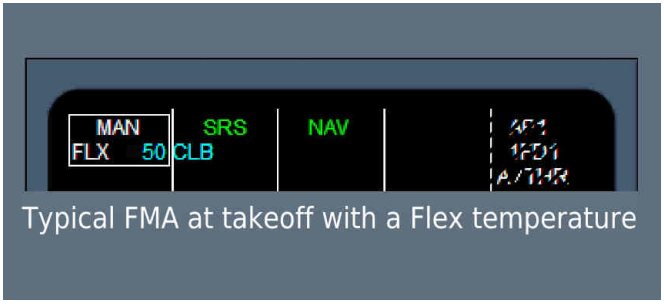
Applicable to: ALL

GUIDANCE

In SRS mode, the aircraft maintains a speed target equal to V2+10 kt in normal engine configuration. When the FMGS detects an engine failure, the speed target becomes the highest of V2 or current speed, limited by V2+15 kt.

The SRS guidance law also includes:
- Attitude protection to reduce aircraft nose-up effect during takeoff (18 ° or 22.5 ° maximum in case of windshear)
- Flight path angle protection that ensures a minimum vertical speed of 120 ft/min
- A speed protection limiting the target speed to V2+15 kt.

Note: *If during takeoff the flight crew inadvertently sets an altitude on the FCU below the current altitude, the aircraft will remain in SRS mode unless the flight crew engages V/S mode.*



Typical FMA at takeoff with a Flex temperature

RUNWAY (RWY)

Applicable to: ALL

Ident.: DSC-22_30-80-20-B-00012255.0001001 / 17 AUG 10

GENERAL

The RUNWAY mode has two submodes:

- RWY mode, which gives lateral guidance orders during takeoff roll and initial climb out (up to 30 ft RA) if a LOC signal is available
- RWY TRK mode, which gives lateral guidance on the track the aircraft was flying at mode engagement (at 30 ft RA).

Ident.: DSC-22_30-80-20-B-00012323.0001001 / 17 AUG 10

ENGAGEMENT CONDITIONS

The RWY engagement conditions are:

- The conditions required for SRS mode engagement:
  - V2 is inserted in the MCDU PERF TAKEOFF page
  - Slats are extended
  - The aircraft has been on ground for at least 30 s.
- The aircraft is receiving a LOC signal and LOC deviation is less than 1/2 dot
- The aircraft heading is within 20 ° of the ILS related course
- The ILS course is identical to the runway heading of the origin airport as selected for the active flight plan, if any.

The RWY TRK mode engages automatically at 30 ft (RA) if NAV mode does not engage (NAV not armed prior to takeoff).

Ident.: DSC-22_30-80-20-B-00012324.0001001 / 17 AUG 10

DISENGAGEMENT CONDITIONS

RWY mode disengages if:

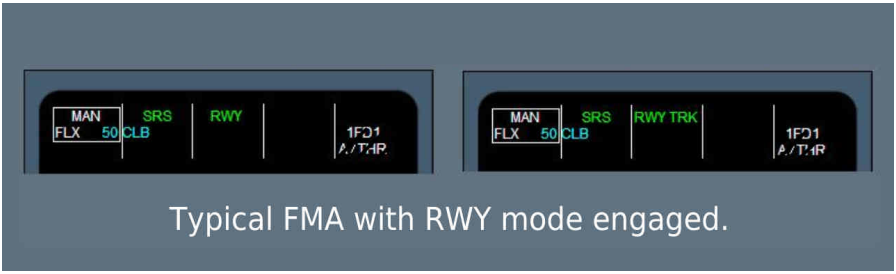
- The LOC signal is lost below 30 ft RA or the aircraft heading and the runway heading differ by more than 20 °.
- Another lateral mode is engaged.

Note: If the takeoff runway has no ILS, RWY mode is not available and the PFD does not display the yaw bar nor "RWY" on FMA.

Ident.: DSC-22_30-80-20-B-00012325.0002001 / 16 MAR 11

GUIDANCE

The RWY mode uses the LOC signal to guide the aircraft on the runway centerline while the aircraft is on the ground. The PFD displays the FD yaw bar and the FMA displays "RWY".
The RWY TRK mode guides the aircraft on the track the aircraft was flying at mode engagement. The FD displays the conventional guidance bar and the FMA displays “RWY TRK”.



Typical FMA with RWY mode engaged.

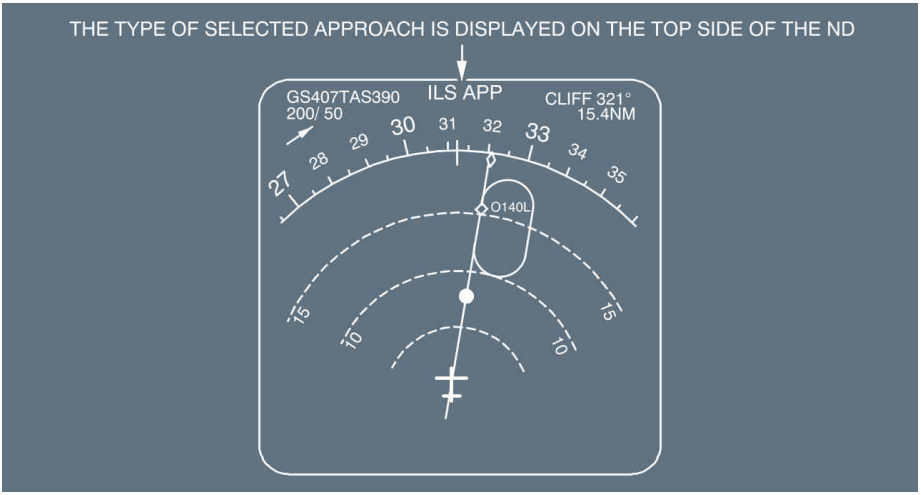
General

GENERAL

Ident.: DSC-22_30-80-30-05-00012378.0001001 / 01 OCT 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

The aircraft can fly different types of approaches:
- Precision approaches: ILS, MLS
- Non-precision approaches: VOR/DME, VOR, NDB (if ADF), RNAV
- Non-precision approaches using a Localizer only: LOC.

The flight crew uses an ARRIVAL lateral revision to insert these approaches into the flight plan:
- For precision approaches, the flight crew uses the APPR pb on the FCU to arm or engage the LOC and G/S guidance modes
- For non-precision approaches, the flight crew uses the APPR pb on the FCU to arm or engage the APP NAV and FINAL guidance modes, except for LOC approaches, where the flight crew only uses the LOC pb to arm or engage the LOC mode.



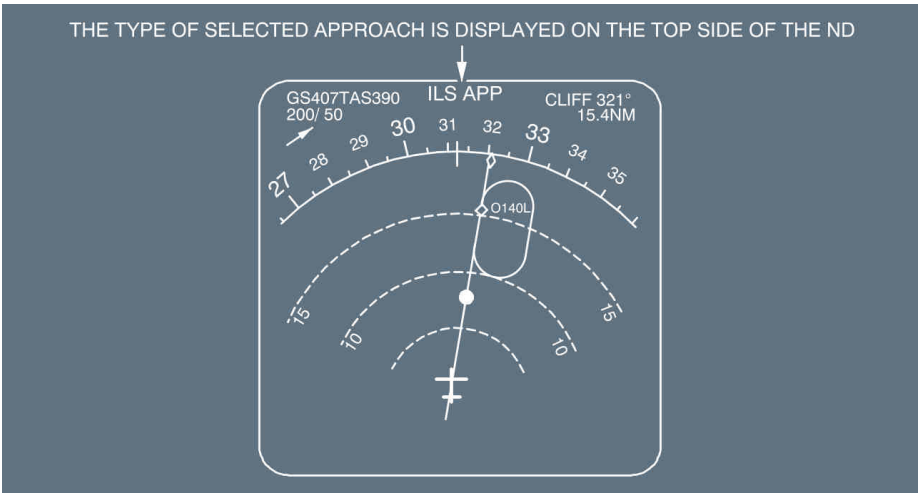
GENERAL

Ident.: DSC-22_30-80-30-05-00012378.0008001 / 01 OCT 12

1 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

The aircraft can fly different types of approaches:
- Precision approaches: ILS, MLS
- Non-precision approaches: VOR/DME, VOR, NDB (if ADF), RNAV
- Non-precision approaches using a Localizer only: LOC.

The flight crew uses an ARRIVAL lateral revision to insert these approaches into the flight plan:
- For precision approaches, the flight crew uses the APPR pb on the FCU to arm or engage the LOC and G/S guidance modes
- For non-precision approaches, the flight crew uses the APPR pb on the FCU to arm or engage the APP NAV and FINAL guidance modes, except for LOC approaches, where the flight crew only uses the LOC pb to arm or engage the LOC mode.



Precision Approach

PRECISION APPROACH MODES

Ident.: DSC-22_30-80-30-10-A-00012379.0003001 / 01 OCT 12
Applicable to: ALL

GENERAL

The ILS approach mode includes the following modes:

VERTICAL MODE	LATERAL MODE
G/S* (capture) G/S (track)	LOC* (capture) LOC (track)
COMMON MODES: LAND - FLARE - ROLL OUT	

The sequencing of these modes is automatic once the flight crew has pushed the APPR pb and the conditions for engagement are met.

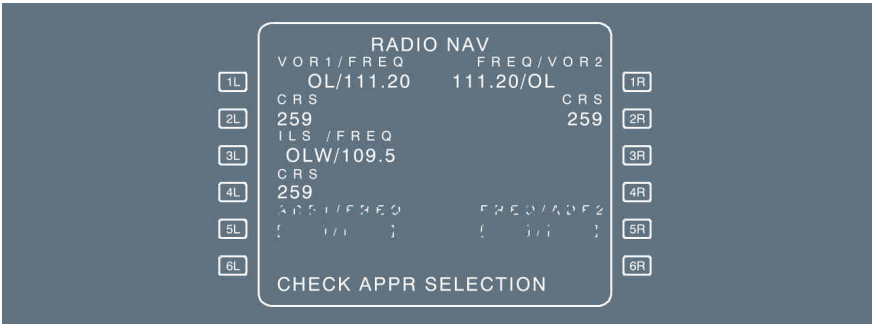
SELECTION

The ILS approach is selected when the APPR pb of the FCU is pressed and:

- An ILS approach or a runway only or no approach is inserted in the Flight Management flight plan (ARRIVAL page), and an ILS frequency is set in on the MCDU, or
- Both radio management panels are set to NAV and each one has the ILS frequency and course set in.

CHECK APPROACH SELECTION MESSAGE

If the flight crew inserts a non-ILS approach into the flight plan, and then uses the RAD NAV page to tune an ILS manually, the MCDU displays “CHECK APPR SELECTION”. This message is a reminder that the available APPR guidance modes are APP NAV and FINAL.



Ident.: DSC-22_30-80-30-10-A-00012380.0157001 / 09 NOV 17
Applicable to: MSN 02108, 02804

APPR MODE

ARMING CONDITIONS OF LOC AND G/S MODES

The flight crew arms the ILS/MLS APPR mode (LOC and G/S in blue on the FMA) by pushing the APPR pb on the FCU, provided that:

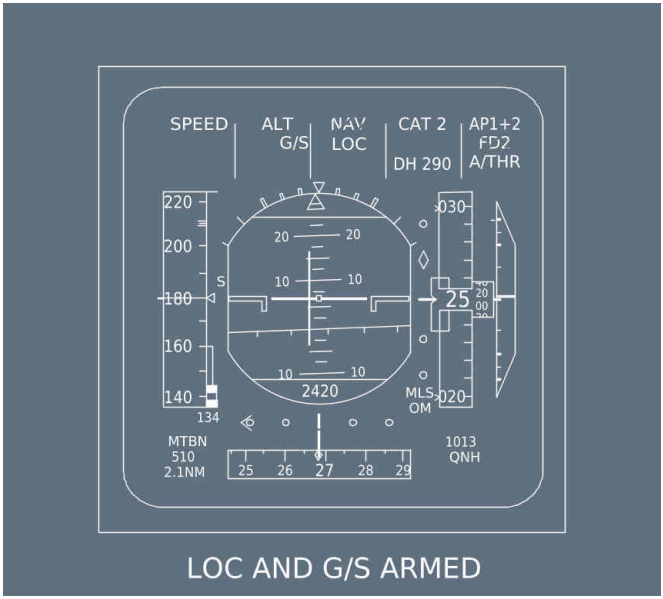
- An ILS/MLS approach is selected
- The aircraft is above 400 ft RA
- The ILS/MLS and RA are available
- Go-around or takeoff or final mode is not engaged
- ILS frequency/MLS channel and course are identically set on both receivers.

LOC and G/S blue are displayed on the FMA. Both modes will automatically engage when conditions are met.
Second autopilot may be engaged.
Current landing capability is displayed on the FMA.

DISARMING CONDITIONS OF LOC AND G/S MODES

ILS/MLS APPR mode disarms if the aircraft is above 400 ft, and:

- When the flight crew presses the APPR pb, or when the flight crew selects another approach, both the LOC and the G/S modes disarm
- When the flight crew presses the LOC pb, only the G/S mode disarms.
  The V/S (FPA) mode engages, if the G/S mode was engaged
- When the flight crew engages the go-around mode.



ENGAGEMENT CONDITIONS OF LOC AND G/S MODES

When ILS/MLS capture conditions are fulfilled:

- LOC* mode engages, and
- G/S* mode engages. No radio altimeter validity is required with this FMGC standard for G/S engagement. The FMA displays “LOC*”, or “G/S*”, or both, in green.

Nevertheless, the G/S* mode cannot engage, if:

- LOC* mode is not engaged, or
- The aircraft is above the glide path and its trajectory does not cross the ILS/MLS G/S beam.

When the aircraft is established on the LOC axis, the LOC mode engages.
When the aircraft is established on the G/S axis, the G/S mode engages.
The FMA displays “LOC” and “G/S” in green. The AP/FD guides the aircraft along the G/S down to 30 ft, and along the LOC during the flare and rollout.

Note: G/S or G/S modes may be engaged above the operating range of the radio altimeters (8 000 ft for TRT, and 5 000 ft for Collins and Honeywell radio altimeters). The landing capability displayed on the FMA will reflect the lack of RA validity (CAT 1) until the radio altimeters become active.*
But, if the radio altimeters fail, or if the FMGS receives no radio altimeter data, LOC, G/S, and AP/FDs will disengage and FDs will re-engage on basic modes.

DISENGAGEMENT CONDITIONS OF LOC AND G/S MODES

If the aircraft is above 400 ft, the ILS/MLS APPR mode disengages when the flight crew:
- Presses the APPR pb, HDG V/S or TRK FPA engages
- Presses the LOC pb, the LOC mode remains engaged. The system reverts to V/S (FPA), if G/S was engaged
- Pulls out the HDG/TRK knob, HDG V/S or TRK FPA engages
- Engages the go-around mode
- Selects another approach. HDG V/S or TRK FPA modes engage.
- When the LOC or G/S signal has been lost for 7 s or more above 200 ft RA. AP/FDs disengage and FDs reengage in basic modes (HDG V/S or TRK FPA).

DISENGAGEMENT CONDITIONS OF G/S ONLY

- The flight crew pulls out the V/S or FPA knob. LOC mode remains engaged, but G/S mode disengages and V/S or FPA engages.
- The flight crew pushes or pulls the ALT knob. LOC mode remains engaged, and the mode selected by the flight crew engages, as a function of the FCU selected altitude.

LOC CONVERGENCE FUNCTION

The aim of the LOC Convergence function is to help the aircraft intercept and capture the LOC axis.

The aircraft is guided with a converging track of 20 ° from the LOC axis, when all the following conditions are met:
- NAV mode is engaged, and LOC mode is armed
- The aircraft is within 20 NM of the destination runway
- The difference between the aircraft track and the QFU is less than 20 °.

ENHANCED LOC CAPTURE FUNCTION

The Enhanced LOC Capture function enhances the performance of the LOC capture and helps the aircraft to capture the LOC beam without overshoot.

Pre-Capture of the LOC Beam

The pre-capture of the LOC beam aims to begin the LOC beam capture sooner.

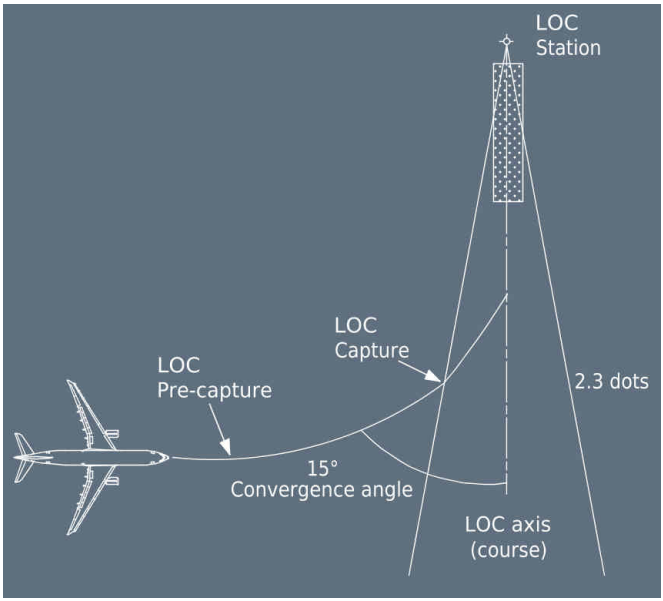
LOC* mode may engage when LOC mode is armed and when the aircraft reaches the LOC pre-capture zone. The LOC pre-capture zone is a geographical zone around LOC beam where it is possible to guide the aircraft toward the LOC beam, with the help of FMS position data. To ensure the capture of the LOC beam, the aircraft is guided with a 15 ° convergence angle with respect to runway QFU.

The LOC* mode engagement in the pre-capture zone is possible, when :
- The LOC deviation is more than 2.3 dots
- The FMS is in GPS PRIMARY
- The difference between the track and the QFU is between 25 ° and 115 °
- The guidance roll order is such that LOC* will capture the LOC beam without overshoot.

When the LOC deviation becomes lower than 2.3 dots, LOC* mode no longer uses the FMS position data for guidance, but the actual LOC beam deviation to complete the capture of the axis.

Capture of the LOC Beam

Current conditions of LOC beam capture in the capture zone remain the same. This means that if approach conditions of the aircraft (interception angle, speed) do not need activation of the capture assistance, the LOC beam capture will occur as usual based on LOC deviation, aircraft track and guidance roll order conditions.



Note: On the PFD and on the ND, the flight crew will observe movement of the LOC deviation toward the center of the scale, only when the LOC deviation is less than 2 dots. This occurs when the aircraft is in the capture zone.

When the ILS frequency/MLS channel or the ILS/MLS ident entered on the RAD NAV page differs from the ILS/MLS of the destination runway entered in the Flight Plan :
- The aircraft loses the LOC capture assistance function
- The "RWY/LS MISMATCH" message is displayed on the scratchpad
- The flight crew should select HDG mode to perform the LOC capture.

Note: There is no glideslope capture assistance. The flight crew shall ensure that the aircraft flight path intercepts the G/S beam.

Ident.: DSC-22_30-80-30-10-A-00012380.0153001 / 09 NOV 17

1 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

APPR MODE

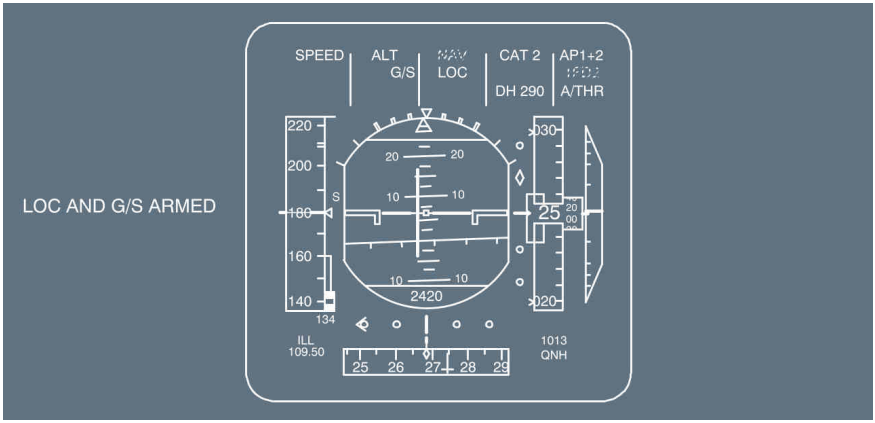
ARMING CONDITIONS OF LOC AND G/S MODES

The flight crew arms the ILS/GLS ◁ /MLS ◁ /APPR mode (LOC and G/S in blue on the FMA) by pushing the APPR pb on the FCU, provided that:
- An ILS/GLS ◁ /MLS ◁ approach is selected
- The aircraft is above 400 ft RA
- The ILS and RA are available
- Go-around or takeoff or final mode is not engaged
- ILS/GLS ◁ /MLS ◁ frequency/channel and course are identically set on both receivers.

LOC and G/S blue are displayed on the FMA. Both modes will automatically engage when conditions are met.
Second autopilot may be engaged.
Current landing capability is displayed on the FMA.

DISARMING CONDITIONS OF LOC AND G/S MODES

ILS APPR mode disarms if the aircraft is above 400 ft, and:
- When the flight crew presses the APPR pb, or when the flight crew selects another approach, both the LOC and the G/S modes disarm
- When the flight crew presses the LOC pb, only the G/S mode disarms.
  The V/S (FPA) mode engages, if the G/S mode was engaged
- When the flight crew engages the go-around mode.



ENGAGEMENT CONDITIONS OF LOC AND G/S MODES

When ILS/GLS ◁ /MLS ◁ capture conditions are fulfilled:
- LOC* mode engages, and
- G/S* mode engages. No radio altimeter validity is required with this FMGC standard for G/S engagement. The FMA displays “LOC*”, or “G/S*”, or both, in green.

Nevertheless, the G/S* mode cannot engage, if:
- LOC* mode is not engaged, or
- The aircraft is above the glide path and its trajectory does not cross the ILS G/S beam.

When the aircraft is established on the LOC axis, the LOC mode engages.
When the aircraft is established on the G/S axis, the G/S mode engages.
The FMA displays “LOC” and “G/S” in green. The AP/FD guides the aircraft along the G/S down to 30 ft, and along the LOC during the flare and rollout.

Note: *G/S* or G/S modes may be engaged above the operating range of the radio altimeters (8 000 ft for TRT, and 5 000 ft for Collins and Honeywell radio altimeters). The landing capability displayed on the FMA will reflect the lack of RA validity (CAT 1) until the radio altimeters become active.*
But, if the radio altimeters fail, or if the FMGS receives no radio altimeter data, LOC, G/S, and AP/FDs will disengage and FDs will re-engage on basic modes.

DISENGAGEMENT CONDITIONS OF LOC AND G/S MODES

If the aircraft is above 400 ft, the ILS APPR mode disengages when the flight crew:
- Presses the APPR pb, HDG V/S or TRK FPA engages
- Presses the LOC pb, the LOC mode remains engaged. The system reverts to V/S (FPA), if G/S was engaged

- Pulls out the HDG/TRK knob, HDG V/S or TRK FPA engages
- Engages the go-around mode
- When the LOC or G/S signal has been lost for 7 s or more above 200 ft RA. AP/FDs disengage and FDs reengage in basic modes (HDG V/S or TRK FPA).
- Selects another approach. HDG V/S or TRK FPA modes engage.

DISENGAGEMENT CONDITIONS OF G/S ONLY

- The flight crew pulls out the V/S or FPA knob. LOC mode remains engaged, but G/S mode disengages and V/S or FPA engages.
- The flight crew pushes or pulls the ALT knob. LOC mode remains engaged, and the mode selected by the flight crew engages, as a function of the FCU selected altitude.

LOC CONVERGENCE FUNCTION

The aim of the LOC Convergence function is to help the aircraft intercept and capture the LOC axis.

The aircraft is guided with a converging track of 20 ° from the LOC axis, when all the following conditions are met:
- NAV mode is engaged, and LOC mode is armed
- The aircraft is within 20 NM of the destination runway
- The difference between the aircraft track and the QFU is less than 20 °.

ENHANCED LOC CAPTURE FUNCTION

The Enhanced LOC Capture function enhances the performance of the LOC capture and helps the aircraft to capture the LOC beam without overshoot.

Pre-Capture of the LOC Beam

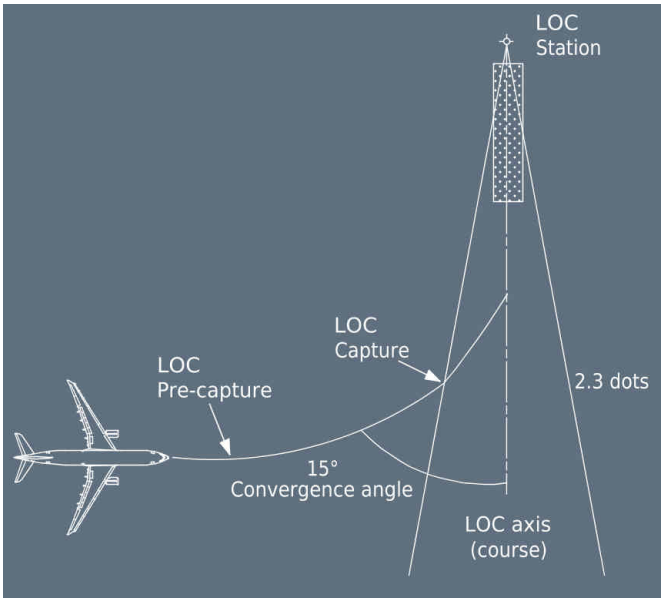
The pre-capture of the LOC beam aims to begin the LOC beam capture sooner.
LOC* mode may engage when LOC mode is armed and when the aircraft reaches the LOC pre-capture zone. The LOC pre-capture zone is a geographical zone around LOC beam where it is possible to guide the aircraft toward the LOC beam, with the help of FMS position data. To ensure the capture of the LOC beam, the aircraft is guided with a 15 ° convergence angle with respect to runway QFU.

The LOC* mode engagement in the pre-capture zone is possible, when :
- The LOC deviation is more than 2.3 dots
- The FMS is in GPS PRIMARY
- The difference between the track and the QFU is between 25 ° and 115 °
- The guidance roll order is such that LOC* will capture the LOC beam without overshoot.

When the LOC deviation becomes lower than 2.3 dots, LOC* mode no longer uses the FMS position data for guidance, but the actual LOC beam deviation to complete the capture of the axis.

Capture of the LOC Beam

Current conditions of LOC beam capture in the capture zone remain the same. This means that if approach conditions of the aircraft (interception angle, speed) do not need activation of the capture assistance, the LOC beam capture will occur as usual based on LOC deviation, aircraft track and guidance roll order conditions.



Note: *On the PFD and on the ND, the flight crew will observe movement of the LOC deviation toward the center of the scale, only when the LOC deviation is less than 2 dots. This occurs when the aircraft is in the capture zone.*

When the ILS frequency or the ILS ident entered on the RAD NAV page differs from the ILS frequency or the ILS ident of the destination runway entered in the Flight Plan :

- The aircraft loses the LOC capture assistance function
- The “RWY/LS MISMATCH” message is displayed on the scratchpad
- The flight crew should select HDG mode to perform the LOC capture.

Note: *There is no glideslope capture assistance. The flight crew shall ensure that the aircraft flight path intercepts the G/S beam.*

Ident.: DSC-22_30-80-30-10-A-00012380.0154001 / 09 NOV 17

2 **Applicable to: MSN 01767-02097, 02121-02737, 02908-04384, 04399-06868, 06914, 06952-07053, 07252-07396**

APPR MODE

ARMING CONDITIONS OF LOC AND G/S MODES

The flight crew arms the ILS/GLS ◁ /MLS ◁ /APPR mode (LOC and G/S in blue on the FMA) by pushing the APPR pb on the FCU, provided that:

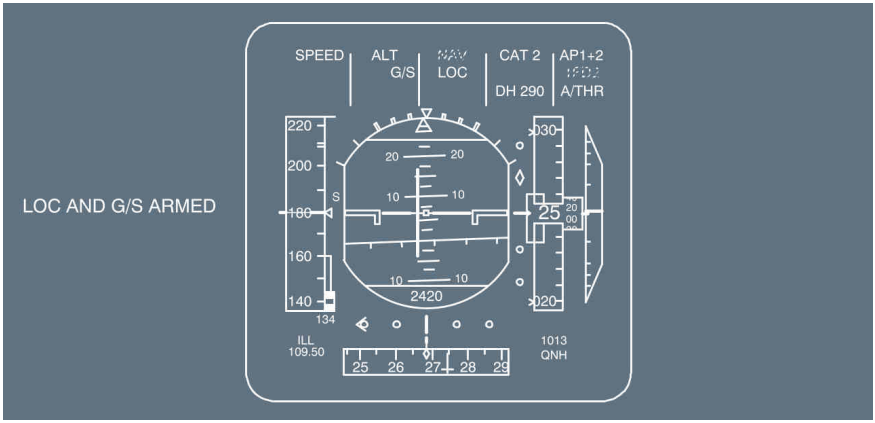
- An ILS/GLS ◁ /MLS ◁ approach is selected
- The aircraft is above 400 ft RA
- The ILS/GLS ◁ and RA are available
- Go-around or takeoff or final mode is not engaged
- ILS/GLS ◁ /MLS ◁ frequency/channel and course are identically set on both receivers.

LOC and G/S blue are displayed on the FMA. Both modes will automatically engage when conditions are met.
Second autopilot may be engaged.
Current landing capability is displayed on the FMA.

DISARMING CONDITIONS OF LOC AND G/S MODES

ILS/GLS ◁ /MLS ◁ APPR mode disarms if the aircraft is above 400 ft, and:

- When the flight crew presses the APPR pb, or when the flight crew selects another approach, both the LOC and the G/S modes disarm.
  The HDG/TRK mode engages if the LOC mode was engaged, and the V/S (FPA) mode engages if the G/S mode was engaged
- When the flight crew presses the LOC pb, only the G/S mode disarms.
  The V/S (FPA) mode engages, if the G/S mode was engaged
- When the flight crew engages the go-around mode.



ENGAGEMENT CONDITIONS OF LOC AND G/S MODES

When ILS/GLS ◁ /MLS ◁ capture conditions are fulfilled:
- LOC* mode engages, and
- G/S* mode engages. No radio altimeter validity is required with this FMGC standard for G/S engagement. The FMA displays “LOC*”, or “G/S*”, or both, in green.

Nevertheless, the G/S* mode cannot engage, if:
- LOC* mode is not engaged, or
- The aircraft is above the glide path and its trajectory does not cross the ILS G/S beam.

When the aircraft is established on the LOC axis, the LOC mode engages.
When the aircraft is established on the G/S axis, the G/S mode engages.
The FMA displays “LOC” and “G/S” in green. The AP/FD guides the aircraft along the G/S down to 30 ft, and along the LOC during the flare and rollout.

Note: *G/S* or G/S modes may be engaged above the operating range of the radio altimeters (8 000 ft for TRT, and 5 000 ft for Collins and Honeywell radio altimeters). The landing capability displayed on the FMA will reflect the lack of RA validity (CAT 1) until the radio altimeters become active.*
But, if the radio altimeters fail, or if the FMGS receives no radio altimeter data, LOC, G/S, and AP/FDs will disengage and FDs will re-engage on basic modes.

DISENGAGEMENT CONDITIONS OF LOC AND G/S MODES

If the aircraft is above 400 ft, the ILS/GLS ◁ /MLS ◁ APPR mode disengages when the flight crew:

- Presses the APPR pb, HDG V/S or TRK FPA engages
- Presses the LOC pb, the LOC mode remains engaged. The system reverts to V/S (FPA), if G/S was engaged
- Pulls out the HDG/TRK knob, HDG V/S or TRK FPA engages
- Engages the go-around mode
- Selects another approach. HDG V/S or TRK FPA modes engage.
- When the LOC or G/S signal has been lost for 7 s or more above 200 ft RA. AP/FDs disengage and FDs reengage in basic modes (HDG V/S or TRK FPA).

DISENGAGEMENT CONDITIONS OF G/S ONLY

- The flight crew pulls out the V/S or FPA knob. LOC mode remains engaged, but G/S mode disengages and V/S or FPA engages.
- The flight crew pushes or pulls the ALT knob. LOC mode remains engaged, and the mode selected by the flight crew engages, as a function of the FCU selected altitude.

LOC CONVERGENCE FUNCTION

The aim of the LOC Convergence function is to help the aircraft intercept and capture the LOC axis.

The aircraft is guided with a converging track of 20 ° from the LOC axis, when all the following conditions are met:

- NAV mode is engaged, and LOC mode is armed
- The aircraft is within 20 NM of the destination runway
- The difference between the aircraft track and the QFU is less than 20 °.

ENHANCED LOC CAPTURE FUNCTION

The Enhanced LOC Capture function enhances the performance of the LOC capture and helps the aircraft to capture the LOC beam without overshoot.

Pre-Capture of the LOC Beam

The pre-capture of the LOC beam aims to begin the LOC beam capture sooner.
LOC* mode may engage when LOC mode is armed and when the aircraft reaches the LOC pre-capture zone. The LOC pre-capture zone is a geographical zone around LOC beam where it is possible to guide the aircraft toward the LOC beam, with the help of FMS position data. To ensure the capture of the LOC beam, the aircraft is guided with a 15 ° convergence angle with respect to runway QFU.

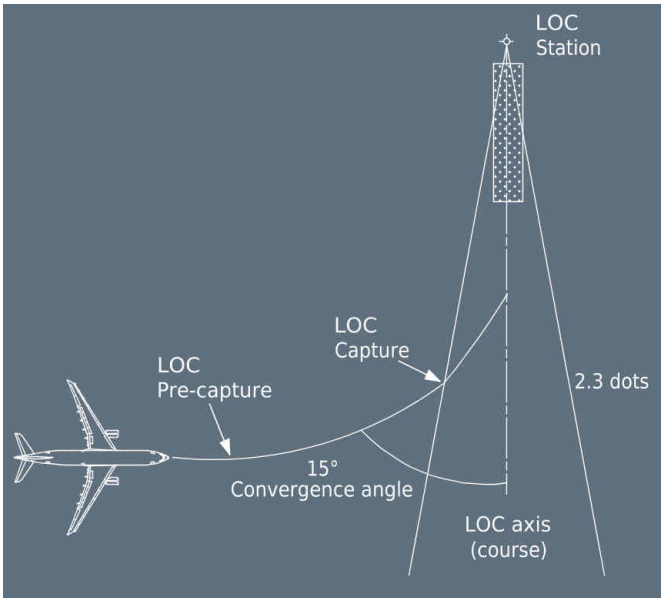
The LOC* mode engagement in the pre-capture zone is possible, when :

- The LOC deviation is more than 2.3 dots
- The FMS is in GPS PRIMARY
- The difference between the track and the QFU is between 25 ° and 115 °
- The guidance roll order is such that LOC* will capture the LOC beam without overshoot.

When the LOC deviation becomes lower than 2.3 dots, LOC* mode no longer uses the FMS position data for guidance, but the actual LOC beam deviation to complete the capture of the axis.

Capture of the LOC Beam

Current conditions of LOC beam capture in the capture zone remain the same. This means that if approach conditions of the aircraft (interception angle, speed) do not need activation of the capture assistance, the LOC beam capture will occur as usual based on LOC deviation, aircraft track and guidance roll order conditions.



Note: *On the PFD and on the ND, the flight crew will observe movement of the LOC deviation toward the center of the scale, only when the LOC deviation is less than 2 dots. This occurs when the aircraft is in the capture zone.*

When the ILS/GLS ◁ /MLS ◁ frequency/channel or the ILS/GLS/MLS ident entered on the RAD NAV page differs from the ILS/GLS/MLS of the destination runway entered in the Flight Plan :

- The aircraft loses the LOC capture assistance function
- The "RWY/LS MISMATCH" message is displayed on the scratchpad
- The flight crew should select HDG mode to perform the LOC capture.

Note: *There is no glideslope capture assistance. The flight crew shall ensure that the aircraft flight path intercepts the G/S beam.*

Ident.: DSC-22_30-80-30-10-A-00012380.0067001 / 09 NOV 17
Applicable to: MSN 04393-04397

APPR MODE

ARMING CONDITIONS OF LOC AND G/S MODES

The flight crew arms the ILS/GLS ◁ /MLS ◁ /APPR mode (LOC and G/S in blue on the FMA) by pushing the APPR pb on the FCU, provided that:

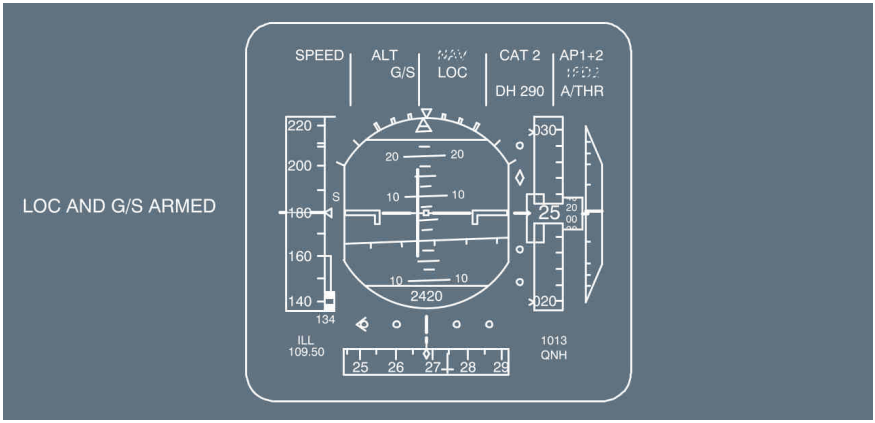
- An ILS/GLS ◁ /MLS ◁ approach is selected
- The aircraft is above 400 ft RA
- The ILS and RA are available
- Go-around or takeoff or final mode is not engaged
- ILS/GLS ◁ /MLS ◁ frequency/channel and course are identically set on both receivers.

LOC and G/S blue are displayed on the FMA. Both modes will automatically engage when conditions are met.
Second autopilot may be engaged.
Current landing capability is displayed on the FMA.

DISARMING CONDITIONS OF LOC AND G/S MODES

ILS APPR mode is disarmed, if the aircraft is above 400 ft and:

- When the flight crew presses the APPR pb, both the LOC and the G/S modes disarm. The HDG/TRK mode engages if the LOC mode was engaged, and the V/S (FPA) mode engages if the G/S mode was engaged
- When the flight crew presses the LOC pb, only the G/S mode disarms. The V/S (FPA) mode engages, if the G/S mode was engaged
- When the flight crew engages the go-around mode.



ENGAGEMENT CONDITIONS OF LOC AND G/S MODES

When ILS/GLS ◁ /MLS ◁ capture conditions are fulfilled:
- LOC* mode engages, and
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Nevertheless, the G/S* mode cannot engage, if:
- LOC* mode is not engaged, or
- The aircraft is above the glide path and its trajectory does not cross the ILS G/S beam.

When the aircraft is established on the LOC axis, the LOC mode engages.
When the aircraft is established on the G/S axis, the G/S mode engages.
The FMA displays “LOC” and “G/S” in green. The AP/FD guides the aircraft along the G/S down to 30 ft, and along the LOC during the flare and rollout.

Note: *G/S* or G/S modes may be engaged above the operating range of the radio altimeters (8 000 ft for TRT, and 5 000 ft for Collins and Honeywell radio altimeters). The landing capability displayed on the FMA will reflect the lack of RA validity (CAT 1) until the radio altimeters become active.*
But, if the radio altimeters fail, or if the FMGS receives no radio altimeter data, LOC, G/S, and AP/FDs will disengage and FDs will re-engage on basic modes.

DISENGAGEMENT CONDITIONS OF LOC AND G/S MODES

If the aircraft is above 400 ft, the ILS APPR mode disengages when the flight crew:
- Presses the APPR pb, HDG V/S or TRK FPA engages
- Presses the LOC pb, the LOC mode remains engaged. The system reverts to V/S (FPA), if G/S was engaged

- Pulls out the HDG/TRK knob, HDG V/S or TRK FPA engages
- Engages the go-around mode
- When the LOC or G/S signal has been lost for 7 s or more above 200 ft RA. AP/FDs disengage and FDs reengage in basic modes (HDG V/S or TRK FPA).

DISENGAGEMENT CONDITIONS OF G/S ONLY

- The flight crew pulls out the V/S or FPA knob. LOC mode remains engaged, but G/S mode disengages and V/S or FPA engages.
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LOC CONVERGENCE FUNCTION

The aim of the LOC Convergence function is to help the aircraft intercept and capture the LOC axis.

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The Enhanced LOC Capture function enhances the performance of the LOC capture and helps the aircraft to capture the LOC beam without overshoot.

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The pre-capture of the LOC beam aims to begin the LOC beam capture sooner.
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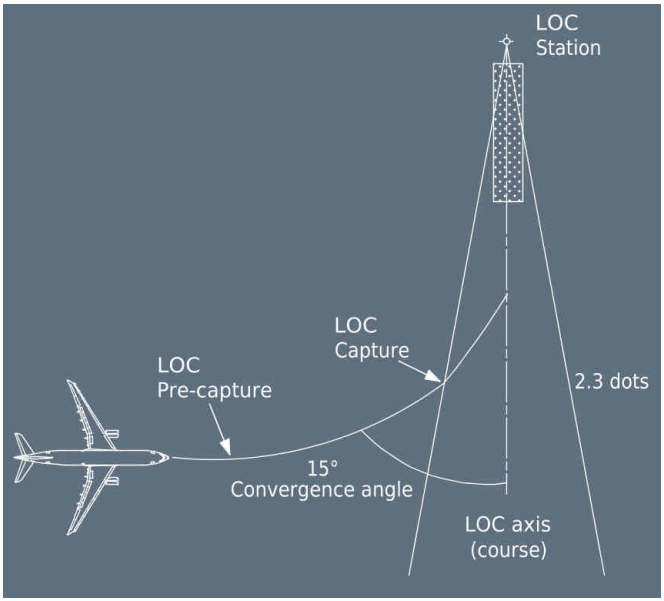
The LOC* mode engagement in the pre-capture zone is possible, when :
- The LOC deviation is more than 2.3 dots
- The FMS is in GPS PRIMARY
- The difference between the track and the QFU is between 25 ° and 115 °
- The guidance roll order is such that LOC* will capture the LOC beam without overshoot.

When the LOC deviation becomes lower than 2.3 dots, LOC* mode no longer uses the FMS position data for guidance, but the actual LOC beam deviation to complete the capture of the axis.

Capture of the LOC Beam

Current conditions of LOC beam capture in the capture zone remain the same. This means that if approach conditions of the aircraft (interception angle, speed) do not need activation of the capture assistance, the LOC beam capture will occur as usual based on LOC deviation, aircraft track and guidance roll order conditions.



Note: *On the PFD and on the ND, the flight crew will observe movement of the LOC deviation toward the center of the scale, only when the LOC deviation is less than 2 dots. This occurs when the aircraft is in the capture zone.*

When the ILS/GLS ◁ /MLS ◁ frequency/channel or the ILS/GLS/MLS ident entered on the RAD NAV page differs from the ILS/GLS/MLS of the destination runway entered in the Flight Plan :

- The aircraft loses the LOC capture assistance function
- The “RWY/LS MISMATCH” message is displayed on the scratchpad
- The flight crew should select HDG mode to perform the LOC capture.

Note: *There is no glideslope capture assistance. The flight crew shall ensure that the aircraft flight path intercepts the G/S beam.*

Ident.: DSC-22_30-80-30-10-A-00012381.0002001 / 17 AUG 10
Applicable to: ALL

LAND MODE

ENGAGEMENT CONDITIONS

LAND mode automatically engages when the LOC and G/S modes are engaged, and the aircraft is below 400 ft RA. The FMA displays “LAND”, indicating that LOC and G/S are locked. No action on the FCU will disengage LAND mode. FLARE and ROLL OUT modes will successively engage.

DISENGAGEMENT CONDITIONS

LAND mode disengages:
- Upon engagement of the go-around mode
- If the flight crew presses the APPR pb, when the aircraft has been on ground for at least 10 s with the autopilot disconnected
- When both AP/FDs are disengaged.

Note: When LAND is not displayed on the FMA, at/or slightly below 400 ft, the landing capability degrades to CAT 1 and the triple click is generated. No autoland is authorized with CAT 1 displayed on the FMA.

Ident.: DSC-22_30-80-30-10-A-00012382.0001001 / 17 AUG 10
Applicable to: ALL

FLARE MODE

Once the aircraft reaches approximately 40 ft RA (the precise value is a function of V/S):
- The FLARE mode engages
- The FMA displays “FLARE” in green.

At 30 ft RA, the AP/FD aligns the yaw axis with the runway centerline and the aircraft flares on the pitch axis. If the autothrust is active, thrust is automatically reduced to IDLE (*Refer to DSC-22_30-90 A/THR Modes - RETARD Mode*).
When both AP/FDs are disengaged, FLARE mode disengages.
After main landing gear touchdown, the autopilot (if engaged) sends a nose down order.

ALIGN SUB-MODE

ALIGN is a sub-mode of LAND mode that lines up the aircraft’s axis with the ILS course. It is not displayed to the flight crew.

Ident.: DSC-22_30-80-30-10-A-00012383.0001001 / 17 AUG 10
Applicable to: ALL

ROLL OUT MODE

At touchdown, the ROLL OUT mode engages and guides the aircraft along the runway centerline. The FMA displays “ROLL OUT” in green, and the PFD displays the yaw bar and no FD bars.

SPEED CONTROL

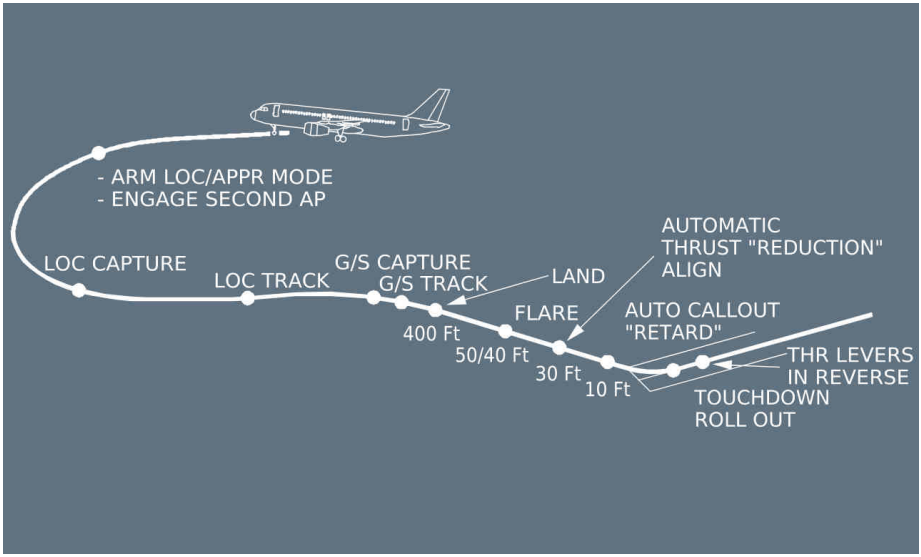
Ident.: DSC-22_30-80-30-10-00012384.0001001 / 17 AUG 10
Applicable to: ALL

The autothrust, when active, controls speed. The approach speed target (VAPP) is either managed by the FMGS or selected by the flight crew:

- When managed, the speed target is computed by the FMGS and may be modified by the flight crew through the MCDU. At 700 ft RA, the current speed target value is memorized by the autothrust, to ensure stabilized speed guidance, even if Flight Management fails. Below 700 ft, any new VAPP or WIND entry in the MCDU has no effect on the speed target.
- When selected, the autothrust always targets the speed selected on the FCU.

TYPICAL ILS APPROACH

Ident.: DSC-22_30-80-30-10-00012385.0001001 / 16 MAR 11
Applicable to: ALL



AUTOLAND WARNING LIGHT

Ident.: DSC-22_30-80-30-10-00012386.0005001 / 09 FEB 18

3 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The AUTOLAND warning flashes when:

- At least one RA indicates a height below 200 ft, and
- At least one AP is engaged or armed with LAND or FLARE mode on the FMA, and
- At least one of the following conditions occurs:
  - The LOC deviation exceeds 1/4 dot and the aircraft is above 15 ft RA (the LOC scale flashes on the PFD), or
  - The GLIDE deviation exceeds 1 dot and the aircraft is above 100 ft RA (the GLIDE scale flashes on the PFD), or
  - Loss of LOC signal above 15 ft RA (The FD vertical bar flashes on the PFD), or
  - Loss of GLIDE signal above 100 ft RA (The FD horizontal bar flashes on the PFD), or
  - The difference between both RA indications is greater than 15 ft RA, or
  - The last autopilot disengages, or
  - The FMGS detects a long flare, or
  - The FMGS detects an untimely Flare condition.

L2 The FMGS detects an untimely Flare condition when one radio altimeter is inoperative, and the time between LAND engagement (measured radio height is below 400 ft) and FLARE condition (measured radio height is below 50 ft) is lower than 2 s.

AUTOLAND WARNING LIGHT

Ident.: DSC-22_30-80-30-10-00012386.0003001 / 09 APR 15

4 **Applicable to: MSN 01767-02097, 02121-02204, 02359-02443, 02482-02584, 02712, 02908-04384, 04399-04488, 04506-04518, 04535-04637, 04752-04888, 04954-05094, 05155-05190, 05230-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09031**

The AUTOLAND warning flashes when:

- At least one RA indicates a height below 200 ft, and
- At least one AP is engaged with LAND or FLARE mode on the FMA, and
- At least one of the following conditions occurs:
  - The LOC deviation exceeds 1/4 dot and the aircraft is above 15 ft RA (the LOC scale flashes on the PFD), or
  - The GLIDE deviation exceeds 1 dot and the aircraft is above 100 ft RA (the GLIDE scale flashes on the PFD), or
  - Loss of LOC signal above 15 ft RA (The FD vertical bar flashes on the PFD), or
  - Loss of GLIDE signal above 100 ft RA (The FD horizontal bar flashes on the PFD), or
  - The difference between both RA indications is greater than 15 ft RA, or
  - The last autopilot disengages, or
  - The FMGS detects a long flare, or
  - The FMGS detects an untimely Flare condition.

L2 The FMGS detects an untimely Flare condition when one radio altimeter is inoperative, and the time between LAND engagement (measured radio height is below 400 ft) and FLARE condition (measured radio height is below 50 ft) is lower than 2 s.

AUTOLAND WARNING LIGHT

Ident.: DSC-22_30-80-30-10-00012386.0002001 / 09 APR 15

5 **Applicable to: MSN 02108, 02275-02334, 02457, 02609-02670, 02737-02804, 04491, 04532, 04645, 04947, 05120, 05218**

The AUTOLAND warning flashes when:

- At least one RA indicates a height below 200 ft, and
- At least one AP is engaged with LAND or FLARE mode on the FMA, and
- At least one of the following conditions occurs:
  - The LOC deviation exceeds 1/4 dot and the aircraft is above 15 ft RA (the LOC scale flashes on the PFD), or
  - The GLIDE deviation exceeds 1 dot and the aircraft is above 100 ft RA (the GLIDE scale flashes on the PFD), or
  - Loss of LOC signal above 15 ft RA (The FD vertical bar flashes on the PFD), or
  - Loss of GLIDE signal above 100 ft RA (The FD horizontal bar flashes on the PFD), or
  - The difference between both RA indications is greater than 15 ft RA, or
  - The last autopilot disengages, or
  - The FMGS detects a long flare.

AUTOLAND WARNING LIGHT

Ident.: DSC-22_30-80-30-10-00012386.0001001 / 03 JUN 14
Applicable to: MSN 04393-04397

The following situations, when occurring below 200 ft RA with the aircraft in LAND mode, trigger the flashing Autoland red warning:

- Both APs OFF below 200 ft RA.
- Excessive deviation in LOC (1/4 dot above 15 ft RA) or GLIDE (1 dot above 100 ft RA). In addition, LOC and GLIDE scales flash on the PFD.
- Loss of LOC signal above 15 ft, or loss of GLIDE signal above 100 ft. The FD bars flash on the PFD. The LAND mode remains engaged.
- The difference between both radio altimeter indications is greater than 15 ft.

LANDING CAPABILITIES

Ident.: DSC-22_30-80-30-10-00012387.0001001 / 17 AUG 10
Applicable to: ALL

Each FMGC computes its own automatic landing capability.
The FMA displays “CAT 1”, “CAT 2”, “CAT 3 SINGLE” or “CAT 3 DUAL” messages as soon as the APPR pb is pushed in to arm ILS approach modes.
Refer to PRO-NOR-SRP-01-70 Initial Approach.

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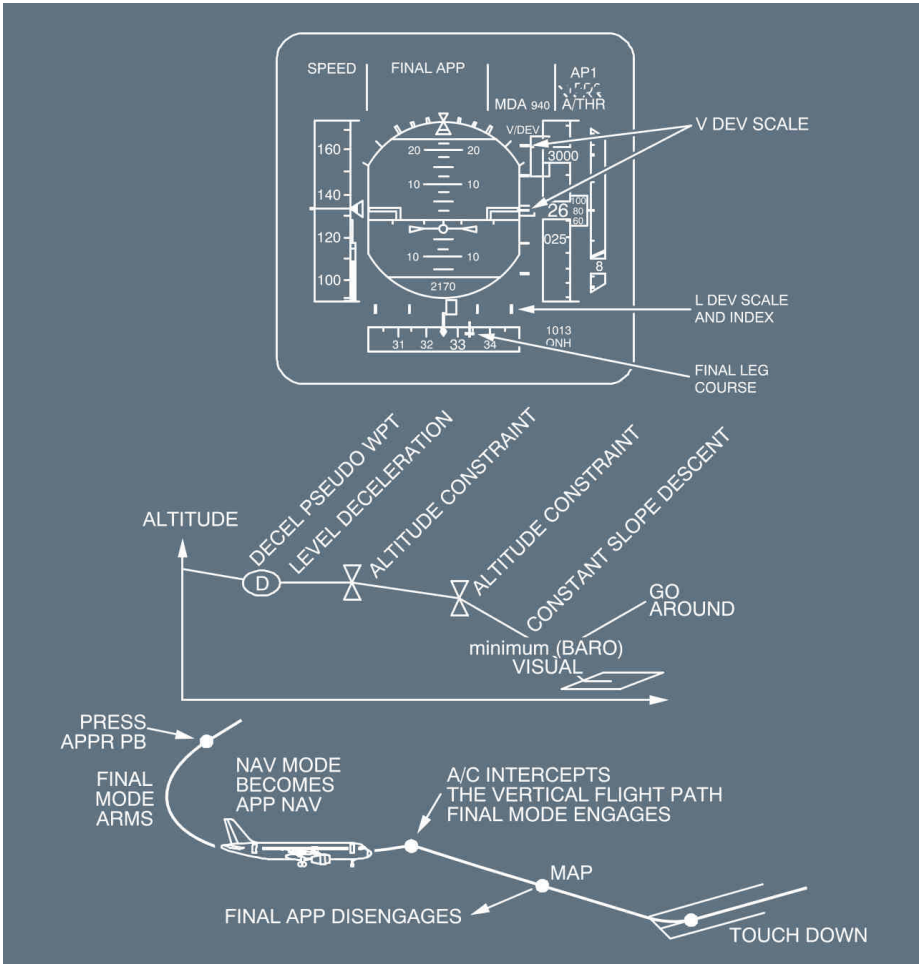
Non Precision Approach

GENERAL

Ident.: DSC-22_30-80-30-20-00012388.0120001 / 04 NOV 13
Applicable to: MSN 02388, 02584, 03750, 04947, 04965-05094, 05155-05190, 05230-05898

This mode guides the aircraft laterally and vertically down to the minimum along the final descent profile computed by the FMGS.
This mode is used to fly a non-ILS/non-GLS ◁ /non-MLS ◁ approach (VOR, VOR/DME, NDB (if ADF ◁), RNAV...) as inserted into the flight plan.



The non-ILS/non-GLS ⋖ /non-MLS ⋖ approach includes the following managed modes:

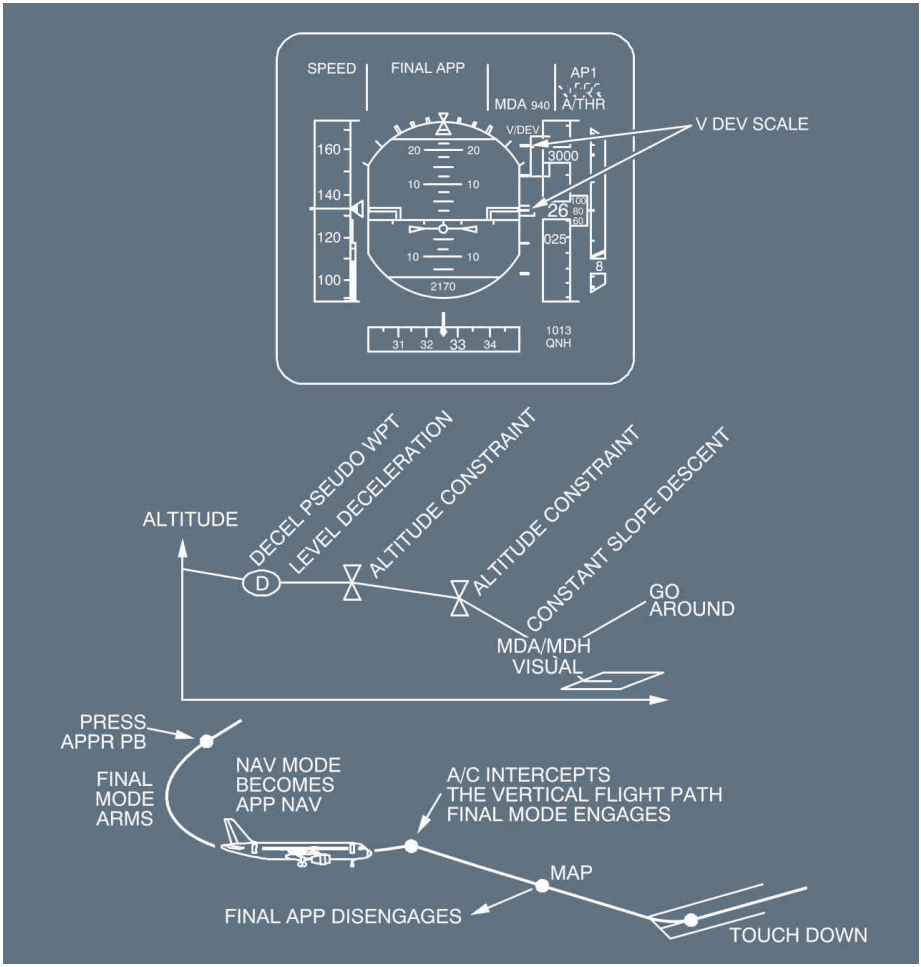
- APP NAV mode for lateral guidance
- FINAL mode for vertical guidance.

GENERAL

Ident.: DSC-22_30-80-30-20-00012388.0119001 / 25 JAN 17

[1] **Applicable to: MSN 01767-02097, 02121-02139, 02443-02457, 02609-03618, 03782-04384, 04399-04888, 04954, 05120, 05218, 05923-09063**

This mode guides the aircraft laterally and vertically down to the minimum along the final descent profile computed by the FMGS.
This mode is used to fly a non-ILS/non-GLS ◁ approach (VOR, VOR/DME, NDB (if ADF ◁), RNAV...) as inserted into the flight plan.



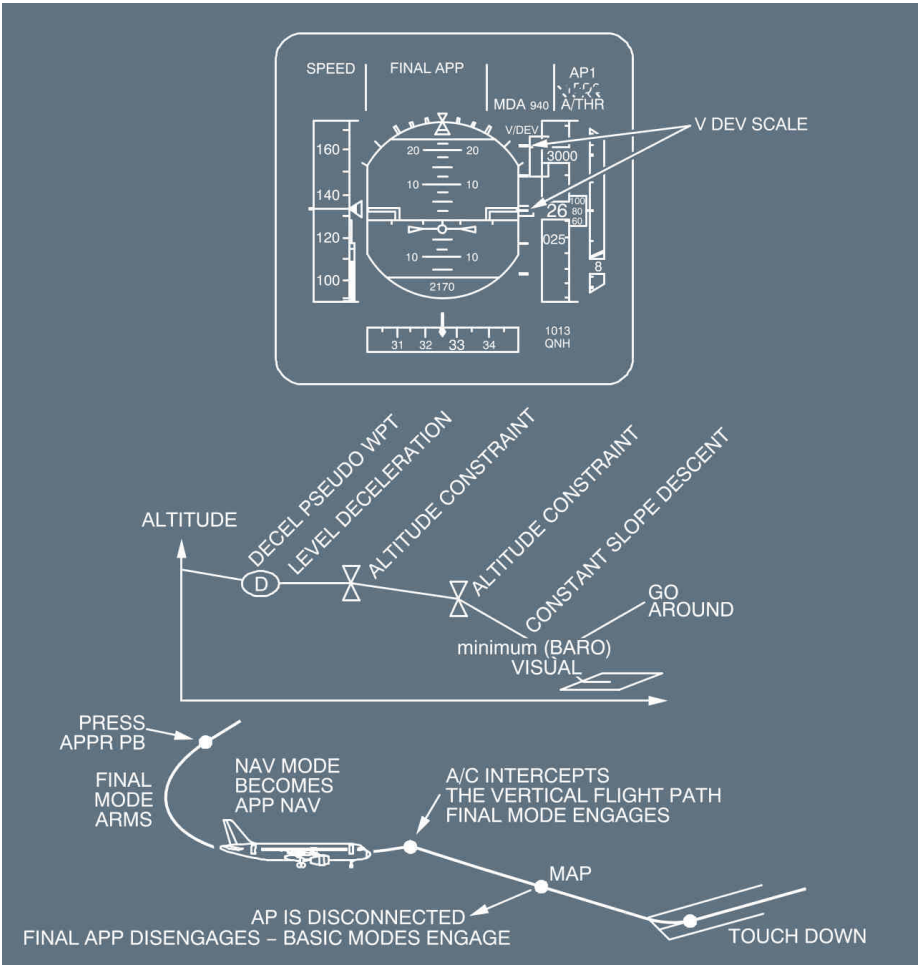
The non-ILS/non-GLS ⩤ approach includes the following managed modes:

- APP NAV mode for lateral guidance
- FINAL mode for vertical guidance.

GENERAL

Ident.: DSC-22_30-80-30-20-00012388.0097001 / 01 OCT 12
Applicable to: MSN 02108, 02275-02334

This mode guides the aircraft laterally and vertically down to the minimum along the final descent profile computed by the FMGS.
This mode is used to fly a non-ILS/non-GLS approach (VOR, VOR/DME, NDB (if ADF), RNAV...) as inserted into the flight plan.

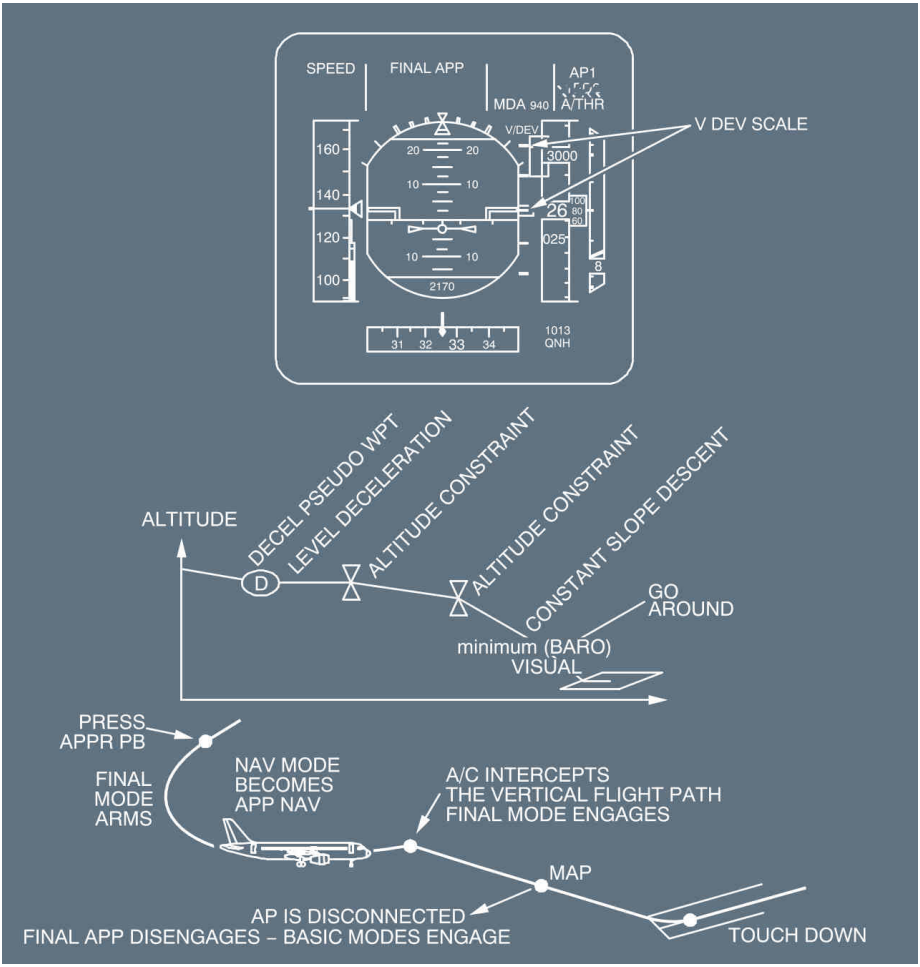


The non-ILS/non-GLS approach includes the following managed modes:
- APP NAV mode for lateral guidance
- FINAL mode for vertical guidance.

GENERAL

Ident.: DSC-22_30-80-30-20-00012388.0090001 / 01 OCT 12
Applicable to: MSN 04393-04397

This mode guides the aircraft laterally and vertically down to the minimum along the final descent profile computed by the FMGS.
This mode is used to fly a non-ILS approach (VOR, VOR/DME, NDB (if ADF ◁), RNAV...) as inserted into the flight plan.



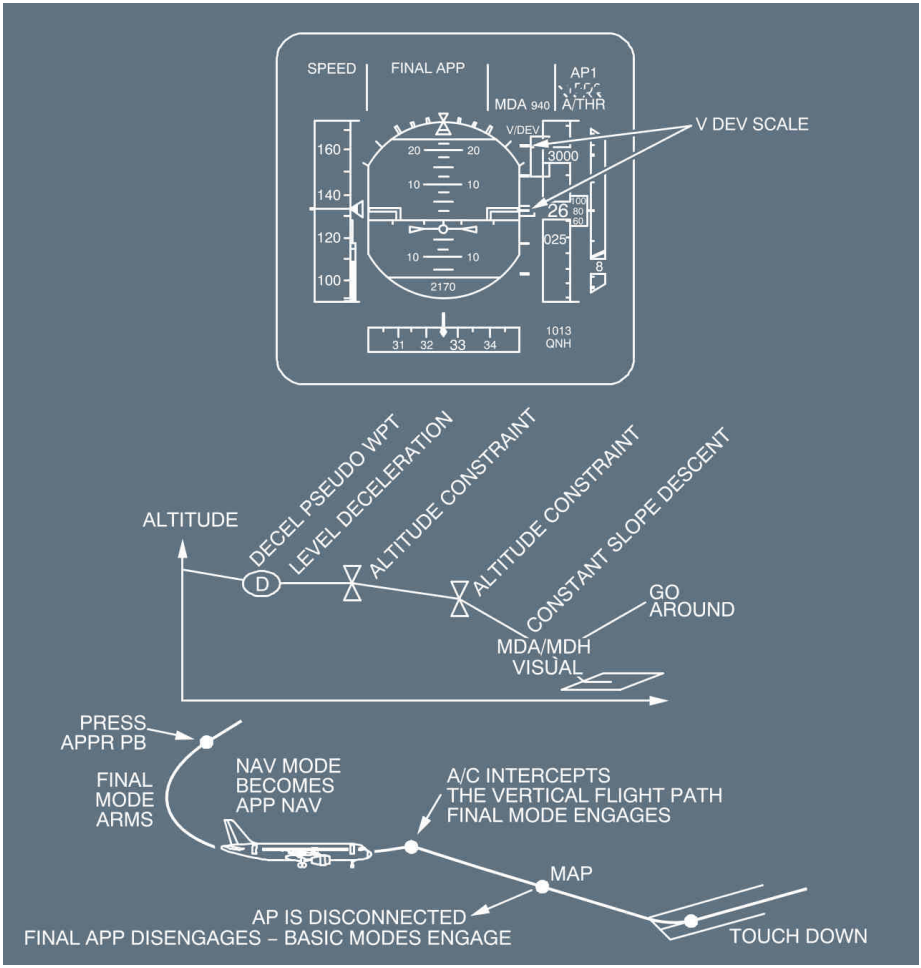
The non-ILS approach includes the following managed modes:

- APP NAV mode for lateral guidance
- FINAL mode for vertical guidance.

GENERAL

Ident.: DSC-22_30-80-30-20-00012388.0089001 / 01 OCT 12
Applicable to: MSN 02195-02204, 02359, 02405, 02482

This mode guides the aircraft laterally and vertically down to the Minimum Descent Altitude (MDA) or Minimum Descent Height (MDH) along the final descent profile computed by the FMGS.
This mode is used to fly a non-ILS approach (VOR, VOR/DME, NDB (if ADF), RNAV...) as inserted into the flight plan.



The non-ILS approach includes the following managed modes:
- APP NAV mode for lateral guidance
- FINAL mode for vertical guidance.

SELECTION

Ident.: DSC-22_30-80-30-20-00012389.0001001 / 17 AUG 10
Applicable to: ALL

A non-ILS approach (VOR, VOR/DME, NDB (if ADF), RNAV) is selected if the active flight plan calls for it (and it has been inserted in that flight plan).

ARMING CONDITIONS

Ident.: DSC-22_30-80-30-20-00012390.0001001 / 17 AUG 10
Applicable to: ALL

The flight crew arms the APP NAV and FINAL modes by pressing the APPR pb on the FCU, if all of the following conditions are met:
- The aircraft is above 400 ft AGL
- The flight plan is valid (lateral and vertical profile)
- The active flight plan has selected a non-ILS approach
- GA mode is not engaged.

The FMA displays “FINAL” and “APP NAV” in blue.
If NAV mode was already engaged, APP NAV engages immediately.

DISARMING CONDITIONS

Ident.: DSC-22_30-80-30-20-00012391.0001001 / 17 AUG 10
Applicable to: MSN 04393-04397

FINAL and APP NAV modes are disarmed if the flight crew:
- Presses the APPR pb, or
- Presses the LOC pb arming the LOC mode, or
- Engages the GO AROUND mode.

DISARMING CONDITIONS

Ident.: DSC-22_30-80-30-20-00012391.0006001 / 30 MAY 12
2 **Applicable to: MSN 01767-04384, 04399-06868, 06914, 06952-07053, 07252-07396**

FINAL and APP NAV modes are disarmed when:
- The flight crew presses the APPR pb, or
- The flight crew presses the LOC pb, or

- The flight crew selects a precision approach instead of the approach currently armed, or
- The flight crew engages the GO AROUND mode.

Note: - *after pressing the LOC pb, the LOC mode is armed*
- *after the selection of a precision approach, the flight crew must press the APPR pb to arm the new approach*

DISARMING CONDITIONS

Ident.: DSC-22_30-80-30-20-00012391.0007001 / 30 MAY 12

3 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

FINAL and APP NAV modes disarm when :
- The flight crew presses the APPR pb, or
- The flight crew presses the LOC pb, or
- The flight crew selects a precision approach instead of the approach currently flown, or
- The flight crew engages the GO AROUND mode, or
- The TCAS mode engages.

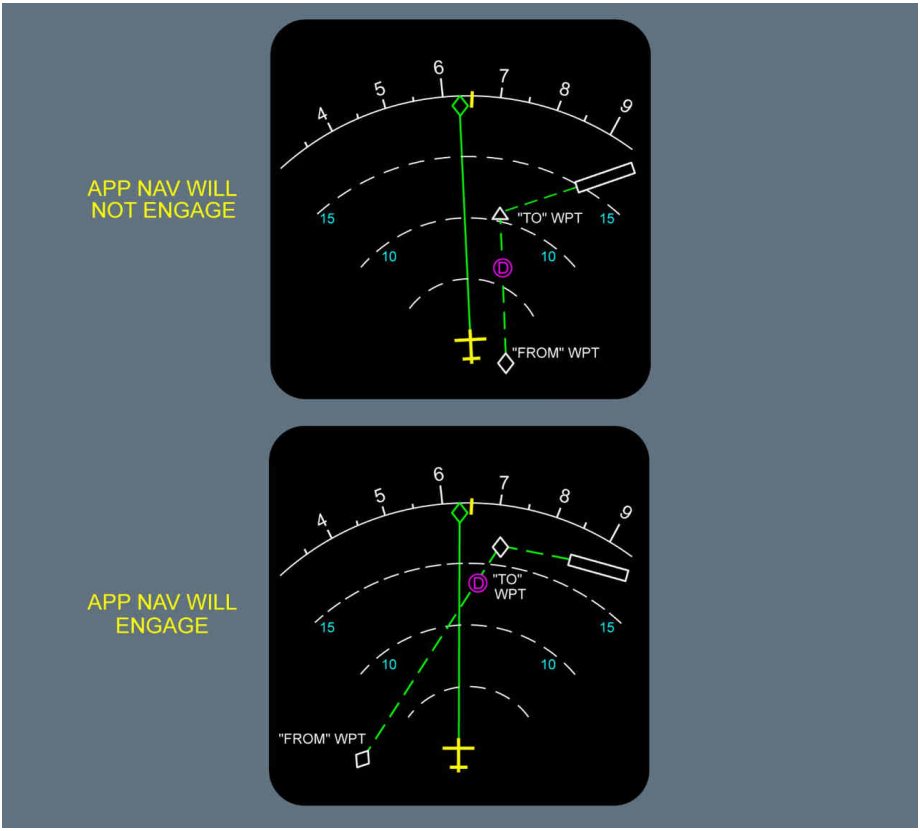
Note: - *After pressing the LOC pb, the LOC mode arms*
- *After the selection of a precision approach, the flight crew must press the APPR pb to arm the new approach*

ENGAGEMENT CONDITIONS

Ident.: DSC-22_30-80-30-20-00012392.0001001 / 04 DEC 18

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-04954

APP NAV and NAV modes engage under the same conditions:
If NAV mode was engaged, APP NAV engages immediately. If HDG/TRK is engaged, APP NAV engages when the intercept conditions are met (aircraft track line must intercept the flight plan active leg).
APP NAV will not engage if the "TO" waypoint is not displayed in white on the ND and MCDU.



FINAL APP is a lateral and vertical managed guidance approach mode that aims guiding aircraft from FDP down to MAP along a defined FPA It is thus recommended to arm this mode when the TO waypoint is the FDP.

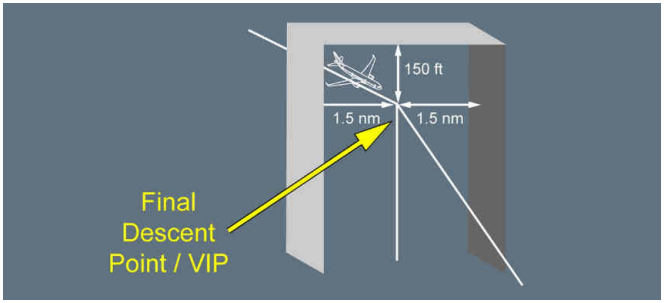
FINAL APP mode engages when:

- NAV or APP NAV is engaged,
- FINAL is armed (by pressing APPR on the FCU),
- Predictions are available in FMS,
- APPROACH phase is active, and the deceleration point has sequenced,

Note: *APPROACH phase may have to be manually activated on MCDU PERF page if the approach starts at high altitude above aerodrome level (i.e. RNAV(RNP) approaches).*

- The aircraft is within the capture area of the FMS profile:
  - Laterally: ±1.5 NM from the Final Descent Point.
  - Vertically: +150 ft above the Final Descent Point.
- The aircraft intercepts a descending leg of the vertical flight path.

Note: *if APPR pb is pressed earlier, FINAL APP mode may engage. As a consequence, resulting speed and altitude management in FINAL APP may be inappropriate before FDP.*



A blue arrow is displayed on NDs to indicate where the FINAL APP engagement conditions are met and where the final descent will begin automatically.
If the same arrow is displayed in white, at least one engagement condition is not fulfilled, FINAL APP will not engage and the aircraft will not descend automatically.

Definition of the Final Descent Point (also called Vertical Intersection Point "VIP" for RNAV (RNP) approaches)

The Final Descent Point (FDP) is the waypoint from which starts the FMS segment with coded FPA. For RNAV(RNP) approaches, this point may be indicated on the chart as FDP or "VIP".

This point is defined in the Navigation Database by:
- A constant vertical flight path beyond this point,
- A coded altitude constraint that may be "at" or "at or above" (e.g. +3 000 ft). This constraint is displayed on ND (in magenta), next to the corresponding waypoint, when the CSTR key is selected on the EFIS Control Panel. It is also shown on the F-PLN page at this WPT.

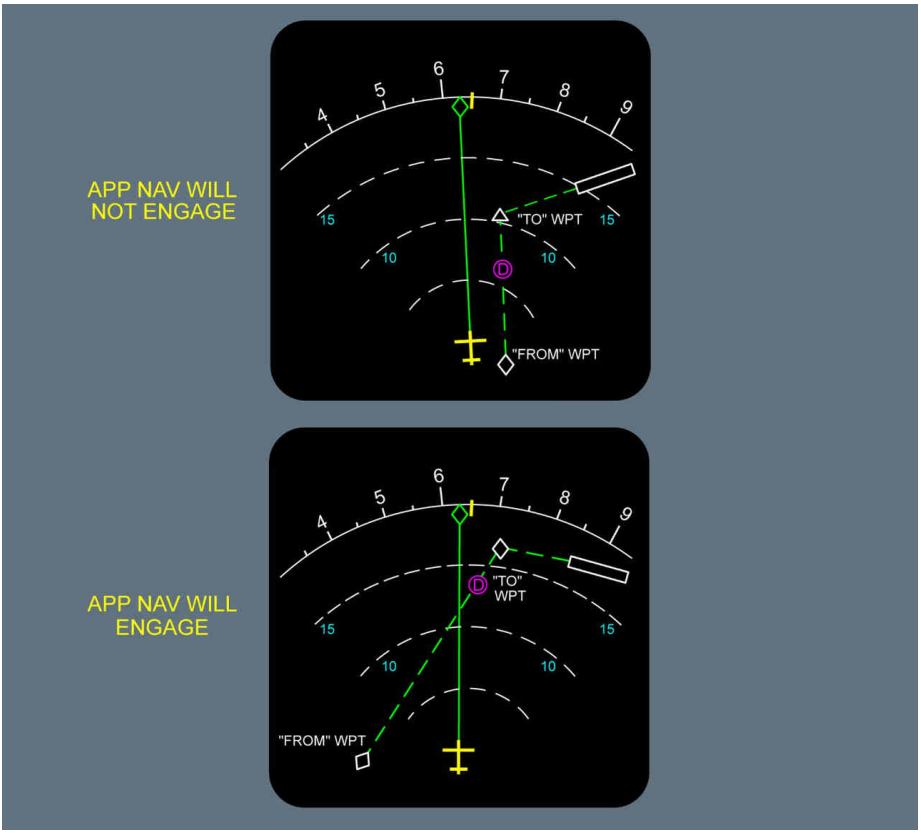
Note: *The Final Approach Fix (FAF) is the position from where the obstacle clearance is defined relative to an Obstacle Clearance Surface (OCS). Obstacle clearance is only ensured if the aircraft is flying on the defined vertical flight path. Before the FAF, minimum altitudes are published with fixed Minimum Obstacle Clearance (MOC). The Final Descent Point is the point in the procedure at or before the FAF from which a constant vertical flight path is defined.*

ENGAGEMENT CONDITIONS

Ident.: DSC-22_30-80-30-20-00012392.0003001 / 04 DEC 18

[4] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 04965-09063**

APP NAV and NAV modes engage under the same conditions:
If NAV mode was engaged, APP NAV engages immediately. If HDG/TRK is engaged, APP NAV engages when the intercept conditions are met (aircraft track line must intercept the flight plan active leg).
APP NAV will not engage if the "TO" waypoint is not displayed in white on the ND and MCDU.



FINAL APP is a lateral and vertical managed guidance approach mode that aims guiding aircraft from FDP down to MAP along a defined FPA It is thus recommended to arm this mode when the TO waypoint is the FDP.

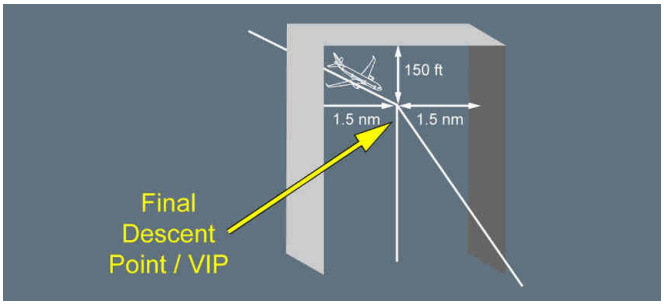
FINAL APP mode engages when:

- NAV or APP NAV is engaged,
- FINAL is armed (by pressing APPR on the FCU),
- Predictions are available in FMS,
- APPROACH phase is active,

  Note: *APPROACH phase may have to be manually activated on MCDU PERF page if the approach starts at high altitude above aerodrome level (i.e. RNAV(RNP) approaches).*

- The aircraft is within the capture area of the FMS profile:
  - Laterally: ±1.5 NM from the Final Descent Point.
  - Vertically: +150 ft above the Final Descent Point.
- The aircraft intercepts a descending leg of the vertical flight path.

  Note: *if APPR pb is pressed earlier, FINAL APP mode may engage. As a consequence, resulting speed and altitude management in FINAL APP may be inappropriate before FDP.*



A blue arrow is displayed on NDs to indicate where the FINAL APP engagement conditions are met and where the final descent will begin automatically.
If the same arrow is displayed in white, at least one engagement condition is not fulfilled, FINAL APP will not engage and the aircraft will not descend automatically.

Definition of the Final Descent Point (also called Vertical Intersection Point "VIP" for RNAV (RNP) approaches)

The Final Descent Point (FDP) is the waypoint from which starts the FMS segment with coded FPA. For RNAV(RNP) approaches, this point may be indicated on the chart as FDP or "VIP".

This point is defined in the Navigation Database by:
- A constant vertical flight path beyond this point,
- A coded altitude constraint that may be "at" or "at or above" (e.g. +3 000 ft). This constraint is displayed on ND (in magenta), next to the corresponding waypoint, when the CSTR key is selected on the EFIS Control Panel. It is also shown on the F-PLN page at this WPT.

Note: *The Final Approach Fix (FAF) is the position from where the obstacle clearance is defined relative to an Obstacle Clearance Surface (OCS). Obstacle clearance is only ensured if the aircraft is flying on the defined vertical flight path. Before the FAF, minimum altitudes are published with fixed Minimum Obstacle Clearance (MOC). The Final Descent Point is the point in the procedure at or before the FAF from which a constant vertical flight path is defined.*

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-80-30-20-00012393.0053001 / 21 MAR 16

5 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

The FINAL and APP NAV modes disengage:
- If the flight crew pushes the APPR pb (HDG-V/S or TRK-FPA modes engage), or
- If the flight crew pushes the LOC pb (LOC mode arms if an ILS/MLS ◁⋕ /GLS ◁⋕ is selected and HDG-V/S or TRK-FPA modes engage), or
- If the flight crew pulls out the HDG/TRK knob (the FMGS reverts to HDG-V/S or TRK-FPA basic modes), or
- If the flight crew selects a precision approach (the FMGS reverts to HDG-V/S or TRK-FPA basic modes), or
- Automatically at Missed Approach Point (the FMGS vertical mode reverts to V/S / FPA and the FMGS lateral mode reverts to HDG / TRK or NAV), or
- When the TCAS mode engages, the FINAL mode disengages (the APPR pb light comes off and the NAV mode engages), or
- When the GO AROUND mode engages.

Note:
- *If the flight crew engages V/S or FPA mode, only FINAL mode disengages. NAV mode remains engaged.*
- *In the case the flight crew selects a new approach, the flight crew must press the APPR pb to engage the new approach.*

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-80-30-20-00012393.0052001 / 21 MAR 16

6 **Applicable to: MSN 01767-04384, 04399-06868, 06914, 06952-07053, 07252-07396**

The FINAL and APP NAV modes disengage:

- If the flight crew pushes the APPR pb (HDG-V/S or TRK-FPA modes engage), or
- If the flight crew pushes the LOC pb (LOC mode arms if an ILS/MLS ◁ /GLS ◁ is selected and HDG-V/S or TRK-FPA modes engage), or
- If the flight crew pulls out the HDG/TRK knob (the FMGS reverts to HDG-V/S or TRK-FPA basic modes), or
- If the flight crew selects a precision approach (the FMGS reverts to HDG-V/S or TRK-FPA basic modes), or
- Automatically at Missed Approach Point (the FMGS vertical mode reverts to V/S / FPA and the FMGS lateral mode reverts to HDG / TRK or NAV), or
- When the GO AROUND mode engages.

Note:

- *If the flight crew engages V/S or FPA mode, only FINAL mode disengages. NAV mode remains engaged.*
- *In the case the flight crew selects a new approach, the flight crew must press the APPR pb to engage the new approach.*

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-80-30-20-00012393.0037001 / 17 MAR 15

Applicable to: MSN 04393-04397

The FINAL and APP NAV modes disengage:

- If the flight crew pushes the APPR pb (HDG-V/S or TRK-FPA modes engage)
- If the flight crew pushes the LOC pb (LOC mode arms if an ILS is selected and HDG-V/S or TRK-FPA modes engage)
- If the flight crew pulls out the HDG/TRK knob, the FMGS reverts to HDG-V/S or TRK-FPA basic modes
- Automatically at missed Approach Point .
- When the GO AROUND mode engages.

Note: *If the flight crew engages V/S or FPA mode, only FINAL mode disengages. NAV mode remains engaged.*

GUIDANCE

Ident.: DSC-22_30-80-30-20-00012394.0027001 / 29 MAR 12

7 **Applicable to: MSN 01767-04384, 04399-09063**

The FINAL mode guides the aircraft on the vertical profile down to the minimum.
The FINAL mode displays on the PFD the aircraft vertical deviation from the descent path (VDEV symbol) on a ± 200 ft scale.

The FINAL mode:
- Anticipates leaving the altitude selected by the FCU when the aircraft reaches the Continue Descent symbol (blue arrow on the ND)
- Provides precise vertical guidance on the descent and final path with an internal vertical speed limitation to avoid excessive V/S.

GUIDANCE

Ident.: DSC-22_30-80-30-20-00012394.0021001 / 18 MAR 11

Applicable to: MSN 04393-04397

The FINAL mode guides the aircraft on the vertical profile down to the minimum.

The FINAL mode does the following:
- Displays a vertical deviation scale (± 200 ft) on the PFD and a VDEV symbol showing deviation from descent path
- Anticipates leaving the altitude selected by the FCU when the aircraft reaches the Continue Descent symbol (blue arrow on the ND)
- Gives precise vertical guidance on the descent and final path with an internal vertical speed limitation to avoid excessive V/S.

If the autopilot is engaged while you are using the APP NAV/ FINAL modes, it disengages automatically at the Missed Approach Point (MAP).
FD modes revert to HDG-V/S or TRK-FPA basic modes.

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GENERAL

Ident.: DSC-22_30-80-40-00012050.0001001 / 17 AUG 10
Applicable to: MSN 01920, 02204, 02457, 02649, 02712, 02914, 03264, 03330

Go-around mode combines the Speed Reference System (SRS) vertical mode with the GA TRK lateral mode.

GENERAL

Ident.: DSC-22_30-80-40-00012050.0005001 / 16 MAR 11
1 **Applicable to: MSN 01767, 01957-02195, 02275-02443, 02482-02626, 02670, 02737-02908, 03071-03138, 03308, 03357-09063**

When the flight crew performs a go-around, the Speed Reference System (SRS) vertical guidance mode automatically engages.

In addition:
- The NAV mode is automatically engaged or armed, except if HDG/TRK was preset, or
- The GA TRK lateral mode is automatically engaged until the HDG/TRK knob is pulled if the HDG/TRK mode is preset.

Note: Below 100 ft , the HDG mode remains engaged with NAV mode armed if HDG/TRK was already engaged during approach.

ENGAGEMENT CONDITIONS

Ident.: DSC-22_30-80-40-00012210.0002001 / 17 AUG 10
Applicable to: MSN 01920, 02204, 02457, 02649, 02712, 02914, 03264, 03330

Setting at least one thrust lever to the TOGA detent engages both SRS/GA TRK modes, if:
- The flaps lever is at least in position 1, and
- The aircraft is in flight, or
- The aircraft has been on ground for less than 30 s (AP disengages and can be re-engaged 5 s after lift-off).

FD bars are automatically restored in SRS/GA TRK modes. If FPV/FPD was previously selected, it reverts to FD bars.
The FMA displays “SRS” and “GA TRK” in green.

ENGAGEMENT CONDITIONS

Ident.: DSC-22_30-80-40-00012210.0004001 / 17 AUG 10

[2] **Applicable to: MSN 01767, 01957-02195, 02275-02443, 02482-02626, 02670, 02737-02908, 03071-03138, 03308, 03357-09063**

Setting at least one thrust lever to the TOGA detent engages both SRS/NAV modes, if:
- The flaps lever is at least in position 1, and
- The aircraft is in flight, or
- The aircraft has been on ground for less than 30 s (AP disengages and can be re-engaged 5 s after lift-off).

FD bars are automatically restored in SRS/NAV modes. If FPV/FPD was previously selected, it reverts to FD bars.
The FMA displays “SRS” and “NAV” in green.

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-80-40-00012220.0036001 / 05 JUN 18

[3] **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

The SRS mode disengages:
- Automatically, at the Go-around acceleration altitude (GA ACC ALT), or if ALT* mode engages (above 400 ft RA)
- If the flight crew engages another vertical mode
- If FCU selected altitude is above the aircraft altitude and the flight crew select a speed. SRS reverts to OP CLB and a triple-click aural warning is heard
- If the TCAS mode engages.

Note: *In Engine Out conditions, the SRS mode does not automatically disengage at EO ACC ALT.* *Refer to DSC-22_20-60-40 General.*

GA TRK disengages when the flight crew engages another lateral mode, above 100 ft RA.

Note: *In dual AP configuration, disengagement of the Go-around mode on either axis causes AP2 to disconnect.*

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-80-40-00012220.0028001 / 05 JUN 18

[4] **Applicable to: MSN 01767, 01957-06868, 06914, 06952-07053, 07252-07396**

The SRS mode disengages:

- Automatically, at the Go-around acceleration altitude (GA ACC ALT), or if ALT* mode engages (above 400 ft RA)
- If the flight crew engages another vertical mode
- If FCU selected altitude is above the aircraft altitude and the flight crew select a speed. SRS reverts to OP CLB and a triple-click aural warning is heard.

Note: *In Engine Out conditions, the SRS mode does not automatically disengage at EO ACC ALT.* *Refer to DSC-22_20-60-40 General.*

GA TRK disengages when the flight crew engages another lateral mode, above 100 ft RA.

Note: *In dual AP configuration, disengagement of the Go-around mode on either axis causes AP2 to disconnect.*

DISENGAGEMENT CONDITIONS

Ident.: DSC-22_30-80-40-00012220.0001001 / 05 JUN 18

Applicable to: MSN 01920

The SRS mode disengages:

- Automatically, at the Go-around acceleration altitude (GA ACC ALT), or if ALT* mode engages (above 400 ft RA)
- If the flight crew engages another vertical mode
- If FCU selected altitude is above the aircraft altitude and the flight crew select a speed. SRS reverts to OP CLB mode.

Note: *In Engine Out conditions, the SRS mode does not automatically disengage at EO ACC ALT.* *Refer to DSC-22_20-60-40 General.*

GA TRK disengages when the flight crew engages another lateral mode, above 100 ft RA.

Note: *In dual AP configuration, disengagement of the Go-around mode on either axis causes AP2 to disconnect.*

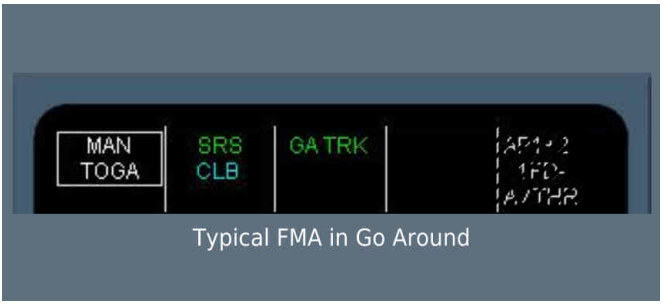
GUIDANCE

Ident.: DSC-22_30-80-40-00012213.0009001 / 16 MAR 11

Applicable to: ALL

The SRS law maintains the current speed at Go-around engagement, or VAPP, whichever is higher. Nevertheless, the SRS speed target is limited to VLS+25 kt, in a two-engine configuration, and

VLS+15 kt, in an engine-out configuration. When the SRS mode disengages, the target speed becomes the smaller of green dot speed or speed constraints.
GA TRK mode guides the aircraft along the current track at Go-around initiation.



Typical FMA in Go Around

GENERAL

Ident.: DSC-22_30-90-00011930.0001001 / 17 MAR 17
Applicable to: ALL

The autothrust (A/THR) is a function of the FMGS, it includes two independent A/THR commands, one per FMGC. Each one is able to control the thrust of both engines simultaneously through two Engine Interface Units and two Electronic Engine Controls (IAE engines) or two Engine Control Units (CFM engines). Only one FMGC controls the active A/THR, it is called the master FMGC.

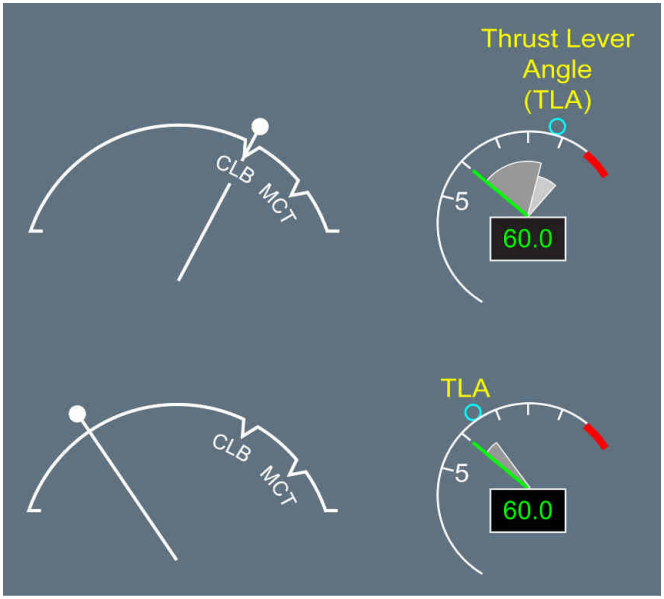
Thrust is controlled:
- Automatically when the A/THR is active
- Manually by the flight crew.

The autothrust is active when the A/THR pb of the FCU is lighted green and A/THR is displayed white in the FMA 5th column.
The position of the thrust levers determines whether A/THR is armed, active, or disconnected.

The autothrust system, when active:
- Maintains a specific thrust in THRUST mode
- Controls the aircraft speed or Mach in SPEED/MACH mode
- Uses ALPHA FLOOR mode to set maximum thrust when the aircraft angle of attack exceeds a specific threshold.

The autothrust system can operate independently or with the AP/FD:
- When performing alone, A/THR always controls the speed
- If the autothrust system is working with the AP/FD, the A/THR mode and AP/FD pitch modes are linked together. *Refer to DSC-22_30-10 Interaction between AP/FD and A/THR Modes*.

When autothrust is active, the FMGS commands the thrust according to the vertical mode logic, but uses a thrust not greater than the thrust commanded by the position of the thrust lever. For example, when the thrust levers are set at the CL (climb) detent, FG can command thrust between idle and max climb.
The autothrust system, when armed, automatically activates if the thrust levers are moved into the active range sector. Outside of this range, thrust levers control thrust directly.



THRUST LEVERS

Ident.: DSC-22_30-90-00011957.0001001 / 04 DEC 17
Applicable to: ALL

The flight crew uses the thrust levers to do the following:

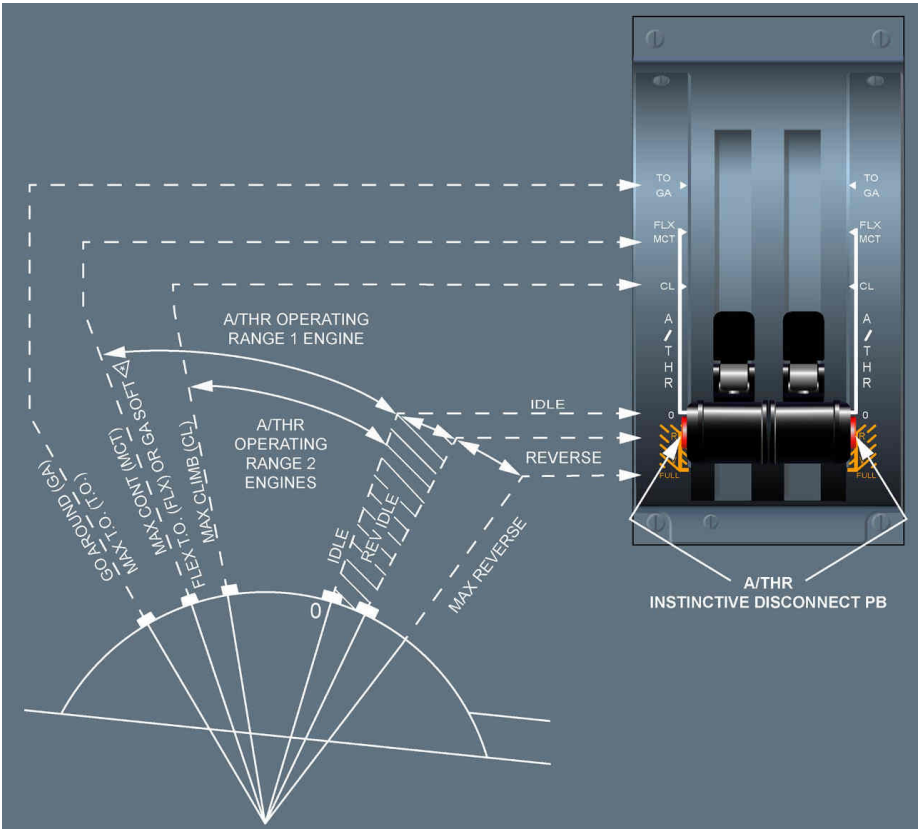
- Manually select engine thrust
- Arm and activate autothrust (A/THR)
- Engage reverse thrust
- Engage the takeoff and go-around modes.

When autothrust is disconnected, the thrust levers control thrust directly: each lever position corresponds to a given thrust.

Five detents divide each of the thrust lever sectors into four segments. The detents are:

TO GA	:	Max takeoff thrust
FLX MCT	:	Max continuous thrust (or FLX at takeoff) or GA SOFT at go-around
CL	:	Maximum climb thrust
IDLE	:	Idle thrust for both forward and reverse thrust
MAX REV	:	Maximum reverse thrust

When the thrust levers are at the IDLE position, the flight crew can pull them up to clear the IDLE stop and select reverse thrust. (There is no reverse detent as such).



A/THR ARMING CONDITIONS

Ident.: DSC-22_30-90-00011958.0004001 / 04 DEC 17

[1] **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

Arming conditions of the A/THR are numerous. The following is a list of the most important ones:

- One FMGC operative
- One FAC operative
- Two ADIRS operative
- Two FADECs operative

- One channel of the FCU operative
- One LGCIU operative
- A/THR is not manually disabled (instinctive disconnect pb has not been pressed for more than 15 s).

The flight crew arms A/THR:
- On ground
  - By pushing the A/THR pb on the FCU when the engines are not running, or
  - By setting the thrust levers to the FLX or TOGA detent when the engines are running.
- In flight
  - By pushing the A/THR pb on the FCU while the thrust levers are out of the active range, or
  - While A/THR is active (“A/THR” white on the FMA), by setting all thrust levers beyond the CL detent or at least one lever above the MCT detent, or
  - By engaging a go-around (MAN TOGA) or a soft go-around (MAN GA SOFT): the flight crew sets the thrust levers to the TOGA detent. Then, in the case of soft go-around, the flight crew retards the thrust levers to the FLX/MCT detent.

When the TCAS mode engages, the A/THR becomes armed or active, depending on the thrust levers position.

When the A/THR is armed:
- The FCU’s A/THR pb light comes on
- “A/THR” is displayed in blue on the FMA.

Note: *At takeoff, if the flight crew sets the thrust levers to idle position, the A/THR disengages and cannot be rearmed until the aircraft becomes airborne.*

A/THR ARMING CONDITIONS

Ident.: DSC-22_30-90-00011958.0003001 / 04 DEC 17
Applicable to: MSN 06720-06868, 06914, 06952-07053, 07252-07396

Arming conditions of the A/THR are numerous. The following is a list of the most important ones:

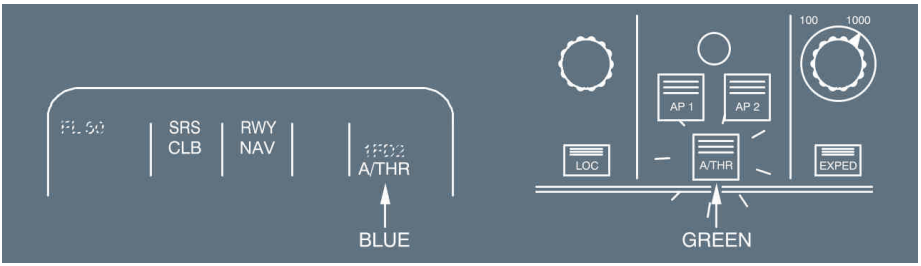
- One FMGC operative
- One FAC operative
- Two ADIRS operative
- Two FADECs operative
- One channel of the FCU operative
- One LGCIU operative
- A/THR is not manually disabled (instinctive disconnect pb has not been pressed for more than 15 s).

The flight crew arms A/THR:

- On ground
  - By pushing the A/THR pb on the FCU when the engines are not running, or
  - By setting the thrust levers to the FLX or TOGA detent when the engines are running.
- In flight
  - By pushing the A/THR pb on the FCU while the thrust levers are out of the active range, or
  - While A/THR is active ("A/THR" white on the FMA), by setting all thrust levers beyond the CL detent or at least one lever above the MCT detent, or
  - By engaging a go-around (MAN TOGA) or a soft go-around (MAN GA SOFT): the flight crew sets the thrust levers to the TOGA detent. Then, in the case of soft go-around, the flight crew retards the thrust levers to the FLX/MCT detent.

When the A/THR is armed:

- The FCU's A/THR pb light comes on
- "A/THR" is displayed in blue on the FMA.



Note: *At takeoff, if the flight crew sets the thrust levers to idle position, the A/THR disengages and cannot be rearmed until the aircraft becomes airborne.*

A/THR ARMING CONDITIONS

Ident.: DSC-22_30-90-00011958.0001001 / 23 JUN 15

[2] **Applicable to: MSN 01767-06336**

Arming conditions of the A/THR are numerous. The following is a list of the most important ones:

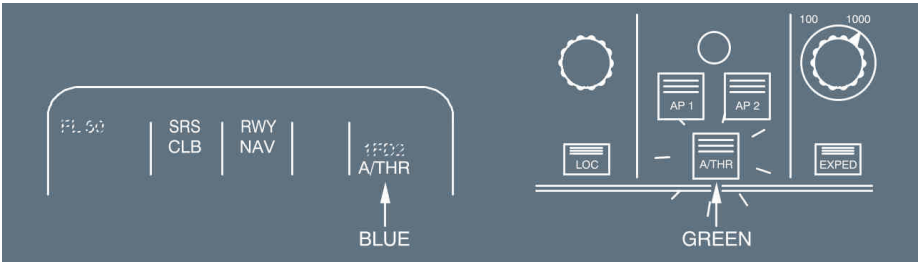
- One FMGC operative
- One FAC operative
- Two ADIRS operative
- Two FADECs operative
- One channel of the FCU operative
- One LGCIU operative
- A/THR is not manually disabled (instinctive disconnect pb has not been pressed for more than 15 s).

The flight crew arms A/THR:

- On ground
  - By pushing the A/THR pb on the FCU when the engines are not running, or
  - By setting the thrust levers at the FLX or TOGA detent when the engines are running.
- In flight
  - By pushing the A/THR pb on the FCU while the thrust levers are out of the active range, or
  - While A/THR is active (“A/THR” white on the FMA), by setting all thrust levers beyond the CL detent or at least one lever above the MCT detent, or
  - By engaging the go around mode.

When the A/THR is armed:

- The FCU’s A/THR pb light comes on
- “A/THR” is displayed in blue on the FMA.



Note: *At takeoff, if the thrust levers are set back to idle, the A/THR disengages and cannot be rearmed until the aircraft becomes airborne.*

A/THR ACTIVATION

Ident.: DSC-22_30-90-A-00011959.0001001 / 14 MAY 12

3 **Applicable to: MSN 01767-06868, 06914, 06952-07053, 07252-07396**

GENERAL

The A/THR is active when it controls thrust or speed. The position of the thrust lever determines the maximum thrust that the A/THR system can command (except in α-floor condition).

The A/THR being armed, is activated:
- When the flight crew sets both thrust levers between the CL and IDLE detents (two engines operative), or
- When the flight crew sets one thrust lever between the MCT and IDLE detents (one engine inoperative).

The A/THR being disconnected, is activated when the flight crew pushes the A/THR pb on the FCU while the thrust levers are within the active range, including IDLE position.

Note: *When the flight crew sets both thrust levers to IDLE position, the A/THR disconnects but, if the flight crew pushes the A/THR pb of the FCU, they will simultaneously arm and activate the autothrust. Due to the thrust levers position, IDLE thrust will be maintained.*

When ALPHA FLOOR is activated, regardless of the initial status of A/THR and the position of the thrust levers, the A/THR activates.

When A/THR is active:
- The A/THR pb on the FCU lights up
- The FMA displays A/THR mode in green in the first column and "A/THR" in white in the fifth column.

Ident.: DSC-22_30-90-A-00011959.0002001 / 14 MAY 12

4 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

GENERAL

The A/THR is active when it controls thrust or speed. The position of the thrust lever determines the maximum thrust that the A/THR system can command (except in α-floor condition).

The A/THR being armed, is activated:
- When the flight crew sets both thrust levers between the CL and IDLE detents (two engines operative)
- When the flight crew sets one thrust lever between the MCT and IDLE detents (one engine inoperative).

The A/THR being disconnected, is activated when the flight crew pushes the FCU pb while the thrust levers are within the active range, including IDLE position.
When the TCAS mode engages, the A/THR becomes armed or active, depending on the thrust levers position.

Note: When the flight crew sets both thrust levers to IDLE position, the A/THR disconnects but, if the flight crew pushes the A/THR pb of the FCU, he will simultaneously arm and activate the autothrust. Due to the thrust levers position, IDLE thrust will be maintained.

When ALPHA FLOOR is activated, regardless of the initial status of A/THR and the position of the thrust levers, the A/THR activates.

When A/THR is active:
- The A/THR pb on the FCU lights up
- The FMA displays A/THR mode in green in the first column and "A/THR" in white in the fifth column.

Ident.: DSC-22_30-90-A-00011960.0002001 / 16 MAR 11
Applicable to: ALL

EFFECTS OF THRUST LEVER MOVEMENT DURING A/THR ACTIVATION

While A/THR is active:

- When both thrust levers are set above the CL detent (both engines operative) or one thrust lever is set above MCT (one engine operative), the A/THR reverts from active to armed.
  "A/THR" turns to blue on the FMA and the thrust levers control thrust directly.
  The FMA displays "MAN THR" in white in its first column.
  The thrust levers provide the flight crew with an immediate increase of thrust when both thrust levers are pushed above the CL detent (two engines) or the active thrust lever above the MCT detent (one engine operative).
- When both thrust levers are set below the CL detent (both engines operative) or one thrust lever is set below MCT (one engine operative), a repeating warning (amber caution, single chime, "A/THR LIMITED" ECAM message) is activated every 5 s until the flight crew moves the lever back into the detent. "LVR CLB" (both engines operative) or "LVR MCT" (one engine operative) flashes white in the first column of the FMA.
  This device reminds the flight crew that the normal operating position of the thrust levers, when A/THR active, is the CL detent (two engines) or the MCT detent (one engine operative).
- When one thrust lever is in the CL detent and the other one out of detent, the "LVR ASYM" amber message comes up until both levers are set in the CL detent (only with both engines operative).

A/THR DISCONNECTION

Applicable to: ALL

Ident.: DSC-22_30-90-B-00011961.0001001 / 17 AUG 10

GENERAL

When the A/THR is disconnected, it is neither armed nor active.

The A/THR can be disconnected in two ways:

- Standard disconnection:
  - The flight crew pushes the instinctive disconnect pb on the thrust levers, or
  - The flight crew sets both thrust levers to IDLE detent.
- Non-standard disconnection:
  - The flight crew pushes the A/THR pb on the FCU while A/THR is active/armed, or
  - The system loses one of the arming conditions.

CAUTION	If the flight crew pushes and holds one instinctive disconnect pb for more than 15 s, the A/THR system is disconnected for the remainder of the flight. All A/THR functions including ALPHA FLOOR are lost, and they can be recovered only at the next FMGC power-up (on ground).

THRUST LOCK FUNCTION

Ident.: DSC-22_30-90-00011963.0002001 / 17 AUG 10
Applicable to: ALL

The Thrust Lock function is activated when the thrust levers are in the CL detent (or the MCT detent with one engine out), and:

- The flight crew pushes the A/THR pb on the FCU, or
- The A/THR disconnects due to a failure.

The thrust is locked at its level prior to disconnection. Moving the thrust levers out of CL or MCT suppresses the thrust lock and gives the flight crew manual control with the thrust levers.

When the Thrust Lock function is active:

- "THR LK" flashes amber on the FMA
- ECAM "ENG THRUST LOCKED" flashes every 5 s
- ECAM displays "THR LEVERS.....MOVE"
- A single chime sounds and the Master Caution light flashes every 5 s.

All warnings cease when the flight crew moves the thrust levers out of the detent.

A/THR DISCONNECTION CAUTION

Ident.: DSC-22_30-90-00011964.0002001 / 17 AUG 10
Applicable to: ALL

		A/THR DISCONNECTION	
		BY INSTINCTIVE DISCONNECT pb OR SETTING TWO LEVERS TO IDLE (if above 50 ft RA)	**BY OTHER MEANS**
CONSEQUENCE	**MASTER CAUTION light**	Illuminated 3 s maximum	Illuminated
	ECAM MESSAGE	A/THR OFF amber message 9 s maximum	Flashing ENG THRUST LOCKED amber caution, AUTO FLT A/THR OFF amber caution, blue "THR LEVERS.....MOVE"
	AUDIO	Single chime	Single chime
	CLR pb on ECAM CONTROL PANEL	Extinguished	Illuminated
ACTION	**MASTER CAUTION light**	- Extinguishes MASTER CAUTION light - Erases ECAM message	Extinguishes MASTER CAUTION light
	CLR pb on ECAM CONTROL PANEL	No effect	- Extinguishes MASTER CAUTION light and CLR pb - Erases ECAM message - Calls status
	INSTINCTIVE DISCONNECT pb	- Extinguishes MASTER CAUTION light - Erases ECAM message	Extinguishes MASTER CAUTION light
ECAM STATUS MESSAGE		NO	YES

The standard disconnection triggers temporary ECAM message and caution light. Single chime sounds.
The non standard disconnection triggers caution light and ECAM message removed only by a flight crew action. Single chime sounds.

A/THR MODES

Ident.: DSC-22_30-90-C-00011965.0002001 / 23 JUN 15
Applicable to: ALL

GENERAL

Except in takeoff and go-around situations, normal operation of the A/THR system requires the thrust levers to be:

- In the CL detent for the two-engine configuration. If they are not set in the CL detent, “LVR CLB” flashes white on the FMA.
- In MCT detent when in the one-engine-out configuration. If the appropriate lever is not set in the MCT detent, “LVR MCT” flashes white on the FMA.

The A/THR modes are selected automatically in conjunction with the AP/FD modes (except for ALPHA FLOOR):

A/THR in THRUST mode	AP/FD pitch mode maintains the speed: OP CLB - OP DES - CLB - EXP CLB ◁ - EXP DES ◁ - SRS - FLARE and DES (IDLE path)
A/THR in SPEED/MACH mode	If neither AP nor FD is engaged
	If AP/FD controls a vertical path: V/S - FPA - ALT* - ALT CST* - ALT - ALT CRZ - G/S* - G/S - FINAL and DES (geometric path)
A/THR in RETARD mode	AP/FD engaged in LAND mode during an automatic landing

Ident.: DSC-22_30-90-C-00011966.0002001 / 04 DEC 17
Applicable to: ALL

THRUST MODE

In THRUST mode, autothrust commands a specific thrust level in conjunction with the AP/FD pitch mode. This thrust level is limited by thrust lever position.

FMA Display	Meaning
THR MCT	Single engine thrust in climb. The live engine is at maximum continuous thrust (thrust lever in MCT detent)
THR CLB	Climb thrust in two engine configuration (at least one thrust lever in the CL detent, the other one below CL)
THR LVR	Undetermined thrust (neither CLB nor MCT thrust)
THR IDLE	Minimum thrust (both engines at IDLE thrust)

Note: When the A/THR is armed for takeoff or go-around, the FMA displays “MAN TOGA” (or “MAN FLX”, or "MAN GA SOFT" ◁) in white to remind the flight crew that the thrust levers are properly positioned.

Ident.: DSC-22_30-90-C-00011967.0001001 / 27 JAN 12
Applicable to: ALL

RETARD MODE

The RETARD mode is only available during automatic landing (AP engaged in LAND mode). At approximately 40 ft RA, the RETARD mode engages and remains engaged after touchdown. The A/THR commands IDLE thrust during the flare, and the FMA and engine warning display "IDLE". If the autopilot is disengaged during the flare before touchdown, the SPEED mode replaces the RETARD mode, and the flight crew has to manually reduce thrust.

Note: In an automatic landing, the system generates a "RETARD" callout at 10 ft RA, which prompts the flight crew to move the thrust levers to IDLE in order to confirm thrust reduction. In manual landing conditions, the system generates this callout at 20 ft RA, as a reminder.

Ident.: DSC-22_30-90-C-00011968.0002001 / 17 AUG 10
5 **Applicable to: MSN 01767-06868, 06914, 06952-07053, 07252-07396**

ALPHA FLOOR

ALPHA FLOOR is a protection that commands TOGA thrust, regardless of the thrust levers' positions. This protection is available from lift-off to 100 ft RA on approach.

ALPHA FLOOR calls up the following indications:
- "A FLOOR" in green, surrounded by a flashing amber box on the FMA, and in amber on the engine warning display, (as long as α-floor conditions are met)
- "TOGA LK" in green, surrounded by a flashing amber box on the FMA, when the aircraft leaves the α-floor conditions. TOGA thrust is frozen.

To cancel ALPHA FLOOR or TOGA LK thrust, the flight crew must disconnect the autothrust.

Ident.: DSC-22_30-90-C-00011968.0003001 / 18 MAR 11
6 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

ALPHA FLOOR

ALPHA FLOOR is a protection that commands TOGA thrust, regardless of the thrust levers' positions. This protection is available from lift-off to 100 ft RA on approach.

ALPHA FLOOR calls up the following indications:
- "A FLOOR" in green, surrounded by a flashing amber box on the FMA, and in amber on the engine warning display, (as long as α-floor conditions are met)
- "TOGA LK" in green, surrounded by a flashing amber box on the FMA, when the aircraft leaves the α-floor conditions. TOGA thrust is frozen.

To cancel ALPHA FLOOR or TOGA LK thrust, the flight crew must disconnect the autothrust.
Alpha floor is inhibited when TCAS mode is engaged (*Refer to DSC-22_30-70-85 General*)

Ident.: DSC-22_30-90-C-00011969.0001001 / 17 AUG 10
Applicable to: ALL

SPEED/MACH MODE

In SPEED/MACH mode, the A/THR adjusts the thrust in order to acquire and hold a speed or Mach target.

The speed or Mach target may be:
- Selected on the FCU by the flight crew
- Managed by the FMGC.

When in SPEED/MACH mode, the A/THR does not allow speed excursions beyond the following limits, regardless of the target speed or Mach number:
- For a selected speed target, the limits are VLS and VMAX (VMO-MMO, VFE-VLE, whichever applies)
- For a managed speed target, the limits are maneuvering speed (Green Dot, S, F, whichever applies) and maximum speed (340/0.80-VFE-VLE, whichever applies).

The changeover from SPEED to MACH mode is either automatic, performed by the FMGC, or manual, with the flight crew pushing the SPD/MACH pb.
The FMA displays “SPEED” or “MACH”.

APPROACH AUTOTHRUST:

Below 3 200 ft RA, with at least CONF 1, the A/THR logic is modified to be more responsive to speed variation. This is referred to as approach autothrust.

SPEED MODE IN APPROACH PHASE

Ident.: DSC-22_30-90-D-00011970.0001001 / 05 DEC 17
Applicable to: ALL

When the aircraft flies an approach in managed speed, the managed speed target, displayed by the magenta triangle on the PFDs, is variable. This managed speed target is the VAPP, displayed on the PERF APPR page, corrected by the Ground Speed Mini function.

ACTIVATION CONDITIONS OF THE GROUND SPEED MINI FUNCTION

The GSmini function is active when :

- The speed is managed and,
- The FMS flight phase is the approach phase.

Ident.: DSC-22_30-90-D-00011971.0001001 / 01 DEC 17
Applicable to: ALL

GROUND SPEED MINI FUNCTION PRINCIPLE

The objective of the Ground Speed Mini function is to take advantage of the aircraft inertia, when the wind varies during the approach. This objective is achieved by providing the adequate indicated speed target (i.e. the managed speed target represented by the magenta triangle). When the aircraft flies this indicated air speed target, the energy of the aircraft is maintained above a minimum level ensuring aerodynamic margins versus stall.
During the approach, the FG continuously computes the managed speed target in order to take into account the gusts or wind changes.

Ident.: DSC-22_30-90-D-00022056.0001001 / 05 DEC 17
Applicable to: ALL

L2 MANAGED SPEED TARGET

The computation of the managed speed target uses the tower headwind component, the current headwind component, and the VAPP.

TOWER HEADWIND COMPONENT

The tower wind is the average wind provided by the ATIS or the tower. The flight crew enters the tower wind in the MAG WIND field on the PERF APPR page.
The tower headwind component is the projection of the MAG WIND on the runway axis. This computation is based on the runway inserted in the FMS active F-PLN.

CURRENT HEADWIND COMPONENT

The projection of the current wind measured by the ADIRS on the aircraft longitudinal axis is the current headwind component (instantaneous headwind).

Ident.: DSC-22_30-90-D-00011975.0002001 / 05 DEC 17
Applicable to: ALL

VAPP COMPUTATION

The FMS computes the VAPP, and displays it on the PERF APPR page. The VAPP computation takes into account the tower headwind component. VAPP is computed as follows:

- VAPP = VLS+1/3 of the TWR HEADWIND COMPONENT, or
- VAPP = VLS +5 kt, whichever is the highest.

Note: *"1/3 of the TWR HEADWIND COMPONENT" has two limits:*

- *0 kt as the minimum value (no wind or tailwind)*
- *+15 kt as the maximum value.*

The flight crew can manually modify the VAPP and MAG WIND values on the PERF APPR page.

Ident.: DSC-22_30-90-D-00022059.0002001 / 05 DEC 17

7 **Applicable to: MSN 01767-06336**

MANAGED SPEED TARGET COMPUTATION

The FG continuously computes the managed speed target that is equal to VAPP plus an additional increment. This increment takes into account the headwind variation during the final approach.
Managed speed target = VAPP + (current headwind component - tower headwind component).
The managed speed target has the following limits:

- VAPP, as the minimum value
- VFE next in CONF 0, 1, 2 or 3, VFE -5 kt in CONF FULL, as the maximum value.

Ident.: DSC-22_30-90-D-00022059.0006001 / 05 DEC 17

8 **Applicable to: MSN 06720-09063**

MANAGED SPEED TARGET COMPUTATION

The FG continuously computes the managed speed target that is equal to VAPP plus an additional increment. This increment takes into account the headwind variation during the final approach.
Managed speed target = VAPP + 1/3*(current headwind component - tower headwind component).
The managed speed target has the following limits:

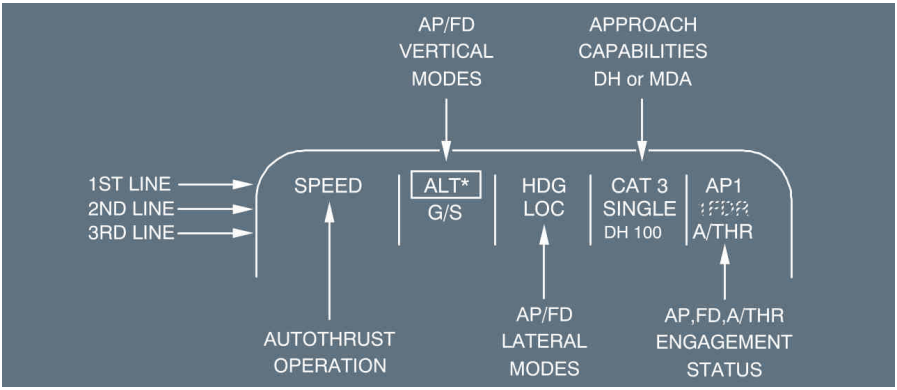
- VAPP, as the minimum value
- VFE next, in CONF 0,1,2,3, VFE-5 kt in CONF FULL, as the maximum value.

FLIGHT MODE ANNUNCIATOR (FMA)

Ident.: DSC-22_30-100-A-00012356.0001001 / 19 DEC 12
Applicable to: MSN 01920

GENERAL

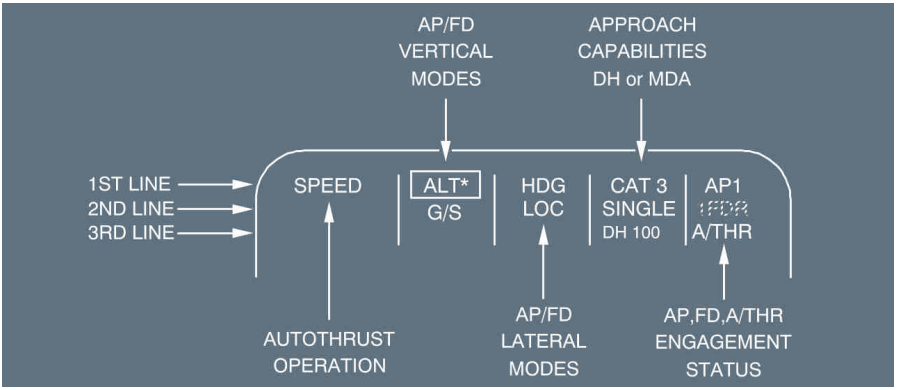
The Flight Mode Annunciator (FMA) which is just above the PFDs, shows the status of the A/THR, the AP/FD vertical and lateral modes, the approach capabilities, and the AP/FD-A/THR engagement status.
After each mode change, the FMA displays a white box around the new annunciation for 10 s.



Ident.: DSC-22_30-100-A-00012356.0002001 / 19 DEC 12
Applicable to: MSN 02108, 02195-02359, 02405, 02482

GENERAL

The Flight Mode Annunciator (FMA) which is just above the PFDs, shows the status of the A/THR, the AP/FD vertical and lateral modes, the approach capabilities, and the AP/FD-A/THR engagement status.
A white box is displayed for 10 s around each new annunciation. The white box display time may be increased to 15 s in some mode reversion cases associated with an aural triple click.



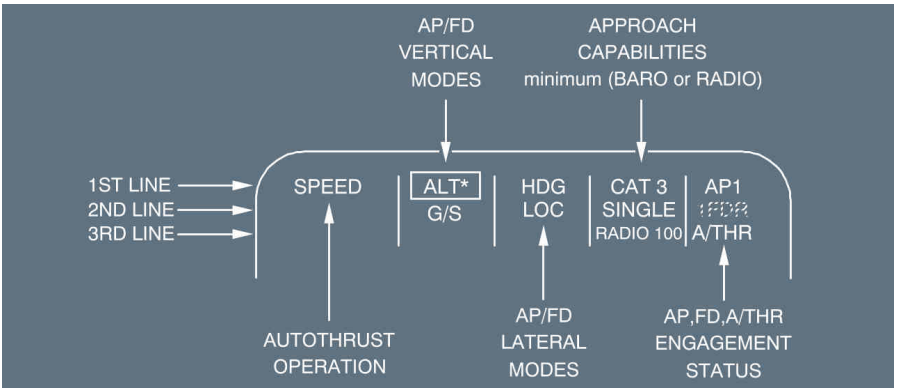
Ident.: DSC-22_30-100-A-00012356.0012001 / 19 DEC 12

Applicable to: MSN 01767, 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09031, 09063

GENERAL

The Flight Mode Annunciator (FMA) which is just above the PFDs, shows the status of the A/THR, the AP/FD vertical and lateral modes, the approach capabilities, and the AP/FD-A/THR engagement status.

A white box is displayed for 10 s around each new annunciation. The white box display time may be increased to 15 s in some mode reversion cases associated with an aural triple click.



Ident.: DSC-22_30-100-A-00012357.0002001 / 17 AUG 10
Applicable to: ALL

THE THREE LEFT COLUMNS

The first line shows the engaged modes in green.
The second line shows the armed modes in blue or magenta.
Magenta indicates that the modes are armed or engaged because of a constraint.

The third line displays special messages:
- Messages related to flight controls have first priority:
  - "MAN PITCH TRIM ONLY" in red, flashing for 9 s, then steady
  - "USE MAN PITCH TRIM" in amber, pulsing for 9 s, then steady.
- Messages related to the FMGS have second priority.

Ident.: DSC-22_30-100-A-00012358.0002001 / 16 MAR 11
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

THE FOURTH COLUMN

Displays approach capabilities in white.
Displays DH or MDA/MDH in blue.

Note: The DH or MDA/MDH value on the FMA is not rounded off: The exact value appears on the FMA, and is the same value as the one inserted in the MCDU PERF APPR page.

Ident.: DSC-22_30-100-A-00012358.0014001 / 16 MAR 11
2 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

THE FOURTH COLUMN

Displays approach capabilities in white.
Displays minimum in blue.

Note: The BARO or RADIO value on the FMA is not rounded off: The exact value appears on the FMA, and is the same value as the one inserted in the MCDU PERF APPR page.

Ident.: DSC-22_30-100-A-00012359.0001001 / 17 AUG 10
Applicable to: ALL

THE FIFTH COLUMN

Displays the engagement status of AP, FD, and A/THR in white.
Displays a box around FD for 10 s in case of automatic FMGC switching.
Displays A/THR in blue when autothrust is armed but not active.

Note: The FMGS synchronizes A/THR mode, AP/FD modes and approach capability to provide identical information on both PFDs.

AUTOTHRUST ANNUNCIATIONS (FMA COLUMN 1)

Ident.: DSC-22_30-100-B-00012360.0006001 / 04 DEC 17

3 **Applicable to: MSN 06720-09063**

FIRST LINE

L12

DISPLAY	COLOR	MEANING
MAN TOGA	White White box	A/THR is armed, at least one thrust lever is in TOGA detent (and associated engine is running).
MAN FLX XX	White White box Blue numbers	A/THR is armed, at least one thrust lever is in FLX/MCT detent with a FLX TO temperature set at XX°. The other thrust lever is at or below the FLX/MCT detent.
MAN GA SOFT	White White box	A/THR is armed, at least one engine is in go-around soft thrust(1) and the thrust levers are above the CL detent and at or below the FLX/MCT detent. *Note:* *The soft go-around function remains operative on the operative engine, and MAN GA SOFT is still displayed if one of the following occurs:* - *One engine fails, or* - *One thrust lever set to idle position, or* - *One engine is not in soft go-around thrust mode.* *However, LVR TOGA appears and requests the flight crew to set the thrust lever of the operative engine to the TOGA detent.*
MAN DTO	White White box	A/THR is armed, and at least one thrust lever is in the FLX/MCT detent, with an entered derated takeoff level. The other thrust lever is at, or below the FLX/MCT detent.
MAN MCT	White White box	A/THR is armed, at least one thrust lever is in the FLX/MCT detent. The other thrust lever is at, or below the FLX/MCT detent. MAN FLX XX, MAN DTO, MAN GA SOFT cannot engage.
MAN THR(2)(3)	White Amber box	A/THR is armed, and the most advanced thrust lever is above CL detent (two engines operative), or one above FLX/MCT (engine-out) and not in a detent.
THR MCT	Green	A/THR is active in thrust mode and the most advanced thrust lever is in the FLX/MCT detent (engine-out).
THR CLB	Green	A/THR is active in thrust mode and the most advanced thrust lever is in the CL detent.
THR IDLE	Green	A/THR is active in thrust mode and commands idle thrust.
THR LVR	Green	A/THR is active in thrust mode with both thrust levers below CL detent, or the live thrust lever (one engine) below MCT.
SPEED or MACH	Green	A/THR is active in SPEED or MACH mode.

Continued on the following page

Continued from the previous page

DISPLAY	COLOR	MEANING
A. FLOOR	Green Amber box	A/THR is active and commands TOGA thrust while α FLOOR conditions are met.
TOGA LK	Green Amber box	A/THR is active and TOGA thrust is locked (α FLOOR conditions are no longer met).

(1) *The GA SOFT mode engages if all the following conditions are applicable when the flight crew sets the thrust levers to TOGA, then to the FLX/MCT detent during the go-around:*
- *Both engines are operative*
- *The slats/flaps are extended*
- *The aircraft is below the go-around thrust reduction altitude, and below 16 000 ft*
- *The aircraft is in flight and not performing a touch and go.*

(2) *If the flight crew sets the thrust levers between CL and TOGA, but not to the CL, FLX/MCT, or TOGA detent, MAN THR will appear on the FMA.*

(3) *If the flight crew sets the thrust levers directly to FLX/MCT and not to TOGA then FLX/MCT, the MAN THR will appear on the FMA.*

Ident.: DSC-22_30-100-B-00012360.0002001 / 23 JUN 15

4 **Applicable to: MSN 01767-06336**

FIRST LINE

DISPLAY	COLOR	MEANING
MAN TOGA	White White box	A/THR is armed, at least one thrust lever is in TOGA detent.
MAN FLX XX	White White box Blue numbers	A/THR is armed, at least one thrust lever is in MCT/FLX detent with FLXTO temp set at XX°. The other thrust lever is at or below the MCT/FLX detent.
MAN MCT	White White box	A/THR is armed, at least one thrust lever is in the MCT/FLX detent, the other is at, or below this detent.
MAN THR	White Amber box	A/THR is armed, and the most advanced thrust lever is above CL detent (two engines operative), or one above MCT/FLX (engine-out) and not in a detent.
THR MCT	Green	A/THR is active in thrust mode and the most advanced thrust lever is in the MCT/FLX detent (engine-out).
THR CLB	Green	A/THR is active in thrust mode and the most advanced thrust lever is in the CL detent.
THR IDLE	Green	A/THR is active in thrust mode and commands idle thrust.
THR LVR	Green	A/THR is active in thrust mode with both thrust levers below CL detent, or the live thrust lever (one engine) below MCT.
SPEED or MACH	Green	A/THR is active in SPEED or MACH mode.

Continued on the following page

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DISPLAY	COLOR	MEANING
A. FLOOR	Green Amber box	A/THR is active and commands TOGA thrust while α FLOOR conditions are met.
TOGA LK	Green Amber box	A/THR is active and TOGA thrust is locked (α FLOOR conditions are no longer met).

Ident.: DSC-22_30-100-B-00012361.0002001 / 17 AUG 10
Applicable to: ALL

SECOND LINE

Not used with this standard.

Ident.: DSC-22_30-100-B-00012362.0006001 / 04 DEC 17
5 **Applicable to: MSN 06720-09063**

THIRD LINE

DISPLAY	COLOR	MEANING
LVR CLB (flashing)	White	Request to set the thrust levers in CL detent in the case not in position while the aircraft is above the altitude of thrust reduction with both engines running.
LVR MCT (flashing)	White	Request to set the live thrust lever in FLX/MCT detent in the case not in position after an engine failure (with speed above green dot).

LVR TOGA
(flashing)
	White	Request to set the thrust levers to the TOGA detent, if one of the following conditions is met:
		- Upon a go-around performed with one engine inoperative (engine failed or corresponding thrust lever set to idle):
		  - The flight crew reduces the thrust lever of operative engine to FLX/MCT before reaching the thrust reduction altitude
		- Upon a soft go-around:
		  - One engine fails, or
		  - One thrust lever set to idle position, or
		  - One engine is not in soft go-around thrust mode, or
		  - The soft go-around function is lost.

LVR ASYM	Amber	(Two engines only). One thrust lever in CL or FLX/MCT detent and the other one is not in this detent.
THR LK (flashing)	Amber	After A/THR disconnection (action of the flight crew on FCU or failure) resulting in thrust being frozen. Both thrust levers being in CL detent or one in FLX/MCT (engine out) detent.

Note: The amber caution light flashes and a single chime sounds every 5 s, as long as the flight crew takes no appropriate action in the following cases:
- *THR LK*
- *LVR CLB (if the thrust levers are below the CLB detent)*
- *LVR MCT (if the thrust levers are below the FLX/MCT detent)*
- *LVR TOGA (if the thrust levers are below the TOGA detent). For this case, single chime sounds every 3 s.*

Ident.: DSC-22_30-100-B-00012362.0002001 / 16 NOV 15

6 **Applicable to: MSN 01767-06336**

THIRD LINE

DISPLAY	COLOR	MEANING
LVR CLB (flashing)	White	Request to set the thrust levers in CL detent in the case not in position while the aircraft is above the altitude of thrust reduction with both engines running.
LVR MCT (flashing)	White	Request to set the live thrust lever in MCT/FLX detent in the case not in position after an engine failure (with speed above green dot).
LVR ASYM	Amber	(Two engines only). One thrust lever in CL or MCT/FLX detent and the other one is not in this detent.
THR LK (flashing)	Amber	After A/THR disconnection (action of the flight crew on FCU or failure) resulting in thrust being frozen. Both thrust levers being in CL detent or one in MCT/FLX (engine out) detent.

Note: The amber caution light flashes and a single chime sounds every 5 s, as long as the flight crew takes no appropriate action in the following cases:
- *THR LK*
- *LVR CLB (if the thrust levers are below the CLB detent)*
- *LVR MCT (if the thrust levers are below the FLX/MCT detent).*

AUTOBRAKE MODES (FMA COLUMN 1)

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: DSC-22_30-100-G-00021938.0002001 / 09 NOV 17

7

FIRST LINE

DISPLAY	COLOR	MEANING
BRK LO	Green White box	A/BRK is active in LO mode.
BRK MED	Green White box	A/BRK is active in MED mode.
BRK MAX	Green White box	A/BRK is active in MAX mode.

Ident.: DSC-22_30-100-G-00021939.0003001 / 09 MAR 18

8

SECOND LINE

DISPLAY	COLOR	MEANING
BRK LO	Blue	A/BRK is armed in LO mode.
BRK MED	Blue	A/BRK is armed in MED mode.

Ident.: DSC-22_30-100-G-00022274.0001001 / 09 MAR 18

9

THIRD LINE

DISPLAY	COLOR	MEANING
BRK MAX	Blue	A/BRK is armed in MAX mode.

AP/FD VERTICAL MODES (FMA COLUMN 2)

Ident.: DSC-22_30-100-C-00012363.0016001 / 24 AUG 18

10 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

FIRST LINE

DISPLAY	COLOR	MEANING
SRS	Green	Takeoff or go-around mode is engaged.
CLB	Green	Climb mode is engaged. The FMGS target altitude is higher than the actual altitude. ALT CSTR are taken into account.
OP CLB	Green	Open Climb mode is engaged. The FCU selected altitude is higher than the actual altitude. ALT CSTR are disregarded.
EXP CLB	Green	Expedite Climb is engaged. The selected altitude is higher than the actual altitude. Green dot speed is maintained, ALT CSTR are disregarded.

Continued on the following page

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DISPLAY	COLOR	MEANING
ALT* or ALT CST*	Green	ALT CAPTURE is engaged: - ALT* green in case of FCU selected altitude capture - ALT CST* green in case of ALT CSTR capture (vertical profile).
ALT or ALT CST	Green	ALTITUDE HOLD mode is engaged: - ALT is green when the FCU selected altitude is held - ALT CST is green when an ALT CSTR is held (vertical profile).
ALT CRZ	Green	ALT mode is engaged and CRZ FL is held.
DES	Green	Descent mode is engaged. The FMGS target altitude is lower than the actual altitude. ALT CSTR are taken into account.
OP DES	Green	Open Descent mode is engaged. The FCU selected altitude is lower than the actual altitude. ALT CSTR are disregarded.
EXP DES	Green	Expedite Descent is engaged, the selected altitude is lower than the actual altitude. M 0.80 or 340 kt is maintained. ALT CSTR are disregarded.
G/S*	Green	Glide Slope capture mode is engaged.
G/S	Green	Glide Slope mode is engaged.
V/S±XXXX	Green + blue numbers	Vertical speed mode is engaged to acquire and hold the V/S selected on the FCU. ALT CSTR are disregarded. If the aircraft reaches VLS or VMAX and cannot maintain the target, the indication is boxed amber and flashes, and the target pulses.
FPA±XX	Green + blue numbers	Flight Path Angle mode is engaged to acquire and hold the FPA selected on the FCU. ALT CSTR are disregarded. If the aircraft reaches VLS or VMAX and cannot maintain the target, the indication is boxed amber and flashes, and the target pulses.
TCAS	Green	TCAS mode is engaged. The Auto Flight System (AFS) guidance provides a vertical guidance in accordance with the TCAS Resolution Advisory order.

Ident.: DSC-22_30-100-C-00012363.0002001 / 23 JUN 15
Applicable to: MSN 01920

FIRST LINE

DISPLAY	COLOR	MEANING
SRS	Green	Takeoff or go-around mode is engaged.
CLB	Green	Climb mode is engaged. The FMGS target altitude is higher than the actual altitude. ALT CSTR are taken into account.
OP CLB	Green	Open Climb mode is engaged. The FCU selected altitude is higher than the actual altitude. ALT CSTR are disregarded.
EXP CLB	Green	Expedite Climb is engaged. The selected altitude is higher than the actual altitude. Green dot speed is maintained, ALT CSTR are disregarded.

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DISPLAY	COLOR	MEANING
ALT* or ALT CST*	Green	ALT CAPTURE is engaged: - ALT* green in case of FCU selected altitude capture - ALT CST* green in case of ALT CSTR capture (vertical profile).
ALT or ALT CST	Green	ALTITUDE HOLD mode is engaged: - ALT is green when the FCU selected altitude is held - ALT CST is green when an ALT CSTR is held (vertical profile).
ALT CRZ	Green	ALT mode is engaged and CRZ FL is held.
DES	Green	Descent mode is engaged. The FMGS target altitude is lower than the actual altitude. ALT CSTR are taken into account.
OP DES	Green	Open Descent mode is engaged. The FCU selected altitude is lower than the actual altitude. ALT CSTR are disregarded.
EXP DES	Green	Expedite Descent is engaged, the selected altitude is lower than the actual altitude. M 0.80 or 340 kt is maintained. ALT CSTR are disregarded.
G/S*	Green	Glide Slope capture mode is engaged.
G/S	Green	Glide Slope mode is engaged.
V/S±XXXX	Green + blue numbers	Vertical speed mode is engaged to acquire and hold the V/S selected on the FCU. ALT CSTR are disregarded.
FPA±XX	Green + blue numbers	Flight Path Angle mode is engaged to acquire and hold the FPA selected on the FCU. ALT CSTR are disregarded.

Ident.: DSC-22_30-100-C-00012363.0006001 / 23 JUN 15

11 **Applicable to: MSN 01767, 01957-02195, 02275-02405, 02457-02649, 02712-02737, 02908-03138, 03308, 03357-06868, 06914, 06952-07053, 07252-07396**

FIRST LINE

DISPLAY	COLOR	MEANING
SRS	Green	Takeoff or go-around mode is engaged.
CLB	Green	Climb mode is engaged. The FMGS target altitude is higher than the actual altitude. ALT CSTR are taken into account.
OP CLB	Green	Open Climb mode is engaged. The FCU selected altitude is higher than the actual altitude. ALT CSTR are disregarded.
EXP CLB	Green	Expedite Climb is engaged. The selected altitude is higher than the actual altitude. Green dot speed is maintained, ALT CSTR are disregarded.
ALT* or ALT CST*	Green	ALT CAPTURE is engaged: - ALT* green in case of FCU selected altitude capture - ALT CST* green in case of ALT CSTR capture (vertical profile).

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DISPLAY	COLOR	MEANING
ALT or ALT CST	Green	ALTITUDE HOLD mode is engaged: - ALT is green when the FCU selected altitude is held - ALT CST is green when an ALT CSTR is held (vertical profile).
ALT CRZ	Green	ALT mode is engaged and CRZ FL is held.
DES	Green	Descent mode is engaged. The FMGS target altitude is lower than the actual altitude. ALT CSTR are taken into account.
OP DES	Green	Open Descent mode is engaged. The FCU selected altitude is lower than the actual altitude. ALT CSTR are disregarded.
EXP DES	Green	Expedite Descent is engaged, the selected altitude is lower than the actual altitude. M 0.80 or 340 kt is maintained. ALT CSTR are disregarded.
G/S*	Green	Glide Slope capture mode is engaged.
G/S	Green	Glide Slope mode is engaged.
V/S±XXXX	Green + blue numbers	Vertical speed mode is engaged to acquire and hold the V/S selected on the FCU. ALT CSTR are disregarded. If the aircraft reaches VLS or VMAX and cannot maintain the target, the indication is boxed amber and flashes, and the target pulses.
FPA±XX	Green + blue numbers	Flight Path Angle mode is engaged to acquire and hold the FPA selected on the FCU. ALT CSTR are disregarded. If the aircraft reaches VLS or VMAX and cannot maintain the target, the indication is boxed amber and flashes, and the target pulses.

Ident.: DSC-22_30-100-C-00012363.0011001 / 23 JUN 15
Applicable to: MSN 02204, 02443, 02670, 02804, 03264, 03330

FIRST LINE

DISPLAY	COLOR	MEANING
SRS	Green	Takeoff or go-around mode is engaged.
CLB	Green	Climb mode is engaged. The FMGS target altitude is higher than the actual altitude. ALT CSTR are taken into account.
OP CLB	Green	Open Climb mode is engaged. The FCU selected altitude is higher than the actual altitude. ALT CSTR are disregarded.
ALT* or ALT CST*	Green	ALT CAPTURE is engaged: - ALT* green in case of FCU selected altitude capture - ALT CST* green in case of ALT CSTR capture (vertical profile).
ALT or ALT CST	Green	ALTITUDE HOLD mode is engaged: - ALT is green when the FCU selected altitude is held - ALT CST is green when an ALT CSTR is held (vertical profile).
ALT CRZ	Green	ALT mode is engaged and CRZ FL is held.

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DISPLAY	COLOR	MEANING
DES	Green	Descent mode is engaged. The FMGS target altitude is lower than the actual altitude. ALT CSTR are taken into account.
OP DES	Green	Open Descent mode is engaged. The FCU selected altitude is lower than the actual altitude. ALT CSTR are disregarded.
G/S*	Green	Glide Slope capture mode is engaged.
G/S	Green	Glide Slope mode is engaged.
V/S±XXXX	Green + blue numbers	Vertical speed mode is engaged to acquire and hold the V/S selected on the FCU. ALT CSTR are disregarded. If the aircraft reaches VLS or VMAX and cannot maintain the target, the indication is boxed amber and flashes, and the target pulses.
FPA±XX	Green + blue numbers	Flight Path Angle mode is engaged to acquire and hold the FPA selected on the FCU. ALT CSTR are disregarded. If the aircraft reaches VLS or VMAX and cannot maintain the target, the indication is boxed amber and flashes, and the target pulses.

Ident.: DSC-22_30-100-C-00012364.0002001 / 23 JUN 15
Applicable to: ALL

SECOND LINE

DISPLAY	COLOR	MEANING
CLB	Blue	Climb mode is armed.
ALT	Blue or Magenta	Altitude mode is armed: - Blue when the target altitude is the FCU selected altitude - Magenta when the target altitude is an ALT CSTR.
DES	Blue	Descent mode is armed before the descent phase.
G/S	Blue	Glide Slope mode is armed.
FINAL	Blue	Final descent mode is armed.
ALT G/S	Blue/Blue	ALT and G/S modes are armed.
ALT G/S	Magenta/ Blue	ALT CST and G/S modes are armed.
ALT FINAL	Blue/Blue	ALT and FINAL modes are armed.
ALT FINAL	Magenta/ Blue	ALT CST and FINAL modes are armed.
DES G/S	Blue/Blue	DES and G/S modes are armed.
DES FINAL	Blue/Blue	DES and FINAL modes are armed.

Ident.: DSC-22_30-100-C-00012365.0001001 / 17 AUG 10
12 **Applicable to: MSN 01767-06868, 06914, 06952-07053, 07252-07396**

THIRD LINE

DISPLAY	COLOR	MEANING
SPEED SEL:XXX	Blue	Indicates a preset speed associated with the cruise or climb phase.
MACH SEL:.XX	Blue	Indicates a preset Mach associated with the cruise or climb phase.

Note: These two messages use both the first and second columns (third line).

Ident.: DSC-22_30-100-C-00012365.0002001 / 18 MAR 11

13 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

THIRD LINE

DISPLAY	COLOR	MEANING
SPEED SEL:XXX	Blue	Indicates a preset speed associated with the cruise or climb phase.
MACH SEL:.XX	Blue	Indicates a preset Mach associated with the cruise or climb phase.
TCAS	Blue	TCAS mode is armed

Note: These two messages use both the first and second columns (third line).

AP/FD LATERAL MODES (FMA COLUMN 3)

Applicable to: ALL

Ident.: DSC-22_30-100-D-00012366.0002001 / 16 MAR 11

FIRST LINE

DISPLAY	COLOR	MEANING
RWY	Green	RWY mode is engaged.
RWY TRK	Green	RWY mode is engaged once airborne at or above 30 ft RA.
HDG	Green	HEADING mode is engaged.
TRK	Green	TRACK mode is engaged.
NAV	Green	NAV mode is engaged to guide the aircraft along the FM lateral F-PLN.
LOC*	Green	LOC capture mode is engaged.
LOC	Green	LOC track mode is engaged.
APP NAV	Green	NAV mode is engaged during a non-ILS approach.
GA TRK	Green	GO-AROUND TRACK mode is engaged.

Ident.: DSC-22_30-100-D-00012367.0001001 / 17 AUG 10

SECOND LINE

DISPLAY	COLOR	MEANING
NAV	Blue	NAV mode is armed.
LOC	Blue	LOC mode is armed.
APP NAV	Blue	NAV mode is armed for a non-ILS approach.

AP/FD COMMON MODES (FMA COLUMNS 2 AND 3)

Ident.: DSC-22_30-100-00012368.0002001 / 17 AUG 10
Applicable to: ALL

DISPLAY	COLOR	MEANING
LAND	Green	Land mode is engaged below 400 ft RA.
FLARE	Green	Flare mode is engaged.
ROLL OUT	Green	Roll out mode is engaged.
FINAL APP	Green	APP NAV and Final modes are engaged during a non-ILS approach.

APPROACH CAPABILITIES (FMA COLUMN 4)

Ident.: DSC-22_30-100-E-00012369.0002001 / 17 AUG 10
Applicable to: ALL

FIRST LINE

DISPLAY	COLOR	MEANING
CAT 1	White	CAT 1 capability available.
CAT 2	White	CAT 2 capability available.
CAT 3	White	CAT 3 capability available.

Ident.: DSC-22_30-100-E-00012370.0002001 / 17 AUG 10
Applicable to: ALL

SECOND LINE

DISPLAY	COLOR	MEANING
SINGLE	White	CAT 3 capability available, with FAIL PASSIVE condition.
DUAL	White	CAT 3 capability available, with FAIL OPERATIONAL condition.

Ident.: DSC-22_30-100-E-00012371.0002001 / 17 AUG 10
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

THIRD LINE

DISPLAY	COLOR	MEANING
MDA/MDH XXXX	White Blue	Minimum Descent Altitude or Minimum Descent Height as inserted by the flight crew on the MCDU PERF APPR page.
DH XXX/NO DH	White Blue	Decision Height as inserted by the flight crew on the MCDU PERF APPR page. NO DH: when NO inserted on the MCDU PERF APPR page.

Ident.: DSC-22_30-100-E-00012371.0009001 / 16 MAR 11

14 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

THIRD LINE

DISPLAY	COLOR	MEANING
BARO XXXX	White Blue	Minimum Descent Altitude or Minimum Descent Height as inserted by the flight crew on the MCDU PERF APPR page.
RADIO XXX/NO DH	White Blue	Decision Height as inserted by the flight crew on the MCDU PERF APPR page. NO DH: when NO inserted on the MCDU PERF APPR page.

AP/FD - A/THR ENGAGEMENT STATUS (FMA COLUMN 5)

Applicable to: ALL

Ident.: DSC-22_30-100-F-00012372.0001001 / 17 AUG 10

FIRST LINE

DISPLAY	COLOR	MEANING
AP1 + 2	White	Autopilot 1 and 2 are engaged.
AP1	White	Autopilot 1 is engaged.
AP2	White	Autopilot 2 is engaged.

Ident.: DSC-22_30-100-F-00012373.0002001 / 17 AUG 10

SECOND LINE

DISPLAY	COLOR	MEANING
X FD Y	White	X and Y give the FD engagement status on PFD1 and PFD2. X and Y can be 1, 2, or –: - –: No FD is engaged on the corresponding PFD - 1: FD 1 is engaged on the corresponding PFD - 2: FD 2 is engaged on the corresponding PFD. The normal status (FD 1 and 2 engaged) is 1 FD 2.

Ident.: DSC-22_30-100-F-00012374.0001001 / 17 AUG 10

THIRD LINE

DISPLAY	COLOR	MEANING
A/THR	White	A/THR is active.
A/THR	Blue	A/THR is armed.

SPECIAL MESSAGES (FMA COLUMNS 2 AND 3)

Ident.: DSC-22_30-100-00012539.0046001 / 05 JUN 18

15 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

The third line displays three types of messages:

- It gives first priority to Flight Control messages
- It gives second priority to vertical Flight Management messages
- It gives last priority to EFIS reconfiguration messages.

DISPLAY	COLOR	MEANING
MAN PITCH TRIM ONLY	Red	Displayed in case of loss of L+R elevators.
USE MAN PITCH TRIM	Amber	F/CTL are in direct law.
DISCONNECT AP FOR LDG	Amber	This message is displayed when, during a Non Precision Approach, the AP/FD remains engaged at: - Minimum minus 50 ft, or - 400 ft AGL (if no minimum entered) This message is a reminder to the flight crew that AP must be disconnected before landing.
CHECK APPR SELECTION	White	The aircraft is in cruise at less than 100 NM from the Top of Descent or in descent or in approach and: - A non-ILS/non-GLS approach has been selected - An ILS frequency/GLS channel is tuned on the MCDU RAD NAV page.
SET MANAGED SPEED or CHECK SPEED MODE (Also displayed on PFD)	White	The SPEED target is selected but a preselected SPEED does not exist for the next flight phase.
SET GREEN DOT SPEED	White	The aircraft is in Engine Out mode and the SPEED target is selected. This message is displayed if the FCU selected speed is: ≤ Green Dot -10 kt, or ≥ Green Dot +10 kt, except in ALT* and ALT mode.
SET HOLD SPEED	White	The aircraft is in selected SPEED control, a Holding pattern is inserted in the F-PLN and the aircraft is 30 s before the deceleration point to the precomputed HOLD SPEED.
DECELERATE or T/D REACHED (Also displayed on PFD)	White	This message is displayed if the thrust is not reduced when passing the top of descent and the aircraft is above the descent profile.

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DISPLAY	COLOR	MEANING
MORE DRAG	White	DES mode is engaged, idle is selected, and either: - The aircraft is above the vertical profile and the predicted intercept point of the theoretical profile is at less than 2 NM from the next ALT CSTR, or - In auto speed control and the aircraft enters a speedbrake decelerating segment.
FOR GA: SET TOGA	Amber	When AP/FD is in approach vertical mode and aircraft is below 1 000 ft RA, this message is displayed if all thrust levers are moved to or above MCT, but below TOGA.
TCAS RA INHIBITED	White	This message is displayed in the case of a TCAS mode automatic disengagement. The TCAS mode is no longer available.
TRK FPA DESELECTED	White	If the flying reference was TRK, when the TCAS mode engages, the flying reference automatically becomes HDG. When the TCAS disengages the FMA displays TRK FPA DESELECTED to inform the flight crew that the flying reference has changed.

SPECIAL MESSAGES (FMA COLUMNS 2 AND 3)

Ident.: DSC-22_30-100-00012539.0045001 / 05 NOV 15

16 **Applicable to: MSN 01957, 02135, 02139, 02443, 02649, 02712, 02908-03071, 03264, 03330-04113, 04216-04312, 04328-04384, 04399-04518, 04552-04757, 04888, 04965-05092, 05120-05190, 05230-05259, 05291-05313, 05437-05460, 05476-05537, 05676-05683, 05727, 05829-05952, 06010-06208, 06275-06287, 06720-06868, 06914, 06952-07053, 07252-07396**

The third line displays three types of messages:
- It gives first priority to Flight Control messages
- It gives second priority to vertical Flight Management messages
- It gives last priority to EFIS reconfiguration messages.

DISPLAY	COLOR	MEANING
MAN PITCH TRIM ONLY	Red	Displayed in case of loss of L+R elevators.
USE MAN PITCH TRIM	Amber	F/CTL are in direct law.
DISCONNECT AP FOR LDG	Amber	This message is displayed when, during a Non Precision Approach, the AP/FD remains engaged at: - Minimum minus 50 ft, or - 400 ft AGL (if no minimum entered) This message is a reminder to the flight crew that AP must be disconnected before landing.

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DISPLAY	COLOR	MEANING
CHECK APPR SELECTION	White	The aircraft is in cruise at less than 100 NM from the Top of Descent or in descent or in approach and: - A non-ILS/non-GLS approach has been selected - An ILS frequency/GLS channel is tuned on the MCDU RAD NAV page.
SET MANAGED SPEED or CHECK SPEED MODE (Also displayed on PFD)	White	The SPEED target is selected but a preselected SPEED does not exist for the next flight phase.
SET GREEN DOT SPEED	White	The aircraft is in Engine Out mode and the SPEED target is selected. This message is displayed if the FCU selected speed is: ≤ Green Dot -10 kt, or ≥ Green Dot +10 kt, except in ALT* and ALT mode.
SET HOLD SPEED	White	The aircraft is in selected SPEED control, a Holding pattern is inserted in the F-PLN and the aircraft is 30 s before the deceleration point to the precomputed HOLD SPEED.
DECELERATE or T/D REACHED (Also displayed on PFD)	White	This message is displayed if the thrust is not reduced when passing the top of descent and the aircraft is above the descent profile.
MORE DRAG	White	DES mode is engaged, idle is selected, and either: - The aircraft is above the vertical profile and the predicted intercept point of the theoretical profile is at less than 2 NM from the next ALT CSTR, or - In auto speed control and the aircraft enters a speedbrake decelerating segment.
FOR GA: SET TOGA	Amber	When AP/FD is in approach vertical mode and aircraft is below 1 000 ft RA, this message is displayed if all thrust levers are moved to or above MCT, but below TOGA.

SPECIAL MESSAGES (FMA COLUMNS 2 AND 3)

Ident.: DSC-22_30-100-00012539.0033001 / 05 NOV 15

Applicable to: MSN 02097, 02121, 02138, 02457, 02670, 02737, 03138, 04156, 04314, 04393-04397, 04532-04535, 04762-04868, 04947-04954, 05094, 05218, 05262, 05365-05411, 05473, 05577-05641, 05712, 05744-05807, 05992, 06247, 06289-06336

The third line displays three types of messages:
- It gives first priority to Flight Control messages
- It gives second priority to vertical Flight Management messages
- It gives last priority to EFIS reconfiguration messages.

DISPLAY	COLOR	MEANING
MAN PITCH TRIM ONLY	Red	Displayed in case of loss of L+R elevators.
USE MAN PITCH TRIM	Amber	F/CTL are in direct law.
DISCONNECT AP FOR LDG	Amber	This message is displayed when, during a Non Precision Approach, the AP/FD remains engaged at: - Minimum minus 50 ft, or - 400 ft AGL (if no minimum entered) This message is a reminder to the flight crew that AP must be disconnected before landing.
CHECK APPR SELECTION	White	The aircraft is in cruise at less than 100 NM from the Top of Descent or in descent or in approach and: - A non-ILS/non-GLS approach has been selected - An ILS frequency/GLS channel is tuned on the MCDU RAD NAV page.
SET MANAGED SPEED or CHECK SPEED MODE (Also displayed on PFD)	White	The SPEED target is selected but a preselected SPEED does not exist for the next flight phase.
SET GREEN DOT SPEED	White	The aircraft is in Engine Out mode and the SPEED target is selected. This message is displayed if the FCU selected speed is: ≤ Green Dot -10 kt, or ≥ Green Dot +10 kt, except in ALT* and ALT mode.
SET HOLD SPEED	White	The aircraft is in selected SPEED control, a Holding pattern is inserted in the F-PLN and the aircraft is 30 s before the deceleration point to the precomputed HOLD SPEED.
DECELERATE or T/D REACHED (Also displayed on PFD)	White	This message is displayed if the thrust is not reduced when passing the top of descent and the aircraft is above the descent profile.
MORE DRAG	White	DES mode is engaged, idle is selected, and either: - The aircraft is above the vertical profile and the predicted intercept point of the theoretical profile is at less than 2 NM from the next ALT CSTR, or - In auto speed control and the aircraft enters a speedbrake decelerating segment.

SPECIAL MESSAGES (FMA COLUMNS 2 AND 3)

Ident.: DSC-22_30-100-00012539.0017001 / 05 NOV 15
Applicable to: MSN 02195-02204, 02359, 02405, 02482, 03308

The third line displays three types of messages:
- It gives first priority to Flight Control messages
- It gives second priority to vertical Flight Management messages
- It gives last priority to EFIS reconfiguration messages.

DISPLAY	COLOR	MEANING
MAN PITCH TRIM ONLY	Red	Displayed in case of loss of L+R elevators.
USE MAN PITCH TRIM	Amber	F/CTL are in direct law.
CHECK APPR SELECTION	White	The aircraft is in cruise at less than 100 NM from the Top of Descent or in descent or in approach and: - A non-ILS/non-GLS approach has been selected - An ILS frequency/GLS channel is tuned on the MCDU RAD NAV page.
SET MANAGED SPEED or CHECK SPEED MODE (Also displayed on PFD)	White	The SPEED target is selected but a preselected SPEED does not exist for the next flight phase.
SET GREEN DOT SPEED	White	The aircraft is in Engine Out mode and the SPEED target is selected. This message is displayed if the FCU selected speed is: ≤ Green Dot -10 kt, or ≥ Green Dot +10 kt, except in ALT* and ALT mode.
SET HOLD SPEED	White	The aircraft is in selected SPEED control, a Holding pattern is inserted in the F-PLN and the aircraft is 30 s before the deceleration point to the precomputed HOLD SPEED.
DECELERATE or T/D REACHED (Also displayed on PFD)	White	This message is displayed if the thrust is not reduced when passing the top of descent and the aircraft is above the descent profile.
MORE DRAG	White	DES mode is engaged, idle is selected, and either: - The aircraft is above the vertical profile and the predicted intercept point of the theoretical profile is at less than 2 NM from the next ALT CSTR, or - In auto speed control and the aircraft enters a speedbrake decelerating segment.

SPECIAL MESSAGES (FMA COLUMNS 2 AND 3)

Ident.: DSC-22_30-100-00012539.0006001 / 03 NOV 14
Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02584-02626, 02804

The third line displays three types of messages:
- It gives first priority to Flight Control messages
- It gives second priority to vertical Flight Management messages
- It gives last priority to EFIS reconfiguration messages.

DISPLAY	COLOR	MEANING
MAN PITCH TRIM ONLY	Red	Displayed in case of loss of L+R elevators.
USE MAN PITCH TRIM	Amber	F/CTL are in direct law.
CHECK APP SEL	White	The aircraft is in cruise at less than 100 NM from the Top of Descent or in descent or in approach and: - A non-ILS approach has been selected - An ILS frequency is tuned on the MCDU RAD NAV page.
SET MANAGED SPEED or CHECK SPEED MODE (Also displayed on PFD)	White	The SPEED target is selected but a preselected SPEED does not exist for the next flight phase.
SET GREEN DOT SPD	White	The aircraft is in Engine Out mode and the SPEED target is selected. This message is displayed if the FCU selected speed is: ≤ Green Dot -10 kt, or ≥ Green Dot +10 kt, except in ALT* and ALT mode.
SET HOLD SPD	White	The aircraft is in selected SPEED control, a Holding pattern is inserted in the F-PLN and the aircraft is 30 s before the deceleration point to the precomputed HOLD SPEED.
DECELERATE or T/D REACHED (Also displayed on PFD)	White	This message is displayed if the thrust is not reduced when passing the top of descent and the aircraft is above the descent profile.
MORE DRAG	White	DES mode is engaged, idle is selected, and either: - The aircraft is above the vertical profile and the predicted intercept point of the theoretical profile is at less than 2 NM from the next ALT CSTR, or - In auto speed control and the aircraft enters a speedbrake decelerating segment.

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UNEXPECTED G/S MODE ARMED

Ident.: DSC-22_30-110-00022028.0001001 / 12 JUL 18
Applicable to: ALL

During the approach phase with Glide Slope (G/S) mode armed (displayed blue on Flight Mode Annunciator (FMA)), the Flight Guidance may not disarm the G/S mode if the following conditions are satisfied in a time frame of less than 1.5 s:

- AP1+2 set to OFF
- FD1+2 set to OFF
- A/THR set to OFF.

As expected, AP/FDs are OFF and G/S mode is correctly disarmed (G/S mode no longer displayed on FMA). However, regardless of the subsequent flight phases (go-around, new approach, take-off, etc), the G/S mode will arm again as soon as the FDs are back to ON. G/S mode armed is displayed in addition to the current vertical mode armed.
The following three illustrations provide non exhaustive examples of unexpected G/S mode armed:

Example of FMA During Cockpit Preparation:

Example of FMA during Cruise:

Example of FMA During Descent:

On ground, misbehavior cancel sequence:
With FDs ON, if G/S is armed, the flight crew shall perform an aircraft power OFF.

In flight, misbehavior cancel sequence:

- Push the FCU APPR push-button to arm the approach modes, confirmed by both LOC and G/S displayed blue on FMA. To do so the arming conditions for approach modes must be satisfied.
- Push again the FCU APPR push-button to disarm the approach modes, confirmed by both LOC and G/S no longer displayed on FMA.

OPERATIONAL RECOMMENDATIONS:

If the misbehavior occurs during the flight, and an approach with FCU LOC push-button is required (LOC only procedure or ILS approach with early LOC interception requested by Air Traffic Control (ATC)), **first perform** the above-mentioned **In flight misbehavior cancel sequence** to remove the G/S mode armed. Then the approach can be flown as usual.

CAT 3 DUAL INOPERATIVE

Ident.: DSC-22_30-110-00012674.0001001 / 28 JUN 17
Applicable to: ALL

"CAT 3 DUAL" INOP SYS is triggered in particular if one ADR or IR is rejected by FAC or FMGC.
If “CAT 3 DUAL” is displayed in INOP SYS without any other failure being detected:

CHANGE the AP in command. It may allow the CAT 3 DUAL function to be recovered.

If unsuccessful:

SET FAC 1 pb to OFF, and back to ON
WAIT for FAC 1 fault ECAM warning to disappear, and
APPLY the same sequence for FAC 2.

Note: *1. Do not reset the FACs with the C/Bs.*
2. If the CAT 3 DUAL INOP SYS is associated to another ECAM message (in particular ADR FAULT or IR FAULT...), it means that the root cause is not an ADR or IR rejection by FAC or FMGC. And consequently the AP switch or FAC reset will not clear the CAT 3 DUAL inop.

LEFT TURN NOT EXPECTED WHILE IN HDG OR TRK MODE

Ident.: DSC-22_30-110-00015029.0001001 / 08 AUG 13
Applicable to: MSN 04393-04397

The AP/FD may erroneously order a left turn if the following conditions are fulfilled:
- The aircraft is in a right turn in HDG or TRK mode
- Within 180 ms, the difference between the target selected on the FCU and the current aircraft heading/track, initially above 85 °:
  1. First goes below 85 °
  2. Then goes above 95 °.

The flight crew may encounter this misbehavior in two different situations:
- The flight crew requests a right turn, then rapidly reduces and increases again the target selected on the FCU
- The flight crew increases the target selected on the FCU according to the above conditions, while the aircraft is already in a right turn.

The misbehavior may affect either one AP/FD or both AP/FD.

OPERATIONAL RECOMMENDATIONS:

The flight crew must immediately take appropriate actions:
- The flight crew must disconnect the AP and the FD, and manually turn.
- When established on the intended trajectory, the flight crew can reengage the FD first, and then the AP.

SPURIOUS CAT 2 INOP

Ident.: DSC-22_30-110-00022057.0001001 / 28 NOV 17
[1] **Applicable to: MSN 01767-04384, 04399-05898**

A spurious CAT 2 INOP ECAM alert may occur on ground or in flight.
- On ground, a CAT 2 INOP may be displayed without another ECAM alert.
- In flight, a CAT 2 INOP may be displayed with the NAV LS TUNING DISAGREE ECAM caution, while there is no real LS tuning disagree.

Note: The case of spurious CAT 2 INOP in flight may occur at the recovery from an FMGC reset, or when the flight crew uses the RMP to tune an ILS frequency/ILS course.

A spurious CAT 2 INOP ECAM alert is caused by the erroneous detection of a difference in ILS tuning between FMGC1 and FMGC2, while in reality there is no difference

OPERATIONAL RECOMMENDATIONS:

On ground or in flight, when the ECAM INOP SYS displays the CAT 2 INOP ECAM alert while there is no system failure associated with the ECAM alert, perform all the following:

- On RADNAV page of any FMS, insert the following ILS frequency/ILS course: 108.0/0 °.
- Check that CAT 2 no longer appears on the ECAM INOP SYS.
- Clear the ILS frequency/ILS course insertions from FMS RADNAV.

Note: 1. 108.0/0 ° is the default value of ILS frequency/ILS course for the FMS.
2. Clearing ILS insertions on RADNAV page restores the automatic navaid tuning.

AIRCRAFT SYSTEMS

AUTO FLIGHT - FLIGHT AUGMENTATION

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DSC-22_40-10 General

GENERAL ..... A

DSC-22_40-20 Yaw Functions

YAW DAMPING ..... A
RUDDER TRIM ..... B
RUDDER TRAVEL LIMITATION C

DSC-22_40-30 Flight Envelope Function

GENERAL ..... A
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DSC-22_40-40 Windshear Detection Function

Windshear Detection Function ..... A
WINDSHEAR DETECTION PRINCIPLES ..... B
GUIDANCE C

DSC-22_40-50 Controls and Indicators

FAC ENGAGEMENT ..... A
RUDDER TRIM OPERATION ..... B

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Localization Title	Toc Index	ID	Reason
DSC-22_40-30 PFD Speed Scale Management	B	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-22_40-30 PFD Speed Scale Management	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_40-30 Alpha-Floor Protection	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-22_40-30 Alpha-Floor Protection	C	4	Effectivity update: The information no longer applies to MSN 05449.

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GENERAL

Ident.: DSC-22_40-10-00000840.0001001 / 24 FEB 15
Applicable to: ALL

The aircraft has two flight augmentation computers (FACs) that perform four main functions:

- Yaw function
  - Yaw damping and turn coordination
  - Rudder trim
  - Rudder travel limitation
- Flight envelope function
  - PFD speed scale management
    - Minimum/maximum speed computation
    - Maneuvering speed computation
  - Alpha-floor protection
- Low-Energy Aural Alert function ◁
- Windshear detection function ◁

In performing these functions the FAC uses independent channels :
Yaw damper
Rudder trim
Rudder travel limit
Flight envelope

Each FAC interfaces with the elevator aileron computers (ELACs) when the APs are disengaged, or with the FMGS when at least one AP is engaged.
Both FACs engage automatically at power-up.
The pilot can disengage or reset each FAC (in case of failure) by means of a pushbutton on the flight control overhead panel.
When a FAC is disengaged (FAC pushbutton set off) but still valid, the flight envelope function of the FAC remains active.
If both FACs are valid, FAC1 controls the yaw damper, turn coordination, rudder trim, and rudder travel limit, and FAC2 is in standby.
FAC1 keeps the aircraft within the flight envelope through FD1 ; FAC2 performs this function through FD2.
If a failure is detected on any channel of FAC1, FAC2 takes over the corresponding channel.

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YAW DAMPING

Ident.: DSC-22_40-20-00000851.0001001 / 18 MAR 11
Applicable to: ALL

Yaw damping stabilizes the aircraft in yaw and coordinates its turns.
In automatic flight (AP engaged) during takeoff and go around, it assists rudder application after an engine failure (short-term yaw compensation).

Note: *When the AP is engaged, the FMGS sends orders to the FAC to give :*
- *Yaw damping during approach*
- *Yaw control for runway alignment in ROLL OUT mode*

RUDDER TRIM

Ident.: DSC-22_40-20-00000855.0001001 / 09 DEC 09
Applicable to: ALL

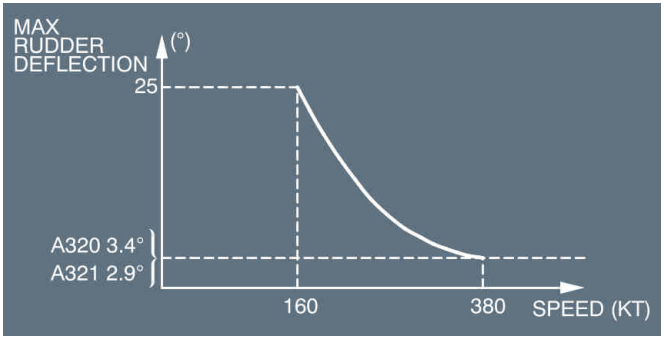
The rudder trim function :
- Executes trim orders, entered by the pilot by using the manual trim knob.
- When AP is engaged
  - executes trim orders from the FMGS.
  - Assists the system in recovering from engine failure (long-term yaw compensation) in all flight guidance modes.
  - If the pilot pushes the rudder more than 10 ° out of trim, it disengages the AP.

Note: *When the AP is engaged, the rudder trim knob is inoperative : the master FMGC sends rudder trim orders to the FAC.*

RUDDER TRAVEL LIMITATION

Ident.: DSC-22_40-20-00000857.0001001 / 01 OCT 12
Applicable to: ALL

This function limits rudder deflection is based on speed in order to avoid high structural loads. It is governed by the following law :



If both FACs lose the rudder travel limitation function, the value of the rudder deflection limit is locked at the time of the second failure.
When the slats are extended, the FACs automatically set the rudder deflection limit at the low-speed setting (maximum authorized deflection).

GENERAL

Ident.: DSC-22_40-30-00000859.0001001 / 09 DEC 09
Applicable to: ALL

As long as one Flight Augmentation Computer (FAC) is valid, it governs the flight envelope function, the rudder position display, and the rudder trim indication regardless of what the flight crew does with the FAC pushbutton.

PFD SPEED SCALE MANAGEMENT

Ident.: DSC-22_40-30-00000860.0001001 / 21 MAR 17
[1] **Applicable to: MSN 01767-05411**

The FAC controls the speed scale on the PFD (*Refer to DSC-31-40 Attitude Data*).
When both FACs are operative, FAC1 supplies data to PFD1 and FAC2 supplies it to PFD2.

The FAC computes:
- The minimum and maximum speeds:
  - VSW (stall warning)
  - VLS
  - VFE and VFE for the next configuration
  - VLE
  - VMO/MMO
- The maneuvering speeds:
  - Green Dot Speed
  - S speed
  - F speed

The FAC also computes the speed trend and displays it as an arrow on the PFD speed scale.
The PFD displays these various speeds as appropriate, and they also go to the FMGC to be used as limits for various guidance modes.

Note: *The principle of the speed computation is as follows:*

- *First, the FAC computes VS1G (stall speed). From VS1G it computes the Gross Weight (GW) which is also sent to the Elevator Aileron computers:*
  - *When the aircraft is below 14 500 ft and 250 kt, it computes this from current angle of attack, speed/Mach, altitude, thrust, and CG.*
  - *When the aircraft is above 14 500 ft or 250 kt, it computes this out of the GW, which it has memorized and updated with a fuel consumption model set in the FAC.*
- *Finally the FAC computes the various minimum and maneuvering speeds, Vα prot and Vsw.*
- *The accuracies of the various minimum and maximum speeds are functions of the accuracy with which the FAC computes aircraft gross weight. Normal accuracy for VLS in CONFIG FULL is about ± 3 kt.*

PFD SPEED SCALE MANAGEMENT

Ident.: DSC-22_40-30-00000860.0002001 / 21 MAR 17

2 **Applicable to: MSN 05437-09063**

The FAC controls the speed scale on the PFD (*Refer to DSC-31-40 Attitude Data*).
When both FACs are operative, FAC1 supplies data to PFD1 and FAC2 supplies it to PFD2.

The FAC computes:

- The minimum and maximum speeds:
  - VSW (stall warning)
  - VLS
  - VFE and VFE for the next configuration
  - VLE
  - VMO/MMO
- The maneuvering speeds:
  - Green Dot Speed
  - S speed
  - F speed

The FAC also computes the speed trend and displays it as an arrow on the PFD speed scale.
The PFD displays these various speeds as appropriate, and they also go to the FMGC to be used as limits for various guidance modes.

Note: The FAC computes the operating speeds based on the FMS gross weight. This allows to have consistent and accurate operating speeds between the PFD and the MCDU. In parallel, the FAC also computes its own GW and CG, based on aerodynamic data, which is used by the ELAC and the FMS for gross weight crosscheck ("CHECK GW" MCDU message), and as a backup for speeds computation in case of dual FMS failure. The principle of the FAC GW/CG computation based on aerodynamic data is as follows :

- *First, the FAC computes VS1G (stall speed). From VS1G it computes the FAC gross weight which is also sent to the ELAC:*
  - *When the aircraft is below 14 500 ft and 250 kt, it computes this from current angle of attack, speed/Mach, altitude, thrust, and CG.*
  - *When the aircraft is above 14 500 ft or 250 kt, it computes this out of the GW, which it has memorized and updated with a fuel consumption model set in the FAC.*

ALPHA-FLOOR PROTECTION

Ident.: DSC-22_40-30-00006198.0019001 / 17 MAR 17

[3] **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

Alpha-floor protection automatically sets the thrust at TOGA thrust, when the aircraft reaches a very high angle of attack.
The Flight Augmentation Computer (FAC) generates the signal that triggers the alpha-floor mode. This, in turn, sets TOGA thrust on the engines, regardless of the thrust lever positions (*Refer to DSC-22_30-90 A/THR Modes - General*).

The FAC sends this signal when:
- The angle of attack is above a predetermined threshold, that is a function of the configuration.
- In CONF 3 and CONF FULL, this threshold decreases as a function of the aircraft deceleration rate (down to – 3 °).

Alpha-floor is available from lift-off until the aircraft reaches 100 ft RA in approach.

Note: The αfloor is activated through the A/THR system, when:
- *α is greater than αfloor (9.5 ° in configuration 0; 15 ° in configuration 1, 2; 14 ° in configuration 3; 13 ° in configuration FULL), or*
- *Sidestick deflection is greater than 14 ° nose up, with either the pitch attitude or the angle-of-attack protection active.*

The αfloor function is available from lift-off to 100 ft RA before landing.

Alpha-floor is inhibited above M 0.6.
Alpha-floor is inhibited when TCAS mode is engaged (*Refer to DSC-22_30-50 AP/FD Modes General*).

Note: - *Alpha-floor is lost, when one of the following combinations of failures occurs:*
SFCC1 and FAC2, or
SFCC2 and FAC1, or
Both FCU channels, or
1 EIU, or
Both FMGCs.
- *Alpha-floor is lost under alternate or direct flight control law.*
- *Alpha-floor is lost in engine-out, when slats/flaps are extended.*

ALPHA-FLOOR PROTECTION

Ident.: DSC-22_40-30-00006198.0015001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02388, 02712, 03138, 03750, 04294, 04314, 04399-04438, 04510, 06720-06868, 06914, 06952-07053, 07252-07396

Alpha-floor protection automatically sets the thrust at TOGA thrust, when the aircraft reaches a very high angle of attack.
The Flight Augmentation Computer (FAC) generates the signal that triggers the alpha-floor mode. This, in turn, sets TOGA thrust on the engines, regardless of the thrust lever positions (*Refer to DSC-22_30-90 A/THR Modes - General*).

The FAC sends this signal when:
- The angle of attack is above a predetermined threshold, that is a function of the configuration.
- In CONF 3 and CONF FULL, this threshold decreases as a function of the aircraft deceleration rate (down to – 3 °).

Alpha-floor is available from lift-off until the aircraft reaches 100 ft RA in approach.

Note: *The αfloor is activated through the A/THR system, when:*
- *α is greater than αfloor (9.5 ° in configuration 0; 15 ° in configuration 1, 2; 14 ° in configuration 3; 13 ° in configuration FULL), or*
- *Sidestick deflection is greater than 14 ° nose up, with either the pitch attitude or the angle-of-attack protection active.*
The αfloor function is available from lift-off to 100 ft RA before landing.

Alpha-floor is inhibited above M 0.6.

Note: - *Alpha-floor is lost, when one of the following combinations of failures occurs:*
SFCC1 and FAC2, or
SFCC2 and FAC1, or
Both FCU channels, or
1 EIU, or
Both FMGCs.
- *Alpha-floor is lost under alternate or direct flight control law.*
- *Alpha-floor is lost in engine-out, when slats/flaps are extended.*

ALPHA-FLOOR PROTECTION

Ident.: DSC-22_40-30-00006198.0011001 / 17 MAR 17

4 **Applicable to: MSN 01957-02139, 02204-02359, 02405-02457, 02626-02670, 02737-03071, 03264, 03330-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

Alpha-floor protection automatically sets the thrust at TOGA thrust, when the aircraft reaches a very high angle of attack.
The Flight Augmentation Computer (FAC) generates the signal that triggers the alpha-floor mode. This, in turn, sets TOGA thrust on the engines, regardless of the thrust lever positions (*Refer to DSC-22_30-90 A/THR Modes - General*).

The FAC sends this signal when :
- The angle of attack is above a predetermined threshold, that is a function of the configuration.
- In CONF3 and CONF FULL, this threshold decreases as a function of the aircraft deceleration rate (down to – 3 °).

Alpha-floor is available from lift-off until the aircraft reaches 100 ft RA in approach.

Note: *The αfloor is activated through the A/THR system, when:*
- *α is greater than αfloor (9.5 ° in configuration 0; 15 ° in configuration 1, 2; 14 ° in configuration 3; 13 ° in configuration FULL), or*
- *Sidestick deflection is greater than 14 ° nose up, with either the pitch attitude or the angle-of-attack protection active.*
The αfloor function is available from lift-off to 100 ft RA before landing.

Alpha-floor is inhibited above M 0.6.

Note: - *Alpha-floor is lost, when one of the following combinations of failures occurs :*

SFCC1 and FAC2, or
SFCC2 and FAC1, or
Both FCU channels, or
1 EIU, or
Both FMGCs.

- *Alpha-floor is lost under alternate or direct flight control law.*
- *Alpha-floor is lost when the FADECs are in N1 degraded mode.*
- *Alpha-floor is lost in engine-out, when slats/flaps are extended.*

ALPHA-FLOOR PROTECTION

Ident.: DSC-22_40-30-00006198.0002001 / 17 MAR 17
Applicable to: MSN 02195, 02482, 02609, 03308

Alpha-floor protection automatically sets the thrust at TOGA thrust, when the aircraft reaches a very high angle of attack.
The Flight Augmentation Computer (FAC) generates the signal that triggers the alpha-floor mode. This, in turn, sets TOGA thrust on the engines, regardless of the thrust lever positions (*Refer to DSC-22_30-90 A/THR Modes - General*).

The FAC sends this signal when :
- The angle of attack is above a predetermined threshold, that is a function of the configuration.
- In CONF3 and CONF FULL, this threshold decreases as a function of the aircraft deceleration rate (down to – 3 °).

Alpha-floor is available from lift-off until the aircraft reaches 100 ft RA in approach.

Note: *The αfloor is activated through the A/THR system, when:*
- *α is greater than αfloor (9.5 ° in configuration 0; 15 ° in configuration 1, 2; 14 ° in configuration 3; 13 ° in configuration FULL), or*
- *Sidestick deflection is greater than 14 ° nose up, with either the pitch attitude or the angle-of-attack protection active.*
The αfloor function is available from lift-off to 100 ft RA before landing.

Note: - *Alpha-floor is lost, when one of the following combinations of failures occurs :*

SFCC1 and FAC2, or
SFCC2 and FAC1, or
Both FCU channels, or
1 EIU, or
Both FMGCs.

- *Alpha-floor is lost under alternate or direct flight control law.*
- *Alpha-floor is lost when the FADECs are in N1 degraded mode.*
- *Alpha-floor is lost in engine-out, when slats/flaps are extended.*

ALPHA-FLOOR PROTECTION

Ident.: DSC-22_40-30-00006198.0001001 / 17 MAR 17
Applicable to: MSN 02584, 04393-04397

Alpha-floor protection automatically sets the thrust at TOGA thrust, when the aircraft reaches a very high angle of attack.
The Flight Augmentation Computer (FAC) generates the signal that triggers the alpha-floor mode. This, in turn, sets TOGA thrust on the engines, regardless of the thrust lever positions (*Refer to DSC-22_30-90 A/THR Modes - General*).

The FAC sends this signal when:
- The angle of attack is above a predetermined threshold, that is a function of the configuration.
- In CONF 3 and CONF FULL, this threshold decreases as a function of the aircraft deceleration rate (down to – 3 °).

Alpha-floor is available from lift-off until the aircraft reaches 100 ft RA in approach.

Note: *The αfloor is activated through the A/THR system, when:*
- *α is greater than αfloor (9.5 ° in configuration 0; 15 ° in configuration 1, 2; 14 ° in configuration 3; 13 ° in configuration FULL), or*
- *Sidestick deflection is greater than 14 ° nose up, with either the pitch attitude or the angle-of-attack protection active.*
  The αfloor function is available from lift-off to 100 ft RA before landing.

Note: - *Alpha-floor is lost, when one of the following combinations of failures occurs:*
SFCC1 and FAC2, or
SFCC2 and FAC1, or
Both FCU channels, or
1 EIU, or
Both FMGCs.
- *Alpha-floor is lost under alternate or direct flight control law.*
- *Alpha-floor is lost in engine-out, when slats/flaps are extended.*

LOW - ENERGY AURAL ALERT

Ident.: DSC-22_40-30-00006197.0001001 / 24 FEB 15
Applicable to: ALL

An aural low-energy “SPEED SPEED SPEED” alert, repeated every 5 s, warns the pilot that the aircraft’s energy level is going below a threshold under which he has to increase thrust, in order to regain a positive flight path angle through pitch control.

It is available in Configuration 2, 3, and FULL. The FAC computes the energy level with the following inputs:
- Aircraft configuration
- Horizontal deceleration rate
- Flight path angle.

The aural alert is inhibited when:
- TOGA is selected, or
- Below 100 ft RA, or
- Above 2 000 ft RA, or
- Alpha-floor, or the ground proximity warning system alert is triggered, or
- In alternate or direct law, or
- If both radio altimeters fail.

During deceleration, the low-energy aural alert is triggered before alpha floor (unless alpha floor is triggered by stick deflection). The amount of time between the two alerts depends on the deceleration rate.

WINDSHEAR DETECTION FUNCTION

Ident.: DSC-22_40-40-00006194.0001001 / 07 JUL 11
Applicable to: ALL

The windshear detection function is provided by the Flight Augmentation Computer (FAC) in takeoff and approach phase in the following conditions:

- At takeoff, 3 s after liftoff, up to 1 300 ft RA
- At landing, from 1 300 ft RA to 50 ft RA
- With at least CONF 1 selected.

The warning consists of:

- A visual “WINDSHEAR” red message displayed on both PFDs for a minimum of 15 s.
- An aural synthetic voice announcing “WINDSHEAR” three times.

WINDSHEAR DETECTION PRINCIPLES

Ident.: DSC-22_40-40-00006195.0001001 / 23 JUN 15
Applicable to: ALL

The FACs generate the windshear warning whenever the predicted energy level for the aircraft falls below a predetermined threshold.
In computing this energy level prediction, the FACs use data from different sources. From ADIRS comes data such as vertical speed, air and ground speeds and slope ; from other sources come such derived parameters as total slope, longitudinal wind gradient, and vertical wind.
The FACs express this energy level as an angle of attack and compare it with an angle-of-attack threshold above which windshear conditions are most likely and pilot action is required.

GUIDANCE

Ident.: DSC-22_40-40-00006196.0001001 / 09 DEC 09
Applicable to: ALL

In windshear conditions, flight guidance acts on specially adapted FD pitch orders received from the speed reference system (SRS). The pilot must set go around thrust immediately (which also triggers the FD SRS mode), and follow the pitch order to execute the optimum escape maneuver.

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FAC ENGAGEMENT

Ident.: DSC-22_40-50-00000861.0001001 / 09 DEC 09
Applicable to: ALL

Refer to DSC-27-10-20 Yaw Control - General

RUDDER TRIM OPERATION

Ident.: DSC-22_40-50-00000862.0001001 / 09 DEC 09
Applicable to: ALL

Refer to DSC-27-10-20 Yaw Control - General

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AIRCRAFT SYSTEMS

AUTO FLIGHT - AOC FUNCTIONS

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General....A
Flight Plan Initialization Function....B
Takeoff Data Function....C
Wind Data Function....D
Flight Reports....E

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Localization Title	Toc Index	ID	Reason
DSC-22_45 Flight Plan Initialization Function	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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GENERAL

Ident.: DSC-22_45-00000864.0001001 / 18 MAR 11
Applicable to: ALL

The FMS AOC function gives an interface between a ground station and one onboard FMGC, allowing data transmission between these two computers via the ACARS Management Unit or the ATSU.

Two different sets of message can be exchanged:

UPLINK messages from the ground station. They consist in reception of data requested or directly sent to the crew.

DOWNLINK messages from the FMGC (master). They consist in reports or requests sent to the ground station.

The FMGS/ACARS or FMGS/ATSU interface enables the following AOC capabilities.

- F-PLN initialization (flight plan and performance data)
- Takeoff data
- Wind data
- Flight reports
- Broadcast data

Crews can send message using ACARS FUNCTION pages or relevant MCDU pages.
Only one FMGC talks to the ground station. This FMGC is called FMGC “master”.

GENERAL SCRATCHPAD MESSAGES

NOT XMITTED TO ACARS:		A crew request or report was sent to the ground but the communication was not established or not acknowledged.
NO ANSWER TO REQUEST	:	A crew request was previously sent to the ground and no answer (uplink message) was received within 4 min.

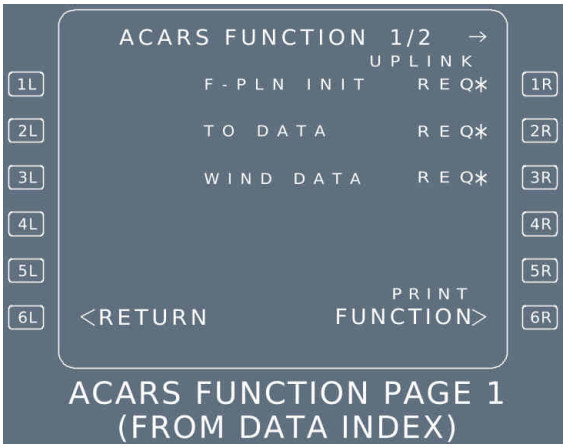
FLIGHT PLAN INITIALIZATION FUNCTION

Ident.: DSC-22_45-00000865.0001001 / 18 MAR 11
1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

This function enables lateral and vertical flight plan data as well as initialization data to be exchanged between the aircraft and a ground station. The aircraft may send flight plan requests for active and secondary flight plan. (downlink messages). The ground station may send flight plan and initialization data (uplink messages) either under aircraft request or automatically without any request.
Each uplink message concerns either the active or secondary flight plan but never both flight plans at the same time. The data sent to the aircraft are checked for flight plan consistency.
A MCDU message comes up when an uplink message is received. “ACT (or SEC) RTE UPLINK”.

If an error prevents the decoding process of the message, “INVALID RTE UPLINK” is displayed on MCDUs.
An uplink message can be routed to the active flight plan if no engine is started and no active flight plan exists. Otherwise, it is routed to the secondary. The crew will insert it into the secondary flight plan or will reject it using the CLR key.

Note: The flight plan may also be initialized using the ACARS FUNCTION page selected from DATA INDEX page.



PERFORMANCE DATA

On ground and before engine start, the ground station may also send performance data to the aircraft.
Performance data are always associated with the uplink flight plan. It is either automatically inserted with the active flight plan data, or stored in the secondary with the corresponding flight plan.
This message contains part or all of the following data:
ZFW, ZFWCG, taxi fuel, block fuel, cruise flight level, tropopause altitude, cruise temperature, transition altitude, cost index, performance factor.

Note: After engine start an uplink performance data message is rejected automatically without any scratchpad message.

SCRATCHPAD MESSAGES RELATED TO FLIGHT PLAN AND PERFORMANCE

INVALID RTE UPLINK	An error is detected, the uplink message is rejected.
ACT or SEC RTE UPLINK	A F-PLN is stored in the active or secondary flight plan.

FLT NUMBER UPLINK	FLT NBR has been initialized within a F-PLN message without previous request.
CHECK FLT NUMBER	The uplinked FLT NBR differs from the one specified in the request.
CHECK CO RTE	The uplinked CO RTE ident differs from the one specified in the request.
INVALID FLT NBR UPLINK	The uplink contains a valid F-PLN but the FLT NBR is invalid.
PERF DATA UPLINK	Performance data is received
INVALID PERF UPLINK	Performance uplink message has been rejected
RTE DATALINK IN PROG	A flight plan modification is performed after a F-PLN INIT request has been sent; this message is displayed until the uplink is received.
UPLINK INSERT IN PROG	This message is displayed during insertion of a Flight Plan.

FLIGHT PLAN INITIALIZATION FUNCTION

Ident.: DSC-22_45-00000865.0010001 / 18 MAR 11

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

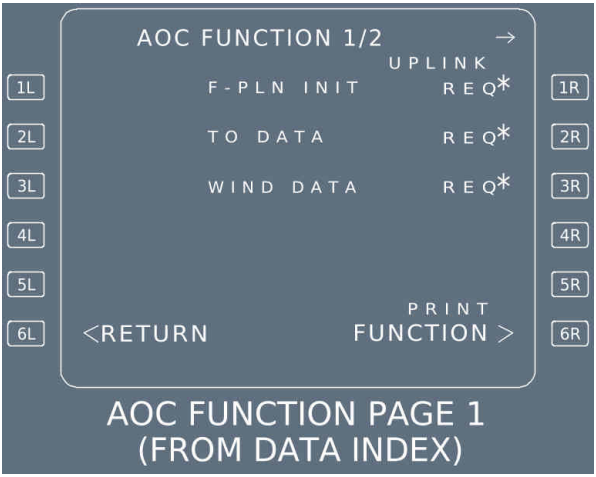
This function enables lateral and vertical flight plan data as well as initialization data to be exchanged between the aircraft and a ground station. The aircraft may send flight plan requests for active and secondary flight plan. (downlink messages). The ground station may send flight plan and initialization data (uplink messages) either under aircraft request or automatically without any request.

Each uplink message concerns either the active or secondary flight plan but never both flight plans at the same time. The data sent to the aircraft are checked for flight plan consistency.

An MCDU message comes up when an uplink message is received. “ACT (or SEC) RTE UPLINK”. If an error prevents the decoding process of the message, “INVALID RTE UPLINK” is displayed on the MCDUs.

An uplink message can be routed to the active flight plan if no engine is started and no active flight plan exists. Otherwise, it is routed to the secondary flight plan. The flight crew will insert it into the secondary flight plan or will reject it using the CLR key.

Note: The flight plan may also be initialized using the AOC FUNCTION page selected from DATA INDEX page.



INITIALIZATION DATA

On ground and before engine start, the ground station may also send data to initialize the F-PLN. This data is always associated with the uplink flight plan. It is either automatically inserted with the active flight plan data, or stored in the secondary with the corresponding flight plan.
Initialization data is made of part or all of the following elements:
ZFW, ZFWCG, taxi fuel, block fuel, cruise flight level, tropopause altitude, cruise temperature, transition altitude, cost index, performance factor.

Note: *After engine start an uplink initialization data message is rejected automatically without any scratchpad message.*

SCRATCHPAD MESSAGES RELATED TO FLIGHT PLAN AND INITIALIZATION DATA

INVALID RTE UPLINK	An error is detected, the uplink message is rejected.
ACT or SEC RTE UPLINK	A F-PLN is stored in the active or secondary flight plan.
FLT NUMBER UPLINK	FLT NBR has been initialized within a F-PLN message without previous request.
CHECK FLT NUMBER	The uplinked FLT NBR differs from the one specified in the request.
CHECK CO RTE	The uplinked CO RTE ident differs from the one specified in the request.
INVALID FLT NBR UPLINK	The uplink contains a valid F-PLN but the FLT NBR is invalid.
INIT DATA UPLINK	Initialization data is received
INVALID INIT UPLINK	Initialization uplink message has been rejected

RTE DATALINK IN PROG — A flight plan modification is performed after a F-PLN INIT request has been sent; this message is displayed until the uplink is received.

UPLINK INSERT IN PROG — This message is displayed during insertion of a Flight Plan.

TAKEOFF DATA FUNCTION

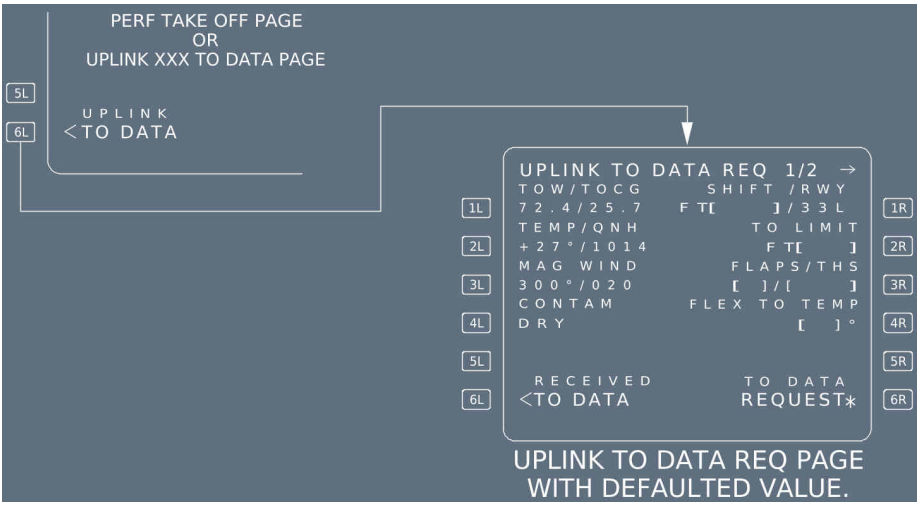
Ident.: DSC-22_45-00000866.0001001 / 18 MAR 11
Applicable to: ALL

The takeoff data function is available for the active flight plan only. It is used to request to the ground station, information data for up to 2 runways and to receive this data for up to 4 runways.
The crew sends a request indicating the departure airport, runway idents, CG, GW and weather conditions (such as BARO setting wind, temperature...). In response he receives the takeoff speeds for up to 4 runways but only one set of data may be inserted in the active flight plan for the selected active runway.
Takeoff speeds are computed for max and flex takeoff.

The takeoff data function has required the modification of the standard PERF TAKEOFF page and the addition of 2 news pages:

- UPLINK TO DAT REQ page that enables the crew to specify a request to the ground.
- UPLINK XXX TO DATA page (XXX for MAX or FLEX)

These 2 pages are accessed from the PERF TAKEOFF page in PREFLIGHT and DONE phase only.



SCRATCHPAD MESSAGES RELATED TO TAKEOFF DATA

TAKEOFF DATA UPLINK	:	Takeoff data uplink message is received
INVALID TAKEOFF UPLINK	:	The UPLINK message is rejected

WIND DATA FUNCTION

Ident.: DSC-22_45-00000867.0001001 / 18 MAR 11
Applicable to: ALL

This function enables the crew to request and to receive forecasted winds associated to the active or secondary flight plan.
The uplink message (ground station to aircraft) may be received upon crew request or automatically without crew request.
The request is initiated from WIND pages or from ACARS FUNCTION page (*Refer to DSC-22_20-70 Wind Data - Request for Wind Data*).

The uplink wind data when received are directly displayed on the wind pages but not inserted in the flight plan, one set for each flight phase: CLIMB, CRUISE, DESCENT. The alternate wind at alternate cruise flight level is displayed on DESCENT page.

- Winds are associated to altitude for climb an descent phases
- Winds are associated to waypoint for cruise phase and step level. One wind per waypoint.
  - On ground and without entered winds, an uplink message is directly inserted in the flight plan.
  - In flight, winds are temporary stored until the crew inserts it phase per phase.
    Phase of flight is indicated in the WIND title page.
  - Clearing the INSERT UPLINK* prompt using the CLR key deletes the uplink wind data for the selected phase.

When uplink winds are deleted, the wind page reverts to the previous status.
The flight plan B page is modified of the uplink wind only after it is inserted by the crew. AOC uplink winds are then considered as crew manual entries (large font).

SCRATCHPAD MESSAGES RELATED TO WIND DATA

INVALID WIND UPLINK	An error is detected, the uplink is rejected.
WIND DATA UPLINK	Uplinked winds are received.
WIND UPLINK PENDING	A temporary flight plan exists or a DIR TO page is displayed when a wind uplink is received. The message is stored.
WIND UPLINK EXISTS	A F-PLN modification (active or secondary) is attempted when uplink winds are not inserted. This message disappears automatically when the wind uplink is inserted or deleted.

CHECK DEST DATA	The aircraft is at 180 NM from destination, and the destination QNH, TEMP or WIND displayed on the PERF APPR page was received by AOC uplink or, if following insertion of a descent wind uplink, a conflict concerning the above parameters exists.
CHECK ALTN WIND	The uplinked alternate cruise flight level differs from the default alternate cruise flight level.

FLIGHT REPORTS

Ident.: DSC-22_45-00000868.0001001 / 01 OCT 12
Applicable to: ALL

Flight reports provide real time information to the ground concerning the aircraft current situation and position.

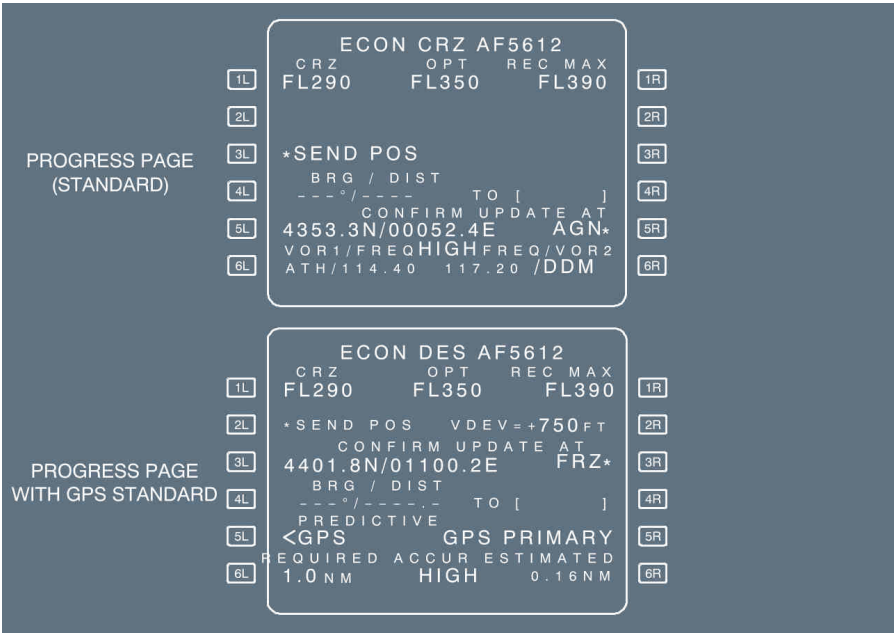
Several types of flight reports are available:
- The Position report : provides current aircraft position
- the Progress report : provides data relative to the destination
- The Flight-Plan report : provides the active route
- the Performance Data report : provides performance data currently used by FMS.

These reports may be manually initiated via a dedicated prompt or automatically sent in response to a ground request or upon specific conditions.

POSITION REPORT

This report is sent:
- manually via a MCDU prompt or
- following a ground request or
- automatically upon sequencing a designated reporting fix (designated by the ground in a uplink message).

The manual POSITION REPORT downlink prompt is displayed on the PROG page. (SEND POS prompt).



Note: *Position report are initiated from active flight plan only.*

POSITION REPORT CONTENT

- Aircraft position
- Overfly reporting waypoint
- Time of report (UTC)
- Aircraft altitude
- Next reporting waypoint
- ETA at next reporting waypoint
- Reporting waypoint following next report
- SAT
- Current wind
- Remaining fuel

PROGRESS REPORT

A progress report contains data relative to the aircraft arrival time and EFOB at destination for the active F-PLN.

This downlink message is automatically sent following:
- a ground request or
- a change of destination or
- a change of runway or
- a specific event. The possible events that can be selected in the navigation database policy file are :
  - X minutes to Top of Descent
  - Z minutes to Destination
  - ETA changes more than W minutes from the previous report.
    X, Z and W are minutes of time set in the navigation database policy file.

The progress report cannot be manually sent by the crew via a dedicated MCDU prompt.

PROGRESS REPORT CONTENT

- Flight Number
- Arrival Airport Ident
- Destination Runway Ident
- Predicted remaining fuel
- ETA at destination
- Reason for report (specific event, ground request...).

FLIGHT PLAN REPORT

The F-PLN report broadcasts flight plan data to the ground. Only data from the active flight plan can be sent.

This downlink message is sent to the ground:
- automatically following a ground request
- manually by the crew using a prompt displayed on the ACARS FUNCTION page (DSC-22_20 Auto Flight - Flight Management/50 Controls and Indicators/10 MCDU - Page Description/25 FMS2 Honeywell/ACARS Function Page). This prompt may be invalidated through the navigation database policy file.

The Flight Plan report can be downlinked either while on ground or in flight during any flight phase.

FLIGHT PLAN REPORT CONTENT

The report contains the active and alternate flight plan.

PERFORMANCE DATA REPORT

The Performance Data report is a downlink message that allows the transmission of performance data (CG, FUEL, CG...) relative to the active F-PLN.
This message is automatically sent following a ground request. Manual sending is not possible.

PERFORMANCE DATA REPORT CONTENT

Sends to the ground:

- Current GW
- Cruise Altitude
- Current CG
- Fuel on Board
- Block Fuel
- Reserve Fuel
- Cost Index
- Top of Climb Temperature
- Climb Transition Altitude
- Tropopause Altitude
- Taxi Fuel
- ZFW
- ZFWCG

AIRCRAFT SYSTEMS

AUTO FLIGHT - PRINT INTERFACE

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Print Function.....A
AOC/Printer Programming Options .....B

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Localization Title	Toc Index	ID	Reason
DSC-22_46 Print Function	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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PRINT FUNCTION

Ident.: DSC-22_46-00000869.0003001 / 01 APR 11

[1] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The print function enables several types of data and report to be printed :

- Flight plan initialization data
- Takeoff data
- Wind data
- Preflight report
- In flight report
- Post flight report

The 3 first reports may differ when automatically or manually printed for the following reason :
The automatic process prints the uplink message although the manual process prints the current active data as displayed on the relevant MCDU pages.
The last 3 reports being processed from the same sources are identical in automatic or manual printing.

Note: *ACARS is not necessary linked to printing process. The printing function may be activated within the FMGS and selected independently from the ACARS.*

- One or several print functions may be deactivated *Refer to DSC-22_20-50-10-25 Print Function Pages*.
- If an ACARS function is not active, (not selected in the nav database policy file) the printing process is invalidated for this specific ACARS function.

PRINT FUNCTION

Ident.: DSC-22_46-00000869.0004001 / 01 APR 11

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The print function enables several types of data and report to be printed :

- Flight plan initialization data
- Takeoff data
- Wind data
- Preflight report
- In flight report
- Post flight report

The 3 first reports may differ when automatically or manually printed for the following reason :
The automatic process prints the uplink message although the manual process prints the current active data as displayed on the relevant MCDU pages.

The last 3 reports being processed from the same sources are identical in automatic or manual printing.

Note: *ACARS is not necessary linked to printing process. The printing function may be activated within the FMGS and selected independently from the ACARS.*

- One or several print functions may be deactivated *Refer to DSC-22_20-50-10-28 PRINT FUNCTION Pages*.
- If an ACARS function is not active, (not selected in the nav database policy file) the printing process is invalidated for this specific ACARS function.

AOC/PRINTER PROGRAMMING OPTIONS ◁

Ident.: DSC-22_46-00000870.0002001 / 11 FEB 11
Applicable to: ALL

Option programming for the AOC/PRINTER functions is obtained through the Navigation Data Base policy file or the Airline Modifiable Information (AMI) file.

The list summarizes the possible options:

Data Link (ACARS or AOC) Inhibit	Disables AOC function
F-PLN Data Request Inhibit	Disables uplink and downlink requests of F-PLN initialization data
Performance Data Request Inhibit	Disables uplink and downlink requests of Performance Initialization data
Takeoff Data Request Inhibit	Disables uplink and downlink request of Takeoff Initialization data
Wind Data Request Inhibit	Disables uplink and downlink request of predicted wind data
Flight Number Enable	Flight Number is included within the F-PLN Request or Progress Report downlinks
Position Report Inhibit	Disables a manual Position Report downlink
Progress Report Triggers	Defines the triggers for the automatic downlink of the Progress Report
F-PLN Report Inhibit	Disables the manual downlink of the F-PLN Report

Auto Print of ACARS or AOC uplinks	Selects/Deselects the automatic printing of the F-PLN, INIT, TO and wind data uplinks. If Autoprint is selected, the crew can deselect it manually. If auto printing is deselected, the crew cannot manually reselect it.
Auto Print of Flight Reports	Selects/Deselects the automatic printing of the Preflight, Inflight, Postflight reports. If selected, the crew can deselect it manually. If autoprint is deselected, the crew cannot manually preselected it.

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AIRCRAFT SYSTEMS

COMMUNICATIONS

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DSC-23-10 General

DSC-23-10-10 Introduction

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DSC-23-10-20 Radio Tuning

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Radio Management Panel....B

DSC-23-10-30 Intercommunication Systems

Audio Management System....A
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DSC-23-10-40 Cockpit Voice Recorder

Description....A
Controls and Indicators....B

DSC-23-10-50 Controls

Audio Control Panel....A
Side Stick Radio Selector....B
Loudspeaker Volume Knob....C
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DSC-23-20 Internal Communication

DSC-23-20-10 Flight Crew Interphone System

Flight Crew Interphone System....A

DSC-23-20-20 Cabin Interphone System

Introduction....A
Cabin Call System....B

DSC-23-20-30 Service Interphone System

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DSC-23-20-40 Passenger Address

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Continued on the following page

Continued from the previous page

DSC-23-30 External Communication

DSC-23-30-10 Radio Communication

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HF C
SELCAL (Selective calling) ..... D

DSC-23-30-20 SATCOM

DSC-23-30-20-10 General

General ..... A

DSC-23-30-20-20 Controls and Indicators

ACP Interface ..... A
MCDU Interface ..... B

DSC-23-40 Emergency Communication

DSC-23-40-10 Emergency Evacuation

Controls and Indicators ..... A

DSC-23-40-20 Emergency Cockpit Alerting System

Cabin to Cockpit Alert ..... A
Cockpit to Cabin Alert ..... B

DSC-23-40-30 Emergency Locator Transmitter

Controls and Indicators ..... A

DSC-23-50 Memo Display

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ATSU ..... B
AUDIO 3 XFRD C
SATCOM ..... D

DSC-23-60 How to

VHF, HF Utilization ..... A

Localization Title	Toc Index	ID	Reason
DSC-23-10-20 Radio Management Panel	B	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-23-10-20 Radio Management Panel	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-23-10-30 Audio Management System	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-23-10-30 Cabin Intercommunication Data System	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-23-10-50 Audio Control Panel	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-23-20-20 Calls from the Cabin	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-23-30-10 HF	C	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-23-40-20 Cabin to Cockpit Alert	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-23-40-20 Cockpit to Cabin Alert	B	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-23-40-30 Controls and Indicators	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-23-40-30 Controls and Indicators	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-23-50 SATCOM	D	1	Effectivity update: The information now also applies to MSN 09063.
DSC-23-50 SATCOM	D	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-23-60 VHF, HF Utilization - Transmission and Reception	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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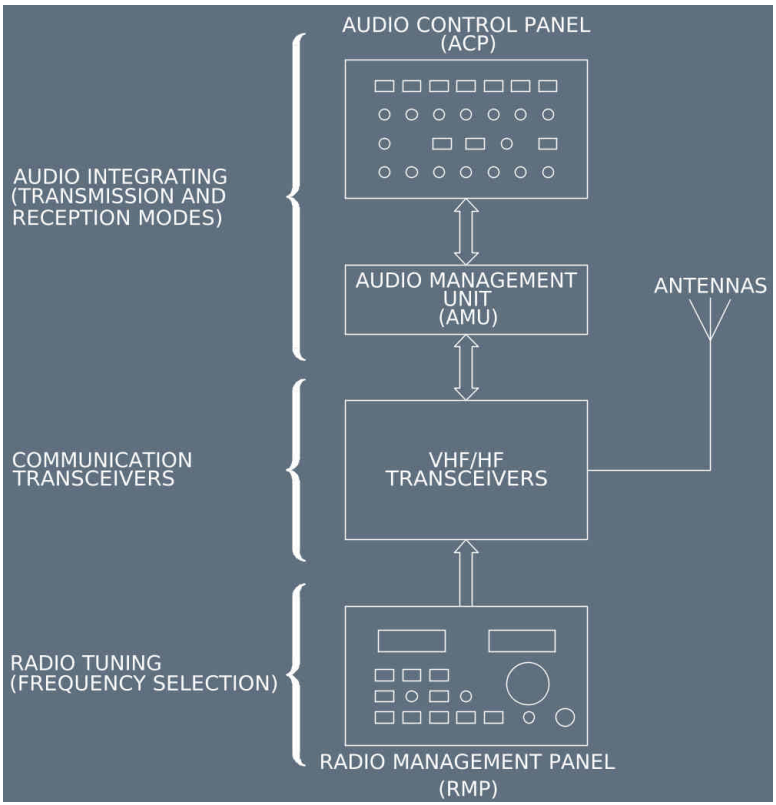
INTRODUCTION

Ident.: DSC-23-10-10-00018503.0001001 / 17 MAR 17
Applicable to: ALL

The communications system comprises the following subsystems :

- VHF/HF transceivers
- Radio tuning systems (Radio Management Panels).
- Audio integrating system (Audio Management Unit, Audio Control Panels).



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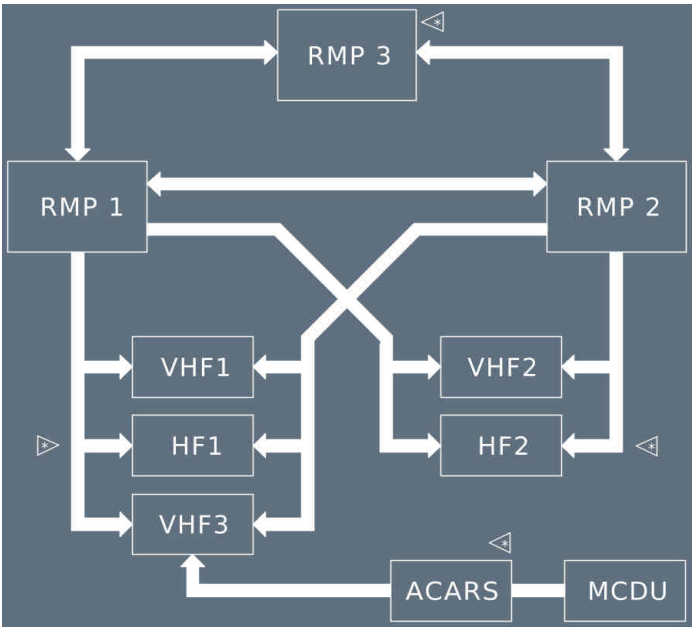
DESCRIPTION

Ident.: DSC-23-10-20-00018494.0001001 / 28 NOV 17
Applicable to: ALL

Identical Radio Management Panels (RMPs):

- Give the flight crew control of all VHF radio communication systems (HF systems ◁).
- Provide backup to the FMGCs for controlling radio navigation systems (*Refer to DSC-34-NAV-30-10 General*).

The two RMPs are on the center pedestal (and the third ◁ is on the overhead panel).
Each RMP can control any VHF (HF ◁) transceiver. RMP1 and RMP2 are connected directly to all VHF (HF ◁) transceivers, (whereas RMP3 ◁ is connected to them via RMP1 and RMP2). RMPs are connected together so that each RMP is updated to the selections made on the other RMPs.
Only RMP1 functions in EMER ELEC CONFIG.

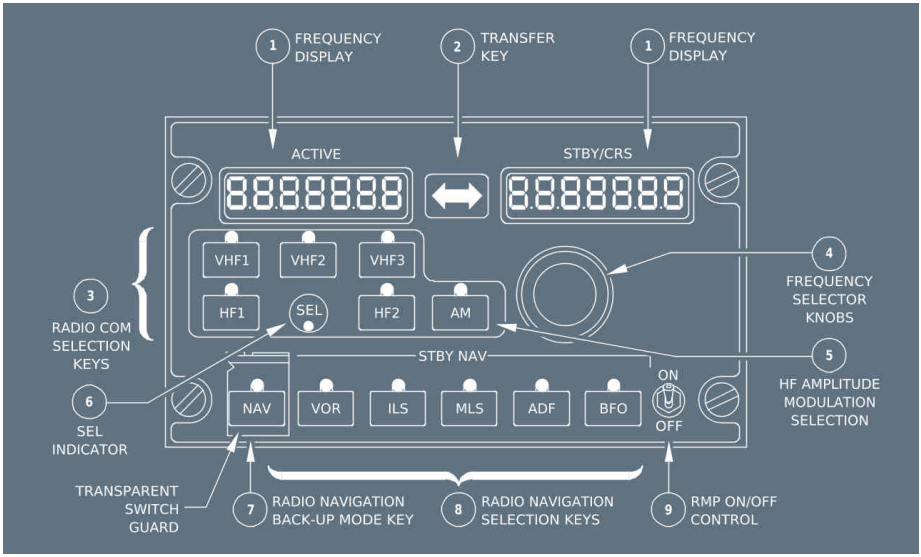


If one RMP fails, the remaining one controls all the VHF (HF ◁) transceivers except if RMP3 is not installed and ACARS is connected to VHF3. In such case, the VHF3 can only be tune in data by the ACARS.

RADIO MANAGEMENT PANEL

Ident.: DSC-23-10-20-00018495.0001001 / 22 MAR 17

1 **Applicable to: MSN 01767-06336**



(1) Frequency displays

The ACTIVE display window shows the active frequency of the selected radio, which is identified by a green light on the selection key.

The STBY/CRS (standby/course) display window shows a standby frequency that the pilot can activate by pressing the transfer key or change by rotating the tuning knobs. (For a description of the CRS function *Refer to DSC-34-NAV-30-30 Radio Management Panel (RMP)*).

(2) Transfer key

Pressing this key moves the active frequency to the standby window and the standby frequency to the active window.

This tunes the selected receiver to the new active frequency.

(3) Radio com selection keys

When the pilot presses one of these keys:

- The ACTIVE window displays the frequency set on that radio.
- The STBY/CRS window displays the selected standby frequency or course.
- The selected key displays a green monitor light.

(4) Frequency selector knobs
The pilot uses these concentric knobs to select the STBY frequency or CRS.
The outer knob controls whole numbers; the inner knob controls decimal fractions.

(5) AM pushbutton
If the aircraft has HF radios and the flight crew has selected an HF tranceiver, this switch selects the AM mode. (The default mode is the SSB, or single side-band mode).
This key displays a green monitor light when the AM mode is active.

(6) SEL indicator

The SEL indicator on both RMPs comes on amber when a transceiver, normally associated with one RMP, is tuned by another:

- If 2 RMP installed:
  - VHF1 (VHF3, ◁ , HF1 ◁), tuned by RMP2,
  - VHF2 (HF2 ◁), tuned by RMP1.
- If 3 RMP installed:
  - VHF1 tuned by RMP2 or RMP3,
  - VHF2 tuned by RMP1 or RMP3,
  - VHF3, HF1, (HF2 ◁) tuned by RMP1 or RMP2.

(7) NAV pushbutton (with transparent switchguard)
The pilot presses this key to select navigation receivers and courses through the RMP.
It does not affect the selection of communication radios and their frequencies. (*Refer to DSC-34-NAV-30-30 Radio Management Panel (RMP)*, for additional information).

(8) Radio navigation selection keys
The pilot presses one of these keys to select a navigation radio to control through this RMP.
This turns on the key's green monitor light.
Refer to DSC-34-NAV-30-30 Radio Management Panel (RMP), for additional information.

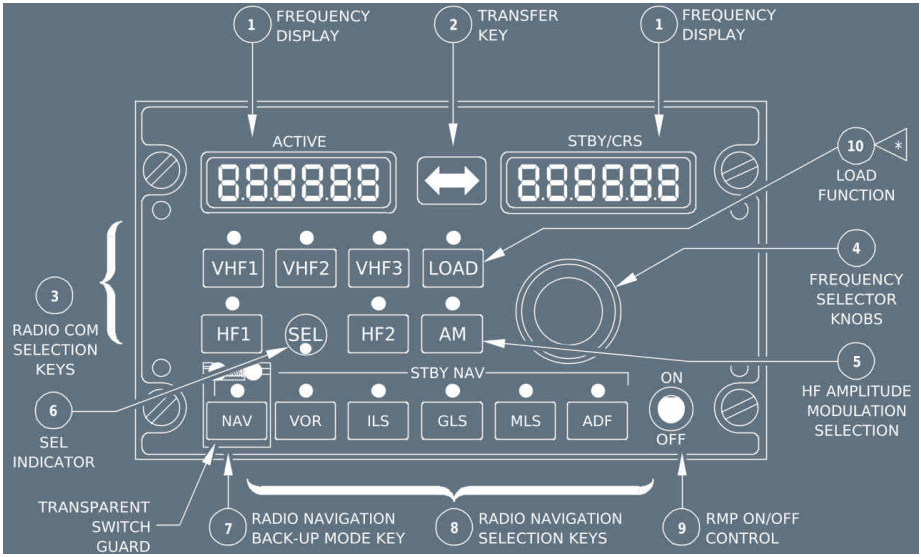
(9) ON/OFF switch
This switch controls the RMP power supply.

Note: *RMP3 is able to control VHF and HF transceivers through RMP1 and RMP2 even when either of the latter is OFF.*

RADIO MANAGEMENT PANEL

Ident.: DSC-23-10-20-00018495.0002001 / 17 MAR 17

[2] **Applicable to: MSN 06720-09063**



(1) Frequency displays

The ACTIVE display window shows the active frequency of the selected radio, which is identified by a green light on the selection key.

The STBY/CRS (standby/course) display window shows a standby frequency that the pilot can activate by pressing the transfer key or change by rotating the tuning knobs. (For a description of the CRS function *Refer to DSC-34-NAV-30-30 Radio Management Panel (RMP)*).

(2) Transfer key

Pressing this key moves the active frequency to the standby window and the standby frequency to the active window.

This tunes the selected receiver to the new active frequency.

(3) Radio com selection keys

When the pilot presses one of these keys:

- The ACTIVE window displays the frequency set on that radio.
- The STBY/CRS window displays the selected standby frequency or course.
- The selected key displays a green monitor light.

(4) Frequency selector knobs
The pilot uses these concentric knobs to select the STBY frequency or CRS.
The outer knob controls whole numbers; the inner knob controls decimal fractions.

(5) AM pb-sw
If the aircraft has HF radios and the flight crew has selected an HF tranceiver, this switch selects the AM mode. (The default mode is the SSB, or single side-band, mode).
This key displays a green monitor light when the AM mode is active.

(6) SEL indicator

The SEL indicator on both RMPs comes on amber when a transceiver normally associated with one RMP is tuned by another:

- VHF 1 tuned by RMP 2 or RMP 3,
- VHF 2 tuned by RMP 1 or RMP 3.
- VHF 3, HF 1, HF 2 (◁) tuned by RMP 1 or RMP 2.

(7) NAV pb sw (with transparent switchguard)
The pilot presses this key to be able to select navigation receivers and courses through the RMP. It does not affect the selection of communication radios and their frequencies. (*Refer to DSC-34-NAV-30-30 Radio Management Panel (RMP)*, for additional information).

(8) Radio navigation selection keys
The pilot presses one of these keys to select a navigation radio to control through this RMP. This turns on the green monitor light in the key.
Refer to DSC-34-NAV-30-30 Radio Management Panel (RMP), for additional information.

(9) ON/OFF sw
This switch controls the power supply to the RMP.

Note: *RMP 3 is able to control VHF and HF transceivers through RMP 1 and RMP 2 even when they are OFF.*

(10) LOAD FUNCTION ◁
When the ATC sends (CONTACT or MONITOR) CPDLC messages to the flight crew, a white light above the LOAD key comes on to indicate that the sent frequency is available to be loaded.
Press on this LOAD key before closing the CONTACT/MONITOR messages to load this VHF frequency to the STBY/CRS window.

Note: *When a frequency from the ATC services (sent label via datalink) has been received, the ATSU validates the frequency and simultaneously sends the information to all the RMP in order to activate the LOAD function.*
When the LOAD function is activated, the flight crew can repeatedly load the frequency on each RMP as often as necessary; except if DATA is present on standby window.

AUDIO MANAGEMENT SYSTEM

Ident.: DSC-23-10-30-00018496.0002001 / 17 MAR 17

Applicable to: MSN 02649, 03071, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336

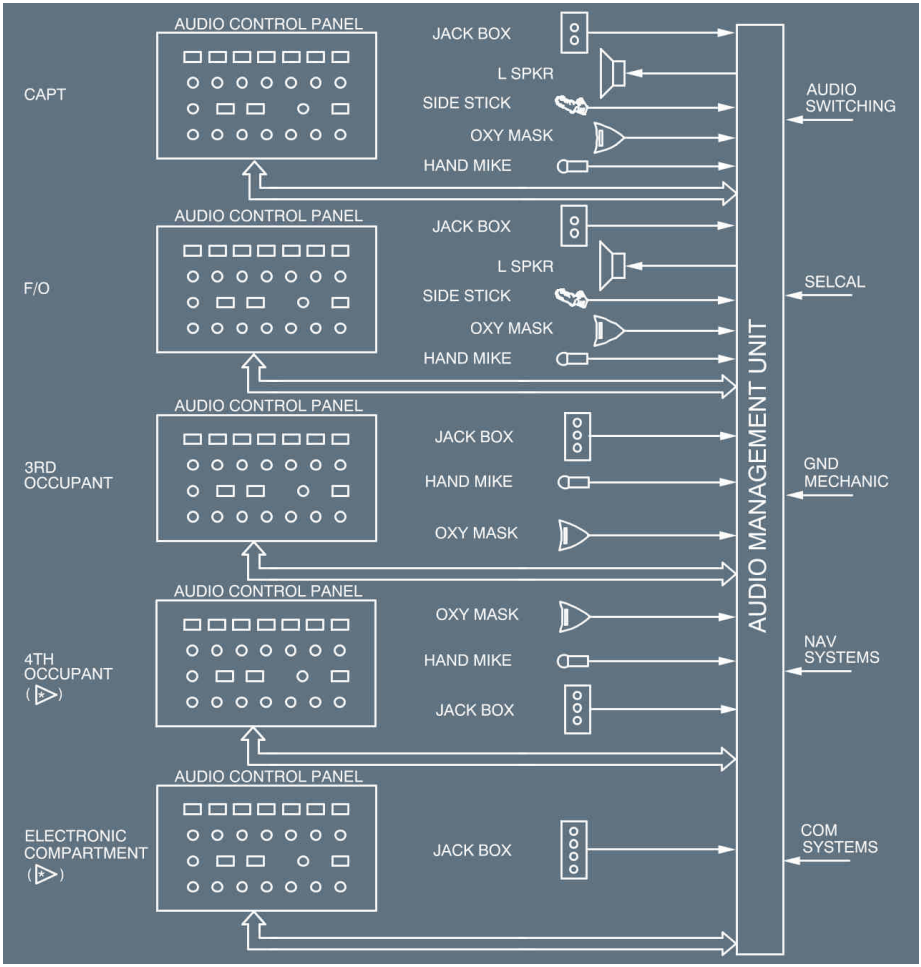
The audio management system allows the flight crew to use :

- All the radio communication and radio navigation facilities installed on the aircraft in transmission and reception mode.
- The interphone systems.
- The call systems.
- The passenger address system.

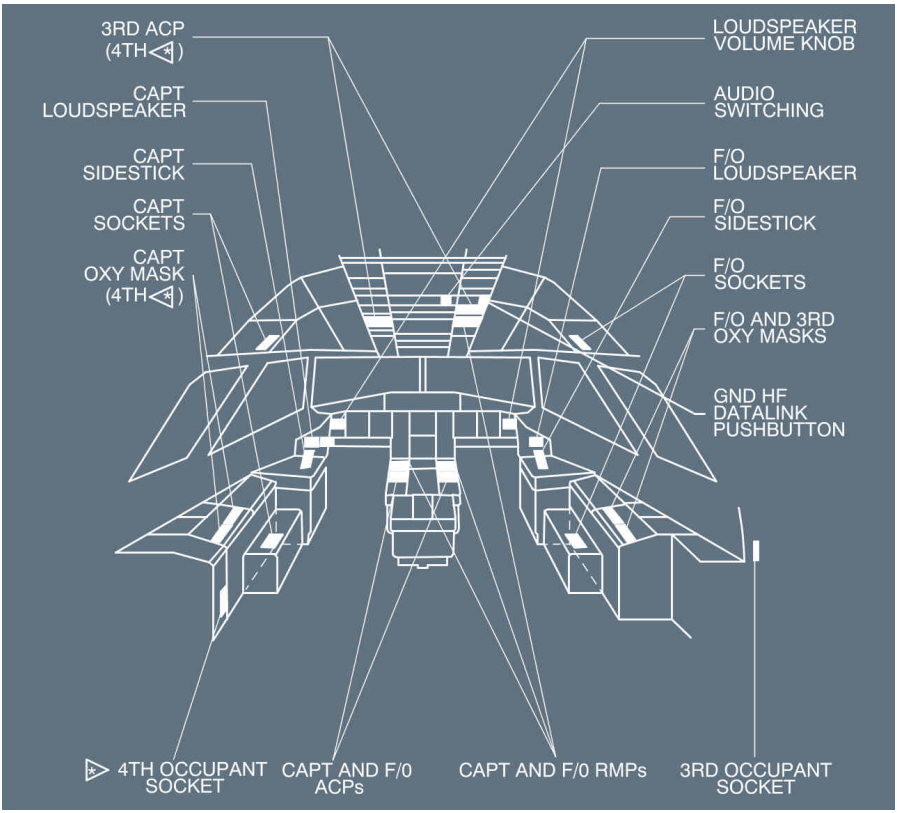
The audio management system includes :

- An audio management unit (AMU).
- Three audio control panels (ACPs) (fourth and fifth optional).
- Sockets at each station:
  - Headset jack and boomset connector (hand microphone connector ◁) for pilot, copilot, and third occupant.
  - Headset jack for fourth occupant.
- One interphone jack at the ground power receptacle.
- Boomsets for the pilot, copilot, and third occupant, and three hand microphones (fourth ◁).
- Three cockpit oxygen mask microphones.
- One radio press-to-talk switch on each sidestick.
- One SELCAL code selection panel (avionics compartment).
- Two cockpit loudspeakers with separate volume controls.
- If installed, a jack panel in the electronic compartment that groups the headset jack, service interphone jack, hand mike connector, and boomset.
- An audio switching facility.

If audio channel 1 or 2 fails due to a failure either in an ACP or the corresponding AMU, the crew can use the AUDIO SWITCHING selector to select the third audio channel.


AUDIO CONTROL PANEL
CAPT
JACK BOX
L SPKR
SIDE STICK
OXY MASK
HAND MIKE
AUDIO CONTROL PANEL
F/O
JACK BOX
L SPKR
SIDE STICK
OXY MASK
HAND MIKE
AUDIO CONTROL PANEL
3RD OCCUPANT
JACK BOX
HAND MIKE
OXY MASK
AUDIO CONTROL PANEL
4TH OCCUPANT
OXY MASK
HAND MIKE
JACK BOX
AUDIO CONTROL PANEL
ELECTRONIC COMPARTMENT
JACK BOX
AUDIO MANAGEMENT UNIT
AUDIO SWITCHING
SELCAL
GND MECHANIC
NAV SYSTEMS
COM SYSTEMS

LOCATION OF COMPONENTS (PILOT'S STATION)



AUDIO MANAGEMENT SYSTEM

Ident.: DSC-23-10-30-00018496.0001001 / 17 MAR 17

[1] **Applicable to: MSN 01767-02626, 02670-02914, 03138-03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 05120, 05158, 05218, 06720-09063**

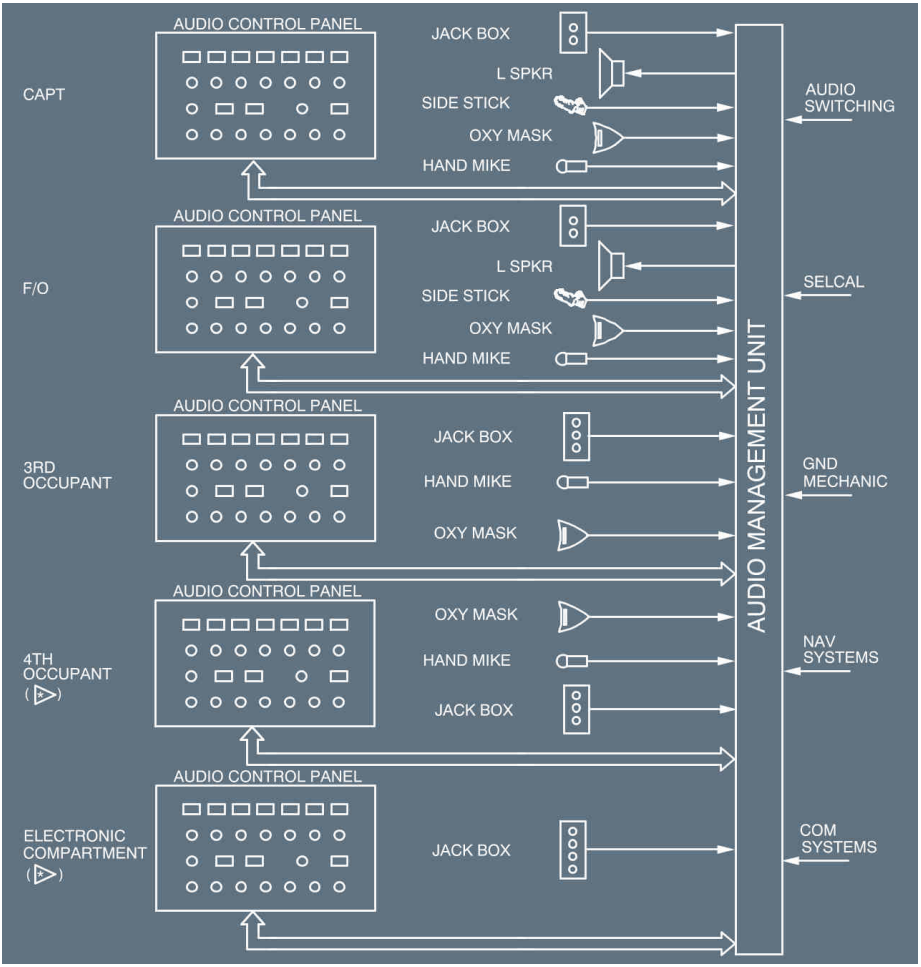
The audio management system allows the flight crew to use :

- All the radio communication and radio navigation facilities installed on the aircraft in transmission and reception mode.
- The interphone systems
- The call systems
- The passenger address system

The audio management system includes :

- An audio management unit (AMU)
- Three audio control panels (ACPs) (fourth and fifth optional)
- Sockets at each station
  - Headset jack and boomset connector (hand microphone connector ◁) for pilot, copilot, and third occupant
  - Headset jack for fourth occupant
- One interphone jack at the ground power receptacle
- Boomsets for the pilot, copilot, and third occupant, and three hand microphones (fourth ◁)
- Three cockpit oxygen mask microphones
- One radio press-to-talk switch on each sidestick
- One SELCAL code selection panel (avionics compartment)
- Two cockpit loudspeakers with separate volume controls
- If installed, a jack panel in the electronic compartment that groups the headset jack, service interphone jack, hand mike connector, and boomset
- An audio switching facility

If audio channel 1 or 2 fails due to a failure either in an ACP or the corresponding AMU, the crew can use the AUDIO SWITCHING selector to select the third audio channel.


AUDIO CONTROL PANEL
CAPT
JACK BOX
L SPKR
SIDE STICK
OXY MASK
HAND MIKE
AUDIO CONTROL PANEL
F/O
JACK BOX
L SPKR
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OXY MASK
HAND MIKE
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3RD OCCUPANT
JACK BOX
HAND MIKE
OXY MASK
AUDIO CONTROL PANEL
4TH OCCUPANT
OXY MASK
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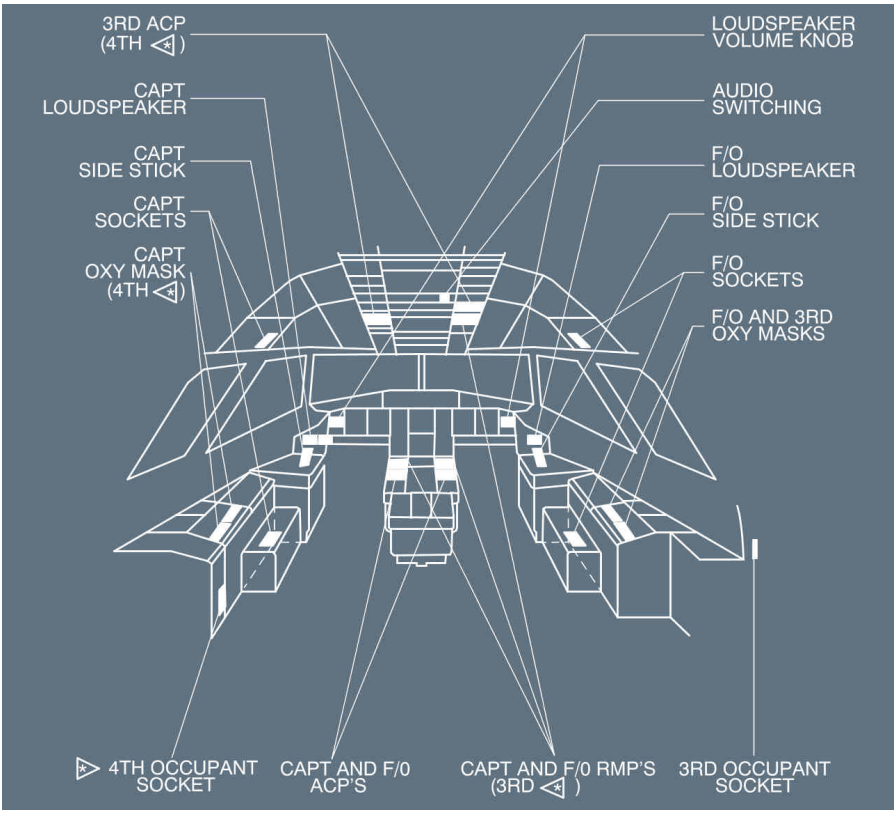
JACK BOX
AUDIO CONTROL PANEL
ELECTRONIC COMPARTMENT
JACK BOX
AUDIO MANAGEMENT UNIT
AUDIO SWITCHING
SELCAL
GND MECHANIC
NAV SYSTEMS
COM SYSTEMS

LOCATION OF COMPONENTS (PILOT'S STATION)



CABIN INTERCOMMUNICATION DATA SYSTEM

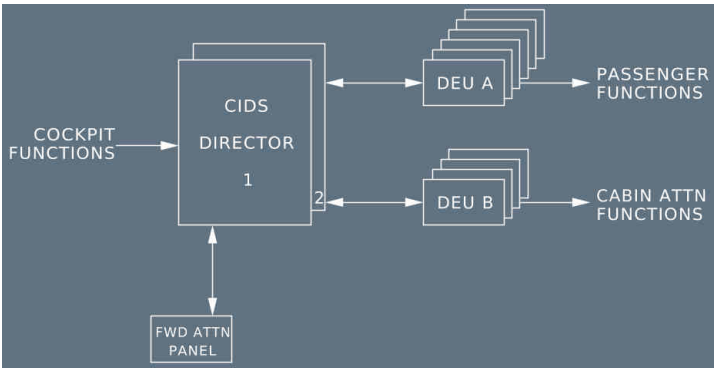
Ident.: DSC-23-10-30-00018497.0001001 / 03 OCT 17
Applicable to: MSN 01767-02405, 02482, 02712

The Cabin Intercommunication Data System (CIDS) transmits, controls, and processes signals for the following cabin systems:

- Cabin and service interphone
- Passenger address
- Passenger lighted signs
- Reading light
- General cabin illumination

- Emergency evacuation signalling
- Lavatory smoke indication
- Passenger entertainment system ◁
- Escape slide bottle pressure monitoring ◁ .

The CIDS has the following main components:
- Two CIDS directors connected in parallel, one active, and the other on standby
- Forward attendant panel for control of the cabin systems
- Programming and test module that allows the system to be reprogrammed after changes are made in the cabin configuration.



Decoder/Encoder Units (DEUs) linked to the two directors:
- Type A units (for passengers) installed along each side of the passenger cabin.
  The loudspeakers, lighted signs, call buttons, call lights and general illumination ballast units are divided into small groups, each connected to a type A DEU
- Type B units (for attendants) installed near the exit doors. The Area Call panels, attendant handsets, slide and door pressure sensors, and attendant indicator panels, are connected to type B DEUs.

CABIN INTERCOMMUNICATION DATA SYSTEM

Ident.: DSC-23-10-30-00018497.0002001 / 03 OCT 17

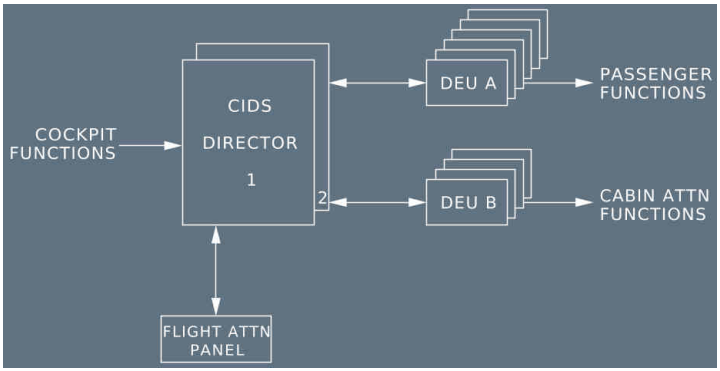
2 **Applicable to: MSN 02443-02457, 02584-02670, 02737-09063**

The Cabin Intercommunication Data System (CIDS) transmits, controls, and processes signals for the following cabin systems :
- Cabin and service interphone
- Passenger address
- Passenger lighted signs
- Reading lights (LED technology)

- General cabin illumination
- Emergency evacuation signalling
- Lavatory smoke detectors and indicators
- Passenger entertainment system
- Escape slide bottle pressure monitoring
- Vacuum system control function
- Cargo and lavatory smoke detection function.

The CIDS has the following main components :
- Two CIDS directors connected in parallel ; one active, and the other on standby
- Flight Attendant Panel (FAP) to monitor and control the cabin systems
- Attendant Indication Panels (AIP), After Attendant Panels (AAP) and Area Call Panels (ACP)
- Decoder/Encoder Units (DEUs) linked to the two directors:

  • Type A units (for passengers) installed along the cabin.
  The loudspeakers, lighted signs, call buttons, call lights and general illumination ballast units are divided into small groups, each connected to a type A DEU
  • Type B units (for attendants) installed near the exit doors. The Area Call panels, smoke detectors, attendant handsets, slide and door pressure sensors, and attendant indicator panels, are connected to type B DEUs.



DESCRIPTION

Ident.: DSC-23-10-40-00018569.0002001 / 17 MAR 17
Applicable to: ALL

The cockpit voice recorder (CVR) records :
- direct conversations between crew members in the cockpit
- all aural warnings sounded in the cockpit
- audio communications received and transmitted
- intercommunications conversations between crew members
- announcements transmitted over the passenger address system, if PA reception is selected on at least one audio control panel.

Only the last 2 h of recording are retained.

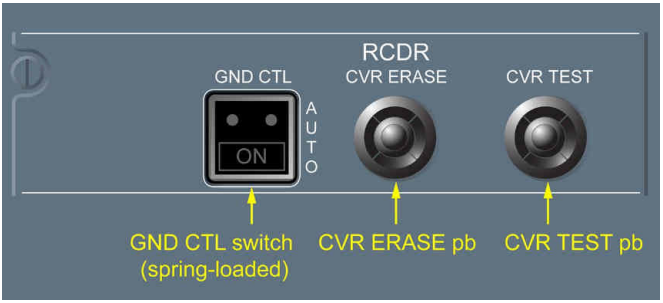
The CVR system consists of :
- a remote microphone behind the overhead panel
- a “hot mike” function, which records the crew members voice directly from their microphone, even if the push to talk switch is not activated.
- a crashproof four-track recorder, equipped with an underwater locating beacon, in the aft section of the aircraft
- a control panel on the overhead panel.

It is energized automatically :
- on the ground during the first 5 min after the aircraft electrical network is energized
- on the ground with one engine running
- in flight

On the ground, it is stopped automatically 5 min after the last engine shutdown provided the CVR jack is not used.
On the ground, the crew can energize the CVR manually by pressing the GND CTL pushbutton.

CONTROLS AND INDICATORS

Ident.: DSC-23-10-40-00018570.0001001 / 04 SEP 18
Applicable to: ALL



GND CTL pb-sw

The CVR, DFDR and QAR ◁ automatically operate (AUTO), according to the logic (*Refer to DSC-23-10-40 Description*).

The flight crew manually starts the CVR, DFDR, and QAR ◁.
After engine start, the ON light goes off and the recorders automatically operate.

Note: The GND CTL pb-sw may revert to AUTO (active or inactive, according to the logic) during an electrical transient.

CVR ERASE pb

When pressed for 2 s, the CVR ERASE function ◁ erases the CVR full recording, if:
- The aircraft is on the ground, and
- The parking brake is on.

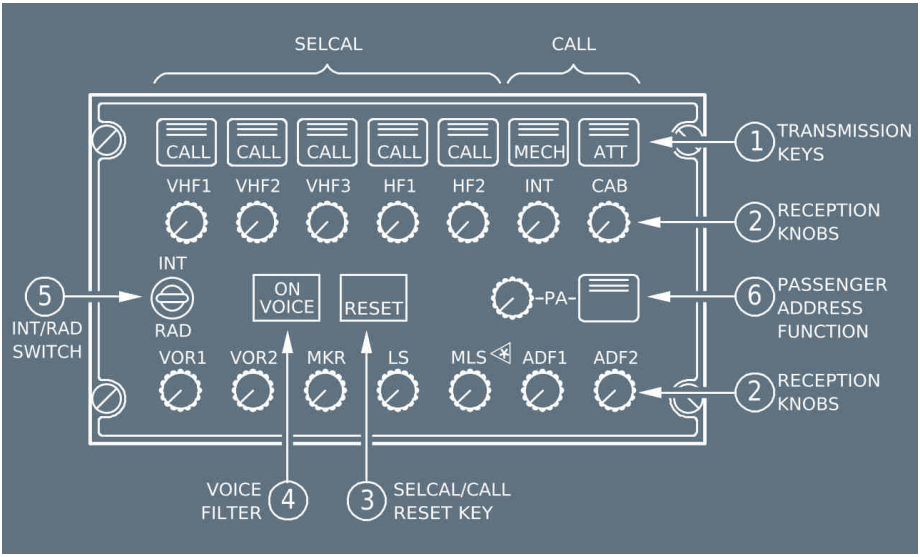
CVR TEST pb

When pressed and held:
This activates the test, if the CVR is on (the GND CTL pb-sw pressed, or during the first 5 min after energization of the aircraft electrical network), and the parking brake is on.

AUDIO CONTROL PANEL

Ident.: DSC-23-10-50-00018498.0001001 / 17 MAR 17

[1] **Applicable to: MSN 01767-02712, 02804-03618, 03782-04312, 04328-04384, 04399-09063**



(1) Transmission keys

Pressed : The associated channel is selected for transmission.
The three green lines come on.
The pilot deselects the channel by pressing the pushbutton again, or by selecting another channel.

CALL : The legend flashes amber (and buzzer sounds) when the SELCAL system detects a call.

MECH : The legend flashes amber (and buzzer sounds) for a call from the nose gear bay. The MECH light goes off after 60 s, if it is not reset.

ATT : The legend flashes amber (and buzzer sounds) for a call from a cabin attendant. The ATT light goes off after 60 s, if it is not reset.

(2) Reception knobs

- Pressing and releasing the knob (knob out) selects the associated audio reception channel and the integral white light comes on
- Rotating the knob adjusts the volume

- The INTEG LT knob or ANN LT knob controls the brightness
- Pressing the knob (knob stays in) disconnects the associated audio reception channel.

Note: To receive DME audio navigation signals that are associated with an ILS or MLS station: the flight crew must select the ILS pb (or LS pb) on the FCU. On some aircraft, the VOR reception channel must also be active on the ACP.

(3) SELCAL/CALL RESET key
Pressing this key extinguishes CALL, MECH, and ATT lights.

(4) ON VOICE key
This key allows the flight crew to inhibit the audio navigation signals (VOR, ADF)
Pressing this key filters out IDENT signals and turns on the green ON light.

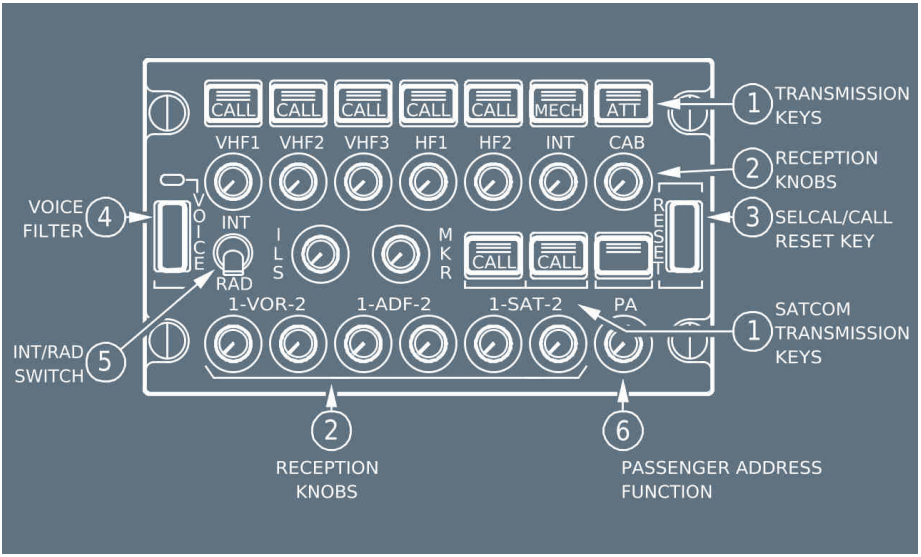
(5) INT/RAD switch
This switch operates as a press-to-talk switch for boom mike or oxygen mask mike.

INT	:	Boom and mask mikes transmit on interphone regardless of which transmission key is selected. For reception on interphone, the crew member must have INT selected (INT reception knob out).
Neutral	:	Reception is normal. Boom and mask mikes do not transmit.
RAD (press and hold)	:	Boom and mask mikes transmit on the radio selected on the audio control panel.

(6) Passenger address (PA) function
(*Refer to DSC-23-20-40 Description*)

AUDIO CONTROL PANEL

Ident.: DSC-23-10-50-00018498.0002001 / 17 MAR 17
Applicable to: MSN 02737, 03750, 04314, 04393-04397



(1) Transmission keys

Pressed	:	The associated channel is selected for transmission. The three green lines come on. The pilot deselects the channel by pressing the pushbutton again, or selecting another channel.
CALL	:	The legend flashes amber (and buzzer sounds) when the SELCAL system detects a call.
MECH	:	The legend flashes amber (and buzzer sounds) for a call from the nose gear bay. The MECH light goes off after 60 s, if it is not reset.
ATT	:	The legend flashes amber (and buzzer sounds) for a call from a cabin crew member. The ATT light goes off after 60 s, if it is not reset.
SAT CALL lt	:	The legend flashes amber when the SATCOM system detects a call. The three green lines flash during the establishment of air to ground calls, or when SATCOM calls are on hold. After call establishment, the three green lines remain steady.

(2) Reception knobs

- Pressing and releasing the knob (knob out) selects the associated audio reception channel and the integral white light comes on
- Rotating the knob adjusts the volume
- The INTEG LT knob or ANN LT knob controls the brightness
- Pressing the knob (knob stays in) disconnects the associated audio reception channel.

Note: To receive DME audio navigation signals that are associated with an ILS or MLS or GLS station: the flight crew must select the ILS pb (or LS pb) on the FCU. On some aircraft, the VOR reception channel must also be active on the ACP.

(3) SELCAL/CALL RESET key
Pressing this key extinguishes CALL, MECH, and ATT lights.

(4) ON VOICE key
This key allows the flight crew to inhibit the audio navigation signals (VOR, ADF)
Pressing this key filters out IDENT signals and turns on the green ON light.

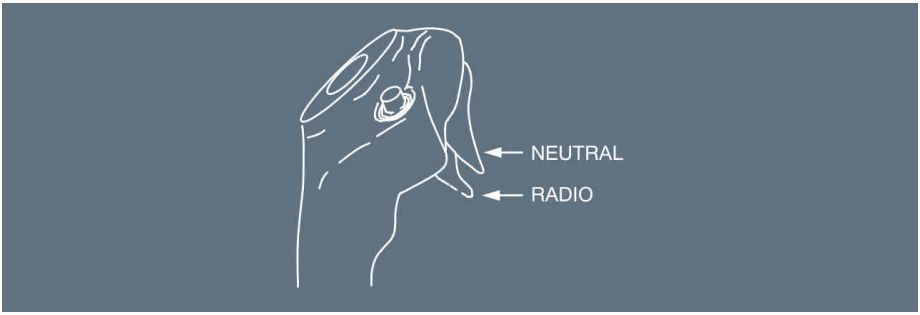
(5) INT/RAD switch
This switch operates as a press-to-talk switch for boom mike or oxygen mask mike.

INT	:	Boom and mask mikes transmit on interphone regardless of which transmission key is selected. For reception on interphone, the crew member must have INT selected (INT reception knob out).
Neutral	:	Reception is normal. Boom and mask mikes do not transmit.
RAD (press and hold)	:	Boom and mask mikes transmit on the radio selected on the audio control panel.

(6) Passenger address (PA) function
(*Refer to DSC-23-20-40 Description*).

SIDE STICK RADIO SELECTOR

Ident.: DSC-23-10-50-00018499.0001001 / 17 MAR 17
Applicable to: ALL



This selector has the same function as the INT/RAD switch on the ACP.

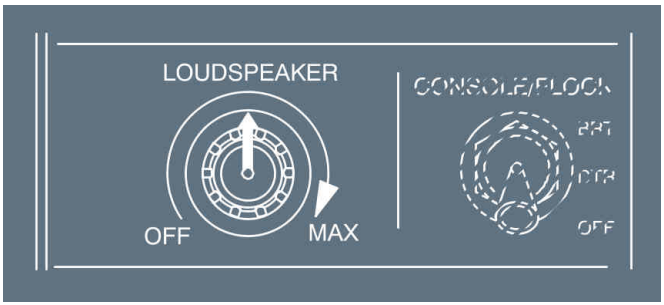
NEUTRAL (spring-loaded) : Boom and mask mikes are dead.
Reception is normal.

RADIO (squeezed) : Boom and mask mikes transmit through the equipment selected by the transmission key on the ACP.

Note: If RADIO is selected on the side stick when the INT/RAD switch is on INT, the radio function has priority over the interphone function.

LOUDSPEAKER VOLUME KNOB

Ident.: DSC-23-10-50-00018500.0001001 / 17 MAR 17
Applicable to: ALL



This knob adjusts the volume of the loudspeaker for radio communication.

OFF : Loudspeaker does not respond to signals from the aircraft's radio equipment.

Clockwise rotation : Loudspeaker broadcasts signals from the aircraft's radio equipment at increasing volume.

Note: *This knob does not control the loudness of aural alert and voice messages.*
In the case of acoustic feedback (i.e. Larsen effect) from the cockpit loudspeaker, the flight crew should reduce the volume of the cockpit loudspeaker. However, the flight crew should ensure that the volume of the cockpit loudspeaker is sufficient to hear radio communication.

AUDIO SWITCHING

Ident.: DSC-23-10-50-00018501.0001001 / 17 MAR 17
Applicable to: ALL

The crew can switch to the third ACP if ACP1 or ACP2 fails.
When the crew does this, it takes away the third occupant's access to the acoustic equipment.
AUDIO 3 XFRD appears in green on the ECAM MEMO display.

NORM : Each crew member uses his dedicated communication equipment.

CAPT 3: The pilot uses his acoustic equipment and the third occupant's ACP.

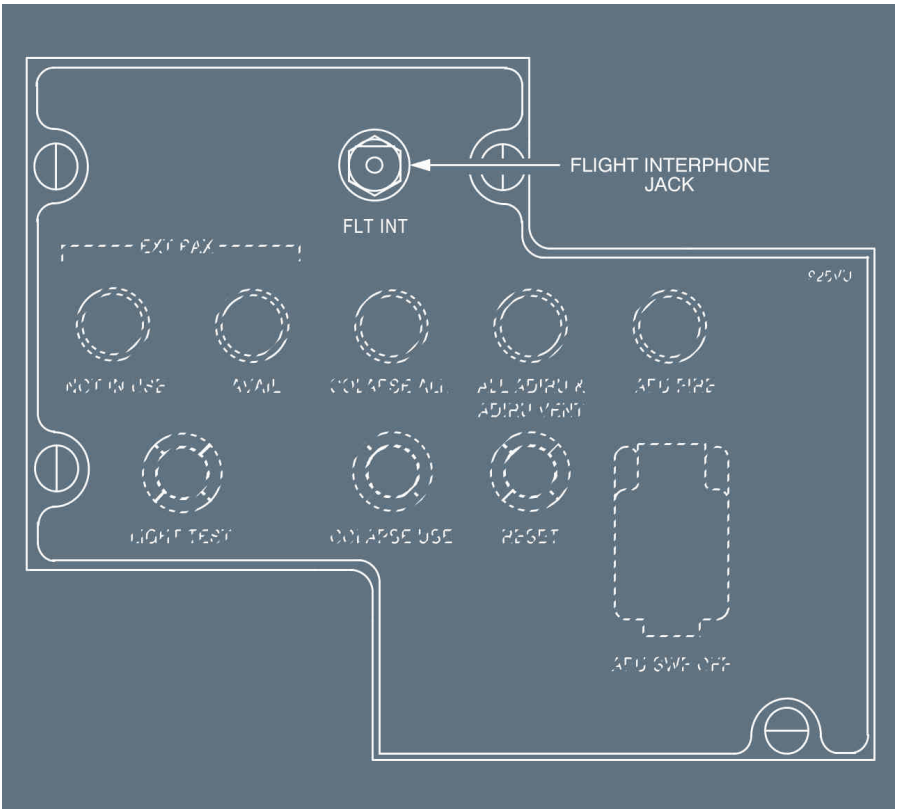
F/O 3 : The copilot uses his acoustic equipment and the third occupant's ACP.

FLIGHT CREW INTERPHONE SYSTEM

Ident.: DSC-23-20-10-00019716.0001001 / 17 MAR 17
Applicable to: ALL

This system allows the flight crew members to communicate among themselves and, through a jack on the external power panel, with the ground mechanic.

EXTERNAL POWER PANEL (FORWARD OF THE NOSE L/G BAY)



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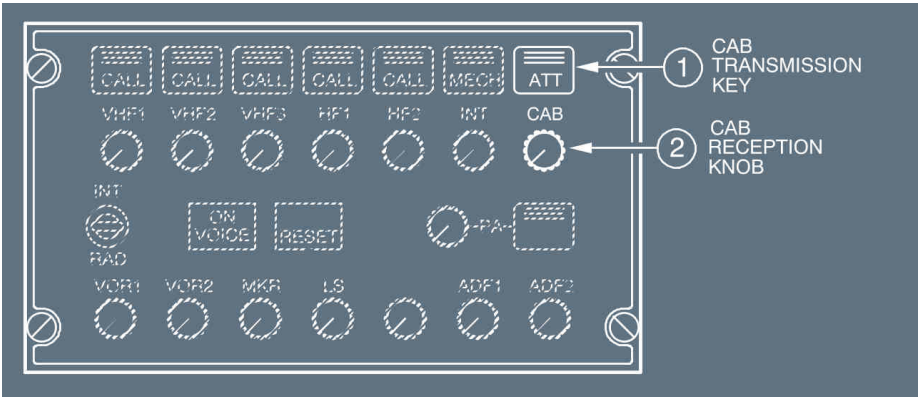
INTRODUCTION

Ident.: DSC-23-20-20-00018481.0001001 / 20 JUL 17
Applicable to: ALL

The system allows the flight crew to communicate with the flight attendants, and the flight attendants to communicate among themselves.

Note: Cabin interphone monitoring may be deactivated in flight depending on CIDS customization.



(1) CAB transmission key

Pressed: Three green lines come on.
Boom, mask, and hand mikes may be used for cabin interphone.

(2) CAB reception knob

Pressed and released (knob out) : The integral white light comes on.
The station receives audio signals from the cabin.
Rotating the knob adjusts the volume.

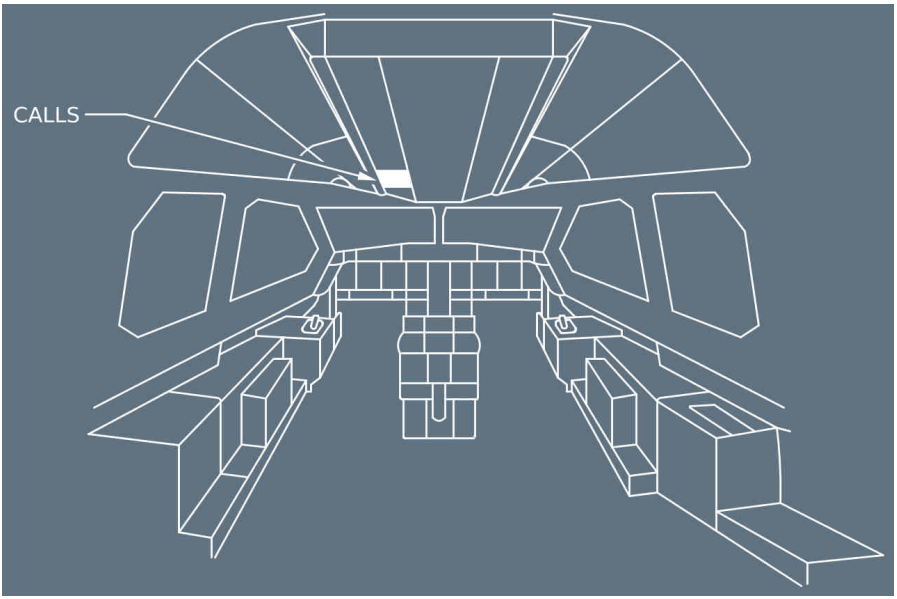
Pressed (knob in) : The white light goes out.
The cabin interphone is disconnected.

CABIN CALL SYSTEM

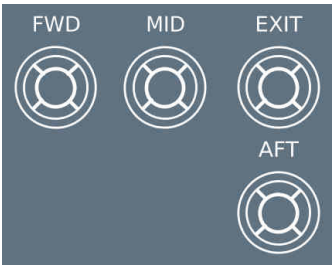
Ident.: DSC-23-20-20-10-00018482.0001001 / 02 NOV 16
Applicable to: ALL

CALLS FROM THE COCKPIT

The pushbuttons described here below are installed on the CALLS panel located on the overhead panel.



PURS ⏪ /FWD/MID ⏪ /EXIT ⏪ /AFT PUSHBUTTON



When pressed, the following aural and visual alerts will trigger in the cabin:
- Two lights come on in pink on the related area of the CALLS panel, as applicable.
- On the Attendant Indication Panel (AIP), the “CAPTAIN CALL” message appears and a light comes on in green.
- A high-low chime sounds in the related section of the cabin, as applicable.

ALL pb

When pressed, all the stations simultaneously respond, as indicated above.

EMER pb-sw (GUARDED)

When pressed, the following aural and visual alerts will trigger in the cabin:
- Two pink lights flash on all area call panels.
- The “EMERGENCY CALL” message appears on all AIPs.
- A high-low chime sounds three times, on all of the loudspeakers.

Depending on aircraft configuration, on the cockpit CALLS panel, the white ON light and the amber CALL light come on.

The following aural and visual alerts will trigger in the cockpit, when an emergency call is made from the cabin to the cockpit:
- On the EMER pb-sw: The amber CALL light flashes.
- The ATT lights will flash on all Audio Control Panels (ACPs).
- Three buzzers will sound consecutively (for approx. three seconds each).

The cabin call system will reset, when the cabin crewmember hangs up the handset.

TT light ⋖

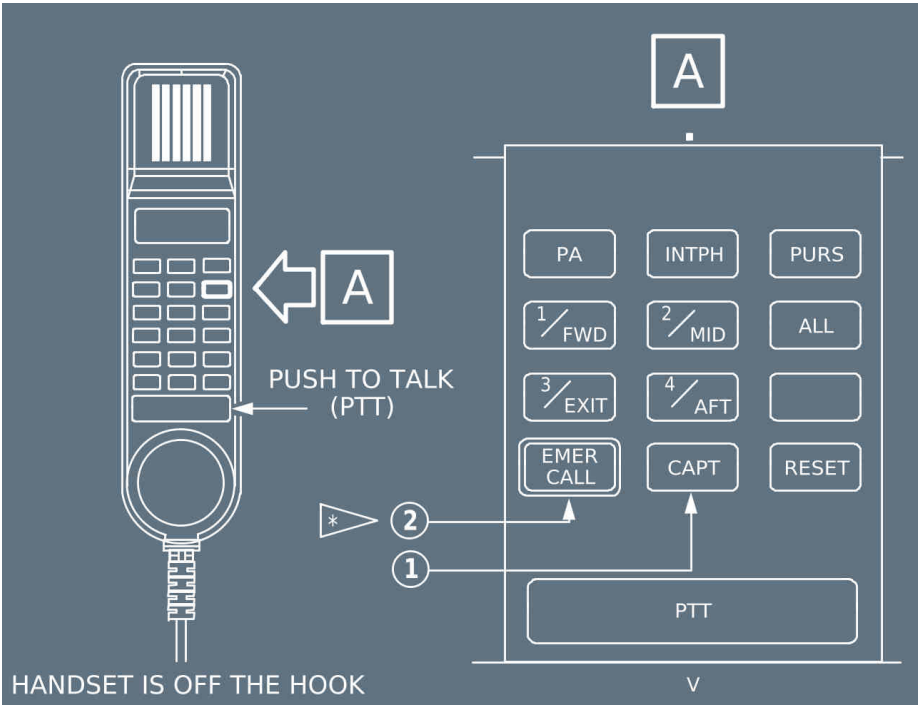
When the TT pb on the FWD or AFT Attendant Panel is pressed, the TT light on the cockpit CALLS panel comes ON and a buzzer sounds three times in the cockpit.

ATTND ADV pb ⋖

When pressed, in the case of an imminent takeoff or landing, the ON light comes on in blue, in addition to a green light on the area call panel in the cabin.

Ident.: DSC-23-20-20-10-00018483.0003001 / 17 MAR 17

1 **Applicable to: MSN 04008-09063**



(1) CAPT key

When pressed, the following aural and visual alerts will trigger in the cockpit:
- The ATT lights will flash on all Audio Control Panels (ACPs).
- A buzzer (inhibited during takeoff and landing) will sound.

In the cabin, the “CAPTAIN” message will appear on the Attendant Indication Panel (AIP) for which the CAPT key was pressed.

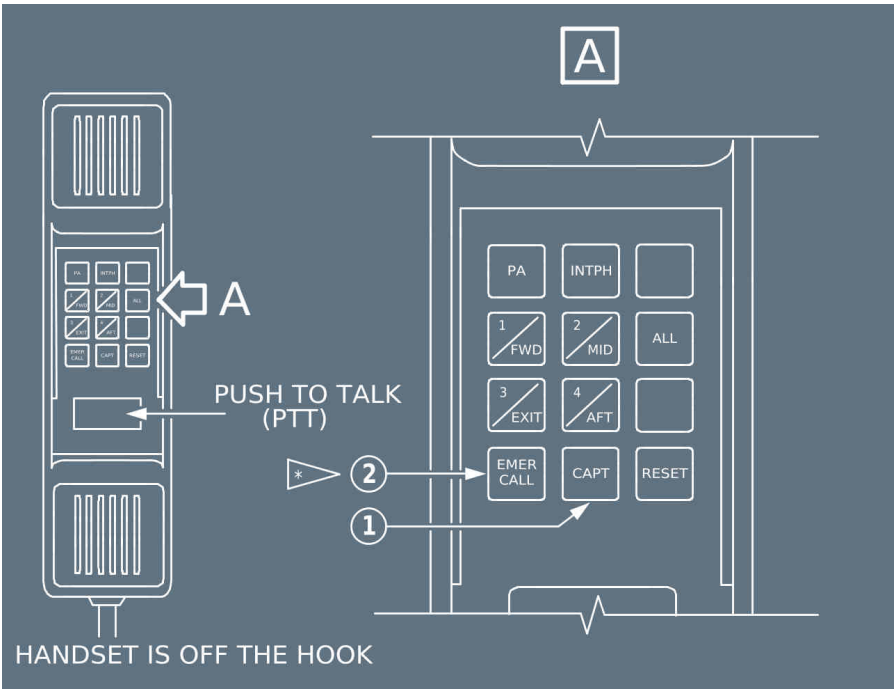
(2) EMER CALL key

When pressed, the following aural and visual alerts will trigger in the cockpit:
- On the EMER pb-sw: The ON light flashes in white, and the CALL light flashes in amber.
- The ATT lights will flash on all ACPs.
- Three buzzers (inhibited during takeoff and landing) will sound consecutively.

In the cabin, the “EMERGENCY CALL” message will appear on all AIPs or on the AIP of the originating station based on its customization.

Ident.: DSC-23-20-20-10-00018483.0002001 / 17 MAR 17
Applicable to: MSN 01920, 02204, 02443, 02584-02626, 02670, 02737-02804, 03264-03943

CALLS FROM THE CABIN



(1) CAPT key

When pressed, the following aural and visual alerts will trigger in the cockpit:
- The ATT lights will flash on all Audio Control Panels (ACPs).
- A buzzer (inhibited during takeoff and landing) will sound.

In the cabin, the “CAPTAIN” message will appear on the Attendant Indication Panel (AIP) for which the CAPT key was pressed.

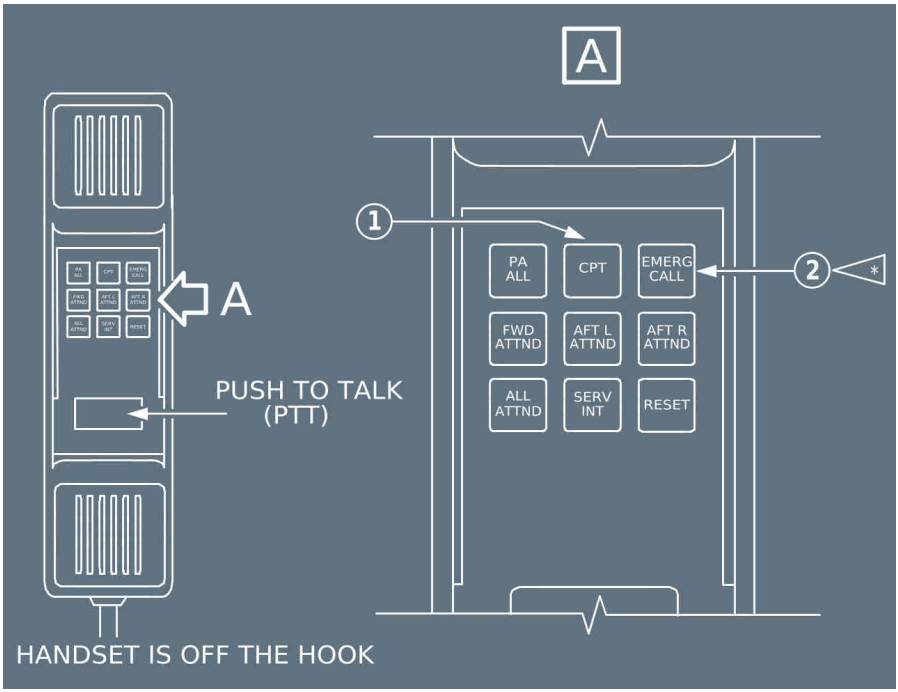
(2) EMER CALL key

When pressed, the following aural and visual alerts will trigger in the cockpit:
- On the EMER pb-sw: The ON light flashes in white, and the CALL light flashes in amber.
- The ATT lights will flash on all ACPs.
- Three buzzers (inhibited during takeoff and landing) will sound consecutively.

In the cabin, the “EMERGENCY CALL” message will appear on all AIPs or on the AIP of the originating station based on its customization.

Ident.: DSC-23-20-20-10-00018483.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02195, 02275-02405, 02457-02482, 02649, 02712, 02908-03138

CALLS FROM THE CABIN



(1) CPT key

When pressed, the following aural and visual alerts will trigger in the cockpit:
- The ATT lights will flash on all Audio Control Panels (ACPs).
- A buzzer (inhibited during takeoff and landing) will sound.

In the cabin, the “CAPTAIN” message will appear on the Attendant Indication Panel (AIP) for which the CPT key was pressed.

(2) EMER CALL key

When pressed, the following aural and visual alerts will trigger in the cockpit:
- On the EMER pb-sw: The ON light flashes in white, and the CALL light flashes in amber.
- The ATT lights will flash on all ACPs.
- Three buzzers (inhibited during takeoff and landing) will sound consecutively.

In the cabin, the “EMERGENCY CALL” message will appear on all AIPs or on the AIP of the originating station based on its customization.

INTRODUCTION

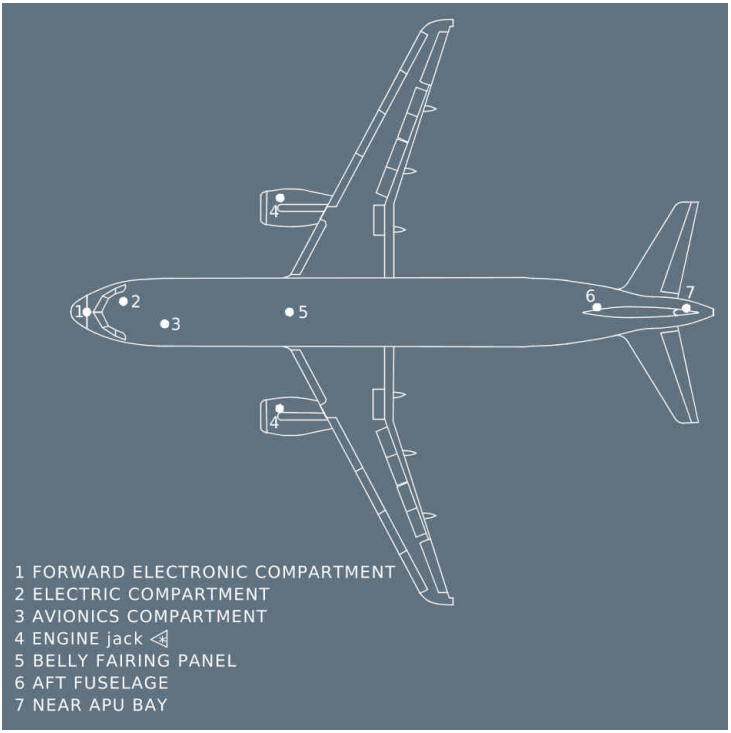
Ident.: DSC-23-20-30-00018485.0001001 / 20 JUL 17
Applicable to: ALL

The system allows for communication between :
- The flight crew and the service interphone jacks.
- The flight attendant stations and the service interphone jacks.
- The different service interphone jacks.

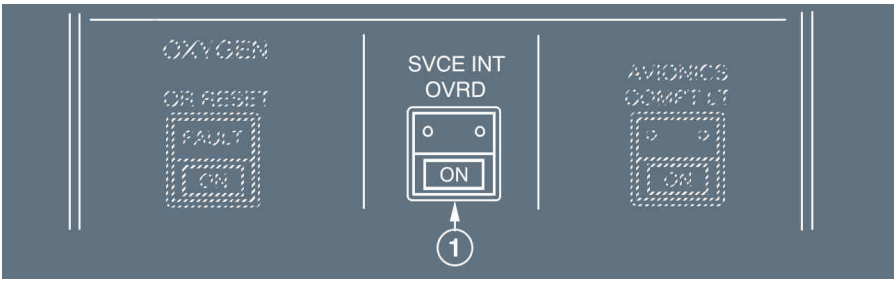
The Service Interphone system has :
- Seven interphone jacks.
- An OVRD switch located on the overhead panel.

The audio lines from the interphone jacks are connected to both CIDS directors.

LOCATION OF INTERPHONE JACKS



CONTROLS AND INDICATORS AT OVERHEAD PANEL



(1) SVCE INT OVRD pushbutton switch

Auto : Ground personnel can communicate with the flight crew by means of the service interphone jacks 10 s after the aircraft has landed. The landing gear must be compressed.

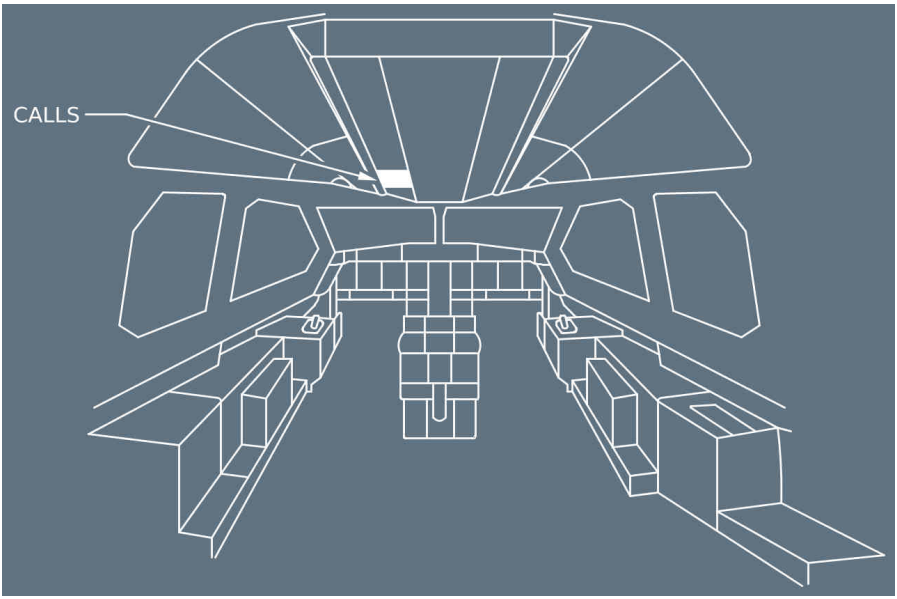
ON : Communication is possible when the landing gear is not compressed. The ON light is white.

GROUND MECHANIC CALL SYSTEM

Applicable to: ALL

Ident.: DSC-23-20-30-10-00018486.0001001 / 17 MAR 17

CONTROLS AND INDICATORS ON OVERHEAD PANEL

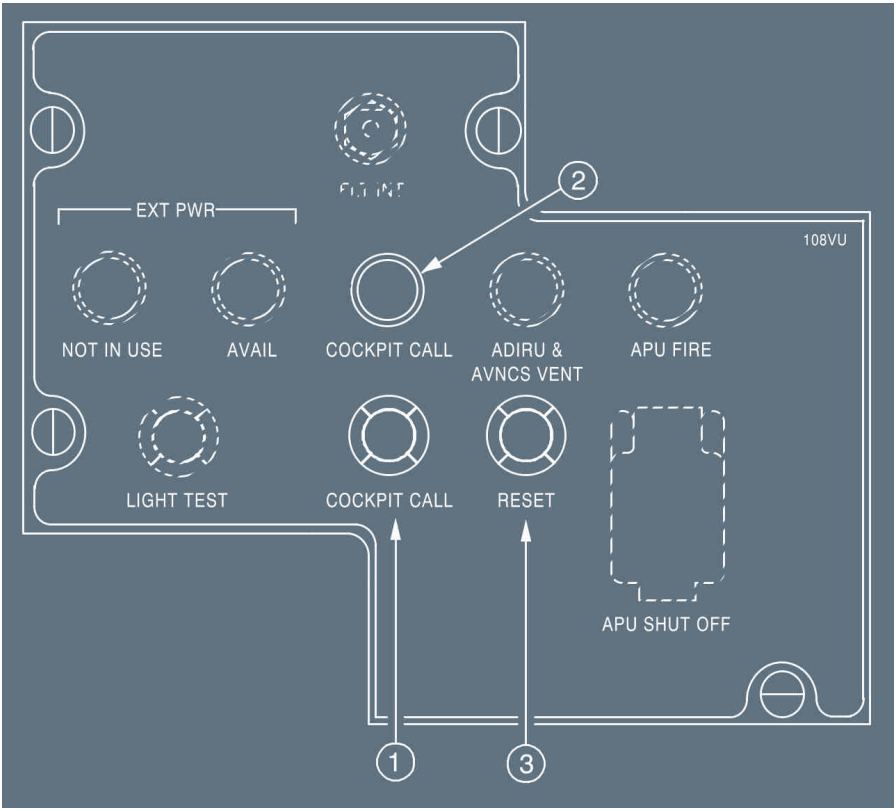


MECH pb

Pressed (and held)	:	COCKPIT CALL lights up blue on the external power panel in the nose L/G bay. An external horn sounds.
Released	:	COCKPIT CALL remains lighted. The ground mechanic can extinguish it by pressing the RESET button on the external power panel. The external horn stops sounding.

Ident.: DSC-23-20-30-10-00018487.0001001 / 17 MAR 17

CONTROLS AND INDICATORS ON THE EXTERNAL POWER PANEL



(1) COCKPIT CALL pushbutton

Pressed : This calls the cockpit.
The MECH lights flash amber on the ACPs and a buzzer sounds.

Released : The MECH lights go out after 60 s if they are not reset on the ACPs.
The buzzer stops.

(2) COCKPIT CALL light

The blue light appears when cockpit calls the ground mechanic. An external horn also sounds.

(3) RESET pushbutton

Pressed The COCKPIT CALL light goes out.

Intentionally left blank

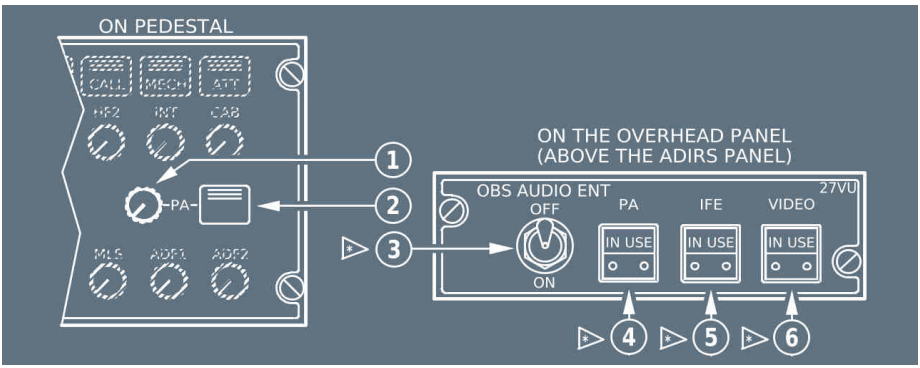
DESCRIPTION

Ident.: DSC-23-20-40-00018685.0001001 / 17 MAR 17
Applicable to: ALL

The passenger address allows all crew members to make announcements to passengers in the cabin through loudspeakers. It can be operated from the cockpit (with ACP or handset) or from the cabin (attendant stations).

CONTROLS AND INDICATORS

Ident.: DSC-23-20-40-00018686.0001001 / 20 JUL 17
Applicable to: ALL



(1) PA reception knob

Pressed and released (knob out) : The message goes to the loudspeakers, and the integral white light comes on.
The flight crew can turn the knob to adjust the volume.

Pressed (knob in) : The PA reception to the loudspeakers is disconnected.
The white light goes out.

(2) PA transmission key

Pressed and held : The flight crew may use a boom, mask, or hand mike to make an announcement.
Three green lines come on.

Note: The flight crew may use a cockpit handset to make PA announcements without action on the ACPs.

(3) OBS AUDIO ENT sw

ON : Announcement from the cockpit can be heard through channel 9 of Passenger Entertainment System (PES).

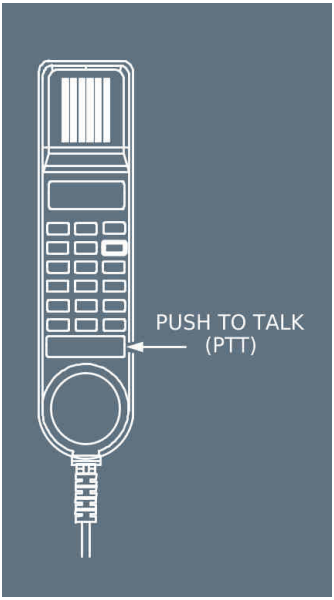
OFF : Normal functionning of PES is restored.

(4) PA IN USE light
The light comes on when the PA is activated from the cockpit or from the cabin (cabin attendant or prerecorded announcement).

(5) IFE IN USE light
The light comes on when the IFE system is in use.

(6) VIDEO IN USE light
The light comes on when the video system is in use.

The flight crew can also use the cockpit handset, located at the bottom of the pedestal, for PA announcements.



Note: *Due to numerous customizations of the handset and keypad, their functions are not described in detail.*

DESCRIPTION

Ident.: DSC-23-30-10-00018475.0001001 / 17 MAR 17
Applicable to: ALL

Either of the two Radio Management Panels (RMPs) (third RMP ◁) can be used to tune each transceiver.
To transmit, the flight crew uses the Audio Control Panel (ACP) to select a VHF or HF system. The ACP works through the Audio Management Unit (AMU). Each system is connected to the RMPs, for frequency selection, and to the AMU for connection to the audio integrating and SELCAL (selective calling) systems.

VHF

Ident.: DSC-23-30-10-00018472.0001001 / 27 APR 17
Applicable to: ALL

Two identical VHF communication systems (third VHF system ◁) are installed.
Each system has a transceiver in the avionics compartment, and an antenna on the fuselage. Only VHF1 functions in EMER ELEC CONFIG. Its range is from 118.0 to 136.975 MHz.

HF

Ident.: DSC-23-30-10-00018473.0001001 / 27 OCT 17
1 **Applicable to: MSN 01767-02626, 02670-02914, 03138-03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 05120, 05158, 05218, 06720-09063**

Two identical HF communication systems are optional. Each has a transceiver in the avionics compartment, and a coupler (located in AFT fuselage) and antenna in the vertical stabilizer. Its range is from 2.8 to 24 MHz.
If the HF is used on ground, it is important to check that nobody stays in the direct vicinity of the antenna. HF must not be used during refueling or transfer operation.
The HF VOICE MODE is not inhibited on ground but the use of HF on ground must be limited to operational needs.

HF

Ident.: DSC-23-30-10-00018473.0003001 / 27 OCT 17
Applicable to: MSN 02649, 03071, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336

Two identical HF communication systems are optional. Each has a transceiver in the avionics compartment, and a coupler (located in AFT fuselage) and antenna in the vertical stabilizer. Its range is from 2.8 to 24 MHz.
If the HF is used on ground, it is important to check that nobody stays in the direct vicinity of the antenna. HF must not be used during refueling or transfer operation.

The HF DATA transmission is inhibited on ground. A GND HF DATALINK pb, located on the overhead panel, enables to override the inhibition. .
The HF VOICE MODE is not inhibited on ground but the use of HF on ground must be limited to operational needs.

SELCAL (SELECTIVE CALLING)

Ident.: DSC-23-30-10-00018476.0001001 / 17 MAR 17
Applicable to: ALL

Upon receiving a call code corresponding to that of the aircraft, the SELCAL system aurally and visually advises the flight crew that a ground station is calling the aircraft.
The aural warning is inhibited during takeoff and landing.

General

GENERAL

Ident.: DSC-23-30-20-10-00019717.0001001 / 17 MAR 17
Applicable to: MSN 02737, 03750, 04314, 04393-04397

The Satellite Communication (SATCOM) system allows the exchange of information between the aircraft and a ground network.

It provides both voice and data channels:
- One or several channels are used for voice transmissions (cockpit or cabin voice). The cockpit voice function must be activated, in order to be available. The cabin telephone system must be installed, to be able to use cabin voice function.
- One channel is used for data transmissions (ATSU or ACARS).
  The ATSU or ACARS normally transmit via VHF3. They automatically switch to SATCOM when VHF3 is not available.

The cockpit voice interface is controlled by the Audio Control Panels (ACPs) for call set-up and call termination, and by the MCDU for the call number selection. It allows the crew:
- To initiate air to ground calls and to receive ground to air calls
- To select the call priority, in case of air to ground calls
- To use manual dial or pre-recorded phone numbers.

If a SATCOM telephone handset is installed in the cockpit, the crew can set up a call without the use of the MCDU.
SATCOM functions are programmed through the Owner Requirement Table (ORT), according to airline needs.
Due to the highly customized programming, the SATCOM functions may vary for different airlines and are, therefore, not described in detail.

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Controls and Indicators

ACP INTERFACE

Ident.: DSC-23-30-20-20-00019718.0001001 / 17 MAR 17
Applicable to: MSN 02737, 03750

Refer to DSC-23-10-30 Audio Management System

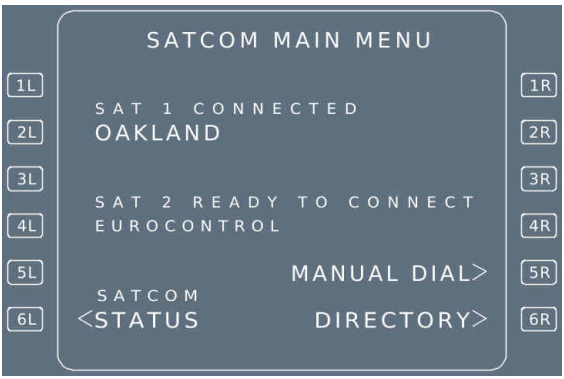
MCDU INTERFACE

Applicable to: MSN 02737, 03750, 04314, 04393-04397

Ident.: DSC-23-30-20-20-A-00019719.0003001 / 17 MAR 17

SATCOM MAIN MENU PAGE

The crew accesses this page by selecting SAT on the MCDU MAIN page.



2L (4L) (Label line) : This field displays the SATCOM Channel 1 (2) status:
- READY TO CONNECT : The channel is ready to support a call
- NOT AVAILABLE : The channel is not available (failed or not logged)
- DIALING : Cockpit call in progress
- INCOMING CALL : Advises of an incoming ground to air call
- CONNECTED : The circuit is connected
- CALL FAILED : The transmission is interrupted.

2L (4L) (Data line) : This field displays:
- The title of the selected phone number, in case of an air to ground call
- The number, if the MANUAL DIAL option is used
- GRND-AIR CALL, in case of a ground to air call.

5R : This key provides access to the Manual Dial page. This page allows the dialing of a phone number.

6L : This key provides access to the SATCOM STATUS page, which contains LOG ON and channel status information.

6R : This key provides access to the SATCOM DIRECTORY PAGE.

Ident.: DSC-23-30-20-20-A-00019720.0001001 / 17 MAR 17

SATCOM DIRECTORY PAGE

This page provides access to 4 phone number lists, where phone numbers can be memorized, according to their priority.

1L : EMERGENCY for Priority 1 - Reserved for emergency and distress phone numbers only.

2L : SAFETY for Priority 2 - Reserved for regulatory and flight safety phone numbers only.

3L : NON-SAFETY for Priority 3 - Reserved for non flight safety phone numbers.

4L : PUBLIC for Priority 4 - Reserved for personal phone numbers.

6L : This key is used to return to the SATCOM MAIN MENU page.

Ident.: DSC-23-30-20-20-A-00019721.0001001 / 17 MAR 17

SATCOM CATEGORY NUMBERS PAGE

The CATEGORY NUMBERS page provides access to the pre-recorded phone numbers.
As an example, the following figure shows the SAFETY CATEGORY NUMBER page.

1L, 2L, 3L, 4L, 5L: These fields display the phone numbers and their titles.
When pressed, they dial the corresponding phone number.

There are two types of numbers:
- Protected : Displayed in green
- Unprotected : Displayed in blue brackets.

1R : This field displays the selected SATCOM channel.

4R : This function alphabetically sorts the phone numbers, within the category, by title.

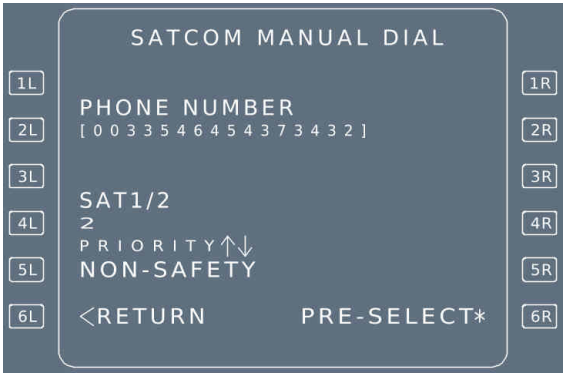
5R : This function automatically searches for a phone number from the beginning of this category, by entering up to the first three letters of the title into the scratchpad, and by pressing 5R.

6L : This key is used to return to the SATCOM DIRECTORY page.

Ident.: DSC-23-30-20-20-A-00019722.0001001 / 17 MAR 17

SATCOM MANUAL DIAL PAGE

The MANUAL DIAL PAGE enables the crew to initiate an air to ground call by manually entering a phone number.



2L (data line) : This field displays the phone number in blue brackets, after having been entered in the scratchpad.

4L : If two channels are available, this field displays the selected SATCOM channel. If only one channel is available, this field is blank.

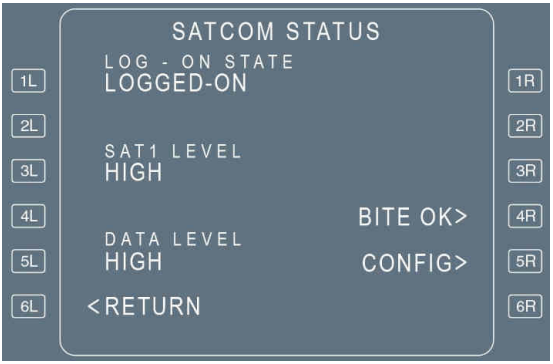
5L : This field displays the priority for the manual dial number. The priority can be changed by pressing the slew up or down keys on the MCDU keyboard.

6L : This key is used to return to the SATCOM MAIN MENU page.

Ident.: DSC-23-30-20-20-A-00021870.0001001 / 03 AUG 17

SATCOM STATUS PAGE

The crew accesses this page by selecting SATCOM STATUS on the SATCOM MAIN MENU page.



1L — Provides the current LOG-ON status:

- LOGGED-ON
- LOGGED-OFF
- SATCOM INOP.

3L (4L) (5L) (Data Line) — Provides the signal level (HIGH or LOW) for:

- The voice channel 1 (SAT 1)
- The voice channel 2 (SAT 2)
- The data link channel (DATA).

4R — Displays the status of the SATCOM BITE:

- BITE OK : The BITE status of all SATCOM items is OK
- BITE FAIL : At least the BITE status of one SATCOM items is failed. Gives access to the SATCOM BITE STATUS page.

5R — Displays the SATCOM CONFIG page.

6L — Displays the SATCOM MAIN MENU page.

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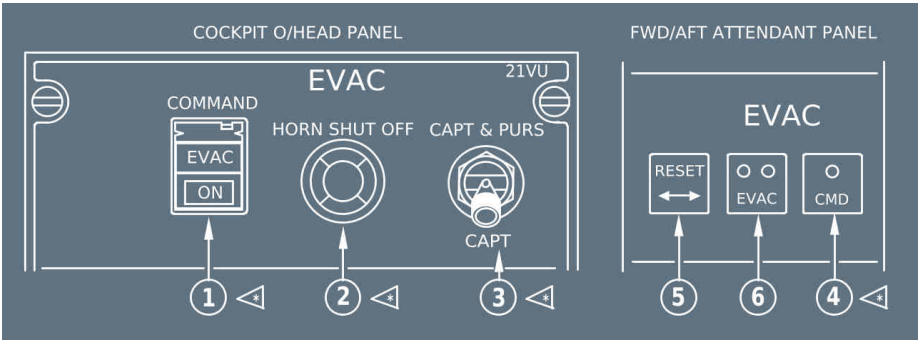
CONTROLS AND INDICATORS

Ident.: DSC-23-40-10-00018468.0001001 / 18 MAY 17
Applicable to: ALL



(1) COMMAND pb (guarded)

ON : In the cockpit :
- EVAC light flashes red.
- Depending on aircraft configuration, horn sounds.

In the cabin :
- EVAC lights flash at FWD and AFT attendant panels.
- Evacuation tone sounds.

OFF : The alert is stopped.

The EVAC light flashes red when the alert is activated.

(2) HORN SHUT OFF pb

Pressing this button silences the cockpit horn.

(3) CAPT and PURS/CAPT sw

CAPT and PURS : The alert may either be activated from the cockpit or the cabin.

CAPT : The alert may only be activated from the cockpit.
If one of the cabin CMD pb is pressed, only the cockpit horn sounds for 3 s.

(4) CMD pb

Pressing this button activates the alert, if the cockpit switch is at the CAPT & PURS position.
Pressing it again stops the alert.

(5) RESET pb

Pressing this button silences the EVAC tone.

(6) EVAC light

This light flashes when the alert is activated.

CABIN TO COCKPIT ALERT

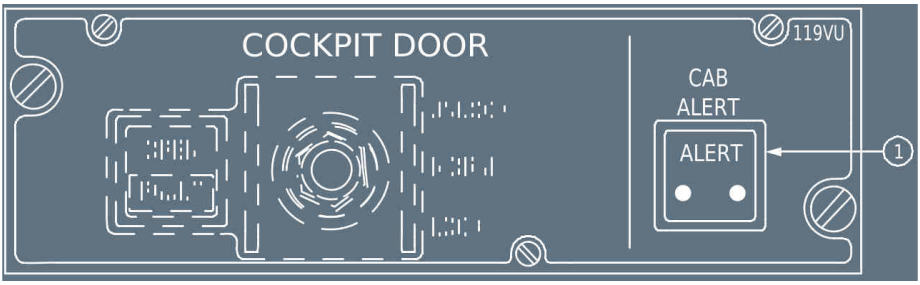
Ident.: DSC-23-40-20-00018470.0001001 / 17 MAR 17

[1] **Applicable to: MSN 02097, 02121, 02138, 02195-02204, 02457, 02609-02626, 03071, 04491, 04532, 04645, 05120, 05218**

This function enables the cabin crew to rapidly and discretely alert pilots of any threat in the cabin, for example, cockpit intrusion.

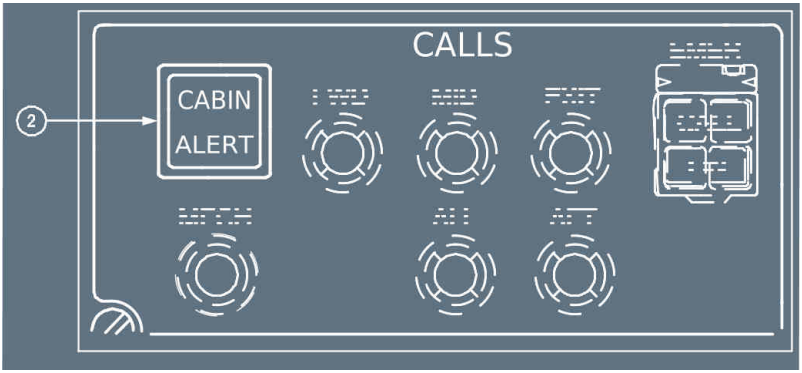
The cabin crew activates the alert by pressing one of the pushbuttons located in each attendant's area for a minimum of one second.

When the cabin crew activates the alert : The buzzer sounds continuously in the cockpit, and on the cockpit CALLS panel, the CABIN ALERT indicator lights and the center pedestal CAB ALERT pushbutton come on.



(1) CAB ALERT pushbutton

- ALERT light : This light comes on in red, and a buzzer sounds in the cockpit, when an alert is initiated from the cabin.
- Off : When the flight crew presses the ALERT pushbutton, the buzzer stops and the red ALERT light goes off.



(2) CAB ALERT indicator light

CABIN ALERT light : This light comes on in amber, when an alert is initiated from the cabin. This visual indication is limited in time.

COCKPIT TO CABIN ALERT

Ident.: DSC-23-40-20-00018471.0001001 / 17 MAR 17

2 **Applicable to: MSN 02195-02204, 02457, 02609-02626, 03071, 04491, 04532, 04645, 05120, 05218**

This function enables the flight crew to inform the cabin crew, via the CIDS network, of any threat in the cockpit. The pilots activate this alert by pressing one of the two pushbuttons installed in the cockpit.

(1) Cockpit to Cabin alert (guarded) pushbutton

Pressed: The alert buzzer sounds in the cabin, and the red alert lights come on, in each attendant's area.

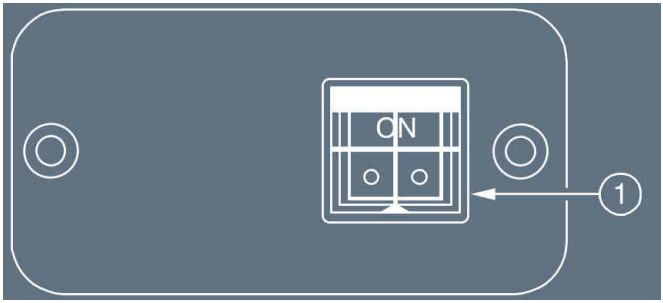
COCKPIT TO CABIN ALERT

Ident.: DSC-23-40-20-00018471.0003001 / 17 MAR 17

Applicable to: MSN 02097, 02121, 02138

This function enables the flight crew to inform the cabin crew, via the CIDS network, of any threat in the cockpit. The pilots activate this alert by pressing one of the two pushbuttons installed in the cockpit.

This also means that the hijacking code will be automatically transmitted to the ATC (*Refer to DSC-34-SURV-10-30 Remote ATC Box*).



(1) Remote ATC box (guarded) pushbutton

Pressed: The alert buzzer sounds in the cabin, and the red alert lights come on, in each attendant's area.
The ON light only comes on when hijacking code is correctly transmitted to ATC (*Refer to DSC-34-SURV-10-30 Remote ATC Box*).

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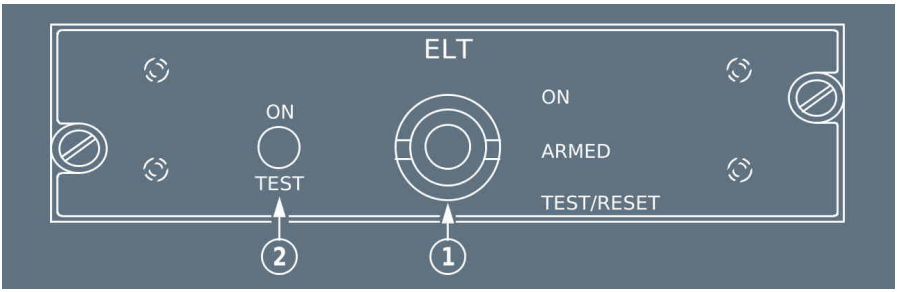
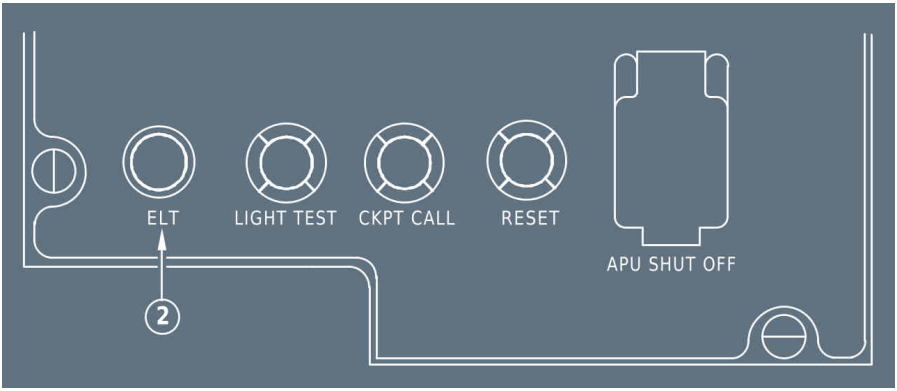
CONTROLS AND INDICATORS

Ident.: DSC-23-40-30-00018516.0004001 / 17 MAR 17
Applicable to: MSN 01767, 02108, 02135, 02139, 02275-02334, 02388, 02443, 02584-02670, 02908-02914, 03138-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336

OVERHEAD PANEL



EXTERNAL POWER PANEL



(1) ELT selector

ON	:	The Emergency Locator Transmitter (ELT) transmits an emergency signal.
ARMED	:	In the case of impact, the ELT transmits an emergency signal (on 121.5, 243 and 406.025 MHz).
TEST/RESET:		Starts the ELT autotest.

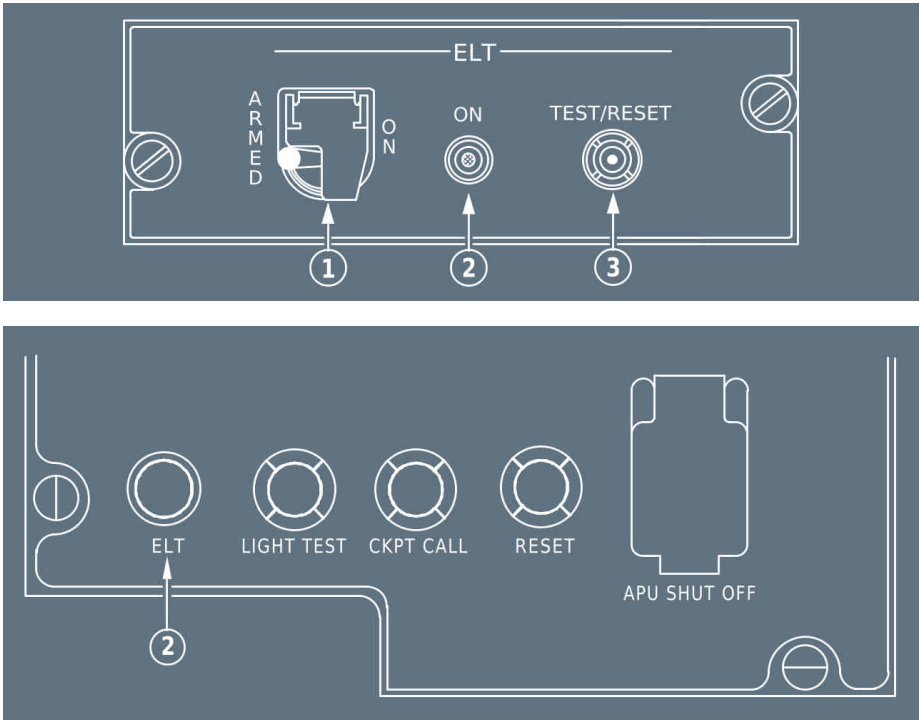
Note: *If the ELT is unduly triggered in ARMED mode (by an external impact, hard landing, etc.), select the TEST/RESET position to reset the ELT and stop signal transmission.*

(2) ON TEST light and ELT light
These lights come on amber either when the emergency signal is transmitted, or during ELT autotest.

CONTROLS AND INDICATORS

Ident.: DSC-23-40-30-00018516.0003001 / 17 MAR 17

1 **Applicable to: MSN 01920-02097, 02121, 02138, 02195-02204, 02737-02804, 03071, 04491, 04532, 04645, 05120, 05218**



(1) ELT sw
The guard keeps this switch in the ARMED position.
ON : The Emergency Locator Transmitter (ELT) transmits an emergency signal.

ARMED : In the case of impact, the ELT transmits an emergency signal (on 121.5, 243 and 406.025 MHz).

(2) ON and ELT light
These lights come on amber either when the emergency signal is transmitted, or during ELT autotest.

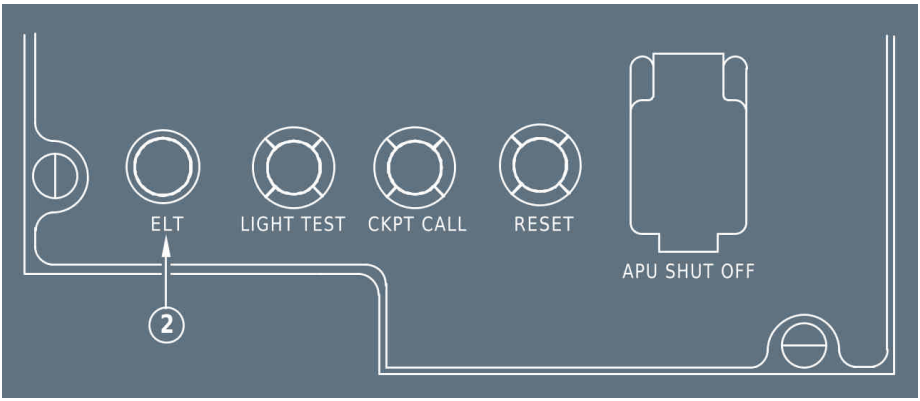
(3) TEST/RESET pb
Pressing this pushbutton starts the ELT auto test.

Note: If the ELT is unduly triggered in ARMED mode (by an external impact, hard landing, etc.), select the TEST/RESET position to reset the ELT and stop signal transmission.

CONTROLS AND INDICATORS

Ident.: DSC-23-40-30-00018516.0002001 / 17 MAR 17

[2] **Applicable to: MSN 02457, 02712, 03750, 05158, 06720-09063**



(1) ELT selector

ON : The Emergency Locator Transmitter (ELT) transmits an emergency signal.

ARMED : In case of impact, the ELT transmits an emergency signal (on 121.5, 243 and 406 MHz).

TEST/RESET : Starts the ELT autotest.

Note: If the ELT is unduly triggered in ARMED mode (by an external impact, hard landing, etc.), select the TEST/RESET position to reset the ELT and stop signal transmission.

(2) ON light and ELT light

These lights come on amber either when the emergency signal is transmitted, or during ELT autotest.

ACARS

Ident.: DSC-23-50-00018505.0001001 / 31 AUG 17
Applicable to: ALL

ACARS CALL : This memo appears in green when ACARS has received a message from the ground requesting a voice communication on VHF. This message is pulsing green during 60 s then steady.

VHF 3 VOICE : This memo appears in green when VHF 3 is operating in voice mode and ACARS communication is interrupted.

ACARS MSG : This memo appears in green when ACARS has received a message from the ground. This message is pulsing green during 60 s then steady.

ACARS STBY : This memo appears in green when ACARS communications between the aircraft and the ground are lost, or when a failure occurs at ATSU initialization to indicate to the crew to enter some initialization parameters.

ATSU

Ident.: DSC-23-50-00018506.0001001 / 31 AUG 17
Applicable to: ALL

VHF 3 VOICE : This memo appears in green, if VHF 3 is operating in voice mode and ACARS communication is interrupted.

HF VOICE : This memo appears in green, if both HFs are operating in voice mode. This message flashes for 10 s and then steady.

AUDIO 3 XFRD

Ident.: DSC-23-50-00018507.0001001 / 17 MAR 17
Applicable to: ALL

AUDIO 3 XFRD : This memo appears in green, if the AUDIO SWITCHING selector is not on NORM.

SATCOM

Ident.: DSC-23-50-00018508.0002001 / 03 APR 18
[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

SATCOM ALERT : This memo appears in green when a message with priority level below 4 is received from the ground.

L12

TEL EMER(ATC)(CPNY) CALL : This memo appears in green when the flight crew receives an EMERGENCY(ATC)(COMPANY) telephone call via the SATCOM.
Appears on the E/WD.

SATCOM

Ident.: DSC-23-50-00018508.0001001 / 31 AUG 17

2 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

SATCOM ALERT : This memo appears in green when a message with priority level below 4 is received from the ground.

VHF, HF UTILIZATION

Ident.: DSC-23-60-A-00002211.0001001 / 05 MAR 18
Applicable to: ALL

TUNING

The pilot should normally use his onside RMP to tune any one of the VHF or HF radios.
If a frequency is tuned on the RMP not dedicated to its associated VHF (e.g. VHF 1 tuned on RMP 2), the SEL lights come on (on the 3 RMP) to remind the pilot at least one radio system is not selected on its associated RMP. After each tuning, in order to be able to read VHF 1 and VHF 2 frequencies, the pilot should select the radio system associated with his RMP, this will extinguish the SEL lights.

ON/OFF switch..... CHECK ON
VHF or HF key..... PRESS

The green light comes on.
ACTIVE and STBY/CRS windows display active and preset frequencies, respectively.

HOW TO CHANGE FREQUENCY

Rotating knob..... TURN

Select the new frequency in the STBY/CRS window.
Outer knob is for units, inner knob for decimals.

Transfer key..... PRESS

This interchanges the ACTIVE and STBY frequencies.
The receiver is now tuned to the new ACTIVE frequency.

AM key (if necessary)..... PRESS

Green light comes on.

FAILURE CASES

When an RMP fails :

- The affected RMP no longer controls the selected receiver.
- The frequency displays disappear and the green VHF or HF lights go out.

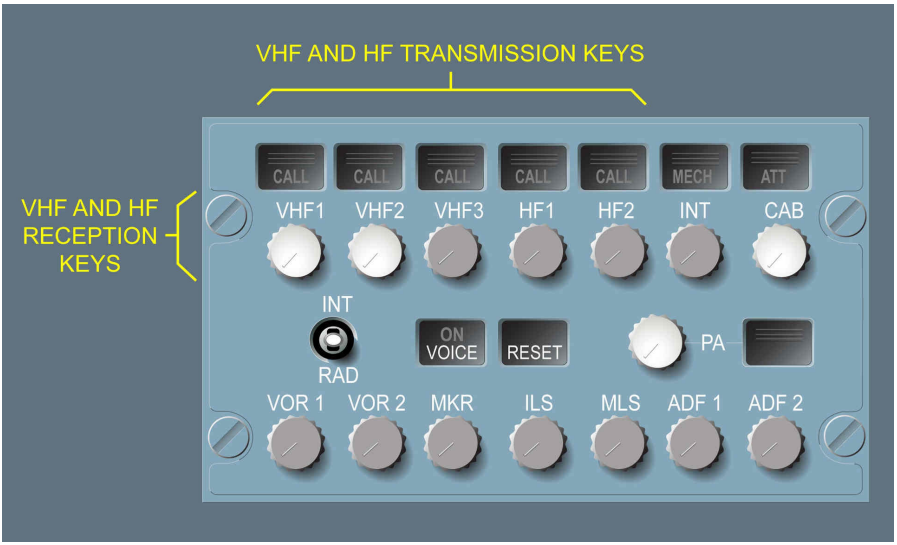
Affected RMP..... SWITCH OFF

One RMP can control all receivers.

Ident.: DSC-23-60-A-00002212.0003001 / 05 MAR 18

1 **Applicable to: MSN 02108, 02195, 02457, 02584, 02712, 02908-02914, 04294, 04399-04438, 04491, 04510, 04532, 04645, 05120, 05218, 06720-09063**

TRANSMISSION AND RECEPTION



VHF or HF reception key..... PRESS

The integrated white light comes on.
The receiver brings in the selected system.

To adjust the volume, turn the key.

VHF or HF transmission key..... PRESS

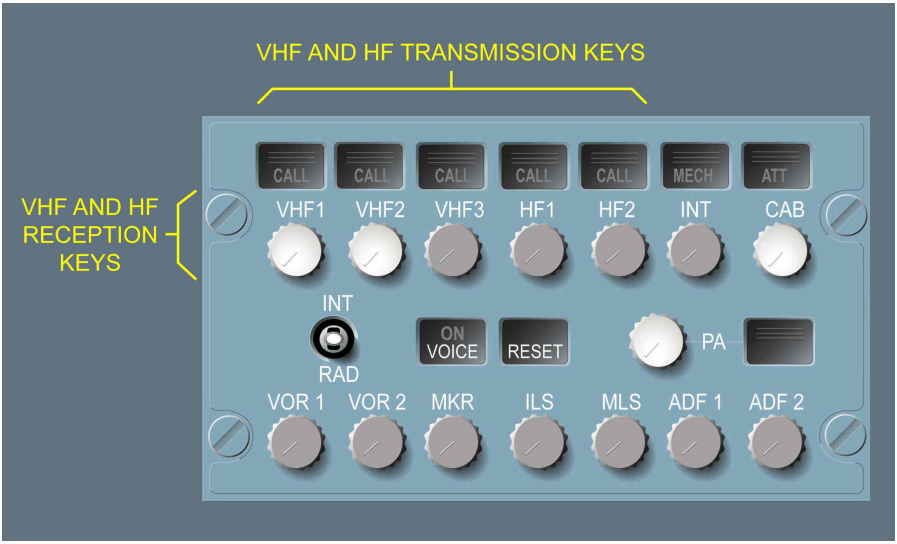
Green bars on the selected system key light up.
Microphones and PTT command are connected to the selected system.

Note: *1. If the VHF 3 VOICE DIRECTORY page is customized with user frequencies:*
- *Use it as a pure directory*
- *Do not press the key adjacent to the desired frequency for direct turning*
- *VHF 3 in VOICE mode should either be tuned using the MANUAL FREQ field, or using the RMP.*

2. If two frequencies are closer than 2 MHz (between VHF 1 and 2, or between VHF 2 and 3), or closer than 6 MHz (between VHF 1 and 3), some interference may occur.

Ident.: DSC-23-60-A-00002212.0004001 / 05 MAR 18
Applicable to: MSN 01767-02097, 02121-02139, 02204-02443, 02482, 02609-02670, 02737-02804, 03071-04216, 04312-04397, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

TRANSMISSION AND RECEPTION



VHF or HF reception key..... PRESS

The integrated white light comes on.
The receiver brings in the selected system.
To adjust the volume, turn the key.

VHF or HF transmission key..... PRESS

Green bars on the selected system key light up.
Microphones and PTT command are connected to the selected system.

Note: *1. If ACARS is installed, do not use VHF 3 for communications with ATC, unless VHF 1 and VHF 2 are inoperative.*

2. If the VHF 3 VOICE DIRECTORY page is customized with user frequencies:
- *Use it as a pure directory*
- *Do not press the key adjacent to the desired frequency for direct turning*
- *VHF 3 in VOICE mode should either be tuned using the MANUAL FREQ field, or using the RMP.*

3. If two frequencies are closer than 2 MHz (between VHF 1 and 2, or between VHF 2 and 3), or closer than 6 MHz (between VHF 1 and 3), some interference may occur.

AIRCRAFT SYSTEMS

ELECTRICAL

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DSC-24-10 Description

DSC-24-10-10 General

General....A

DSC-24-10-20 Generation of Electrical Power

AC Generators....A
DC Generation....B
Circuit Breakers (C/Bs)....C

DSC-24-10-30 Operations

DSC-24-10-30-10 General

General....A

DSC-24-10-30-20 Normal Configuration

In Flight....A
On Ground....B

DSC-24-10-30-30 Abnormal Configurations

Failure of One Engine Generator....A
Failure of AC BUS 1....B
Failure of One TR....C
Failure of TR 1 and TR 2....D
Emergency Generation after Loss of All Main Generators....E
EMER GEN Running....F
EMER GEN Running (Cont'd)....G
Flight with Batteries Only....H
On Ground, Batteries Only (Speed < 50 kt)....I
Smoke Configuration....J

DSC-24-10-30-40 Distribution Table

Distribution Table....A

DSC-24-20 Controls and Indicators

Overhead Panel....A
Overhead Panel (Cont'd)....B
External Power Panel....C
Forward Cabin....D
ECAM ELEC Page....E
Memo Display....F

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Localization Title	Toc Index	ID	Reason
DSC-24-10-30-20 In Flight	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-24-10-30-20 On Ground	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-24-10-30-30 Failure of One Engine Generator	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-24-10-30-30 Failure of AC BUS 1	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-24-10-30-30 Failure of One TR	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-24-10-30-30 Failure of TR 1 and TR 2	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-24-10-30-30 EMER GEN Running	F	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-24-10-30-30 Smoke Configuration	J	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-24-20 ECAM ELEC Page	E	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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GENERAL

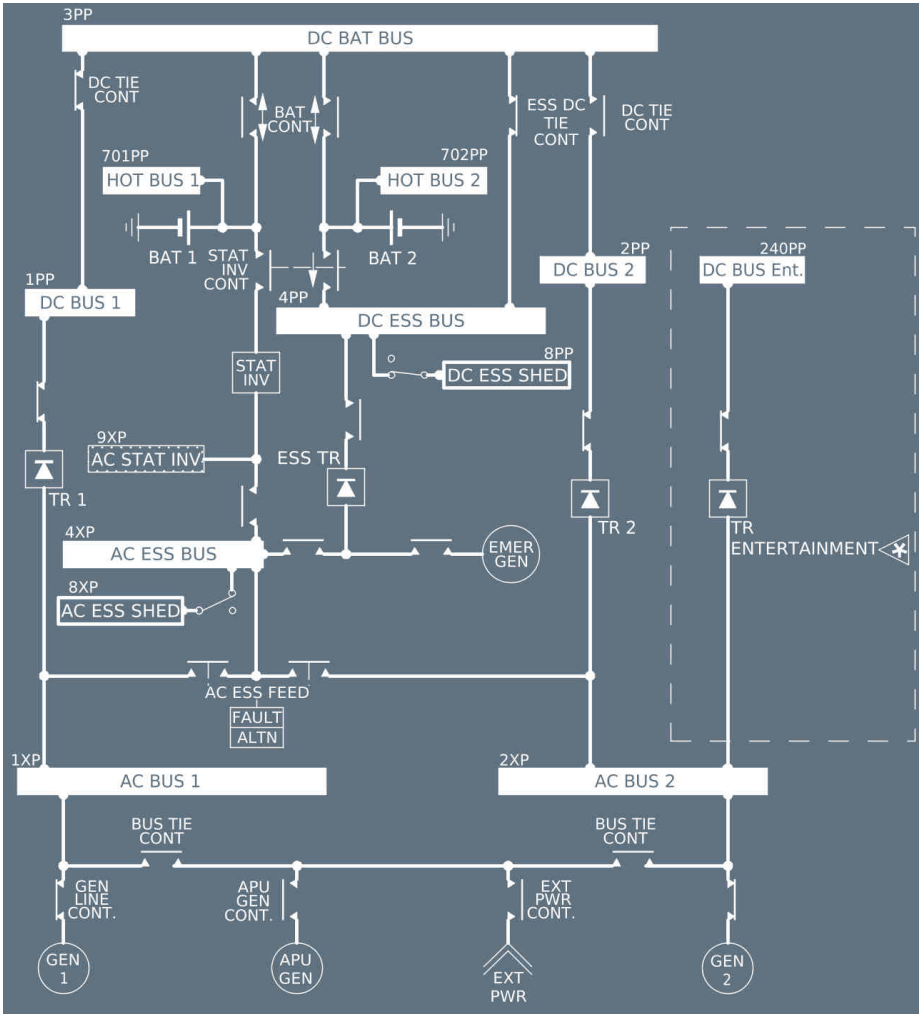
Ident.: DSC-24-10-10-00017750.0001001 / 21 MAR 16
Applicable to: ALL

The electrical power system consists of a three-phase 115/200 V 400 Hz constant-frequency AC system and a 28 V DC system. Electrical transients are acceptable for equipment. Commercial supply has secondary priority.

In normal configuration, the electrical power system provides AC power. The electrical power system is constituted of 2 engine generators and 1 APU generator. Each generator can provide AC power to all electrical bus bars. A part of this AC power is converted into DC power for certain applications.

In the event that normal AC power is not available, an emergency generator can provide AC power.

In the event that all AC power is not available, the electrical power system can invert DC power from the batteries into AC power.


3PP
DC BAT BUS
DC TIE CONT
BAT CONT
ESS DC TIE CONT
DC TIE CONT
701PP
HOT BUS 1
702PP
HOT BUS 2
BAT 1
STAT INV CONT
BAT 2
2PP
DC BUS 2
240PP
DC BUS Ent.
1PP
DC BUS 1
4PP
DC ESS BUS
STAT INV
8PP
DC ESS SHED
9XP
AC STAT INV
ESS TR
TR 1
TR 2
TR ENTERTAINMENT
4XP
AC ESS BUS
EMER GEN
8XP
AC ESS SHED
AC ESS FEED
FAULT ALTN
1XP
AC BUS 1
2XP
AC BUS 2
BUS TIE CONT
BUS TIE CONT
GEN LINE CONT.
APU GEN CONT.
EXT PWR CONT.
GEN 1
APU GEN
EXT PWR
GEN 2

AC GENERATORS

Ident.: DSC-24-10-20-00017751.0001001 / 21 MAR 16
Applicable to: ALL

ENGINE – DRIVEN GENERATORS

Two AC generators (GEN 1, GEN 2), one driven by each main engine through an integrated drive, supply aircraft electrical power. Each generator can supply up to 90 KVA of three phase 115/200 V 400 Hz power.

Two Generators Control Units (GCU) control the output of their respective generator. The main functions of each GCU are :
- Control the frequency and voltage of the generator output.
- Protect the network by controlling the associated generator line contactor.

APU GENERATOR AND EXTERNAL POWER

A third generator (APU GEN), driven directly by the APU and producing the same output as each main engine generator, can replace either or both main engine generators at any time.
A ground power connector near the nosewheel allows ground power to be supplied to all busbars.

A Ground Power Control Unit (GPCU) :
- Protects the network by controlling the external power contactor, or

A Ground and Auxiliary Power Control Unit (GAPCU) ◁✻ :
- Regulates, via the APU Electronic Control Box, the frequency and voltage of the APU generator.
- Protects the network by controlling the external power contactor and the APU generator line contactor.

EMERGENCY GENERATOR

The blue hydraulic circuit drives an emergency generator that automatically supplies emergency AC power to the aircraft electrical system, if all main generators fail. This generator supplies 5 KVA of three-phase 115 and 200 V 400 Hz power.

A Generator Control Unit (GCU) :
- Keeps the emergency generator at a constant speed,
- Controls the generator's output voltage,
- Protects the network by the controlling the emergency generator line contactor, and
- Controls the emergency generator start-up.

STATIC INVERTER

A static inverter transforms DC power from Battery 1 into one KVA of single-phase 115 V 400 Hz AC power, which is then supplied to part of the AC essential bus. When the aircraft speed is above

50 kt, the inverter is automatically activated, if only the batteries are supplying electrical power to the aircraft, regardless of the BAT 1 and BAT 2 pushbutton positions.
When the aircraft speed is below 50 kt, the inverter is activated, if only the batteries are supplying electrical power to the aircraft, and both BAT 1 and BAT 2 pushbuttons are on.

DC GENERATION

Ident.: DSC-24-10-20-00017752.0001001 / 21 MAR 16
Applicable to: ALL

TRANSFORMER RECTIFIERS (TRS)

Two main transformer rectifiers, TR 1 and TR 2, supply the aircraft's electrical system, with up to 200 A of DC current.
A third (identical) Transformer Rectifier, the ESS TR, can power the essential DC circuit from the emergency generator, if the engine and APU generators all fail, or if TR 1 or TR 2 fails.
Each TR controls its contactor by internal logic.
A fourth Transformer Rectifier (TR Entertainment ◁) powers the DC Entertainment bus bar dedicated to the In-Flight Entertainment system (IFE) in order to take into account IFE needs.

BATTERIES

Two main batteries, each with a normal capacity of 23 Ah, are permanently connected to the two hot buses.
Each battery has an associated Battery Charge Limiter (BCL).
The BCL monitors battery charging and controls its battery contactor.

CIRCUIT BREAKERS (C/BS)

Ident.: DSC-24-10-20-00000874.0002001 / 15 FEB 11
Applicable to: ALL

The aircraft has two types of C/Bs:
- Monitored (green): When out for more than 1 min, the C/B TRIPPED warning is triggered on the ECAM.
- Non-monitored (black).

The Wing Tip Brake (WTB) C/Bs have red caps on them to prevent them from being reset.
The C/B TRIPPED warning on the ECAM indicates the location of the affected C/B. The following panels are monitored: OVHD PNL, L(R) ELEC BAY, REAR PNL J-M or N-R or S-V or W-Z.

Note: *The flight crew can clear the ECAM C/B TRIPPED caution by pressing:*

- *The EMER CANC pb: When pressed, this pushbutton clears and inhibits the ECAM C/B TRIPPED caution for the remainder of the flight, or*
- *The CLR pb: When pressed, this pushbutton only clears the ECAM C/B TRIPPED caution. If the C/B remains pulled, any additional tripped circuit breakers on the same panel will not be detected, and the ECAM will not trigger the caution. However, if the C/B is pushed, any additional tripped circuit breakers will be detected, and the ECAM will trigger the caution again.*

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General

GENERAL

Ident.: DSC-24-10-30-10-00017759.0001001 / 21 MAR 16
Applicable to: ALL

GEN 1 and 2 when operating have priority over the APU generator and over external power.
External power has priority over the APU generator when the EXT PWR pb switch is ON.
The APU generator or external power can supply the entire network.
One engine generator can supply the entire network, except the DC BUS Entertainment.
The generators cannot be connected in parallel.

Note: *Two generators are needed to supply the DC BUS Entertainment ◁ , except on ground, where the APU generator (if not overloaded) or the external power is sufficient.*

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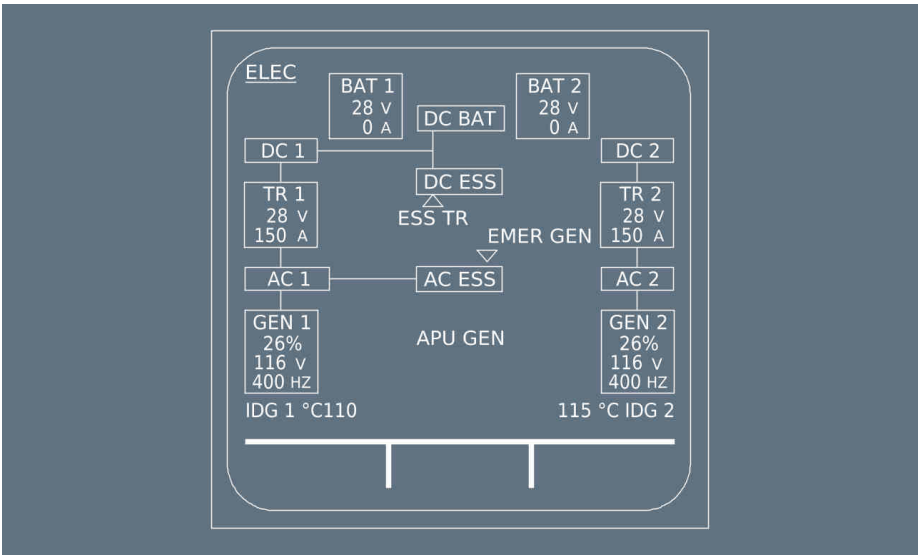
Normal Configuration

IN FLIGHT

Ident.: DSC-24-10-30-20-00000876.0001001 / 09 OCT 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

Each engine-driven generator supplies its associated AC BUS (1 and 2) via its generator line contactor (GLC 1 and GLC 2).
AC BUS 1 normally supplies the AC ESS BUS via a contactor.
TR 1 normally supplies DC BUS 1, DC BAT BUS, and DC ESS BUS.
TR 2 normally supplies DC BUS 2.
The two batteries are connected to the DC BAT BUS, if they need charging. When they are fully charged, the battery charge limiter disconnects them.

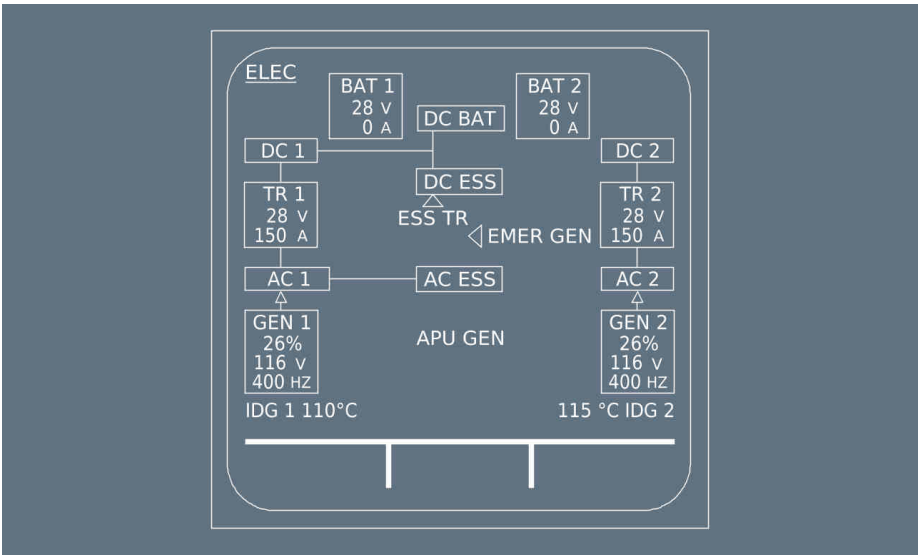


IN FLIGHT

Ident.: DSC-24-10-30-20-00000876.0002001 / 09 OCT 12
1 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

Each engine-driven generator supplies its associated AC BUS (1 and 2) via its generator line contactor (GLC 1 and GLC 2).
AC BUS 1 normally supplies the AC ESS BUS via a contactor.

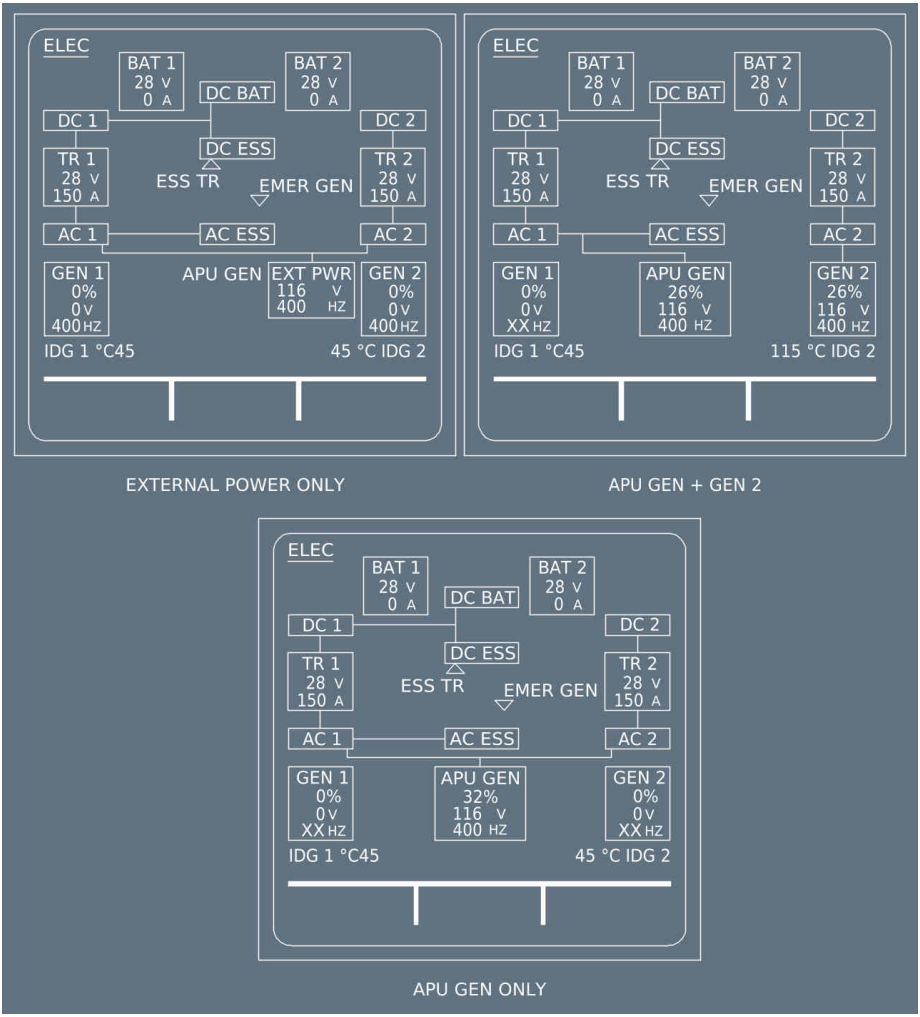
TR 1 normally supplies DC BUS 1, DC BAT BUS, and DC ESS BUS.
TR 2 normally supplies DC BUS 2.
The two batteries are connected to the DC BAT BUS, if they need charging. When they are fully charged, the battery charge limiter disconnects them.



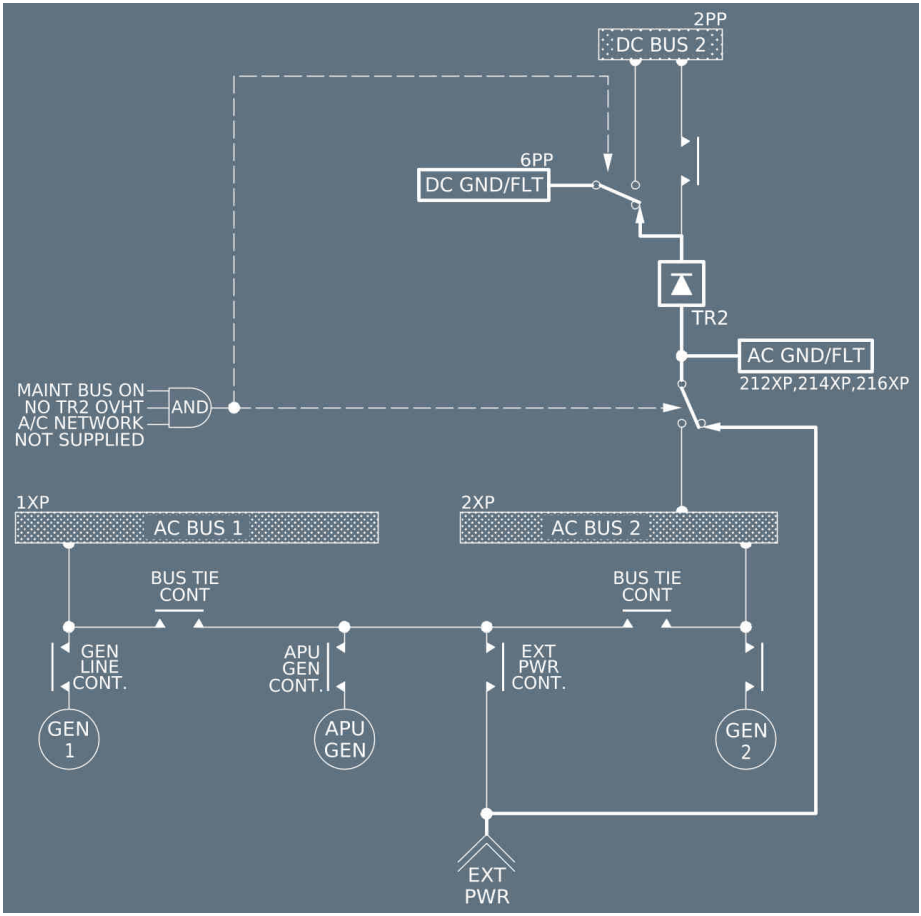
ON GROUND

Ident.: DSC-24-10-30-20-00000877.0001001 / 22 MAY 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

Either the APU generator, or external power, may supply the complete system.



On ground, when only ground services are required, external power can supply the AC and DC GND/FLT BUSES directly without supplying the entire aircraft network.
Personnel select this configuration with the MAINT BUS switch in the forward entrance area.

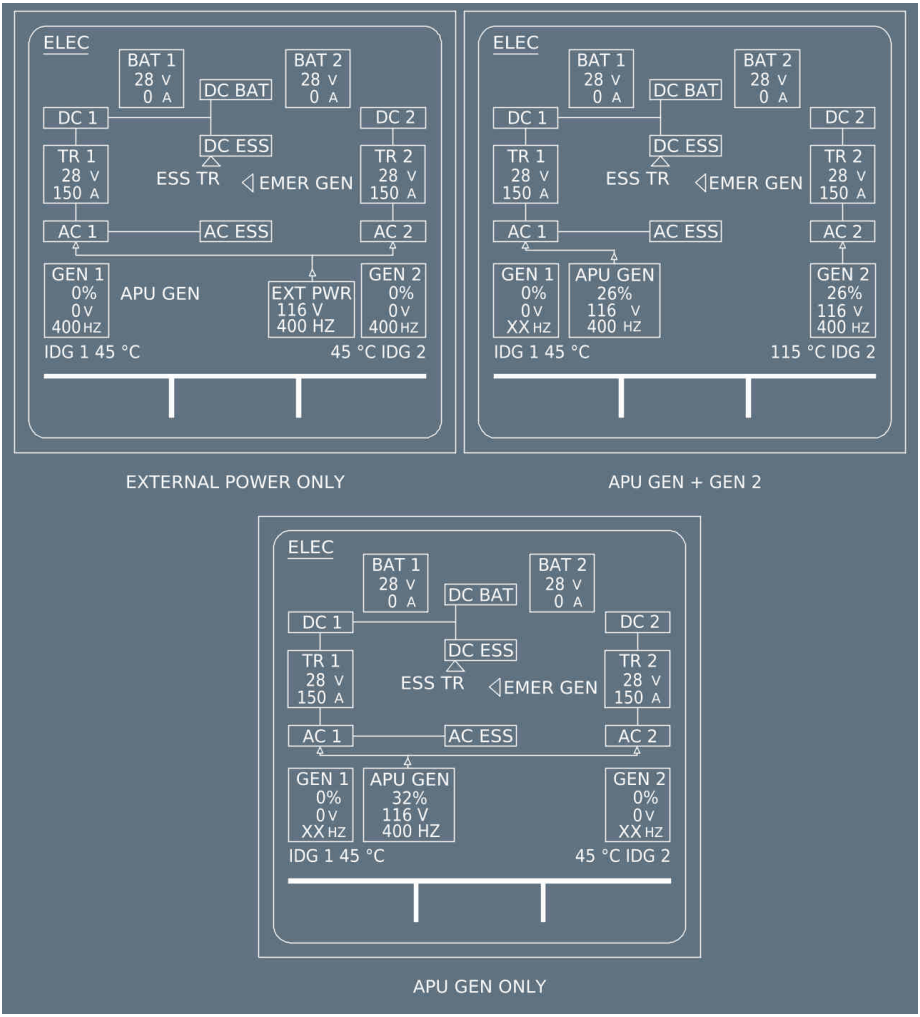


ON GROUND

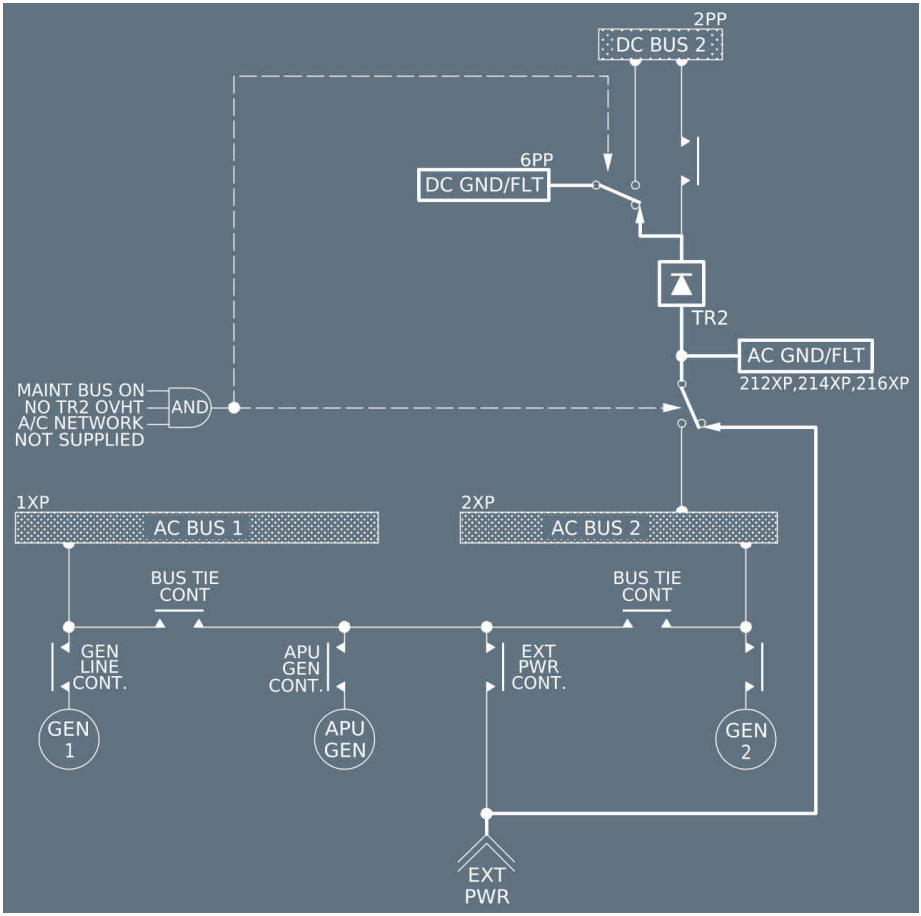
Ident.: DSC-24-10-30-20-00000877.0002001 / 22 MAY 12

2 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

Either the APU generator, or external power, may supply the complete system.



On ground, when only ground services are required, external power can supply the AC and DC GND/FLT BUSES directly without supplying the entire aircraft network.
Personnel select this configuration with the MAINT BUS switch in the forward entrance area.


2PP
DC BUS 2
6PP
DC GND/FLT
TR2
AC GND/FLT
212XP,214XP,216XP
MAINT BUS ON
NO TR2 OVHT
A/C NETWORK
NOT SUPPLIED
AND
1XP
AC BUS 1
2XP
AC BUS 2
BUS TIE
CONT
BUS TIE
CONT
GEN
LINE
CONT.
APU
GEN
CONT.
EXT
PWR
CONT.
GEN
1
APU
GEN
GEN
2
EXT
PWR

Abnormal Configurations

FAILURE OF ONE ENGINE GENERATOR

Ident.: DSC-24-10-30-30-00017760.0002001 / 21 MAR 16

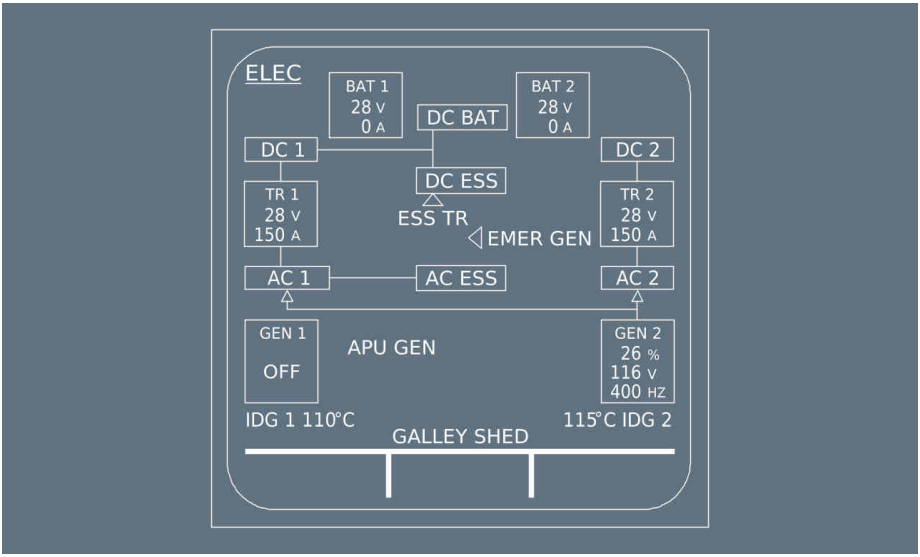
1 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

The system automatically replaces the failed generator, with the :

- APU GEN, if available, or
- Other engine generator.

Part of the galley load and the DC BUS Ent ◁ are automatically shed.

Note: The Galley Load Automatic Shedding ◁ allows all the galley load to be automatically shed.



FAILURE OF ONE ENGINE GENERATOR

Ident.: DSC-24-10-30-30-00017760.0001001 / 21 MAR 16

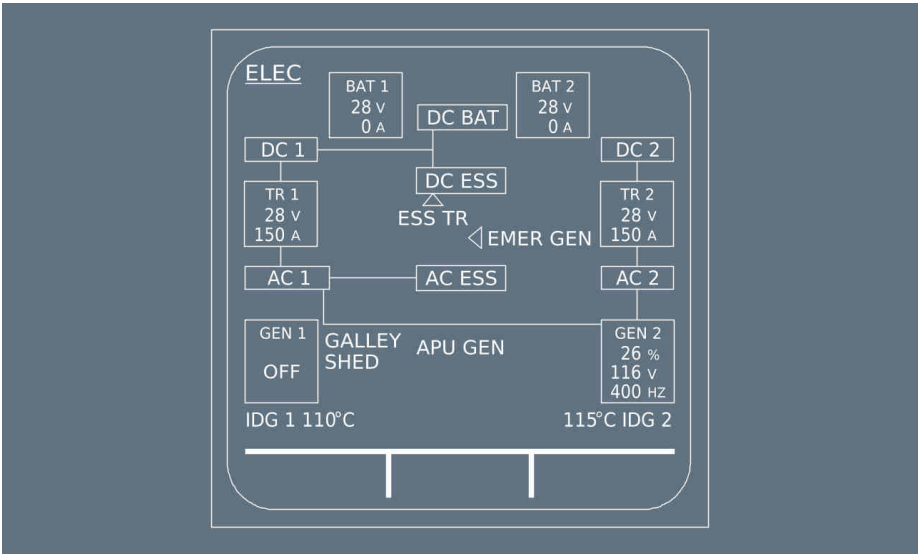
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

The system automatically replaces the failed generator, with the :

- APU GEN, if available, or
- Other engine generator.

Part of the galley load and the DC BUS Ent ◁ are automatically shed.

Note: The Galley Load Automatic Shedding ◁ allows all the galley load to be automatically shed.

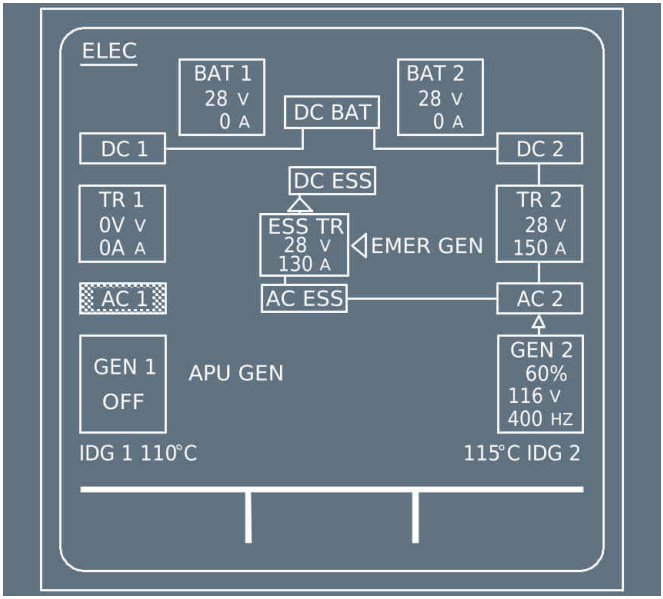


FAILURE OF AC BUS 1

Ident.: DSC-24-10-30-30-00017761.0002001 / 21 MAR 16

2 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

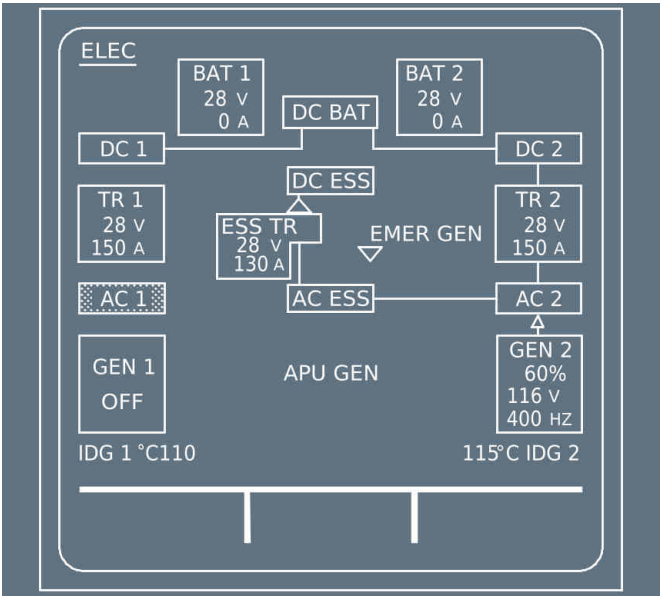
- AC BUS 2 can supply AC ESS BUS, and ESS TR can supply DC ESS BUS, both via the AC ESS FEED pb. This is done automatically with the AC ESS FEED Auto Switching ◁ .
- DC BUS 2 supplies DC BUS 1 and DC BAT BUS automatically after 5 s.



FAILURE OF AC BUS 1

Ident.: DSC-24-10-30-30-00017761.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

- AC BUS 2 can supply AC ESS BUS, and ESS TR can supply DC ESS BUS, both via the AC ESS FEED pb. This is done automatically with the AC ESS FEED Auto Switching ⋖ .
- DC BUS 2 supplies DC BUS 1 and DC BAT BUS automatically after 5 s.



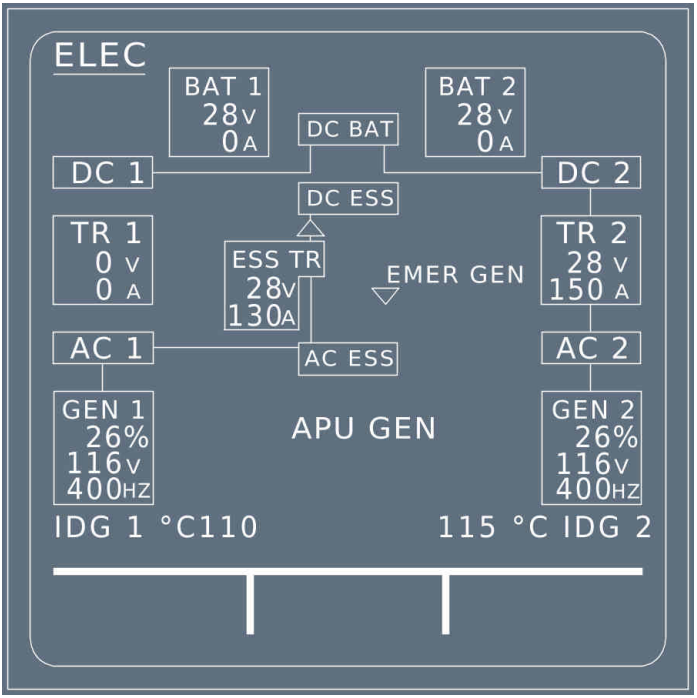
FAILURE OF ONE TR

Ident.: DSC-24-10-30-30-00000880.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

The contactor of each TR opens automatically, in case of :

- Overheat
- Minimum current

The other TR automatically replaces the faulty one.
The ESS TR supplies the DC ESS BUS.



FAILURE OF ONE TR

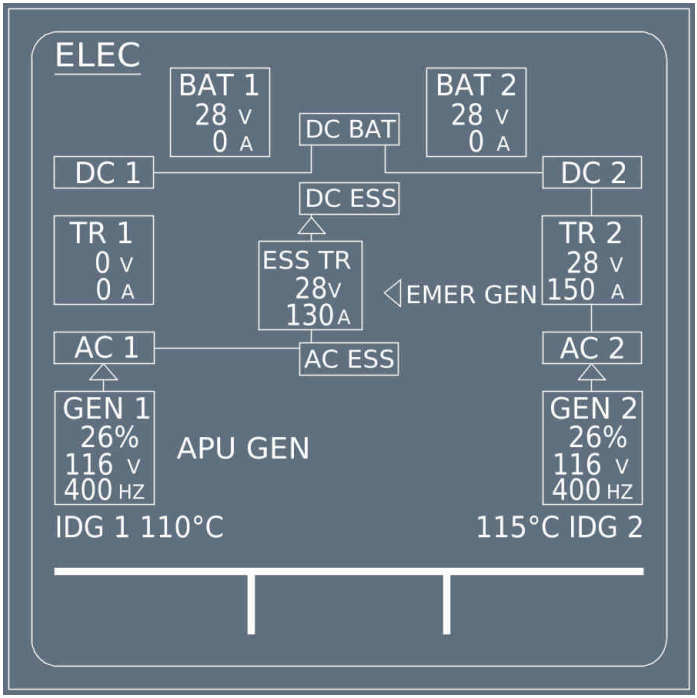
Ident.: DSC-24-10-30-30-00000880.0002001 / 21 MAR 16

3 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

The contactor of each TR opens automatically, in case of :

- Overheat
- Minimum current

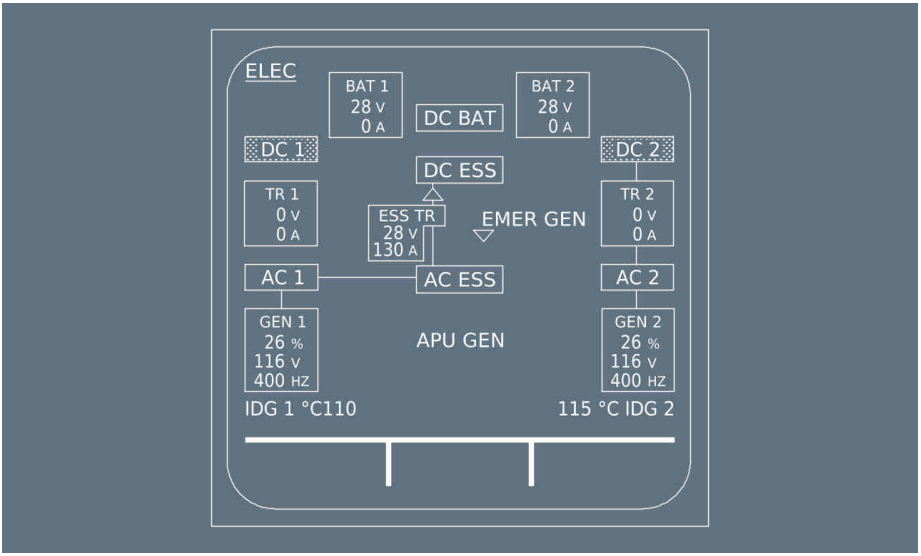
The other TR automatically replaces the faulty one.
The ESS TR supplies the DC ESS BUS.



FAILURE OF TR 1 AND TR 2

Ident.: DSC-24-10-30-30-00000881.0001001 / 09 OCT 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

If TR 1 and TR 2 are lost, DC BUS 1, DC BUS 2, and DC BAT BUS are lost. The DC ESS BUS is supplied by the ESS TR.

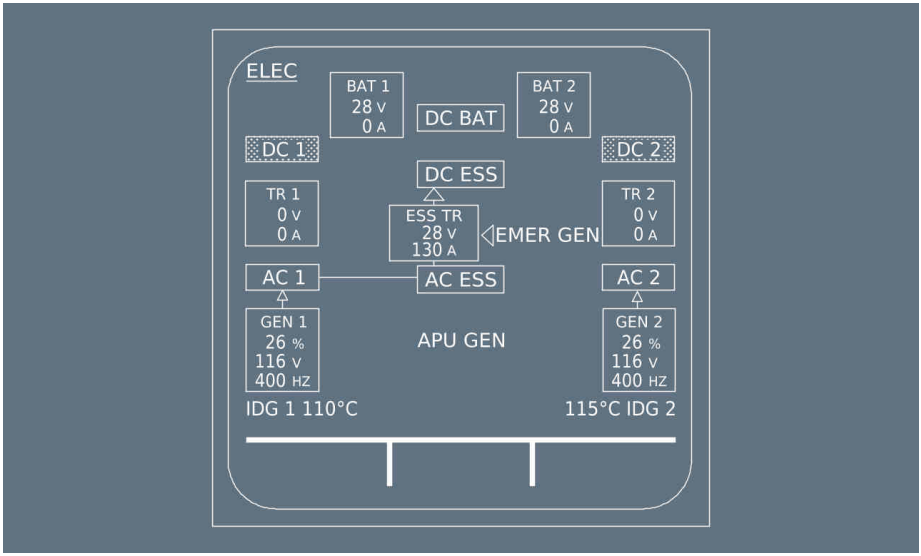


FAILURE OF TR 1 AND TR 2

Ident.: DSC-24-10-30-30-00000881.0002001 / 09 OCT 12

[4] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

If TR 1 and TR 2 are lost, DC BUS 1, DC BUS 2, and DC BAT BUS are lost. The DC ESS BUS is supplied by the ESS TR.



EMERGENCY GENERATION AFTER LOSS OF ALL MAIN GENERATORS

Ident.: DSC-24-10-30-30-00000882.0002001 / 21 MAR 16
Applicable to: ALL

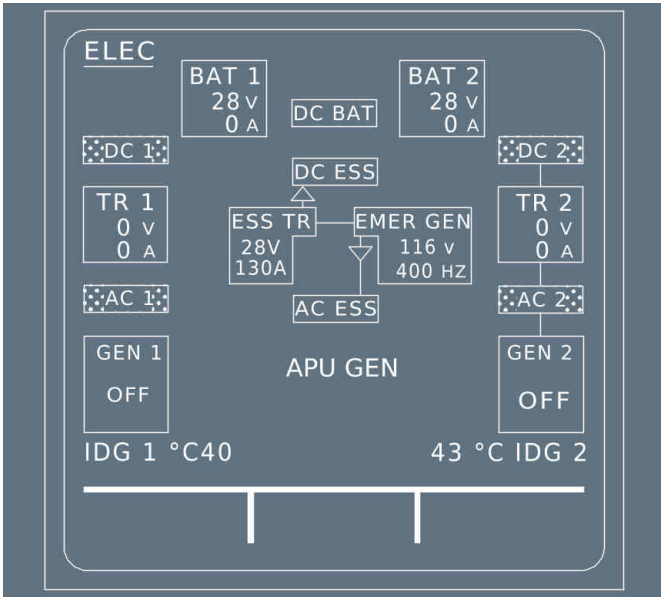
If both AC BUS 1 and AC BUS 2 are lost and the aircraft speed is above 100 kt, the Ram Air Turbine (RAT) extends automatically. This powers the blue hydraulic system, which drives the emergency generator by means of a hydraulic motor. This generator supplies the AC ESS BUS, and the DC ESS BUS via the ESS TR.
If the RAT stalls, or if the aircraft is on the ground with a speed below 100 kt, the emergency generator has nothing to drive it. The emergency generation network automatically transfers to the batteries and static inverter, and the system automatically sheds the AC SHED ESS and DC SHED ESS buses.

When the aircraft is on ground :
- Below 100 kt, DC BAT BUS is automatically connected to the batteries.
- Below 50 kt, AC ESS BUS is automatically shed, leading to the loss of all display units.

Note: *1. During RAT extension and emergency generator coupling (about 8 s), the batteries power the emergency generation network.*
2. On ground, if only the batteries are powering the emergency generation network, APU start is only available when the speed is below 100 kt.

EMER GEN RUNNING

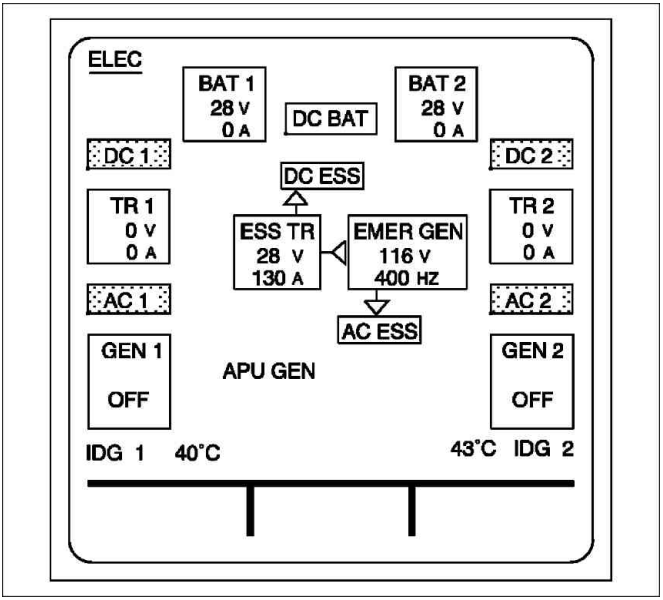
Ident.: DSC-24-10-30-30-00000883.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



EMER GEN RUNNING

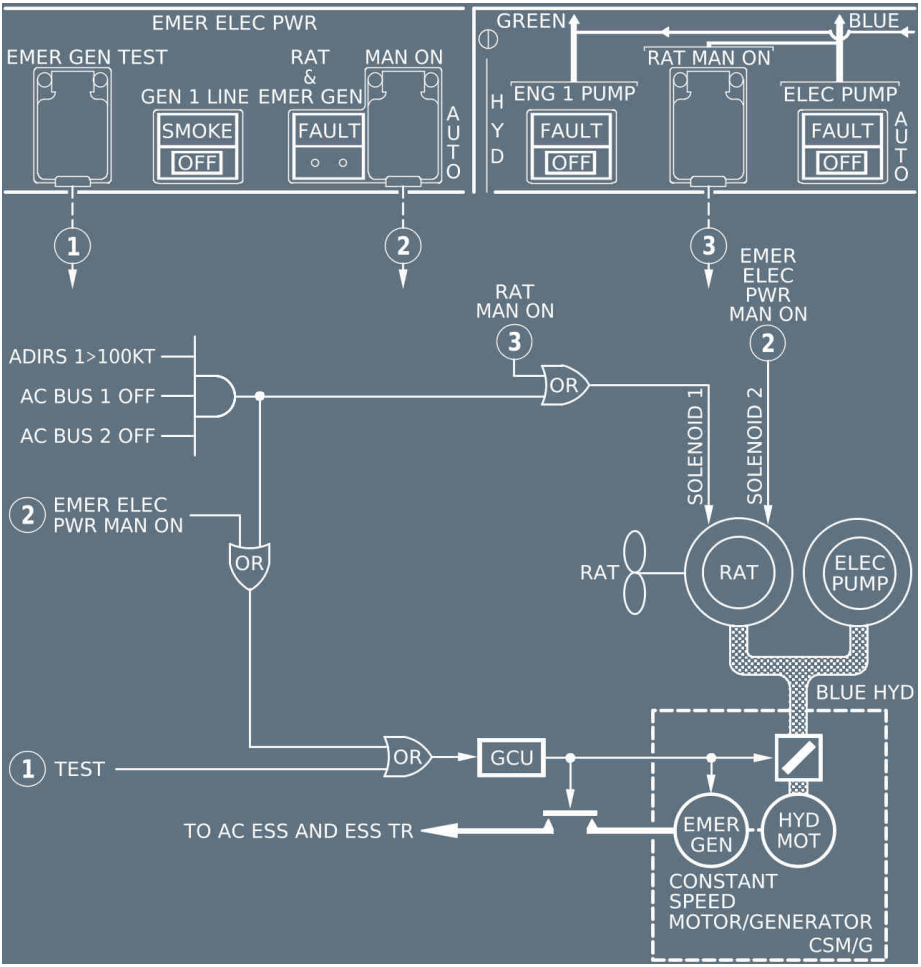
Ident.: DSC-24-10-30-30-00000883.0002001 / 17 MAR 11

[5] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



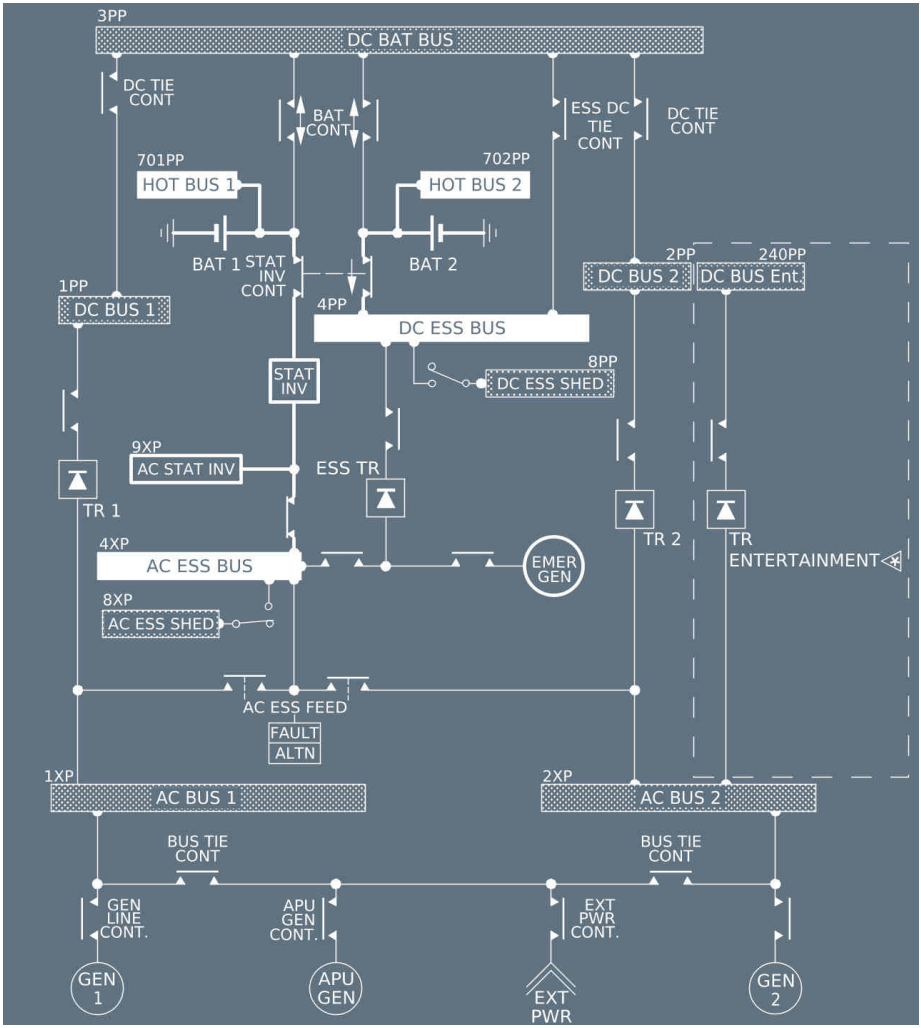
EMER GEN RUNNING (CONT'D)

Ident.: DSC-24-10-30-30-00000884.0002001 / 21 MAR 16
Applicable to: ALL



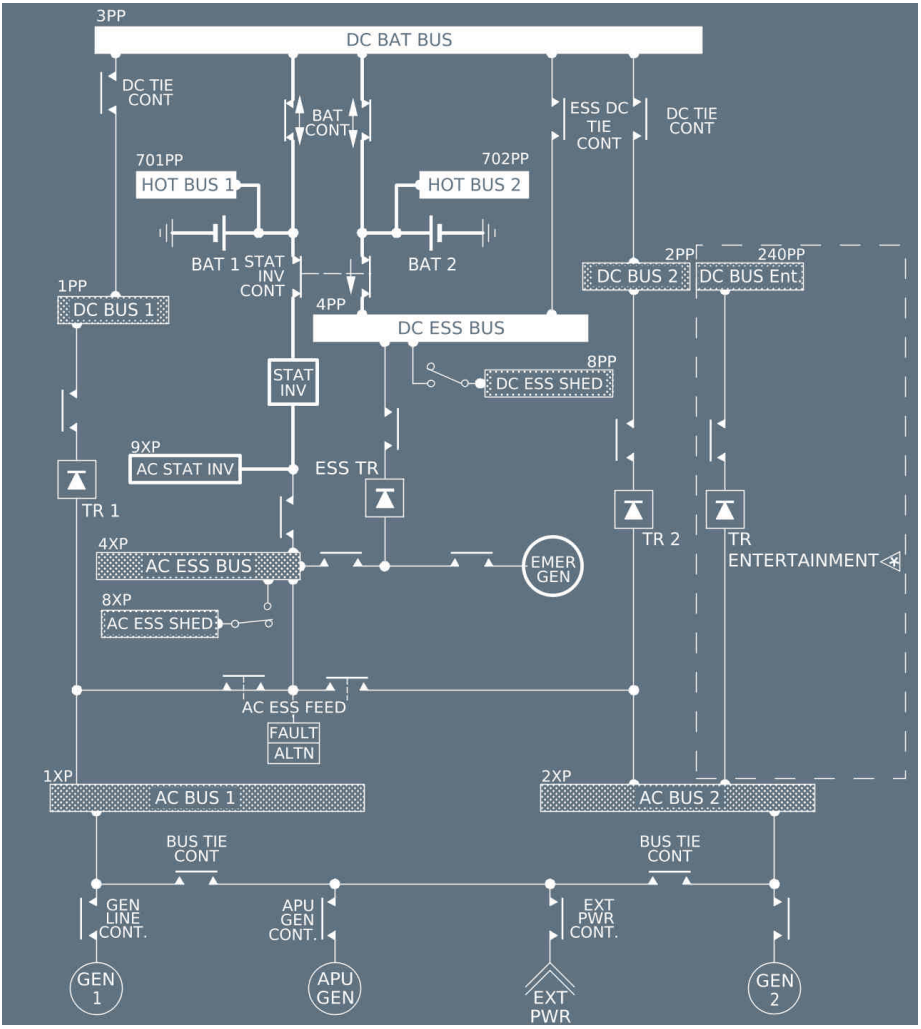
FLIGHT WITH BATTERIES ONLY

Ident.: DSC-24-10-30-30-00017762.0001001 / 21 MAR 16
Applicable to: ALL



ON GROUND, BATTERIES ONLY (SPEED < 50 KT)

Ident.: DSC-24-10-30-30-00017763.0001001 / 21 MAR 16
Applicable to: ALL

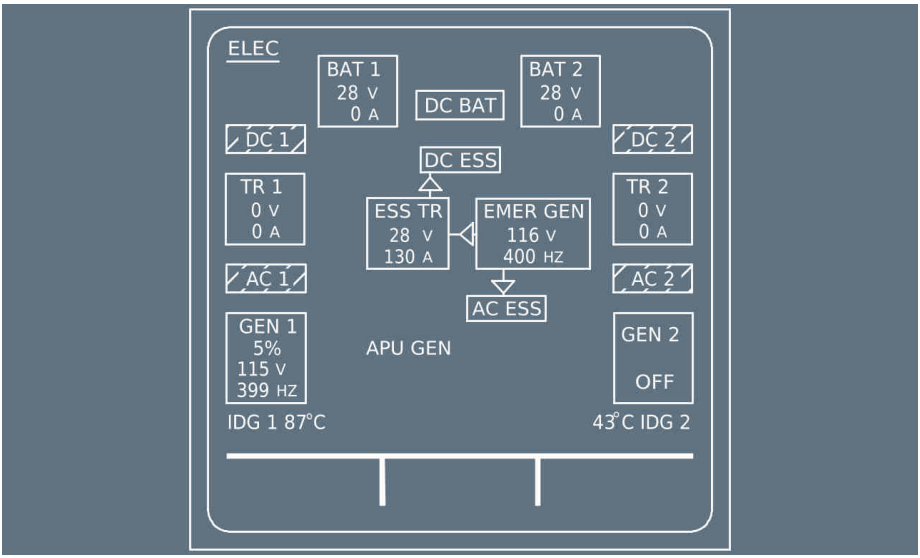


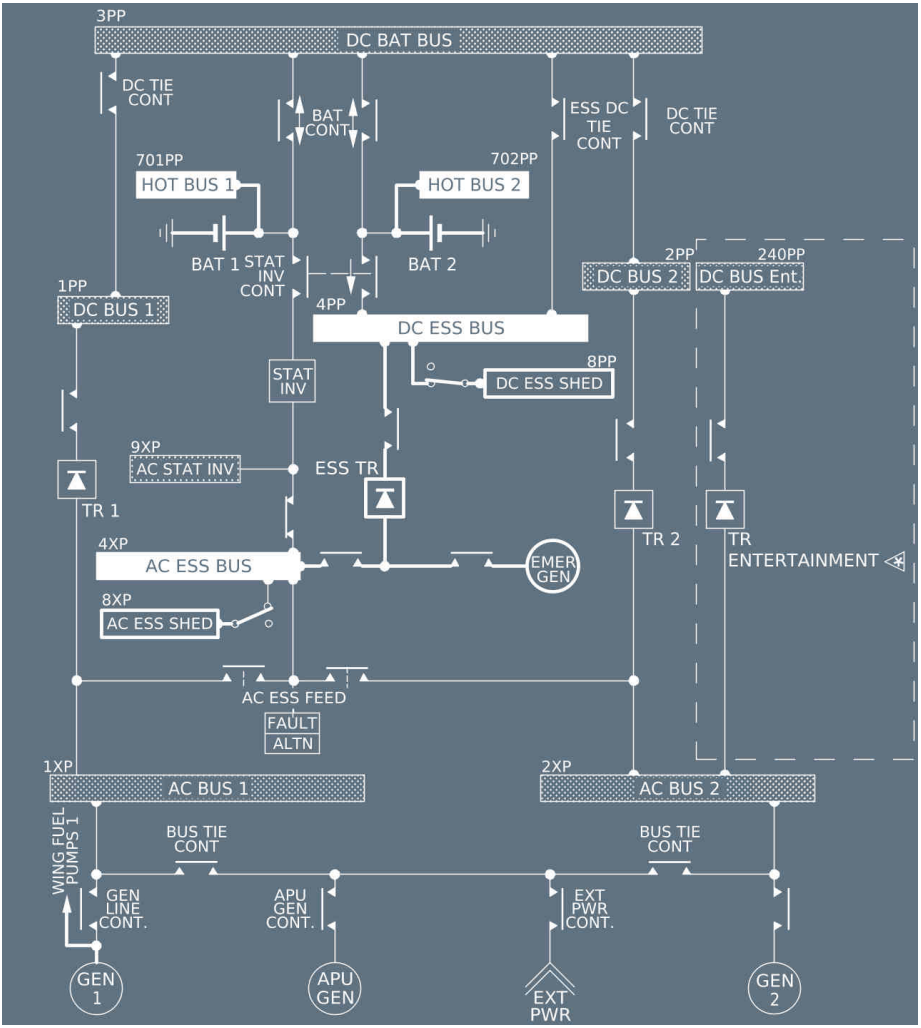
SMOKE CONFIGURATION

Ident.: DSC-24-10-30-30-00017764.0002001 / 21 MAR 16

6 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

In this configuration the main busbars are shed. The electrical distribution is the same as it is in the emergency electrical configuration (loss of main generators), except the fact that in smoke configuration the fuel pumps are connected upstream of the GEN 1 line connector.
The procedure sheds approximately 75 % of electrical equipment. All equipment that remains powered is supplied via the circuit breakers on the overhead panel (except for equipment supplied by hot buses).



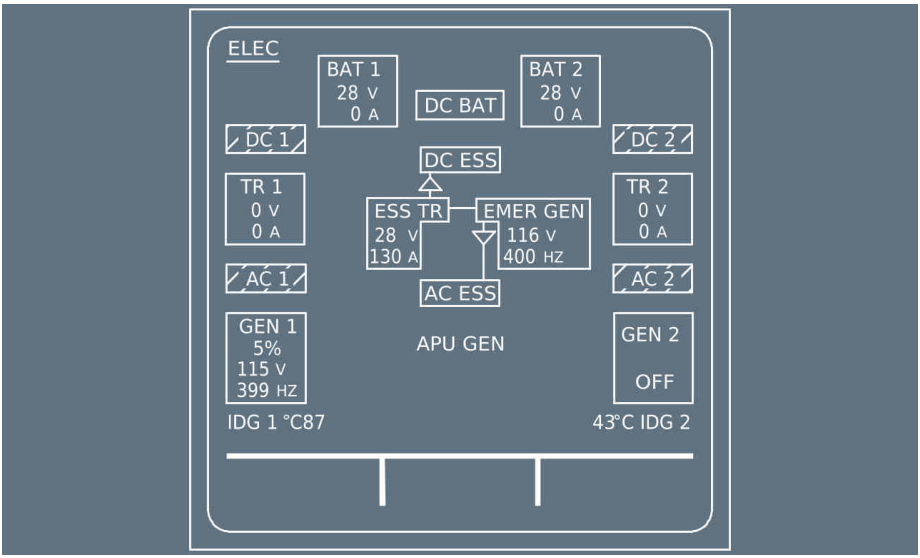


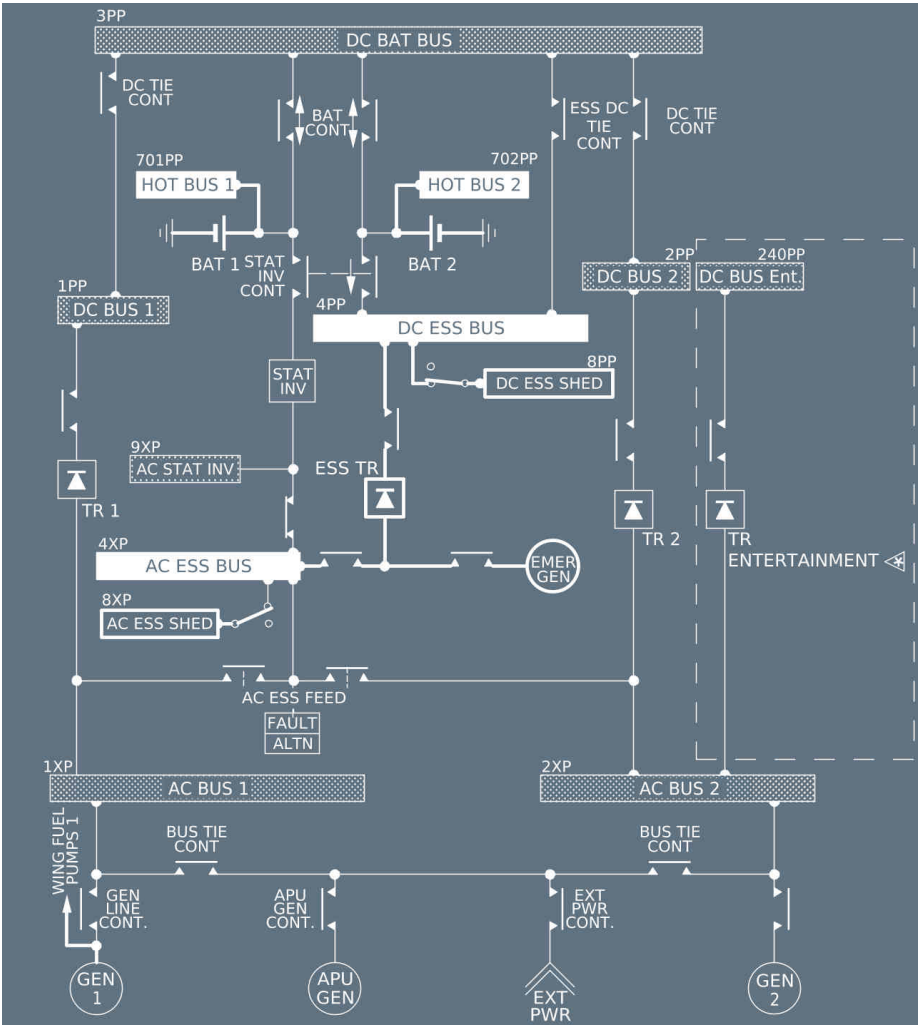
Note: *ECAM ELEC page is identical to that for emergency generator running.*

SMOKE CONFIGURATION

Ident.: DSC-24-10-30-30-00017764.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

In this configuration the main busbars are shed. The electrical distribution is the same as it is in the emergency electrical configuration (loss of main generators), except the fact that in smoke configuration the fuel pumps are connected upstream of the GEN 1 line connector.
The procedure sheds approximately 75 % of electrical equipment. All equipment that remains powered is supplied via the circuit breakers on the overhead panel (except for equipment supplied by hot buses).





Note: *ECAM ELEC page is identical to that for emergency generator running.*

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Distribution Table

DISTRIBUTION TABLE

Ident.: DSC-24-10-30-40-00017765.0002001 / 21 MAR 16
Applicable to: ALL

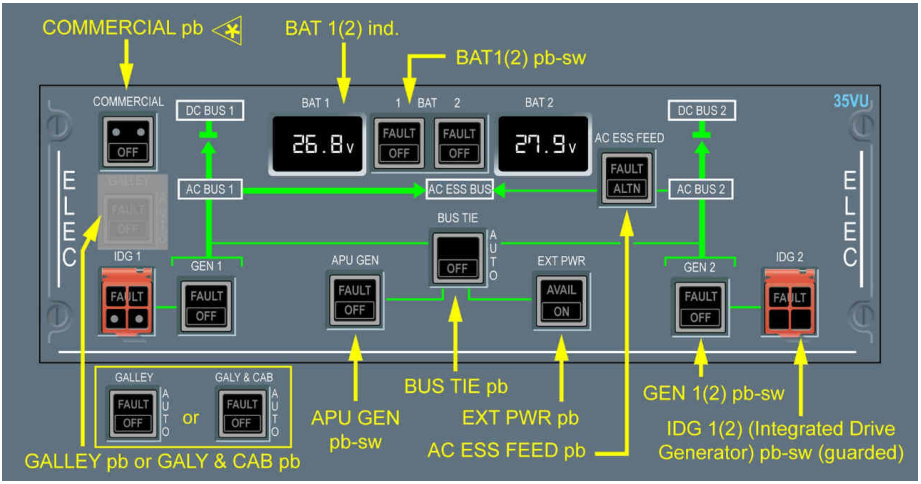
	AC BUS 1	AC BUS 2	AC ESS BUS	AC SHED ESS	AC STAT INV	TR 1	TR 2	ESS TR	TR Ent. (1)	DC BUS 1	DC BUS 2	DC BUS Ent. (1)	DC BAT BUS	DC ESS BUS	DC SHED ESS	HOT BUS 1	HOT BUS 2
NORM CONF	GEN 1	GEN 2	GEN 1	GEN 1	-	GEN 1	GEN 2	-	GEN 2	TR 1 GEN 1	TR 2 GEN 2	REN GEN 2	TR 1 GEN 1	TR 1 GEN 1	TR 1 GEN 1	BAT 1	BAT 2
ONE GEN INOP AVAIL-X- (1, 2 or APU)	GEN X	GEN X	GEN X	GEN X	-	GEN X	GEN X	-	GEN X	TR 1 GEN X	TR 2 GEN X	REN GEN X	TR 1 GEN X	TR 1 GEN X	TR 1 GEN X	BAT 1	BAT 2
EMER CONF • BEFORE EMER GEN AVAILABILITY (about 8 s)	-	-	ST INV BAT 1	-	ST INV BAT 1	-	-	-	-	-	-	-	-	BAT 2	-	BAT 1	BAT 2
• EMER GEN RUNNING	-	-	EMER GEN	EMER GEN	-	-	-	EMER GEN	-	-	-	-	-	ESS TR EMER GEN	ESS TR EMER GEN	BAT 1	BAT 2
TR 1 FAULT	GEN 1	GEN 2	GEN 1	GEN 1	-	-	GEN 2	GEN 1	-	TR 2 GEN 2	TR 2 GEN 2	-	TR 2 GEN 2	ESS TR GEN 1	ESS TR GEN 1	BAT 1	BAT 2
TR 2 FAULT	GEN 1	GEN 2	GEN 1	GEN 1	-	GEN 1	-	GEN 1	-	TR 1 GEN 1	TR 1 GEN 1	-	TR 1 GEN 1	ESS TR GEN 1	ESS TR GEN 1	BAT 1	BAT 2
TR 1 + 2 FAULT	GEN 1	GEN 2	GEN 1	GEN 1	-	-	-	GEN 1	-	-	-	-	-	ESS TR -GEN 1	ESS TR -GEN 1	BAT 1	BAT 2

(1) Two generators are needed to supply the DC BUS Entertainment, except on ground, where the APU generator (if not overloaded) or the external power is sufficient.

ON GROUND BAT. ONLY	AC BUS 1	AC BUS 2	AC ESS BUS	AC SHED ESS	AC STAT INV	TR 1	TR 2	ESS TR	TR Ent. ◁	DC BUS 1	DC BUS 2	DC BUS Ent.	DC BAT BUS	DC ESS BUS	DC SHED ESS	HOT BUS 1	HOT BUS 2
Speed >100 kt	-	-	EMER GEN	EMER GEN	-	-	-	EMER GEN	-	-	-	-	-	ESS TR EMER GEN	ESS TR EMER GEN	BAT 1	BAT 2
Rat stall or 50 kt ≤ speed ≤ 100 kt	-	-	ST INV BAT 1	-	ST INV BAT 1	-	-	-	-	-	-	-	BAT 1-2	BAT 2	-	BAT 1	BAT 2
Speed < 50 kt	-	-	-	-	ST INV BAT 1	-	-	-	-	-	-	-	BAT 1-2	BAT 2	-	BAT 1	BAT 2

OVERHEAD PANEL

Ident.: DSC-24-20-00017766.0004001 / 04 DEC 18
Applicable to: ALL



(1) BAT 1(2) ind.

: Shows battery voltage.

(2) BAT 1(2) pb-sw

: Controls the operation of the corresponding battery charge limiter.

The battery charge limiter controls automatically the connection and the disconnection of the corresponding battery to the DC BAT BUS (3 PP) by closing and opening of the battery line contactor.

- The batteries are connected to the DC BAT BUS in the following cases:
  - APU starting (MASTER SW pb-sw at ON and N < 95 %)

    Note: *The connection is limited to 3 min when the emergency generator is running.*

  - Battery voltage below 26.5 V (battery charge). The charging cycle ends when battery charge current goes below 4 A.

    ■ On ground, immediately
    ■ In flight, after a time delay of 30 min.

  - Loss of AC BUS 1 and 2 when below 100 kt (EMER GEN not supplying).
- If AC BUS 1 and 2 are not energized and the EMER GEN is not supplying:
  - Battery 1 supplies the AC STAT INV BUS, and, if speed is greater than 50 kt, the AC ESS BUS
  - Battery 2 supplies the DC ESS BUS.

    Note: *In normal configuration the batteries are disconnected most of the time.*

    Note: *A battery automatic cut-off logic prevents the batteries from discharging completely when the aircraft is on the ground (parking).*

    Automatic battery contactors open when:
    - *The aircraft is on the ground*
    - *The BAT pb switches are at AUTO*
    - *The main power supply (EXT PWR + GEN) is cut off*
    - *Battery voltage is low.*

    The flight crew can reset the contactors by switching the BAT pb-sw to OFF then to AUTO.

: The battery charge limiter is not operating: the battery line contactor is open. The DC BAT BUS is supplied. Hot buses remain supplied.

: The battery charge limiter is in fault. It is accompanied by an ECAM caution, when the charging current for the corresponding battery is outside limits. In this case the battery contactor opens.

(3) IDG 1(2) (Integrated Drive Generator) pb-sw (guarded)

:

CAUTION	1. Maintaining the IDG pb-sw during more than 3 s may damage the IDG disconnection mechanism. 2. Disconnect the IDG only when the engine is running or windmilling. If not, the IDG will be damaged when starting the engine.

The IDG switches are normally springloaded out.
Pressing this switch disconnects the IDG from its driveshaft: only maintenance personnel can reconnect it.

: ECAM caution comes on, if:
- IDG oil outlet overheats (above 180 °C), or
- IDG oil pressure is low (inhibited at low engine speed: N2 below 14 %).

It extinguishes when the IDG is disconnected.

Note: *An automatic thermal disconnection of the IDG will occur if the temperature reaches 200 °C.*

(4) GEN 1 (2) pb-sw

: The generator field is energized and the line contactor closes if electrical parameters are normal.

: The generator field is de-energized and the line contactors opens.
The fault circuit is reset.

: ECAM caution comes on, if:
- The associated generator control unit (GCU) trips it

  Note: *If a differential fault trips the protection, reset action has no effect after two attempts.*

- Opening of the line contactor (except if the GEN pb-sw is selected OFF).

(5) APU GEN pb-sw

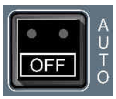
: The APU generator field is energized and the line contactor closes if parameters are normal and the EXT PWR line contactor is open.
The bus tie contactor 1(2) closes automatically if GEN 1(2) is not operating.

: The generator field is de-energized and the line contactor opens. The fault circuit is reset.

: APU speed is too low or if the APU GEN line contactor opens after EXT PWR or ENG GEN takes over.

(6) BUS TIE pb

: The bus tie contactors (BTCs) automatically open or close to maintain power supply to both AC BUS 1 and 2.
- One contactor is closed, when:
  - One engine generator supplies the associated AC BUS, and
  - The APU generator, or external power supplies the other side.
- Both contactors are closed during single-engine operation, or operation on the APU generator, or external power supply.



: Both bus tie contactors open.

(7) AC ESS FEED pb

: The AC ESS BUS is supplied by AC BUS 1.

: The AC ESS BUS is supplied by AC BUS 2. Comes on when manually selected.

Note: *With the AC ESS FEED Auto Switching ◁ , AC BUS 2 will automatically supply AC ESS BUS when AC BUS 1 is lost.*

: ECAM caution come on, when the AC ESS BUS is not electrically-supplied.

Note: *In case of a total loss of the main generators, the AC ESS BUS is automatically supplied by the emergency generator, or by the static inverter, if the emergency generator is not available.*

(8) GALLEY pb or GALY & CAB pb

: Main galley, secondary galley, in-seat power supply ◁ and IFE ◁ system (prerecorded announcement, telephone system, video/airshow, music…), are supplied.

The main galley, the in-seat power supply ◁ and the IFE ◁ systems are automatically shed:
- In flight: When only one generator is operating
- On ground: When only one engine generator is operating. (All galleys are available when the APU GEN or EXT PWR is supplying power.)

Note: *With the Galley Load Automatic Shedding ◁ the secondary galley is also automatically shed.*

: The main galley, secondary galley, in-seat power supply ◁ and IFE ◁ system (prerecorded announcement, telephone system, video/airshow, music ....) are not supplied.
The electrical supply of the heating floor panels is shed.

: ECAM caution come on, when the load on any generator is more than 100 % of rated output.

(9) EXT PWR pb

: - External power is plugged in, and
- External power parameters are normal.

When pressed:

: - The external power line contactor closes.

: - The external power line contactor opens.

Note: 1. *External power has priority over the APU generator. The engine generators have priority over external power.*
2. *The ON light stays on, even when the engine generators supply the aircraft.*

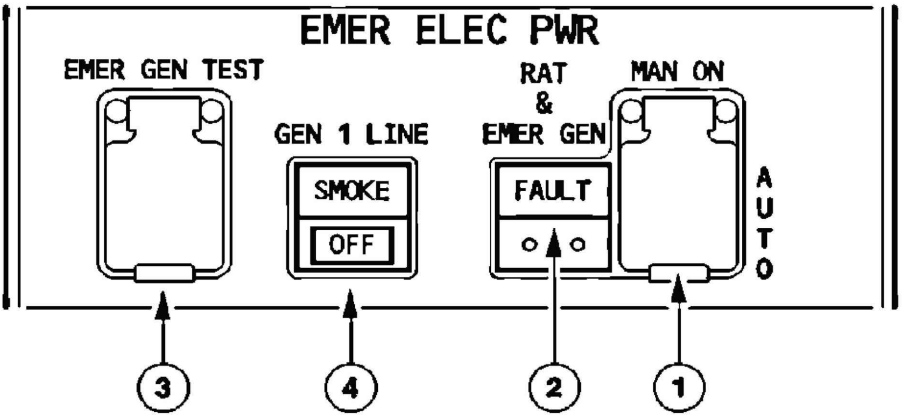
(10) COMMERCIAL pb ◁

: All aircraft commercial electrical loads are supplied:
- Cabin and cargo lights
- Water and toilet system
- Drain mast ice protection
- Galley
- Passenger entertainment system
- Semi-automatic cargo loading ◁ .

: Switches off all aircraft commercial electrical loads.

OVERHEAD PANEL (CONT'D)

Ident.: DSC-24-20-00017778.0002001 / 21 MAR 17
Applicable to: ALL



(1) MAN ON pb (guarded)

AUTO : When the following conditions are met:
- AC BUS 1 is not electrically supplied, and
- AC BUS 2 is not electrically supplied, and
- Aircraft speed is greater than 100 kt.

  • The RAT extends, and
  • The blue hydraulic system drives the emergency generator.

As soon as the emergency generator electrical parameters are within tolerance the emergency generator is connected to the aircraft network.

Pressed : This selects manual RAT extension.
Emergency generator coupling occurs 3 s after the RAT supplies the emergency generator.

(2) FAULT light

This light comes on red if the emergency generator is not supplying power when AC BUS 1 and AC BUS 2 are not powered.

(3) EMER GEN TEST pb (guarded)

Pressed and held:
- If AC NORMAL BUSES are supplied:
  • The EMER GEN is driven hydraulically if the blue electric pump is running.
  The AC ESS BUS and the DC ESS BUS are connected to the emergency generator.
  (The DC ESS SHED and AC ESS SHED buses are not powered.)
  • ECAM displays the ELEC page automatically (only on the ground).
- If only the batteries supply the aircraft:
  • The static inverter powers the AC ESS BUS.

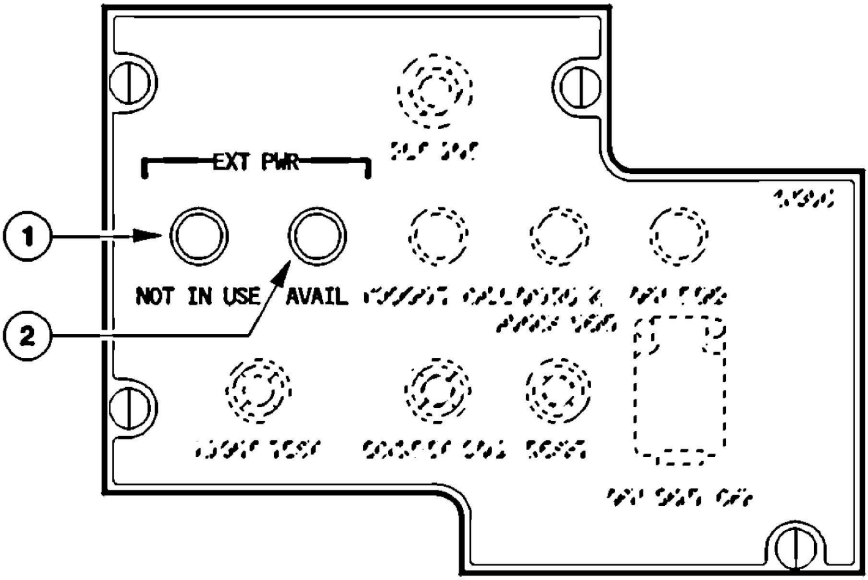
(4) GEN 1 LINE pb-sw

OFF : GEN 1 line contactor opens.
The AC BUS 1 channel is supplied from GEN 2 through bus tie contactors. This is used for smoked drill.

SMOKE light : *Refer to DSC-26-30-20 GEN 1 LINE pb-sw.*

EXTERNAL POWER PANEL

Ident.: DSC-24-20-00000891.0001001 / 21 MAR 16
Applicable to: ALL



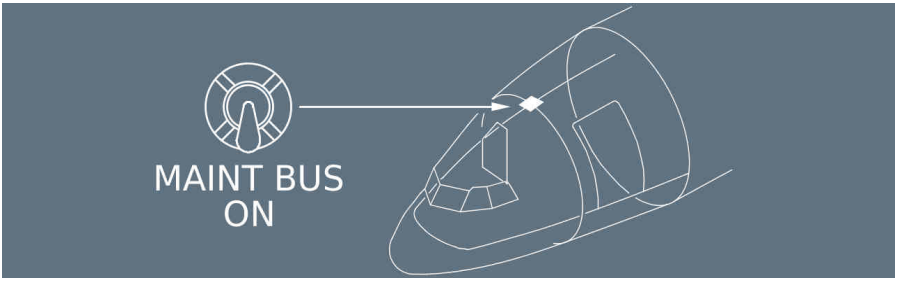
(1) EXT PWR NOT IN USE
This white light comes on to inform ground personnel that the ground power unit is not supplying the aircraft network and can be removed.

(2) EXT PWR AVAIL
This amber light comes on to indicate that external power is available and the voltage is correct.

FORWARD CABIN

Ident.: DSC-24-20-00000892.0001001 / 22 MAY 12
Applicable to: ALL

MAINT BUS SW:



This switch allows personnel to energize electrical circuits for ground servicing without energizing the entire aircraft electrical system.

ON : The switch latches magnetically if external power is connected and normal (AVAIL light on).

The AC and DC GND/FLT buses have power and the following loads can be energized:
- passenger compartment lighting
- galley lighting
- entrance area lights
- lavatory lighting and service
- vacuum cleaner sockets
- flight compartment service outlets
- hydraulic pump (yellow system)
- flight compartment flood lighting
- fuel quantity indications
- refueling
- cargo hold lighting
- main and nose landing gear compartment lighting
- belly fairing panel service outlets
- ground call
- equipment compartment lights and service outlets
- navigation lights.

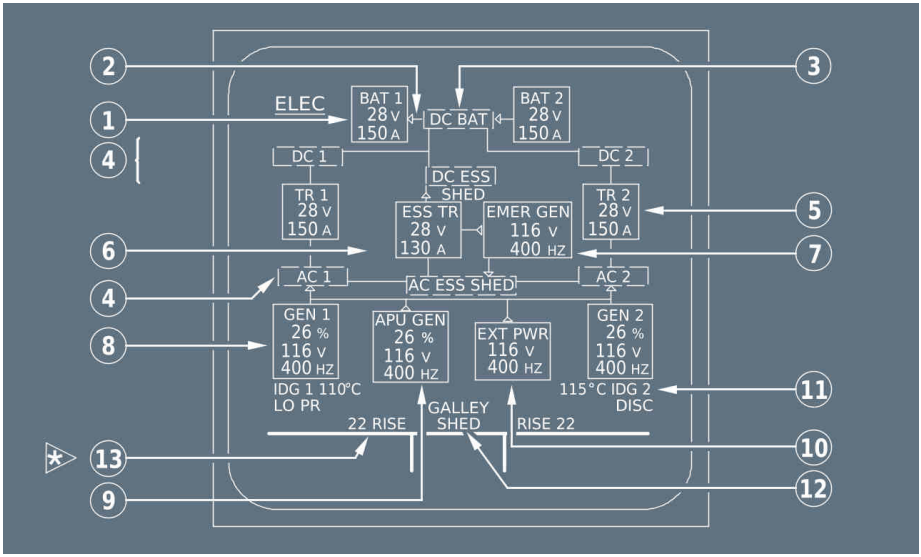
The switch trips when the external source is removed.

OFF : The AC and DC GND/FLT buses are connected to AC BUS 2 and DC BUS 2.

ECAM ELEC PAGE

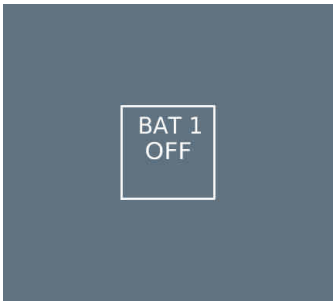
Ident.: DSC-24-20-00017780.0002001 / 25 SEP 17

[1] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

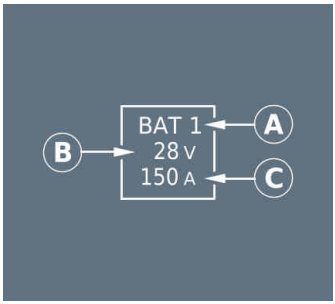


(1) Battery indications

- BAT pb-sw at OFF:
  Legend is in white.



- BAT pb-sw at Auto:



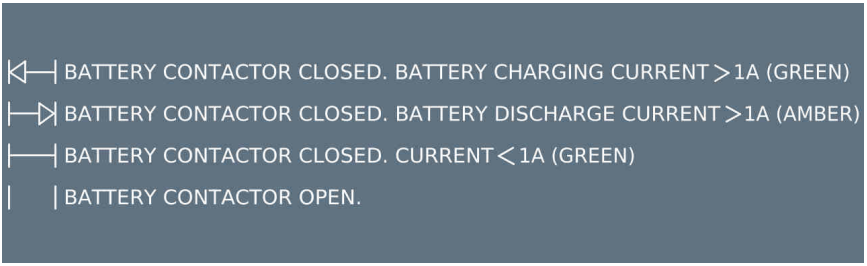
(A)

Legend is normally white, but becomes amber:
- when voltage and current indications change to amber, or
- in case of a BAT FAULT alert.

(B) Battery voltage is normally green, but becomes amber if V > 31 V or V < 25 V.

(C) Battery current is normally green, but becomes amber if discharge current > 5 A.

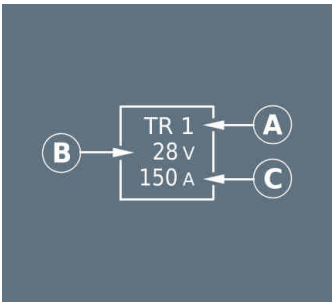
(2) Battery charge/discharge indication



(3) DC BAT indication
It is normally in green. It becomes amber, if DC BAT voltage ≤ 25 V.

(4) Bus bar indication
The bus bar indication is normally green. It becomes amber when the corresponding bus bar is not powered.
SHED appears in amber, when AC or DC SHED ESS BUS is shed.

(5) TR 1 (2) indication

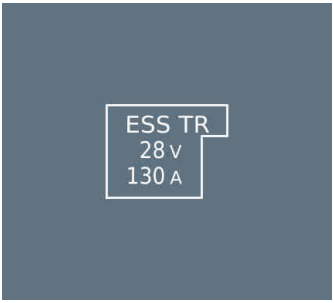


(A) Normally white, this legend becomes amber when legends B and C do.

(B) The TR voltage is normally in green. It becomes amber, if V > 31 V, or V < 25 V.

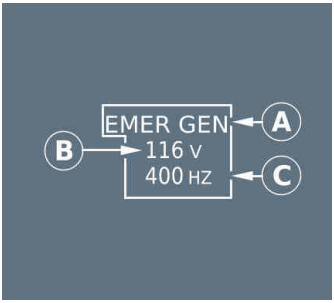
(C) The TR current is normally in green. It becomes amber, when the TR current ≤ 5 A.

(6) ESS TR indication



This legend follows the logic of the above-noted TR 1 (2) legend.
The voltage and current are not displayed, when the essential TR contactor is open.

(7) EMER GEN indication



(A) This legend is normally in white. It becomes amber when either the voltage or frequency legend becomes amber.

(B)

This legend is normally in green. It becomes amber, if:
- V > 120 V or
- V < 110 V.

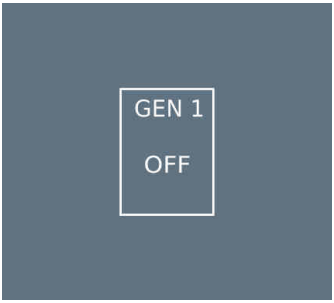
(C)

This legend is normally in green. It becomes amber, if:
- F > 410 Hz or
- F < 390 Hz .

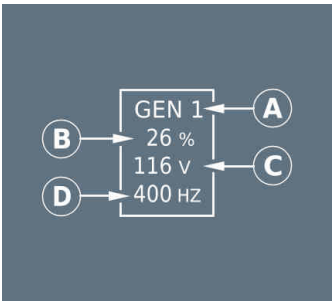
Voltage and frequency indications are not displayed, when the EMER GEN line contactor is open.

(8) GEN 1(2) indications

- GEN pb-sw is OFF:
  GEN is amber.
  OFF indication is white
  1 or 2 indication is white if the associated engine is running, amber if it is not.



- GEN pb-sw is ON.



(A) GEN 1 or GEN 2, normally white, becomes amber if any of the following legends become amber.

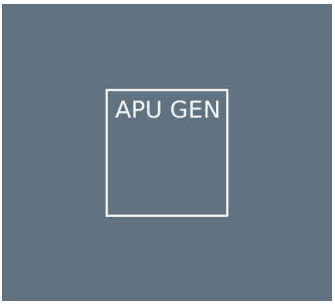
(B) The load legend, normally green, becomes amber if load > 100 %.

(C) The voltage legend, normally green, becomes amber if V > 120 V or V < 110 V.

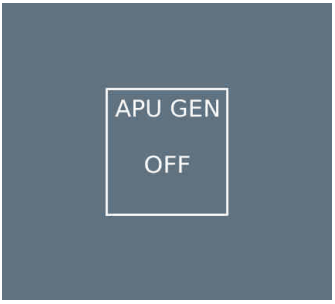
(D) The frequency legend, normally green, becomes amber if F > 410 Hz or F < 390 Hz.

(9) APU GEN indications

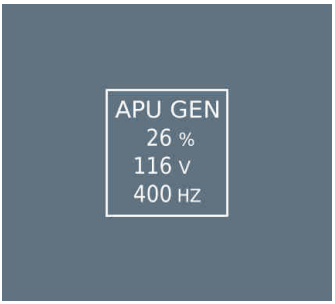
- When the APU MASTER sw is OFF this legend is white regardless of the position of the APU GEN pb-sw.



- When the APU MASTER sw is ON, and the APU GEN pb-sw is OFF:
  The APU GEN legend is amber.
  The OFF legend is white.

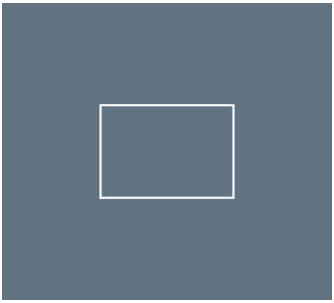


- When the APU MASTER sw is ON and the APU GEN pb-sw is ON:
  The indications are the same as for GEN 1 (2).

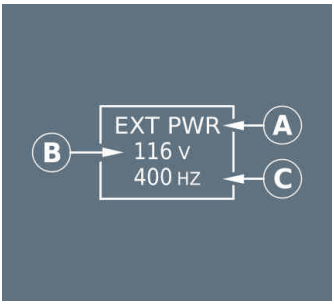


(10) EXT PWR indications

- External power is not available.



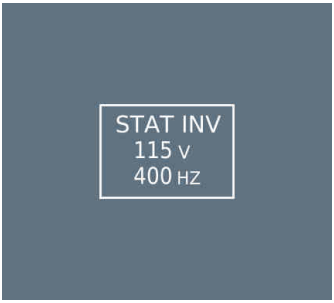
- When external power is available:



(A) This legend is normally white, but becomes amber, if either of the following legends turns amber.

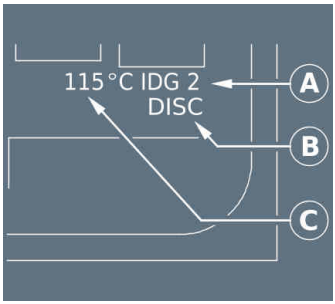
(B) This legend is normally green, but becomes amber, if V > 120 V or if V < 110 V.

(C) This legend is normally green, but becomes amber, if F > 410 Hz or if F < 390 Hz.



- This legend appears during the static inverter test, and when pressing the ELEC pb on the ECAM control panel while ESS BUSES are supplied by the batteries. It is normally green, but becomes amber, if:
  V < 110 V or V> 120 V.
  F < 390 Hz or F > 410 Hz.

(11) IDG indications



(A) IDG1 (2) legend

The IDG legend is normally white, but becomes amber, if:
- Oil outlet temperature > 180 °C.
- Oil pressure gets too low.
- IDG becomes disconnected.

The 1 or 2 is white if the corresponding engine is running, amber if it is not and the FADEC is powered.

(B) DISC/LO PR indication

The DISC legend appears in amber, when the IDG is disconnected.
LO PR appears in amber, when IDG low pressure is detected and the associated engine is running.

(C) Oil outlet temperature

This legend is normally in green, but appears amber, if T > 180 °C.
It flashes, if 147 °C < T < 180 °C (advisory).

(12) GALLEY SHED indication

This legend appears in white when:
- The GALLEY pb-sw is OFF, or
- The main galleys are shed, meaning:
  - In flight, only one generator is operating.
  - On ground, the aircraft is being supplied by one engine generator only.

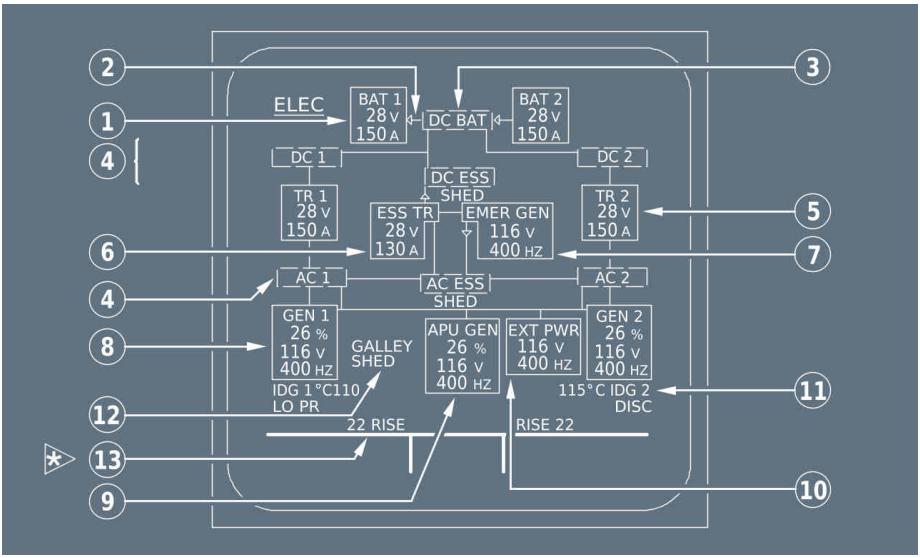
The legend is not displayed, when the aircraft is in its normal configuration.

(13) RISE indication ◁✳

This number, displayed in green, is the difference between the temperature at the IDG inlet and that at the IDG outlet.

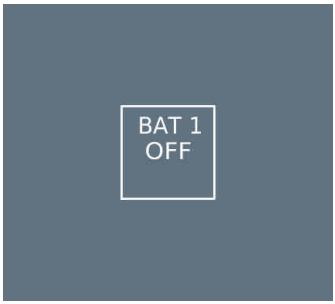
ECAM ELEC PAGE

Ident.: DSC-24-20-00017780.0001001 / 25 SEP 17
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

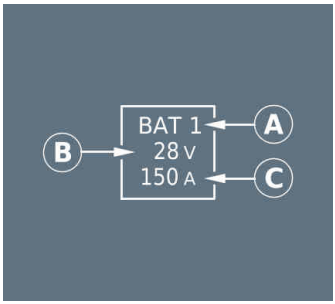


(1) Battery indications

- BAT pb-sw at OFF:
  Legend is in white.



- BAT pb-sw at Auto:



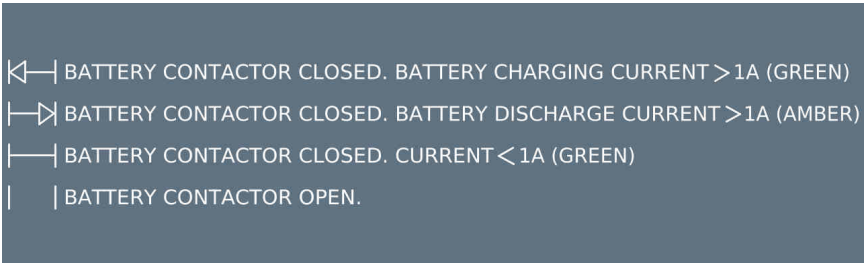
(A)

Legend is normally white, but becomes amber:
- when voltage and current indications change to amber, or
- in case of a BAT FAULT alert.

(B) Battery voltage is normally green, but becomes amber if V > 31 V or V < 25 V.

(C) Battery current is normally green, but becomes amber if discharge current > 5 A.

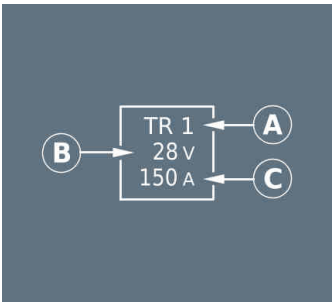
(2) Battery charge/discharge indication



(3) DC BAT indication
It is normally in green. It becomes amber, if DC BAT voltage ≤ 25 V.

(4) Bus bar indication
The bus bar indication is normally green. It becomes amber when the corresponding bus bar is not powered.
SHED appears in amber, when AC or DC SHED ESS BUS is shed.

(5) TR 1 (2) indication

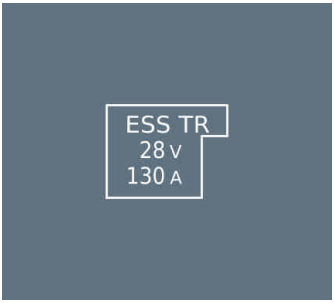


(A) Normally white, this legend becomes amber when legends B and C do.

(B) The TR voltage is normally in green. It becomes amber, if V > 31 V, or V < 25 V.

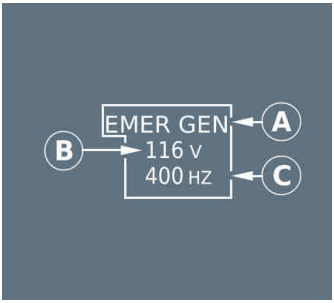
(C) The TR current is normally in green. It becomes amber, when the TR current ≤ 5 A.

(6) ESS TR indication



This legend follows the logic of the above-noted TR 1 (2) legend.
The voltage and current are not displayed, when the essential TR contactor is open.

(7) EMER GEN indication



(A) This legend is normally in white. It becomes amber when either the voltage or frequency legend becomes amber.

(B)

This legend is normally in green. It becomes amber, if:
- V > 120 V or
- V < 110 V.

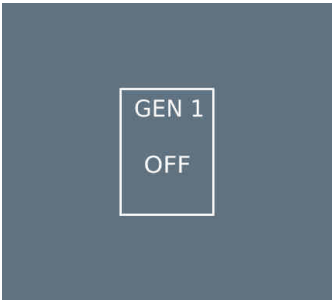
(C)

This legend is normally in green. It becomes amber, if:
- F > 410 Hz or
- F < 390 Hz .

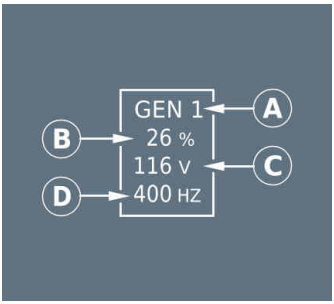
Voltage and frequency indications are not displayed, when the EMER GEN line contactor is open.

(8) GEN 1(2) indications

- GEN pb-sw is OFF:
  GEN is amber.
  OFF indication is white
  1 or 2 indication is white if the associated engine is running, amber if it is not.



- GEN pb-sw is ON.



(A) GEN 1 or GEN 2, normally white, becomes amber if any of the following legends become amber.

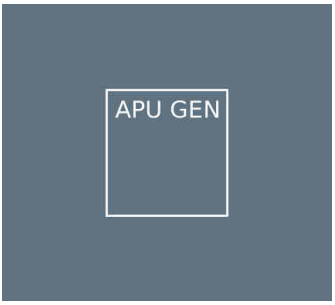
(B) The load legend, normally green, becomes amber if load > 100 %.

(C) The voltage legend, normally green, becomes amber if V > 120 V or V < 110 V.

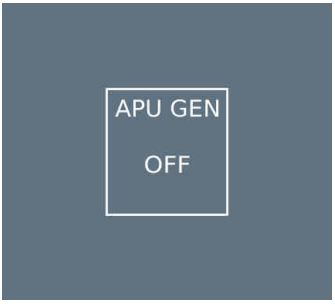
(D) The frequency legend, normally green, becomes amber if F > 410 Hz or F < 390 Hz.

(9) APU GEN indications

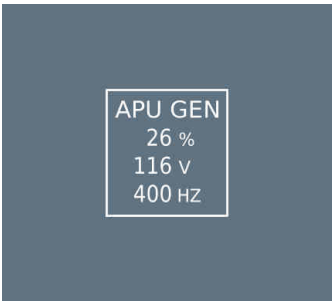
- When the APU MASTER sw is OFF this legend is white regardless of the position of the APU GEN pb-sw.



- When the APU MASTER sw is ON, and the APU GEN pb-sw is OFF:
  The APU GEN legend is amber.
  The OFF legend is white.

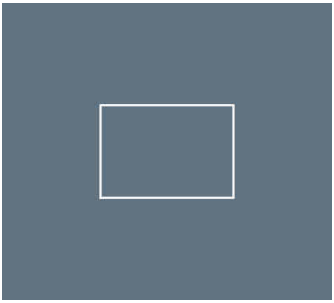


- When the APU MASTER sw is ON and the APU GEN pb-sw is ON:
  The indications are the same as for GEN 1 (2).

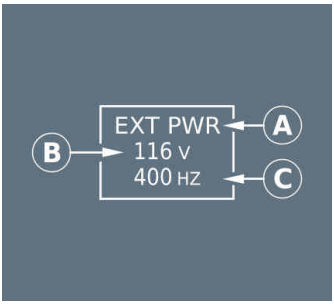


(10) EXT PWR indications

- External power is not available.



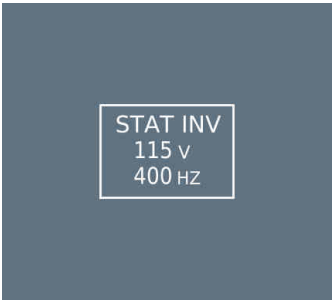
- When external power is available:



(A) This legend is normally white, but becomes amber, if either of the following legends turns amber.

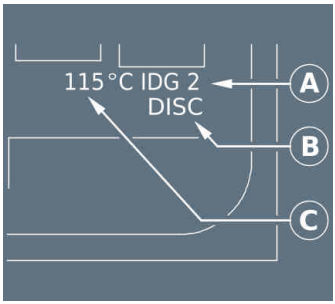
(B) This legend is normally green, but becomes amber, if V > 120 V or if V < 110 V.

(C) This legend is normally green, but becomes amber, if F > 410 Hz or if F < 390 Hz.



- This legend appears during the static inverter test, and when pressing the ELEC pb on the ECAM control panel while ESS BUSES are supplied by the batteries. It is normally green, but becomes amber, if:
  V < 110 V or V> 120 V.
  F < 390 Hz or F > 410 Hz.

(11) IDG indications



(A) IDG1 (2) legend

The IDG legend is normally white, but becomes amber, if:
- Oil outlet temperature > 180 °C.
- Oil pressure gets too low.
- IDG becomes disconnected.

The 1 or 2 is white if the corresponding engine is running, amber if it is not and the FADEC is powered.

(B) DISC/LO PR indication

The DISC legend appears in amber, when the IDG is disconnected.
LO PR appears in amber, when IDG low pressure is detected and the associated engine is running.

(C) Oil outlet temperature

This legend is normally in green, but appears amber, if T > 180 °C.
It flashes, if 147 °C < T < 180 °C (advisory).

(12) GALLEY SHED indication

This legend appears in white when:
- The GALLEY pb-sw is OFF, or
- The main galleys are shed, meaning:
  - In flight, only one generator is operating.
  - On ground, the aircraft is being supplied by one engine generator only.

The legend is not displayed, when the aircraft is in its normal configuration.

(13) RISE indication ◁

This number, displayed in green, is the difference between the temperature at the IDG inlet and that at the IDG outlet.

MEMO DISPLAY

Ident.: DSC-24-20-00016808.0001001 / 21 MAR 16
Applicable to: ALL

EMER GEN : This memo appears in green, when the emergency generator is running.

AIRCRAFT SYSTEMS

EQUIPMENT

Intentionally left blank

DSC-25-10 Flight Deck

DSC-25-10-10 General

General....A
Principles For Pushbuttons With Integrated Indications....B
General Arrangement....C

DSC-25-10-20 Cockpit Plan

General....A
Right Rear Corner....B
Left Rear Corner....C

DSC-25-10-30 Seats

Pilot Seats....A
Pilot Seat Mechanical Adjustment....B
Pilot Seat Electrical Adjustment ◁ C
Head Rest Adjustment ◁ ....D
Armrest Adjustment....E
Observer Seat....F
Observer Seat Adjustment....G
Armrest....H

DSC-25-10-40 Main Instrument Panels

Main Instrument Panel - Captain Side....A
Main Instrument Panel - First Officer Side....B

DSC-25-10-50 Pedestal

Pedestal....A

DSC-25-10-60 Overhead Panel

Overhead Panel....A

DSC-25-10-70 C/B Panels

C/B Panels....A

DSC-25-10-80 Foot Warmer (If Installed)

General....A
Controls....B

DSC-25-20 Emergency Equipment

Emergency Equipment....A

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GENERAL

Ident.: DSC-25-10-10-00020853.0001001 / 17 MAR 17
Applicable to: ALL

The aircraft and system controls, required for piloting the aircraft, are arranged in such a way that the crew faces forward and all crewmembers can monitor instruments and systems.
The designers concentrated system controls on the overhead panel by making extensive use of pushbuttons, directly installed in the system synoptic.

Note: *This chapter describes the panels and equipment of the basic aircraft configuration, and may not correspond to the customized configuration of a specific aircraft.*
For more information on the installed equipment or panels, refer to the relevant chapter's system description.

PRINCIPLES FOR PUSHBUTTONS WITH INTEGRATED INDICATIONS

Ident.: DSC-25-10-10-00000983.0001001 / 21 MAR 16
Applicable to: ALL

Whenever possible, pushbuttons used for corrective actions, have integrated status and failure indications.

The pushbutton positions, and their illuminated indications, follow the "lights out" principle.

- While corresponding to particular aircraft configurations, indications also have the following color codes :
  - Warnings
    RED : A failure requiring immediate action.
  - Cautions
    AMBER : A failure, of which the flight crew should be aware, but does not call for immediate action.
  - Indications
    GREEN : For normal system operation.
    BLUE : For normal operation of a system used temporarily
    WHITE : - For an abnormal pushbutton position.
    - For a test result or maintenance information.

  When the aircraft is in a normal configuration, only green lights can be permanently lit, whereas blue lights can be intermittently.
- Pushbutton positions :

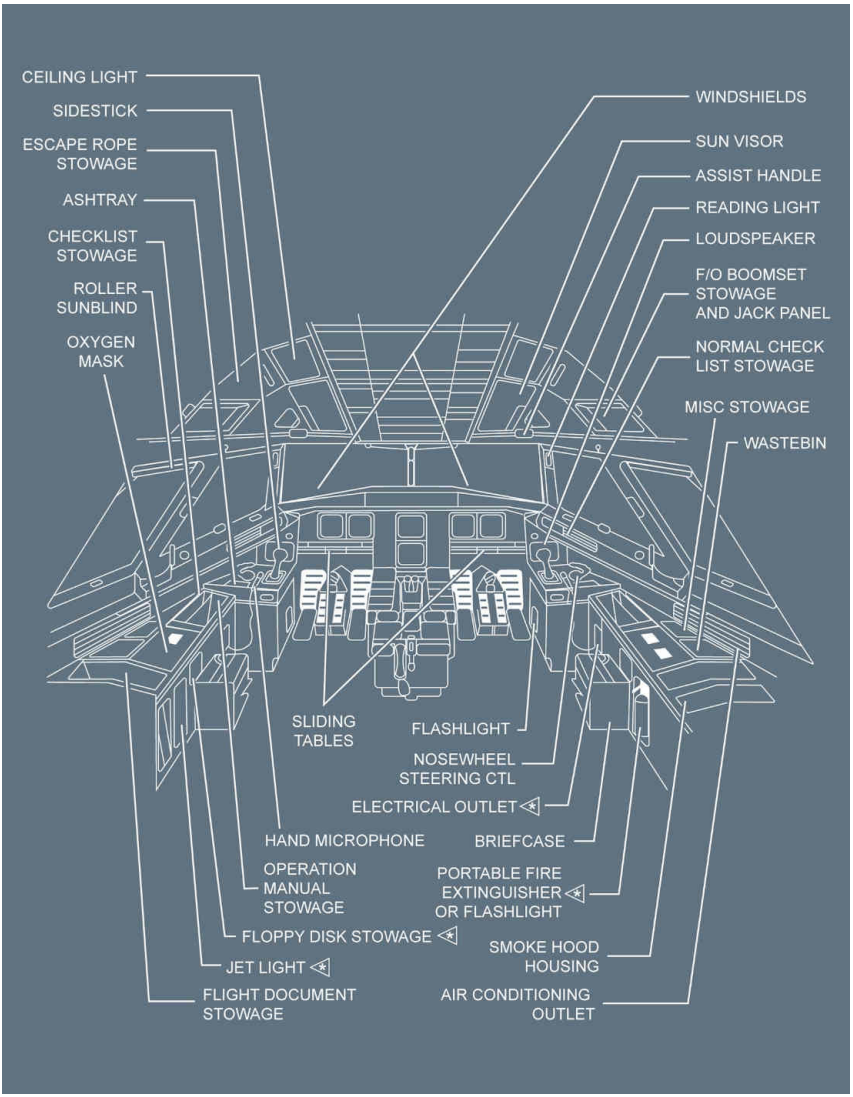
POSITION	BASIC FUNCTION
Pressed In	ON, AUTO, OVRD, OPEN
Released Out	OFF, MAN, ALTN, SHUT

Note: *1. Certain pushbutton lights have two dots, indicating that the corresponding part of the pushbutton is not used.*
2. Certain pushbuttons do not remain pressed in. These are referred to as “Momentary Action” pushbuttons.

GENERAL ARRANGEMENT

Ident.: DSC-25-10-10-00018419.0001001 / 17 MAR 17

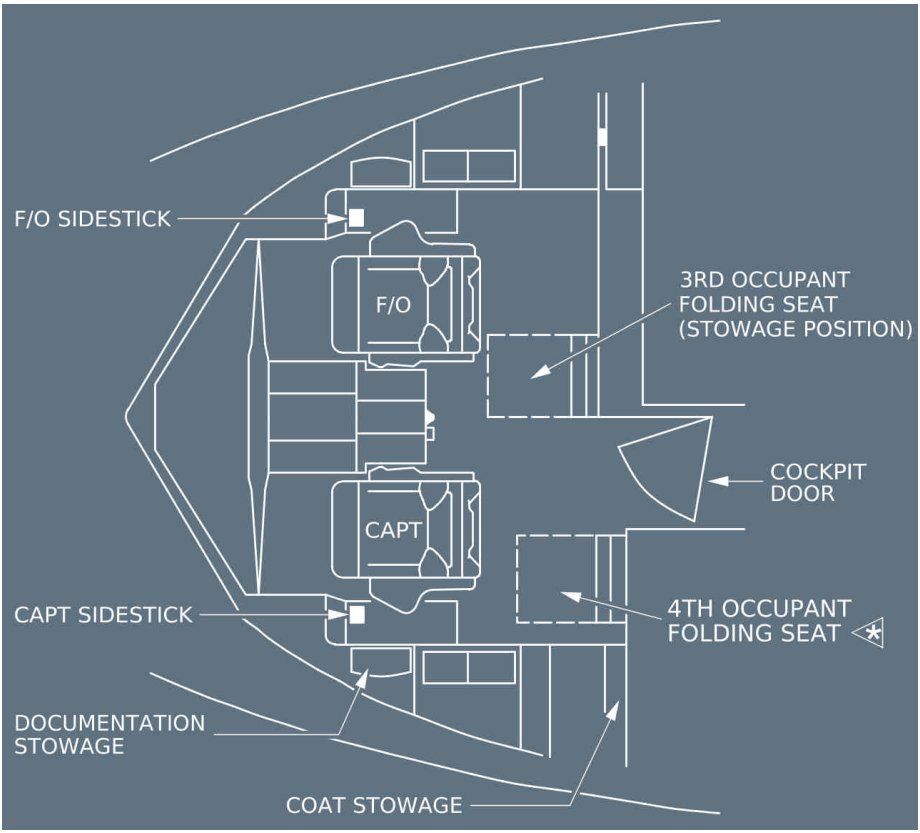
Applicable to: ALL



GENERAL

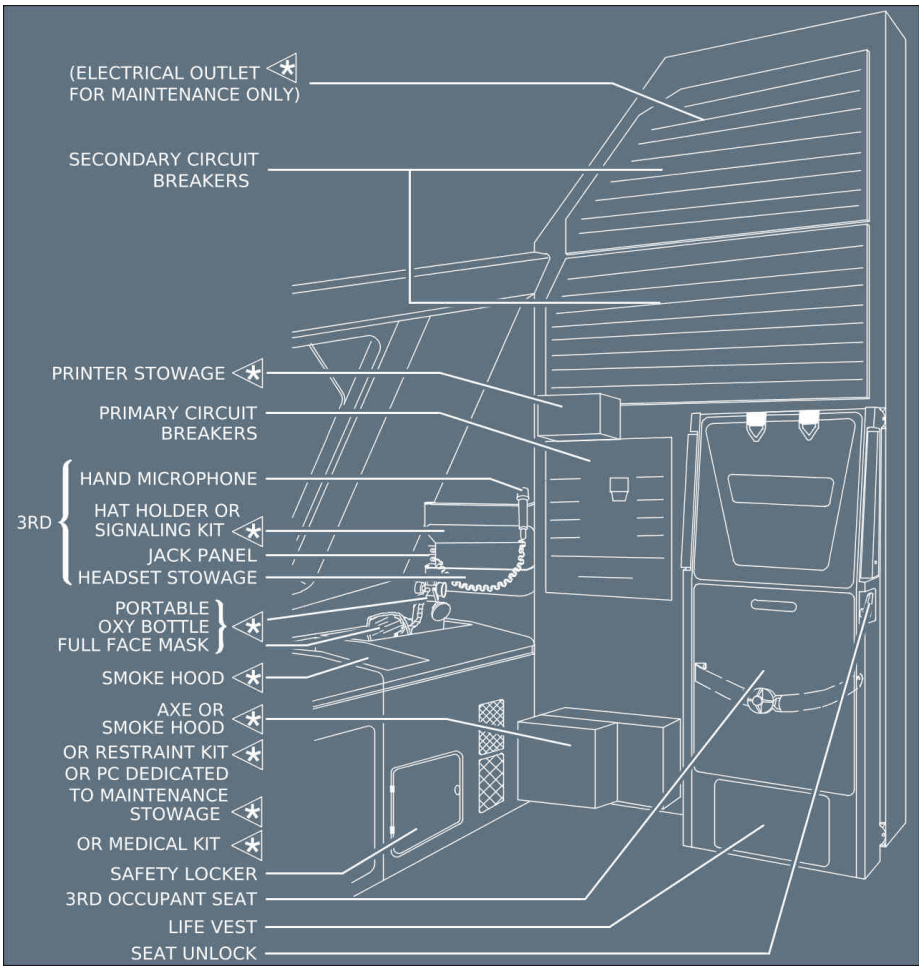
Ident.: DSC-25-10-20-00017002.0001001 / 17 MAR 17
Applicable to: ALL

The cockpit can accommodate two crewmembers, plus a third and fourth occupant ⋘ .
The two pilot seats are mounted on columns.
The third and fourth occupant seats are folding seats.



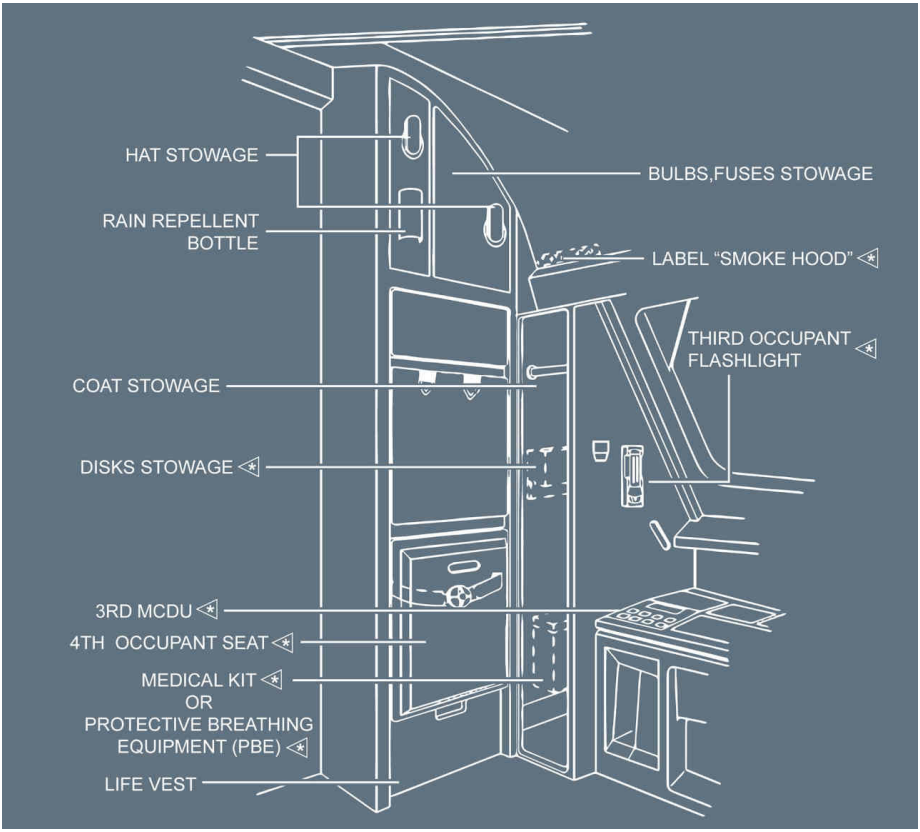
RIGHT REAR CORNER

Ident.: DSC-25-10-20-00000986.0001001 / 06 DEC 16
Applicable to: ALL



LEFT REAR CORNER

Ident.: DSC-25-10-20-00018428.0001001 / 17 MAR 17
Applicable to: ALL



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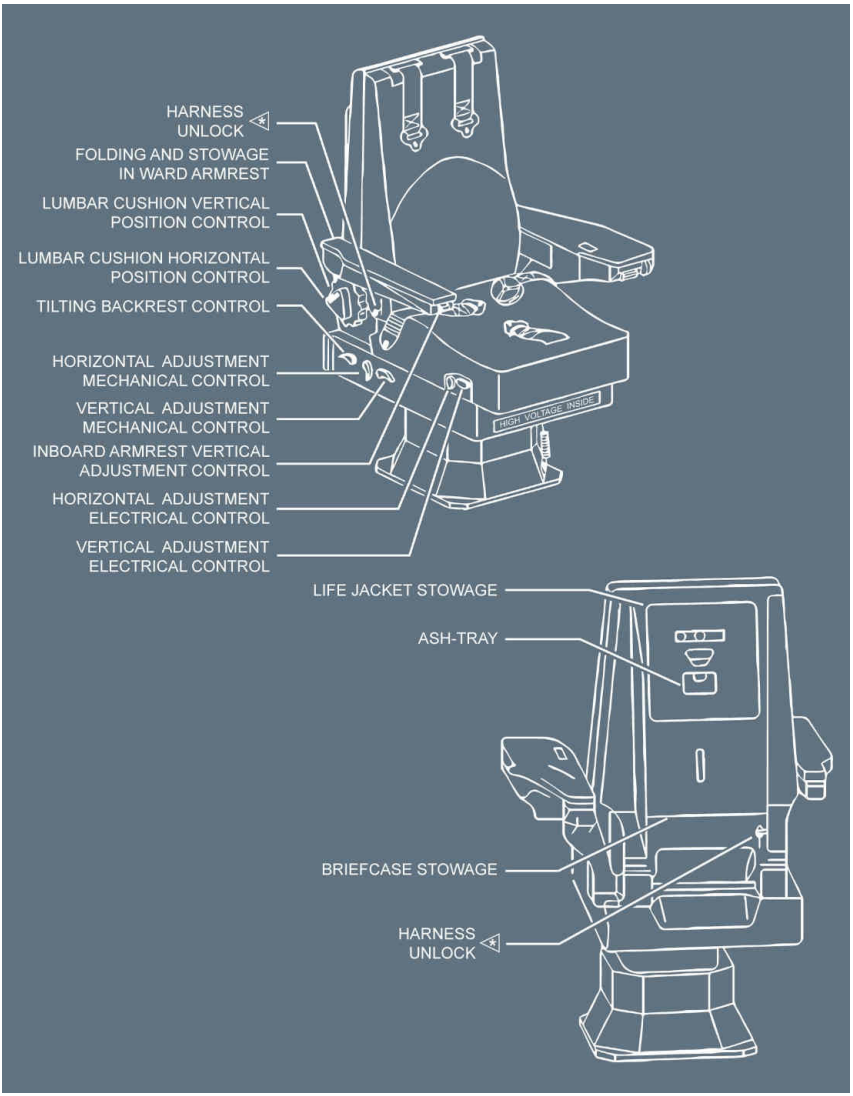
PILOT SEATS

Ident.: DSC-25-10-30-00018429.0002001 / 17 MAR 17

Applicable to: ALL



PILOT SEAT MECHANICAL ADJUSTMENT

Ident.: DSC-25-10-30-00000989.0001001 / 22 MAR 17
Applicable to: ALL

To adjust a seat mechanically, the occupant must lift the appropriate control handle. This unlocks the seat so that it may be moved. Releasing the control handle returns it to springloaded locked position. On electrically-powered seats, the mechanical adjustment is a backup: The seat should be adjusted electrically.

PILOT SEAT ELECTRICAL ADJUSTMENT ⋖

Ident.: DSC-25-10-30-00018405.0001001 / 17 MAR 17
Applicable to: ALL

To adjust a seat electrically, the occupant must press the appropriate control switch in the desired direction, and release it when the seat reaches the desired position. The switch then returns to the springloaded neutral position.

To adjust the vertical position of the lumbar cushion, the occupant must:
- Pull the control out to the unlocked position
- Turn the control to adjust the position of the cushion
- Push the control into the locked position.

HEAD REST ADJUSTMENT ⋖

Ident.: DSC-25-10-30-00018406.0001001 / 17 MAR 17
Applicable to: ALL

To adjust the headrest in inclination, the occupant presses the inclination control button, and releases it to lock the position.
To control the height of the headrest, the occupant must push it horizontally, adjust the height, and release it to lock the position.

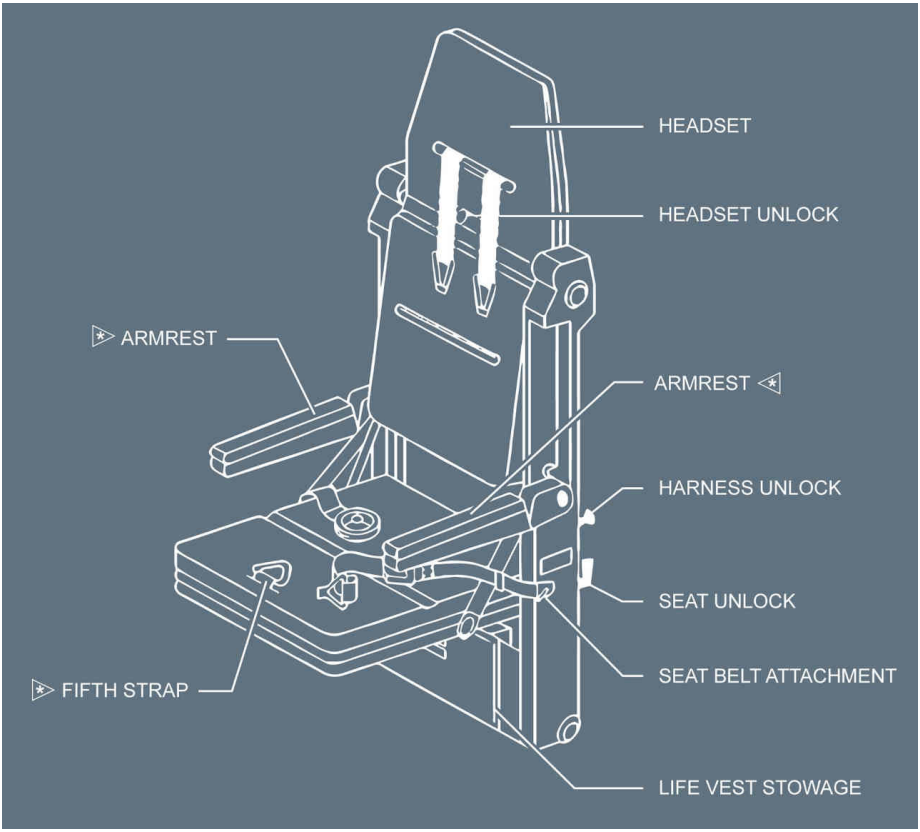
ARMREST ADJUSTMENT

Ident.: DSC-25-10-30-00000993.0001001 / 21 MAR 17
Applicable to: ALL

To adjust the inboard armrest, the occupant must turn the knurled knob, located on the bottom surface of the armrest.

OBSERVER SEAT

Ident.: DSC-25-10-30-00018430.0001001 / 17 MAR 17
Applicable to: ALL



OBSERVER SEAT ADJUSTMENT

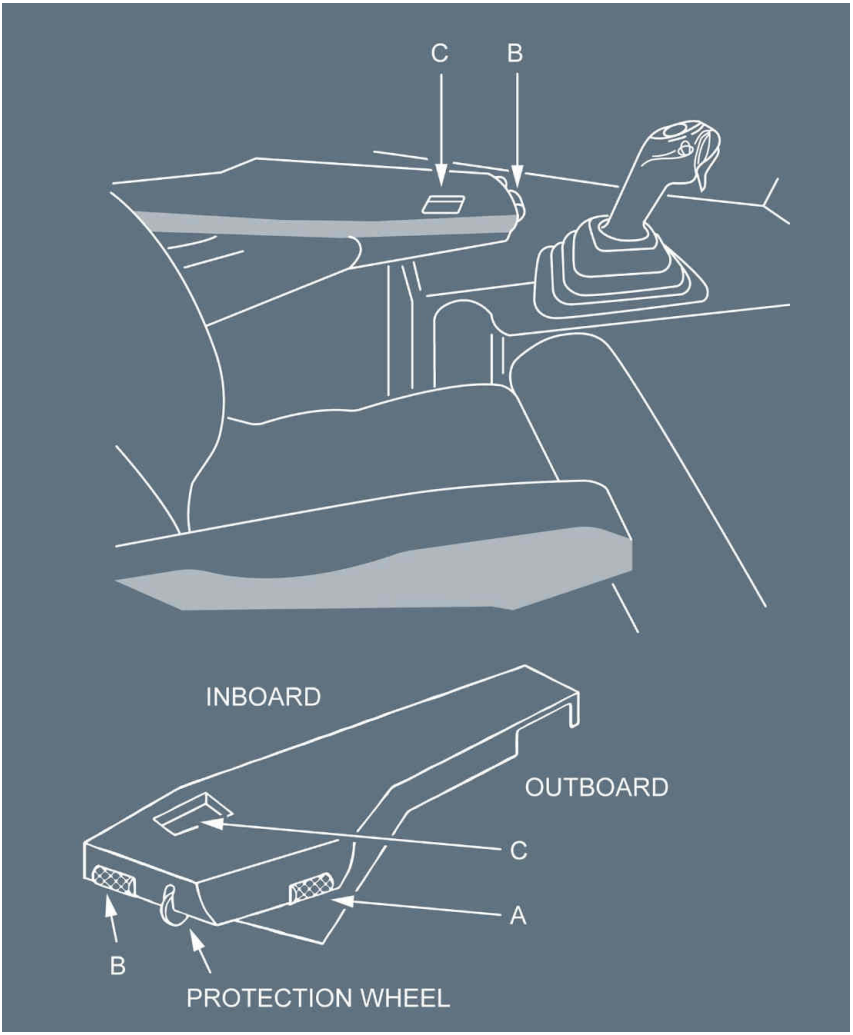
Ident.: DSC-25-10-30-00000995.0001001 / 21 MAR 17
Applicable to: ALL

This seat has three positions :

- Normal : Centered on aircraft axis.
- Intermediate : Clear of the cockpit entrance.
- Stowed : Seat vertical and headrest folded back. The seat is usable in this position, and does not impede access to the documents and equipment on the right side of the cockpit.

ARMREST

Ident.: DSC-25-10-30-00018431.0001001 / 17 MAR 17
Applicable to: ALL



The position of the armrest is adjustable as follows:
A. Height adjustment
B. Pitch adjustment

The armrest also has a memory display (C) that shows pitch and height.

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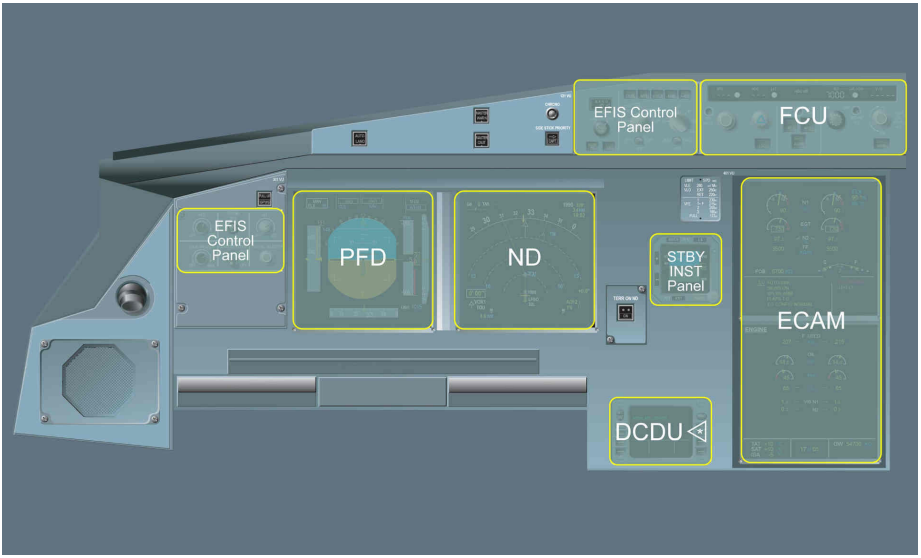
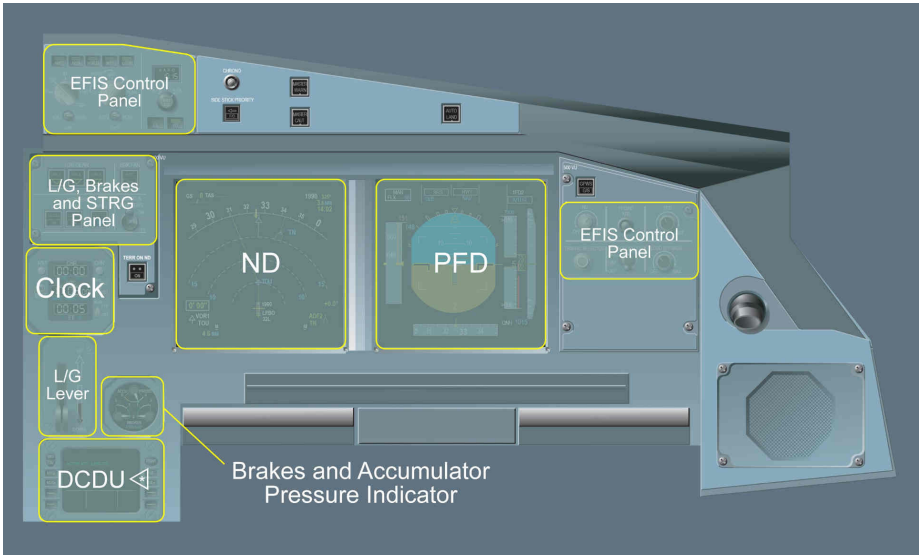
MAIN INSTRUMENT PANEL - CAPTAIN SIDE

Ident.: DSC-25-10-40-00020851.0001001 / 21 MAR 17
Applicable to: ALL



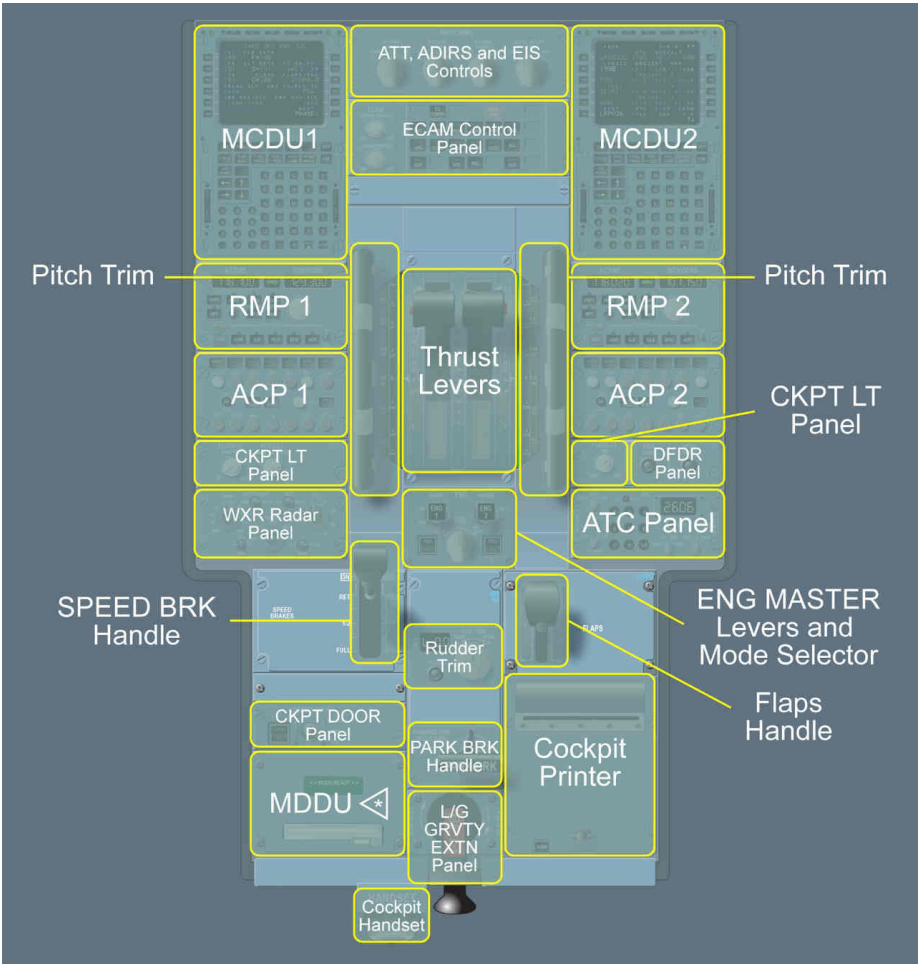
MAIN INSTRUMENT PANEL - FIRST OFFICER SIDE

Ident.: DSC-25-10-40-00020852.0001001 / 21 MAR 17
Applicable to: ALL



PEDESTAL

Ident.: DSC-25-10-50-00020854.0001001 / 17 MAR 17
Applicable to: ALL



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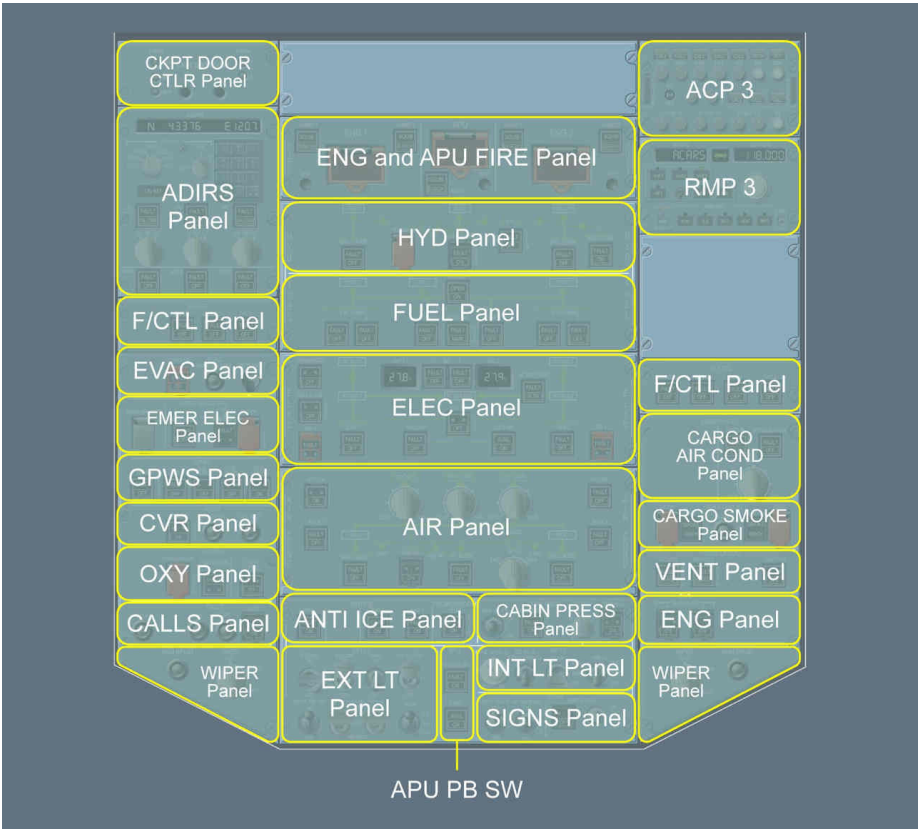
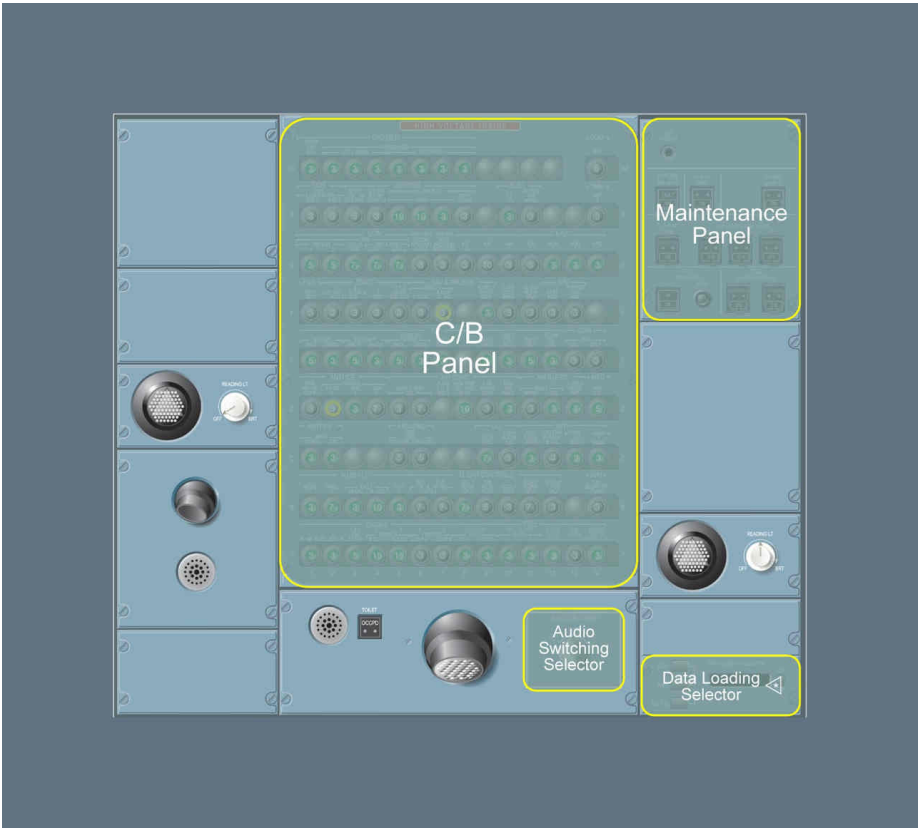
OVERHEAD PANEL

Ident.: DSC-25-10-60-00020855.0001001 / 17 MAR 17
Applicable to: ALL

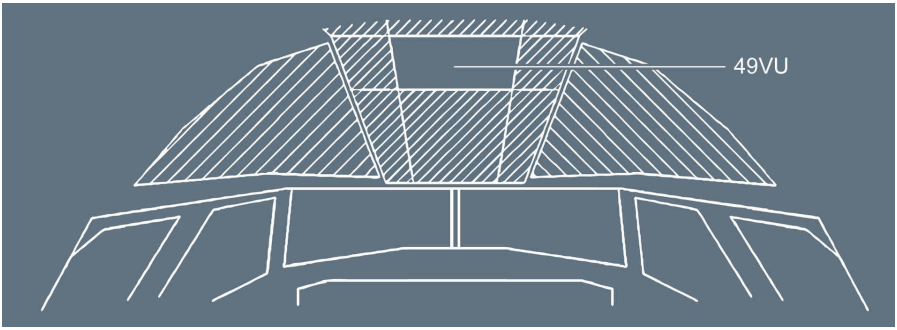



Maintenance Panel
C/B Panel
Audio Switching Selector
Data Loading Selector

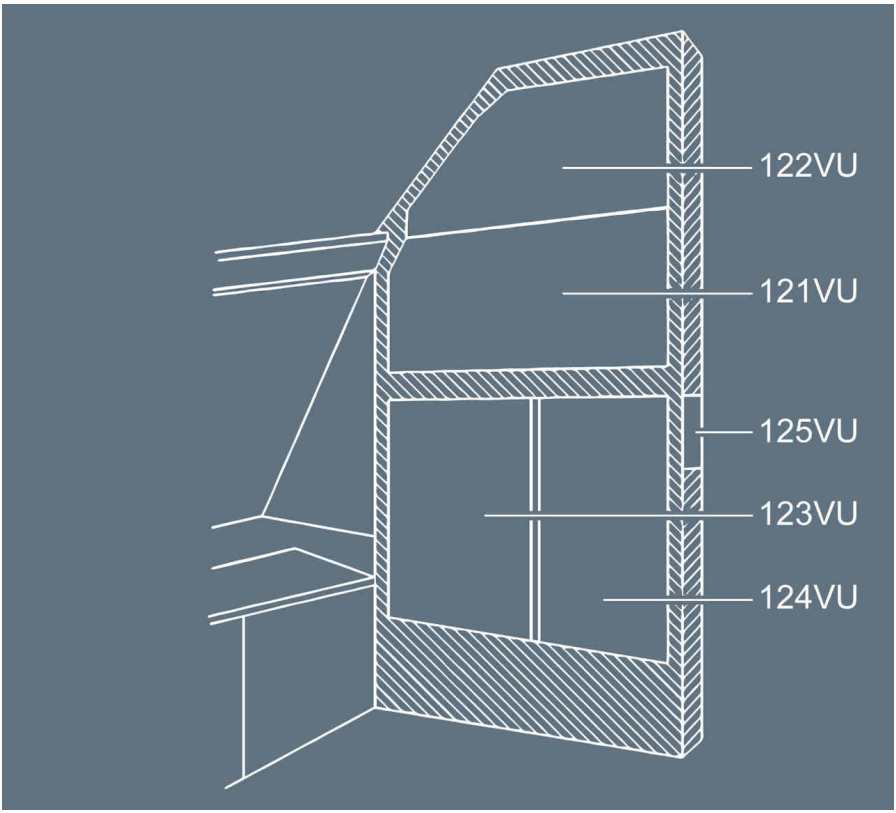
C/B PANELS

Ident.: DSC-25-10-70-00018436.0001001 / 17 MAR 17
Applicable to: ALL

OVERHEAD PANEL



RIGHT REAR PANEL



GENERAL

Ident.: DSC-25-10-80-00017009.0001001 / 17 MAR 17
Applicable to: ALL

The foot warmer system has a heating panel attached to each pedal. The temperature of the panels is about 20 °C (68 °F).

CONTROLS

Ident.: DSC-25-10-80-00017008.0001001 / 17 MAR 17
Applicable to: ALL

The Foot Warmer ON/OFF control switch is located on the main instrument panel, on the captain's and first officer's side.

FOOT WARMER sw

Operation of the associated heating panel on captain's pedals or first officer's pedals.

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EMERGENCY EQUIPMENT

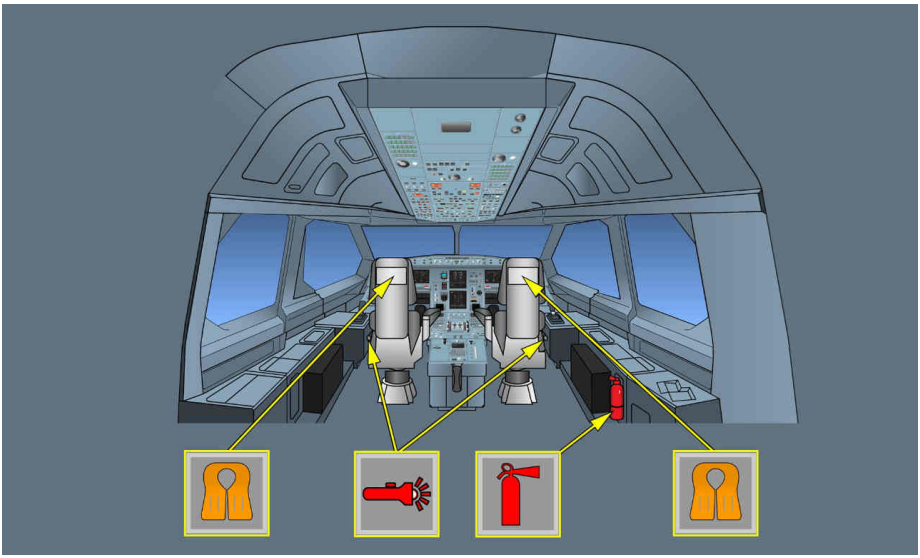
Applicable to: ALL

Ident.: DSC-25-20-10-00022066.0001001 / 04 DEC 17

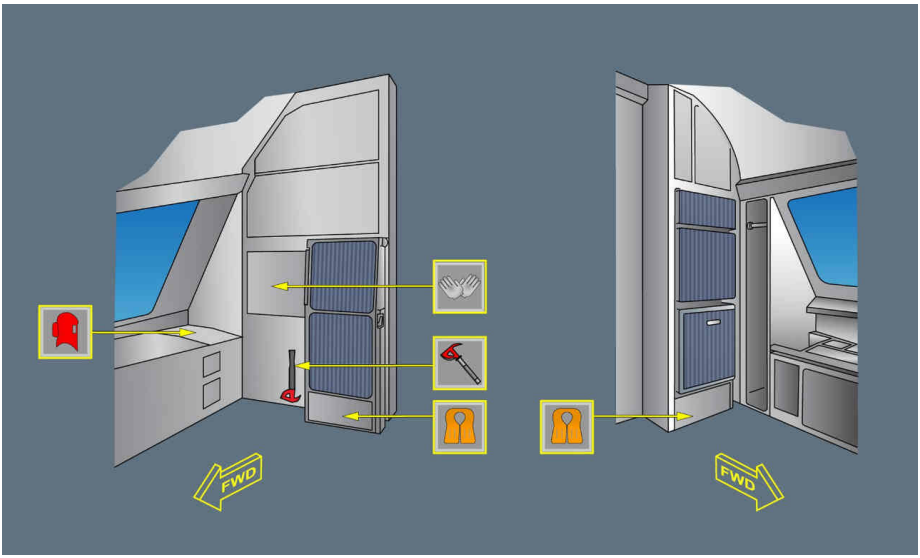
Placards indicate the location of emergency equipment on board the aircraft. To consult the list of symbols, *Refer to CCOM/07-010 Symbol List*.

Ident.: DSC-25-20-10-00022067.0001001 / 04 DEC 18

Cockpit Front View



Cockpit Rear View



Note: *The illustration shows the typical emergency equipment in this area. The location and the type of emergency equipment may vary. Placards indicate the location and the type.*

Ident.: DSC-25-20-10-00022068.0001001 / 04 DEC 17

For the description of the cabin emergency equipment, Refer to CCOM/EMERGENCY EQUIPMENT/PORTABLE EMERGENCY EQUIPMENT.

AIRCRAFT SYSTEMS

FIRE PROTECTION

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DSC-26-10 General

Description ..... A

DSC-26-20 Engines and APU

DSC-26-20-10 System Description

Fire Detection ..... A
Extinguishing ..... B
Fire Detection and Detection Fault Logic C

DSC-26-20-20 Controls and Indicators

FIRE Panel ..... A
ENG MASTER Panel ..... B
EXTERNAL POWER Panel C
MAINTENANCE Panel ..... D

DSC-26-30 Avionics Bay

DSC-26-30-10 System Description

Smoke Detection ..... A

DSC-26-30-20 Controls and Indicators

EMER ELEC PWR Panel ..... A
VENTILATION Panel ..... B

DSC-26-40 Lavatory

DSC-26-40-10 System Description

Smoke Detection ..... A
Wastebin Fire Extinguishing ..... B

DSC-26-50 Cargo Compartments

DSC-26-50-10 System Description

Smoke Detection ..... A
Fire Extinguishing ..... B

DSC-26-50-20 Controls and Indicators

CARGO SMOKE Panel ..... A

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Localization Title	Toc Index	ID	Reason
DSC-26-50-10 Smoke Detection	A	1	Effectivity update: The information now also applies to MSN 09063.
DSC-26-50-10 Smoke Detection	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-26-50-10 Fire Extinguishing	B	3	Effectivity update: The information now also applies to MSN 09063.
DSC-26-50-10 Fire Extinguishing	B	4	Effectivity update: The information no longer applies to MSN 05449.
DSC-26-50-10 Fire Extinguishing	B	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-26-50-20 CARGO SMOKE Panel	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-26-50-20 CARGO SMOKE Panel	A	2	Effectivity update: The information now also applies to MSN 09063.
DSC-26-50-20 CARGO SMOKE Panel	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-26-50-20 DISCH Light	A	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-26-50-20 DISCH pb	A	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-26-50-20 DISCH AGENT 2 Light	A	6	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
DSC-26-50-20 DISCH sw	A	7	Effectivity update: The information no longer applies to MSN 05449.
DSC-26-50-20 BTL Light	A	8	Effectivity update: The information now also applies to MSN 09063.

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DESCRIPTION

Ident.: DSC-26-10-00021387.0006001 / 17 MAR 17
Applicable to: ALL

The fire and smoke protection system includes:

- Fire and overheat detection for the engines and APU
- Smoke detection for the cargo compartments, the lavatories, and the avionics bay
- Fire extinguishing for the cargo compartments, the engines, the APU, and the lavatories.

In addition, the aircraft includes portable fire extinguishers in the cockpit and in the cabin areas.

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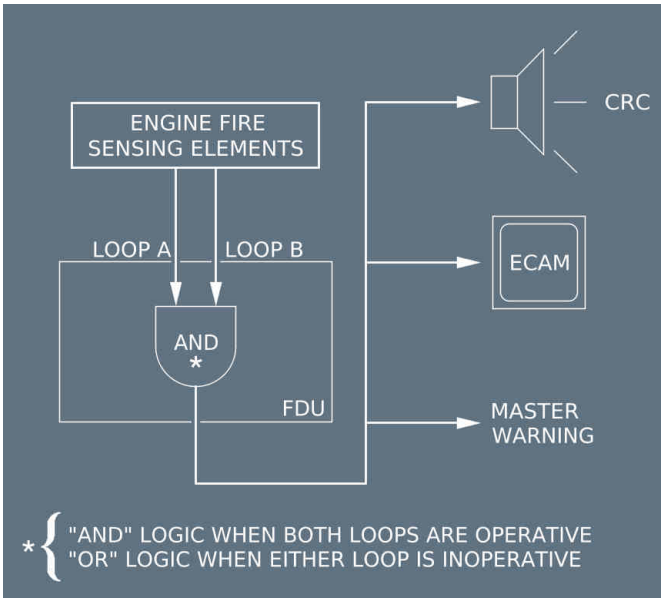
FIRE DETECTION

Ident.: DSC-26-20-10-00021393.0001001 / 17 MAR 17
Applicable to: ALL

The engines and the APU each have a fire and overheat detection system consisting of:
- Two identical detection loops (A and B) mounted in parallel
- A Fire Detection Unit (FDU).

The fire detection loops consist of:
- Three or four (as installed) engine fire sensing elements, in the pylon nacelle, in the engine core, and in the engine fan section
- One fire sensing element in the APU compartment.



When a sensing element is subjected to heat, it sends a signal to the FDU. As soon as loops A and B detect temperature above a preset level, the fire warning system is triggered.
A fault in one loop (break or loss of electrical supply) does not affect the warning system and the unaffected loop still protects the aircraft.

EXTINGUISHING

Ident.: DSC-26-20-10-00021395.0001001 / 04 JUL 17
Applicable to: ALL

ENGINES

Each engine has two fire extinguisher bottles, with electrically-operated squibs to discharge their agents. Each squib has a dual electric supply. The flight crew controls the discharge of the fire extinguisher bottles from the FIRE panel in the cockpit.

APU

The APU has one fire extinguisher bottle, with two electrically-operated squibs to discharge its agent. The flight crew controls the discharge of the fire extinguisher bottle from the FIRE panel in the cockpit. When an APU fire is detected on the ground, the APU automatically shuts down, and the extinguisher bottle discharges automatically.

FIRE DETECTION AND DETECTION FAULT LOGIC

Ident.: DSC-26-20-10-00021394.0001001 / 17 MAR 17
Applicable to: ALL

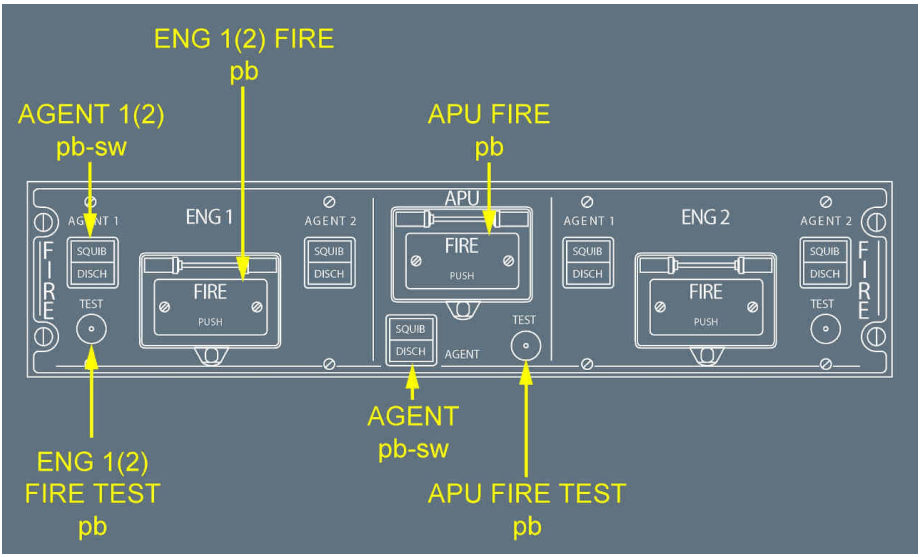
Fire detection units process all the warnings and cautions originating in the sensing elements.

- A fire warning appears, if:
  - Both loops A and B send a fire signal, or
  - One loop sends a fire signal and the other one is failed, or
  - Breaks occur in both loops within 5 s of each other (flame effect), or
  - A test is performed on the FIRE panel
- A loop-fault caution appears, if:
  - One loop is failed, or
  - Both loops are failed, or
  - The FDU fails.

FIRE PANEL

Applicable to: ALL

Ident.: DSC-26-20-20-10-00021396.0002001 / 17 MAR 17



Ident.: DSC-26-20-20-10-00021415.0001001 / 17 MAR 17

ENG 1(2) FIRE PB

The pushbutton normal position is in, and guarded. When the flight crew pushes it, the pushbutton is released and sends an electrical signal that performs the following for the corresponding engine:

- Silences the aural fire warning
- Arms the fire extinguisher squibs
- Closes the low-pressure fuel valve
- Closes the hydraulic fire shut off valve
- Closes the engine bleed valve
- Closes the pack flow control valve
- Cuts off the FADEC power supply
- Deactivates the IDG.

The red lights come on, regardless of the pushbutton position, whenever the fire warning for the corresponding engine is activated.

Ident.: DSC-26-20-20-10-00021420.0001001 / 17 MAR 17

AGENT 1(2) PB-SW

Both AGENT pushbutton-switches of an affected engine become active when the flight crew releases the ENG 1(2) FIRE pb.
A brief push on the pushbutton-switch discharges the corresponding fire agent.

- "SQUIB" comes on white when the flight crew releases the ENG 1(2) FIRE pb to help the flight crew identify the AGENT pb-sw to be activated.
- "DISCH" comes on amber when the corresponding fire extinguisher bottle has lost pressure.

Ident.: DSC-26-20-20-10-00021421.0001001 / 19 SEP 17

ENG 1(2) FIRE TEST PB

This pushbutton tests the operation of the fire detection and extinguishing system for ENG 1(2).

When pressed:
- A continuous repetitive chime (CRC) sounds
- The MASTER WARNING lights flash
- ENG FIRE warning appears on ECAM.
- On the FIRE panel:
  - The ENG 1(2) FIRE pb lights up red
  - The SQUIB lights come on white if discharge supplies are available
  - The DISCH lights come on amber.
- On the ENG MASTER panel (pedestal):
  - The FIRE lights come on red.

Note: The FIRE lights do not illuminate in case of Engine Fire Detection Loop A fault on the Engine 1 or Engine Fire Detection Loop B fault on the Engine 2.

Ident.: DSC-26-20-20-10-00021423.0001001 / 17 MAR 17

APU FIRE PB

The pushbutton normal position is in, and guarded. When the flight crew pushes it, the pushbutton is released and sends an electrical signal that performs the following for the APU:
- Shuts down the APU
- Silences the aural warning
- Arms the squib on the APU fire extinguisher
- Closes the low-pressure fuel valve
- Shuts off the APU fuel pump
- Closes the APU bleed valve and X bleed valve and deactivates the APU generator.

The red lights come on, regardless of the pushbutton position, whenever an APU fire warning is activated.

Ident.: DSC-26-20-20-10-00021424.0001001 / 17 MAR 17

AGENT PB-SW

The APU AGENT pb-sw becomes active when the flight crew releases the APU FIRE pb.
A brief push on the pushbutton-switch discharges the corresponding fire agent.

- "SQUIB" comes on white when the pilot releases the APU FIRE pb.
- "DISCH" comes on amber when the fire extinguisher bottle has lost pressure.

Note: *A red disk, which is outside at the rear of the fuselage, signals that the agent is not discharged overboard due to bottle overpressure.*

Ident.: DSC-26-20-20-10-00021425.0001001 / 17 MAR 17

APU FIRE TEST PB

This pushbutton tests the operation of the APU fire detection and extinguishing system.

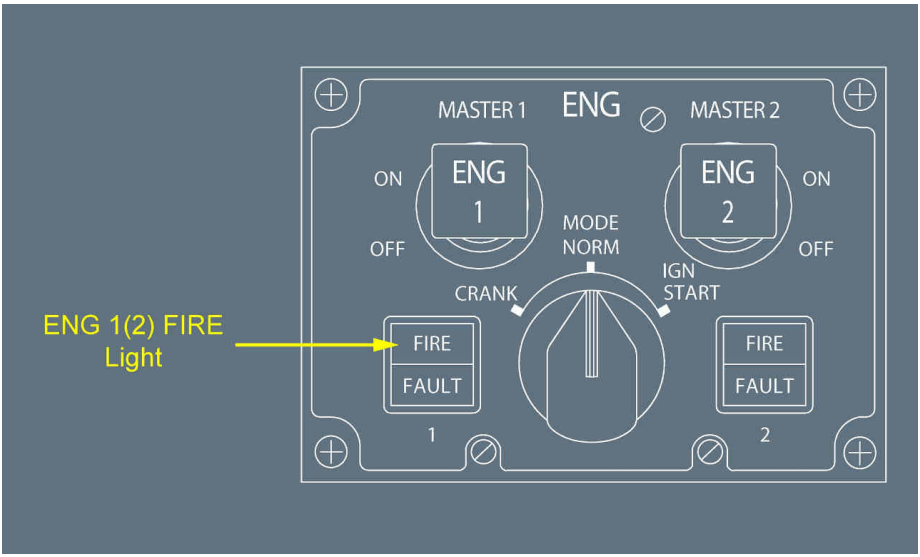
When pressed:
- A continuous repetitive chime (CRC) sounds
- The MASTER WARNING lights flash
- APU FIRE warning appears on ECAM.
- On the FIRE panel:
  - The APU FIRE pb lights up red
  - The SQUIB light comes on white if discharge supplies are available
  - The DISCH light comes on amber.

Note: *The automatic shutdown of the APU on the ground does not occur when the flight crew performs this test.*

ENG MASTER PANEL

Applicable to: ALL

Ident.: DSC-26-20-20-20-00021427.0001001 / 17 MAR 17



Ident.: DSC-26-20-20-20-00021428.0001001 / 17 MAR 17

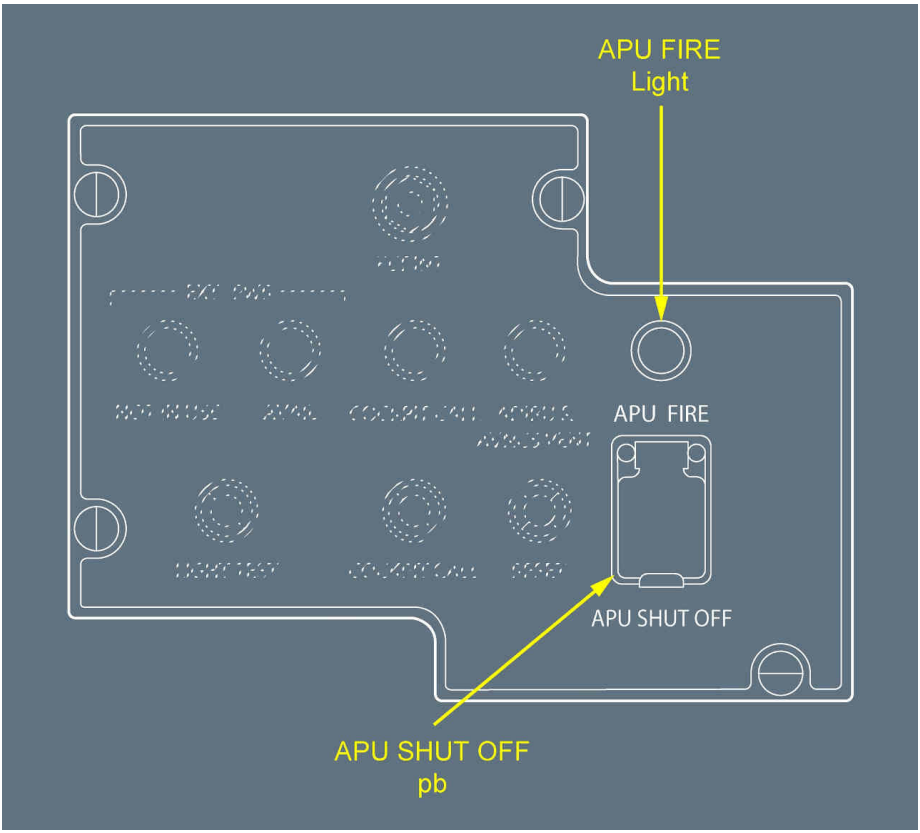
ENG 1(2) FIRE LIGHT

This light identifies the engine to be shutdown in the case of fire.
The light comes on red when an engine fire warning is triggered.

EXTERNAL POWER PANEL

Applicable to: ALL

Ident.: DSC-26-20-20-30-00021429.0001001 / 17 MAR 17



Ident.: DSC-26-20-20-30-00021430.0001001 / 17 MAR 17

APU FIRE LIGHT

The red APU FIRE light comes on and an external warning horn sounds when the system detects an APU fire.
The APU fire extinguisher discharges automatically 3 s after the appearance of the fire warning.
The light goes out when the fire has been extinguished.

Ident.: DSC-26-20-20-30-00021431.0001001 / 17 MAR 17

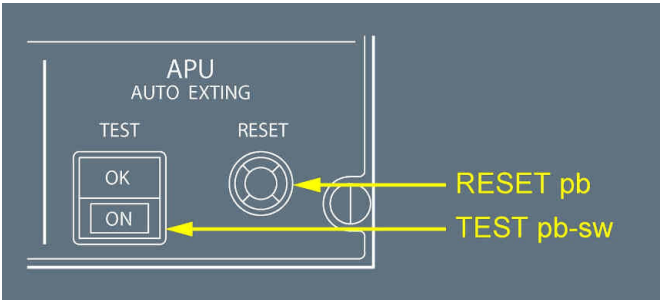
APU SHUT OFF PB

This pushbutton is used for manual APU emergency shutdown, if an emergency situation is detected on ground by the ground crew. When this pushbutton is pressed, the APU low pressure fuel shutoff valve closes, and the ECB receives a signal that starts the shutdown sequence. The shutdown sequence is the same as the APU automatic shutdown sequence, except that there is no cool down cycle. Pressing this pushbutton also silences the external warning horn.

MAINTENANCE PANEL

Applicable to: ALL

Ident.: DSC-26-20-20-40-00021432.0001001 / 17 MAR 17



Ident.: DSC-26-20-20-40-00021435.0001001 / 17 MAR 17

TEST PB-SW

When pressed, tests the following APU circuits:
- Fire warning
- Auto extinguishing
- Shutdown.

During the test sequence, the APU MASTER sw must be ON.
If all circuits are operating correctly, the OK light comes on.

Note: *If the APU was running, it shuts down.*

Ident.: DSC-26-20-20-40-00021436.0001001 / 17 MAR 17

RESET PB

When pressed, resets the test circuit.

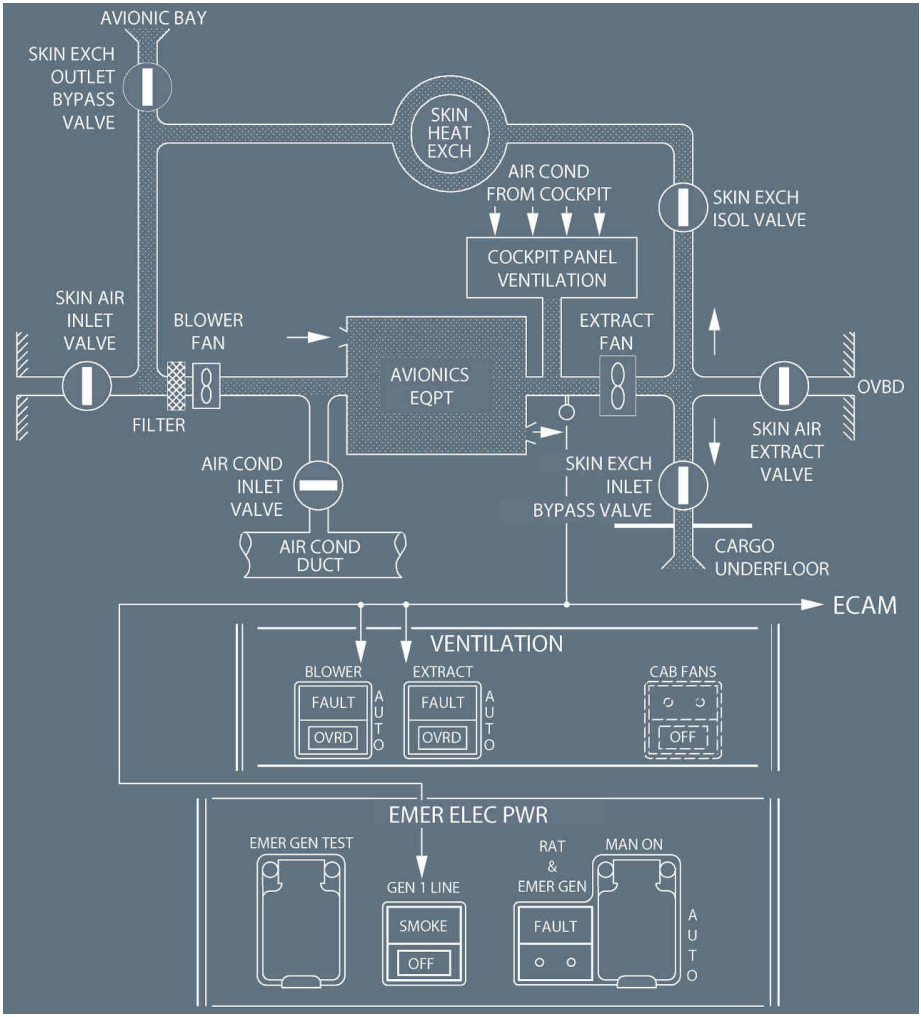
SMOKE DETECTION

Ident.: DSC-26-30-10-00021401.0001001 / 17 MAR 17
Applicable to: ALL

The air extraction duct of the avionics ventilation system has one smoke detector.

When smoke is detected for more than 5 s:

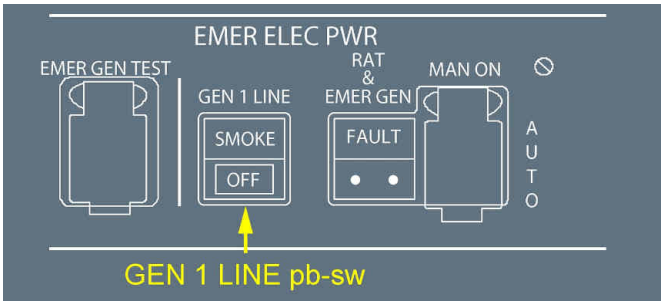
- The Single Chime (SC) sounds
- The MASTER CAUTION lights flash
- The ECAM AVIONICS SMOKE alert triggers
- On the EMER ELEC PWR panel, the SMOKE light of the GEN 1 LINE pb-sw comes on
- On the VENTILATION panel, the FAULT lights of the BLOWER pb-sw and the EXTRACT pb-sw come on.


AVIONIC BAY
SKIN EXCH OUTLET BYPASS VALVE
SKIN HEAT EXCH
AIR COND FROM COCKPIT
SKIN EXCH ISOL VALVE
COCKPIT PANEL VENTILATION
SKIN AIR INLET VALVE
BLOWER FAN
EXTRACT FAN
AVIONICS EQPT
OVBD
FILTER
SKIN AIR EXTRACT VALVE
AIR COND INLET VALVE
SKIN EXCH INLET BYPASS VALVE
AIR COND DUCT
CARGO UNDERFLOOR
ECAM
VENTILATION
BLOWER
EXTRACT
CAB FANS
FAULT
OVRD
AUTO
OFF
EMER ELEC PWR
EMER GEN TEST
GEN 1 LINE
RAT & EMER GEN
MAN ON
SMOKE

EMER ELEC PWR PANEL

Applicable to: ALL

Ident.: DSC-26-30-20-A-00021439.0001001 / 17 MAR 17



Ident.: DSC-26-30-20-A-00021440.0001001 / 17 MAR 17

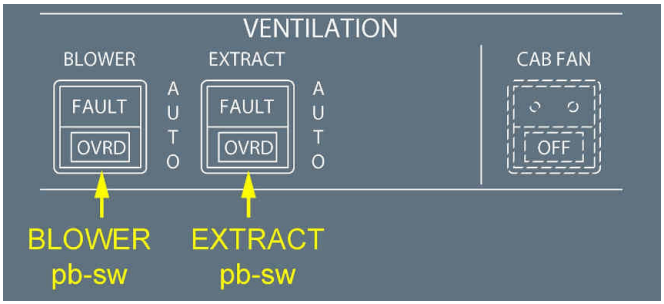
GEN 1 LINE PB-SW

SMOKE light on : The amber light comes on when smoke is detected in the avionics ventilation duct.

VENTILATION PANEL

Applicable to: ALL

Ident.: DSC-26-30-20-B-00021402.0001001 / 17 MAR 17



Ident.: DSC-26-30-20-B-00021437.0001001 / 17 MAR 17

BLOWER PB-SW

FAULT light on : The amber light comes on when smoke is detected in the avionics ventilation duct.

Ident.: DSC-26-30-20-B-00021438.0001001 / 17 MAR 17

EXTRACT PB-SW

FAULT light on : The amber light comes on when smoke is detected in the avionics ventilation duct.

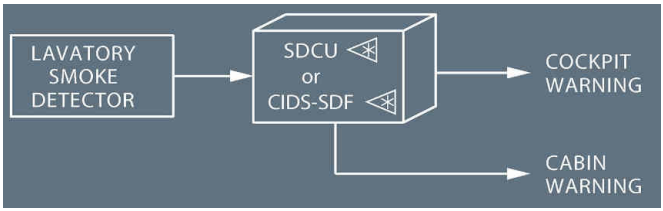
SMOKE DETECTION

Ident.: DSC-26-40-10-00021441.0001001 / 17 MAR 17
Applicable to: ALL

The lavatory smoke detection system consists of:

- One smoke detector, in the air extraction duct of the lavatory
- A double channel Smoke Detection Control Unit (SDCU) or a Cabin Intercommunication Data Systems (CIDS) with a Smoke Detection Function (SDF) that triggers the applicable alerts (cockpit and cabin).

In the case of smoke in a lavatory, the detector sends a signal to the SDCU or CIDS, which transmits it to the Flight Warning Computer (FWC) for warning in the cockpit and in the cabin.



WASTEBIN FIRE EXTINGUISHING

Ident.: DSC-26-40-10-00001034.0001001 / 21 MAR 16
Applicable to: ALL

Each lavatory wastebin has an automatic fire extinguishing system.

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SMOKE DETECTION

Ident.: DSC-26-50-10-00021442.0004001 / 17 MAR 17

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

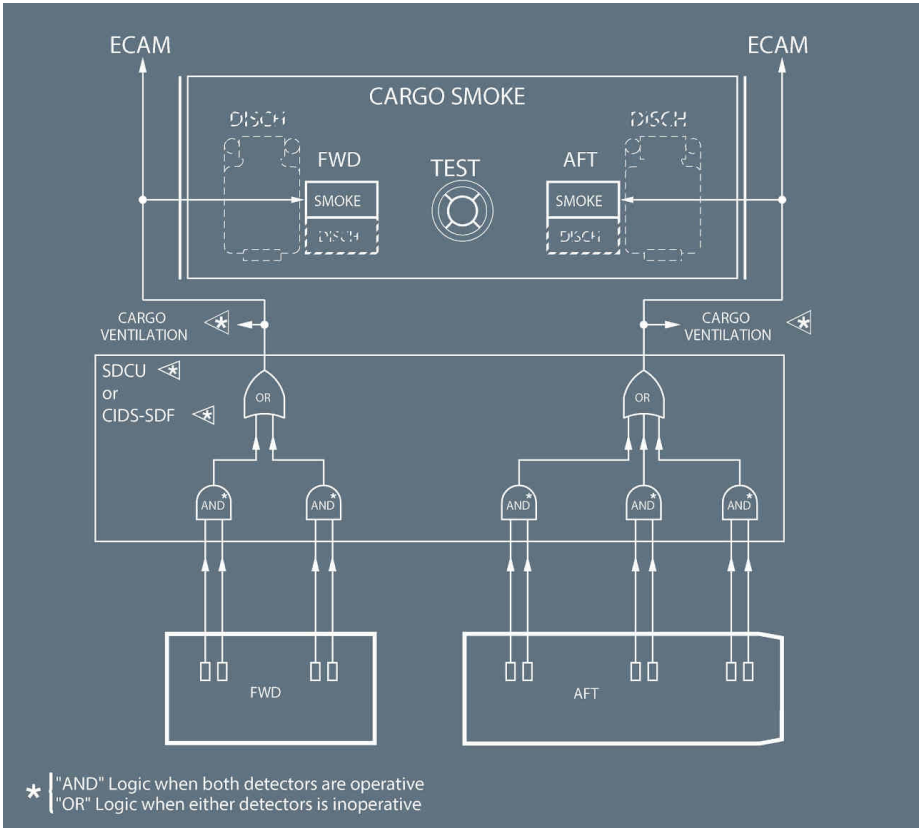
The forward and aft cargo compartments smoke detection system consists of:

- 4 smoke detectors that are in the forward cargo compartment ceiling panel cavities. Each detector is linked to one of the two detection loops (dual loop principle).
- 6 smoke detectors that are in the aft cargo compartment ceiling panel cavities. Each detector is linked to one of the two detection loops (dual loop principle).
- A Smoke Detection Control Unit (SDCU) ◁✻ with two identical channels, or a Cabin Intercommunication Data Systems (CIDS) with a Smoke Detection Function (SDF) ◁✻ , that receives signals from the smoke detectors, and transmits it to the ECAM.

Smoke in one cavity activates the cargo smoke warning if:

- Both smoke detectors detect smoke, or
- One smoke detector detects smoke and the other is inoperative.

Cargo isolation valves ◁✻ close automatically, and the extraction fan ◁✻ stops when the cargo smoke warning is activated.


ECAM
ECAM
CARGO SMOKE
DISCH
DISCH
FWD
TEST
AFT
SMOKE
SMOKE
DISCH
DISCH
CARGO VENTILATION
CARGO VENTILATION
SDCU
or
CIDS-SDF
OR
OR
AND
AND
AND
AND
AND
FWD
AFT
* "AND" Logic when both detectors are operative
"OR" Logic when either detectors is inoperative

SMOKE DETECTION

Ident.: DSC-26-50-10-00021442.0003001 / 17 MAR 17

[2] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

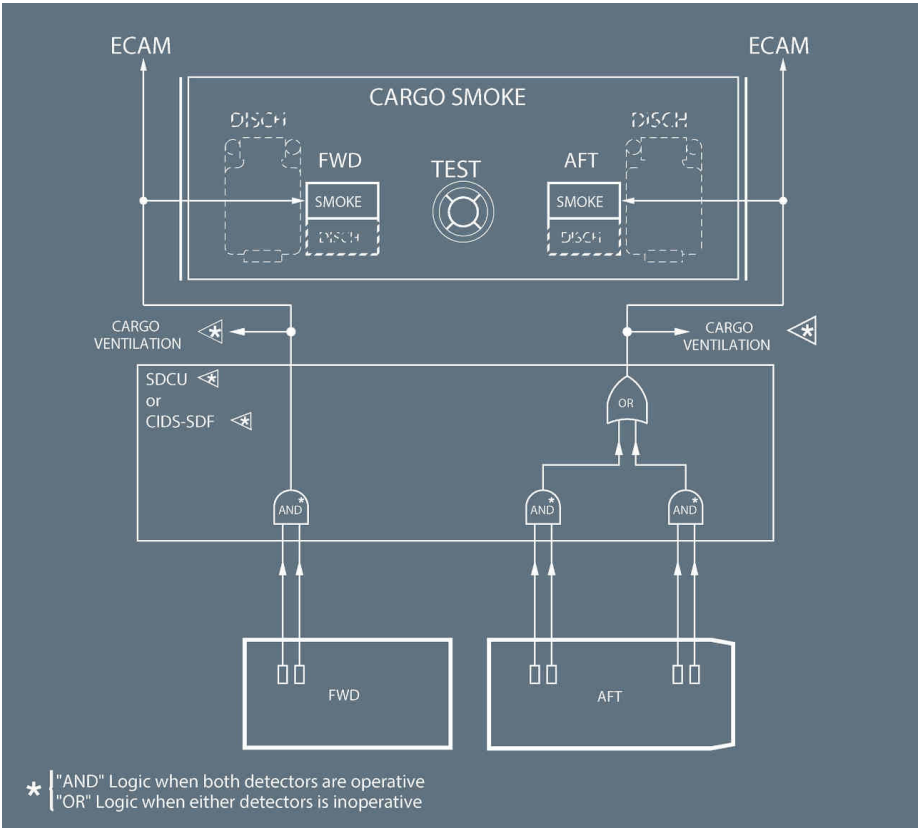
The forward and aft cargo compartments smoke detection system consists of:

- Two smoke detectors that are in the forward cargo compartment ceiling panel cavities. Each detector is linked to one of the two detection loops (dual loop principle).
- Four smoke detectors that are in the aft cargo compartment ceiling panel cavities. Each detector is linked to one of the two detection loops (dual loop principle).
- A Smoke Detection Control Unit (SDCU) ◁✻ with two identical channels, or a Cabin Intercommunication Data Systems (CIDS) with a Smoke Detection Function (SDF) ◁✻ , that receives signals from the smoke detectors, and transmits it to the ECAM.

Smoke in one cavity activates the cargo smoke warning if:

- Both smoke detectors detect smoke, or
- One smoke detector detects smoke and the other is inoperative.

Cargo isolation valves ◁✻ close automatically, and the extraction fan ◁✻ stops when the cargo smoke warning is activated.



FIRE EXTINGUISHING

Ident.: DSC-26-50-10-00021443.0023001 / 22 MAR 18

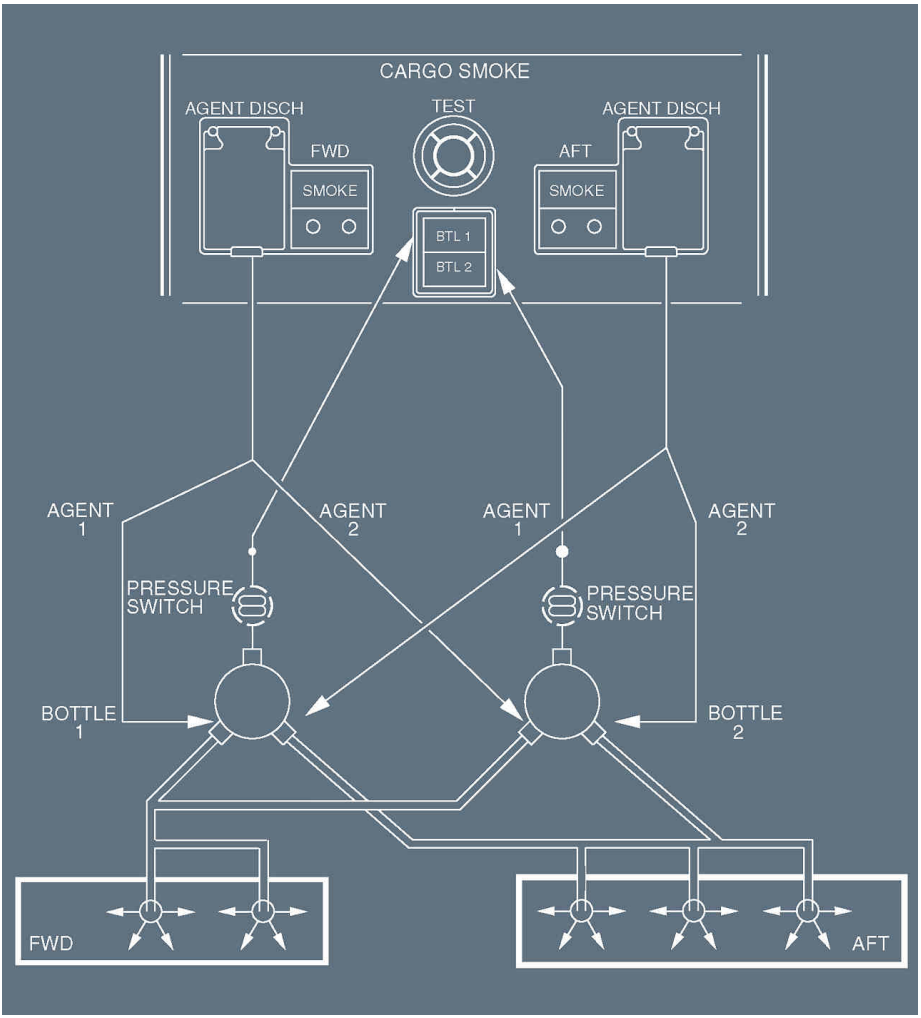
3 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

A fire extinguishing system protects the forward and aft cargo compartments.

Two fire bottles with two discharge heads, one for each compartment, supply five nozzles:
- Two nozzles in the forward cargo compartment
- Three nozzles in the aft cargo compartment.

When the FWD(AFT) SMOKE light comes on, the flight crew selects the corresponding DISCH pb. This action simultaneously ignites the corresponding squib on the fire bottles, which then discharge the extinguishing agent into that compartment.

Bottle 1 discharges in approximately 60 s. A flow metering system controls the discharge of bottle 2 for at least 135 min.
When bottle 1(2) is empty, the BTL1(2) light comes on amber.



FIRE EXTINGUISHING

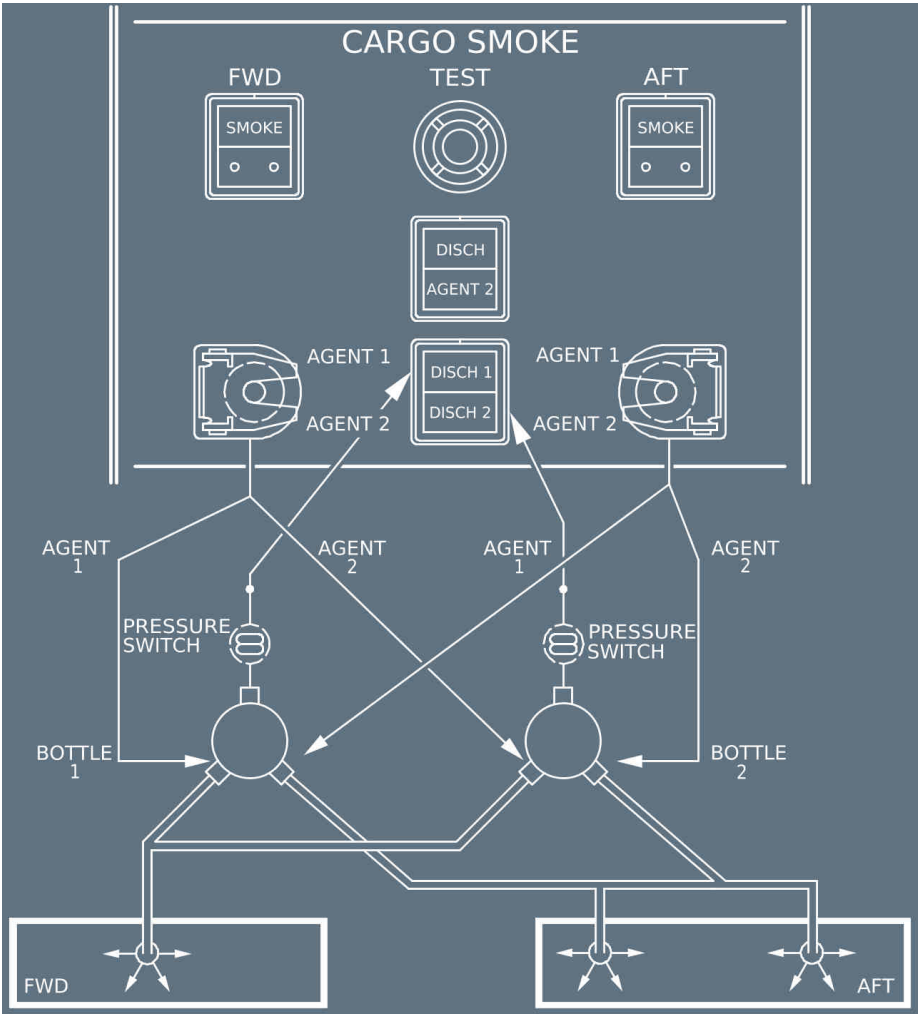
Ident.: DSC-26-50-10-00021443.0007001 / 17 MAR 17

4 **Applicable to: MSN 01920-02097, 02121-02204, 02457, 02670, 02804, 03071, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05155, 05190-06336, 06772, 06829, 06904, 06946, 07083-07192, 08455-08459, 08511-08541, 08558-08586, 08627-08654, 08688-08702**

A fire extinguishing system protects the forward and aft cargo compartments.

Two fire bottles with two discharge heads, one for each compartment, supply three nozzles:
- One nozzle in the forward cargo compartment
- Two nozzles in the aft cargo compartment.

When the FWD(AFT) SMOKE light comes on, the flight crew selects AGENT 1 with the corresponding DISCH sw. This action ignites the corresponding squib on the fire bottle, which then discharges the extinguishing agent into that compartment.
60 min after the discharge of AGENT 1, the DISCH AGENT 2 light comes on to indicate that the flight crew has to discharge AGENT 2 to maintain the required extinguisher concentration in the cargo compartment.
Bottle 1 discharges in approximately 60 s. A flow metering system controls the discharge of bottle 2 in approximately 90 min. This ensures sufficient agent concentration for 205 min.
When bottle 1(2) is empty, the DISCH 1(2) light comes on amber.


CARGO SMOKE
FWD
TEST
AFT
SMOKE
SMOKE
DISCH
AGENT 2
AGENT 1
AGENT 2
DISCH 1
DISCH 2
AGENT 1
AGENT 2
AGENT 1
AGENT 2
AGENT 1
AGENT 2
PRESSURE SWITCH
PRESSURE SWITCH
BOTTLE 1
BOTTLE 2
FWD
AFT

FIRE EXTINGUISHING

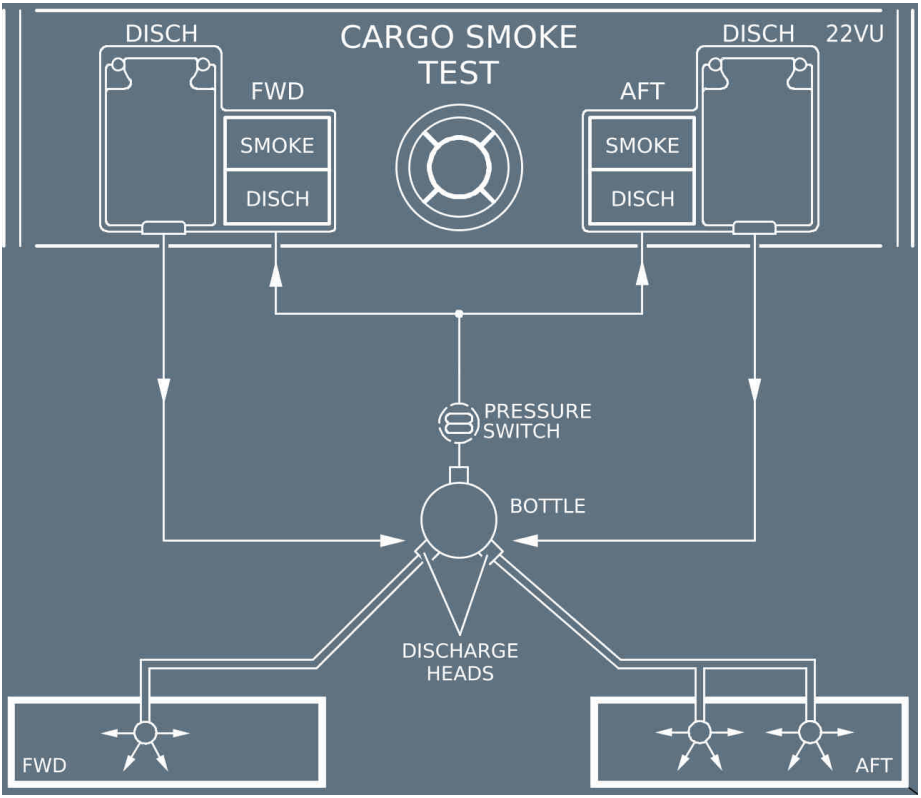
Ident.: DSC-26-50-10-00021443.0005001 / 17 MAR 17

5 **Applicable to: MSN 01767, 02108, 02275-02443, 02482-02649, 02712-02737, 02908-02914, 03138-03264, 03330, 03750, 04294, 04314, 04393-04438, 04510, 05158, 06720-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252-08440, 08460-08492, 08737, 08771-09045**

A fire extinguishing system protects the forward and aft cargo compartments.

One fire bottle with two discharge heads, one for each compartment, supplies three nozzles:
- One nozzle in the forward cargo compartment
- Two nozzles in the aft cargo compartment.

When the flight crew presses the FWD(AFT) DISCH pb, the action ignites the corresponding squib on the fire bottle, which then discharges the extinguisher agent into that cargo compartment.
When the bottle is empty, the DISCH light comes on amber.


DISCH
CARGO SMOKE TEST
DISCH
22VU
FWD
SMOKE
DISCH
AFT
SMOKE
DISCH
PRESSURE SWITCH
BOTTLE
DISCHARGE HEADS
FWD
AFT

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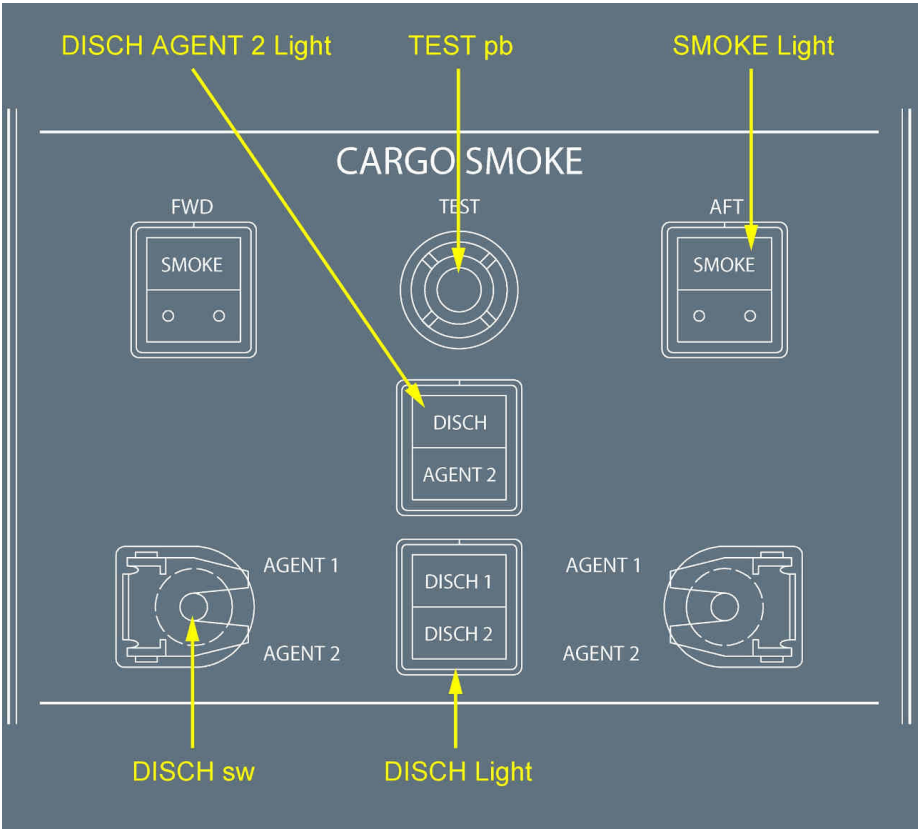
CARGO SMOKE PANEL

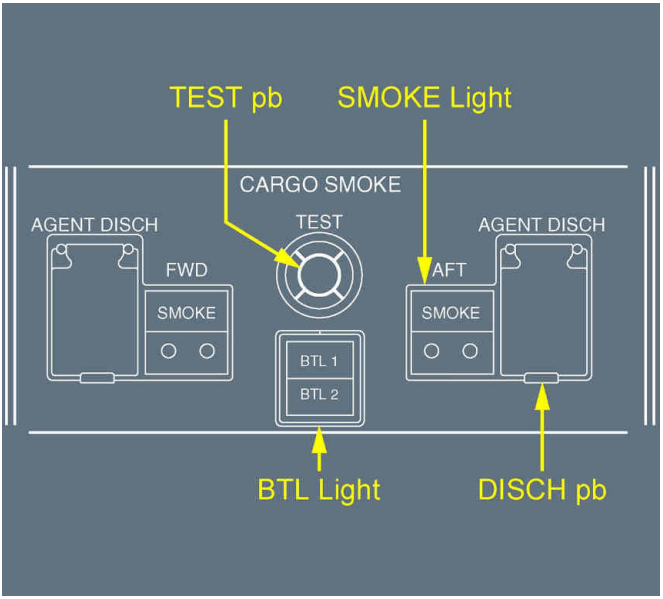
Ident.: DSC-26-50-20-10-00021446.0007001 / 17 MAR 17

[1] **Applicable to: MSN 01920-02097, 02121-02204, 02457, 02670, 02804, 03071, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05155, 05190-06336, 06772, 06829, 06904, 06946, 07083-07192, 08455-08459, 08511-08541, 08558-08586, 08627-08654, 08688-08702**



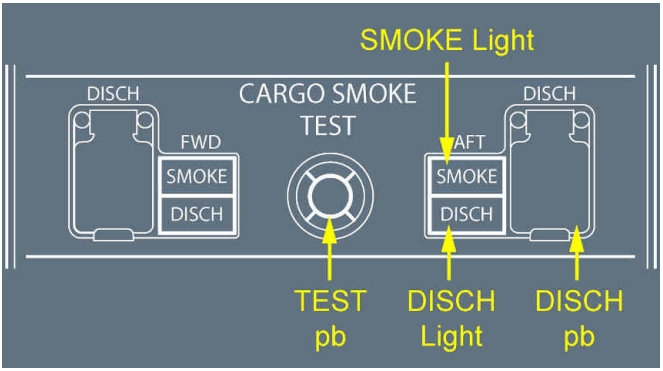
Ident.: DSC-26-50-20-10-00021446.0015001 / 22 MAR 18

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



Ident.: DSC-26-50-20-10-00021446.0005001 / 17 MAR 17

3 **Applicable to: MSN 01767, 02108, 02275-02443, 02482-02649, 02712-02737, 02908-02914, 03138-03264, 03330, 03750, 04294, 04314, 04393-04438, 04510, 05158, 06720-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252-08440, 08460-08492, 08737, 08771-09045**



Ident.: DSC-26-50-20-10-00021450.0001001 / 17 MAR 17
Applicable to: ALL

SMOKE LIGHT

This red light, and the associated ECAM warning, come on when the system detects smoke in the indicated cargo compartment. This light comes on, if:

- Both channels detect smoke, or
- One channel detects smoke and the other channel is faulty.

Ident.: DSC-26-50-20-10-00021451.0002001 / 17 MAR 17
Applicable to: ALL

TEST PB

Tests the operation of the cargo smoke detection system.

When pressed for at least 3 s, and until released:

- Tests the smoke detectors in sequence
- Turns on the red SMOKE lights twice, and displays the ECAM warning
- Closes the isolation valves of the cargo ventilation system ◁
- The DISCH lights come on in amber.

Ident.: DSC-26-50-20-10-00021452.0001001 / 17 MAR 17
4 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

DISCH LIGHT

Within 60 s after pressing the discharge pushbutton, the amber DISCH light comes on when the associated bottle is fully discharged.

Ident.: DSC-26-50-20-10-00021454.0001001 / 17 MAR 17
5 **Applicable to: MSN 01767, 02108, 02275-02443, 02482-02649, 02712-02737, 02908-02914, 03138-03264, 03330, 03750, 04294, 04314, 04393-04438, 04510, 05158, 06720-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252-08440, 08460-08492, 08557, 08587, 08655, 08710-09063**

DISCH PB

The DISCH pb ignites the squib, thereby discharging the extinguishing agent in the affected cargo compartment.

Ident.: DSC-26-50-20-10-00021455.0001001 / 17 MAR 17
6 **Applicable to: MSN 01920-02097, 02121-02204, 02457, 02670, 02804, 03071, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05155, 05190-06336, 06772, 06829, 06904, 06946, 07083-07192, 08455-08459, 08511-08710, 08768, 09063**

DISCH AGENT 2 LIGHT

This light comes on amber, 60 min after the discharge of AGENT 1 in the affected cargo compartment. The light goes off when the AGENT 2 squib is ignited.

Ident.: DSC-26-50-20-10-00021456.0001001 / 17 MAR 17

7 **Applicable to: MSN 01920-02097, 02121-02204, 02457, 02670, 02804, 03071, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05155, 05190-06336, 06772, 06829, 06904, 06946, 07083-07192, 08455-08459, 08511-08541, 08558-08586, 08627-08654, 08688-08702**

DISCH SW

The guarded DISCH sw permits ignition of the corresponding squib for discharge of extinguishing AGENT 1(2) in the respective cargo compartment (FWD or AFT).

Ident.: DSC-26-50-20-10-00022194.0001001 / 22 MAR 18

8 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

BTL LIGHT

The amber BTL light comes on when the associated bottle is fully discharged.

AIRCRAFT SYSTEMS

FLIGHT CONTROLS

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DSC-27-10 General

DSC-27-10-10 General

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DSC-27-20-10 Normal Law

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Protections....D

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Bank Angle Protection....B

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Sideslip Target....A

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Alternate Law Without Reduced Protection....D
Direct Law....E
Abnormal Attitude Laws....F
Mechanical Back-Up....G

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Side Stick Indications On PFD....E
ECAM F/CTL Page....F
ECAM Wheel Page....G
Memo Display....H

DSC-27-30 Flaps and Slats

DSC-27-30-10 Description

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Main Components....B
Architecture....C
Configurations....D
Alpha/Speed Lock Function (Slats)....E

DSC-27-30-20 Controls and Indicators

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ECAM Upper Display....B

Localization Title	Toc Index	ID	Reason
DSC-27-10-20 Roll Control - General	C	1	Effectivity update: The information now also applies to MSN 09063.
DSC-27-10-20 Roll Control - General	C	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-27-10-20 Speed Brakes and Ground Spoilers - Speed Brake Control	D	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-27-10-20 Speed Brakes and Ground Spoilers - Speed Brake Control	D	4	Effectivity update: The information now also applies to MSN 09063.
DSC-27-10-20 Speed Brakes and Ground Spoilers - Ground Spoiler Control	D	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-27-20-10-20 Flight Mode	B	1	Effectivity update: The information now also applies to MSN 09063.
DSC-27-20-10-20 Flight Mode	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-27-20-10-20 Flare Mode	C	3	Effectivity update: The information now also applies to MSN 09063.
DSC-27-20-10-20 Flare Mode	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-27-20-10-20 Protections - High Angle-of-Attack Protection	D	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-27-20-10-20 Protections - High Angle-of-Attack Protection	D	6	Effectivity update: The information now also applies to MSN 09063.
DSC-27-20-10-20 Protections - High Speed Protection	D	7	Effectivity update: The information now also applies to MSN 09063.
DSC-27-20-10-20 Protections - High Speed Protection	D	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-27-20-10-40 Load Alleviation Function (LAF)	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-27-20-20 Flight Controls Law Reconfiguration	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-27-20-20 Flight Controls Law Reconfiguration	B	2	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
DSC-27-20-20 Alternate Law	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-27-20-30 ECAM F/CTL Page	F	1	Effectivity update: The information now also applies to MSN 09063.
DSC-27-20-30 ECAM F/CTL Page	F	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-27-20-30 ECAM Wheel Page	G	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-27-30-10 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-27-30-10 General	A	2	Effectivity update: The information now also applies to MSN 09063.
DSC-27-30-10 Main Components	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-27-30-10 Main Components	B	4	Effectivity update: The information now also applies to MSN 09063.
DSC-27-30-10 Architecture	C	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-27-30-10 Architecture	C	6	Effectivity update: The information now also applies to MSN 09063.
DSC-27-30-10 Alpha/Speed Lock Function (Slats)	E	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-27-30-10 Alpha/Speed Lock Function (Slats)	E	8	Effectivity update: The information now also applies to MSN 09063.
DSC-27-30-20 Pedestal	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-27-30-20 Pedestal	A	2	Effectivity update: The information now also applies to MSN 09063.
DSC-27-30-20 ECAM Upper Display	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

GENERAL

Ident.: DSC-27-10-10-00001043.0001001 / 21 MAR 16
Applicable to: ALL

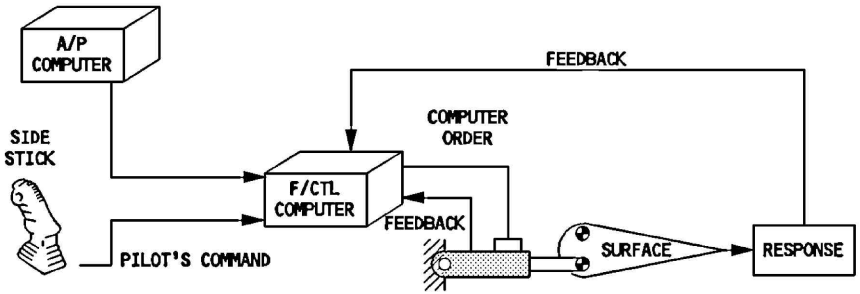
The fly-by-wire system was designed and certified to render the new generation of aircraft even more safe, cost effective, and pleasant to fly.

BASIC PRINCIPLE

Ident.: DSC-27-10-10-00001044.0001001 / 21 MAR 16
Applicable to: ALL

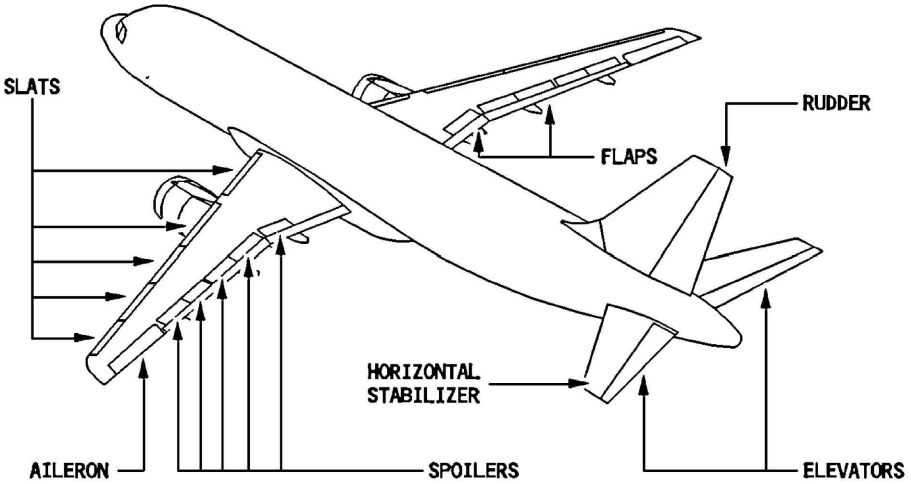
Flight control surfaces are all :
- Electrically-controlled, and
- Hydraulically-activated.

The stabilizer and rudder can also be mechanically-controlled.
Pilots use sidesticks to fly the aircraft in pitch and roll (and in yaw, indirectly, through turn coordination).
Computers interpret pilot input and move the flight control surfaces, as necessary, to follow their orders.
However, when in normal law, regardless of the pilot's input, the computers will prevent excessive maneuvers and exceedance of the safe envelope in pitch and roll axis.
However, as on conventional aircraft, the rudder has no such protection.



CONTROL SURFACES

Ident.: DSC-27-10-10-00001045.0001001 / 21 MAR 16
Applicable to: ALL



The flight controls are electrically or mechanically controlled as follows :

PITCH AXIS

Elevator	=	Electrical
Stabilizer	=	Electrical for normal or alternate control. Mechanical for manual trim control

ROLL AXIS

Ailerons	=	Electrical
Spoilers	=	Electrical

YAW AXIS

Rudder	=	Mechanical, however control for yaw damping, turn coordination and trim is electrical.

SPEED BRAKES

Speed brakes	=	Electrical

Note: *All surfaces are hydraulically actuated.*

COCKPIT CONTROLS

Ident.: DSC-27-10-10-00001046.0001001 / 21 MAR 16
Applicable to: ALL

- Each pilot has a sidestick controller with which to exercise manual control of pitch and roll. These are on their respective lateral consoles.
  The two sidestick controllers are not coupled mechanically, and they send separate sets of signals to the flight control computers.
- Two pairs of pedals, which are rigidly interconnected, give the pilot mechanical control of the rudder.
- The pilots control speed brakes with a lever on the center pedestal.
- The pilots use mechanically interconnected handwheels on each side of the center pedestal to control the trimmable horizontal stabilizer.
- The pilots use a single switch on the center pedestal to set the rudder trim.
- There is no manual switch for trimming the ailerons.

COMPUTERS

Ident.: DSC-27-10-10-00001047.0001001 / 21 MAR 16
Applicable to: ALL

Seven flight control computers process pilot and autopilot inputs according to normal, alternate, or direct flight control laws.
The computers are :

2 ELACs

(Elevator Aileron Computer)

For : Normal elevator and stabilizer control.
Aileron control.

3 SECs

(Spoilers Elevator Computer)

For : Spoilers control.
Standby elevator and stabilizer control.

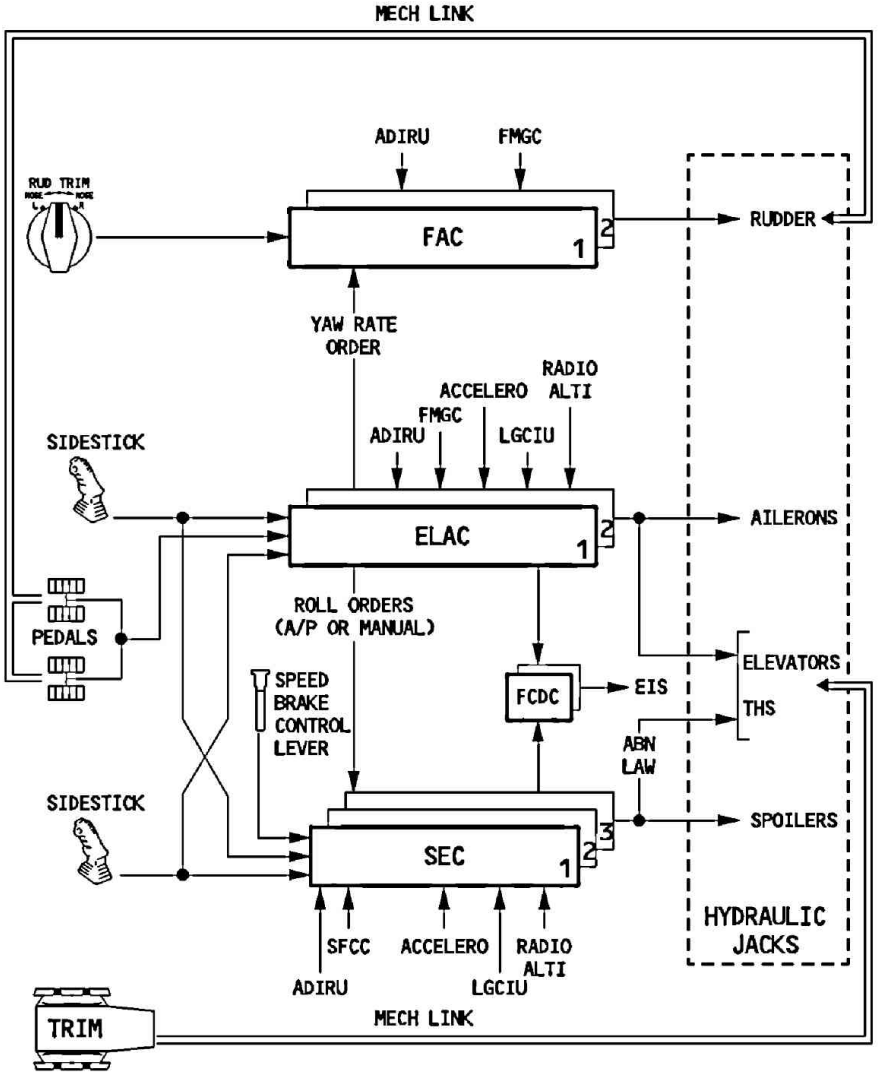
2 FACs

(Flight Augmentation Computer)

For : Electrical rudder control.

IN ADDITION 2 FCDC

Flight Control Data Concentrators (FCDC) acquire data from the ELACs and SECs and send it to the electronic instrument system (EIS) and the centralized fault display system (CFDS).


MECH LINK
ADIRU
FMGC
RUD TRIM
FAC
1
2
RUDDER
YAW RATE
ORDER
RADIO
ALTI
ACCELERO
FMGC
ADIRU
LGCIU
SIDESTICK
ELAC
1
2
AILERONS
PEDALS
ROLL ORDERS
(A/P OR MANUAL)
ELEVATORS
SPEED
BRAKE
CONTROL
LEVER
FCDC
EIS
THS
ABN
LAW
SIDESTICK
SEC
1
2
3
SPOILERS
HYDRAULIC
JACKS
SFCC
ACCELERO
RADIO
ALTI
ADIRU
LGCIU
TRIM
MECH LINK

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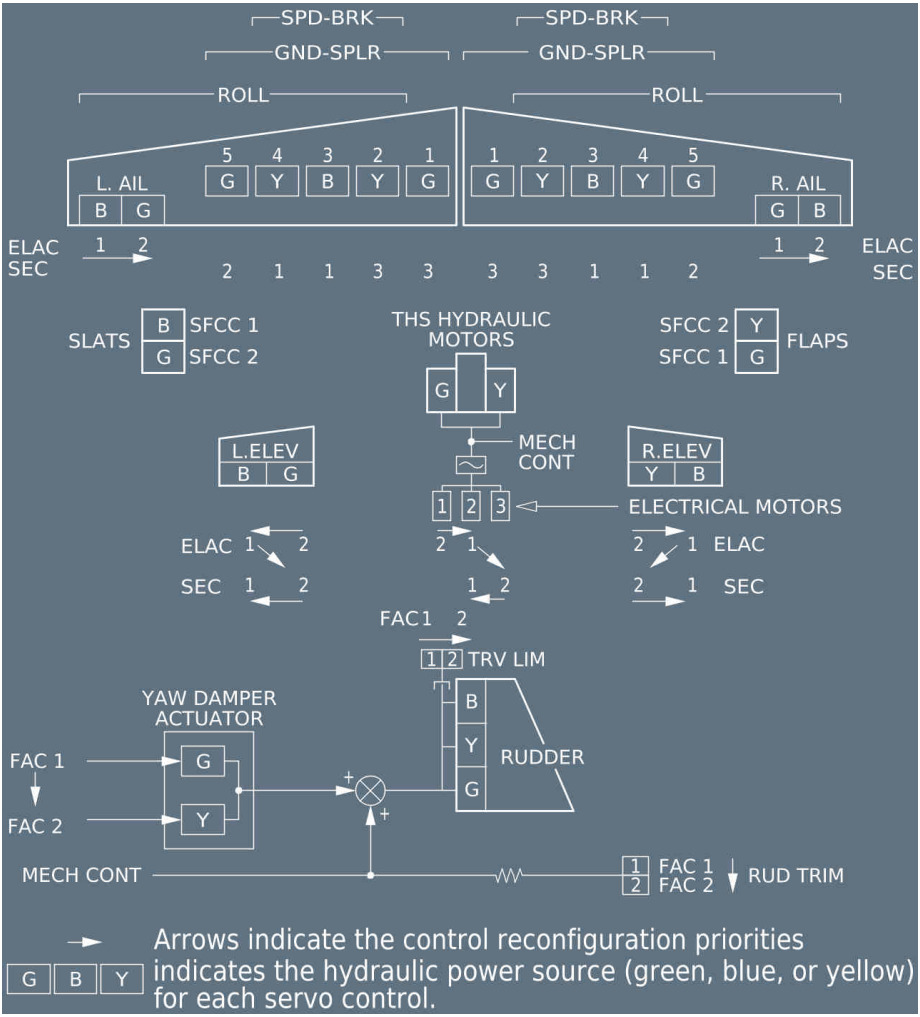
GENERAL ARCHITECTURE

Ident.: DSC-27-10-20-00001048.0002001 / 13 JAN 14
Applicable to: ALL

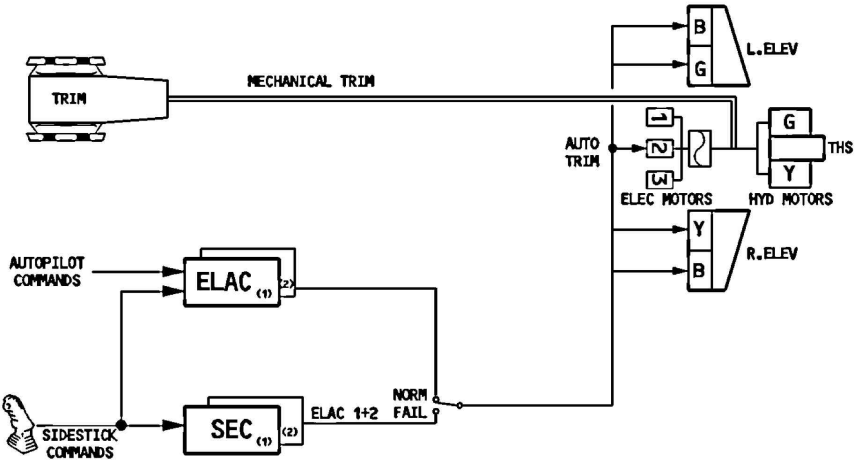


PITCH CONTROL

Applicable to: ALL

Ident.: DSC-27-10-20-A-00001049.0001001 / 21 MAR 16

GENERAL



Two elevators and the Trimmable Horizontal Stabilizer (THS) control the aircraft in pitch. The maximum elevator deflection is 30 ° nose up, and 17 ° nose down. The maximum THS deflection is 13.5 ° nose up, and 4 ° nose down.

Ident.: DSC-27-10-20-A-00001050.0001001 / 21 MAR 16

ELECTRICAL CONTROL

- In normal operations, ELAC2 controls the elevators and the horizontal stabilizer, and the green and yellow hydraulic jacks drive the left and right elevator surfaces respectively.
  The THS is driven by N° 1 of three electric motors.
- If a failure occurs in ELAC2, or in the associated hydraulic systems, or with the hydraulic jacks, the system shifts pitch control to ELAC1. ELAC1 then controls the elevators via the blue hydraulic jacks and controls the THS via the N° 2 electric motor.
- If neither ELAC1 nor ELAC2 is available, the system shifts pitch control either to SEC1 or to SEC2, (depending on the status of the associated circuits), and to THS motor N° 2 or N° 3.

In case of failure, the actuators are reconfigured, *Refer to DSC-27-10-20 Pitch Control - Schematic*.

Ident.: DSC-27-10-20-A-00001051.0001001 / 21 MAR 16

MECHANICAL CONTROL

Mechanical control of the THS is available from the pitch trim wheel at any time, if either the green or yellow hydraulic system is functioning.
Mechanical control from the pitch trim wheel has priority over electrical control.

Ident.: DSC-27-10-20-A-00001053.0002001 / 21 MAR 16

ACTUATION

ELEVATORS

- Two electrically-controlled hydraulic servojacks drive each elevator.

  Each servojack has three control modes :
  - Active : The jack position is electrically-controlled.
  - Damping : The jack follows surface movement.
  - Centering : The jack is hydraulically retained in the neutral position.

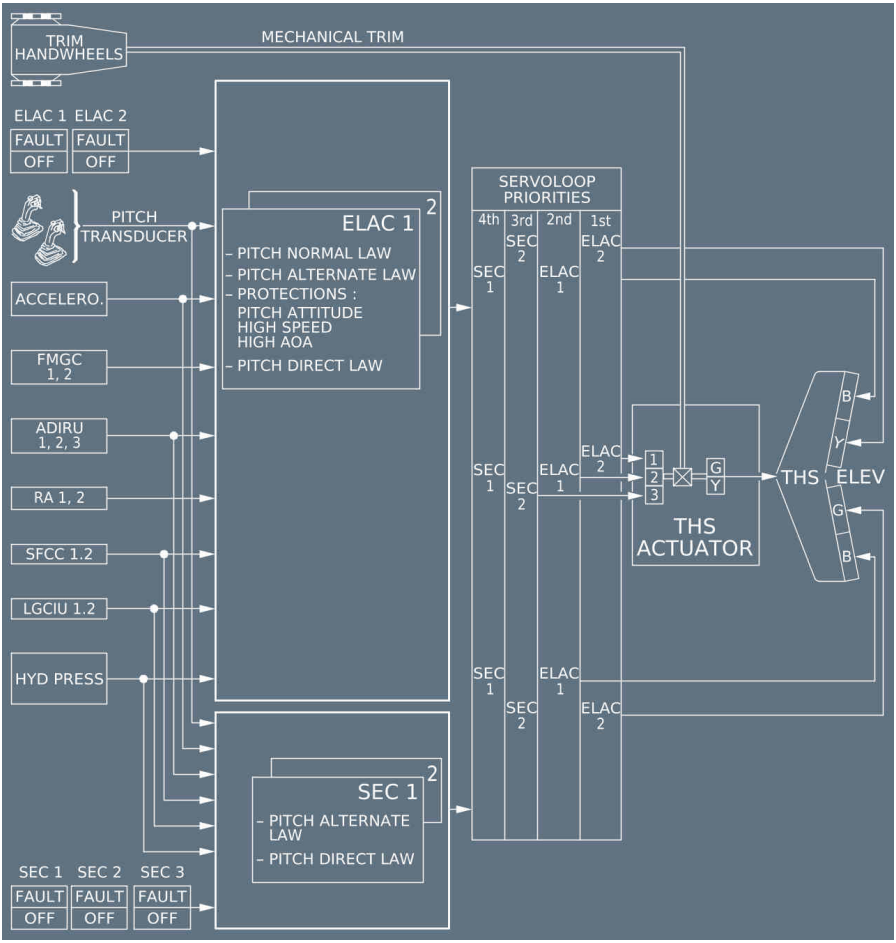
- In normal operation :
  - One jack is in active mode.
  - The other jack is in damping mode.
  - Some maneuvers cause the second jack to become active.
- If the active servojack fails, the damped one becomes active, and the failed jack is automatically switched to damping mode.
- If neither jack is being controlled electrically, both are automatically switched to the centering mode.
- If neither jack is being controlled hydraulically, both are automatically switched to damping mode.
- If one elevator fails, the deflection of the remaining elevator is limited in order to avoid putting excessive asymmetric loads on the horizontal tailplane or rear fuselage.

STABILIZER

- A screwjack driven by two hydraulic motors drives the stabilizer.
- The two hydraulic motors are controlled by :
  - One of three electric motors, or
  - The mechanical trim wheel.

Ident.: DSC-27-10-20-A-00001054.0001001 / 09 OCT 12

SCHEMATIC

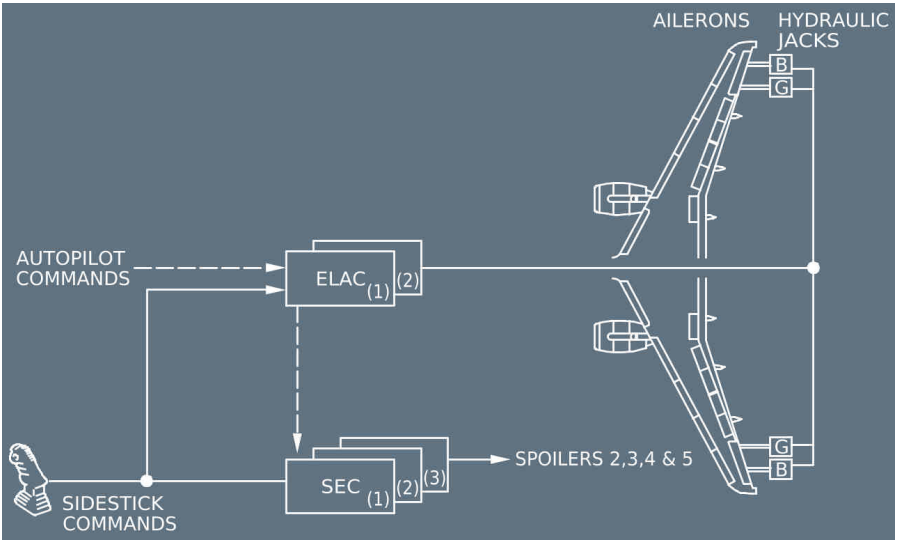


ROLL CONTROL

Ident.: DSC-27-10-20-B-00001055.0005001 / 14 OCT 14

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

GENERAL



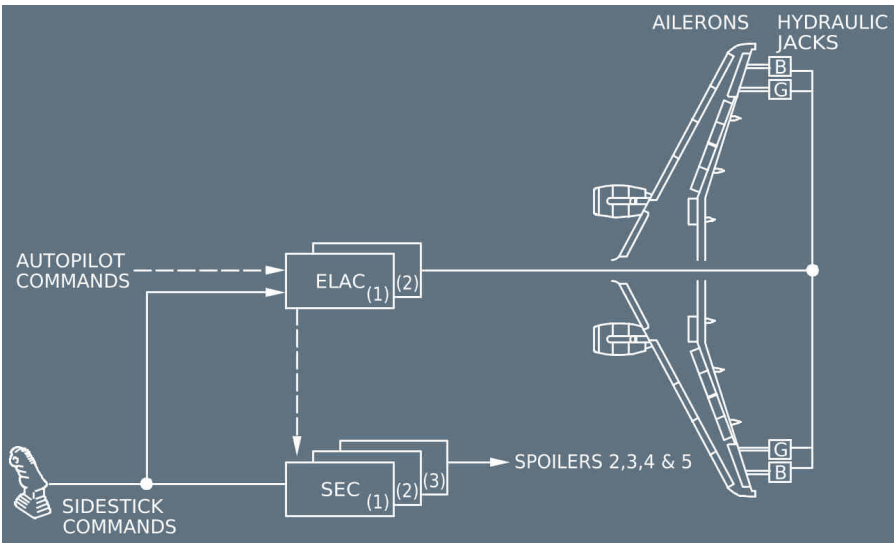
One aileron and four spoilers on each wing control the aircraft about the roll axis.
The maximum deflection of the ailerons is 25 °.
The ailerons extend 10 ° down when the flaps are extended (aileron droop).

The maximum deflection of the spoilers is:
- 35 ° for spoilers 2, 4, and 5
- 7 ° for spoilers 3.

Ident.: DSC-27-10-20-B-00001055.0003001 / 09 OCT 12

2 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

GENERAL



One aileron and four spoilers on each wing control the aircraft about the roll axis.
The maximum deflection of the ailerons is 25 °.
The ailerons extend 5 ° down when the flaps are extended (aileron droop).
The maximum deflection of the spoilers is 35 °.

Ident.: DSC-27-10-20-B-00001056.0001001 / 21 MAR 16
Applicable to: ALL

ELECTRIC CONTROL

- The ELAC 1 normally controls the ailerons.
  If ELAC1 fails, the system automatically transfers aileron control to ELAC2.
  If both ELACs fail, the ailerons revert to the damping mode.
- SEC3 controls the N° 2 spoilers, SEC1 the N° 3 and 4 spoilers, and SEC2 the N° 5 spoilers.
  If a SEC fails, the spoilers it controls are automatically retracted.

Ident.: DSC-27-10-20-B-00001057.0001001 / 21 MAR 16
Applicable to: ALL

ACTUATION

AILERONS

Each aileron has two electrically controlled hydraulic servojacks.
One of these servojacks per aileron operates at a time.

Each servojack has two control modes :

Active : Jack position is controlled electrically
Damping : Jack follows surface movement.

The system automatically selects damping mode, if both ELACs fail or in the event of blue and green hydraulic low pressure.

SPOILERS

A servojack positions each spoiler. Each servojack receives hydraulic power from either the green, yellow, or blue hydraulic system, controlled by the SEC1, 2 or 3 (*Refer to DSC-27-10-20 General Architecture* diagram).
The system automatically retracts the spoilers to their zero position, if it detects a fault or loses electrical control.
If the system loses hydraulic pressure, the spoiler retains the deflection it had at the time of the loss, or a lesser deflection if aerodynamic forces push it down.
When a spoiler surface on one wing fails, the symmetric one on the other wing is inhibited.

SPEED BRAKES AND GROUND SPOILERS

Ident.: DSC-27-10-20-C-00001058.0011001 / 26 MAY 14
3 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

SPEED BRAKE CONTROL

The pilot controls the speedbrakes with the speed brake lever.
The speedbrakes are actually spoilers 2, 3 and 4.

Speedbrake extension is inhibited, if:
- SEC 1 and SEC 3 both have faults, or
- An elevator (L or R) has a fault, or
- Angle-of-attack protection is active, or
- Flaps are in configuration FULL, or
- Thrust levers above MCT position, or
- Alpha Floor activation.

If an inhibition occurs when the speedbrakes are extended, they retract automatically and stay retracted until the inhibition condition disappears and the pilots reset the lever. (The speedbrakes can be extended again 10 s or more after the lever is reset).
When a speedbrake surface on one wing fails, the symmetric one on the other wing is inhibited.

Note: *1. For maintenance purposes, the speedbrake lever will extend the N° 1 surfaces when the aircraft is stopped on ground, whatever the slat/flap configuration.*
2. When the aircraft is flying faster than 315 kt or M 0.75 with the autopilot engaged, the speedbrake retraction rate is reduced (Retraction from FULL to in takes about 25 s).

L3 The maximum speedbrake deflection in manual flight is:
40 ° for spoilers 3 and 4
20 ° for spoiler 2.

The maximum speedbrake deflection with the autopilot engaged is:
25 ° for spoilers 3 and 4
12.5 ° for spoiler 2.

The maximum speedbrake deflection achievable with the autopilot engaged is obtained by setting the speedbrake lever to the half way position. On setting the position of the speedbrake lever from half to full, no increase in speedbrake deflection will be achieved.
For these surfaces (which perform both roll and speedbrake functions) the roll function has priority. When the sum of a roll order and a simultaneous speedbrake order on one surface is greater than the maximum deflection available in flight, the same surface on the other wing is retracted until the difference between the two surfaces is equal to the roll order.

Ident.: DSC-27-10-20-C-00001058.0013001 / 26 MAY 14
4 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The pilot controls the speedbrakes with the speedbrake lever.
The speedbrakes are actually spoilers 2, 3 and 4.

Speedbrake extension is inhibited, if:
- SEC1 and SEC3 both have faults, or
- An elevator (L or R) has a fault, or
- Angle-of-attack protection is active, or
- Flaps are in configuration 3 or FULL, or
- Thrust levers above MCT position, or
- Alpha Floor activation.

If an inhibition occurs when the speedbrakes are extended, they automatically retract and remain retracted until the inhibition condition disappears and the pilots reset the lever. (The speedbrakes can be extended again, 10 s or more after the lever is reset).
When a speedbrake surface on one wing fails, the symmetric one on the other wing is inhibited.

Note: *1. For maintenance purposes, the speedbrake lever will extend the N° 1 surfaces when the aircraft is stopped on ground, regardless of the slat/flap configuration.*
2. When the aircraft is flying faster than 315 kt or M 0.75 with the autopilot engaged, the speedbrake retraction rate is reduced (Retraction from FULL to in takes about 25 s).

L3 The maximum deflection for the spoilers 2, 3 and 4 is 25 °.
For these surfaces (which perform both roll and speedbrake functions) the roll function has priority. When the sum of a roll order and a simultaneous speedbrake order on one surface is greater than the maximum deflection available in flight, the same surface on the other wing is retracted until the difference between the two surfaces is equal to the roll order.

Ident.: DSC-27-10-20-C-00017787.0001001 / 17 OCT 17
Applicable to: MSN 03750, 04393

GROUND SPOILER CONTROL

The ground spoiler function involves all spoilers (full extension) and ailerons (Aileron Anti Droop ◁).
When a ground spoiler surface on one wing fails, the symmetric ground spoiler surface on the other wing is inhibited.

ARMING

The pilot arms the ground spoilers by pulling the speedbrake control lever up into the armed position.

FULL EXTENSION – REJECTED TAKEOFF PHASE

- If the ground spoilers are armed and the wheel speed exceeds 72 kt, the ground spoilers will automatically extend as soon as both thrust levers are reset to idle.
- If the ground spoilers are not armed and the wheel speed exceeds 72 kt, the ground spoilers will automatically extend as soon as reverse is selected on one engine (the other thrust lever remains at idle).

FULL EXTENSION - LANDING PHASE

- If the ground spoilers are armed and all thrust levers are at idle, the ground spoilers will automatically extend as soon as both main landing gears have touched down.
- If the ground spoilers are not armed and both main landing gears have touched down, the ground spoilers will automatically extend as soon as reverse is selected on one engine (the other thrust lever remains at idle).

PARTIAL EXTENSION

The ground spoilers partially extend when reverse is selected on at least one engine (other engine at idle), and one main landing gear strut is compressed. This partial extension,

by decreasing the lift, eases the compression of the second main landing gear strut, and consequently leads to full ground spoiler extension.

RETRACTION

The ground spoilers retract:

- After landing,
- After a rejected takeoff, when the ground spoilers are disarmed.
- During a touch and go, when at least one thrust lever is advanced above 20 °.

Ident.: DSC-27-10-20-C-00017787.0002001 / 17 OCT 17

5 **Applicable to: MSN 01767-03618, 03782-04384, 04394-09063**

GROUND SPOILER CONTROL

The ground spoiler function involves all spoilers (full extension) and ailerons (Aileron Anti Droop ◁).

When a ground spoiler surface on one wing fails, the symmetric ground spoiler surface on the other wing is inhibited.

ARMING

The pilot arms the ground spoilers by pulling the speedbrake control lever up into the armed position.

FULL EXTENSION – REJECTED TAKEOFF PHASE

- If the ground spoilers are armed and the wheel speed exceeds 72 kt, the ground spoilers will automatically extend as soon as both thrust levers are reset to idle.
- If the ground spoilers are not armed and the wheel speed exceeds 72 kt, the ground spoilers will automatically extend as soon as reverse is selected on one engine (the other thrust lever remains at idle).

FULL EXTENSION - LANDING PHASE

The ground spoilers will automatically extend when the following conditions are met:

- Speed brake lever not in the retracted position or ground spoilers armed and:
  - Both main landing gears on ground,
  - Both thrust levers at or below Idle position, or Reverse selected on at least one engine (and the other thrust lever below MCT position).
- Speed brake lever in the retracted position but ground spoilers not armed and:
  - Both main landing gears on ground,
  - Reverse selected on at least one engine (and the other thrust lever below MCT position).

The ailerons are fully-extended (Aileron Anti Droop ◁✻), provided one aileron servocontrol is available on each side, when:

- The ground spoilers are fully extended
- Flaps are not in clean CONF
- Pitch attitude is lower than 2.5 °
- Flying manually
- In normal law only.

PARTIAL EXTENSION

In order to accelerate the full spoiler extension, the Phased Lift Dumping (PLD) function allows the ground spoilers to deploy with a reduced deflection when the following conditions are met:

- Speed brake lever not in the retracted position or ground spoilers armed and:
  - One main landing gear on ground,
  - Both thrust levers at or below Idle position.
- Speed brake lever in the retracted position but ground spoilers not armed and:
  - One main landing gear on ground,
  - Reverse selected on at least one engine (and the other thrust lever below MCT position).

In order to reduce the bounce severity at landing in the case of an inappropriate thrust lever handling during flare, ground spoilers are also partially deployed when the following conditions are met:

- Ground spoilers armed,
- Both main landing gears on ground,
- Both thrust levers at or below the Climb position.

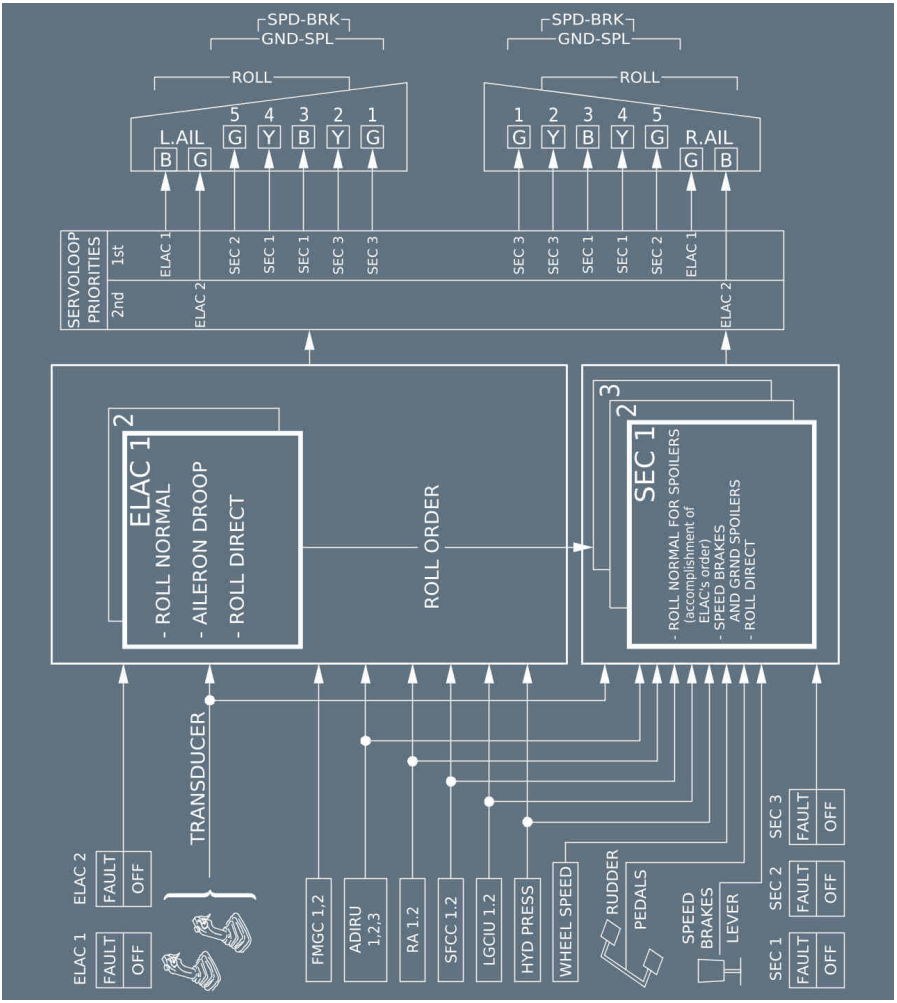
RETRACTION

The ground spoilers retract:

- After landing,
- After a rejected takeoff, when the ground spoilers are disarmed.
- During a touch and go, when at least one thrust lever is advanced above 20 °.

Ident.: DSC-27-10-20-C-00001060.0002001 / 22 MAY 12
Applicable to: ALL

ROLL CONTROL - SCHEMATIC

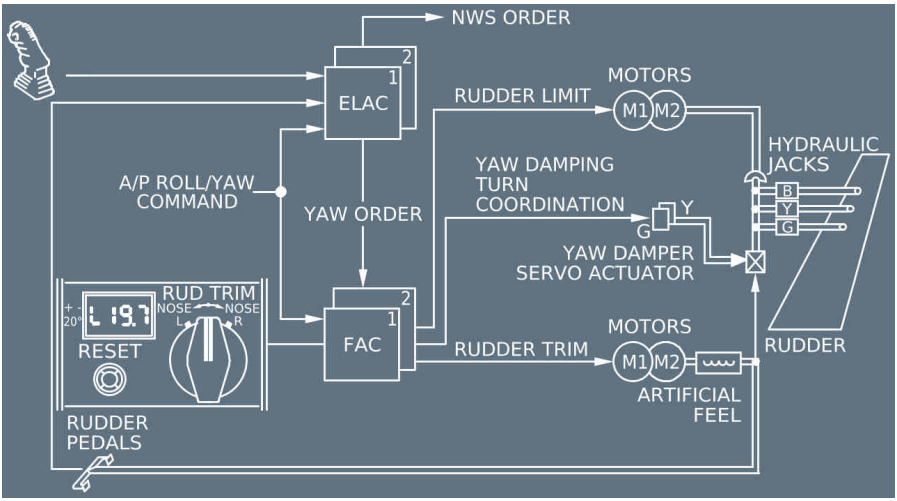


YAW CONTROL

Applicable to: ALL

Ident.: DSC-27-10-20-D-00001061.0001001 / 09 OCT 12

GENERAL



One rudder surface controls yaw.

Ident.: DSC-27-10-20-D-00001062.0001001 / 21 MAR 16

ELECTRICAL RUDDER CONTROL

The yaw damping and turn coordination functions are automatic.
The ELACs compute yaw orders for coordinating turns and damping yaw oscillations, and transmit them to the FACs.

Ident.: DSC-27-10-20-D-00001063.0001001 / 21 MAR 16

MECHANICAL RUDDER CONTROL

The pilots can use conventional rudder pedals to control the rudder.

Ident.: DSC-27-10-20-D-00001064.0001001 / 21 MAR 16

RUDDER ACTUATION

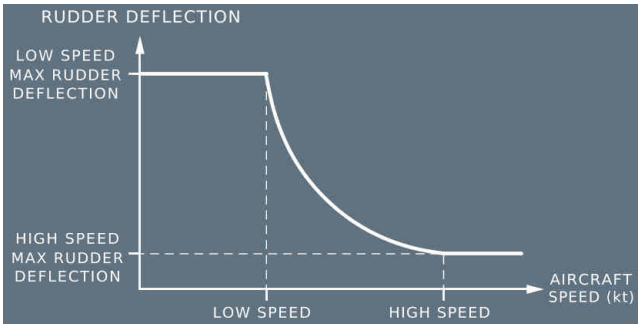
Three independent hydraulic servojacks, operating in parallel, actuate the rudder. In automatic operation (yaw damping, turn coordination) a green servo actuator drives all three servojacks. A yellow servo actuator remains synchronized and takes over if there is a failure.

There is no feedback to the rudder pedals from the yaw damping and turn coordination functions.

Ident.: DSC-27-10-20-D-00001065.0003001 / 21 MAR 16

RUDDER TRAVEL LIMIT

The maximum rudder travel deflection gradually reduces as the speed increases, to avoid structural loads:



In the case of a failure that causes loss of the Rudder Travel limit system, the rudder deflection limit stops at the last value reached. At slats extension, full rudder travel authority is recovered.
In all cases, the available rudder deflection provides sufficient yaw control within the entire flight envelope. This includes the case of maximum asymmetric thrust.

Ident.: DSC-27-10-20-D-00015506.0001001 / 21 MAR 16

RELATIONSHIP BETWEEN SIDESLIP/RUDDER DEFLECTION/RUDDER PEDAL TRAVEL

Regardless of the aircraft speed, therefore the maximum rudder deflection, full rudder pedal travel remains available. However, except at low speed, maximum rudder deflection is achieved before reaching maximum rudder pedal travel.

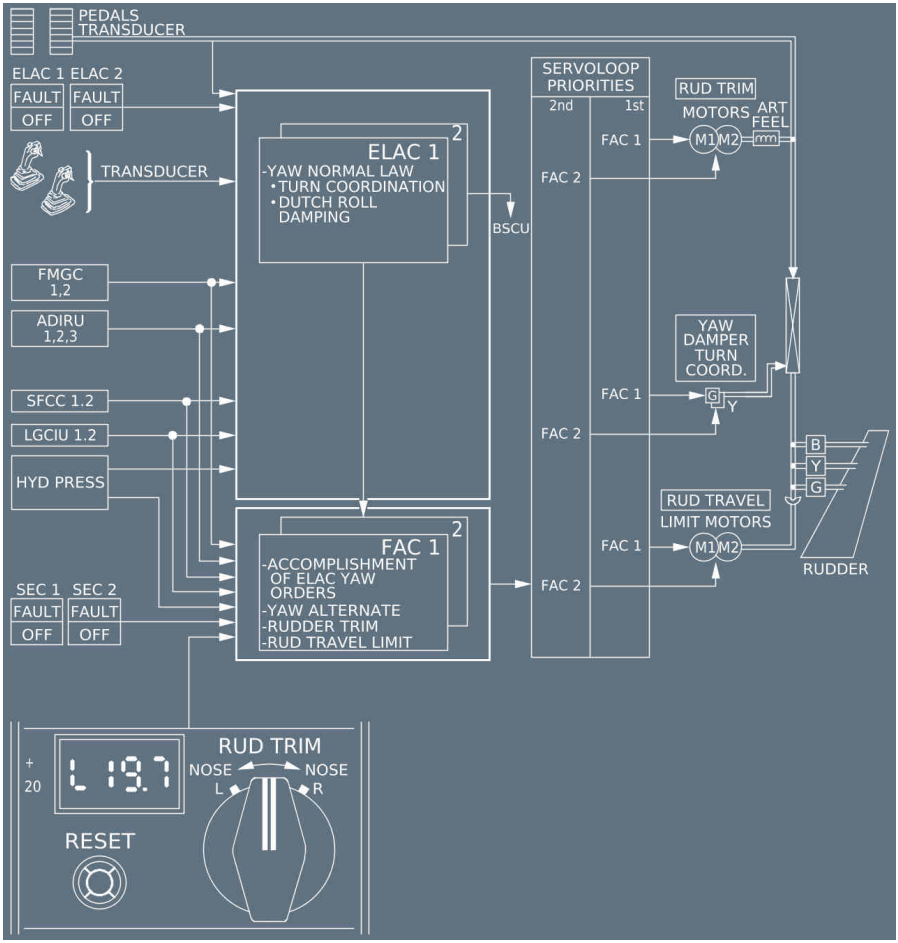
Ident.: DSC-27-10-20-D-00001066.0002001 / 21 MAR 16

RUDDER TRIM

The two electric motors that position the artificial feel unit also trim the rudder. In normal operation, motor N° 1 (controlled by FAC1), powers the trim, and FAC2 with motor N° 2 remains synchronized as a backup.
In manual flight, the pilot can apply rudder trim via the rotary RUD TRIM switch on the pedestal. The pilot can use a button on the RUD TRIM panel to reset the rudder trim to zero.

Note: *With the autopilot engaged, the FMGC computes the rudder trim orders. The rudder trim rotary switch and the rudder trim reset pushbutton are not active.*

SCHEMATIC


PEDALS TRANSDUCER
ELAC 1 ELAC 2
FAULT
OFF
TRANSDUCER
FMGC 1,2
ADIRU 1,2,3
SFCC 1.2
LGCIU 1.2
HYD PRESS
SEC 1 SEC 2
ELAC 1
-YAW NORMAL LAW
• TURN COORDINATION
• DUTCH ROLL DAMPING
FAC 1
-ACCOMPLISHMENT OF ELAC YAW ORDERS
-YAW ALTERNATE
-RUDDER TRIM
-RUD TRAVEL LIMIT
BSCU
SERVOLOOP PRIORITIES
2nd
1st
FAC 1
FAC 2
RUD TRIM
MOTORS
ART FEEL
M1
M2
YAW DAMPER TURN COORD.
G
Y
B
RUD TRAVEL LIMIT MOTORS
RUDDER
RUD TRIM
NOSE L
NOSE R
RESET

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General

GENERAL

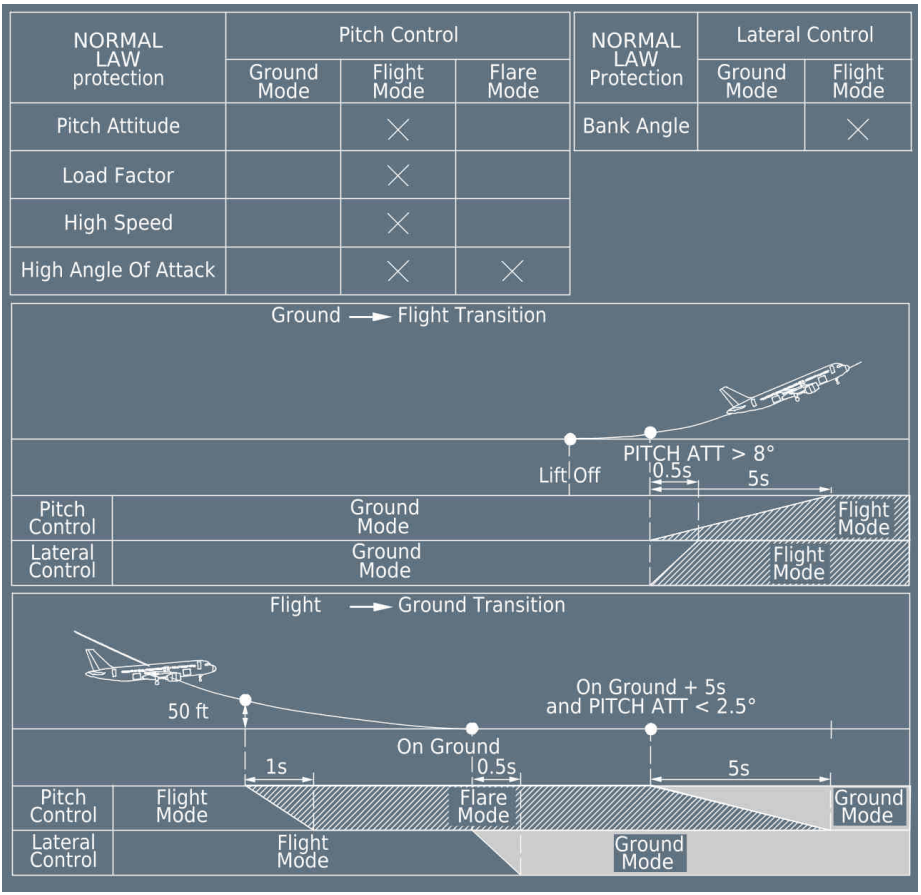
Ident.: DSC-27-20-10-10-00001068.0001001 / 17 MAR 17
Applicable to: ALL

Flight control normal law covers:

- three-axis control
- flight envelope protection
- alleviation of maneuver loads

NORMAL LAW protection	Pitch Control		
	Ground Mode	Flight Mode	Flare Mode
Pitch Attitude		X	
Load Factor		X	
High Speed		X	
High Angle Of Attack		X	X

NORMAL LAW Protection	Lateral Control	
	Ground Mode	Flight Mode
Bank Angle		X



One of the PF's primary tasks is to maintain the aircraft within the limits of the normal flight envelope. However, some circumstances, due to extreme situations or aircraft mishandling, may provoke the violation of these limits.
Despite system protections, the PF must not exceed deliberately the normal flight envelope. In addition, these protections are not designed to be structural limit protections (e.g. opposite rudder pedal inputs). Rather, they are designed to assist the PF in emergency and stressful situations, where only instinctive and rapid reactions will be effective.

Protections are intended to:

- Provide full authority to the PF to consistently achieve the best possible aircraft performance in extreme conditions
- Reduce the risks of overcontrolling, or overstressing the aircraft
- Provide PF with an instinctive and immediate procedure to ensure that the PF achieves the best possible result.

Pitch Control

GROUND MODE

Ident.: DSC-27-20-10-20-00001069.0001001 / 20 SEP 13
Applicable to: ALL

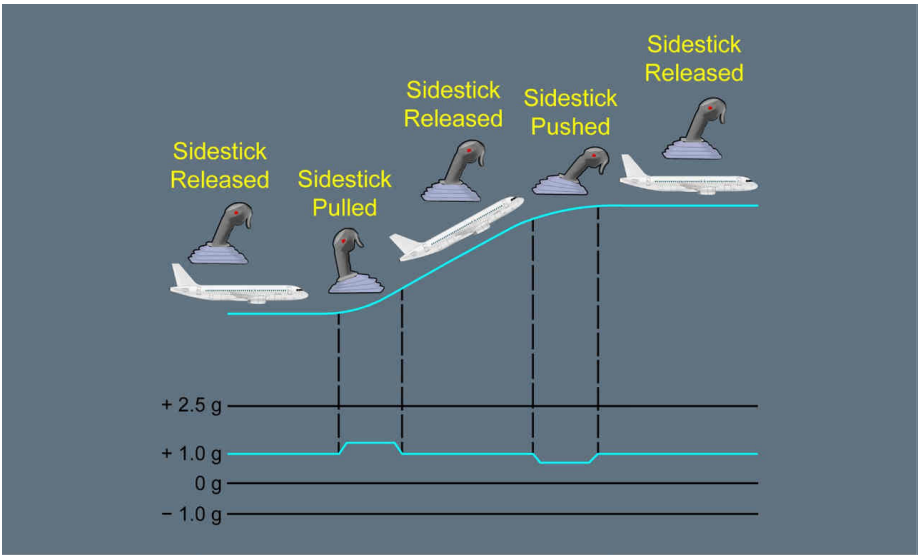
Ground mode is a direct relationship between sidestick deflection and elevator deflection, without auto trim.
It automatically sets the trimmable horizontal stabilizer (THS) at 0 ° (inside the green band).
A setting that the pilot enters manually to adjust for CG has priority for takeoff.
When the aircraft reaches 75 kt during the takeoff roll, the system reduces the maximum up elevator deflection from 30 ° to 20 °.

FLIGHT MODE

Ident.: DSC-27-20-10-20-00001070.0001001 / 17 MAR 17
1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The normal-law flight mode is a load-factor-demand mode with automatic trim and protection throughout the flight envelope.
Following normal law, the sidestick controllers set the elevator and THS to maintain load factor proportional to stick deflection and independent of speed.
With the sidestick at neutral, wings level, the system maintains 1 g in pitch (corrected for pitch attitude), and there is no need for the pilot to trim by changing speed or configuration. Therefore pilots only need to perform minor corrections on the sidestick, if the aircraft deviates from its intended flight path. If the pilot senses an overcontrol, the sidestick should be released.

Airbus Pitch Characteristic



Pitch trim is automatic both in manual mode and when the autopilot is engaged. In normal turns (up to 33 °C of bank) the pilot does not have to make any pitch corrections once the turn is established. The flight mode is active from takeoff to landing, and follows the logic shown schematically (*Refer to DSC-27-20-10-10 General*).

Automatic pitch trim freezes in the following situations:
- The pilot enters a manual trim order.
- The radio height is below 50 ft (100 ft with autopilot engaged).
- The load factor goes below 0.5 g.
- The aircraft is under high-speed or high-Mach protection.

When angle-of-attack protection is active, the THS setting is limited between the setting at the aircraft's entry into this protection and 3.5 ° nose down. (Neither the pilot nor the system can apply additional nose-up trim).
Similarly, when the load factor is higher than 1.25 g or when the aircraft exceeds 33 ° of bank, the THS setting is limited to values between the actual setting and 3.5 ° nose down.

CONTROL WITH AUTOPILOT ENGAGED

- The ELACs and SECs limit what the autopilot can order.
- The pilot has to overcome a restraining force in order to move the sidestick when the autopilot is engaged. If he overcomes this force and does move the sidestick, he disconnects the autopilot.

- The pilot can also disconnect the autopilot by pushing on the rudder pedals (10 ° out of trim), or by moving the pitch trim wheel beyond a certain threshold.
- All protections of normal laws remain effective except pitch attitude protection.

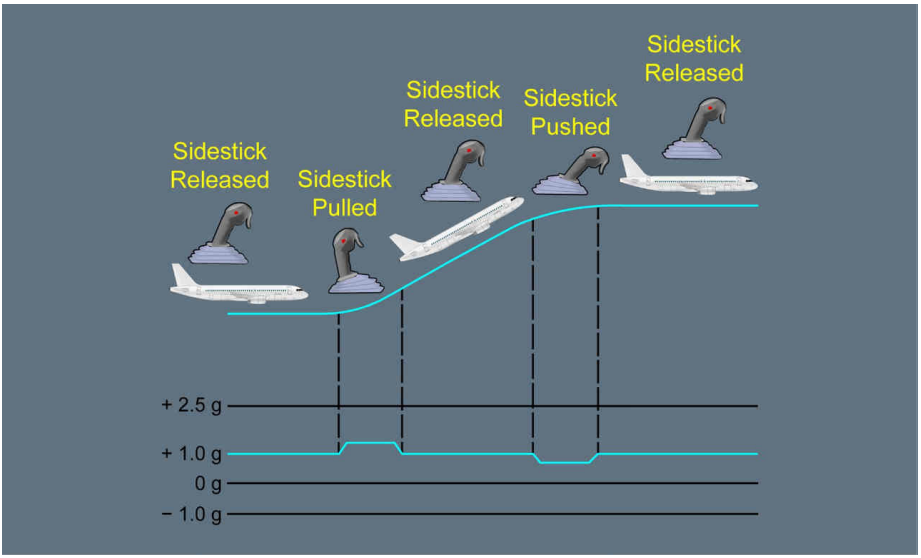
FLIGHT MODE

Ident.: DSC-27-20-10-20-00001070.0003001 / 17 MAR 17

2 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The normal-law flight mode is a load-factor-demand mode with automatic trim and protection throughout the flight envelope.
Following normal law, the sidestick controllers set the elevator and THS to maintain load factor proportional to stick deflection and independent of speed.
With the sidestick at neutral, wings level, the system maintains 1 g in pitch (corrected for pitch attitude), and there is no need for the pilot to trim by changing speed or configuration. Therefore pilots only need to perform minor corrections on the sidestick, if the aircraft deviates from its intended flight path. If the pilot senses an overcontrol, the sidestick should be released.
Pitch trim is automatic both in manual mode and when the autopilot is engaged. In normal turns (up to 33 ° of bank) the pilot does not have to make any pitch corrections once the turn is established.
The flight mode is active from takeoff to landing, and follows the logic shown schematically (*Refer to DSC-27-20-10-10 General*).

Airbus Pitch Characteristic



Automatic pitch trim freezes in the following situations:
- The pilot enters a manual trim order.
- The radio height is below 50 ft (100 ft with autopilot engaged).
- The load factor goes below 0.5 g.

When angle-of-attack protection is active, the THS setting is limited between the setting at the aircraft's entry into this protection and 3.5 ° nose down. (Neither the pilot nor the system can apply additional nose-up trim).
Similarly, when the load factor is higher than 1.25 g or when the aircraft exceeds 33 ° of bank, the THS setting is limited to values between the actual setting and 3.5 ° nose down.
When High Speed or High Mach Protection is active, the THS Setting is limited between the setting at the aircraft's entry into this protection and 11 ° nose-up.

CONTROL WITH AUTOPILOT ENGAGED

- The ELACs and SECs limit what the autopilot can order.
- The pilot has to overcome a restraining force in order to move the sidestick when the autopilot is engaged. If he overcomes this force, he disconnects the autopilot.
- The pilot can also disconnect the autopilot by pushing on the rudder pedals (10 ° out of trim), or by moving the pitch trim wheel beyond a certain threshold.
- All protections of normal laws remain effective except pitch attitude protection.

FLARE MODE

Ident.: DSC-27-20-10-20-00001071.0005001 / 14 DEC 18

3 **Applicable to: MSN 08587, 08655, 08710, 08768, 09063**

When passing 100 ft RA, the THS is frozen and the normal flight mode changes to flare mode as the aircraft descends to land. The flare mode is essentially a direct stick-to-elevator law without auto trim, with some damping provided by load factor and pitch rate feedback. The flare law provides full elevator authority.
The flare law has no compensation of the ground effect nor the thrust effect.

FLARE MODE

Ident.: DSC-27-20-10-20-00001071.0001001 / 21 MAR 16

4 **Applicable to: MSN 01767-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

When the aircraft passes 50 ft RA, the THS is frozen and the normal flight mode changes to flare mode as the aircraft descends to land. Flare mode is essentially a direct stick-to-elevator relationship (with some damping provided by the load factor and the pitch rate feedbacks).
The system memorizes the aircraft's attitude at 50 ft, and it becomes the initial reference for pitch attitude control.

As the aircraft descends through 30 ft, the system begins to reduce the pitch attitude to -2 °nose down over a period of 8 s. Consequently, to flare the aircraft, a gentle nose-up action by the pilot is required.

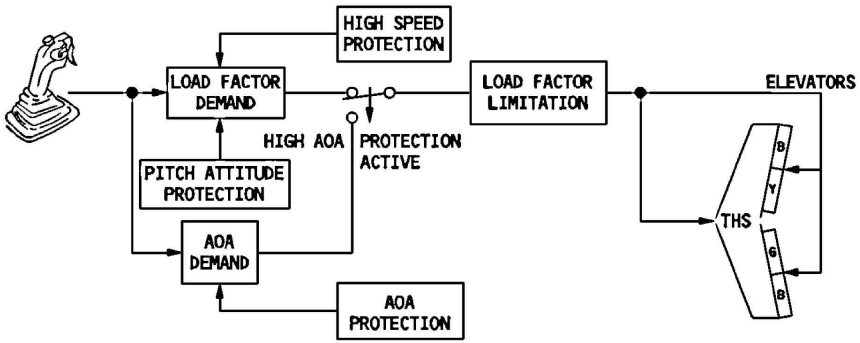
PROTECTIONS

Ident.: DSC-27-20-10-20-A-00001072.0001001 / 21 MAR 16
Applicable to: ALL

GENERAL

The normal law protects the aircraft throughout the flight envelope, as follows :

- load factor limitation
- pitch attitude protection
- high-angle-of-attack (AOA) protection
- high-speed protection.



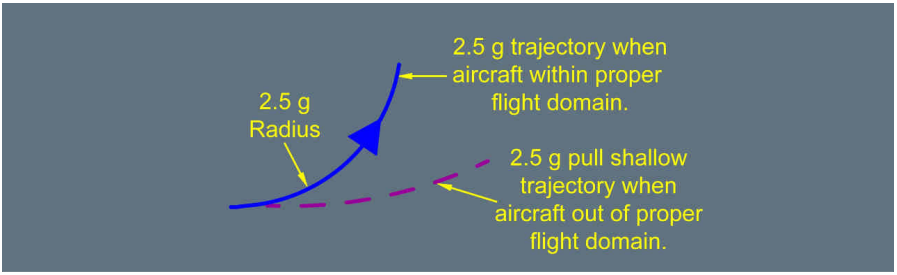
Ident.: DSC-27-20-10-20-A-00001073.0001001 / 17 MAR 17
Applicable to: ALL

LOAD FACTOR PROTECTION

High load factors can be encountered during evasive maneuvers due to potential collisions, or CFIT …
Pulling "g" is efficient, if the resulting maneuver is really flown with this "g" number. If the aircraft is not able to fly this trajectory, or to perform this maneuver, pulling "g" will be detrimental.

The load factor is automatically limited to:
+2.5 g to -1 g for clean configuration.
+2 g to 0 for other configurations.

Airbus LOAD FACTOR PROTECTION AND SAFETY



On most commercial aircraft, the potential for an efficient 2.5 g maneuver is very remote. Furthermore, as G Load information is not continuously provided in the cockpit, airline pilots are not used to controlling this parameter. This is further evidenced by inflight experience, which reveals that: In emergency situations, initial PF reaction on a yoke or sidestick is hesitant, then aggressive.

With load factor protection, the PF may immediately and instinctively pull the sidestick full aft: The aircraft will initially fly a 2.5 g maneuver without losing time. Then, if the PF still needs to maintain the sidestick full aft stick, because the danger still exists, then the high AOA protection will take over. Load factor protection enhances this high AOA protection.

Load factor protection enables immediate PF reaction, without any risk of overstressing the aircraft.

Flight experience has also revealed that an immediate 2.5 g reaction provides larger obstacle clearance, than a hesitant and delayed high G Load maneuver (two-second delay).

Ident.: DSC-27-20-10-20-A-00001074.0001001 / 17 MAR 17
Applicable to: ALL

PITCH ATTITUDE PROTECTION

Excessive pitch attitudes, caused by upsets or inappropriate maneuvers, lead to hazardous situations:

- Too high a nose-up ▸ Very rapid energy loss
- Too low a nose-down ▸ Very rapid energy gain

Furthermore, there is no emergency situation that requires flying at excessive attitudes. For these reasons, pitch attitude protection limits pitch attitude:

- 30 ° nose up in conf 0 to 3 (progressively reduced to 25 ° at low speed).
- 25 ° nose up in conf FULL (progressively reduced to 20 ° at low speed).
- 15 ° nose down (indicated by green symbols “=” on the PFD’s pitch scale).

The flight director bars disappear from the PFD when the pitch attitude exceeds 25 ° up or 13 ° down. They return to the display when the pitch angle returns to the region between 22 ° up and 10 ° down.

Pitch attitude protection enhances high speed protection, high load factor protection, and high AOA protection.

Ident.: DSC-27-20-10-20-A-00001075.0002001 / 17 MAR 17

5 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

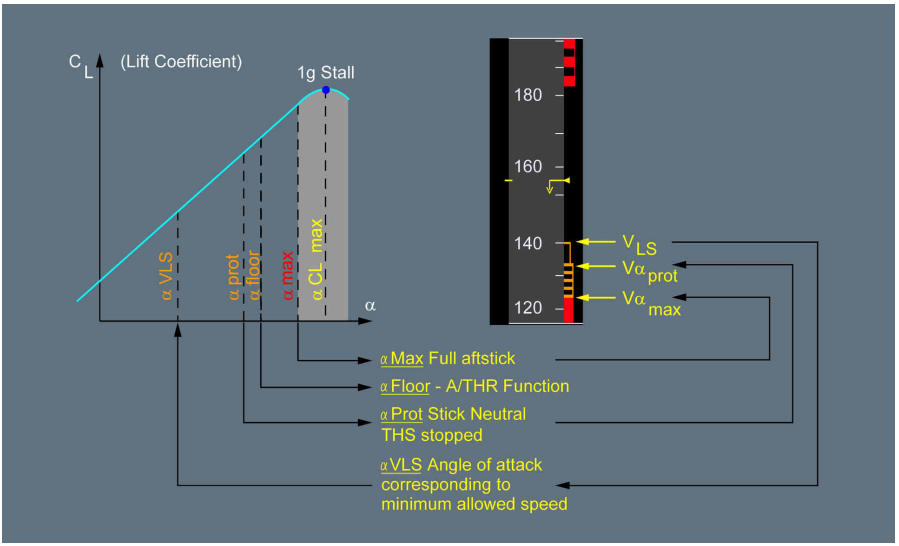
HIGH ANGLE-OF-ATTACK PROTECTION

In the normal law, the aircraft is protected against stall, in dynamic maneuvers or gusts. When the current angle-of-attack becomes greater than αPROT, the high angle-of-attack (AOA) protection activates.

Without pilot input, the F/CTL computers will maintain the AOA equal to αPROT. The AOA can be further increased by the pilot input, up to a maximum value equal to αMAX. When the High AOA protection is activated, the normal law demand is modified and the side stick input is an angle-of-attack demand, instead of a load factor demand.

The PF must not deliberately fly the aircraft in the High AOA, except for brief periods, when maximum maneuvering speed is required.

Airbus AOA Protection



Vα PROT, Vα floor, Vα MAX are mainly computed based on the AOA, and therefore they vary with configuration, weight and load factor.

Refer to DSC-22_10-50-20 Characteristic Speeds for more information.
The angle-of-attack will not exceed αMAX, even if the pilot gently pulls the sidestick all the way back. The pilot can hold full back stick, if it is needed, and the aircraft stabilizes at an angle-of-attack close to but less than the 1 g stall. When flying at αMAX, the PF can make gentle turns, if necessary. If the pilot releases the sidestick, the angle-of-attack returns to αPROT and stays there. As the aircraft enters protection at the amber and black strip (αPROT), the system inhibits further nose-up trim beyond the point already reached. The nose-down trim remains available, if the pilot pushes the stick forward.

Note: At takeoff, the αPROT is equal to the αMAX for 5 s.

This High AOA protection has priority over all other protections.
The aircraft can also enter αPROT at a high flight level, where it protects the aircraft from the buffet boundary. As at a low speed or low flight level, if the sidestick is merely released to neutral, the aircraft maintains the alpha for αPROT. This value of alpha is not the same as the value used at the low speed. Alpha for αPROT is reduced as a function of Mach, so that a typical cruise value is about 3.5 ° for the A318 and A321 aircraft, or 4.5 ° for the A319 and A320 aircraft. Therefore, the aircraft may climb with the sidestick free, when leaving a turn after entering αPROT.
If the pilot flies into αPROT, he should leave it as soon as other considerations allow, by easing forward on the sidestick to reduce alpha below the value of αPROT, while simultaneously adding power (if the αfloor has not yet been activated, or cancelled).

To deactivate the angle of attack protection, the pilot must push the sidestick:
- Greater than 8 ° forward, or,
- Greater than 0.5 ° for at least 0.5 s when α < αMAX.

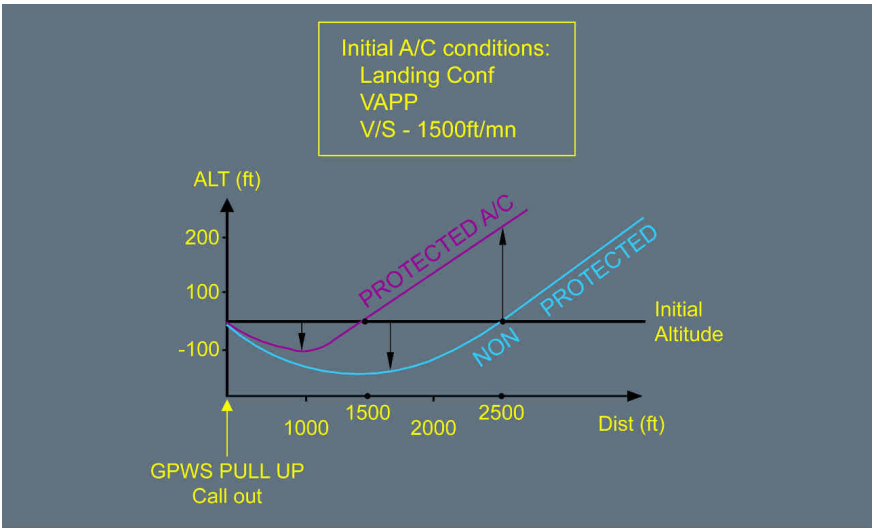
In addition, below 200 ft, the angle of attack protection is also deactivated, when:
- Sidestick deflection is less than half nose-up, and
- Actual α is less than αPROT – 2 °.

Between the αPROT and αMAX, αfloor protection may automatically set the go-around thrust. The αfloor will usually be triggered just after entering αPROT, and the go-around thrust will automatically be applied. Therefore, if the sidestick is held aft, either inadvertently or deliberately, the aircraft will start to climb at a relatively constant low airspeed. To recover a normal flight condition, the αPROT should be exited by easing forward on the sidestick, as described above, and the αfloor should be cancelled by using the disconnect pushbutton on either thrust lever as soon as a safe speed is regained. *Refer to DSC-22_40-30 Alpha-Floor Protection* for more information.

GPWS / WINDSHEAR CASE:

In the case of application of GPWS or windshear procedures, aircraft protections provide maximum lift / maximum thrust / minimum drag. Therefore, CFIT escape manoeuvres will be much more efficient.

Protected A/C Versus Non-protected A/C Go-around Trajectory



The above-illustrated are typical trajectories flown by protected or not protected aircraft, when the PF applies the escape procedure after an aural " GPWS PULL UP" alert.
The graph demonstrates the efficiency of the protection, to ensure a duck-under that is 50 % lower, a bucket-distance that is 50 % shorter, a safety margin that more than doubles (due to a quicker reaction time), and a significant altitude gain (± 250 ft). These characteristics are common to all protected aircraft, because the escape procedure is easy to achieve, and enables the PF to fly the aircraft at a constant AOA, close to the max AOA. It is much more difficult to fly the stick shaker AOA on an aircraft that is not protected.

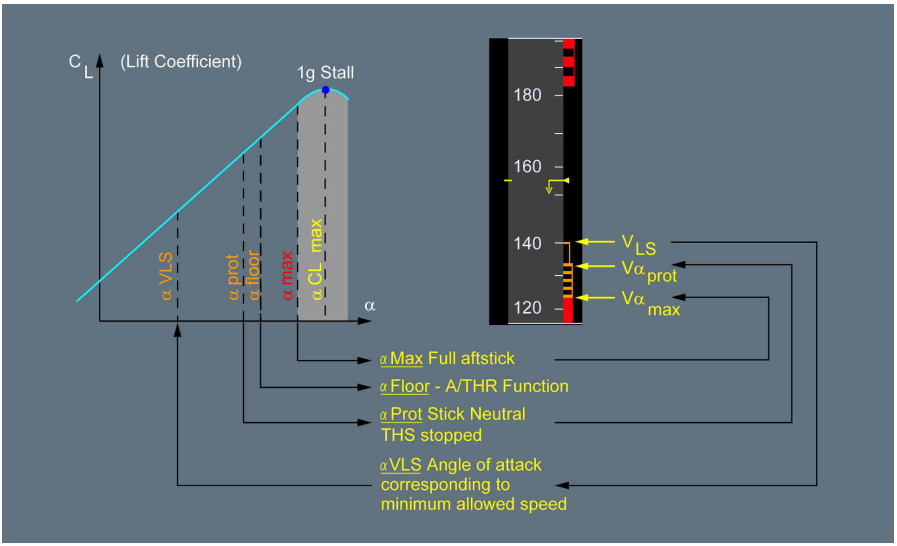
Ident.: DSC-27-20-10-20-A-00001075.0004001 / 17 MAR 17

6 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

HIGH ANGLE-OF-ATTACK PROTECTION

In the normal law, the aircraft is protected against stall, in dynamic maneuvers or gusts. When the current angle-of-attack becomes greater than αPROT, the high angle-of-attack (AOA) protection activates.
Without pilot input, the F/CTL computers will maintain the AOA equal to αPROT. The AOA can be further increased by the pilot input, up to a maximum value equal to αMAX. When the High AOA protection is activated, the normal law demand is modified and the side stick input is an angle-of-attack demand, instead of a load factor demand.
The PF must not deliberately fly the aircraft in the High AOA, except for brief periods, when maximum maneuvering speed is required.

Airbus AOA Protection



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Note: *At takeoff, the αPROT is equal to the αMAX for 5 s.*

This High AOA protection has priority over all other protections.
The aircraft can also enter αPROT at a high flight level, where it protects the aircraft from the buffet boundary. As at a low speed or low flight level, if the sidestick is merely released to neutral, the aircraft maintains the alpha for αPROT. This value of alpha is not the same as the value used at the low speed. Alpha for αPROT is reduced as a function of Mach, so that a typical cruise value is about 3.5 ° for the A318 and A321 aircraft, or 4.5 ° for the A319 and A320 aircraft. Therefore, the aircraft may climb with the sidestick free, when leaving a turn after entering αPROT.

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To deactivate the angle of attack protection, the pilot must push the sidestick:
- Greater than 8 ° forward, or,
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Between the αPROT and αMAX, αfloor protection may automatically set the go-around thrust. The αfloor will usually be triggered just after entering αPROT, and the go-around thrust will automatically be applied. Therefore, if the sidestick is held aft, either inadvertently or deliberately, the aircraft will start to climb at a relatively constant low airspeed. To recover a normal flight condition, the αPROT should be exited by easing forward on the sidestick, as described above, and the αfloor should be cancelled by using the disconnect pushbutton on either thrust lever as soon as a safe speed is regained. *Refer to DSC-22_40-30 Alpha-Floor Protection* for more information.

GPWS / WINDSHEAR CASE:

In the case of application of GPWS or windshear procedures, aircraft protections provide maximum lift / maximum thrust / minimum drag. Therefore, CFIT escape manoeuvres will be much more efficient.

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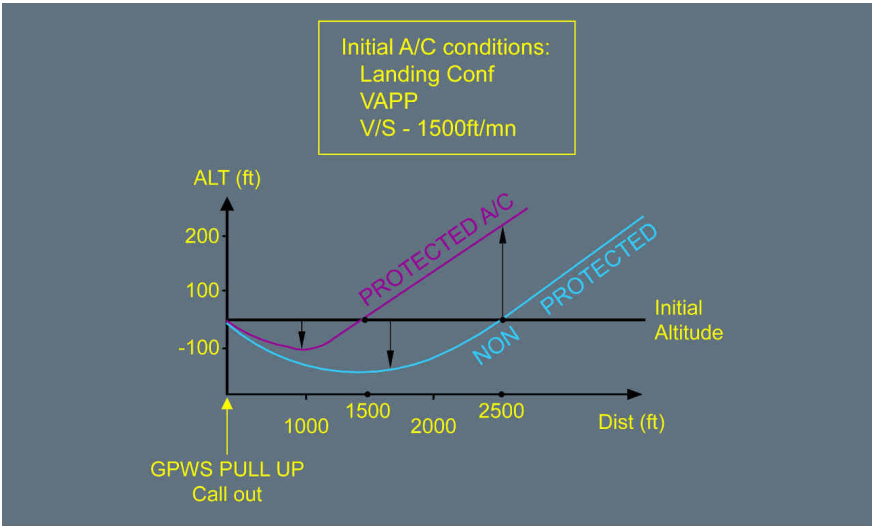

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The graph demonstrates the efficiency of the protection, to ensure a duck-under that is 50 % lower, a bucket-distance that is 50 % shorter, a safety margin that more than doubles (due to a quicker reaction time), and a significant altitude gain (± 250 ft). These characteristics are common to all protected aircraft, because the escape procedure is easy to achieve, and enables the PF to fly the aircraft at a constant AOA, close to the max AOA. It is much more difficult to fly the stick shaker AOA on an aircraft that is not protected.

Ident.: DSC-27-20-10-20-A-00001076.0001001 / 17 MAR 17

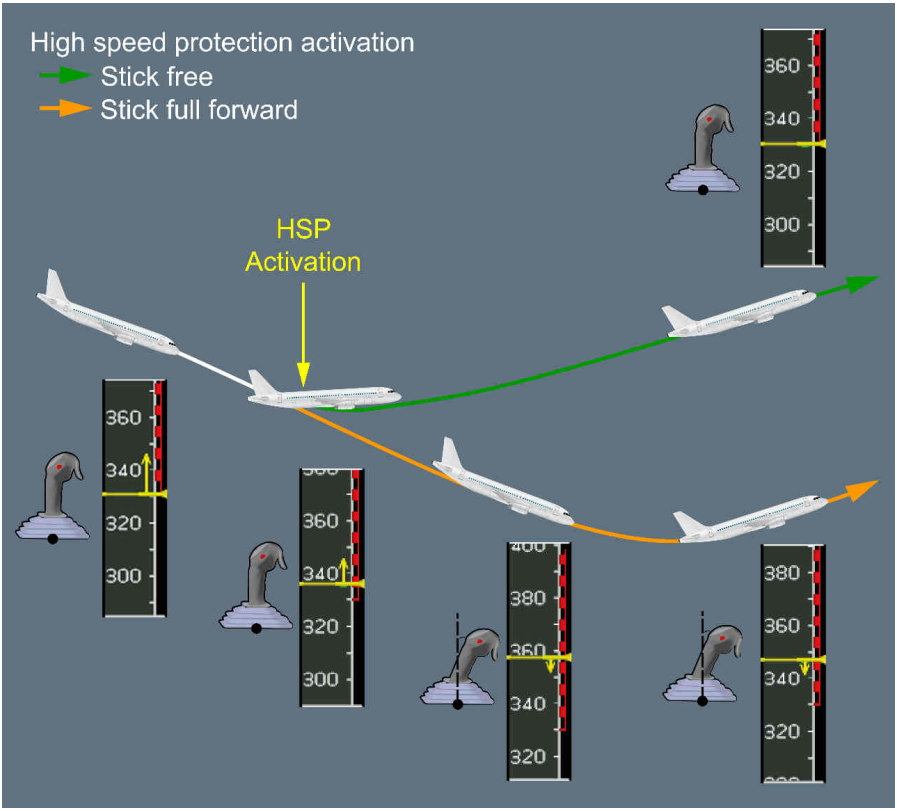
7 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

HIGH SPEED PROTECTION

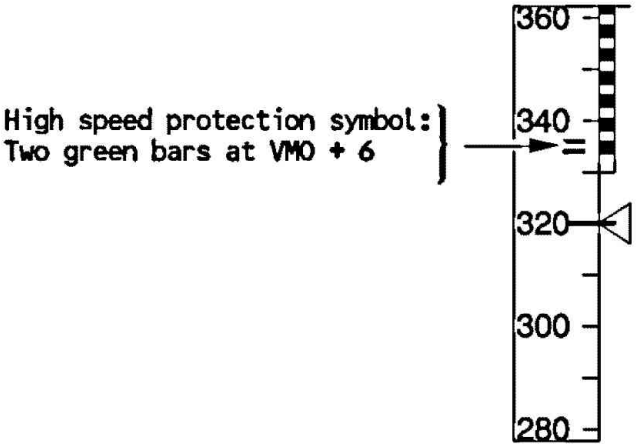
The aircraft automatically recovers, following a high speed upset. Depending on the flight conditions (high acceleration, low pitch attitude), High Speed Protection is activated at/or above VMO/MMO.
When it is activated, the pitch trim is frozen. Positive spiral static stability is introduced to 0 ° bank angle (instead of 33 ° in normal law), so that with the sidestick released, the aircraft always returns to a bank angle of 0 °. The bank angle limit is reduced from 67 ° to 40 °.
As the speed increases above VMO/MMO, the sidestick nose-down authority is progressively reduced, and a permanent nose-up order is applied to aid recovery to normal flight conditions.

Therefore, in a dive situation:

- If there is no sidestick input on the sidestick, the aircraft will slightly overshoot VMO/MMO and fly back towards the envelope.
- If the sidestick is maintained full forward, the aircraft will significantly overshoot VMO/MMO. At approximately VMO +16 / MMO +0.04, the pitch nose-down authority smoothly reduces to zero (which does not mean that the aircraft stabilizes at that speed).



The PF, therefore, has full authority to perform a high speed/steep dive escape maneuver, when required, via a reflex action on the sidestick.
High Speed Protection is deactivated, when the aircraft speed decreases below VMO/MMO, where the usual normal control laws are recovered.
The autopilot disconnects at VMO + 15 kt and MMO + 0.04.



Note: *1. The ECAM displays an "O/SPEED" warning at VMO + 4 kt and MMO + 0.006.*
2. At high altitude, this may result in activation of the angle of attack protection. Depending on the ELAC standard, the crew may have to push on the stick to get out of this protection law.

Ident.: DSC-27-20-10-20-A-00001076.0002001 / 17 MAR 17
8 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

HIGH SPEED PROTECTION

The aircraft automatically recovers, following a high speed upset. Depending on the flight conditions (high acceleration, low pitch attitude), High Speed Protection is activated at/or above VMO/MMO.
When it is activated, the THS setting is limited between the setting at the aircraft's entry into this protection and 11 ° nose-up. Positive spiral static stability is introduced to 0 ° bank angle (instead of 33 ° in normal law), so that with the sidestick released, the aircraft always returns to a bank angle of 0 °. The bank angle limit is reduced from 67 °to 40 °.
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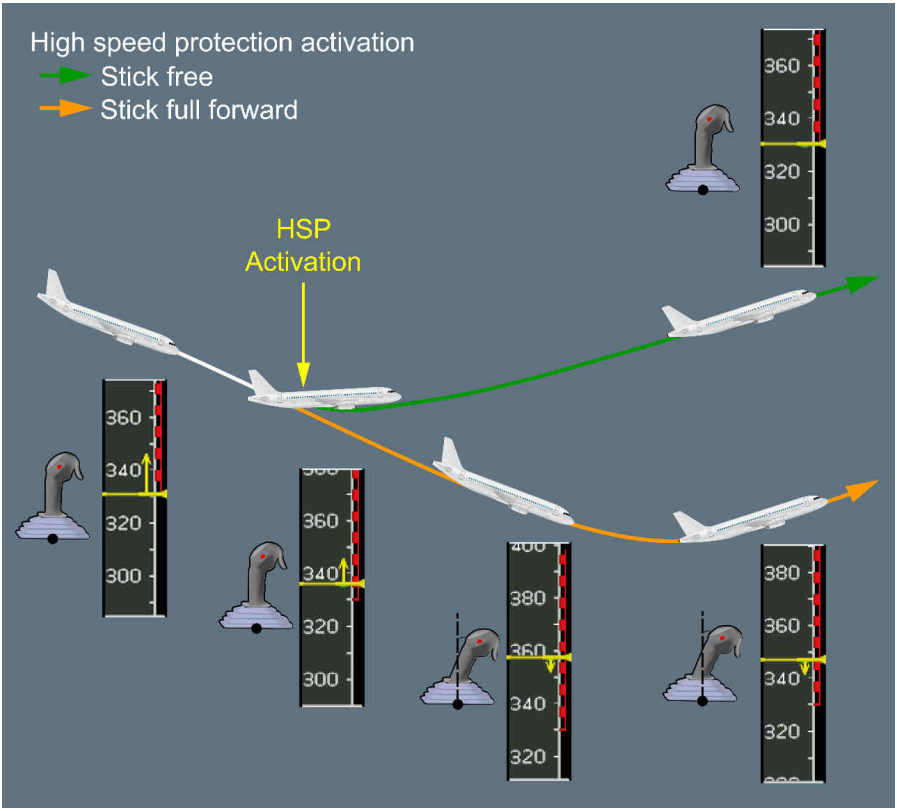

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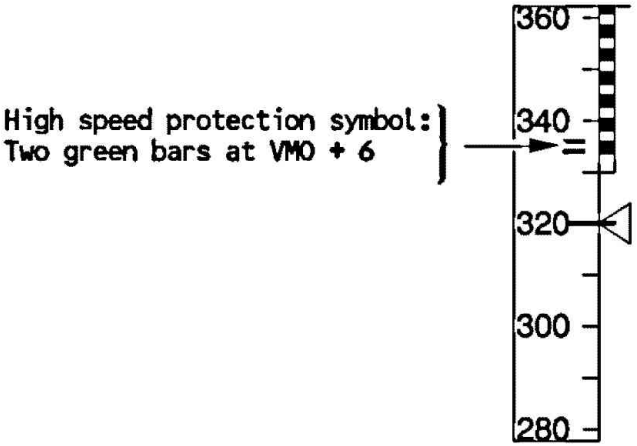

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Ident.: DSC-27-20-10-20-A-00001077.0001001 / 21 MAR 16
Applicable to: ALL

LOW ENERGY AURAL ALERT (IF INSTALLED)

The low energy aural alert is computed by the FAC (*Refer to DSC-22_40-10 General*).

Lateral Control

NORMAL LAW

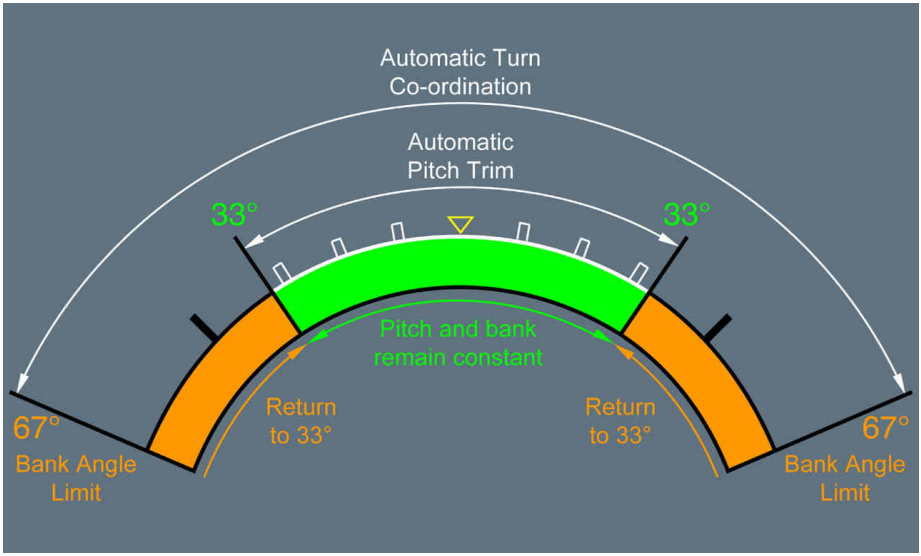
Ident.: DSC-27-20-10-30-00001078.0001001 / 17 MAR 17
Applicable to: ALL

When the aircraft is on the ground (in “on ground” mode), the sidestick commands the aileron and roll spoiler surface deflection. The amount of control surface deflection that results from a given amount of sidestick deflection depends upon aircraft speed. The pedals control rudder deflection through a direct mechanical linkage. The aircraft smoothly transitions to “in flight” mode shortly after liftoff.
When the aircraft is in the “in flight” mode, normal law combines control of the ailerons, spoilers (except N° 1 spoilers), and rudder (for turn coordination) in the sidestick. The pilot does not need to use the rudder for turn coordination. While the system thereby gives the pilot control of the roll and heading, it also limits the roll rate and bank angle, coordinates the turns, and damps the dutch roll.
The roll rate requested by the pilot during flight is proportional to the sidestick deflection, with a maximum rate of 15 °/s when the sidestick is at the stop.
When the aircraft is in “flare” mode, the lateral control is the same as in “in flight” mode.
After touchdown, the aircraft smoothly transitions from “in flight” mode to “ground” mode.

BANK ANGLE PROTECTION

Ident.: DSC-27-20-10-30-00001079.0001001 / 17 MAR 17
Applicable to: ALL

Inside the normal flight envelope, the system maintains positive spiral static stability for bank angles above 33 °. If the pilot releases the sidestick at a bank angle greater than 33 °, the bank angle automatically reduces to 33 °. Up to 33 °, the system holds the roll attitude constant when the sidestick is at neutral. If the pilot holds full lateral sidestick deflection, the bank angle goes to 67 ° and no further.
If Angle-of-Attack protection is active, and the pilot maintains full lateral deflection on the sidestick, the bank angle will not go beyond 45 °. If High Speed Protection is active, and the pilot maintains full lateral deflection on the sidestick, the bank angle will not go beyond 40 °. If high speed protection is operative, the system maintains positive spiral static stability from a bank angle of 0 °, so that with the sidestick released, the aircraft always returns to a bank angle of 0 °.
When bank angle protection is active, auto trim is inoperative.
If the bank angle exceeds 45 °, the autopilot disconnects and the FD bars disappear. The FD bars return when the bank angle decreases to less than 40 °.



During a normal turn (bank angle less than 33 °), in level flight:

- The PF moves the sidestick laterally (the more the sidestick is moved laterally, the greater the resulting roll rate - e.g. 15 °/s at max deflection)
- It is not necessary to make a pitch correction
- It is not necessary to use the rudder.

In the case of steep turns (bank angle greater than 33 °), the PF must apply:

- Lateral pressure on the sidestick to maintain bank
- Aft pressure on the sidestick to maintain level flight.

Load Alleviation Function

LOAD ALLEVIATION FUNCTION (LAF)

Ident.: DSC-27-20-10-40-00001080.0006001 / 27 NOV 12

1 **Applicable to: MSN 05437-09063**

The load alleviation function permits to alleviate the wing structure loads.

The function is achieved through the upward deflection of:
- The two ailerons only, or
- The two ailerons associated to the spoilers 4 and 5.

The LAF has 2 sub-functions:
- A sub-function activated in case of stable maneuver (ailerons deflections only)
- A sub-function activated in case of gust detection (ailerons and spoilers deflections)

In case of continuous turbulences, the two LAF sub-functions can be activated independently (the highest alleviation is taken into account).
The LAF is available when the aircraft is in clean configuration and in Normal law. The LAF orders are added to those generated by the normal law.

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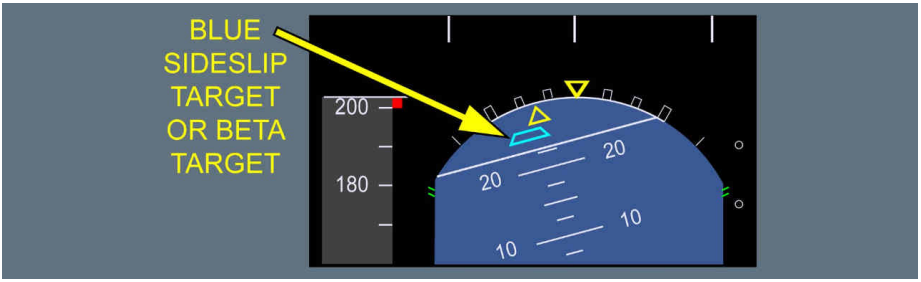
Sideslip Target

SIDESLIP TARGET

Ident.: DSC-27-20-10-50-00001081.0001001 / 17 MAR 17
Applicable to: ALL

If one engine fails, the FAC modifies the sideslip indication slightly to show the pilot how much rudder to use to get the best climb performance (ailerons to neutral and spoilers retracted).
In the case of an engine failure at takeoff, or at go-around, the sideslip index on the PFD changes from yellow to blue (to provide the conditions for the blue display of the sideslip target, *Refer to DSC-31-40 Attitude Data*).



In flight, the lateral normal law commands some rudder surface deflection to minimize the sideslip. The pilot's response is normal and instinctive: zero the slip indication by applying the right amount of rudder to get the best climb performance.

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Aircraft Trimming

AIRCRAFT TRIMMING

Ident.: DSC-27-20-10-70-00002179.0001001 / 09 DEC 09
Applicable to: ALL

When the aircraft is :

- In normal cruise range (around M .77),
- In straight flight,
- With the autopilot engaged,
- With symmetrical engine thrust, and
- With fuel in the wing tanks distributed symmetrically,

the rudder trim should stay between 1 ° right and 2.3 ° left.

Note: *This indication corresponds to a true rudder deflection within ± 1.5 °, taking into account the permanent offset of rudder trim indication, when the aircraft is in cruise conditions. (average 0.5 ° right, 0.8 ° left).*
An indicated, rudder trim above 1 ° right or 2.3 ° left is acceptable, if maintenance personnel establishes that the corresponding real rudder position is within 1.5 ° left, and 1.5 ° right.

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GENERAL

Ident.: DSC-27-20-20-00001082.0001001 / 17 MAR 17
Applicable to: ALL

Depending on the failures occuring to the flight control system, or on its peripherals, there are 3 levels of reconfiguration :

- Alternate law
  They are two levels of alternate law : with and without reduced protections.
- Direct law
- Mechanical

The ECAM and PFD indicate any control law degradation.

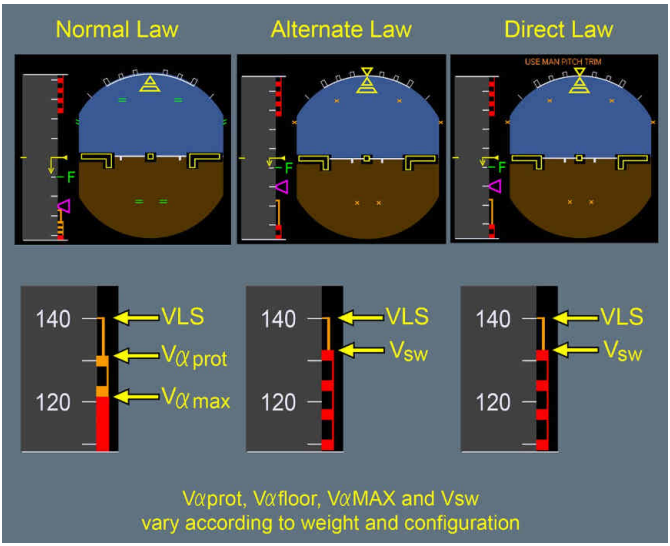
ON THE ECAM

- **In ALTN Law:**
  FLT CTL ALTN LAW (PROT LOST)
  MAX SPEED 320 kt (320 kt/M 0.77 on A318)
- **In Direct Law:**
  FLT CTL DIRECT LAW (PROT LOST)
  MAX SPEED 320 kt/M 0.77
  MAN PITCH TRIM USE

ON THE PFD

The PFD enhances the PF's awarness of the status of flight controls.
Specific symbols (= in green), and specific formatting of low speed information on the speed scale in normal law, indicate which protections are available.
When protections are lost, amber crosses (X) appear, instead of the green protection symbols (=).
When automatic pitch trim is no longer available, the PFD indicates this with an amber "USE MAN PITCH TRIM" message below the FMA.

Fly-by-Wire Status Awareness via the PFD

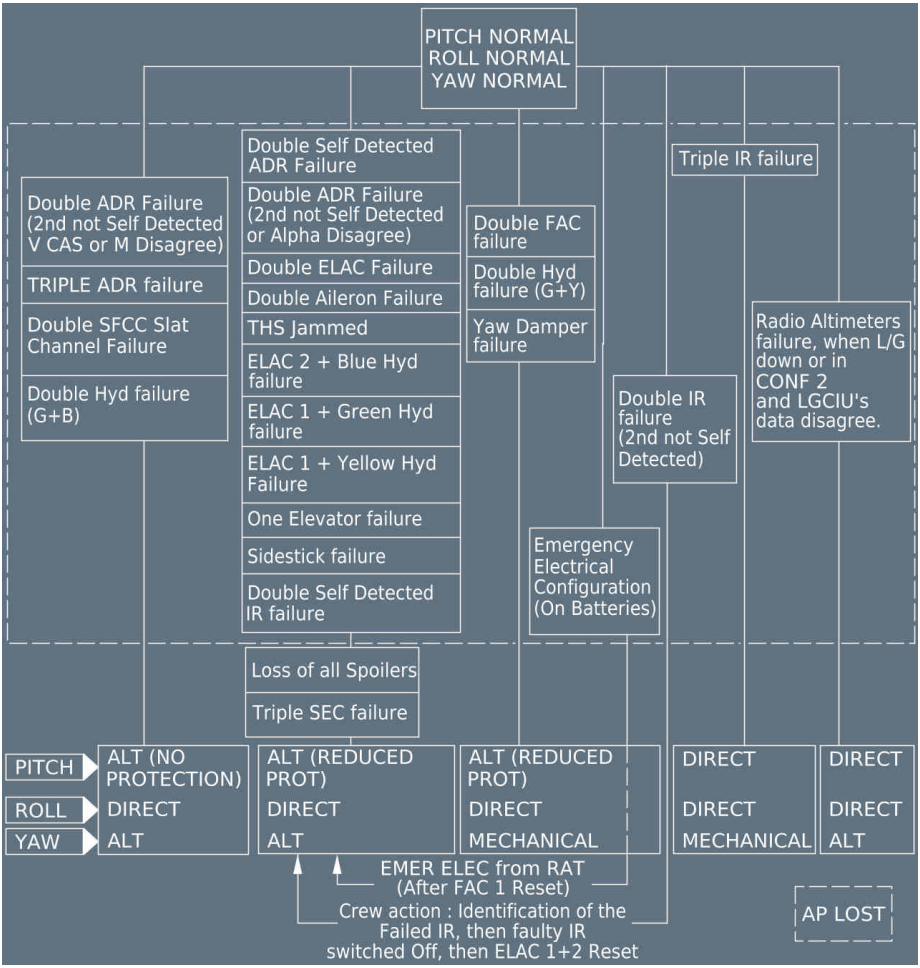


Therefore, by simply looking at this main instrument (PFD), the flight crew is immediately aware of the status of flight controls, and the operational consequences.

FLIGHT CONTROLS LAW RECONFIGURATION

Ident.: DSC-27-20-20-00001083.0001001 / 22 MAY 12

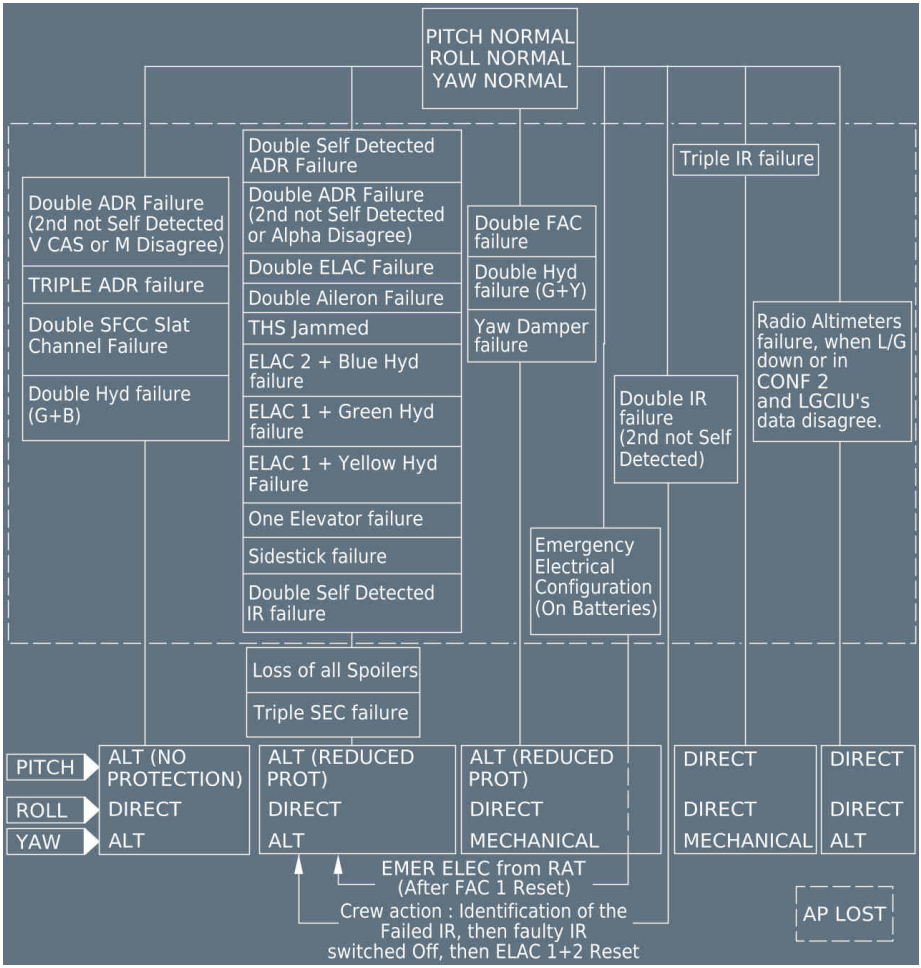
[1] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



FLIGHT CONTROLS LAW RECONFIGURATION

Ident.: DSC-27-20-20-00001083.0002001 / 22 MAY 12

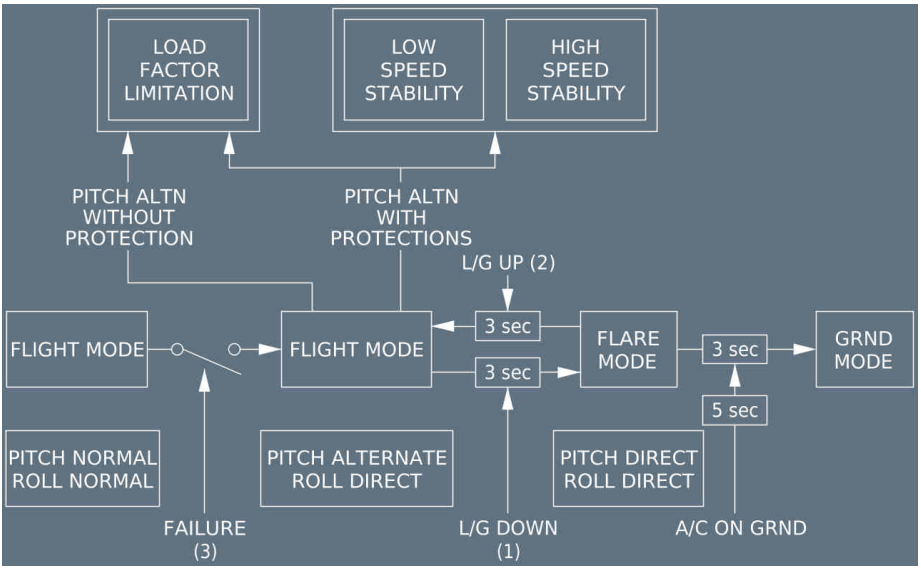
[2] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



ALTERNATE LAW

Ident.: DSC-27-20-20-00001084.0001001 / 21 AUG 15

Applicable to: MSN 01767-01920, 02097-02121, 02138, 02195-02405, 02457-02626, 02670, 02737-02804, 03138, 03308, 04156, 04294, 04314, 04393-04397, 04433, 04510, 04532-04535, 04762-04868, 04954, 05094, 05218, 05262, 05365-05411, 05473, 05577-05641, 05712, 05744-05807, 05992, 06247, 06289-06336



(1) OR SLATS OR FLAPS ≥ 2 IF L/G INFORMATION NO LONGER AVAILABLE (LGCIU 1+2 FAULT OR SEC 1+2+3 FAULT)

(2) OR SLATS OR FLAPS < 2 IF L/G INFORMATION NO LONGER AVAILABLE (LGCIU 1+2 FAULT OR SEC 1+2+3 FAULT)

(3) *Refer to DSC-27-20-20 Flight Controls Law Reconfiguration.*

PITCH CONTROL

GROUND MODE

Under alternate law the ground mode becomes active on the ground 5 s after touchdown. It is identical to the ground mode of the normal law.

FLIGHT MODE

In flight, the alternate law pitch mode follows a load-factor demand law much as the normal law pitch mode does, but it has less built-in protection (reduced protections).

FLARE MODE

In pitch alternate law the flight mode changes to the flare mode when the pilot selects landing gear down. The flare mode is a direct stick-to-elevator relationship. (*Refer to DSC-27-20-20 Direct Law*).

LATERAL CONTROL

When the aircraft flying in pitch alternate law, lateral control follows the roll direct law associated with yaw alternate or mechanical.

ROLL DIRECT LAW

Refer to DSC-27-20-20 Direct Law.

YAW ALTERNATE LAW

Only the yaw damping function is available. Damper authority is limited to ±5 ° of rudder deflection.

REDUCED PROTECTIONS

LOAD FACTOR LIMITATION

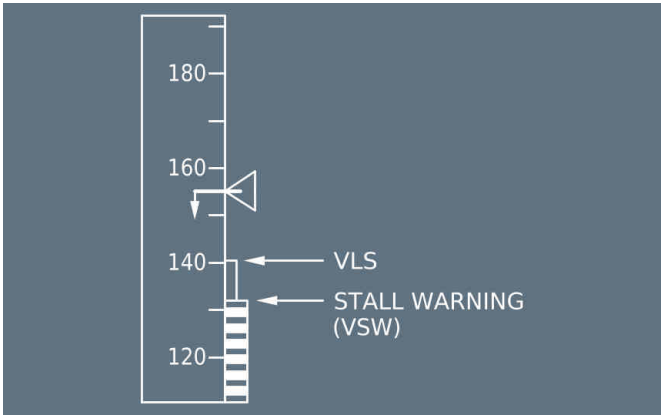
The load factor limitation is similar to that under normal law.

PITCH ATTITUDE PROTECTION

There is no pitch attitude protection. Amber Xs replace the green double bars "=" on the PFD.

LOW SPEED STABILITY

An artificial low speed stability replaces the normal angle-of-attack protection. It is available for all slat/flap configurations, and the low speed stability is active from about 5 kt up to about 10 kt above stall warning speed, depending on the aircraft's gross weight and slats/flaps configuration.
A gentle progressive nose down signal is introduced, which tends to keep the speed from falling below these values. The pilot can override this demand.
The system also injects bank-angle compensation, so that operation effectively maintains a constant angle of attack.
In addition, audio stall warnings (crickets + "STALL" synthetic voice message) is activated at an appropriate margin from the stall condition.
The PFD speed scale is modified to show a black/red barber pole below the stall warning.
The α floor protection is inoperative.



HIGH SPEED STABILITY

Above VMO or MMO, a nose up demand is introduced to avoid an excessive increase in speed. The pilot can override this demand.
In addition, the aural overspeed warning (VMO + 4 or MMO + 0.006) remains available.

BANK ANGLE PROTECTION

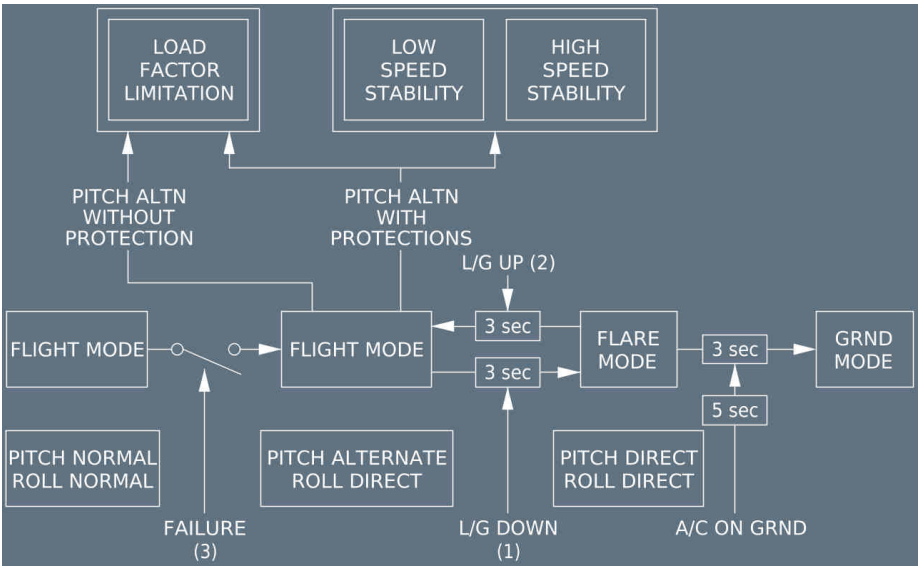
Not provided.

Note: *The AP will disconnect, if speed exceeds VMO/MMO, or if the bank angle exceeds 45 °.*

ALTERNATE LAW

Ident.: DSC-27-20-20-00001084.0002001 / 21 AUG 15

[3] **Applicable to: MSN 01957, 02135, 02139, 02443, 02649, 02712, 02908-03071, 03264, 03330-04113, 04216, 04312, 04328-04384, 04399, 04438-04506, 04518, 04552-04757, 04888-04947, 04965-05092, 05120-05190, 05230-05259, 05291-05313, 05437-05460, 05476-05537, 05676-05683, 05727, 05829-05952, 06010-06208, 06275-06287, 06720-09063**



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(2) OR SLATS OR FLAPS < 2 IF L/G INFORMATION NO LONGER AVAILABLE (LGCIU 1+2 FAULT OR SEC 1+2+3 FAULT)

(3) *Refer to DSC-27-20-20 Flight Controls Law Reconfiguration.*

PITCH CONTROL

GROUND MODE

Under alternate law the ground mode becomes active on the ground 5 s after touchdown. It is identical to the ground mode of the normal law.

FLIGHT MODE

In flight, the alternate law pitch mode follows a load-factor demand law much as the normal law pitch mode does, but it has less built-in protection (reduced protections).

FLARE MODE

In pitch alternate law the flight mode changes to the flare mode when the pilot selects landing gear down. The flare mode is a direct stick-to-elevator relationship. (*Refer to DSC-27-20-20 Direct Law*).

LATERAL CONTROL

When the aircraft flying in pitch alternate law, lateral control follows the roll direct law associated with yaw alternate or mechanical.

ROLL DIRECT LAW

Refer to DSC-27-20-20 Direct Law.

YAW ALTERNATE LAW

Only the yaw damping function is available. Damper authority is limited to ±5 ° of rudder deflection.

REDUCED PROTECTIONS

LOAD FACTOR LIMITATION

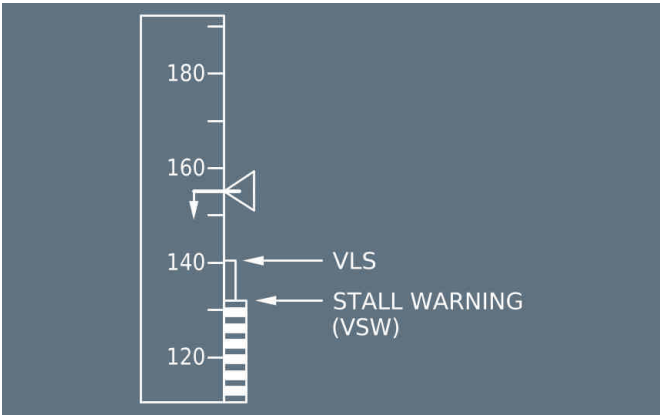
The load factor limitation is similar to that under normal law.

PITCH ATTITUDE PROTECTION

There is no pitch attitude protection. Amber Xs replace the green double bars "=" on the PFD.

LOW SPEED STABILITY

An artificial low speed stability replaces the normal angle-of-attack protection. It is available for all slat/flap configurations, and the low speed stability is active from about 5 kt up to about 10 kt above stall warning speed, depending on the aircraft's gross weight and slats/flaps configuration.
A gentle progressive nose down signal is introduced, which tends to keep the speed from falling below these values. The pilot can override this demand.
The system also injects bank-angle compensation, so that operation effectively maintains a constant angle of attack.
In addition, stall warnings (crickets + "STALL" synthetic voice message and "STALL STALL" red message on PFD) are activated at an appropriate margin from the stall condition.
The PFD speed scale is modified to show a black/red barber pole below the stall warning.
The α floor protection is inoperative.



HIGH SPEED STABILITY

Above VMO or MMO, a nose up demand is introduced to avoid an excessive increase in speed. The pilot can override this demand.
In addition, the aural overspeed warning (VMO + 4 or MMO + 0.006) remains available.

BANK ANGLE PROTECTION

Not provided.

Note: *The AP will disconnect, if speed exceeds VMO/MMO, or if the bank angle exceeds 45 °.*

ALTERNATE LAW WITHOUT REDUCED PROTECTION

Ident.: DSC-27-20-20-00001085.0001001 / 21 MAR 16
Applicable to: ALL

This is identical to alternate law except that it does not include the low-speed stability or the high-speed stability. It includes only the load factor limitation.

DIRECT LAW

Ident.: DSC-27-20-20-00001086.0001001 / 21 MAR 16
Applicable to: ALL

PITCH CONTROL

The pitch direct law is a direct stick-to-elevator relationship (elevator deflection is proportional to stick deflection).
In all configurations the maximum elevator deflection varies as a function of CG.

It is a compromise between adequate controllability with the CG forward, and not-too-sensitive control with the CG aft.
There is no automatic trim : the pilot must trim manually.
The PFD displays in amber the message “USE MAN PITCH TRIM”.
No protections are operative.
The α floor function is inoperative.
Overspeed and stall warnings are available as for alternate law.

LATERAL CONTROL

When flying in “direct law”, the roll direct law associated with mechanical yaw control governs lateral control.

ROLL DIRECT LAW

The roll direct law is a direct stick-to-surface-position relationship. System gains are set automatically to correspond to slat/flap configuration.
With the aircraft in the clean configuration, the maximum roll rate is about 30 °/s.
With slats extended, it is about 25 °/s.
To limit roll rate, the roll direct law uses only ailerons and spoilers N° 4 and 5.
If spoiler N° 4 has failed, spoiler N° 3 replaces it.
If the ailerons have failed, all roll spoilers become active.

YAW MECHANICAL CONTROL

The pilot controls yaw with the rudder pedals.
The yaw damping and turn coordination functions are lost.

ABNORMAL ATTITUDE LAWS

Ident.: DSC-27-20-20-00001087.0002001 / 18 JAN 17
Applicable to: ALL

If for any reason the aircraft goes far outside the normal flight envelope and reaches an extreme attitude, the flight control law will be modified.
The abnormal attitude law will engage and will provide the PF with maximum efficiency to recover normal attitude.

L2 The abnormal attitude law engages when one of the following values is reached:
- Bank angle above 125 °
- Pitch attitude above 50 ° nose up or below 30 ° nose down
- Speed below 60 to 90 kt (depending on the aircraft pitch attitude), or above 440 kt
- Mach above 0.91
- Angle of attack above 30 ° to 40 °, or below -10 °

L1 When the abnormal attitude law engages:

- The pitch alternate law is active with no protection, except load–factor protection and without autotrim.
- The roll direct law is active
- The yaw mechanical law is active.

When the aircraft returns within the normal flight envelope, the abnormal attitude law disengages and the following conditions remains for the remainder of the flight:

- The pitch alternate law is active with no protection and with autotrim.
- The roll direct law is active
- The yaw alternate law is active.

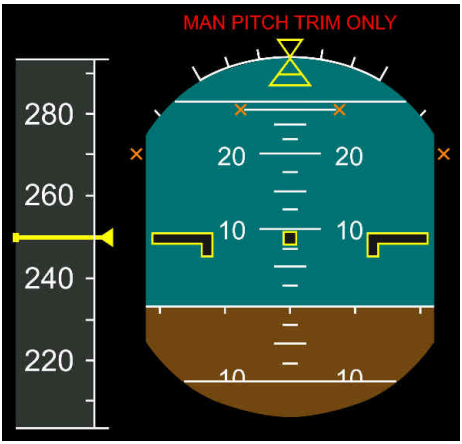
MECHANICAL BACK-UP

Ident.: DSC-27-20-20-00001088.0001001 / 17 MAR 17
Applicable to: ALL

The purpose of the mechanical backup is to achieve all safety objectives in MMEL dispatch condition: to manage a temporary and total electrical loss, the temporary loss of five fly-by-wire computers, the loss of both elevators, or the total loss of ailerons and spoilers.

PITCH

The pilot manually applies trim to the THS to control the aircraft in pitch.
The PFDs display “MAN PITCH TRIM ONLY” in red.



LATERAL

The pilot uses the rudder pedals as the mechanical backup to laterally control the aircraft .

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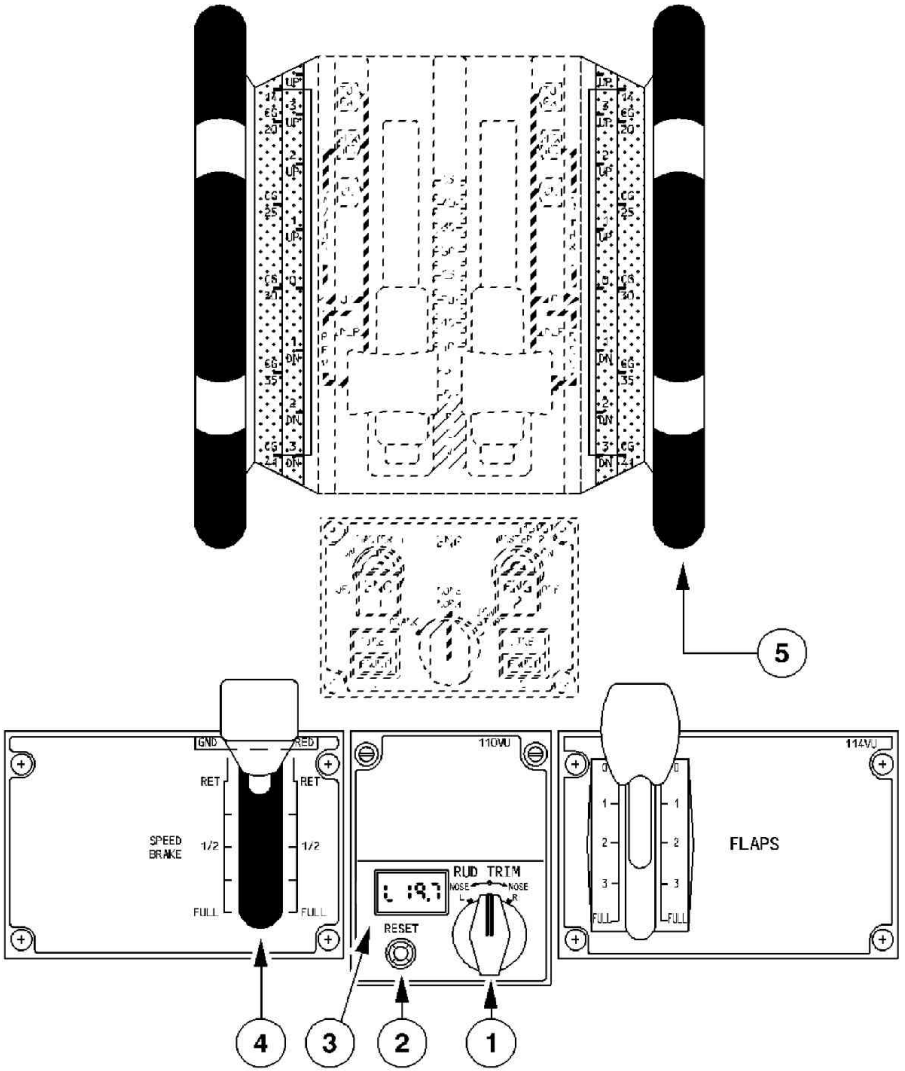
PEDESTAL

Ident.: DSC-27-20-30-00001090.0002001 / 08 JUL 15
Applicable to: ALL



(1) RUD TRIM rotary selector

Controls the rudder trim actuator, which moves the neutral point of the artificial feel by the equivalent of one degree of rudder travel per second.

Note: The rudder trim rotary selector has no effect, when the autopilot is engaged.

(2) RESET pb

By pushing the RESET pb, the zero trim position is ordered at 1.5 °/s.
After the reset, an indication of up to 0.3° (L or R) may be observed in the rudder trim position indication.

Note: The RESET pb is not active, when the autopilot is engaged.

(3) Position Indicator

Displays the rudder trim direction (L or R) and value.

(4) SPEEDBRAKE lever

The lever controls:

- The position of the speedbrake surfaces.
  To set speedbrake surfaces to a required position, the lever has to be pushed down and set to the required position. A “hardpoint” is provided at “½” SPEEDBRAKE position.
- The manual preselection of the ground spoilers.
  To arm the ground spoilers, the lever must be pulled up when in the RET position.
  When the lever is armed (or reverse thrust is selected), all spoiler's surfaces will automatically extend at landing, or in case of a rejected takeoff.

(5) PITCH TRIM Wheel

Both pitch trim wheels provide mechanical control of the THS and have priority over electrical control. A pilot action on the pitch trim wheel disconnects the autopilot.

Note: Crew action on the pitch trim wheel does not disconnect the ELACs (micro-switches, actuated by the override mechanism, ensure that the computers remain synchronized with the manually-selected position).

The THS is manually-controlled on ground for the THS setting, before takeoff and in flight, when in direct law.

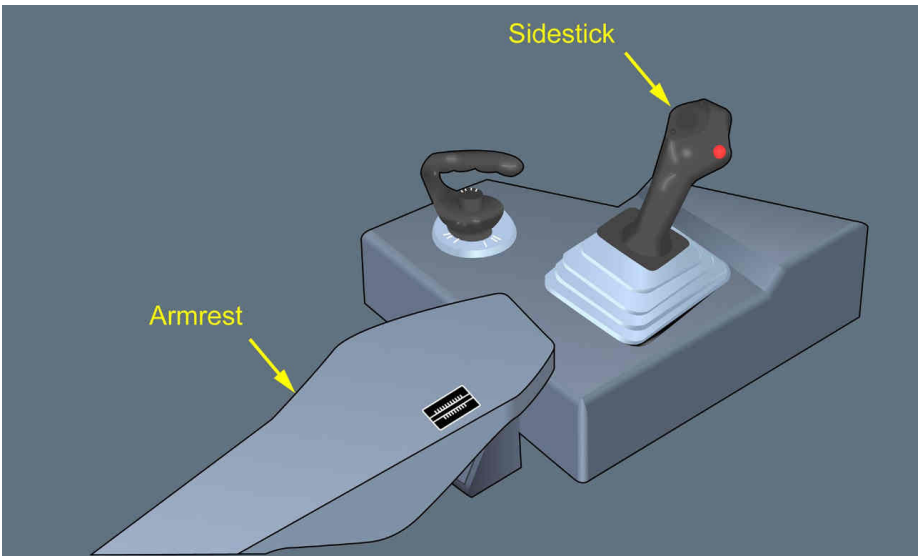
- Before takeoff, the pilot sets the THS to the angular value, determined as a function of the aircraft CG, using the CG scale on the wheel. The relationship between the aircraft CG and the THS setting shown on the trim wheel is only applicable for takeoff. The limits of the THS normal setting range for takeoff are indicated by a green band on the pitch trim wheel.
- In flight, when in direct law, the pilot uses the THS conventionally to fly in trim. In flight, the aircraft pitch trim setting depends on aircraft CG, weight, altitude and speed. Consequently, the relation between the aircraft CG, and the THS setting displayed on the pitch trim wheel, does not apply in flight.

Following nosewheel touchdown, as the pitch attitude becomes less than 2.5 ° for more than 5 s, pitch trim is automatically reset to zero.

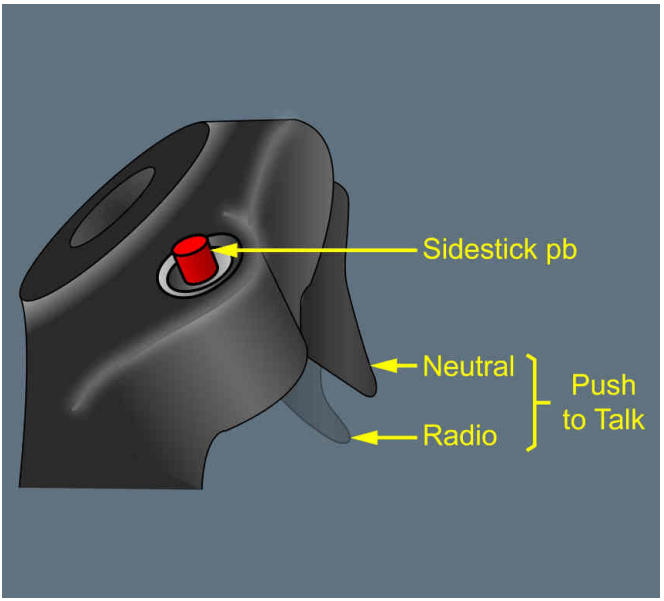
Note: *This function is inoperative, when the green or yellow hydraulic system is not pressurized.*

LATERAL CONSOLES

Ident.: DSC-27-20-30-00001091.0004001 / 30 AUG 18
Applicable to: ALL



SIDESTICKS



The sidestick are springloaded to neutral. They are not mechanically linked, and do not receive feedback from the flight control surfaces.
When the autopilot is engaged, the sidesticks are locked in the neutral position.

If a flight crewmember applies a force above a given threshold:
- The sidesticks unlock
- The autopilot disengages
- The AUTO FLT AP OFF alert triggers.

L3 The autopilot disengages when a pilot applies a force of more than 5 daN in pitch, or 3.5 daN in roll.

L1 *Note:* *This is not the recommended method for autopilot disengagement. For more information, Refer to DSC-22_30-30 AP Disengagement.*

Each sidestick has two controls:
- The Radio Push To Talk switch
- The sidestick pb, for autopilot disengagement, or sidestick priority.

SIDESTICK PRIORITY LOGIC

At all times, only one flight crewmember should fly the aircraft.
However, if both flight crewmembers use their sidesticks simultaneously, their orders are algebraically added.

L2 The flight control laws limit the combined order to the equivalent of the full deflection of one sidestick.

L1 In this case the two green SIDE STICK PRIORITY lights on the glareshield come on and "DUAL INPUT" voice message is activated.
A flight crewmember can deactivate the other sidestick and take full control, by pressing and keeping pressed the sidestick pb.
To deactivate the other sidestick, the flight crewmember must press their sidestick pb for 40s.
The other sidestick is permanently deactivated, until any flight crewmember presses their sidestick pb.
If both flight crew members press their sidestick pb, the last pilot to press gets the priority.

L2 If one sidestick was deactivated on ground, the CONFIG L(R) SIDESTICK FAULT alert is triggered at takeoff power application, or during the TO CONFIG test.

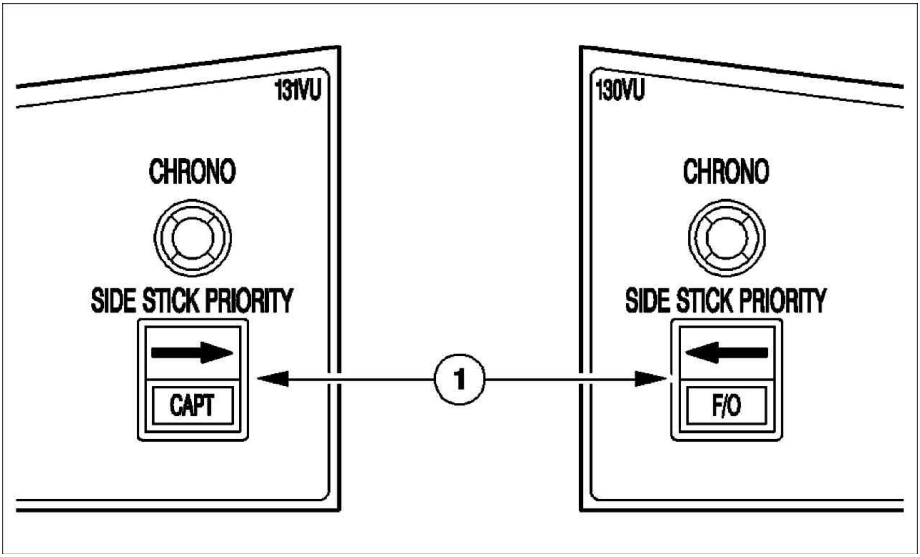
L1 For more information: *Refer to DSC-27-20-30 Glareshield*

ARMREST

The armrest on the sidestick side of the Captain and F/O seats are adjustable.
Correctly adjusting the seat eases the handling of the sidestick.
For information on how to adjust the armrest: *Refer to DSC-25-10-30 Armrest*

GLARESHIELD

Ident.: DSC-27-20-30-00001092.0002001 / 21 MAR 16
Applicable to: ALL



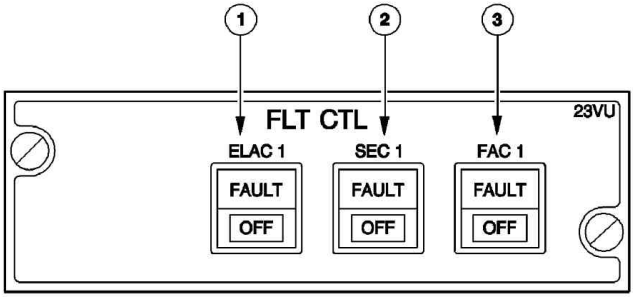
(1) SIDE STICK PRIORITY lt

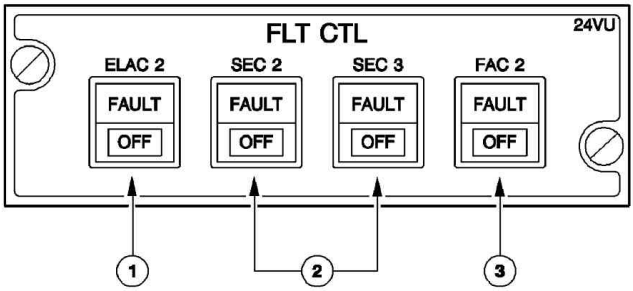
Red arrow light : - comes on in front of the pilot losing authority.
- goes out if he has recovered his authority
  - if the other pilot releases his TAKEOVER pushbutton prior the priority condition is latched.
    or
  - If he has used his takeover push button to cancel a latched priority situation.
    Sidestick priority audio : A “PRIORITY LEFT” or “PRIORITY RIGHT” audio voice message is given each time priority is taken.

Green CAPT and F/O lights :
- Both lights flash when the pilots move both sidesticks simultaneously and neither takes priority.
- When a pilot has taken priority by pressing the takeover pushbutton and the other pilot's sidestick is not at neutral, the light in front of the pilot with priority lights up. It goes out when the other pilot returns his stick to the neutral position.

OVERHEAD PANEL

Ident.: DSC-27-20-30-00017869.0001001 / 19 SEP 16
Applicable to: ALL





(1) ELAC 1(2) pushbutton
Controls the Elevator and Aileron Computer (ELAC) 1(2).

ON : ELAC 1(2) performs the following functions :
- Normal pitch and roll, normal LAF ◁
- Alternate pitch, alternate LAF ◁
- Direct pitch and roll
- Abnormal attitude
- Aileron droop
- Acquisition of autopilot orders.

OFF : The corresponding computer is not active. Switching it OFF, then ON, resets the computer.

FAULT : Comes on amber, along with an ECAM caution:
- When a failure is detected
- During ELAC power-up test (eight seconds).

Note: The ELAC power-up test occurs when electrical power is turned on, or after the occurrence of an electrical transient lasting longer than 25 ms.

The FAULT light goes off, when the pilot selects OFF, or at the end of the ELAC power-up test, if its results are satisfactory.

(2) SEC 1(2)(3) pushbutton
Controls the Spoiler and Elevator Computer (SEC) 1(2)(3).

ON : SEC 1(2)(3) performs the following functions:
- Normal roll (by controlling the spoilers)
- Speed brakes and ground spoilers
- Alternate pitch (SEC 1 and SEC 2 only)
- Direct pitch (SEC 1 and SEC 2 only)
- Direct roll
- Alternate LAF ◁
- Abnormal attitude.

OFF : The corresponding computer is not active. Switching it OFF, then ON, resets the computer.

FAULT : Comes on amber, along with an ECAM caution, when a failure is detected.
The FAULT light goes off, when the pilot selects OFF.

(3) FAC 1(2) pushbutton
Controls the Flight Augmentation Computer (FAC) 1(2).

ON : Both FACs perform the following functions:
- Normal roll (coordinating turns and damping dutch roll)
- Rudder trim
- Rudder travel limit
- Alternate yaw

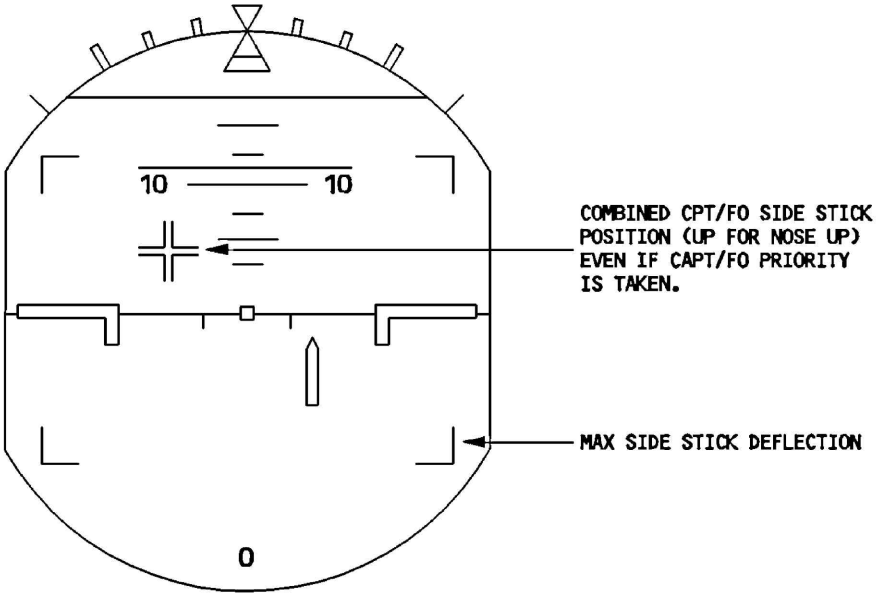
OFF : The corresponding computer is not active. Switching it OFF, and then ON, resets the computer.

FAULT : Comes on amber, along with an ECAM caution, when a failure is detected. The FAULT light goes off, when the pilot selects OFF.

SIDE STICK INDICATIONS ON PFD

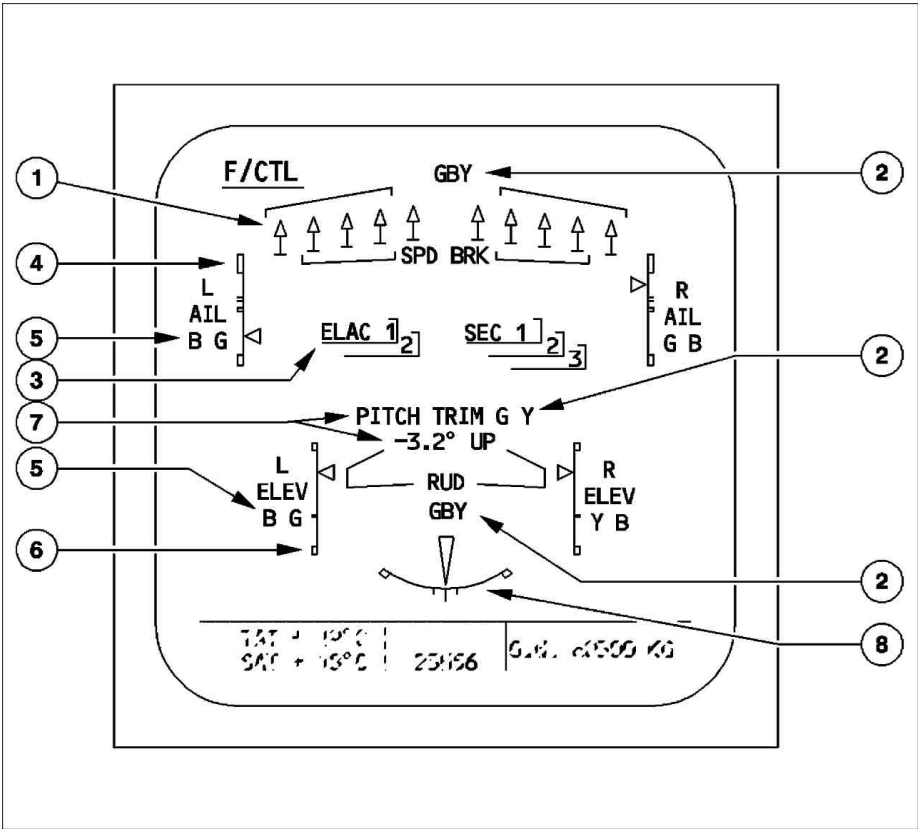
Ident.: DSC-27-20-30-00001094.0001001 / 21 MAR 16
Applicable to: ALL

On the ground, after the first engine start, sidestick position indications appear white on both PFDs. The indications disappear when the aircraft goes from the ground into flight.



ECAM F/CTL PAGE

Ident.: DSC-27-20-30-00001095.0002001 / 15 OCT 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



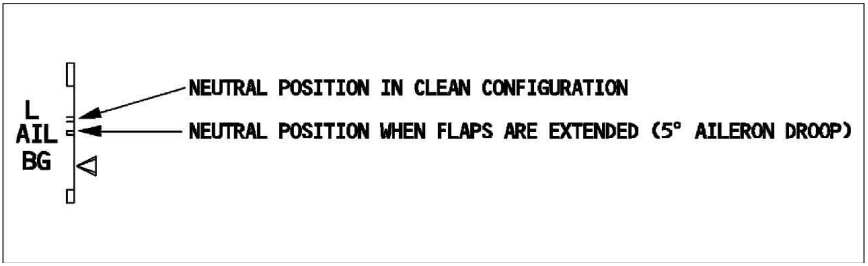
(1) Spoilers/Speed brakes Indication

- Δ : Spoiler deflected by more than 2.5 ° (green)
- – : Spoiler retracted (green)
- Δ : Spoiler fault deflected (amber)
- 1 : Spoiler fault retracted (amber)
- × : Spoiler position not valid (amber)

(2) Hydraulic System Pressure Indication
It is normally green. It becomes amber, if the hydraulic system's pressure decreases.

(3) ELAC/SEC Indication
Normally green. Changes to amber if there is a failure in the ELAC or the SEC, or if ELAC or SEC pushbutton is off, or if both flight control data concentrators (FCDCs) fail.
The surrounding box is normally grey. It changes to amber if the ELAC or SEC indication does.

(4) Aileron position indication
It is indicated with a white scale and green index. It changes to amber, when neither (green nor blue) servojack is available.

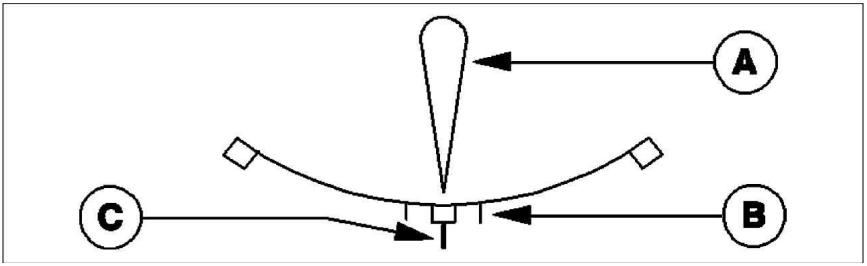


(5) Aileron and elevator actuator indication
"G" and "B" are normally displayed in green.
The color changes to amber, in case of a green or blue hydraulic system low pressure.
The partial box also changes to amber, if the associated computer or actuator fails.

(6) Elevator position indication
It is indicated with a white scale and green index. The index becomes amber, when both associated actuators are not available.

(7) Pitch trim position indication
The pitch trim numbers are in green. They become amber, if green and yellow hydraulic system pressure decreases.
The "PITCH TRIM" legend is in white. It becomes amber, if the pitch trim jams.

(8) Yaw control indications



(A) Rudder position indication
It is normally in green. The rudder symbol becomes amber, if the blue, green, and yellow hydraulic pressures are low.

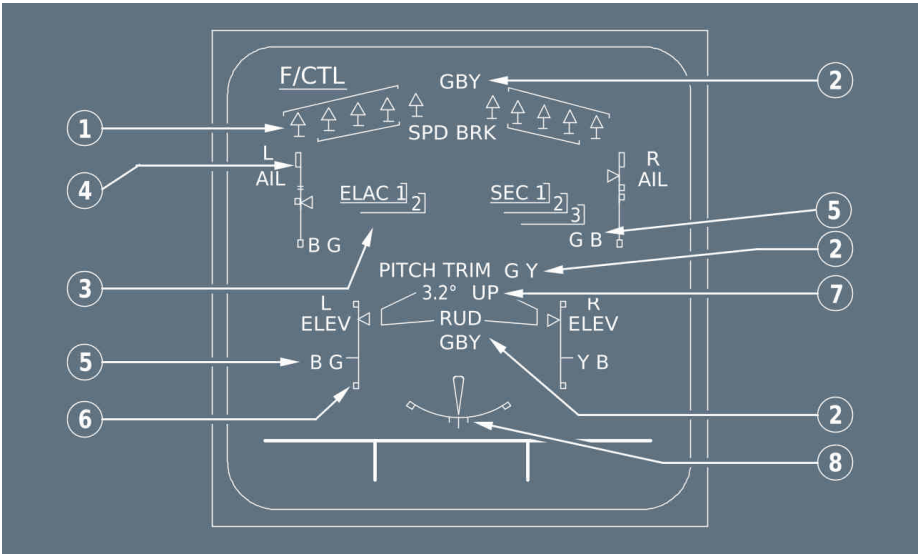
(B) Rudder travel limiter
It is normally in green. It becomes amber when travel limiter 1 and 2 are faulty.

(C) Rudder trim position
It is normally in blue. It becomes amber, if the rudder trim reset fails.

ECAM F/CTL PAGE

Ident.: DSC-27-20-30-00001095.0006001 / 14 OCT 14

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



(1) Spoilers/Speedbrakes' Indication

- Δ : Spoiler deflected by more than 2.5 ° (green)
- – : Spoiler retracted (green)
- Δ : Spoiler fault deflected (amber)
- 1 : Spoiler fault retracted (amber)
- × : Spoiler position not valid (amber)

(2) Hydraulic System Pressure Indication

It is normally green. It becomes amber, if the hydraulic system's pressure decreases.

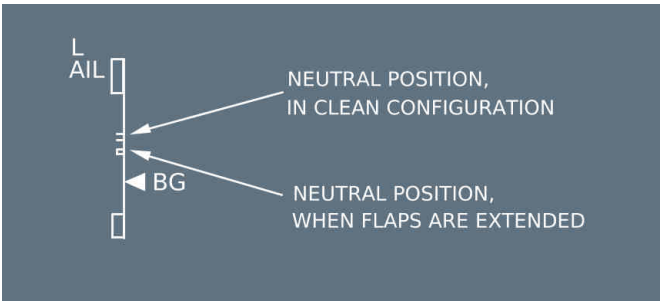
(3) ELAC/SEC Indication

- ELAC and SEC labels are always displayed in white
- The computer number is normally in green, and boxed in grey.
  The number and box become amber, if the computer fails, or is switched OFF.

(4) Aileron position indication

It is indicated with a white scale and green index. It changes to amber, when neither (green nor blue) servojack is available.

Note: The ailerons extend 10 ° down when the flaps are extended (aileron droop).



(5) Aileron and elevator actuator indication

"G" and "B" are normally displayed in green.

They become amber, in the case of a green or blue hydraulic system low pressure. The partial box also becomes amber, if the associated computer or actuator fails.

(6) Elevator position indication

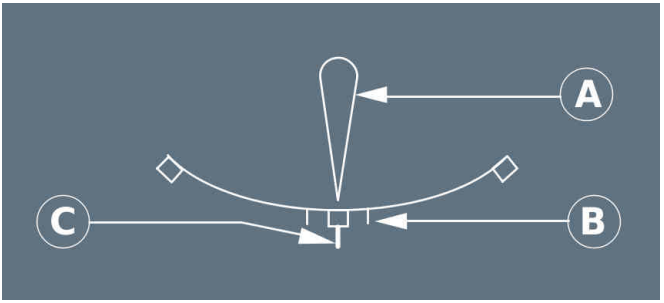
It is indicated with a white scale and green index. The index becomes amber, when both associated actuators are not available.

(7) Pitch trim position indication

The pitch trim numbers are in green. They become amber, if green and yellow hydraulic system pressure decreases.

The "PITCH TRIM" legend is in white. It becomes amber, if the pitch trim jams.

(8) Yaw control indications



(A) Rudder position indication
It is normally in green. The rudder symbol becomes amber, if the blue, green, and yellow hydraulic pressures are low.

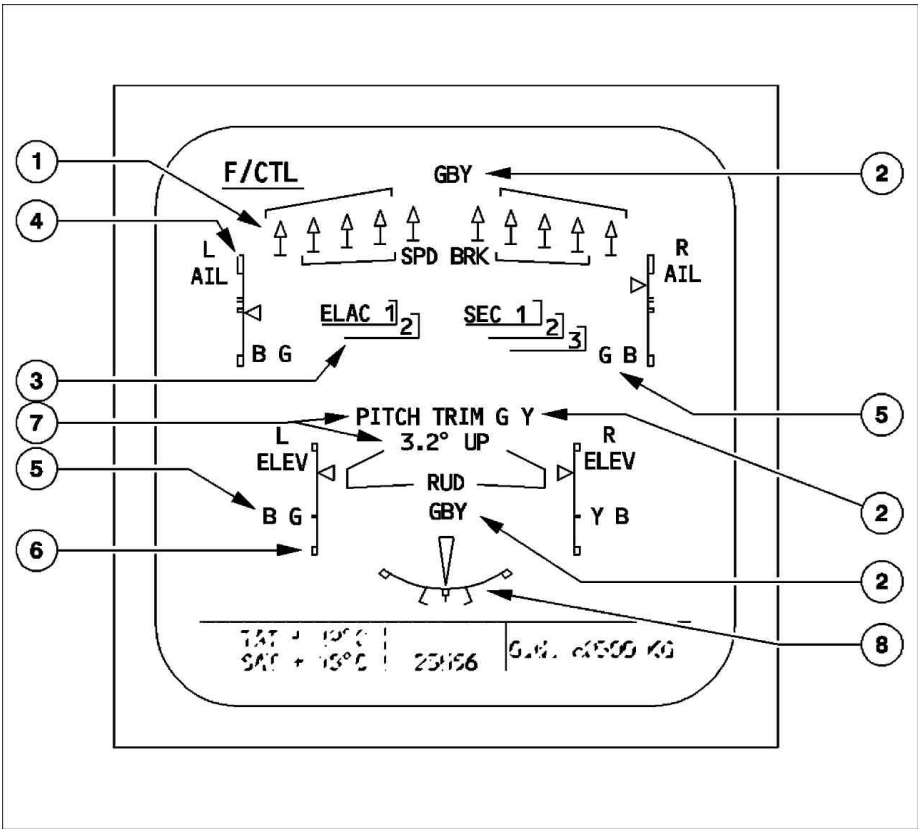
(B) Rudder travel limiter
It is normally in green. It becomes amber when travel limiter 1 and 2 are faulty.
Two TLU messages are displayed in amber when the TLU indexes are suppressed.

(C) Rudder trim position
It is normally in blue. It becomes amber, if the rudder trim reset fails.

ECAM F/CTL PAGE

Ident.: DSC-27-20-30-00001095.0004001 / 15 OCT 12

[2] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



(1) Spoilers/Speedbrakes' Indication

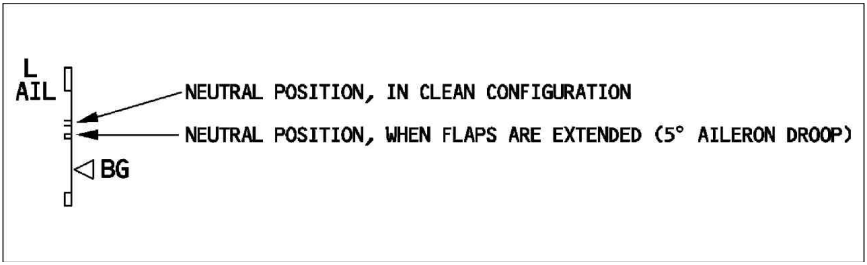
- Δ : Spoiler deflected by more than 2.5 ° (green)
- – : Spoiler retracted (green)
- Δ : Spoiler fault deflected (amber)
- 1 : Spoiler fault retracted (amber)
- × : Spoiler position not valid (amber)

(2) Hydraulic System Pressure Indication
It is normally green. It becomes amber, if the hydraulic system's pressure decreases.

(3) ELAC/SEC Indication

- ELAC and SEC labels are always displayed in white
- The computer number is normally in green, and boxed in grey.
  The number and box become amber, if the computer fails, or is switched OFF.

(4) Aileron position indication
It is indicated with a white scale and green index. It changes to amber, when neither (green nor blue) servojack is available.

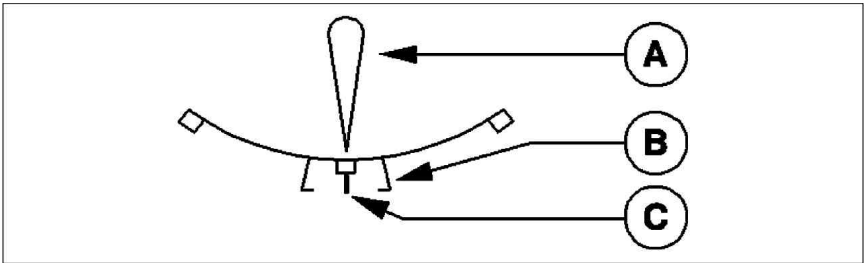


(5) Aileron and elevator actuator indication
"G" and "B" are normally displayed in green.
They become amber, in the case of a green or blue hydraulic system low pressure. The partial box also becomes amber, if the associated computer or actuator fails.

(6) Elevator position indication
It is indicated with a white scale and green index. The index becomes amber, when both associated actuators are not available.

(7) Pitch trim position indication
The pitch trim numbers are in green. They become amber, if green and yellow hydraulic system pressure decreases.
The "PITCH TRIM" legend is in white. It becomes amber, if the pitch trim jams.

(8) Yaw control indications



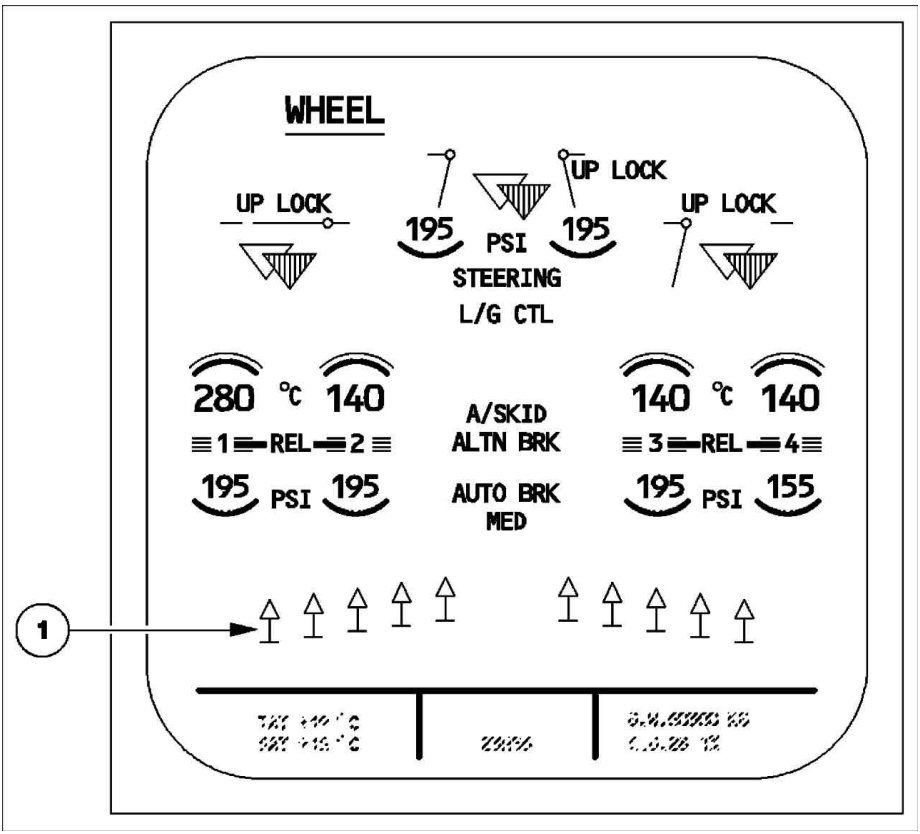
(A) Rudder position indication
It is normally in green. The rudder symbol becomes amber, if the blue, green, and yellow hydraulic pressures are low.

(B) Rudder travel limiter
It is normally in green. It becomes amber when travel limiter 1 and 2 are faulty.
Two TLU messages are displayed in amber when the TLU indexes are suppressed.

(C) Rudder trim position
It is normally in blue. It becomes amber, if the rudder trim reset fails.

ECAM WHEEL PAGE

Ident.: DSC-27-20-30-00001096.0001001 / 15 FEB 11
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

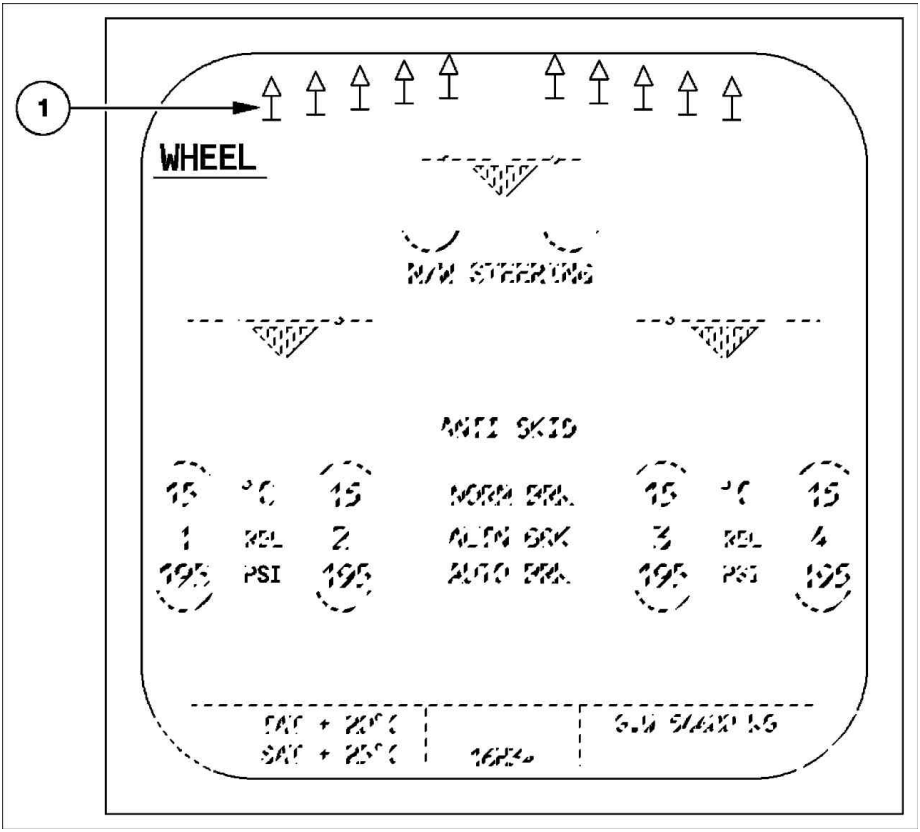


(1) Spoilers/Speedbrakes' Indication
These indications are identical to those displayed on the FLT CTL page.

ECAM WHEEL PAGE

Ident.: DSC-27-20-30-00001096.0002001 / 15 FEB 11

[3] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



(1) Spoilers/Speedbrakes' Indication
These indications are identical to those displayed on the FLT CTL page.

MEMO DISPLAY

Applicable to: ALL

Ident.: DSC-27-20-30-A-00016860.0001001 / 21 MAR 16

GND SPLRS ARMED : This memo appears in green when the ground spoilers are armed.

Ident.: DSC-27-20-30-A-00016859.0001001 / 21 MAR 16

SPEED BRK : This memo appears in green when the speedbrakes are extended.

SPEED BRK : This memo appears in amber when the speedbrakes should be retracted.

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GENERAL

Ident.: DSC-27-30-10-00001097.0001001 / 21 MAR 16

1 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Each wing has the following lift augmentation devices :
- Two flap surfaces.
- Five slat surfaces.

These surfaces are electrically controlled and hydraulically operated.
The pilot extends slats and flaps by moving the FLAPS lever on the center pedestal.
It has five positions.

GENERAL

Ident.: DSC-27-30-10-00001097.0004001 / 21 MAR 16

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Each wing has the following lift augmentation devices :
- Two double-slotted flap surfaces.
- Five slat surfaces.

These surfaces are electrically controlled and hydraulically operated.
The pilot extends slats and flaps by moving the FLAPS lever on the center pedestal.
It has five positions.

MAIN COMPONENTS

Ident.: DSC-27-30-10-00001098.0001001 / 21 MAR 16

3 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The slat and flap systems are similar, comprising :
- Two slat flap control computers (SFCCs), each containing one slat channel and one flap channel.
- A power control unit (PCU) consisting of two independent hydraulic motors coupled by a differential gearbox.
  The motors use green and blue hydraulic power for the slats and yellow and green power for the flaps.
  Pressure-off brakes (POBs) lock the transmission when the slat or flap surfaces have reached the selected position or if hydraulic power fails.
- Five slat surfaces and two flap surfaces per wing.
- An assymetry position pick-off unit (APPU) that measures the assymetry between the left and right wings.
- A flap disconnect detection system, which detects attachment failure and inhibits flap operation in order to prevent further damage. A sensor detects the failure by measuring excessive differential movement between the inner and the outer flaps.

- Wingtip brakes (WTBs), activated in case of assymetry, mechanism overspeed, symmetrical runaway, or uncommanded movement of the surfaces. They cannot be released in flight.
  They use blue and green hydraulic power for the slats and for the right wing flaps, and blue and yellow hydraulic power for the left wing flaps.
- Feedback position pick-off units (FPPUs) that feed back position information to the SFCCs.
- An instrumentation position pick-off unit (IPPU) that sends position data to the ECAM.

Note: *If the flap wingtip brakes are on, the pilot can still operate the slats, and if the slat wingtip brakes are on, he can still operate the flaps.*
If one SFCC is inoperative, slats and flaps both operate at half speed.
If one hydraulic system is inoperative, the corresponding surfaces (slats or flaps) operate at half speed.

MAIN COMPONENTS

Ident.: DSC-27-30-10-00001098.0002001 / 21 MAR 16

4 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The slat and flap systems are similar, comprising :

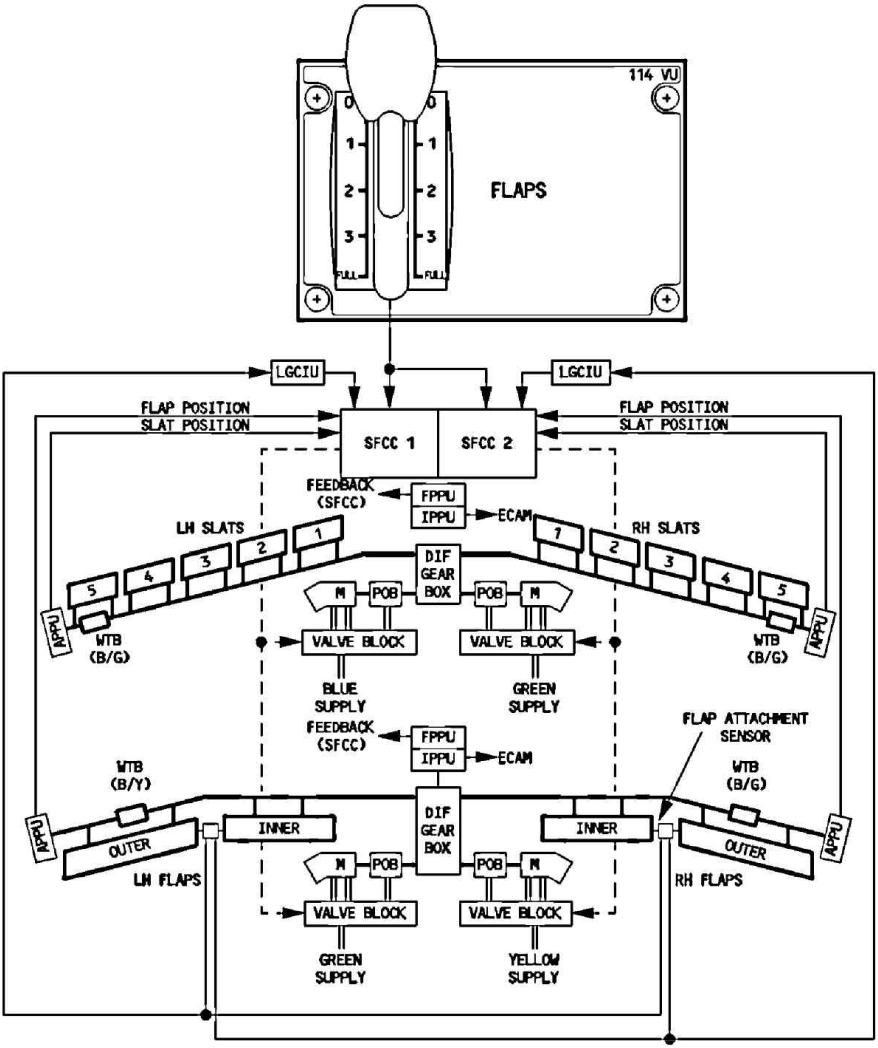
- Two slat flap control computers (SFCCs), each containing one slat channel and one flap channel.
- A power control unit (PCU) consisting of two independent hydraulic motors coupled by a differential gearbox.
  The motors use green and blue hydraulic power for the slats and yellow and green power for the flaps.
  Pressure-off brakes (POBs) lock the transmission when the slat or flap surfaces have reached the selected position or if hydraulic power fails.
- Five slat surfaces and two double-slotted flap surfaces per wing.
- An assymetry position pick-off unit (APPU) that measures the assymetry between the left and right wings.
- A flap disconnect detection system, which detects attachment failure and inhibits flap operation in order to prevent further damage. A sensor detects the failure by measuring excessive differential movement between the inner and the outer flaps.
- Wingtip brakes (WTBs), activated in case of assymetry, mechanism overspeed, symmetrical runaway, or uncommanded movement of the surfaces. They cannot be released in flight.
  They use blue and green hydraulic power for the slats and for the right wing flaps, and blue and yellow hydraulic power for the left wing flaps.
- Feedback position pick-off units (FPPUs) that feed back position information to the SFCCs.
- An instrumentation position pick-off unit (IPPU) that sends position data to the ECAM.

Note: *If the flap wingtip brakes are on, the pilot can still operate the slats, and if the slat wingtip brakes are on, he can still operate the flaps.*
If one SFCC is inoperative, slats and flaps both operate at half speed.
If one hydraulic system is inoperative, the corresponding surfaces (slats or flaps) operate at half speed.

ARCHITECTURE

Ident.: DSC-27-30-10-00001099.0001001 / 21 MAR 16

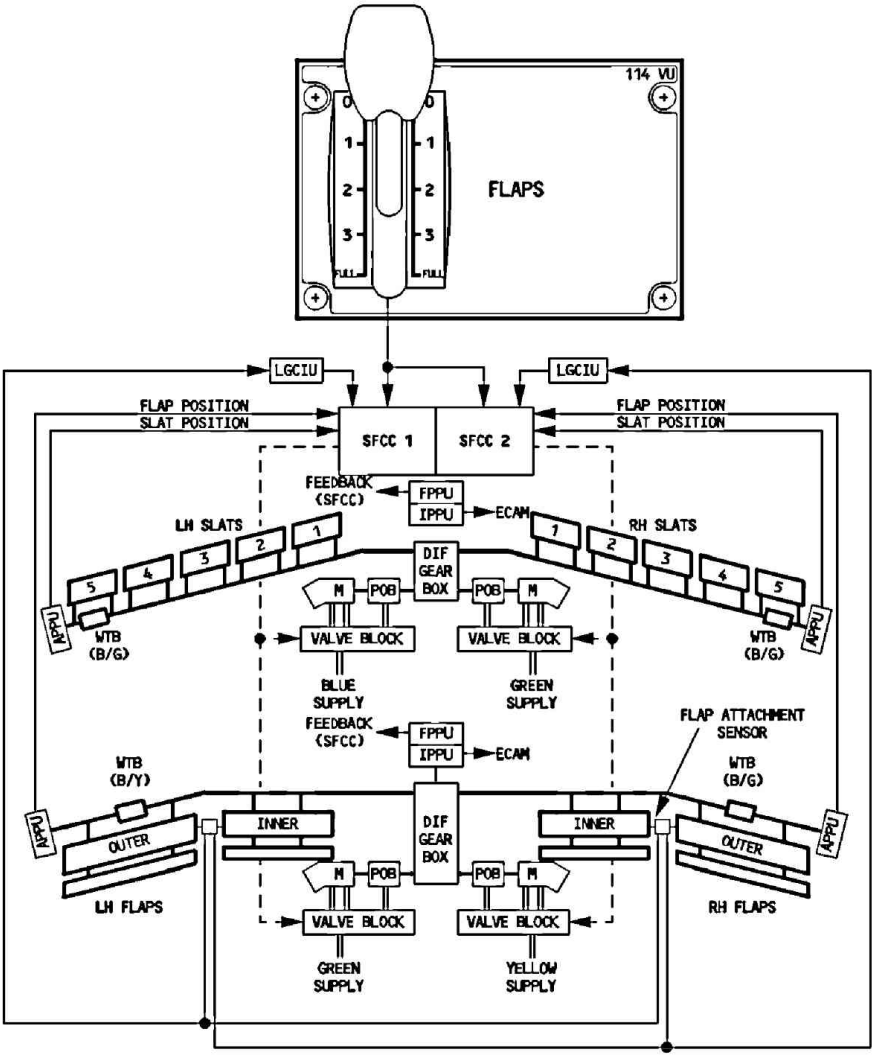
[5] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



ARCHITECTURE

Ident.: DSC-27-30-10-00001099.0002001 / 21 MAR 16

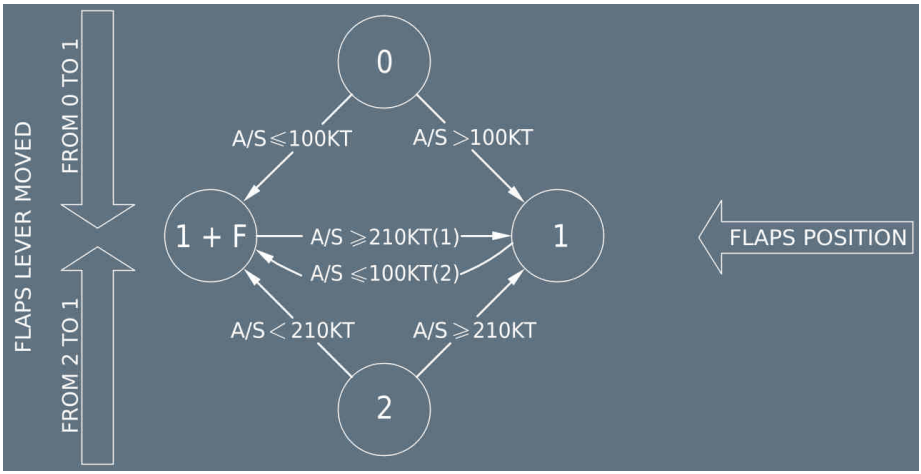
[6] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



CONFIGURATIONS

Ident.: DSC-27-30-10-00001100.0001001 / 09 OCT 12
Applicable to: ALL

The FLAPS lever has five positions: 0, 1, 2, 3 and FULL.
Two configurations correspond to position 1: Configuration 1 and Configuration 1 + F.
The pilot selects these as follows:



(1) When in Configuration 1 + F, the flaps retract to 0 ° automatically at 210 kt (before the airspeed reaches VFE).

(2) When in configuration 1, the flaps extend to 10 ° automatically at 100 kt.

ALPHA/SPEED LOCK FUNCTION (SLATS)

Ident.: DSC-27-30-10-00001101.0001001 / 13 SEP 16
7 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

This function inhibits slat retraction at high angles-of-attack and low speeds.
The SFCCs use corrected angle-of-attack (alpha) or airspeed information from the ADIRUs to inhibit slat retraction.

When the FLAPS lever is set to 0, the slats alpha/speed lock function activates and inhibits slats retraction, if:
- The AOA is above 8.5 °, or
- The speed is less than 148 kt.

Note: If the FLAPS lever is already set to 0, when either of the above conditions occurs, the function will not activate therefore the slats will continue to retract or will remain at 0.

Once the slats alpha/speed lock function is active, the slats retract to 0 when:
- The AOA is less than 7.6 ° and
- The speed is above 154 kt.

Note: When the aircraft is on ground and its speed is less than 60 kt, then the function will not activate.

ALPHA/SPEED LOCK FUNCTION (SLATS)

Ident.: DSC-27-30-10-00001101.0002001 / 02 MAY 17

8 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

This function inhibits slat retraction at high angles-of-attack and low speeds.
The SFCCs use corrected angle-of-attack (alpha) or airspeed information from the ADIRUs to inhibit slat retraction.

When the FLAPS lever is set to 0, the slats apha/speed lock function activates and inhibits slats retraction, if:
- The AOA is above 8.0 °, or
- The speed is less than 165 kt.

Note: If the FLAPS lever is already set to 0, when either of the above conditions occurs, the function will not activate therefore the slats will continue to retract or remain at 0.

Once the slats alpha/speed lock function is active, the slats retract to 0 when:
- The AOA is less than 7.1 °, or
- The speed is above 171 kt.

Note: When the aircraft is on ground and its speed is less than 60 kt, then the function will not activate.

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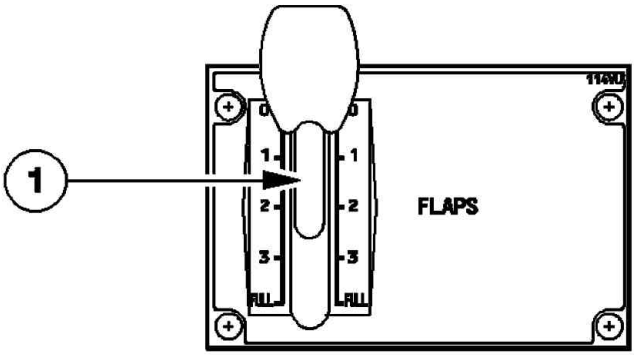
PEDESTAL

Ident.: DSC-27-30-20-00001102.0001001 / 18 MAR 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510



The five lever positions correspond to the following surface positions :

Position	SLATS	FLAPS	Indications on ECAM			
0	0	0			CRUISE	HOLD
1	18	0	1			
		10	1 + F	TAKEOFF		
2	22	15	2			APPR
3	22	20	3		LDG	
FULL	27	35	FULL			

Before selecting any position, the pilot must pull the lever out of the detent. Balks at positions 1 and 3 prevent the pilot from calling for excessive flap/slat travel with a single action.

Note: *The pilot cannot select an intermediate lever position.*

TAKEOFF IN CONFIGURATION 1

1 + F (18 °/10 °) is selected. If the pilot does not select configuration 0 after takeoff, the flaps retract automatically at 210 kt.

TAKEOFF OR GO-AROUND IN CONFIGURATION 2 OR 3

If the pilot selects configuration 1, he gets 1 + F (18 °/10 °) if airspeed is under 210 kt.
If the pilot does not select configuration 0 after takeoff, the flaps retract automatically at 210 kt.

CONFIGURATION 0 TO CONFIGURATION 1 IN FLIGHT

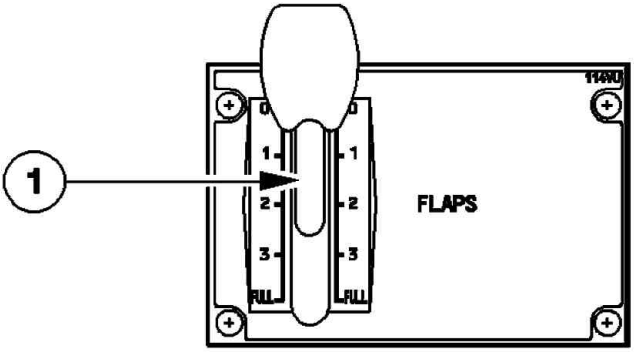
Configuration 1 (18 °/0 °) is selected.

Note: After flap retraction, configuration 1 + F is no longer available until the airspeed is 100 kt or less, unless configuration 2, 3, or FULL has been selected previously.

PEDESTAL

Ident.: DSC-27-30-20-00001102.0002001 / 18 MAR 11

[1] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



(1) FLAPS lever

The FLAPS lever selects simultaneous operation of the slats and flaps.

The five lever positions correspond to the following surface positions:

Position	SLATS	FLAPS	Indications on ECAM			
0	0	0			CRUISE	HOLD
1	18	0	1			
		10	1 + F			
2	22	15	2	TAKEOFF		APPR
3	22	20	3		LDG	
FULL	27	40	FULL			

Before selecting any position, the pilot must pull the lever out of the detent. Balks at positions 1 and 3 prevent the pilot from calling for excessive flap/slat travel with a single action.

Note: The pilot cannot select an intermediate lever position.

TAKEOFF IN CONFIGURATION 1

1 + F (18 °/10 °) is selected. If the pilot does not select configuration 0 after takeoff, the flaps retract automatically at 210 kt.

TAKEOFF OR GO-AROUND IN CONFIGURATION 2 OR 3

If the pilot selects configuration 1, he gets 1 + F (18 °/10 °) if airspeed is under 210 kt.
If the pilot does not select configuration 0 after takeoff, the flaps retract automatically at 210 kt.

CONFIGURATION 0 TO CONFIGURATION 1 IN FLIGHT

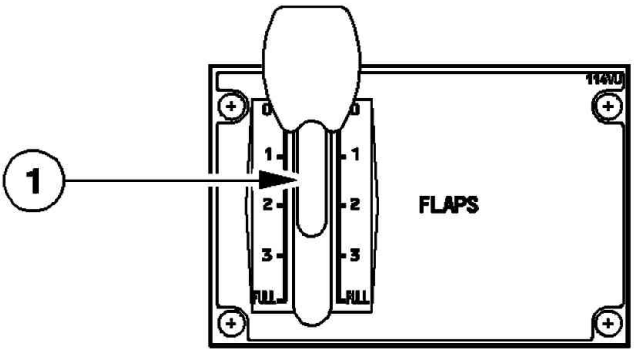
Configuration 1 (18 °/0 °) is selected.

Note: After flap retraction, configuration 1 + F is no longer available until the airspeed is 100 kt or less, unless configuration 2, 3, or FULL has been selected previously.

PEDESTAL

Ident.: DSC-27-30-20-00001102.0004001 / 09 MAY 17

[2] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



(1) FLAPS lever

The FLAPS lever selects simultaneous operation of the slats and flaps.

The five lever positions correspond to the following surface positions :

Position	SLATS	FLAPS	Indications on ECAM			
0	0	0			CRUISE	HOLD
1	18	0	1			
		10	1 + F			
2	22	14	2	TAKEOFF		APPR
3	22	21	3		LDG	
FULL	27	30	FULL			

Before selecting any position, the pilot must pull the lever out of the detent. Balks at positions 1 and 3 prevent the pilot from calling for excessive flap/slat travel with a single action.

Note: The pilot cannot select an intermediate lever position.

TAKEOFF IN CONFIGURATION 1

1 + F (18 °/10 °) is selected. If the pilot does not select configuration 0 after takeoff, the flaps retract automatically at 210 kt.

TAKEOFF OR GO-AROUND IN CONFIGURATION 2 OR 3

If the pilot selects configuration 1, he gets 1 + F (18 °/10 °) if airspeed is under 210 kt.
If the pilot does not select configuration 0 after takeoff, the flaps retract automatically at 210 kt.

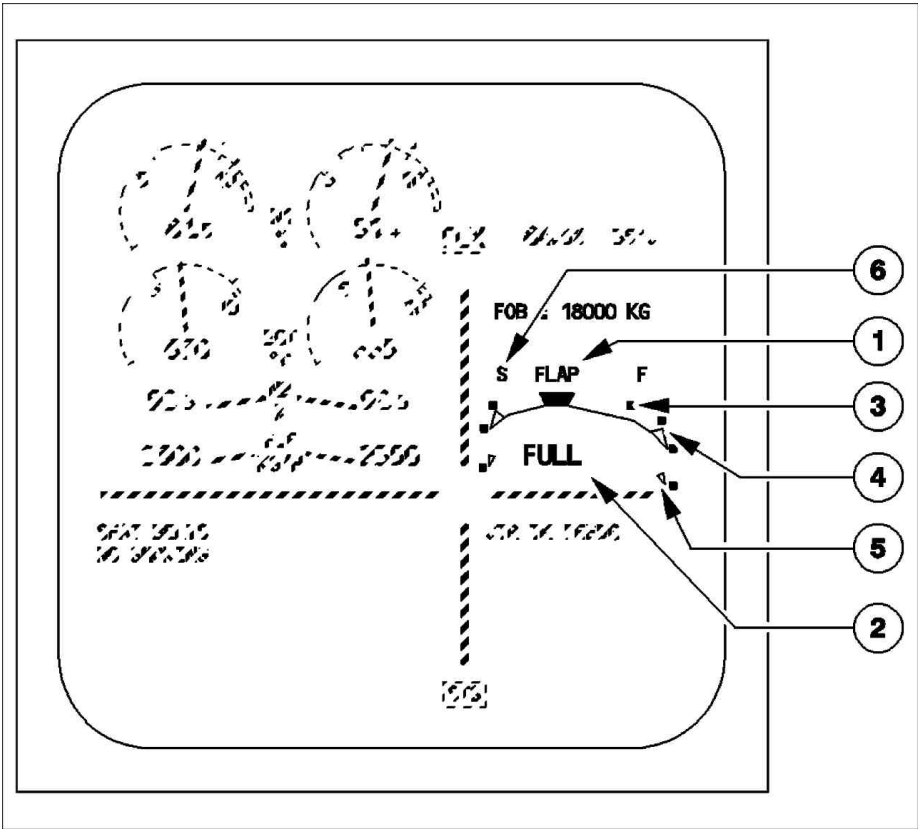
CONFIGURATION 0 TO CONFIGURATION 1 IN FLIGHT

Configuration 1 (18 °/0 °) is selected.

Note: After flap retraction, configuration 1 + F is no longer available until the airspeed is 100 kt or less, unless configuration 2, 3, or FULL has been selected previously.

ECAM UPPER DISPLAY

Ident.: DSC-27-30-20-00001103.0001001 / 18 MAR 11
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) FLAP indication

The “FLAP” legend appears when the slats or the flaps are not fully retracted.
- The legend is white when the slats and flaps are in the selected position.
- The legend is cyan when the slats and flaps are in transit.
- The legend is amber if:
  - Both relevant hydraulic systems go down (except on the ground with engines stopped).
  - The wingtip brakes are on.
  - There is a fault in the slats or flaps.

(2) Flap lever position

The “0”, “1 + F”, “1”, “2”, “3”, or “FULL” appears.
- It is green, when the slats and flaps are in the selected position. “0” is not displayed, when the aircraft attains clean configuration.
- The legend is cyan when the slats and flaps are in transit.
  The legend “S (F) LOCKED” appears in amber, associated with an ECAM caution, when the wingtip brakes are applied or when the system detects a non-alignment between two flaps.
  The legend “A-LOCK” pulses in cyan when the slat alpha/speed-lock function is active.

(3) Position indexes

These white points indicate that the slats and flaps are in a selectable position. They do not appear when the aircraft is in the clean configuration.

(4) Slat and flap position

These green triangles indicate the actual position of the slats and flaps.

They change to amber if:
- Both relevant hydraulic systems go down, unless the aircraft is on the ground with both engines stopped.
- The wingtip brakes are on.
- There is a fault in the slats or flaps.

(5) Selected surface position

These blue triangles indicate the position the pilot has selected.
(With the current standard display management computer, the blue triangles may disappear before the slats and flaps are all completely in the selected position).

(6) S and F indications

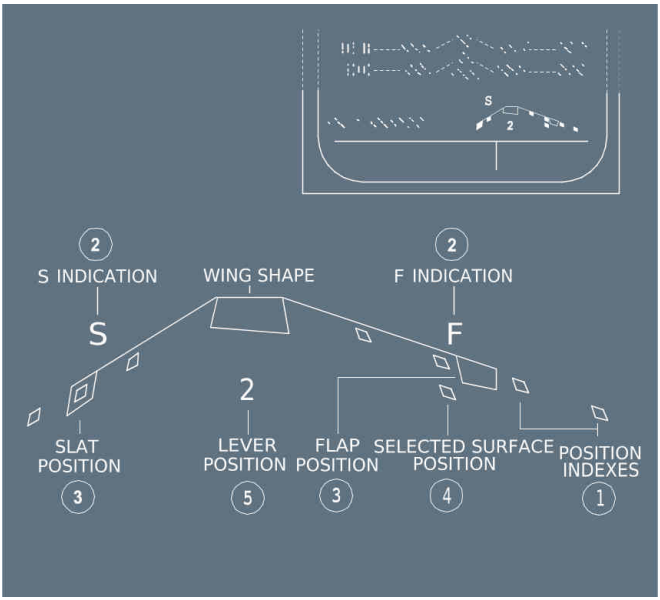
The “S” and “F” normally appear in green. They become amber if:

- Both relevant hydraulic systems go down, unless the aircraft is on the ground with both engines stopped.
- The wingtip brakes are on.
- There is a fault in the slats or flaps.

ECAM UPPER DISPLAY

Ident.: DSC-27-30-20-00001103.0002001 / 14 NOV 11

3 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



(1) Position indexes

These white points indicate that the slats and flaps are in a selectable position. They do not appear, when the aircraft is in clean configuration.

(2) F and S

"F" and "S" normally appear in white. They become amber, if:
- Both relevant hydraulic systems fail, unless the aircraft is on ground with both engines stopped.
- The wingtip brakes are on.
- There is a slats or flaps fault.

"S (F) LOCKED" legend, appears in amber, in association with an ECAM caution, when the wingtip brakes are applied, or when the system detects a non-alignment between two flaps.
The "A-LOCK" legend pulses in green, when the slat alpha/speedlock function is active.

(3) Flaps/Slats' actual position

These green boxes indicate the actual flaps/slats position.

They become amber, if:
- Both relevant hydraulic systems fail, unless the aircraft is on ground with both engines stopped.
- The wingtip brakes are on.
- There is a slats or flaps fault.

(4) Selected position

It is in blue, when the surfaces are in transit.
It disappears, when the selected position is reached.

(5) Flap lever position

The "0", "1 + F", "1", "2", "3", or "FULL" legend appears.
- It is green, when the slats and flaps are in the selected position. "0" is not displayed, when the aircraft attains clean configuration.
- It becomes cyan, when the slats and flaps are in transit.

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AIRCRAFT SYSTEMS

FUEL

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DSC-28-10 Description

DSC-28-10-10 General
GENERAL ..... A
General ..... B

DSC-28-10-20 Tanks
Tanks ..... A

DSC-28-10-30 Engine Feed
GENERAL ..... A
Main Components ..... B
Engine Feed C
Fuel Feed Sequence ..... D

DSC-28-10-40 ACT System
General ..... A
Automatic Transfer ..... B
Manual Transfer C

DSC-28-10-50 APU Feed
APU FEED ..... A

DSC-28-10-60 Fuel Recirculation System
Fuel Recirculation System ..... A

DSC-28-10-70 Refueling and Defueling
Refueling - Defueling ..... A

DSC-28-10-80 Fuel Quantity Indication and Level Sensing
FUEL QUANTITY INDICATION (FQI) SYSTEM ..... A
FUEL LEVEL SENSING CONTROL UNIT (FLSCU) ..... B
Fuel Level Sensing Control Unit (FLSCU) C
AUXILIARY FUEL MANAGEMENT SYSTEM (AFMS) ..... D
AUXILIARY LEVEL SENSE CONTROL UNIT (ALSCU) ..... E
Fuel System Architecture ..... F

DSC-28-10-90 Fuel Tank Inerting System
Fuel Tank Inerting System ..... A

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DSC-28-20 Controls and Indicators

Overhead Panel....A
ACT Control Panel....B
Refueling Control Panel....C
Maintenance Panel....D
ECAM Fuel Page....E
ECAM Upper Display....F
Memo Display....G

Localization Title	Toc Index	ID	Reason
DSC-28-10-10 GENERAL	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-10-10 GENERAL	A	2	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-10 General	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-28-10-20 Tanks	A	1	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-20 Tanks	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-28-10-20 Usable Fuel	A	3	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-20 Usable Fuel	A	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-28-10-20 Usable Fuel	A	5	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-10-30 GENERAL	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-28-10-30 GENERAL	A	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-10-30 GENERAL	A	3	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-30 MAIN COMPONENTS - TANK PUMPS	B	4	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-30 MAIN COMPONENTS - TANK PUMPS	B	5	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-10-30 Main Components - Tank Pumps	B	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-28-10-30 MAIN COMPONENTS - INTERTANK TRANSFER VALVES	B	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-28-10-30 MAIN COMPONENTS - SUCTION VALVES	B	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-28-10-30 MAIN COMPONENTS - SUCTION VALVES	B	9	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-10-30	B	10	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
MAIN COMPONENTS - SUCTION VALVES			
DSC-28-10-30 Engine Feed	C	11	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-30 Engine Feed	C	12	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-10-30 Engine Feed	C	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-28-10-30 Fuel Feed Sequence	D	14	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-30 Fuel Feed Sequence	D	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-28-10-30 Fuel Feed Sequence	D	16	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-10-40 General	A	1	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-40 Automatic Transfer	B	2	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-40 Manual Transfer - General	C	3	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-40 Manual Transfer - Ecam Indication	C	4	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-40 Manual Transfer - ACT System Architecture	C	5	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-60 Fuel Recirculation System - Description	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-28-10-60 Fuel Recirculation System - Description	A	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-10-60 Fuel Recirculation System - Description	A	3	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-70 Refueling - Defueling	A	1	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-70 Refueling - Defueling	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-28-10-70 Refueling - Defueling	A	3	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-28-10-80 FUEL QUANTITY INDICATION (FQI) SYSTEM	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-28-10-80 FUEL QUANTITY INDICATION (FQI) SYSTEM	A	2	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-80 FUEL LEVEL SENSING CONTROL UNIT (FLSCU)	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-28-10-80 Fuel Level Sensing Control Unit (FLSCU)	C	4	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-80 AUXILIARY FUEL MANAGEMENT SYSTEM (AFMS)	D	5	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-80 AUXILIARY LEVEL SENSE CONTROL UNIT (ALSCU)	E	6	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-80 Fuel System Architecture	F	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-28-10-80 Fuel System Architecture	F	8	Effectivity update: The information now also applies to MSN 09063.
DSC-28-10-90 Fuel Tank Inerting System	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-28-20 Overhead Panel	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-28-20 Overhead Panel	A	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-20 L(R) TK PUMPS 1(2) pb-sw	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-28-20 L(R) TK PUMPS 1(2) pb-sw	A	4	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-20 MODE SEL pb-sw	A	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-28-20 MODE SEL pb-sw	A	6	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 MODE SEL pb-sw	A	7	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-28-20 CTR TK PUMP 1(2) pb-sw	A	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-28-20 CTR TK PUMP 1(2) pb-sw	A	9	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-20 ACT pb-sw	A	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-28-20 ACT Control Panel	B	11	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 ACT XFR MODE SEL pb-sw	B	12	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 ACT XFR rotary Selector	B	13	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 ALL ACT pb-sw	B	14	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 FWD ACT pb-sw (guarded)	B	15	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 Refueling Control Panel	C	16	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 Refueling Control Panel	C	17	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-28-20 ACT QUANTITY Indicator	C	18	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 TOTAL ACT Indicator	C	19	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 CKPT Light	C	20	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-28-20 ACT Selector	C	21	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 ECAM Fuel Page	E	22	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 ECAM Fuel Page	E	23	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-28-20 ECAM Fuel Page	E	24	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-20 CTR Tanks Pumps Indications	E	25	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-20 CTR Tanks Valves Indications	E	26	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
DSC-28-20 LP Valve (ENG) Indications	E	27	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-28-20 Transfer Valve Indications	E	28	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-28-20 Transfer Valve Indications	E	29	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 Transfer Valve Indications	E	30	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-20 APU Indications	E	31	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-28-20 Fuel Temperature Indication	E	32	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 Fuel Temperature Indication	E	33	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-28-20 Fuel Quantity Indication	E	34	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 Fuel Quantity Indication	E	35	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-28-20 Boxed Indications	E	36	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-28-20 Boxed Indications	E	37	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 Boxed Indications	E	38	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-20 Overflow Indication	E	39	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 Overflow Indication	E	40	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-28-20 Advisory	E	41	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 Advisory	E	42	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-28-20 Fuel On Board (FOB) Indication	E	43	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
DSC-28-20 Fuel On Board (FOB) Indication	E	44	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-28-20 ACT ◁ to Center Tank Fuel Transfer Indication	E	45	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 ACT ◁ to Center Tank Fuel Transfer Indication	E	46	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-28-20 Fuel Flow Indication	E	47	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-28-20 ECAM Upper Display	F	48	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-28-20 Total Fuel Indication	F	49	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-28-20 Total Fuel Indication	F	50	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 Total Fuel Indication	F	51	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-20 CTR TK FEEDG	G	52	Effectivity update: The information no longer applies to MSN 05449.
DSC-28-20 FOB BELOW 3T (6600 LBS)	G	53	Effectivity update: The information now also applies to MSN 09063.
DSC-28-20 OUTR TK FUEL XFRD	G	54	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

GENERAL

Ident.: DSC-28-10-10-00001107.0001001 / 13 NOV 13

1 **Applicable to: MSN 01767-06036**

The fuel system :

- Stores fuel in the tanks.
- Supplies fuel, in the correct quantities, to the fuel tanks during refueling.
- Supplies fuel to the engines and the Auxiliary Power Unit (APU).
- Circulates fuel to cool the Integrated Drive Generator (IDG).
- Keeps fuel in the outer tanks for wing bending and flutter relief.

GENERAL

Ident.: DSC-28-10-10-00001107.0002001 / 10 DEC 09

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The fuel system :

- Stores fuel in the tanks.
- Supplies fuel, in the correct quantities, to the fuel tanks during refueling.
- Supplies fuel to the engines and the Auxiliary Power Unit (APU).
- Controls the transfer of fuel from the center tank to the wing tanks.
- Circulates fuel to cool the Integrated Drive Generator (IDG).

GENERAL

Ident.: DSC-28-10-10-00001107.0003001 / 13 NOV 13

3 **Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The fuel system :

- Stores fuel in the tanks
- Supplies fuel, in the correct quantities, to the fuel tanks during refueling
- Supplies fuel to the engines and the Auxiliary Power Unit (APU)
- Circulates fuel to cool the Integrated Drive Generator (IDG)
- Controls the transfer of fuel from the center tank to the inner tanks
- Keeps fuel in the outer tanks for wing bending and flutter relief.

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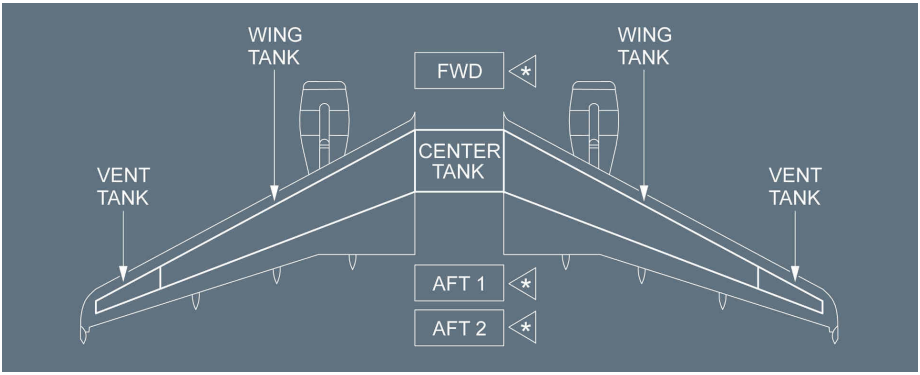
TANKS

Ident.: DSC-28-10-20-A-00020195.0005001 / 05 JUN 18

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

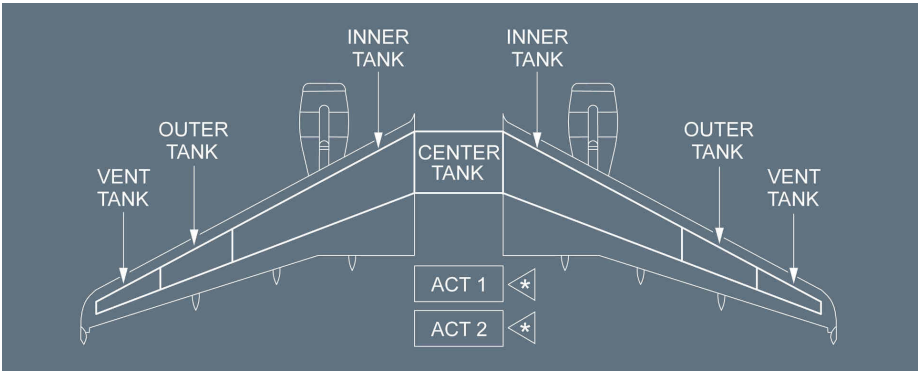
The fuel is stored in the wings, in the center tank, and in the Additional Center Tank (ACT ✻).
There is a vent surge tank outboard of each wing tank.
When the aircraft has been refueled to maximum capacity, the fuel can expand by 2 % (20 °C temperature rise) without spilling.
There is an overpressure protector in each vent and wing tank, and between the center tank and the left wing tank.



Ident.: DSC-28-10-20-A-00020195.0001001 / 17 MAR 17

2 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The fuel is stored in the wings, in the center tank, and in the Additional Center Tank (ACT ✻).
The wings have inner and outer tanks.
There is a vent surge tank outboard of the outer tank in each wing.
When the aircraft has been refueled to maximum capacity, the fuel can expand by 2 % (20 °C temperature rise) without spilling.
There is an overpressure protector in each vent, outer and inner tank and between the center tank and the left inner tank.



Ident.: DSC-28-10-20-A-00020196.0017001 / 04 SEP 18

3 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

USABLE FUEL								
		WING TANK	CENTER TANK	ACT	TOTAL WITH			
					NO ACT	1 ACT	2 ACTs	3 ACTs
VOLUME	(liters)	2 x 7 690	8 200	3 121	23 580	26 701	29 822	32 943
	(US gallons)	2 x 2 031	2 166	824	6 229	7 053	7 877	8 701
WEIGHT(1)	(KG)	2 x 6 036	6 437	2 450	18 510	20 960	23 410	25 860
	(LB)	2 x 13 308	14 189	5 398	40 805	46 203	51 601	56 999

(1) *Fuel density : 0.785 kg/l or 6.551 lb/US Gal.*

Ident.: DSC-28-10-20-A-00020196.0015001 / 17 MAR 17

4 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

USABLE FUEL					
		OUTER TANKS	INNER TANKS	CENTER TANK	TOTAL
VOLUME	(liters)	864 x 2	6 874 x 2	8 248	23 724
	(US gallons)	228 x 2	1 816 x 2	2 178	6 267
WEIGHT(1)	(KG)	678 x 2	5 396 x 2	6 474	18 623
	(LB)	1 494 x 2	11 896 x 2	14 274	41 054

(1) *Fuel density : 0.785 kg/l or 6.551 lb/US Gal .*

Ident.: DSC-28-10-20-A-00020196.0014001 / 17 MAR 17
Applicable to: MSN 05313-06336

USABLE FUEL								
		OUTER TANKS	INNER TANKS	CENTER TANK	ACT	TOTAL WITH		
						NO ACT	1 ACT	2 ACTs
VOLUME	(liters)	867 x 2	6 917 x 2	8 248	2 992	23 816	26 808	29 800
	(US gallons)	229 x 2	1 827 x 2	2 179	790	6 291	7 081	7 871
WEIGHT(1)	(KG)	680 x 2	5 429 x 2	6 474	2 349	18 692	21 041	23 390
	(LB)	1 500 x 2	11 968 x 2	14 274	5 175	41 210	46 385	51 560

(1) *Fuel density : 0.785 kg/l or 6.551 lb/US Gal.*

Ident.: DSC-28-10-20-A-00020196.0003001 / 17 MAR 17
Applicable to: MSN 03750, 04294, 04314, 04393-04438, 04510

USABLE FUEL								
		OUTER TANKS	INNER TANKS	CENTER TANK	ACT	TOTAL WITH		
						NO ACT	1 ACT	2 ACTs
VOLUME	(liters)	880 x 2	7 099 x 2	8 250	2 992	24 209	27 201	30 193
	(US gallons)	232 x 2	1 875 x 2	2 179	790	6 395	7 185	7 975
WEIGHT(1)	(KG)	691 x 2	5 573 x 2	6 476	2 349	19 004	21 353	23 702
	(LB)	1 523 x 2	12 286 x 2	14 278	5 175	41 893	47 068	52 243

(1) *Fuel density : 0.785 kg/l or 6.551 lb/US Gal.*

Ident.: DSC-28-10-20-A-00020196.0001001 / 17 MAR 17
5 **Applicable to: MSN 01767-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05298**

USABLE FUEL								
		OUTER TANKS	INNER TANKS	CENTER TANK	ACT	TOTAL WITH		
						NO ACT	1 ACT	2 ACTs
VOLUME	(liters)	880 x 2	6 924 x 2	8 250	2 992	23 859	26 851	29 843
	(US gallons)	232 x 2	1 829 x 2	2 179	790	6 303	7 093	7 883
WEIGHT (1)	(KG)	691 x 2	5 435 x 2	6 476	2 349	18 729	21 078	23 427
	(LB)	1 523 x 2	11 983 x 2	14 278	5 175	41 289	46 464	51 639

(1) *Fuel density : 0.785 kg/l or 6.551 lb/US Gal.*

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GENERAL

Ident.: DSC-28-10-30-00001109.0001001 / 13 NOV 13

1 **Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The main fuel pump system supplies fuel from the inner tanks to the engines. The system has four main fuel pumps.

GENERAL

Ident.: DSC-28-10-30-00001109.0002001 / 10 DEC 09

2 **Applicable to: MSN 01767-06036**

The main fuel pump system supplies fuel from the center tank or the inner wing tanks to the engines. The system has six main fuel pumps.

GENERAL

Ident.: DSC-28-10-30-00001109.0003001 / 10 DEC 09

3 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The main fuel pump system supplies fuel from the wing tanks to the engines. The system has four main fuel pumps.

MAIN COMPONENTS

Ident.: DSC-28-10-30-A-00001110.0001001 / 10 DEC 09

4 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

TANK PUMPS

In normal operation each engine is supplied from two pumps in its own side wing tank.

Ident.: DSC-28-10-30-A-00001110.0002001 / 01 FEB 13

5 **Applicable to: MSN 01767-06036**

TANK PUMPS

In normal operation each engine is supplied by one pump in the center tank or two pumps in its own side inner tank.
All wing tank pumps remain on throughout the flight. They are fitted with pressure relief sequence valves which ensure that, when all pumps are running, the center tank pumps will deliver fuel preferentially.

Ident.: DSC-28-10-30-A-00001110.0003001 / 13 NOV 13

6 **Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

TANK PUMPS

In normal operation, each engine is supplied from two pumps in its own side inner tank.

Ident.: DSC-28-10-30-A-00001111.0001001 / 31 JAN 13
7 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

INTERTANK TRANSFER VALVES

Two electrical transfer valves are mounted in each wing to permit fuel transfer from outer to inner tank.

Ident.: DSC-28-10-30-A-00001112.0001001 / 10 DEC 09
Applicable to: ALL

CROSS FEED VALVE

A cross feed valve controlled by a double motor allows both engines to be fed from one side or one engine to be fed from both sides.

Ident.: DSC-28-10-30-A-00001113.0001001 / 20 MAR 17
Applicable to: ALL

ENGINE LP VALVES

The engine fuel flow can be stopped by its low pressure (LP) fuel valve. The LP fuel valve is closed by either :

- The engine master switch, or
- The ENG FIRE PUSH pushbutton.

Ident.: DSC-28-10-30-A-00001114.0001001 / 13 NOV 13
8 **Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

SUCTION VALVES

Closed by pumps pressure in normal operation, they allow engines to be fed by gravity if the inner tank pumps fail.

Ident.: DSC-28-10-30-A-00001114.0002001 / 29 MAR 12
9 **Applicable to: MSN 01767-06036**

SUCTION VALVES

Closed by pumps pressure in normal operation, they allow engines to be fed by gravity if the inner tank pumps fail.

Note: *Center tank pumps are not fitted with suction valves. Therefore, gravity feeding is not possible from the center tank.*

Ident.: DSC-28-10-30-A-00001114.0003001 / 29 MAR 12
10 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

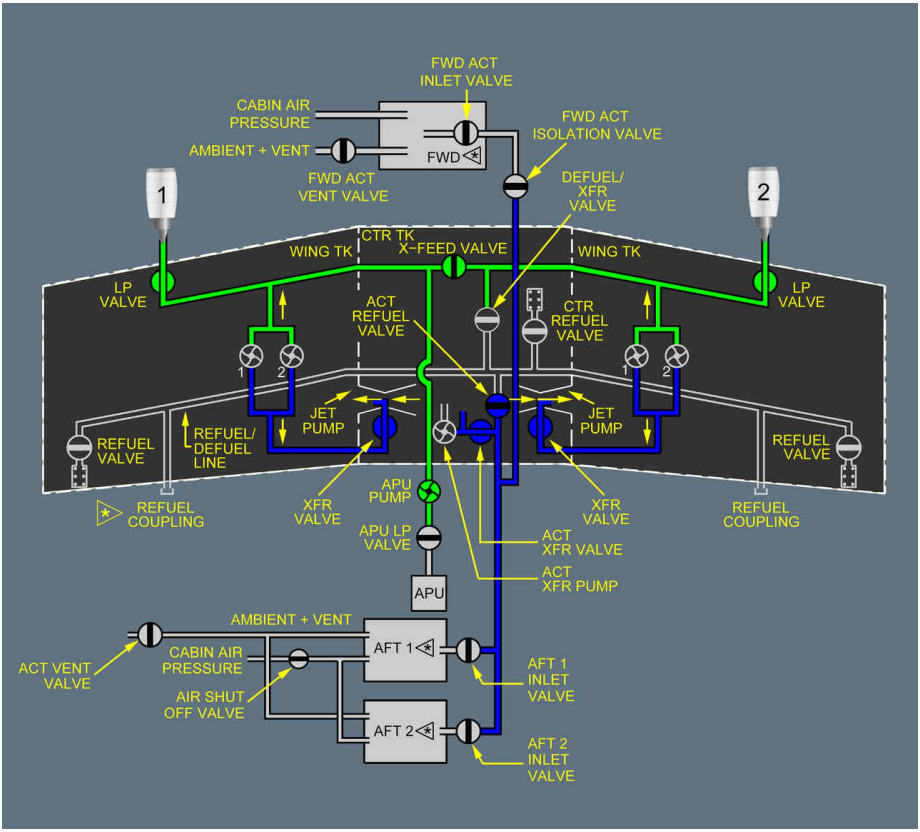
SUCTION VALVES

Closed by pumps pressure in normal operation, they allow engines to be fed by gravity if the wing tank pumps fail.

ENGINE FEED

Ident.: DSC-28-10-30-00001115.0017001 / 20 NOV 18

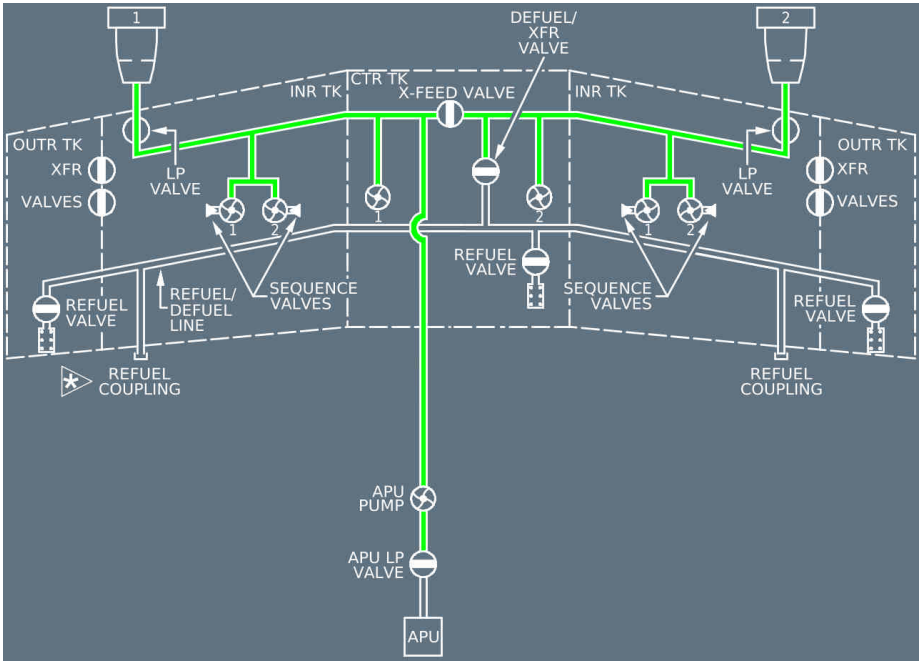
[11] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



ENGINE FEED

Ident.: DSC-28-10-30-00001115.0002001 / 18 MAR 14

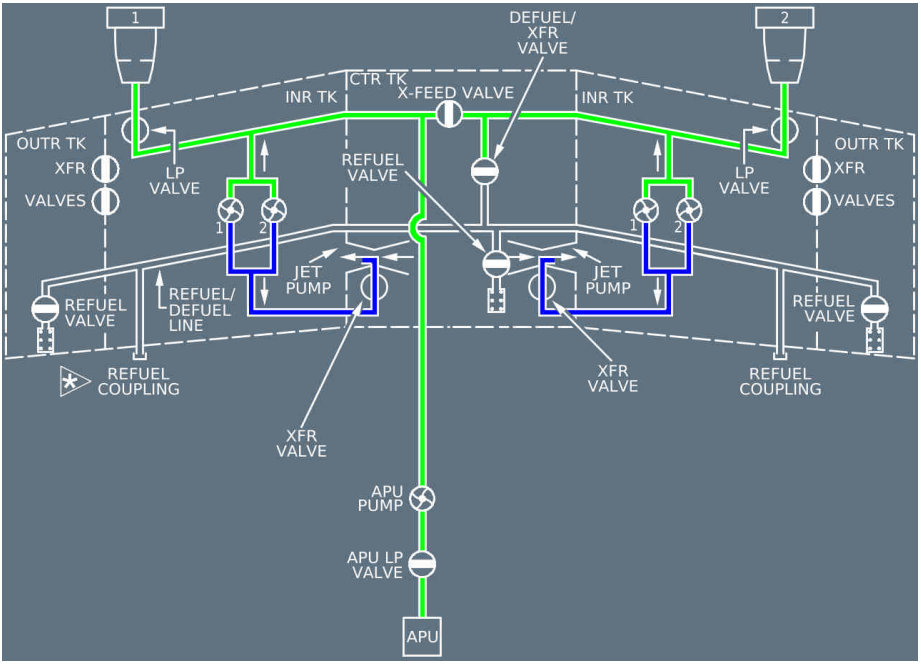
12 **Applicable to: MSN 01767-06036**



ENGINE FEED

Ident.: DSC-28-10-30-00001115.0013001 / 18 MAR 14

[13] **Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



FUEL FEED SEQUENCE

Ident.: DSC-28-10-30-00021263.0013001 / 20 NOV 18

[14] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The wing tanks feed fuel to the engines. The tanks empty in the following sequence:

1. The FWD ACT ⋖ : Fuel transfers into the center tank.
2. The AFT2 ACT ⋖ : Fuel transfers into the center tank.
3. The AFT1 ACT ⋖ : Fuel transfers into the center tank.
4. The center tank: Fuel transfers into the wing tanks.
5. The wing tanks.

CENTER TANK FUEL TRANSFER

The transfer system controls the flow of fuel from the center tank to the wing tanks. The Fuel Level Sensing Control Unit (FLSCU) has automatic control of the transfer valve. When the transfer valve

is open, fuel from the wing tank pumps flows through the jet pump and creates a suction in it. This suction moves the fuel from the center tank to the related wing tank.

CENTER TANK TRANSFER VALVE CONTROL LOGIC

The FLSCU automatically closes the associated center tank transfer valve when the wing tank is full. The FLSCU then reopens the center tank transfer valve when the engines have used 250 kg (550 lb) of wing tank fuel (when the fuel level reaches the underfull sensors).
With the MODE SEL in MAN position, the center tank transfer valves will open. Wing tank overflow must be prevented by selecting the CTR TK XFR pb-sw off when the wing tanks are full. They must also be selected off when the center tank is empty.

IF THE AIRCRAFT HAS ONE ACT ◁ : ACT TO CENTER TANK TRANSFER

ACT transfer automatically starts 30 min after landing gear up.
Fuel transfers from the ACT to the center tank via pressurization of the tank, by closing the ACT vent valve and opening the air shutoff valve.
When the ACT is empty, the ACT transfer valve, the air shutoff valve and inlet valve close, and the ACT vent valve opens.

Note: *ACT transfer stops, if the center tank fuel level exceeds 5 750 kg (12 676 lb), by closing the ACT transfer valve. The transfer valve reopens when the center tank fuel level falls below 5 000 kg (11 023 lb).*

IF THE AIRCRAFT HAS TWO ACTS ◁ : AFT 1 + 2 TO CENTER TANK TRANSFER

ACT transfer automatically starts 30 min after landing gear up.
Fuel transfers from the ACT to the center tank via pressurization of the tank, by closing the ACT vent valve and opening the air shutoff valve.
AFT2 ACT transfers first, via the ACT transfer valve and the AFT2 ACT inlet valve.
When AFT2 ACT is empty, the AFT2 ACT inlet valve shuts, and the AFT1 ACT inlet valve opens.
When AFT1 ACT is empty, the ACT transfer valve and AFT1 ACT inlet valve close.
When the aircraft is on ground after landing, the air shutoff valve closes and both ACT vent valves open, depressurizing the ACTs.

Note: *ACT transfer stops, if the center tank fuel level exceeds 5 750 kg (12 676 lb), by closing the ACT transfer valve. The transfer valve reopens when the center tank fuel level falls below 5 000 kg (11 023 lb).*

IF THE AIRCRAFT HAS THREE ACTS ◁ : FWD + AFT 2 + AFT 1 TO CENTER TANK TRANSFER

ACT transfer automatically starts 30 min after landing gear up.
Fuel transfers from the ACT to the center tank via pressurization of the tank, by closing the ACT vent valve and opening the air shutoff valve.

The FWD ACT transfers first, via the ACT transfer valve and the FWD ACT inlet valve.
When FWD ACT is empty, the FWD ACT inlet valve shuts and the AFT2 ACT inlet valve opens.
When AFT2 ACT is empty, the AFT2 ACT inlet valve shuts and the AFT1 ACT inlet valve opens.
When AFT1 ACT is empty, the ACT transfer valve and AFT1 ACT inlet valve close.
When the aircraft is on ground after landing, the air shutoff valve closes and both ACT vent valves open, depressurizing the ACTs.

Note: ACT transfer stops, if the center tank fuel level exceeds 5 750 kg (12 676 lb), by closing the ACT transfer valve. The transfer valve reopens when the center tank fuel level falls below 5 000 kg (11 023 lb).

FUEL FEED SEQUENCE

Ident.: DSC-28-10-30-00021263.0010001 / 21 MAR 17

15 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The inner tanks feed fuel to the engines. The tanks empty in the following sequence :
1. The ACT2 ◁ : Fuel transfers into the center tank.
2. The ACT1 ◁ : Fuel transfers into the center tank.
3. The center tank : Fuel transfers into the inner tanks.
4. The inner tanks : Each inner tank empties down to 750 kg (1 650 lb).
5. The outer tanks : Fuel transfers into the inner tanks.

CENTER TANK FUEL TRANSFER

The transfer system controls the flow of fuel from the center tank to the inner tanks. The Fuel Level Sensing Control Unit (FLSCU) has automatic control of the transfer valve. When the transfer valve is open, fuel from the inner tank pumps flows through the jet pump and creates a suction in it. This suction moves the fuel from the center tank to the related inner tank.

CENTER TANK TRANSFER VALVE CONTROL LOGIC:

The FLSCU automatically closes the associated center tank transfer valve when the inner tank is full. The FLSCU then reopens the center tank transfer valve when the engines have used 500 kg (1 100 lb) of inner tank fuel (when the fuel level reaches the underfull sensors).
With the MODE SEL in MAN position, the center tank transfer valves will open. Inner tank overflow must be prevented by selecting the CTR TK XFR pb-sw OFF when the inner tanks are full. They must also be selected OFF when the center tank is empty.

FUEL TRANSFER FROM OUTER TO INNER TANKS

The transfer valves automatically open, when the inner tank fuel reaches the low level (about 750 kg/1 650 lb), thus enabling the fuel to drain from the outer to inner tanks.
When open, the valves are latched open. They will automatically close at the next refueling operation.

Note: *1. Two level sensors are installed in each inner tank. Each sensor controls two transfer valves, one in each wing, ensuring simultaneous transfer to both wings.*
2. The 750 kg/1 650 lb value is based on a level aircraft attitude, with no acceleration. During steep descent or accelerations/decelerations, the transfer valves may open with more than 750 kg/1 650 lb of fuel in each inner tank, and the low level warning may be triggered.
3. During takeoff phase with less than 7 000 kg / 15 400 lb FOB, an early outer to inner transfer may occur. This is because one of the wing low-level sensors may become dry due to the move of the fuel in the wing, thus opening the transfer valves.

IF THE AIRCRAFT HAS ONE ACT ◁ : ACT TO CENTER TANK TRANSFER

ACT transfer automatically starts after takeoff at slats' retraction, if the center tank high-level sensor has been dry for 10 min, and the ACT is not empty.
Fuel transfers from the ACT to the center tank via pressurization of the tank, by closing the ACT vent valve and opening the air shutoff valve.
When the ACT is empty, the ACT transfer valve, the air shutoff valve and inlet valve close, and the ACT vent valve opens.

Note: *ACT transfer stops, if the center tank high level becomes wet, by closing the ACTs transfer valve. The transfer valve reopens when the center tank high-level sensor becomes dry for 10 min.*

Selecting the ACT pb-sw to FWD opens the ACT transfer valve, the ACT inlet valve, and starts the ACT transfer pump. It must be returned to AUTO, when the ACT is empty.
Center tank overflow is prevented, by returning the ACT pb-sw to AUTO, when the center tank is full.

IF THE AIRCRAFT HAS TWO ACTS ◁ : ACT 1 + 2 TO CENTER TANK TRANSFER

ACT transfer automatically starts after takeoff at slats' retraction, if the center tank high-level sensor has been dry for 10 min, and the ACT is not empty.
Fuel transfers from the ACT to the center tank via pressurization of the tank, by closing the ACT vent valve and opening the air shutoff valve.
ACT2 transfers first, via the ACT transfer valve and the ACT2 inlet valve.
When ACT2 is empty, the ACT2 inlet valve shuts, and the ACT1 inlet valve opens.
When ACT1 is empty, the ACT transfer valve and ACT1 inlet valve close.
When the aircraft is on ground after landing, the air shutoff valve closes and both ACT vent valves open, depressurizing the ACTs.

Note: *ACT transfer stop, if the center tank high level becomes wet, by closing the ACT transfer valve. The transfer valve reopens when the center tank high-level sensor becomes dry for 10 min.*

Selecting the ACT pb-sw to FWD opens the ACT transfer valve and starts the ACT transfer pump. ACT2 empties first, then ACT1. It must be returned to AUTO, when the ACT is empty.
Center tank overflow is prevented, by returning the ACT pb-sw to AUTO, when the center tank is full.

FUEL FEED SEQUENCE

Ident.: DSC-28-10-30-00021263.0004001 / 21 MAR 17
Applicable to: MSN 06208-06336

The inner tanks feed fuel to the engines. The tanks empty in the following sequence :
1. The ACT2 : Fuel transfers into the center tank.
2. The ACT1 : Fuel transfers into the center tank.
3. The center tank : Fuel transfers into the inner tanks.
4. The inner tanks : Each inner tank empties down to 750 kg (1 650 lb).
5. The outer tanks : Fuel transfers into the inner tanks.

CENTER TANK FUEL TRANSFER

The transfer system controls the flow of fuel from the center tank to the inner tanks. The Fuel Level Sensing Control Unit (FLSCU) has automatic control of the transfer valve. When the transfer valve is open, fuel from the inner tank pumps flows through the jet pump and creates a suction in it. This suction moves the fuel from the center tank to the related inner tank.

CENTER TANK TRANSFER VALVE CONTROL LOGIC:

The FLSCU automatically closes the associated center tank transfer valve when the inner tank is full. The FLSCU then reopens the center tank transfer valve when the engines have used 500 kg (1 100 lb) of inner tank fuel (when the fuel level reaches the underfull sensors).
With the MODE SEL in MAN position, the center tank transfer valves will open. Inner tank overflow must be prevented by selecting the CTR TK XFR pb-sw OFF when the inner tanks are full. They must also be selected OFF when the center tank is empty.

FUEL TRANSFER FROM OUTER TO INNER TANKS

The transfer valves automatically open, when the inner tank fuel reaches the low level (about 750 kg/1 650 lb), thus enabling the fuel to drain from the outer to inner tanks.
When open, the valves are latched open. They will automatically close at the next refueling operation.

Note: 1. *Two level sensors are installed in each inner tank. Each sensor controls two transfer valves, one in each wing, ensuring simultaneous transfer to both wings.*
2. *The 750 kg/1 650 lb value is based on a level aircraft attitude, with no acceleration. During steep descent or accelerations/decelerations, the transfer valves may open with more than 750 kg/1 650 lb of fuel in each inner tank, and the low level warning may be triggered.*

IF THE AIRCRAFT HAS ONE ACT ◁ : ACT TO CENTER TANK TRANSFER

ACT transfer automatically starts after takeoff at slats' retraction, if the center tank high-level sensor has been dry for 10 min, and the ACT is not empty.
Fuel transfers from the ACT to the center tank via pressurization of the tank, by closing the ACT vent valve and opening the air shutoff valve.
When the ACT is empty, the ACT transfer valve, the air shutoff valve and inlet valve close, and the ACT vent valve opens.

Note: *ACT transfer stops, if the center tank high level becomes wet, by closing the ACTs transfer valve. The transfer valve reopens when the center tank high-level sensor becomes dry for 10 min.*

Selecting the ACT pb-sw to FWD opens the ACT transfer valve, the ACT inlet valve, and starts the ACT transfer pump. It must be returned to AUTO, when the ACT is empty.
Center tank overflow is prevented, by returning the ACT pb-sw to AUTO, when the center tank is full.

IF THE AIRCRAFT HAS TWO ACTS ◁ : ACT 1 + 2 TO CENTER TANK TRANSFER

ACT transfer automatically starts after takeoff at slats' retraction, if the center tank high-level sensor has been dry for 10 min, and the ACT is not empty.
Fuel transfers from the ACT to the center tank via pressurization of the tank, by closing the ACT vent valve and opening the air shutoff valve.
ACT2 transfers first, via the ACT transfer valve and the ACT2 inlet valve.
When ACT2 is empty, the ACT2 inlet valve shuts, and the ACT1 inlet valve opens.
When ACT1 is empty, the ACT transfer valve and ACT1 inlet valve close.
When the aircraft is on ground after landing, the air shutoff valve closes and both ACT vent valves open, depressurizing the ACTs.

Note: *ACT transfer stop, if the center tank high level becomes wet, by closing the ACT transfer valve. The transfer valve reopens when the center tank high-level sensor becomes dry for 10 min.*

Selecting the ACT pb-sw to FWD opens the ACT transfer valve and starts the ACT transfer pump. ACT2 empties first, then ACT1. It must be returned to AUTO, when the ACT is empty.

Center tank overflow is prevented, by returning the ACT pb-sw to AUTO, when the center tank is full.

FUEL FEED SEQUENCE

Ident.: DSC-28-10-30-00021263.0001001 / 21 MAR 17

16 **Applicable to: MSN 01767-06036**

The tanks empty in the following sequence :

1. The ACT2 ◁ : Fuel transfers into the center tank.
2. The ACT1 ◁ : Fuel transfers into the center tank.
3. The center tank.
4. The inner tanks: Each inner tank empties down to 750 kg (1 650 lb).
5. The outer tanks: Fuel transfers into the inner tanks.

CENTER TANK FUEL TRANSFER

The center tank feeds fuel to the engines, when the center tank pumps are not stopped by the control logic described below. The inner tanks feed the engines when the center tank pumps are stopped.

CENTER TANK TRANSFER VALVE CONTROL LOGIC

Each center tank pump stops, until approximately 500 kg (1 100 lb) of the fuel in its associated inner tank fuel has been used (when the fuel level reaches the underfull sensors).
With the MODE SEL in the MAN position, the center tank pumps will run. In manual mode, the CTR TK PUMP pb-sw must be selected OFF, when the center tank is empty.

FUEL TRANSFER FROM OUTER TO INNER TANKS

The transfer valves automatically open, when the inner tank fuel reaches the low level (about 750 kg/1 650 lb), thus enabling the fuel to drain from the outer to inner tanks.
When open, the valves are latched open. They will automatically close at the next refueling operation.

Note: *1. Two level sensors are installed in each inner tank. Each sensor controls two transfer valves, one in each wing, ensuring simultaneous transfer to both wings.*
2. The 750 kg/1 650 lb value is based on a level aircraft attitude, with no acceleration. During steep descent or accelerations/decelerations, the transfer valves may open with more than 750 kg/1 650 lb of fuel in each inner tank, and the low level warning may be triggered.

IF THE AIRCRAFT HAS ONE ACT ◁ : ACT TO CENTER TANK TRANSFER

ACT transfer automatically starts after takeoff at slats' retraction, if the center tank high-level sensor has been dry for 10 min, and the ACT is not empty.

Fuel transfers from the ACT to the center tank via pressurization of the tank, by closing the ACT vent valve and opening the air shutoff valve.
When the ACT is empty, the ACT transfer valve, the air shutoff valve and inlet valve close, and the ACT vent valve opens.

Note: *ACT transfer stops, if the center tank high level becomes wet, by closing the ACTs transfer valve. The transfer valve reopens when the center tank high-level sensor becomes dry for 10 min.*

Selecting the ACT pb-sw to FWD opens the ACT transfer valve, the ACT inlet valve, and starts the ACT transfer pump. It must be returned to AUTO, when the ACT is empty.
Center tank overflow is prevented, by returning the ACT pb-sw to AUTO, when the center tank is full.

IF THE AIRCRAFT HAS TWO ACTS ⩤ : ACT 1 + 2 TO CENTER TANK TRANSFER

ACT transfer automatically starts after takeoff at slats' retraction, if the center tank high-level sensor has been dry for 10 min, and the ACT is not empty.
Fuel transfers from the ACT to the center tank via pressurization of the tank, by closing the ACT vent valve and opening the air shutoff valve.
ACT2 transfers first, via the ACT transfer valve and the ACT2 inlet valve.
When ACT2 is empty, the ACT2 inlet valve shuts, and the ACT1 inlet valve opens.
When ACT1 is empty, the ACT transfer valve and ACT1 inlet valve close.
When the aircraft is on ground after landing, the air shutoff valve closes and both ACT vent valves open, depressurizing the ACTs.

Note: *ACT transfer stop, if the center tank high level becomes wet, by closing the ACT transfer valve. The transfer valve reopens when the center tank high-level sensor becomes dry for 10 min.*

Selecting the ACT pb-sw to FWD opens the ACT transfer valve and starts the ACT transfer pump.
ACT2 empties first, then ACT1. It must be returned to AUTO, when the ACT is empty.
Center tank overflow is prevented, by returning the ACT pb-sw to AUTO, when the center tank is full.

GENERAL

Ident.: DSC-28-10-40-00009208.0003001 / 20 NOV 18

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

ACT SYSTEM

Up to 3 ACTs can be installed in the cargo holds: 1 FWD, 2 AFT. They transfer to the center tank one at a time, in the following order: FWD then AFT2 and AFT1. Transfer is fully automatic and is achieved by pressurizing the tanks with cabin air.

AUTOMATIC TRANSFER

Ident.: DSC-28-10-40-00009209.0007001 / 20 NOV 18

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The transfer starts in flight, when the center tank quantity is below 5 000 kg (11 030 lb), by pressurizing the ACTs and opening the ACT transfer valve. The inlet valve of the first ACT in sequence opens, until that ACT is empty. Each empty ACT will be scavenged for around 2 min. Then, its inlet valve closes, and the inlet valve of the next ACT in sequence opens.
When the center tank quantity reaches 5 750 kg (12 700 lb), the ACT transfer stops.
A wire installed on the forward ACT vent pipe detects an ACT damage due to engine rotor burst. Then the forward ACT is automatically isolated.

MANUAL TRANSFER

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: DSC-28-10-40-A-00009210.0001001 / 05 JUN 18

3

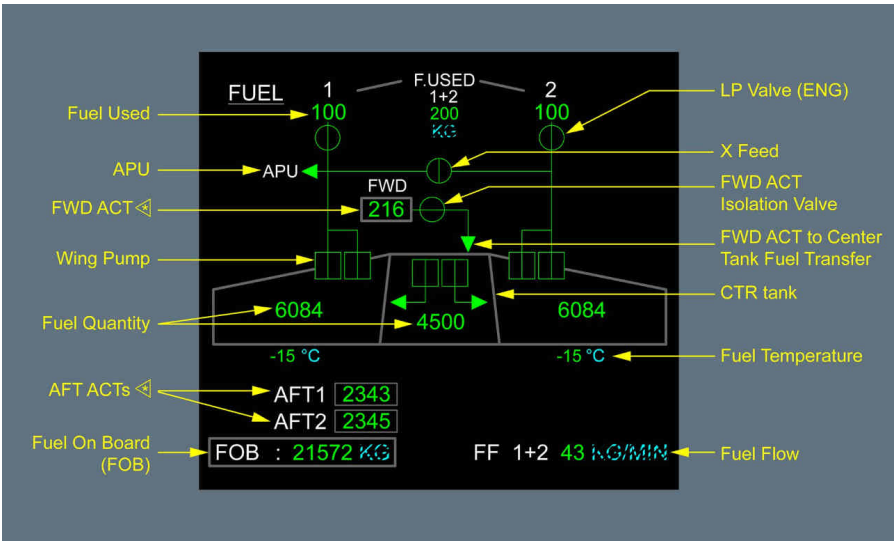
GENERAL

In case of a transfer failure, a manual transfer is performed by pressing the ACT XFR MODE SEL pb-sw . The crew then selects the ACT to be transferred on the ACT XFR rotary selector . If a center tank overflow occurs, pressing the ALL ACT pb-sw stops the ACT transfer by isolating all the ACTs.

Ident.: DSC-28-10-40-A-00009211.0005001 / 05 JUN 18

4

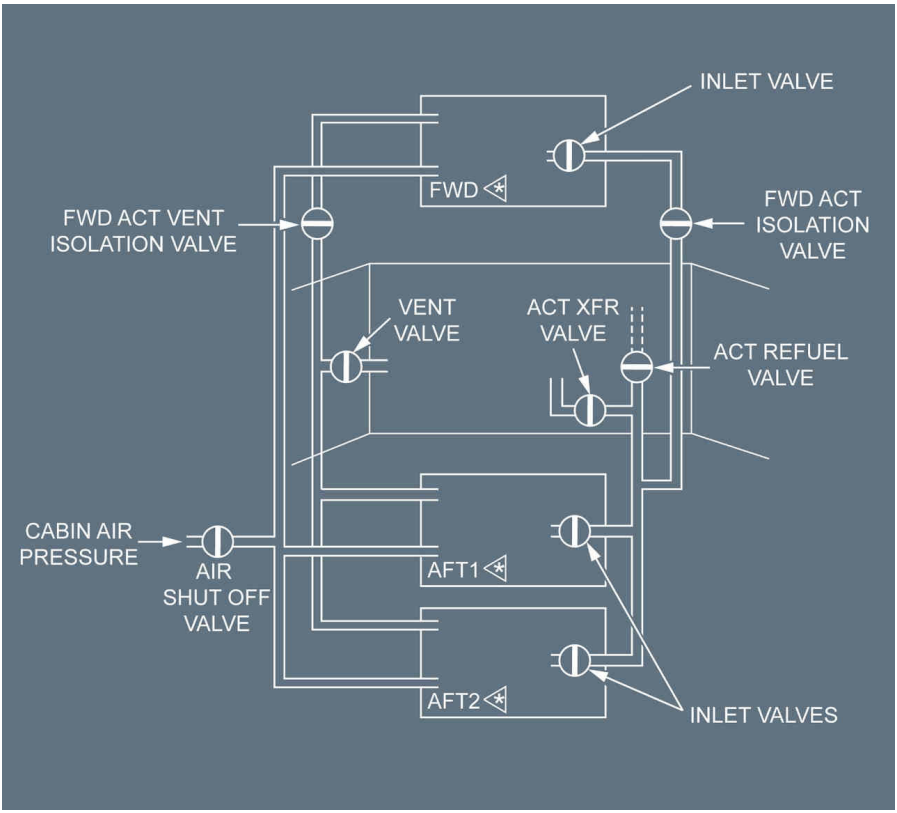
ECAM INDICATION



Ident.: DSC-28-10-40-A-00009212.0002001 / 05 JUN 18

5

ACT SYSTEM ARCHITECTURE



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APU FEED

Ident.: DSC-28-10-50-00001120.0001001 / 10 DEC 09
Applicable to: ALL

A special fuel pump supplies fuel for APU startup when fuel feed pressure is low (due to loss of tank pumps or loss of normal AC electrical supply). This pump normally runs off the AC ESS SHED, but runs off the AC STAT INV BUS if the AC ESS SHED fails.

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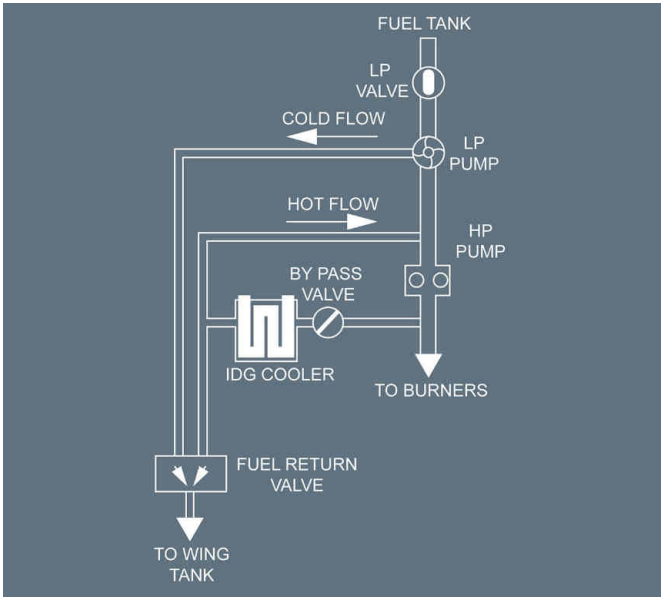
FUEL RECIRCULATION SYSTEM

Ident.: DSC-28-10-60-B-00020316.0001001 / 05 JUN 18
Applicable to: ALL

Illustration - For information only



Ident.: DSC-28-10-60-B-00020317.0010001 / 28 NOV 17
1 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

For PW 6100 engine: Refer to DSC-70-47 IDG Cooling System.
For PW 1100G engine: Refer to DSC-70-48 IDG Cooling Recirculation System.
Some of the fuel supplied to each engine goes from the high-pressure fuel line in that engine, through the integrated drive generator (IDG) heat exchanger (where it absorbs heat), to the fuel return valve and back to the outer fuel tank.
This operation ensures the IDG cooling when the oil temperature is high or when at low engine power.
The FADEC controls the fuel return valve.
If the outer tank is already full, the fuel overflows to the inner tank through a spill pipe.

Ident.: DSC-28-10-60-B-00020317.0009001 / 28 NOV 17
Applicable to: MSN 06208-06336

Refer to DSC-70-45 General

Some of the fuel supplied to each engine goes from the high-pressure fuel line in that engine, through the integrated drive generator (IDG) heat exchanger (where it absorbs heat), to the fuel return valve and back to the outer fuel tank.
This operation ensures the IDG cooling when the oil temperature is high or when at low engine power.
The FADEC controls the fuel return valve.
If the outer tank is already full, the fuel overflows to the inner tank through a spill pipe.

Ident.: DSC-28-10-60-B-00020317.0004001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Refer to DSC-70-40 IDG Cooling System.
Some of the fuel supplied to each engine goes from the high-pressure fuel line in that engine, through the integrated drive generator (IDG) heat exchanger (where it absorbs heat), to the fuel return valve and back to the outer fuel tank.
This operation ensures the IDG cooling when the oil temperature is high or when at low engine power.
The FADEC controls the fuel return valve.
If the outer tank is already full, the fuel overflows to the inner tank through a spill pipe. On ground, the fuel recirculation is not inhibited if there is an overflow in the surge tanks (*Refer to DSC-70-40 IDG Cooling System*).

- **If the FUEL MODE SEL pb-sw is in AUTO mode:**
  If center tank is feeding, the wing tank will tend to overfill and the system automatically selects the CTR TK PUMP off when the inner tank is full. The wing tank pumps will feed until the engine have used approximately 500 kg (1 100 lb) of fuel when the fuel level reaches the underfull sensors. The logic circuits then restart the center tank pumps.
- **If the FUEL MODE SEL pb-sw is in MAN mode:**
  If center tank is feeding, the wing tanks will tend to overfill but the system does not automatically select the CTR TK PUMPs OFF when the inner tank is full. Therefore, an overflow of the wing tanks can occur on ground if the CTR TK PUMPs are not switched OFF.

Ident.: DSC-28-10-60-B-00020317.0005001 / 31 AUG 17
2 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06036**

Refer to DSC-70-45 General.
Some of the fuel supplied to each engine goes from the high-pressure fuel line in that engine, through the integrated drive generator (IDG) heat exchanger (where it absorbs heat), to the fuel return valve and back to the outer fuel tank.
This operation ensures the IDG cooling when the oil temperature is high or when at low engine power.
The FADEC controls the fuel return valve.
If the outer tank is already full, the fuel overflows to the inner tank through a spill pipe.

If center tank is feeding, the wing tank will tend to overfill and the system automatically selects the CTR TK PUMP off when the inner tank is full. The wing tank pumps will feed until the engine have used approximately 500 kg (1 100 lb) of fuel when the fuel level reaches the underfull sensors. The logic circuits then restart the center tank pumps.

Ident.: DSC-28-10-60-B-00020317.0006001 / 28 NOV 17

3 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

For IAE engine: Refer to DSC-70-45 General.
For PW engine: Refer to DSC-70-48 IDG Cooling Recirculation System.
For CFM engine: Refer to DSC-70-40 IDG Cooling System.
Some of the fuel supplied to each engine goes from the high-pressure fuel line in that engine, through the integrated drive generator (IDG) heat exchanger (where it absorbs heat), to the fuel return valve and back to the wing tank.
This operation ensures the IDG cooling when the oil temperature is high or when at low engine power.
The FADEC controls the fuel return valve.

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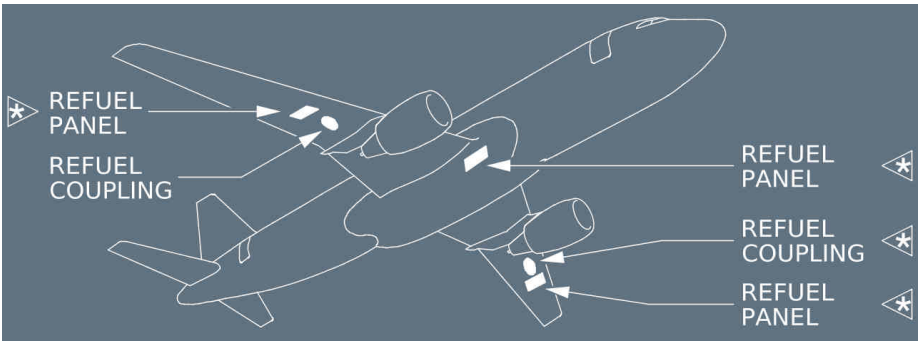
REFUELING - DEFUELING

Ident.: DSC-28-10-70-00021235.0010001 / 04 SEP 18

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

- During automatic refueling, fuel goes into the ACTs ◁ , the center tank and the wing tanks simultaneously.
  During manual refueling, fill the wing tanks first, then the center tank, then the ACTs ◁ .
- Electrical transients (caused by switching among the APU, the external and the engine electrical supply) during automatic refueling may stop the process. If the automatic refueling process is stopped, it is necessary to re-enter the Preselected Fuel Quantity.
- One (two) refueling point(s) is (are) installed under the wings, enabling the aircraft to be refueled from either the right or left (if installed) side.
- A refuel panel is located on the fuselage side beneath the right wing, or under the right or left wing adjacent to the refuel coupling.

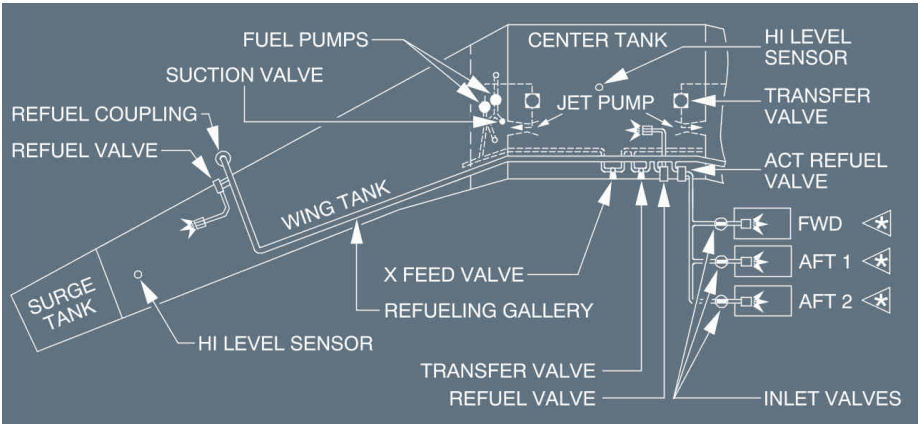


A gallery connects the refuel coupling to each tank's refuel valve.
Refueling is normally automatic, the required fuel load being set on the preselector.
Manual control is also available.
Automatic refueling starts with the wing tanks. If the preselected fuel load exceeds the capacity of the wing tanks, the center tank is simultaneously refueled.
Refuel valves close automatically, when the tanks contain the preselected load, or when sensors detect a high fuel level.
The aircraft can be refueled, when only battery power is available.
The wing tanks can be refueled by gravity, through refueling points on top of the wings.

A transfer valve, between the engine feed system and the refueling gallery, allows :
- The tank pumps to transfer fuel from one tank to another
- Defueling through the refuel coupling.

Approximate refueling time at nominal pressure is :

- 17 min for wing tanks
- 20 min for all tanks (without ACT ◁)
- 25 min for all tanks (with one ACT ◁)
- 27 min for all tanks (with two ACTs ◁)
- 39 min for all tanks (with three ACTs ◁).

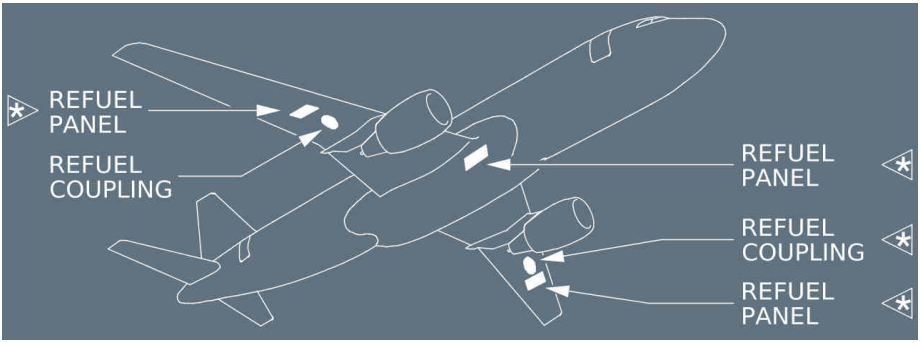


REFUELING - DEFUELING

Ident.: DSC-28-10-70-00021235.0005001 / 21 MAR 17

2 **Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

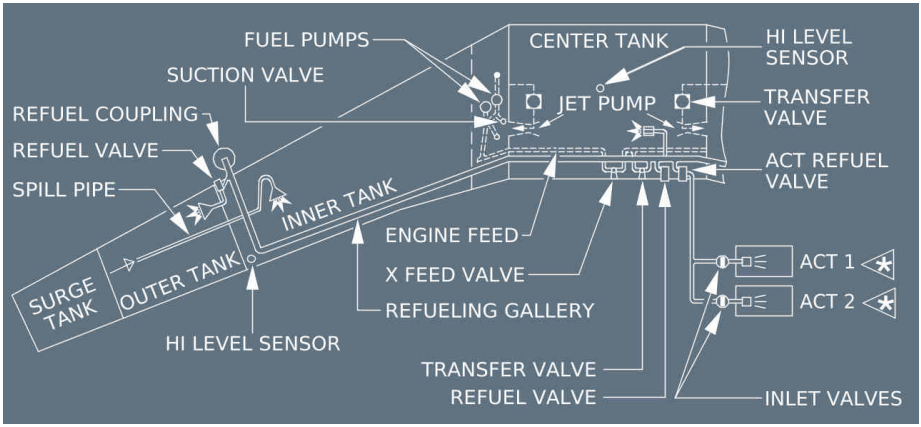
- During automatic refueling, fuel goes into the ACTs ◁ , the center tank and the outer cell of the wing tanks simultaneously. When the outer cell of the wing tank is full, fuel overflows into the inner cell. During manual refueling, fill the wing tanks first, then the center tank, then the ACTs ◁ .
- Electrical transients (caused by switching among the APU, the external and the engine electrical supply) during automatic refueling may stop the process. If the automatic refueling process is stopped, it is necessary to re-enter the Preselected Fuel Quantity.
- One (two) refueling point(s) is (are) installed under the wings, enabling the aircraft to be refueled from either the right or left (if installed) side.
- A refuel panel is located on the fuselage side beneath the right wing, or under the right or left wing adjacent to the refuel coupling.



A gallery connects the refuel coupling to each tank's refuel valve.
Refueling is normally automatic, the required fuel load being set on the preselector.
Manual control is also available.
Automatic refueling starts with the outer tanks. If the selected fuel load exceeds the wing tank capacity, the center tank is simultaneously refueled.
When an outer tank is full, the fuel overflows into the inner tank through a spill pipe.
Refuel valves close automatically, when the tanks contain the preselected load, or when sensors detect a high fuel level.
The aircraft can be refueled, when only battery power is available.
The wing tanks can be refueled by gravity, through refueling points on top of the wings.

A transfer valve, between the engine feed system and the refueling gallery, allows:
- The tank pumps to transfer fuel from one tank to another
- Defueling through the refuel coupling.

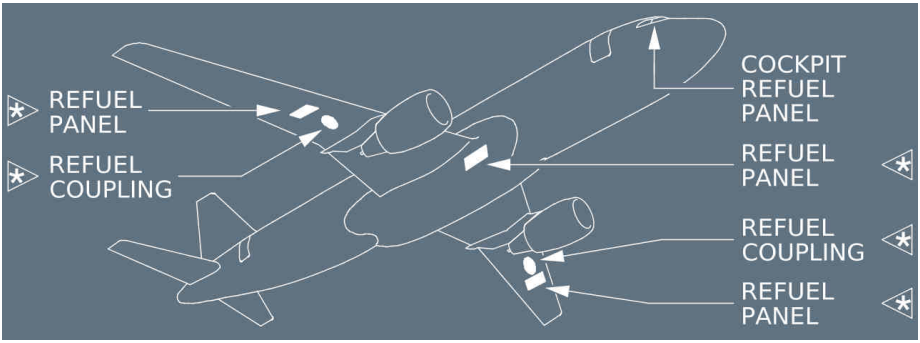
Approximate refueling time at nominal pressure is:
- 17 min for wing tanks
- 20 min for all tanks (without ACT)
- 25 min for all tanks (with one ACT)
- 27 min for all tanks (with two ACTs).



REFUELING - DEFUELING

Ident.: DSC-28-10-70-00021235.0002001 / 21 MAR 17
Applicable to: MSN 01767, 02108, 02388, 03138

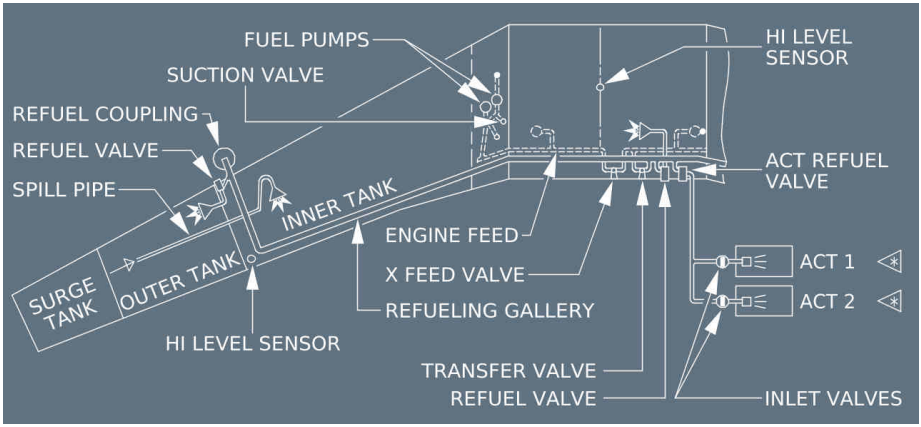
- During automatic refueling, fuel goes into the ACTs ⋘ , the center tank and the outer cell of the wing tanks simultaneously. When the outer cell of the wing tank is full, fuel overflows into the inner cell. During manual refueling, fill the wing tanks first, then the center tank, then the ACTs ⋘ .
- Electrical transients (caused by switching among the APU, the external and the engine electrical supply) during automatic refueling may stop the process. If the automatic refueling process is stopped, it is necessary to re-enter the Preselected Fuel Quantity.
- One (two) refueling point(s) is (are) installed under the wings, enabling the aircraft to be refueled from either the right or left (if installed) side.
- A refuel panel is located on the fuselage side beneath the right wing, or under the right or left wing adjacent to the refuel coupling.
- Another refuel panel is located on the cockpit overhead maintenance panel.
- A "READY FOR FUELING" green light is installed adjacent to the refuel coupling.



A gallery connects the refuel coupling to each tank's refuel valve.
Refueling is normally automatic, the required fuel load being set on the preselector.
Manual control is also available.
Automatic refueling starts with the outer tanks. If the selected fuel load exceeds the wing tank capacity, the center tank is simultaneously refueled.
When an outer tank is full, the fuel overflows into the inner tank through a spill pipe.
Refuel valves close automatically, when the tanks contain the preselected load, or when sensors detect a high fuel level.
The aircraft can be refueled, when only battery power is available.
The wing tanks can be refueled by gravity, through refueling points on top of the wings.

A transfer valve, between the engine feed system and the refueling gallery, allows :
- The tank pumps to transfer fuel from one tank to another
- Defueling through the refuel coupling.

Approximate refueling time at nominal pressure is:
- 17 min for wing tanks
- 20 min for all tanks (without ACT)
- 25 min for all tanks (with one ACT)
- 27 min for all tanks (with two ACTs).

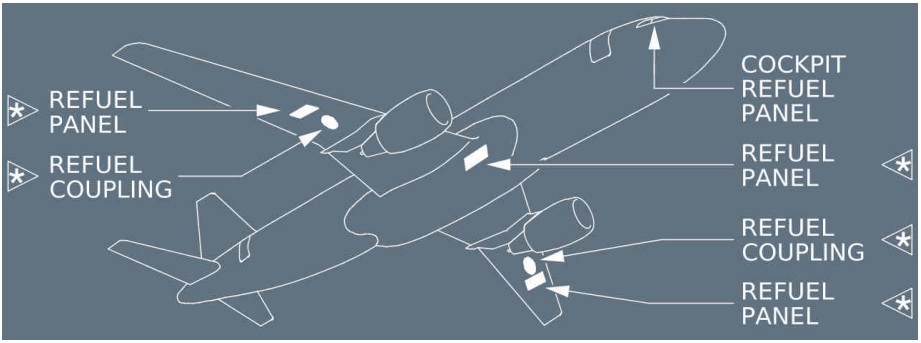


REFUELING - DEFUELING

Ident.: DSC-28-10-70-00021235.0001001 / 21 MAR 17

3 **Applicable to: MSN 01920-02097, 02121-02359, 02405-03071, 03264-06036**

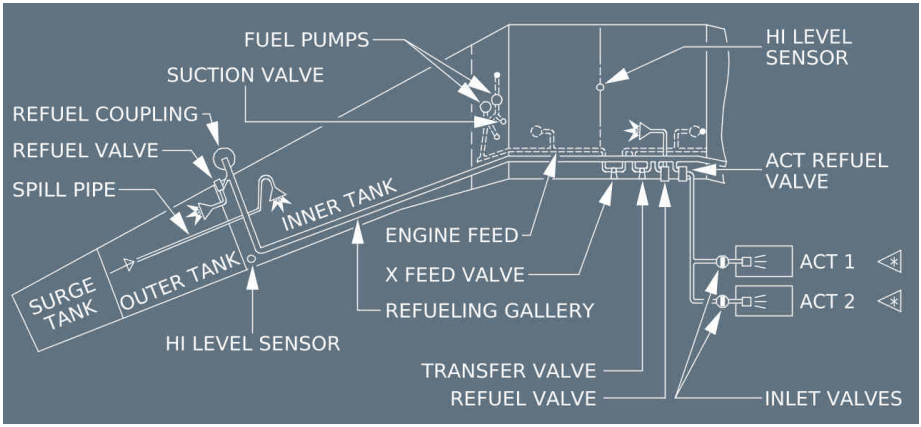
- During automatic refueling, fuel goes into the ACTs , the center tank and the outer cell of the wing tanks simultaneously. When the outer cell of the wing tank is full, fuel overflows into the inner cell. During manual refueling, fill the wing tanks first, then the center tank, then the ACTs .
- Electrical transients (caused by switching among the APU, the external and the engine electrical supply) during automatic refueling may stop the process. If the automatic refueling process is stopped, it is necessary to re-enter the Preselected Fuel Quantity.
- One (two) refueling point(s) is (are) installed under the wings, enabling the aircraft to be refueled from either the right or left (if installed) side.
- A refuel panel is located on the fuselage side beneath the right wing, or under the right or left wing adjacent to the refuel coupling.



A gallery connects the refuel coupling to each tank's refuel valve.
Refueling is normally automatic, the required fuel load being set on the preselector.
Manual control is also available.
Automatic refueling starts with the outer tanks. If the selected fuel load exceeds the wing tank capacity, the center tank is simultaneously refueled.
When an outer tank is full, the fuel overflows into the inner tank through a spill pipe.
Refuel valves close automatically, when the tanks contain the preselected load, or when sensors detect a high fuel level.
The aircraft can be refueled, when only battery power is available.
The wing tanks can be refueled by gravity, through refueling points on top of the wings.

A transfer valve, between the engine feed system and the refueling gallery, allows :
- The tank pumps to transfer fuel from one tank to another
- Defueling through the refuel coupling.

Approximate refueling time at nominal pressure is:
- 17 min for wing tanks
- 20 min for all tanks (without ACT)
- 25 min for all tanks (with one ACT)
- 27 min for all tanks (with two ACTs).


FUEL PUMPS
SUCTION VALVE
REFUEL COUPLING
REFUEL VALVE
SPILL PIPE
INNER TANK
OUTER TANK
SURGE TANK
HI LEVEL SENSOR
ENGINE FEED
X FEED VALVE
REFUELING GALLERY
TRANSFER VALVE
REFUEL VALVE
HI LEVEL SENSOR
ACT REFUEL VALVE
ACT 1
ACT 2
INLET VALVES

FUEL QUANTITY INDICATION (FQI) SYSTEM

Ident.: DSC-28-10-80-00001123.0001001 / 10 DEC 09

1 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The FQI is a computerized system that :
- transmits the actual total fuel mass, as well as the quantity and temperature of fuel in the tanks, to the ECAM.
- controls automatic refueling.

Two channels perform fuel computations : channel 2 activates automatically if channel 1 fails.

The FQI system has :
- an FQI computer.
- a set of capacitance probes in each tank to measure fuel level and temperature.
- one densitometer (cadensicon) sensor in each wing inner tank permitting the calculation of the fuel quantity.
- one Capacitance Index Compensator (CIC) in each inner tank giving the dielectric constant of the fuel in case of cadensicon failure.
- a quantity indicator for each tank installed on the refuel/defuel panel.
- a preselector on the refuel/defuel panel that shows the preselected and actual total fuel quantity.

FUEL QUANTITY INDICATION (FQI) SYSTEM

Ident.: DSC-28-10-80-00001123.0004001 / 05 JUN 18

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The FQI is a computerized system that:
- Transmits the quantity and temperature of fuel in the wing and center tanks, to the Auxiliary Fuel Management Computer (AFMC)
- Controls automatic refueling.

Two channels perform fuel computations: channel 2 activates automatically if channel 1 fails.

The FQI system has:
- An FQI computer
- A set of capacitance probes in each tank to measure fuel level and temperature
- One densitometer (cadensicon) sensor in each wing inner tank permitting the calculation of the fuel quantity
- One Capacitance Index Compensator (CIC) in each inner tank giving the dielectric constant of the fuel in case of cadensicon failure
- A quantity indicator for each tank installed on the refuel/defuel panel
- A preselector on the refuel/defuel panel that shows the preselected and actual total fuel quantity.

FUEL LEVEL SENSING CONTROL UNIT (FLSCU)

Ident.: DSC-28-10-80-00001124.0001001 / 16 MAR 15

3 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The fuel level system generates fuel-level and fuel-temperature signals in order to operate the appropriate switching functions for refueling and defueling and control the IDG cooling recirculation system and the center-tank-to-wing-tank fuel transfer system.

The FLSCU comprises :
- fuel level sensors in the tanks to sense high, low, and overflow levels.
- a fuel temperature sensor to control the IDG cooling recirculation.

When fuel quantity in one wing tank goes below 750 kg (1 650 lb), the low-level sensor triggers the LO LVL warning on ECAM. The LO LVL warning is totally independent from the displayed fuel quantity indication of the tank.

FUEL LEVEL SENSING CONTROL UNIT (FLSCU)

Ident.: DSC-28-10-80-00001124.0002001 / 16 MAR 15

4 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The fuel level system generates fuel-level and fuel-temperature signals in order to operate the appropriate switching functions for refueling and defueling and control the IDG cooling recirculation system and the center-tank-to-wing-tank fuel transfer system and ACT ◁ to center tank fuel transfer system.

The FLSCU comprises :
- fuel level sensors in the tanks to sense high, low, and overflow levels.
- a fuel temperature sensor to control the IDG cooling recirculation.

When fuel quantity in one wing tank goes below 750 kg (1 650 lb), the low-level sensor triggers the LO LVL warning on ECAM. The LO LVL warning is totally independent from the displayed fuel quantity indication of the tank.

AUXILIARY FUEL MANAGEMENT SYSTEM (AFMS)

Ident.: DSC-28-10-80-00009213.0001001 / 05 JUN 18

5 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The AFMS is a computerized system that:
- Calculates the fuel quantity in the ACTs and transmits the quantities to the ECAM and overhead panel
- Adds the total ACT quantity to the wing and center tank quantity from the FQIC
- Transmits the total fuel quantity to the ECAM

- Controls the transfer of the ACTs to the center tank
- Generates ECAM warnings in case of transfer failure.

The auxiliary fuel management system comprises:
- An AFMC computer
- Two probes in each ACT to measure fuel quantity.

AUXILIARY LEVEL SENSE CONTROL UNIT (ALSCU)

Ident.: DSC-28-10-80-00009214.0001001 / 10 DEC 09

6 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

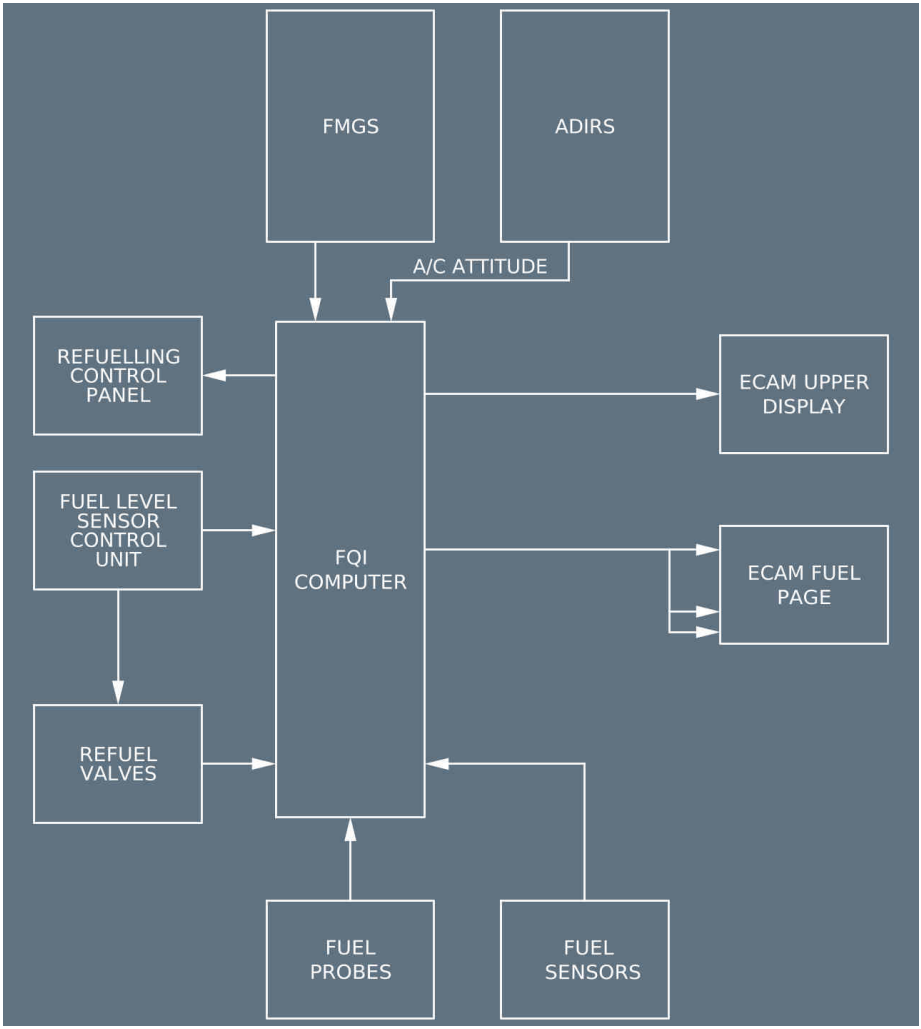
The auxiliary level sense control unit generates ACT low and high fuel level signals in order to control the refuel and transfer of the ACTs. These signals are also used to generate ECAM warnings in case of transfer failure.
The system comprises :

- one ALSCU
- one low level sensor per ACT
- one high level sensor per ACT

FUEL SYSTEM ARCHITECTURE

Ident.: DSC-28-10-80-00001125.0001001 / 22 MAY 12

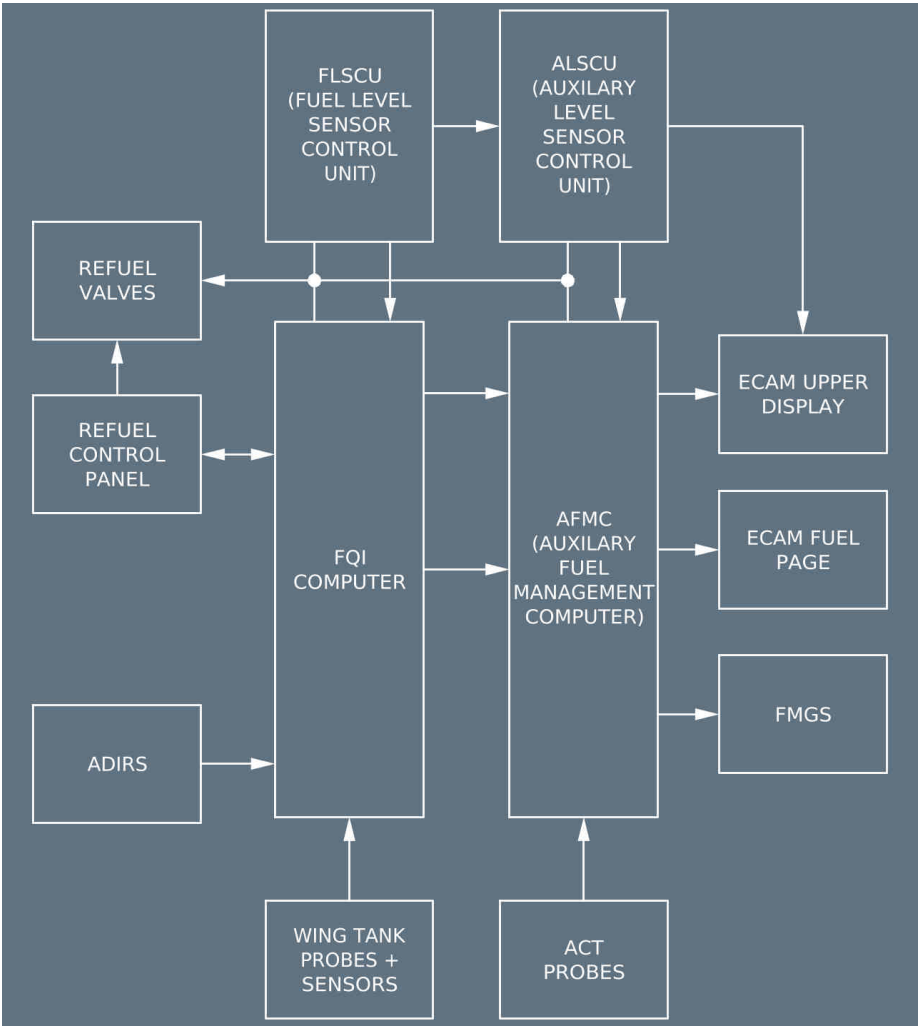
[7] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



FUEL SYSTEM ARCHITECTURE

Ident.: DSC-28-10-80-00001125.0002001 / 22 MAY 12

[8] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



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FUEL TANK INERTING SYSTEM

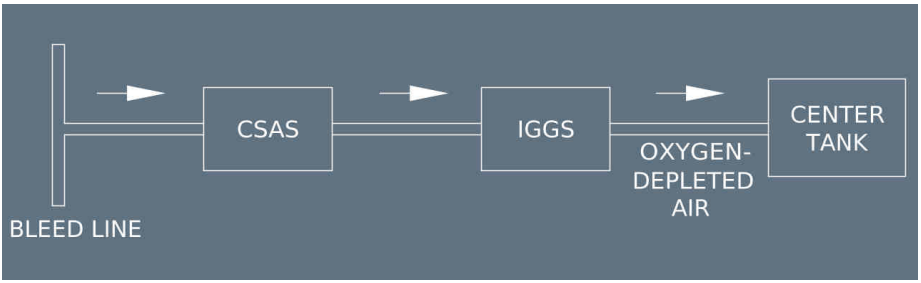
Ident.: DSC-28-10-90-00013692.0001001 / 18 MAR 11

[1] **Applicable to: MSN 02405, 02482, 04314, 04393-04397, 04965-09063**

The A318, A319, A320 and A321 aircraft are equipped with a Fuel Tank Inerting System.
The aim of this system is to reduce the flammability in the fuel tanks that have a high flammability exposure.
The fuel center tank is the only one that has a high flammability exposure. Therefore, the Fuel Tank Inerting System only needs to be installed for the center tank. All other tanks do not need Fuel Tank Inerting System installation.
To reduce the flammability in the center tank, the Fuel Tank Inerting System produces an oxygen-depleted air that goes in the center tank to replace the ambient air.

The system is installed in the belly fairing of the aircraft, and is composed by:
- A conditioned Service Air System (CSAS)
- An Inert Gas Generation System (IGGS).

The CSAS extracts and conditions some engine bleed air to adequate pressure and temperature. Then, the air goes through the IGGS where an Air Separation Module taps the nitrogen molecules. Therefore, an oxygen-depleted air is produced (with less than 12 % of oxygen) and replaces the ambient air of the center tank.



The Fuel Tank Inerting System does not require any flight crew action. It works independently as soon as the engines start and until they stop.

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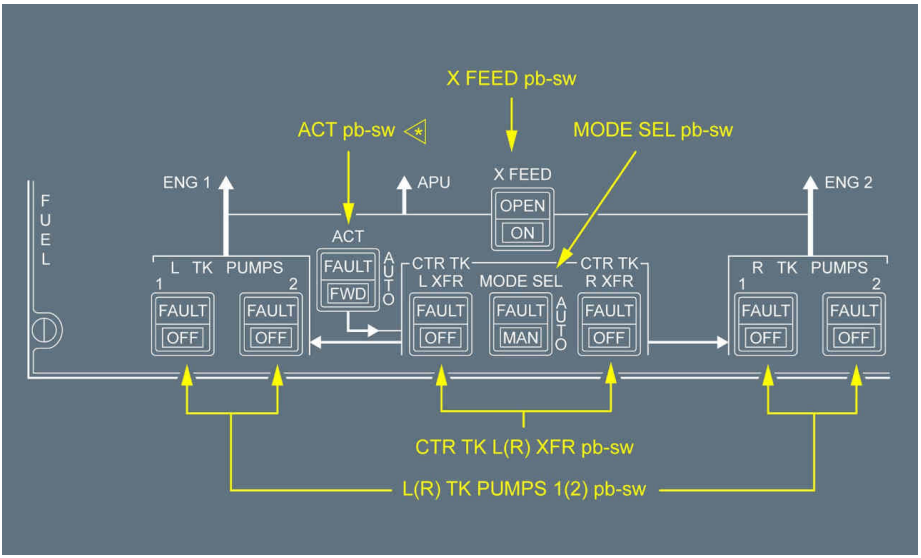
OVERHEAD PANEL

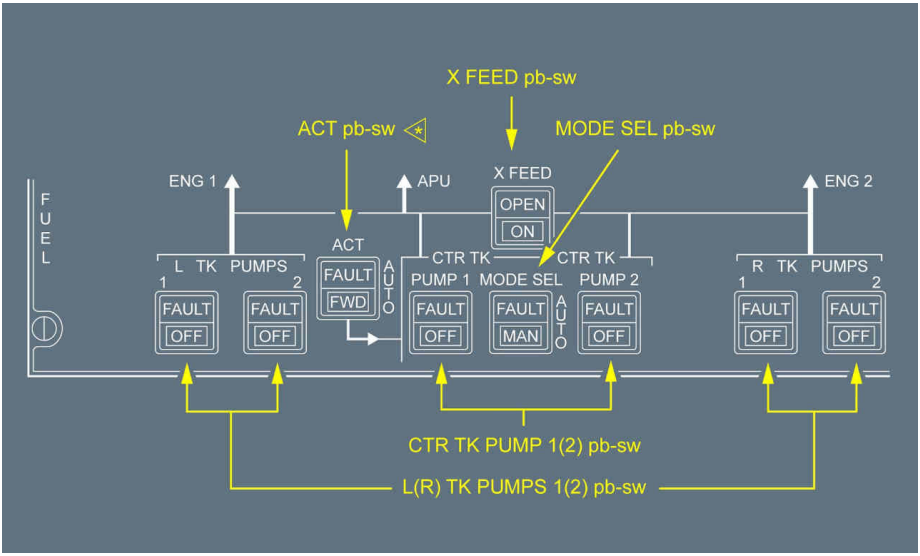
Ident.: DSC-28-20-G-00020183.0002001 / 17 MAR 17

[1] **Applicable to: MSN 06208-09063**



Ident.: DSC-28-20-G-00020183.0001001 / 17 MAR 17

2 **Applicable to: MSN 01767-06036**



Ident.: DSC-28-20-G-00020239.0002001 / 17 MAR 17

3 **Applicable to: MSN 06208-09063**

L (R) TK PUMPS 1(2) pb-sw

On	:	Pump is on.
OFF	:	Pump is off, and the OFF button comes on white.
FAULT light	:	Amber light and ECAM caution come on, when the delivery pressure drops. It does not come on when OFF is selected.

Ident.: DSC-28-20-G-00020239.0001001 / 17 MAR 17

4 **Applicable to: MSN 01767-06036**

L(R) TK PUMPS 1(2) pb-sw

On	:	Pump is on (but only fuel feeds) when the delivery pressure of the center tank pumps drops below the threshold.
OFF	:	Pump is off, and the OFF button comes on white.
FAULT light	:	Amber light and ECAM caution come on, when the delivery pressure drops. It does not come on when OFF is selected.

Ident.: DSC-28-20-G-00020240.0003001 / 17 MAR 17

5 **Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

MODE SEL pb-sw

AUTO : Control of center tank transfer valves is automatic:
- They open if the associated inner tank is not full,
- They stop automatically 5 min after center tank low level is reached.

MAN : Flight crew manually controls the center tank transfer valves with the CTR TK XFR pushbutton switches.

FAULT light : Amber light comes on, and ECAM caution comes on when center tank has more than 250 kg (550 lb) of fuel and the left or right wing tank has less than 5 000 kg (11 000 lb) and the MODE SEL pb-sw is at AUTO.

Ident.: DSC-28-20-G-00020240.0002001 / 17 MAR 17

6 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

MODE SEL pb-sw

AUTO : Control of center tank transfer valves is automatic:
- They open if the associated wing tank is not full,
- They stop automatically 5 min after center tank low level is reached.

MAN : Flight crew manually controls the center tank transfer valves with CTR TK XFR pushbutton switches.

FAULT light : Amber light comes on, and ECAM caution comes on when center tank has more than 250 kg (550 lb) of fuel and the left or right wing tank has less than 5 000 kg (11 000 lb) and the MODE SEL pb-sw is at AUTO.

Ident.: DSC-28-20-G-00020240.0001001 / 17 MAR 17

7 **Applicable to: MSN 01767-06036**

MODE SEL pb-sw

AUTO : Control of center tank pumps is automatic:
- They run at engine start for 2 min,
- Before or after the engine start sequence, the pumps run if the slats are retracted,
- They stop automatically 5 min after center tank low level is reached.

MAN : Flight crew manually controls the center tank pumps with the center tank pumps' pushbutton.

FAULT light : Amber light comes on, and ECAM caution comes on when center tank has more than 250 kg (550 lb) of fuel and the left or right wing tank has less than 5 000 kg (11 000 lb).

Ident.: DSC-28-20-G-00020256.0002001 / 17 MAR 17

8 **Applicable to: MSN 06208-09063**

CTR TK L(R) XFR pb-sw

On : The transfer valve opens, if MAN mode is selected on the MODE SEL pb-sw, The transfer valve is automatically controlled when AUTO mode is selected.

OFF : The transfer valve is closed.

FAULT light : Amber light and associated ECAM caution come on, if the associated wing tank overflows.

Ident.: DSC-28-20-G-00020256.0001001 / 17 MAR 17

9 **Applicable to: MSN 01767-06036**

CTR TK PUMP 1(2) pb-sw

On : Pump runs, if MAN mode is selected on the MODE SEL pb-sw.
Pump is automatically controlled when AUTO mode is selected.

OFF : Pump is off and OFF button comes on white.

FAULT light : Amber light and associated ECAM caution come on, when the pump is in operation and the delivery pressure drops.

Ident.: DSC-28-20-G-00020257.0001001 / 17 MAR 17

Applicable to: ALL

X FEED pb-sw

ON : The valve opens, and the ON pushbutton comes on in white.

OFF : The valve closes, and the pushbutton does not come on.

OPEN light : This green light comes on, when the valve is fully open.

Ident.: DSC-28-20-G-00020258.0001001 / 17 MAR 17

10 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

ACT pb-sw ⏪

AUTO : Control of the ACT transfer is automatic.
- The automatic forward transfer occurs, if:
  - The aircraft is in flight, and
  - The slats are retracted, and
  - At least one ACT low-level sensor is wet, and
  - The center tank high-level sensor has been dry for at least 10 min.
- The automatic forward transfer stops, as soon as one of the above conditions is not met.

FWD : The manual transfer to the center tank is initiated by opening:
- The ACT transfer valve,
- The ACT 1 or ACT 2 (if available) inlet valve.

The ACT transfer pump is then commanded on.

FAULT light : Amber light and associated ECAM caution come on, when:
- The center tank has less than 3 000 kg (6 614 lb) of fuel, and 1 ACT has more than 250 kg (550 lb) of fuel, and
- The ACT pb-sw is on AUTO.

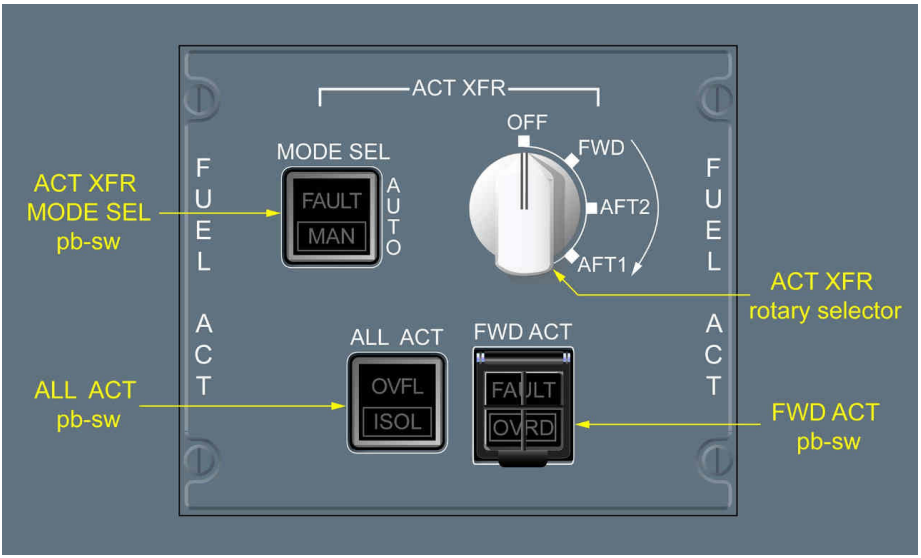
Note: *When no ACT is installed, the pushbutton is inoperative.*

ACT CONTROL PANEL

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: DSC-28-20-B-00020184.0003001 / 20 NOV 18

11



Ident.: DSC-28-20-B-00020261.0002001 / 05 JUN 18

12

ACT XFR MODE SEL pb-sw

AUTO : Control of the ACTs transfer is automatic.

- Automatic transfer occurs, if:
  - The aircraft is in flight, and
  - The landing gear is up for more than 30 min, and
  - At least one ACT is not empty, and
  - The center tank quantity is below 5 000 kg (11 030 lb).
- The automatic forward transfer stops, when all ACTs are empty, or the center tank quantity is above 5 750 kg (12 700 lb).

MAN : Manual transfer to the center tank is initiated. The ACT transfer and air shutoff valves open, the ACT vent valve closes, and the ACT transfer pump begins to operate.
The inlet valve, of the ACT selected on the ACT XFR selector, opens.

FAULT Light : Comes on amber, along with an ECAM caution, when:

- The ACT MODE SEL is in AUTO, and
- Any ACT empties before the previous ACT is empty.

Or

- The ACT MODE SEL is in MAN, and
- Any of the valves are in the incorrect position.

Ident.: DSC-28-20-B-00020262.0002001 / 20 NOV 18

13

ACT XFR rotary selector

OFF : If the ACT XFR MODE SEL pb-sw is in MAN position, all ACT inlet valves close.

AFT2, AFT1, FWD : If the ACT XFR MODE SEL pb-sw is in MAN position, the inlet valve of the selected ACT opens. The selected ACT transfers.

Ident.: DSC-28-20-B-00020263.0001001 / 17 MAR 17

14

ALL ACT pb-sw

Auto : The ACT system operates normally.

ISOL : The ACT transfer valve closes and the ACT transfer pump stops. ISOL comes on white.

OVFL light : Comes on amber when fuel overflows into the left wing surge tank.

Ident.: DSC-28-20-B-00020264.0001001 / 17 MAR 17

15

FWD ACT pb-sw (GUARDED)

Auto : The ACT system operates normally. When the ACT transfer and vent pipes are detected damaged, the forward ACT inlet valves, the forward ACT isolation valve and the forward ACTvent isolation valve close.

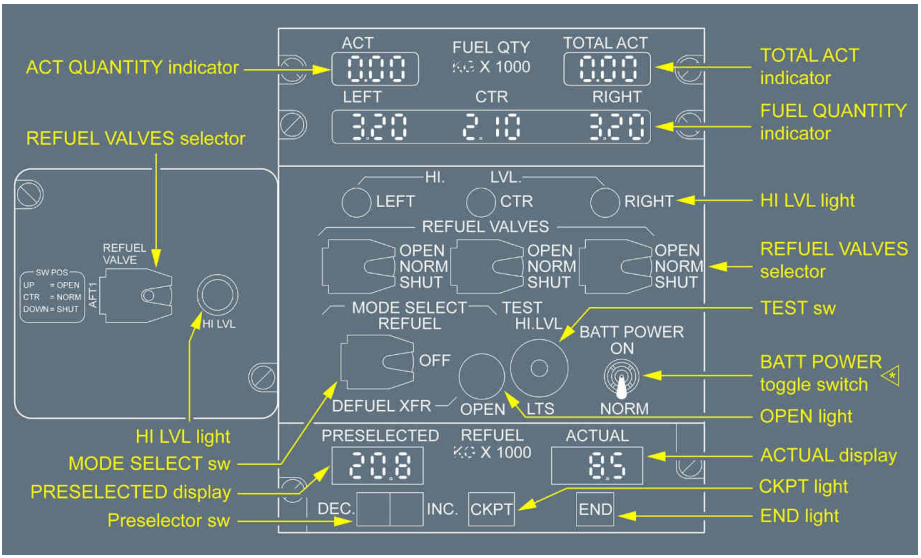
OVRD : The forward ACT inlet valves, the forward ACT isolation valve and the forward ACT vent isolation valve shut commands are overridden. OVRD comes on white.

FAULT light : Comes on amber when the forward ACT transfer and vent pipes are detected damaged.

REFUELING CONTROL PANEL

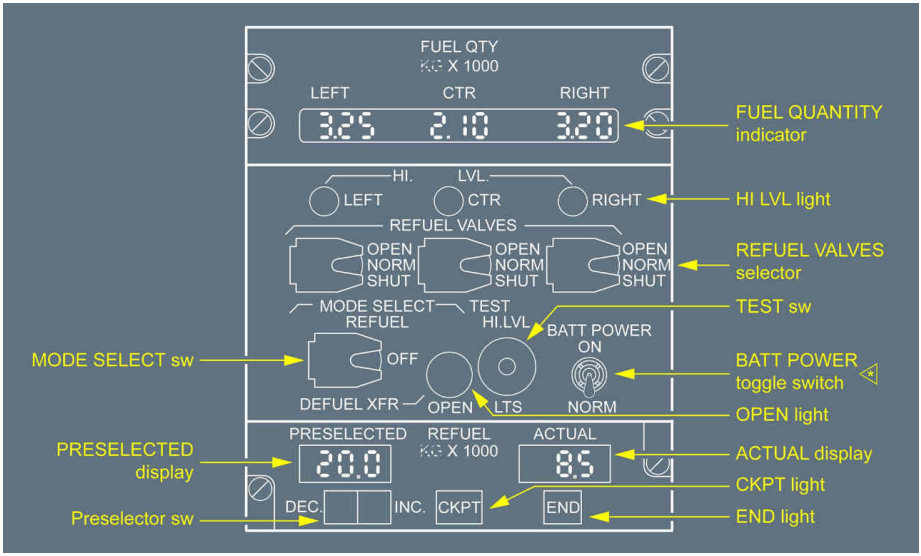
Ident.: DSC-28-20-C-00020185.0008001 / 30 MAR 18

16 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



Ident.: DSC-28-20-C-00020185.0001001 / 17 MAR 17

17 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



Ident.: DSC-28-20-C-00020265.0001001 / 21 MAR 17

Applicable to: ALL

FUEL QUANTITY INDICATOR

The number shows the quantity of fuel in each tank.

Units may either be in kg × 1 000 or lb × 1 000 depending on the aircraft configuration.

Ident.: DSC-28-20-C-00020279.0001001 / 21 MAR 17

18 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

ACT QUANTITY

The number shows the quantity of fuel in the ACT selected on the ACT selector knob.

Ident.: DSC-28-20-C-00020281.0001001 / 21 MAR 17

19 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

TOTAL ACT INDICATOR

The number shows the total fuel quantity of all ACT installed.

Ident.: DSC-28-20-C-00020266.0001001 / 21 MAR 17
Applicable to: ALL

HI LVL light

This blue light comes on, when the system detects a high fuel level.
The corresponding refuel valve closes automatically.

Ident.: DSC-28-20-C-00020267.0001001 / 21 MAR 17
Applicable to: ALL

REFUEL VALVES selector (GUARDED IN NORM)

NORM : Automatic refueling logic controls the refuel valves.

OPEN : Valves open when the MODE SELECT sw is set to the REFUEL or DEFUEL XFR position. Each refuel valve closes, when the system detects a high level in the associated tank.

SHUT : Valves close.

Ident.: DSC-28-20-C-00020268.0001001 / 17 MAR 17
Applicable to: ALL

MODE SELECT sw (GUARDED AT OFF)

OFF : Refuel system is de-energized. Refuel valves are closed.

REFUEL : Refuel valves operate in automatic or in manual mode depending on the position of REFUEL VALVES sw.

DEFUEL XFR : Refuel/Defuel transfer valve opens.
Refuel valve opens if the associated REFUEL VALVE sw is at OPEN.

Ident.: DSC-28-20-C-00020270.0001001 / 21 MAR 17
Applicable to: ALL

OPEN light

This amber light comes on when the defuel transfer valve is open.

Ident.: DSC-28-20-C-00020271.0001001 / 17 MAR 17
Applicable to: ALL

TEST sw

HI LVL : The HI LVL lights come on if high level sensors and associated circuits are serviceable.

Note: If tanks are full (HI LVL lights on) during this test, the HI LVL lights go out if high level sensors and associated circuits are serviceable.

LTS : Lights on panel and all 8's on FQI and preselector come on.

Ident.: DSC-28-20-C-00020272.0001001 / 21 MAR 17
Applicable to: ALL

PRESELECTED DISPLAY

This display shows the preselected total fuel quantity in kg (lb) × 1 000 (multiply by 1 000 to get actual amount).

Ident.: DSC-28-20-C-00020273.0001001 / 17 MAR 17
Applicable to: ALL

Preselector sw

Pressing the left or right side of the switch decreases or increases the preselected quantity.

Ident.: DSC-28-20-C-00020274.0001001 / 21 MAR 17
Applicable to: ALL

ACTUAL DISPLAY

This display shows the total fuel on board.

Ident.: DSC-28-20-C-00020275.0001001 / 21 MAR 17
Applicable to: ALL

END light

This green light comes on steady when automatic refueling is completed.
It flashes green if refueling is aborted.

Ident.: DSC-28-20-C-00020276.0002001 / 21 MAR 17
Applicable to: MSN 01767, 02108, 02388, 03138

CKPT light

Indicates that cockpit refuel panel has priority.
Illuminates when electrical PWR pb-sw on cockpit refuel is pressed.

Ident.: DSC-28-20-C-00020276.0001001 / 21 MAR 17
Applicable to: MSN 01920-02097, 02121-02359, 02405-03071, 03264-09063

CKPT light

Not used.

Ident.: DSC-28-20-C-00020277.0001001 / 21 MAR 17
Applicable to: ALL

BATT POWER TOGGLE SWITCH

ON : When the flight crew momentarily switches this to ON position and releases it, HOT BUS 1 supplies the FQI.
After completion of the FQI tests (about 40 s), the fuel quantity indications appear and refuel operation can be selected.

The electrical supply is automatically cut off:
- After 10 min, if no refuel operation is selected, or
- At the end of refueling.

NORM : The FQI is not supplied by batteries.

Ident.: DSC-28-20-C-00020283.0001001 / 21 MAR 17
21 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

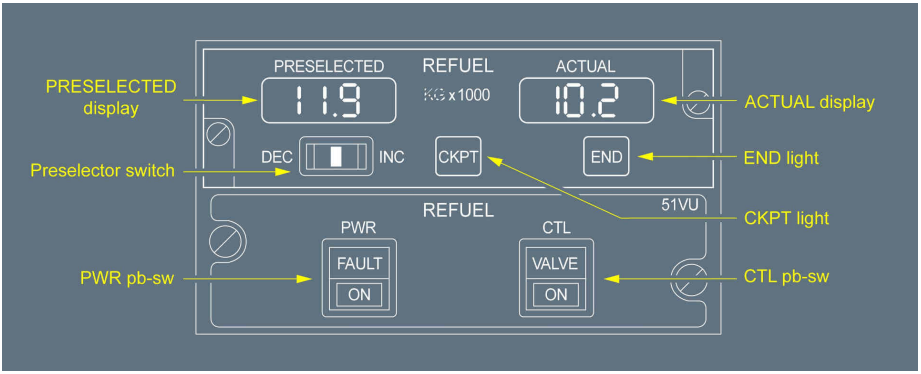
ACT SELECTOR

This selects the ACT quantity to be displayed in the ACT QUANTITY indicator.

MAINTENANCE PANEL

Applicable to: MSN 01767, 02108, 02388, 03138

Ident.: DSC-28-20-D-00020187.0007001 / 17 MAR 17



Ident.: DSC-28-20-D-00020286.0001001 / 21 MAR 17

PRESELECTED DISPLAY

This display shows the preselected total fuel quantity in KG (or in LB depending on aircraft configuration) × 1 000 (multiply by 1 000 to get actual amount).

Ident.: DSC-28-20-D-00020287.0001001 / 21 MAR 17

ACTUAL DISPLAY

This display shows the total fuel on board.

Ident.: DSC-28-20-D-00020288.0001001 / 17 MAR 17

Preselector sw

Pressing the left or the right side of the switch decreases or increases the preselected quantity.

Ident.: DSC-28-20-D-00020289.0001001 / 21 MAR 17

END light

This green light comes on steady when automatic refueling is achieved (associated with the green refuel light on wing extinguishing ◁).
It flashes green if refueling is aborted.

Ident.: DSC-28-20-D-00020290.0001001 / 17 MAR 17

PWR pb-sw

ON : - Refuel system is energized
- Cockpit refuel control/preselector panels takes priority (cockpit lights illuminate on cockpit and external refuel control panels)
- Automatic high level test
- REFUEL caption is displayed on ECAM.

OFF : - Refuel system is deenergized
- ECAM “REFUEL” caption is cleared
- Priority is cleared.

FAULT : This amber light comes on when auto high level test not satisfied.

Ident.: DSC-28-20-D-00020291.0001001 / 17 MAR 17

CTL pb-sw

ON : - Start of refuel, (associated with refuel green light illumination on wing ◁)
- Auto shut off occurs when the selected load is reached or in case of HI level detection
- VALVE light comes amber if REFUEL VALVE CTL switch are not at NORM position (on refueling control panel).

Off : Refuel stops. The selected load can be reset.

Ident.: DSC-28-20-D-00020294.0001001 / 21 MAR 17

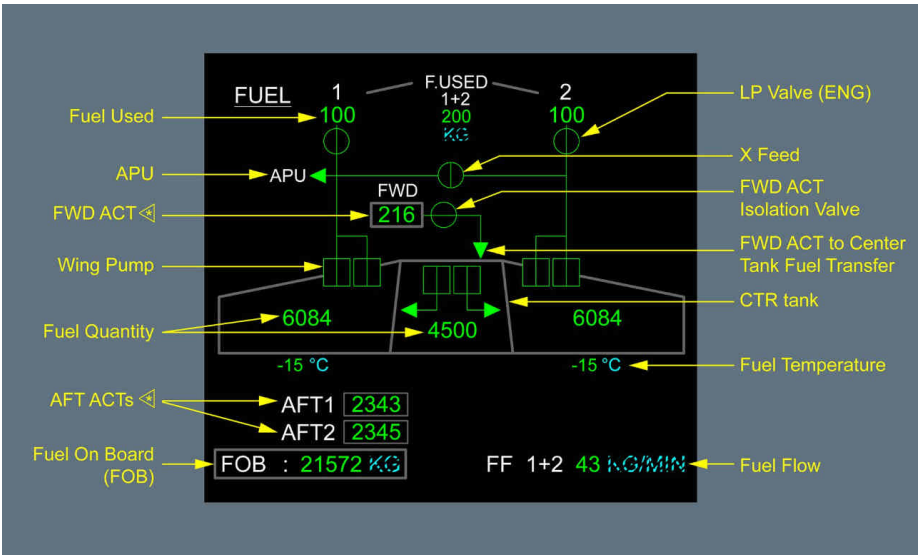
CKPT light

Comes on when PWR pb-sw switch is ON associated with the CKPT light on the external refuel control panel.

ECAM FUEL PAGE

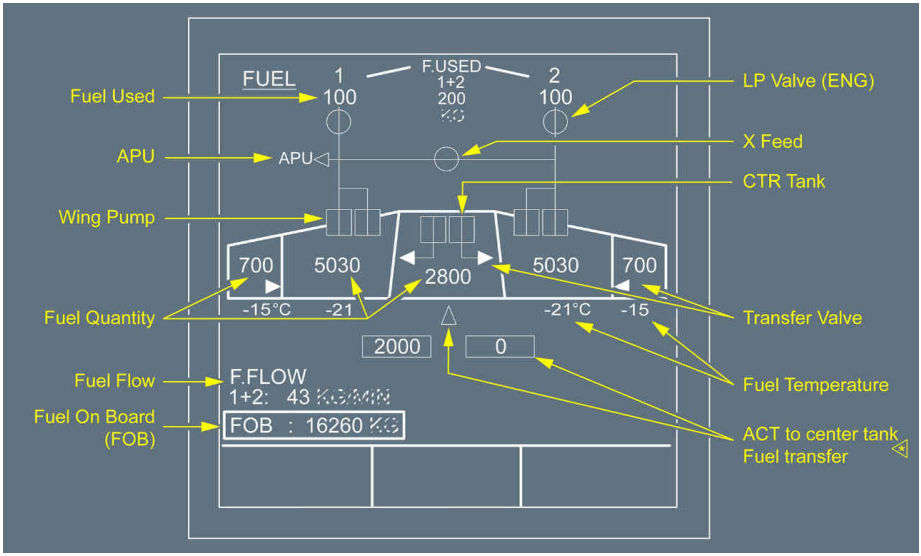
Ident.: DSC-28-20-F-00020188.0009001 / 04 MAY 18

22 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



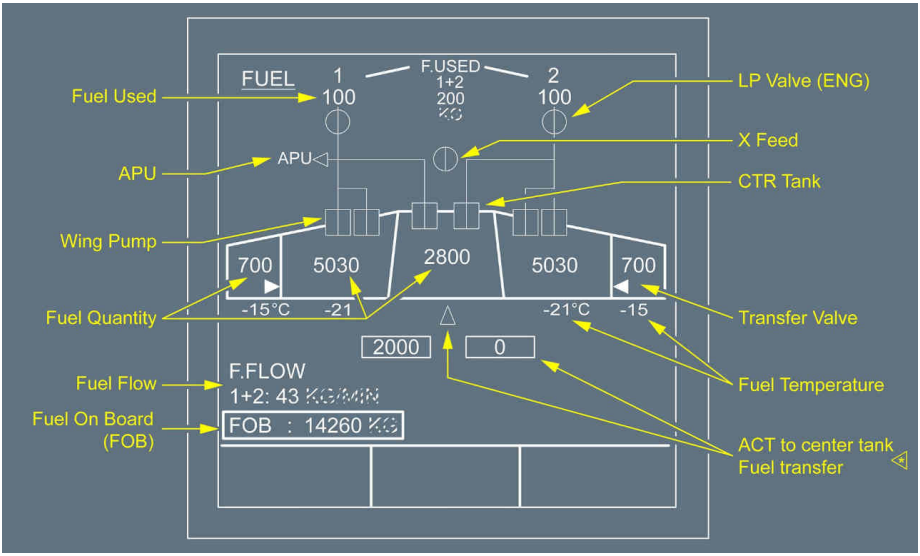
Ident.: DSC-28-20-F-00020188.0008001 / 17 MAR 17

23 **Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

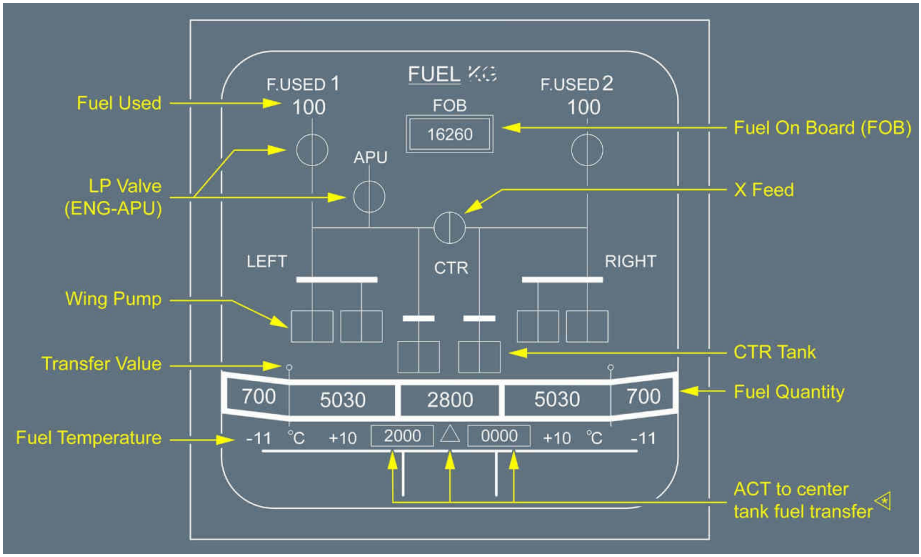


Ident.: DSC-28-20-F-00020188.0004001 / 17 MAR 17

24 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-06036**



Ident.: DSC-28-20-F-00020188.0001001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



Ident.: DSC-28-20-F-00020213.0001001 / 17 MAR 17
Applicable to: ALL

WING PUMP INDICATIONS

Inline - Green	:	Pump pressure is normal (pump contactor on).
"LO" - Amber	:	Pump pressure is low (pump contactor on).
Crossline - Amber	:	Pump contactor is off.

Ident.: DSC-28-20-F-00020214.0002001 / 17 MAR 17
25 **Applicable to: MSN 01767-06036**

CTR TANKS PUMPS INDICATIONS

Inline - Green	:	Pump pressure is normal (pump contactor on).
"LO" - Amber	:	Pump pressure is low (pump contactor on).
Crossline - Green	:	Pump contactor is off, and auto shut-off is required.
Crossline - Amber	:	Pump contactor is off, and auto shut-off is not required.

Ident.: DSC-28-20-F-00020214.0001001 / 17 MAR 17

26 **Applicable to: MSN 06208-09063**

CTR TANKS VALVES INDICATIONS

Inline - Green	:	Transfer valve is open.
Inline - Amber	:	Transfer valve is open, although commanded closed in automatic or manual mode.
Crossline - Green	:	Transfer valve is closed.
Crossline - Amber	:	Transfer valve is closed, although commanded Open in automatic or manual mode.

Ident.: DSC-28-20-F-00020216.0002001 / 17 MAR 17

Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

LP VALVE (ENG-APU) INDICATIONS

Inline - Green	:	The valve is open.
Inline - Amber	:	The valve is open, with the ENG (APU) MASTER switch OFF or FIRE pb out.
Crossline - Green	:	The APU valve is closed.
Crossline - Amber	:	The ENG valve is fully closed or APU valve is closed with master switch ON.
Transit - Amber	:	The valve is in transit.

Ident.: DSC-28-20-F-00020216.0001001 / 17 MAR 17

27 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

LP VALVE (ENG) INDICATIONS

Inline - Green	:	The valve is open.
Inline - Amber	:	The valve is open, with the ENG MASTER switch OFF.
Crossline - Amber	:	The ENG valve is fully closed.
Transit - Amber	:	The valve is in transit.

Ident.: DSC-28-20-F-00020217.0001001 / 17 MAR 17

Applicable to: ALL

X FEED INDICATIONS

Inline - Green	:	The valve is open.
Inline - Amber	:	The valve is open, with X Feed pb off.
Crossline - Green	:	The valve is closed.
Crossline - Amber	:	The valve is closed with X feed pb ON.

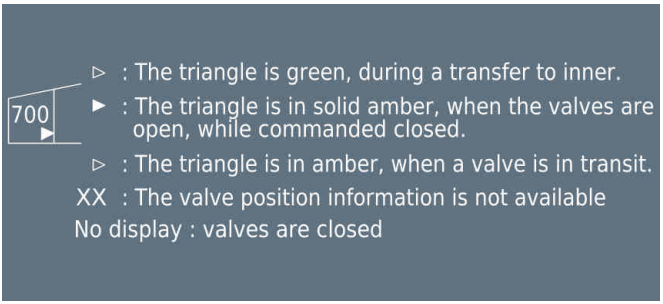
Transit - Amber : The valve is in transit.

Ident.: DSC-28-20-F-00020218.0005001 / 17 MAR 17

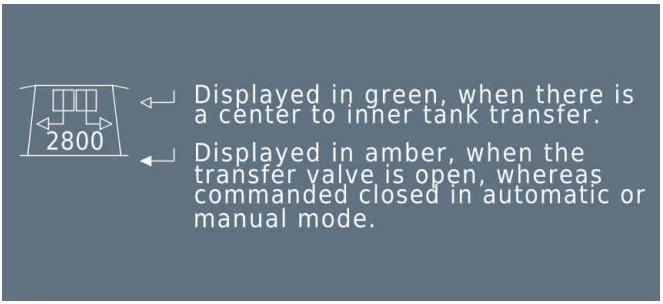
28 **Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

TRANSFER VALVE INDICATIONS

Outer to Inner Transfer



Center to Inner Transfer

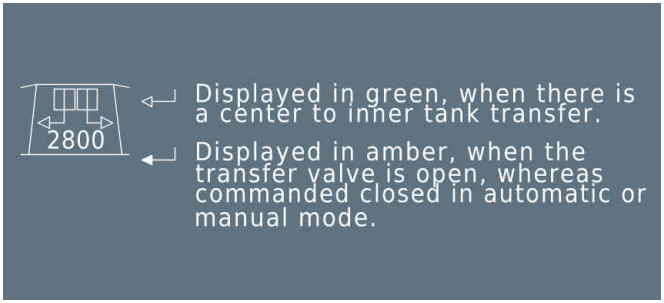


Ident.: DSC-28-20-F-00020218.0004001 / 17 MAR 17

29 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

TRANSFER VALVE INDICATIONS

Center to Inner Transfer

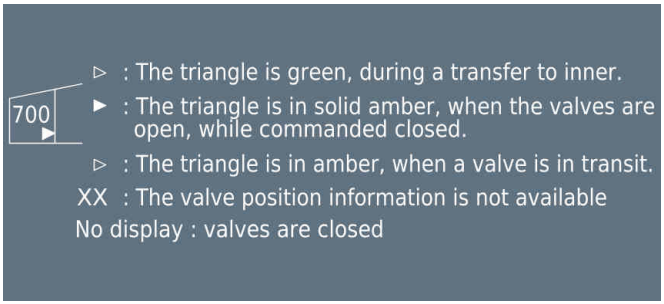


Ident.: DSC-28-20-F-00020218.0002001 / 17 MAR 17

30 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-06036**

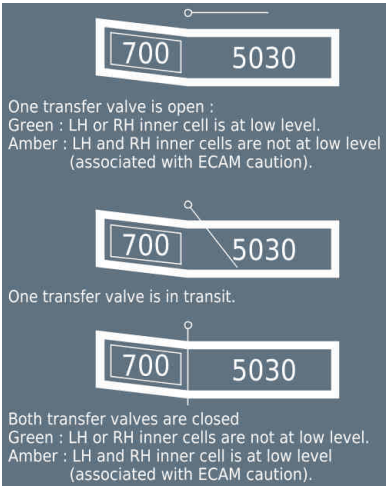
TRANSFER VALVE INDICATIONS

Outer to Inner Transfer



Ident.: DSC-28-20-F-00020218.0001001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

TRANSFER VALVE INDICATIONS



Ident.: DSC-28-20-F-00020219.0001001 / 17 MAR 17
31 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

APU INDICATIONS

APU◁—: APU is in white and the triangle is in green: the APU valve is open.

APU◀—: APU and solid triangle are in amber : the APU valve is open, with the APU Fire Pushbutton out, or the APU MASTER switch OFF.

APU : APU is in amber : APU valve is closed and APU Fire pushbutton is out / or APU MASTER switch ON.

APU◁ : APU and triangle are in white : the APU valve is closed.

Ident.: DSC-28-20-F-00020220.0002001 / 17 MAR 17
32 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

FUEL TEMPERATURE INDICATION

This appears, when its associated temperature sensor is wet. It is normally in green.

An advisory only appears in phases 2 and 6, when the fuel temperature is:
- Above 45 °C, or
- Below -40 °C.

It becomes amber, and the ECAM displays a caution, if the temperature goes above the high limit or below the low limit.

Ident.: DSC-28-20-F-00020220.0001001 / 17 MAR 17

33 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

FUEL TEMPERATURE INDICATION

This appears when its associated temperature sensor is wet. It is normally in green.

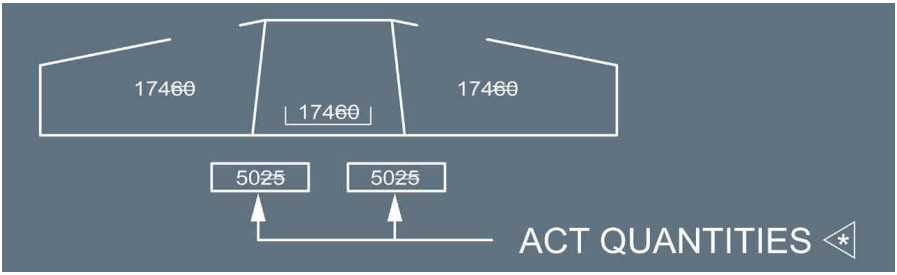
An advisory only appears in phases 2 and 6, when the fuel temperature is:
- Above 45 °C for the inner cell, or 55 °C for the outer cell.
- Below -40 °C.

It becomes amber, and the ECAM displays a caution, if the temperature goes above the high limit or below the low limit.

Ident.: DSC-28-20-F-00020221.0004001 / 17 MAR 17

34 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

FUEL QUANTITY INDICATION

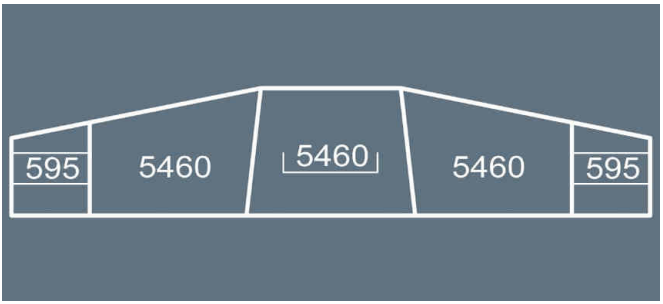


- It is normally in green.
- The units may either be in KG or LB, depending on the DMC pin program.
- Two dashes appear across the last two digits when the FQI is inaccurate (*Refer to DSC-28-20 Total Fuel Indication*).

Ident.: DSC-28-20-F-00020221.0002001 / 17 MAR 17

35 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

FUEL QUANTITY INDICATION



- It is normally in green.
- The units may either be in KG or LB, depending on the DMC pin program.
- Two dashes appear across the last two digits when the FQI is inaccurate (*Refer to DSC-28-20 Total Fuel Indication*).

Ident.: DSC-28-20-F-00020221.0001001 / 17 MAR 17

Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

FUEL QUANTITY INDICATION

- It is normally in green.
- The units may either be in KG or LB, depending on the DMC pin program.
- Two dashes appear across the last two digits when the FQI is inaccurate (*Refer to DSC-28-20 Total Fuel Indication*).

Ident.: DSC-28-20-F-00020340.0003001 / 17 MAR 17

36 **Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

FUEL QUANTITY - BOXED INDICATIONS

- The outer indication is boxed amber, if both transfer valves fail to open when the inner is at low level.
- The center tank indication is boxed amber, if both center tank transfer valves fail in the closed position.

Ident.: DSC-28-20-F-00020340.0002001 / 17 MAR 17

37 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

FUEL QUANTITY - BOXED INDICATIONS

- The center tank indication is boxed amber, if both transfer valves fail in the closed position.

Ident.: DSC-28-20-F-00020340.0001001 / 17 MAR 17

38 **Applicable to: MSN 01767-06036**

FUEL QUANTITY - BOXED INDICATIONS

- The outer indication is boxed amber, if both transfer valves fail to open when the inner is at low level.
- The center tank indication is boxed amber, if both center tank pumps are failed, or are switched OFF.

Ident.: DSC-28-20-F-00020341.0001001 / 17 MAR 17

39 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

FUEL QUANTITY - OVERFLOW INDICATION

- The wing tank indication turns amber, if a wing tank overflows.

Ident.: DSC-28-20-F-00020341.0002001 / 17 MAR 17

40 **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02649-02737, 02908-03264, 03330-04216, 04312, 04328-04384, 04394-04399, 04438-04506, 04518-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

FUEL QUANTITY - OVERFLOW INDICATION

In the case of wing overflow, the associated inner tank quantity indication turns amber.

Ident.: DSC-28-20-F-00020345.0002001 / 17 MAR 17

41 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

FUEL QUANTITY - ADVISORY

- An advisory appears in flight phases 2 and 6, when the difference between the fuel quantities in the two wings is greater than 1 500 kg (3 300 lb). The indication for the wing with the highest fuel level pulses.

Ident.: DSC-28-20-F-00020345.0001001 / 17 MAR 17

42 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

FUEL QUANTITY - ADVISORY

An advisory appears in flight phases 2 and 6, when the difference between the fuel quantities in the two wings is greater than 1 500 kg (3 300 lb). The wing inner and outer tank indications pulse with the highest fuel level.

Ident.: DSC-28-20-F-00020346.0001001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

FUEL ON BOARD (FOB) INDICATION

It is normally in green. It indicates the total of all tanks (Including the ACTs ◁)
Two dashes appear across the last two digits when the FQI is inaccurate (*Refer to DSC-28-20 Total Fuel Indication*).
Units may either be in KG or LB, depending on the DMC pin program.

The indication is boxed in amber, if:
- Center tank pumps fail, or are switched OFF.
- Both transfer valves fail to open, when the inner tank is at low level.
- Any ACT ◁ is not usable.

Ident.: DSC-28-20-F-00020346.0006001 / 17 MAR 17
43 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

FUEL ON BOARD (FOB) INDICATION

It is normally in green. It indicates the total of all tanks (Including the ACTs ◁).
Two dashes appear across the last two digits when the FQI is inaccurate (*Refer to DSC-28-20 Total Fuel Indication*).
Units may either be in KG or LB, depending on the DMC pin program.

The indication is half-boxed in amber, if:
- Both center tank transfer valves fail in close position
- Any ACT ◁ is not usable.

Ident.: DSC-28-20-F-00020346.0003001 / 17 MAR 17
44 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

FUEL ON BOARD (FOB) INDICATION

It is normally in green. It indicates the total of all tanks (Including the ACTs ◁).
Two dashes appear across the last two digits when the FQI is inaccurate (*Refer to DSC-28-20 Total Fuel Indication*).
Units may either be in KG or LB, depending on the DMC pin program.

The indication is half-boxed in amber, if:
- Center tank pumps fail, or are switched OFF.
- Both transfer valves fail to open, when the inner tank is at low level.
- Any ACT ◁ is not usable.

Ident.: DSC-28-20-F-00020347.0001001 / 17 MAR 17
Applicable to: ALL

FUEL USED INDICATION

- The engine identification number is in amber, when the engine is below idle. It is in white color, when it is at, or above, idle.
- The fuel used indication is green from flight phase 2, until electrical power is cut off at the end of the flight. It is automatically reset, when the engine is started on ground.
- Units may either be in KG or LB, depending on the DMC pin program.

Ident.: DSC-28-20-F-00020348.0003001 / 26 SEP 18
45 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

ACT TO CENTER TANK FUEL TRANSFER INDICATION

- The ACTs quantities are each displayed in some grey boxes.
- The box becomes amber in case of a transfer fault.
- The fuel quantity is normally displayed in green.
- The fuel quantity is displayed green pulsing when the crew revert to manual transfer mode and the expected ACT to transfer as per normal sequence is not properly selected on the ACT Control Panel.
- In case of degraded data, the two least significant digits are crossed by an amber line.
- The digital value is replaced by amber XX when the indication is not valid.
- The forward transfer valve is displayed on the transfer line between FWD ACT and CTR TK
  - It is Green (open or closed) when position is in accordance with the command
  - It is Amber (open or closed) when position and command disagree
- A triangle indicates that the fuel transfer to the center tank has started:
  - △ : Green, when the automatic transfer begins.
  - ▲ : Fully green, when the manual transfer begins.
- The fuel transfer path is displayed in amber in case of failed transfer in AUTO mode.

Ident.: DSC-28-20-F-00020348.0002001 / 17 MAR 17
46 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

ACT TO CENTER TANK FUEL TRANSFER INDICATION

- It is normally in green.
- The ACT quantity is displayed in a grey box.
- This box becomes amber in case of a transfer fault.
- ACT 1 is indicated on the left and ACT 2 is indicated on the right.

- Units may either be in KG or LB, depending on the DMC pin program.
- A triangle indicates that the fuel transfer to the center tank has started:
  - △ : Green, when the automatic transfer begins.
  - ▲ : Fully green, when the manual transfer begins.

Ident.: DSC-28-20-F-00020348.0001001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

ACT TO CENTER TANK FUEL TRANSFER INDICATION

It is normally in green.
A triangle indicates that the ACT fuel transfer to the center tank has started.
The ACT quantity is normally green. It shows the total fuel quantity of ACT(s) installed.
Units may either be in KG or LB, depending on the DMC pin program.
ACT1 is indicated on the left and ACT2 is indicated on the right.

Ident.: DSC-28-20-F-00020351.0001001 / 17 MAR 17
47 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

FUEL FLOW INDICATION

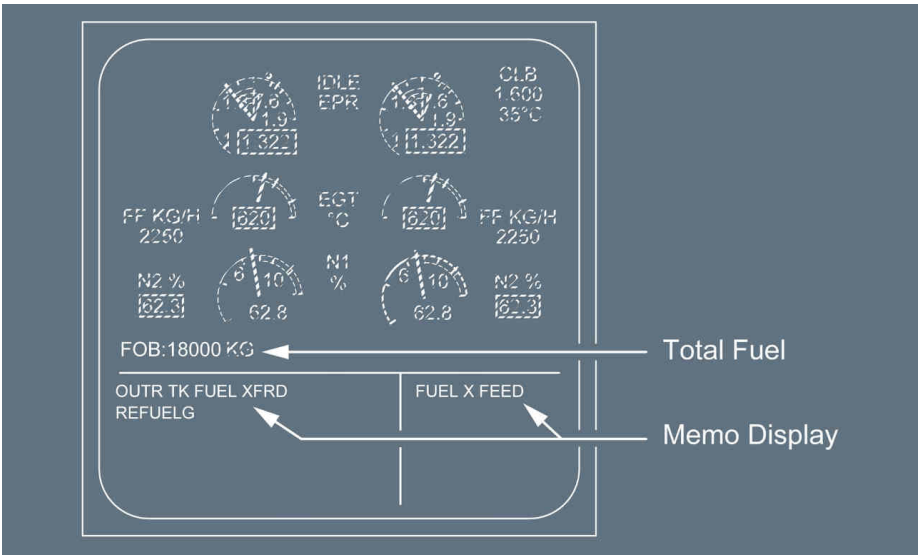
The Total Fuel Flow is displayed in KG/MIN or LB/MIN.
Units may either be in KG or LB, depending on the DMC pin program.

- It is normally in green.
- It is replaced by an amber XX if there is no valid data.

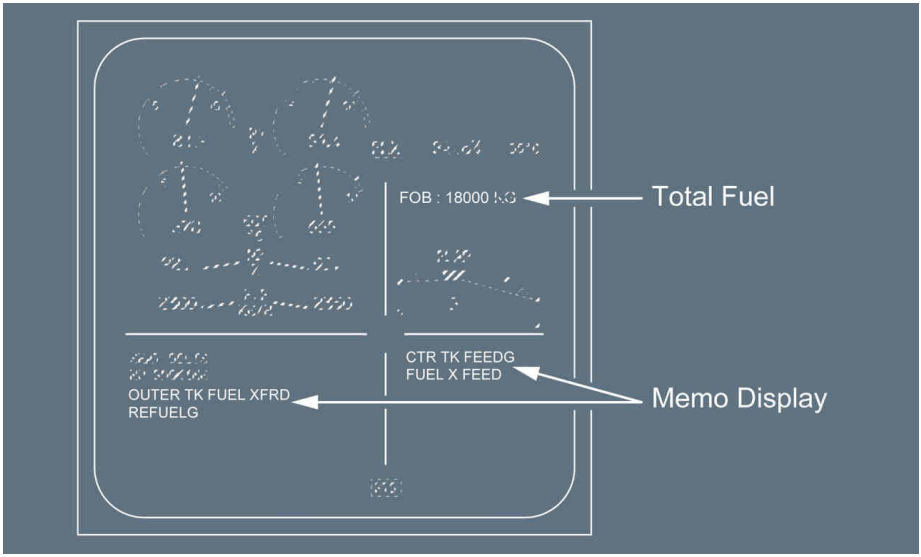
ECAM UPPER DISPLAY

Ident.: DSC-28-20-E-00020189.0002001 / 17 MAR 17

48 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



Ident.: DSC-28-20-E-00020189.0001001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



Ident.: DSC-28-20-E-00020193.0003001 / 17 MAR 17
Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

TOTAL FUEL INDICATION

A half amber box appears around FOB, when the displayed quantity is not all usable (intercell transfer valve failure or both center tank transfer valves fail in the closed position).
Units may either be in KG or LB, depending on the DMC pin program.
If the FOB indication is displayed with two dashes across the last two digits, the FQI is in degraded mode. In this case, the ECAM FUEL page can be called on ECAM lower display to determine which tank is affected.

The loss of accuracy resulting from the loss of FQI normal mode is as follows :

Wing outer tank affected	:	+20 kg (+44 lb), –200 kg (–440 lb).
Wing inner tank affected	:	±110 kg (240 lb).
Center tank affected	:	±130 kg (290 lb).
All tanks affected	:	+390 kg (+860 lb), –750 kg (–1660 lb).

Ident.: DSC-28-20-E-00020193.0002001 / 17 MAR 17

50 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

TOTAL FUEL INDICATION

An amber half box appears around FOB, when the displayed quantity is not all usable (both center tank transfer valves fail in the closed position).
Units may either be in KG or LB, depending on the DMC pin program.
If the FOB indication is displayed with two dashes across the last two digits, the FQI is in degraded mode. In this case, the ECAM FUEL page can be called on ECAM lower display to determine which tank is affected.

The loss of accuracy resulting from the loss of FQI normal mode is as follows :

Wing tank affected	:	+130 kg (+290 lb), –310 kg (–690 lb).
Center tank affected	:	±130 kg (290 lb).
All tanks affected	:	+390 kg (+860 lb), –750 kg (–1660 lb).

Ident.: DSC-28-20-E-00020193.0001001 / 17 MAR 17

51 **Applicable to: MSN 01767-06036**

TOTAL FUEL INDICATION

An amber half box appears around FOB, when the displayed quantity is not all usable (intercell transfer valve failure or loss of center tank pumps).
Units may either be in KG or LB, depending on the DMC pin program.
If the FOB indication is displayed with two dashes across the two least significant digits, the FQI is in degraded mode. In this case, the ECAM FUEL page can be called on ECAM lower display to determine which tank is affected.

The loss of accuracy resulting from the loss of FQI normal mode is as follows :

Wing outer tank affected	:	+20 kg (+44 lb), –200 kg (–440 lb).
Wing inner tank affected	:	±110 kg (240 lb).
Center tank affected	:	±130 kg (290 lb).
All tanks affected	:	+390 kg (+860 lb), –750 kg (–1660 lb).

Ident.: DSC-28-20-E-00020194.0001001 / 17 MAR 17

Applicable to: ALL

MEMO DISPLAY

Memos are normally in green color, but they may be in amber color in abnormal situations.

MEMO DISPLAY

Ident.: DSC-28-20-A-00016777.0001001 / 21 MAR 16
52 **Applicable to: MSN 01767-06036**

CTR TK FEEDG : This memo appears in green, if at least one center tank pump is energized.

Ident.: DSC-28-20-A-00016780.0002001 / 30 MAR 18
53 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

WNG TANKS BELOW 3000 KG (6600 LBS) : This memo appears in green, when the fuel quantity in either wing is below 1 500 kg (3 300 lb).

Ident.: DSC-28-20-A-00016778.0001001 / 21 MAR 16
Applicable to: ALL

FUEL X FEED : This memo appears in green, if the fuel X FEED pb-sw is ON, and the X FEED valve is not fully closed. It appears in amber in flight phases 3,4, or 5.

Ident.: DSC-28-20-A-00016776.0001001 / 21 MAR 16
54 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

OUTR TK FUEL XFRD : This memo appears in green, if at least one transfer valve is open in one wing tank.

Ident.: DSC-28-20-A-00016779.0001001 / 21 MAR 16
Applicable to: ALL

REFUELG : This memo appears in green, when :

- The door of the refuel control panel ◁ on the fuselage or on the wing is open, or
- The PWR pb-sw of the refuel control panel ◁ in the cockpit is ON.

AIRCRAFT SYSTEMS

HYDRAULIC

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DSC-29-10 Description

DSC-29-10-10 General

General....A

DSC-29-10-20 Generation

Green System Pump....A
Blue System Pumps....B
Yellow System Pumps....C
Power Transfer Unit (PTU)....D
Ram Air Turbine (RAT)....E
System Accumulators....F
Priority Valves....G
Fire Shutoff Valves....H
Leak Measurement Valves....I
Filters....J
Generation....K
Reservoir Pressurization....L
Indications....M

DSC-29-10-30 Distribution

Distribution....A

DSC-29-20 Controls and Indicators

Overhead Panel....A
Maintenance Panel....B
ECAM HYD Page....C
Memo Display....D

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Localization Title	Toc Index	ID	Reason
DSC-29-10-30 Distribution	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-29-20 ECAM HYD Page	C	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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GENERAL

Ident.: DSC-29-10-10-00001133.0001001 / 21 MAR 16
Applicable to: ALL

The aircraft has three continuously operating hydraulic systems : blue, green, and yellow. Each system has its own hydraulic reservoir. Normal system operating pressure is 3 000 PSI (2 500 PSI when powered by the RAT). Hydraulic fluid cannot be transferred from one system to another.

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GREEN SYSTEM PUMP

Ident.: DSC-29-10-20-00001134.0001001 / 21 MAR 16
Applicable to: ALL

A pump driven by engine 1 pressurizes the green system.

BLUE SYSTEM PUMPS

Ident.: DSC-29-10-20-00001135.0001001 / 21 MAR 16
Applicable to: ALL

An electric pump pressurizes the blue system. A pump driven by a ram air turbine (RAT) pressurizes this system in an emergency.

YELLOW SYSTEM PUMPS

Ident.: DSC-29-10-20-00001136.0001001 / 21 MAR 16
Applicable to: ALL

A pump driven by engine 2 pressurizes the yellow system.
An electric pump can also pressurize the yellow system, which allows yellow hydraulics to be used on the ground when the engines are stopped.
Crew members can also use a hand pump to pressurize the yellow system in order to operate the cargo doors when no electrical power is available.

POWER TRANSFER UNIT (PTU)

Ident.: DSC-29-10-20-00001137.0001001 / 04 DEC 18
Applicable to: ALL

A bidirectional power transfer unit enables the yellow system to pressurize the green system and vice versa.
The power transfer unit comes into action automatically when the differential pressure between the green and the yellow systems is greater than 500 PSI.
The PTU therefore allows the green system to be pressurized on the ground when the engines are stopped.

RAM AIR TURBINE (RAT)

Ident.: DSC-29-10-20-00001138.0001001 / 21 MAR 16
Applicable to: ALL

A drop-out RAT coupled to a hydraulic pump allows the blue system to function if electrical power is lost or both engines fail. The RAT deploys automatically if AC BUS 1 and AC BUS 2 are both lost. It

can be deployed manually from the overhead panel. It can be stowed only when the aircraft is on the ground.

SYSTEM ACCUMULATORS

Ident.: DSC-29-10-20-00001139.0001001 / 21 MAR 16
Applicable to: ALL

An accumulator in each system helps to maintain a constant pressure by covering transient demands during normal operation.

PRIORITY VALVES

Ident.: DSC-29-10-20-00001141.0001001 / 21 MAR 16
Applicable to: ALL

Priority valves cut off hydraulic power to heavy load users if hydraulic pressure in a system gets low.

FIRE SHUTOFF VALVES

Ident.: DSC-29-10-20-00001142.0001001 / 21 MAR 16
Applicable to: ALL

Each of the green and yellow systems has a fire shutoff valve in its line upstream of its engine-driven pump. The flight crew can close it by pushing the ENG 1(2) FIRE pushbutton.

LEAK MEASUREMENT VALVES

Ident.: DSC-29-10-20-00001143.0001001 / 21 MAR 16
Applicable to: ALL

Each system has a leak measurement valve upstream of the primary flight controls.
These valves, which measure the leakage in each circuit, are closed by operation of the LEAK MEASUREMENT VALVES pushbutton switch on the maintenance panel.

FILTERS

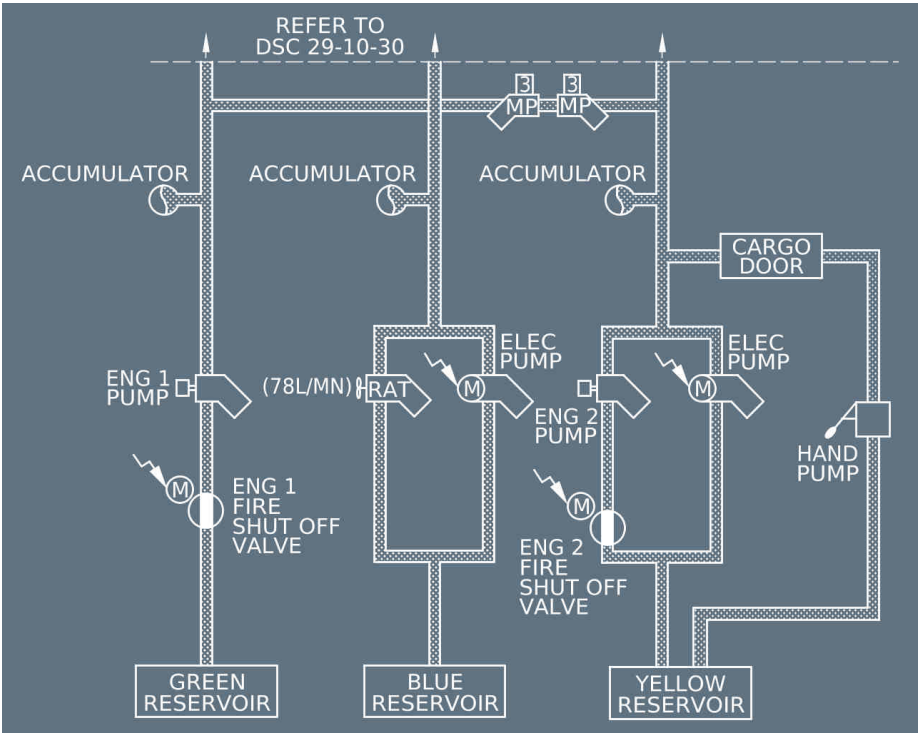
Ident.: DSC-29-10-20-00001144.0001001 / 21 MAR 16
Applicable to: ALL

L3 Filters clean the hydraulic fluid as follows :

- HP filters on each system and on the reservoir filling system and the normal braking system
- return line filters on each line
- case drain filters on engine pumps and the blue electric pump (which permit maintenance crew to monitor pump wear by inspecting the filters for the presence of metallic particles).

GENERATION

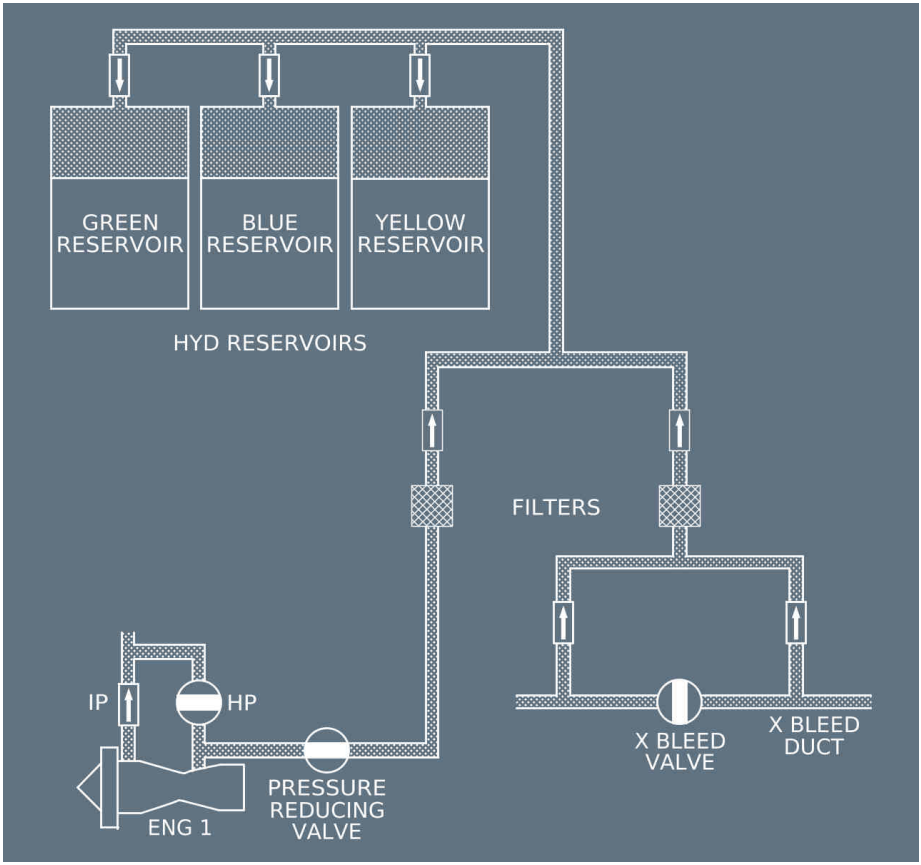
Ident.: DSC-29-10-20-00001145.0001001 / 08 FEB 13
Applicable to: ALL



RESERVOIR PRESSURIZATION

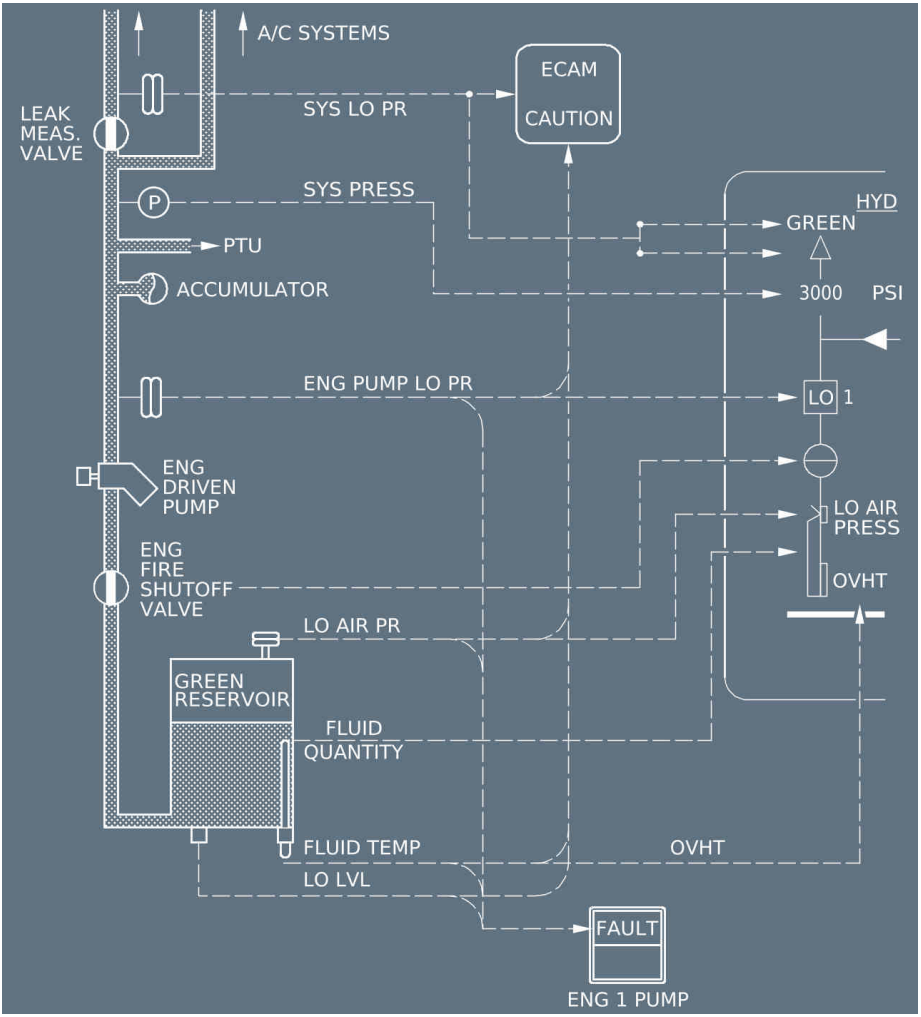
Ident.: DSC-29-10-20-00001146.0001001 / 08 FEB 13
Applicable to: ALL

Normally, HP bleed air from engine 1 pressurizes the hydraulic reservoirs automatically.
If the bleed air pressure is too low, the system takes bleed air pressure from the crossbleed duct.
The systems maintain a high enough pressure to prevent their pumps from cavitating.


GREEN RESERVOIR
BLUE RESERVOIR
YELLOW RESERVOIR
HYD RESERVOIRS
FILTERS
IP
HP
ENG 1
PRESSURE REDUCING VALVE
X BLEED VALVE
X BLEED DUCT

INDICATIONS

Ident.: DSC-29-10-20-00001147.0002001 / 09 OCT 12
Applicable to: ALL



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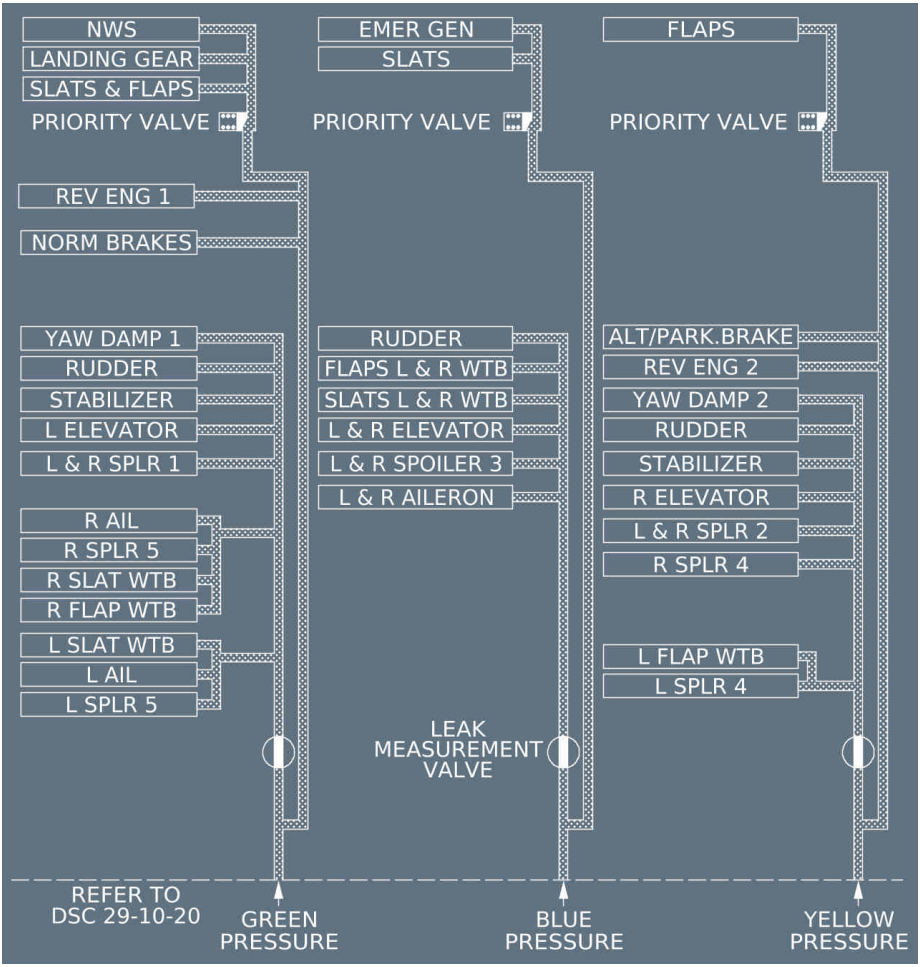
DISTRIBUTION

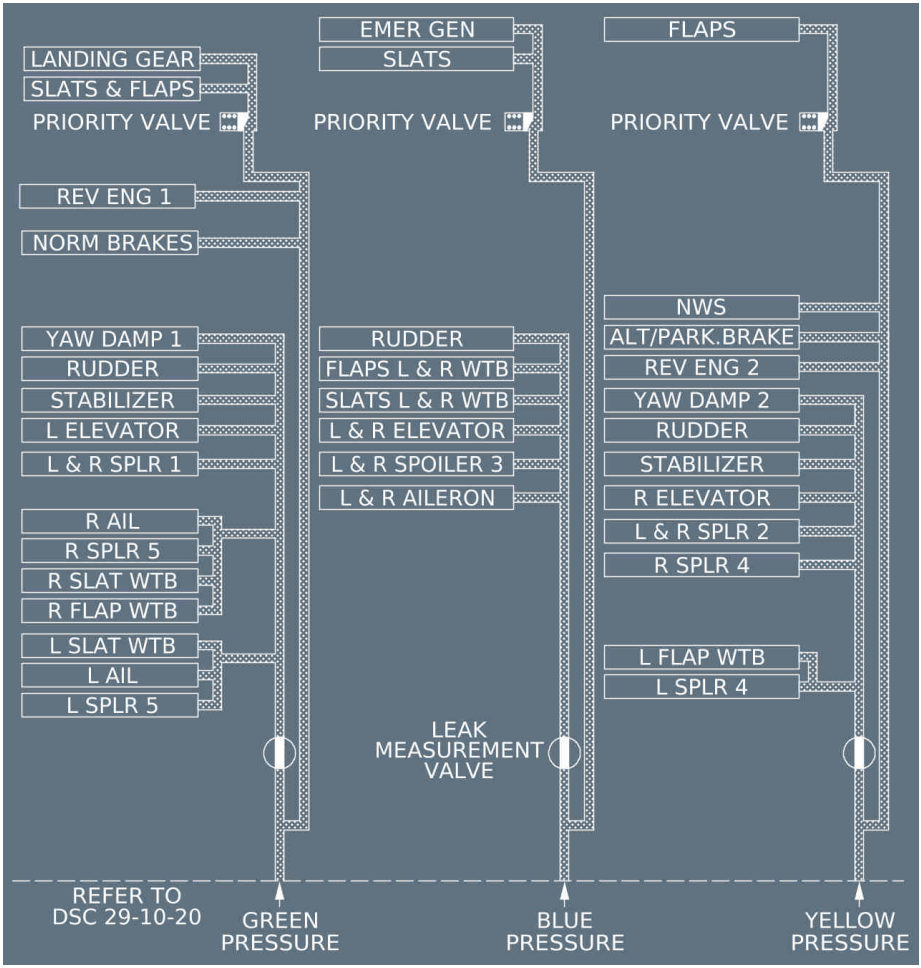
Ident.: DSC-29-10-30-00001148.0002001 / 08 FEB 13
Applicable to: MSN 01767-02405, 02482



DISTRIBUTION

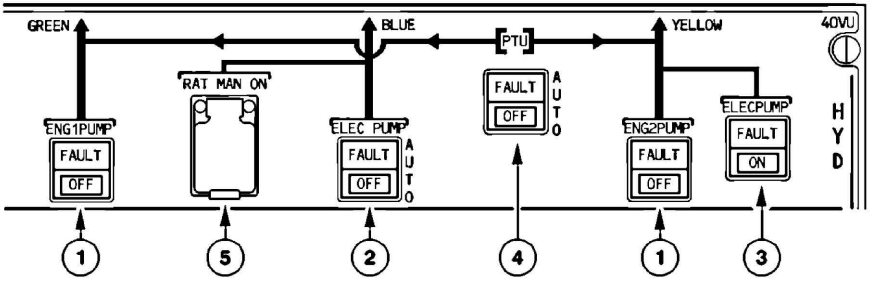
Ident.: DSC-29-10-30-00001148.0003001 / 08 FEB 13

1 **Applicable to: MSN 02443-02457, 02584-09063**



OVERHEAD PANEL

Ident.: DSC-29-20-00001149.0001001 / 21 MAR 16
Applicable to: ALL



(1) ENG 1 (2) PUMP pb

On : The pump pressurizes the system when the engine is running.

OFF : The pump is depressurized. The generation of hydraulic power stops.

FAULT lt : This amber light comes on, and the ECAM caution appears, if :
- The reservoir level is low
- The reservoir overheats
- The reservoir air pressure is low
- The pump pressure is low (inhibited on the ground, when the engine is stopped).

This light goes out, when the crew selects OFF, except during an overheat. (The light stays on as long as the overheat lasts).

(2) BLUE ELEC PUMP pb (guarded)

AUTO : If AC power is available, the electric pump operates :
- In flight
- On the ground, if one engine is running or if the crew has pressed the BLUE PUMP OVRD pushbutton on the maintenance panel.

OFF : The pump is de-energized.

FAULT lt : This amber light comes on, and a caution appears on the ECAM, if :
- The reservoir level is low
- The reservoir overheats
- The air pressure in the reservoir is low
- The pump is delivering low pressure (inhibited on the ground, when the engines are stopped)
- The pump overheats.

The light goes out, when the crew selects OFF, except during an overheat. (The light stays on as long as the overheat lasts).

(3) YELLOW ELEC PUMP pb sw (springloaded)

ON : The electric pump is ON.
If the electrical power supply is removed, the pump will remain off when electrical power is applied again.

Off : The pump is off.
It comes on automatically when a crewman sets the lever of the cargo door manual selector valve to OPEN or CLOSE.
This inhibits the operation of other yellow system functions (except alternate braking and engine 2 reverse).

FAULT lt : This amber light, accompanied by an ECAM caution, comes on if :
- the reservoir level is low
- air pressure in the reservoir is low
- the reservoir overheats
- pump pressure is low
- the pump overheats.

The light goes out when the crew selects OFF, except during an overheat. (The light stays on as long as the overheat lasts).

(4) PTU pb sw

AUTO : The bidirectional power transfer unit is armed and both the yellow and the green electrohydraulic valves are open.
The power transfer unit runs automatically when the differential pressure between the green and yellow systems is more than 500 PSI.

Note: The PTU is inhibited during the first engine start and automatically tested during the second engine start.

OFF : Both the green and the yellow PTU electrohydraulic valves close. Power transfer stops.

FAULT lt : This amber light comes on, and a caution appears on the ECAM, if :
- the green or the yellow reservoir overheats
- the green or the yellow reservoir has low air pressure
- the green or the yellow reservoir has a low flluid level.

The light goes out when the crew selects OFF, except during an overheat. (The light stays on as long as the overheat lasts).

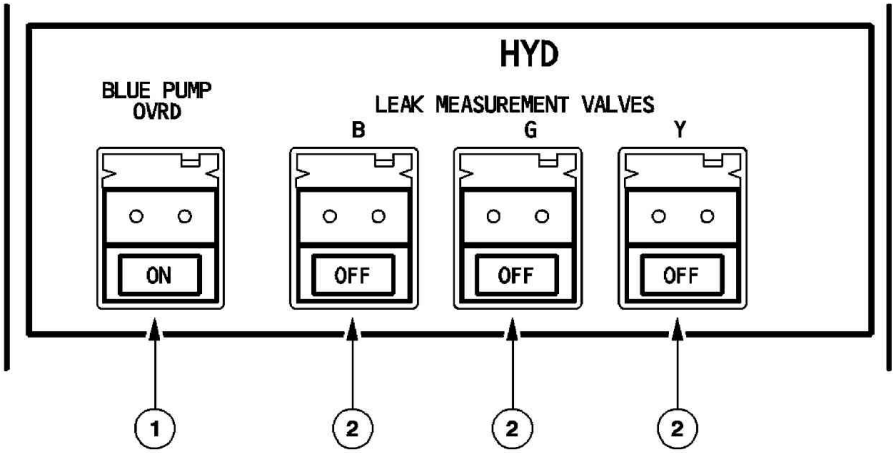
(5) RAT MAN ON pb

The flight crew may extend the RAT at any time by pressing the RAT MAN ON pushbutton.

Note: The RAT extends automatically if AC BUS 1 and AC BUS 2 are lost. (Refer to DSC-24-20 Overhead Panel (Cont'd)).

MAINTENANCE PANEL

Ident.: DSC-29-20-00001150.0001001 / 21 MAR 16
Applicable to: ALL



(1) BLUE PUMP OVRD pb sw (guarded)

ON : The blue electric pump is on if the ELEC PUMP pushbutton switch on the HYD panel is at AUTO.

Off : The blue electric pump is off.

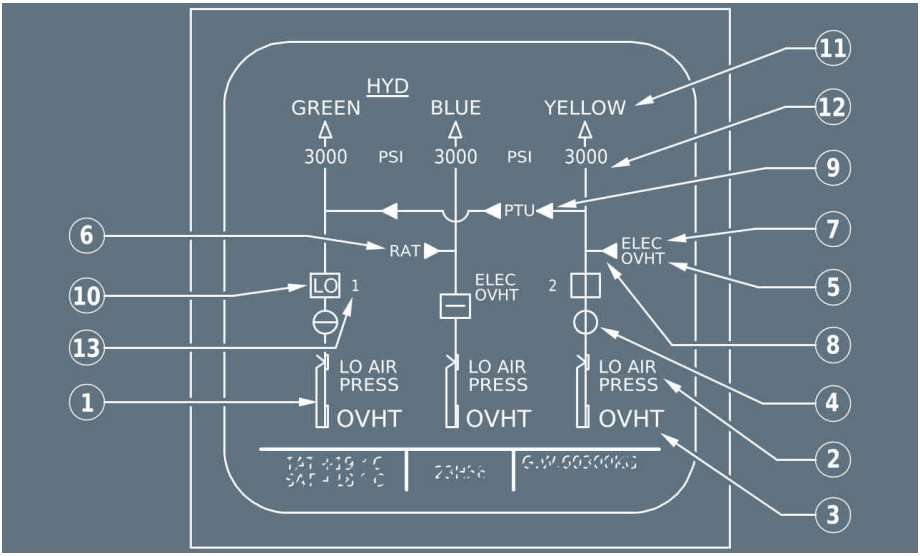
(2) LEAK MEASUREMENT VALVES pb sw (guarded)

OFF: The corresponding electrohydraulic valve closes and shuts off hydraulic supply to the primary flight controls.

On : The corresponding electrohydraulic valve opens to go back to normal hydraulic supply.

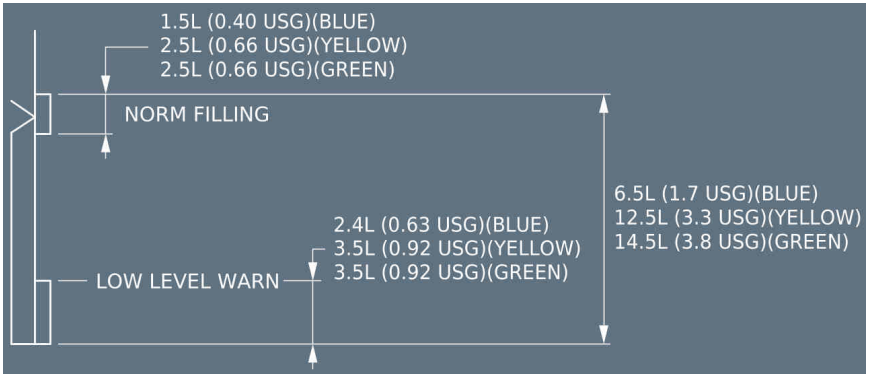
ECAM HYD PAGE

Ident.: DSC-29-20-00001151.0001001 / 23 JUN 15
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) Reservoir quantity

It is in green, unless the fluid level goes below the warning level, in which case it becomes amber.



(2) Reservoir LO AIR PRESS
This appears in amber, and a caution appears on ECAM, if the air pressure for the indicated reservoir drops below normal.

(3) Reservoir OVHT
This appears in amber, and a caution appears on ECAM, if the temperature of returning hydraulic fluid temperature at the inlet to its reservoir is above normal.

(4) FIRE VALVE

Cross line - Amber	:	The valve is fully closed.
In line - Green	:	The valve is not fully closed.

(5) OVHT
This appears in amber if the electric pump for that system (blue or yellow) overheats.

(6) RAT

RAT ▷ White	:	The RAT is stowed.
RAT Green	:	The RAT is not stowed.
RAT ▶ Amber	:	Pressure for stowing the RAT has been applied, or the RAT pump is not available.

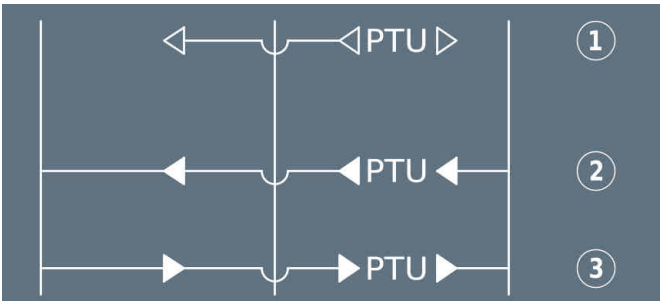
(7) ELEC
This legend, normally white, becomes amber if the associated power supply fails.

(8) YELLOW ELEC PUMP control

◁ White	:	The electric pump is off.
Green	:	The electric pump is ON.

◂ Amber : The electric pump is ON and the yellow system has low pressure.

(9) PTU control



(1)

Green : The power transfer unit (PTU) pushbutton switch is in AUTO and the PTU is not transferring pressure.

Amber : The PTU pb-sw is OFF.

(2)

Green : The PTU is supplying the green hydraulic system.

(3)

Green : The PTU is supplying the yellow hydraulic system.

(10) ENG PUMP control and low pressure indication

In line (Green) : The pushbutton switch for the designated PUMP is on and hydraulic pressure is normal.

Cross line (Amber) : The pushbutton switch for the designated PUMP is OFF.

"LO" (Amber) : The pushbutton switch for the designated PUMP is on and hydraulic pressure is low.

(11) System label

	pressure > 1 450 PSI	pressure < 1 450 PSI
YELLOW	white	amber
△	green	amber

(12) System pressure

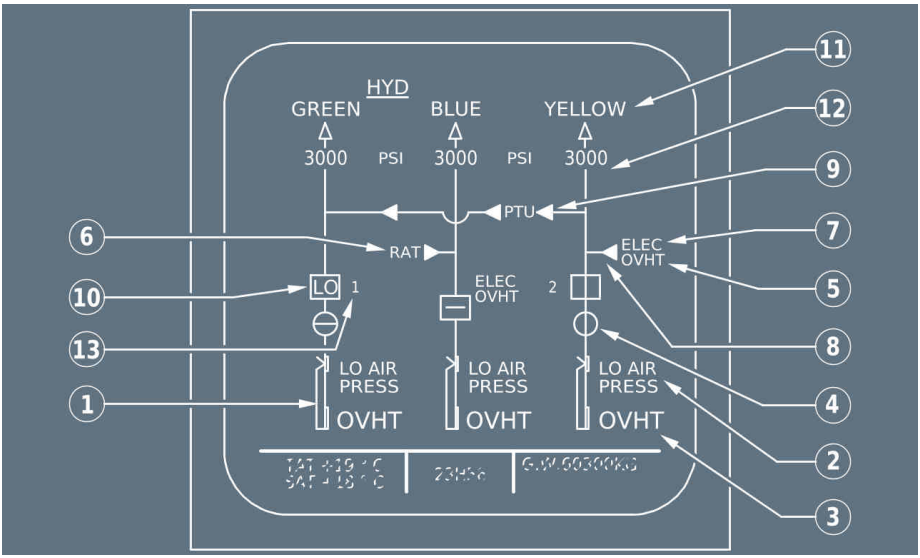
This legend, normally green, becomes amber when system pressure is below 1 450 PSI.

(13) PUMP
This legend, normally white, becomes amber when N2 is below idle.

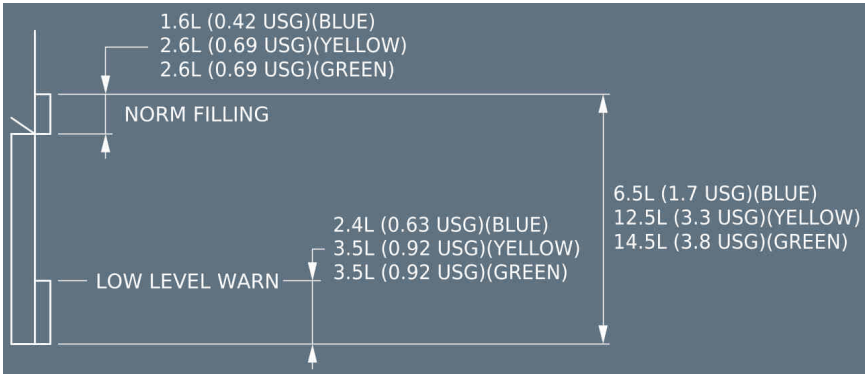
ECAM HYD PAGE

Ident.: DSC-29-20-00001151.0002001 / 23 JUN 15

[1] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



(1) Reservoir quantity
It is in green, unless the fluid level goes below the warning level, in which case it becomes amber.



(2) Reservoir LO AIR PRESS
This appears in amber, and a caution appears on ECAM, if the air pressure for the indicated reservoir drops below normal.

(3) Reservoir OVHT
This appears in amber, and a caution appears on ECAM, if the temperature of returning hydraulic fluid temperature at the inlet to its reservoir is above normal.

(4) FIRE VALVE

Cross line - Amber : The valve is fully closed.

In line - Green : The valve is not fully closed.

(5) OVHT
This appears in amber if the electric pump for that system (blue or yellow) overheats.

(6) RAT

RAT ▹ White : The RAT is stowed.

RAT Green : The RAT is not stowed.

RAT ▸ Amber : Pressure for stowing the RAT has been applied, or the RAT pump is not available.

(7) ELEC
This legend, normally white, becomes amber if the associated power supply fails.

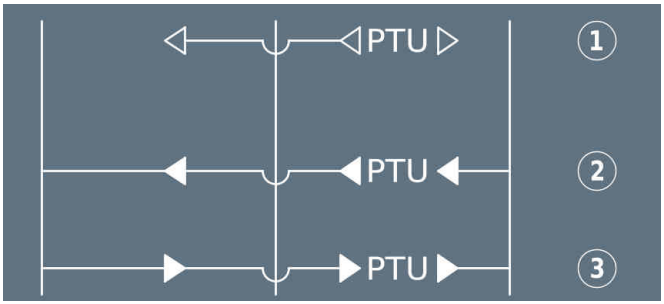
(8) YELLOW ELEC PUMP control

◃ White : The electric pump is off.

Green : The electric pump is ON.

◂ Amber : The electric pump is ON and the yellow system has low pressure.

(9) PTU control



(1)

Green : The power transfer unit (PTU) pushbutton switch is in AUTO and the PTU is not transferring pressure.

Amber : The PTU pb-sw is OFF.

(2)

Green : The PTU is supplying the green hydraulic system.

(3)

Green : The PTU is supplying the yellow hydraulic system.

(10) ENG PUMP control and low pressure indication

In line (Green) : The pushbutton switch for the designated PUMP is on and hydraulic pressure is normal.

Cross line (Amber) : The pushbutton switch for the designated PUMP is OFF.

"LO" (Amber) : The pushbutton switch for the designated PUMP is on and hydraulic pressure is low.

(11) System label

	pressure > 1 450 PSI	pressure < 1 450 PSI
YELLOW	white	amber
△	green	amber

(12) System pressure

This legend, normally green, becomes amber when system pressure is below 1 450 PSI.

(13) PUMP
This legend, normally white, becomes amber when N2 is below idle.

MEMO DISPLAY

Applicable to: ALL

Ident.: DSC-29-20-A-00016787.0001001 / 21 MAR 16

HYD PTU : This memo appears in green, when the power transfer unit is running.

Ident.: DSC-29-20-A-00016786.0001001 / 21 MAR 16

RAT OUT : This memo appears in green, if the Ram Air Turbine is not fully stowed. The color changes to amber during flight phases 1 and 2.

AIRCRAFT SYSTEMS

ICE AND RAIN PROTECTION

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DSC-30-10 General

DSC-30-10-10 Description

General....A
Anti-Ice....B
Rain Removal....C

DSC-30-20 Wing Anti-Ice

DSC-30-20-10 Description

Description....A

DSC-30-20-20 Controls And Indicators

Overhead Panel....A
ECAM BLEED Page....B
Engine Warning Display....C
Memo Display....D

DSC-30-30 Engine Anti-Ice

DSC-30-30-10 Description

Description....A

DSC-30-30-20 Controls and Indicators

Overhead Panel....A
Engine Warning Display....B
Memo Display....C

DSC-30-40 Window Heat

DSC-30-40-10 Description

Description....A

DSC-30-40-20 Controls and Indicators

Overhead Panel....A

DSC-30-50 Probes Heat

DSC-30-50-10 Description

Description....A

DSC-30-50-20 Controls and Indicators

Overhead Panel....A

Continued on the following page

Continued from the previous page

DSC-30-60 Rain Removal

DSC-30-60-10 Description

Wipers....A
Rain Repellent ....B

DSC-30-60-20 Controls and Indicators

Overhead Panel....A
Rain Repellent System Indicators....B

DSC-30-70 Ice Detection System

DSC-30-70-10 Description

Visual Ice Indicator....A
Ice Detection System....B

Localization Title	Toc Index	ID	Reason
DSC-30-20-20 Overhead Panel	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-30-20-20 Overhead Panel	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-30-20-20 Engine Warning Display	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-30-30-10 Description	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-30-30-10 Description	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-30-30-20 Overhead Panel	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-30-30-20 Overhead Panel	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-30-30-20 Engine Warning Display	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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GENERAL

Ident.: DSC-30-10-10-00001154.0001001 / 16 MAR 11
Applicable to: ALL

The ice and rain protection system allows unrestricted operation of the aircraft in icing conditions and heavy rain.

ANTI-ICE

Ident.: DSC-30-10-10-00001155.0001001 / 29 MAR 12
Applicable to: ALL

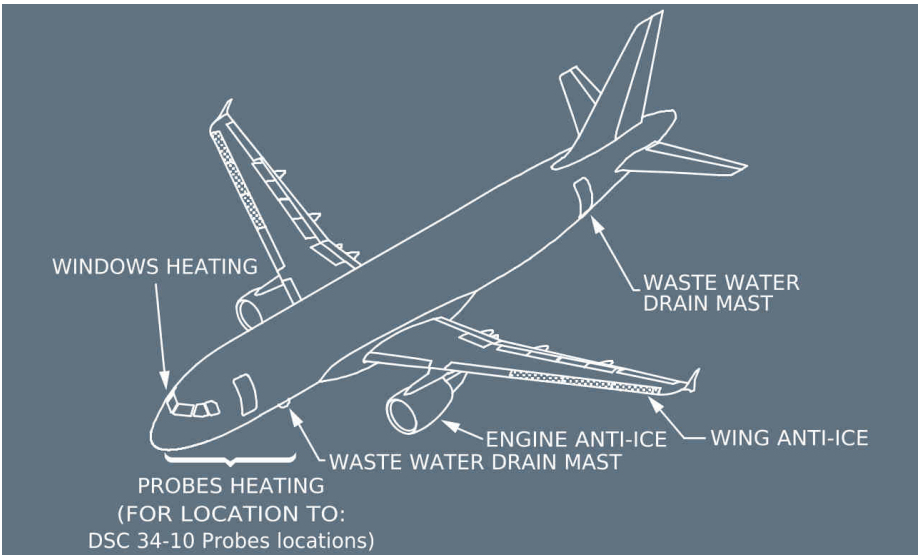
Either hot air or electrical heating protects critical areas of the aircraft as follows:

HOT AIR

- Three outboard leading-edge slats of each wing
- Engine air intakes.

ELECTRICAL HEATING

- Flight compartment windows
- Sensors, pitot probes and static ports
- Waste-water drain mast.



RAIN REMOVAL

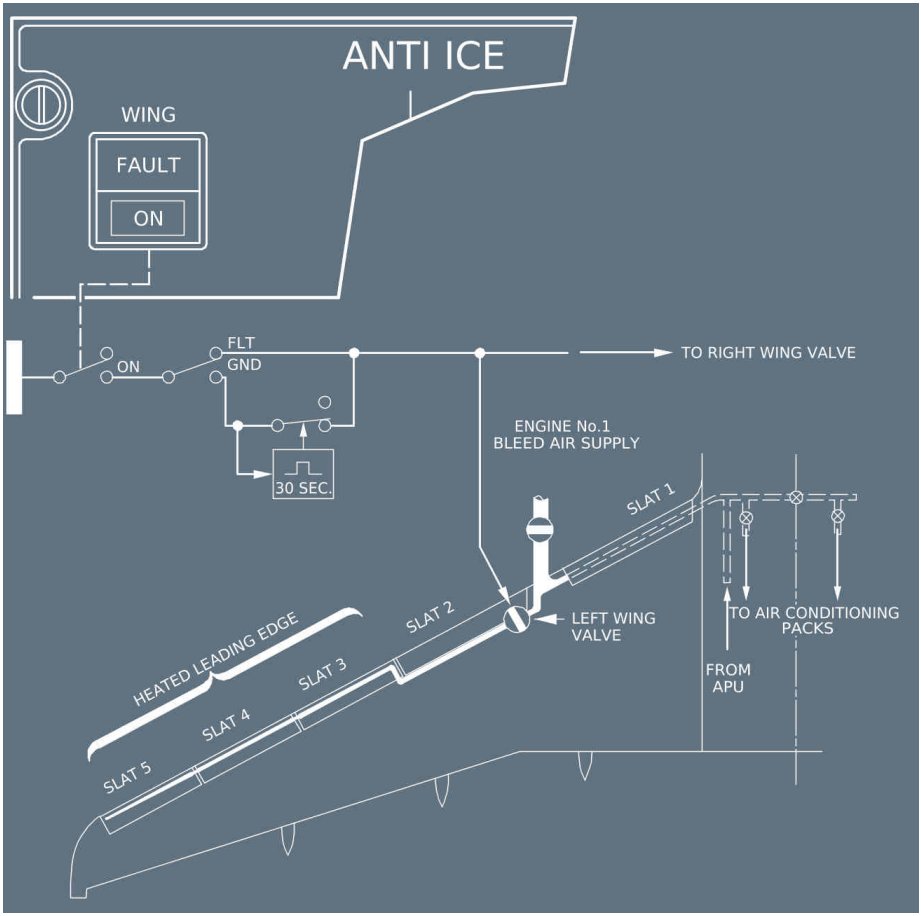
Ident.: DSC-30-10-10-00017416.0001001 / 21 MAR 16
Applicable to: ALL

Wipers and fluid rain repellent ◁ , remove rain from the front windshield panels.

DESCRIPTION

Ident.: DSC-30-20-10-00017417.0001001 / 21 MAR 16
Applicable to: ALL

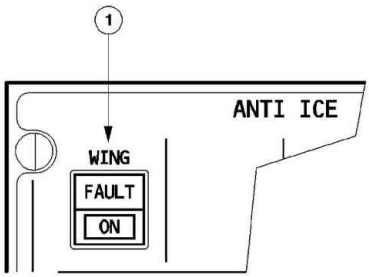
In flight, hot air from the pneumatic system heats the three outboard slats (3-4-5) of each wing.
Air is supplied through one valve in each wing.
The WING pushbutton on the ANTI ICE panel controls the valves.
When the aircraft is on ground, the flight crew can initiate a 30 s test sequence by turning the system ON.
If the system detects a leak during normal operation, the affected side's wing anti-ice valve automatically closes (*Refer to DSC-36-10-50 Leak Detection*).
When wing anti-ice is selected, the N1 or EPR limit is automatically reduced, and the idle N1 or EPR is automatically increased.
If the electrical power supply fails, the valves close.


ANTI ICE
WING
FAULT
ON
FLT
GND
ON
TO RIGHT WING VALVE
ENGINE No.1
BLEED AIR SUPPLY
30 SEC.
SLAT 1
SLAT 2
SLAT 3
SLAT 4
SLAT 5
HEATED LEADING EDGE
LEFT WING
VALVE
TO AIR CONDITIONING
PACKS
FROM
APU

OVERHEAD PANEL

Ident.: DSC-30-20-20-00017418.0001001 / 21 MAR 16

[1] **Applicable to: MSN 01767-06336**



(1) WING ANTI ICE pb sw

This switch controls the wing anti ice system on the left and right sides simultaneously.

Off : ON light goes off.
Wing anti-icing control valves close.

FAULT : Light comes on amber, and caution appears on ECAM, if:
- The position of the anti-icing control valve is not the required position, or
- Low pressure is detected.

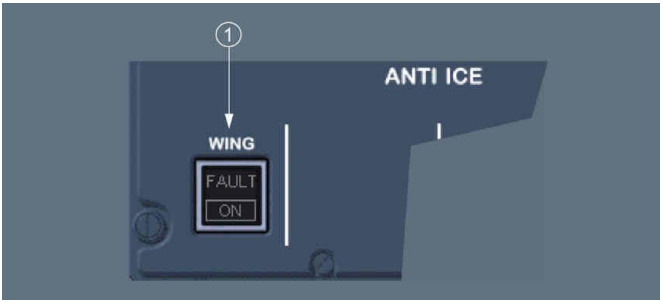
Note: The amber FAULT light comes on briefly as the valves transit.

ON : Light comes on blue.
WING A. ICE appears on the ECAM MEMO page.
Wing anti ice control valves open if a pneumatic supply is available.
On the ground the wing anti-icing control valves open for 30 s only (test sequence).

OVERHEAD PANEL

Ident.: DSC-30-20-20-00017418.0002001 / 21 MAR 16

[2] **Applicable to: MSN 06720-09063**



(1) WING ANTI ICE pb sw

This switch controls the wing anti ice system on the left and right sides simultaneously.

Off : ON light goes off.
Wing anti-icing control valves close.

FAULT : Light comes on amber, and caution appears on ECAM, if:
- The position of the anti-icing control valve is not the required position, or
- Low pressure is detected.

Note: The amber FAULT light comes on briefly as the valves transit.

ON : Light comes on blue.
WING A. ICE appears on the ECAM MEMO page. WAI appears on the Engine Warning Display when the thrust levers are in the TOGA or FLX/MCT detent.
Wing anti ice control valves open if a pneumatic supply is available.
On the ground the wing anti-icing control valves open for 30 s only (test sequence).

ECAM BLEED PAGE

Ident.: DSC-30-20-20-00001159.0001001 / 21 MAR 16

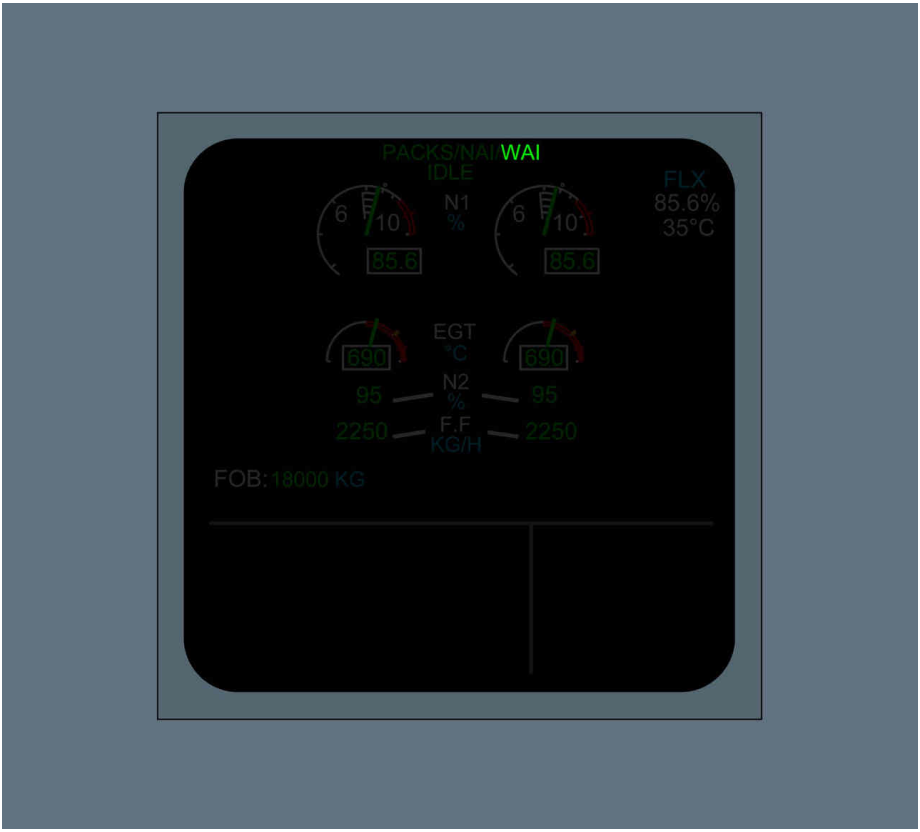
Applicable to: ALL

Refer to DSC-36-20 ECAM Bleed Page

ENGINE WARNING DISPLAY

Ident.: DSC-30-20-20-00017421.0001001 / 06 SEP 16

[3] **Applicable to: MSN 06720-09063**



WING ANTI-ICE status

For more information, *Refer to DSC-70-90-40 Bleed Air Configuration*

MEMO DISPLAY

Ident.: DSC-30-20-20-A-00016938.0001001 / 21 MAR 16

Applicable to: MSN 01767, 02584-02649, 04314, 04393-04397

ICE NOT DET : This memo appears in green, if ice is no longer detected after 190 s.

Ident.: DSC-30-20-20-A-00016939.0001001 / 21 MAR 16
Applicable to: ALL

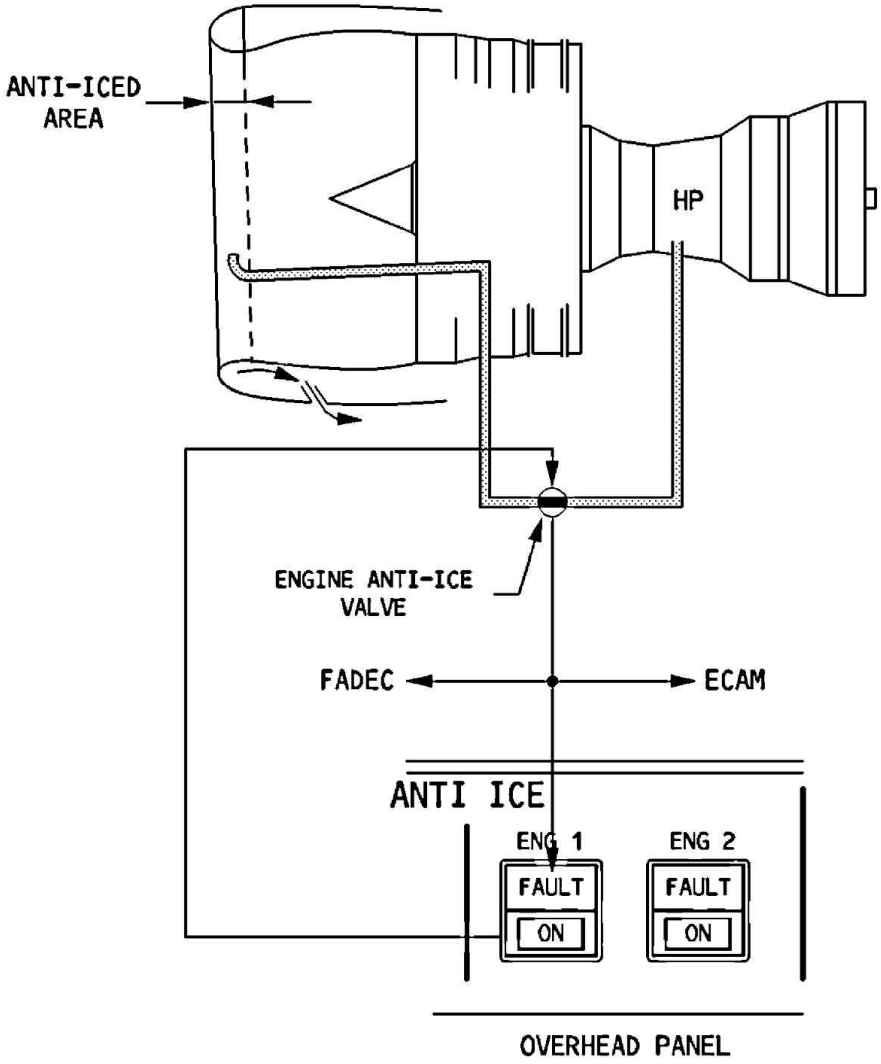
WING A.ICE : This memo appears in green, if the WING ANTI ICE pb-sw is ON.

DESCRIPTION

Ident.: DSC-30-30-10-00017422.0001001 / 21 MAR 16

[1] **Applicable to: MSN 01767-06336**

An independent air bleed from the high pressure compressor protects each engine nacelle from ice.
Air is supplied through a two-position (open and closed) valve that the flight crew controls with two pushbuttons, one for each engine.
The valve automatically closes, if air is unavailable (engine not running).
When an engine anti-ice valve is open, the N1 or EPR limit is automatically reduced and, if necessary, the idle N1 or EPR is automatically increased for both engines in order to provide the required pressure.
If electrical power fails, the valves open.


ANTI-ICED
AREA
HP
ENGINE ANTI-ICE
VALVE
FADEC
ECAM
ANTI ICE
ENG 1
ENG 2
FAULT
ON
FAULT
ON
OVERHEAD PANEL

DESCRIPTION

Ident.: DSC-30-30-10-00017422.0002001 / 04 JUL 17

[2] **Applicable to: MSN 06720-09063**

Each engine has its own anti-ice system, with an independent hot bleed air source.

L3 The bleed air is extracted from the High Pressure Compressor to anti-ice the engine air inlet.

L1 Two Pressure Regulated & Shut off Valves (PRSOV) enable the flow of bleed air to the engines air intake inlet.

Each valve is electrically controlled and pneumatically actuated.

L2 Both PRSOVs are regulating in cascade when the engine anti-ice is on.

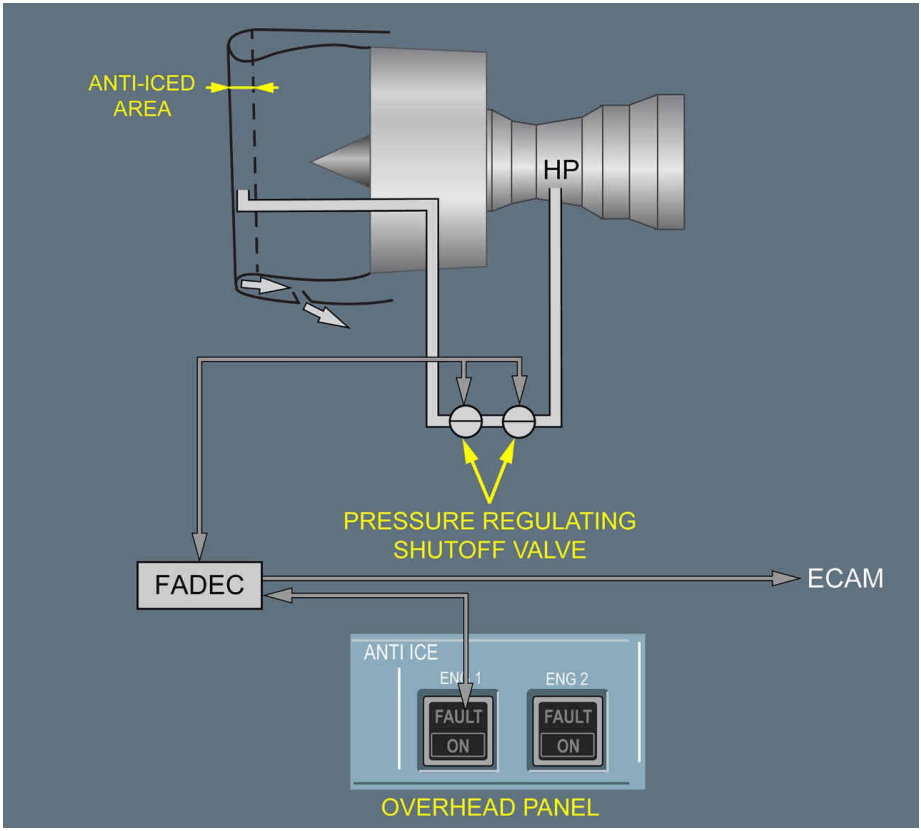
L1 Only one PRSOV is performing the shut off function when the engine anti-ice is off.

A continuous monitoring of the system enables the detection of bleed air duct leak or burst and deactivation of the system.

When the engine anti-ice is on, the N1 limit is automatically reduced and the idle N1 is automatically increased for both engines, if necessary, in order to provide the required pressure.

In the case of a detected burst duct, both valves are commanded closed.

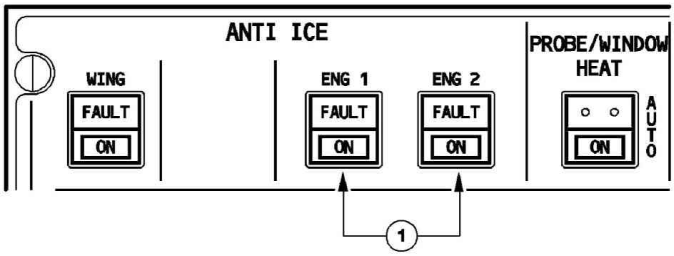
In the case of an electrical failure, both PRSOVs are fail safe opened providing the air inlet with enough pressure for the anti-ice function.


ANTI-ICED
AREA
HP
PRESSURE REGULATING
SHUTOFF VALVE
FADEC
ECAM
ANTI ICE
ENG 1
ENG 2
FAULT
ON
FAULT
ON
OVERHEAD PANEL

OVERHEAD PANEL

Ident.: DSC-30-30-20-00017425.0001001 / 21 MAR 16

[1] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**



(1) ENG 1 (2) ANTI ICE pb-sw

Off : ON light goes off.
Engine anti-ice valve closes.

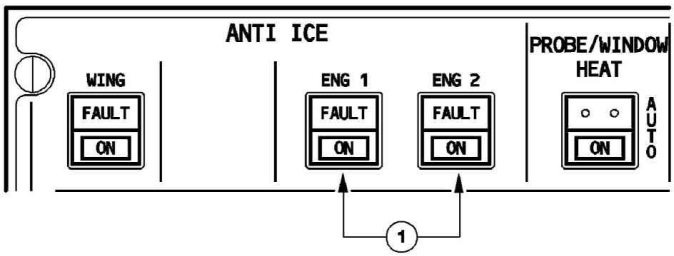
FAULT : Light comes on amber, and caution message appears on ECAM, if the position of the anti-ice valve disagrees with the ENG 1 (2) pushbutton selection.

Note: The amber FAULT light comes on briefly as valve transits.

ON : Light comes on blue.
ECAM MEMO displays “ENG A. ICE”.
Engine anti-icing valve opens if bleed air is available from the engine.
Continuous ignition is selected when the valve is opened and the ENG ANTI ICE pb-sw is selected ON. This makes the IGNITION memo appear on the ECAM.

OVERHEAD PANEL

Ident.: DSC-30-30-20-00017425.0003001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510



(1) ENG 1 (2) ANTI ICE pb-sw

Off : ON light goes off.
Engine anti-ice valve closes.

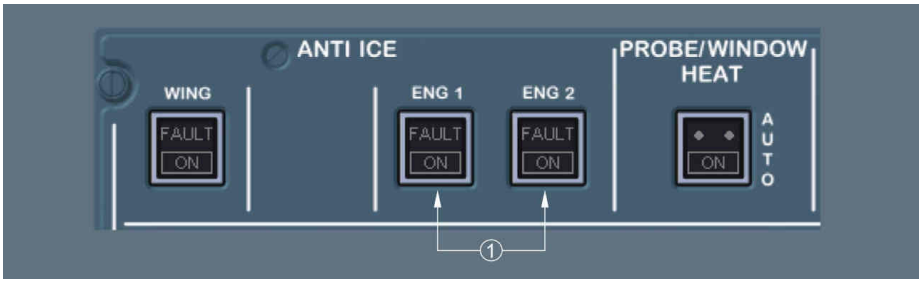
FAULT : Light comes on amber, and caution message appears on ECAM, if the position of the anti-ice valve disagrees with the ENG 1 (2) pushbutton selection.

Note: The amber FAULT light comes on briefly as valve transits.

ON : Light comes on blue.
ECAM MEMO displays “ENG A. ICE”.
Engine anti-icing valve opens if bleed air is available from the engine.

OVERHEAD PANEL

Ident.: DSC-30-30-20-00017425.0004001 / 21 MAR 16
2 **Applicable to: MSN 06720-09063**



(1) ENG 1 (2) ANTI ICE pb-sw

Off : ON light goes off.
Engine anti-ice valves close.

FAULT : Light comes on amber, and caution message appears on ECAM, if the positions of the anti-ice valves disagree with the ENG 1 (2) pushbutton selection.

Note: *The amber FAULT light comes on briefly as valves transit.*

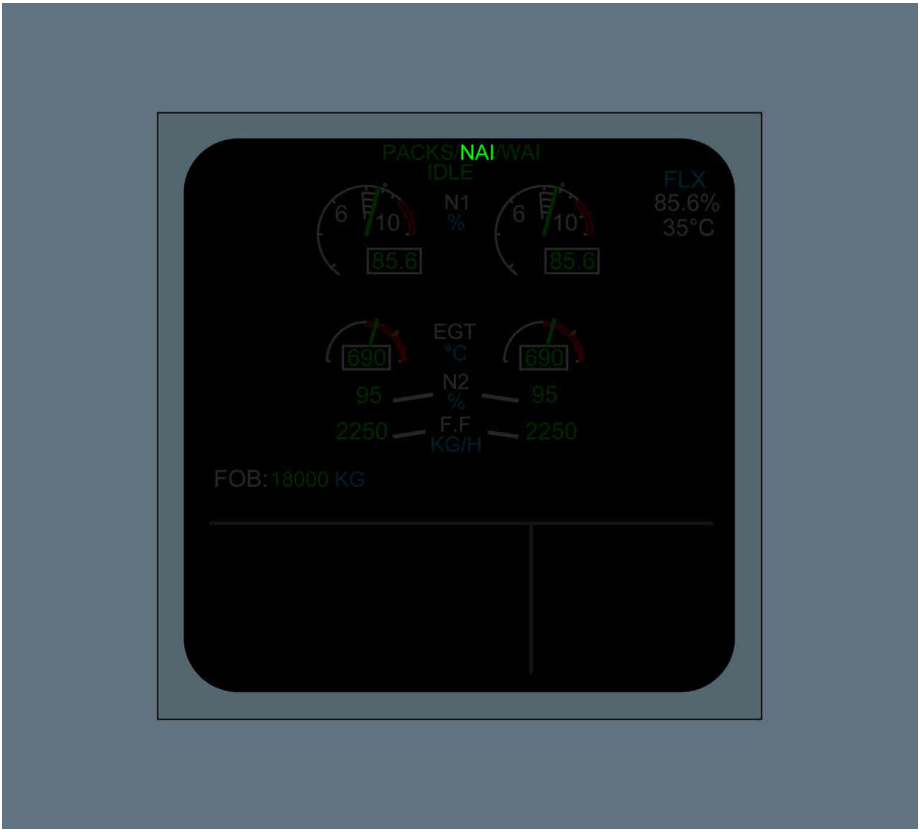
Associated with one of the following ECAM alerts:
- ANTI ICE ENG 1(2) VALVE CLSD (*Refer to PRO-ABN-A-ICE ANTI ICE ENG 1(2) VALVE CLSD*)
- ANTI ICE ENG 1(2) VALVE OPEN (*Refer to PRO-ABN-A-ICE ANTI ICE ENG 1(2) VALVE OPEN*)
- ANTI ICE ENG 1(2) CTL FAULT (*Refer to PRO-ABN-A-ICE ANTI ICE ENG 1(2) CTL FAULT (ENG 1(2) A.ICE VALVE OPEN)*)
- ANTI ICE ENG 1(2) OVER PRESS (*Refer to PRO-ABN-A-ICE ANTI ICE ENG 1(2) OVER PRESS*)

ON : Light comes on blue.
ECAM MEMO displays “ENG A. ICE”. NAI appears on the Engine Warning Display when the thrust levers are in the TOGA or FLX/MCT detent.
Engine anti-icing valves open if bleed air is available from the engine.

ENGINE WARNING DISPLAY

Ident.: DSC-30-30-20-00017457.0001001 / 06 SEP 16

[3] **Applicable to: MSN 06720-09063**



ENGINE NACELLE ANTI-ICE status

For more information, *Refer to DSC-70-90-40 Bleed Air Configuration*

MEMO DISPLAY

Ident.: DSC-30-30-20-A-00016945.0001001 / 21 MAR 16

Applicable to: ALL

ENG A.ICE : This memo appears in green, if one or both ENG ANTI ICE pb-sw are ON.

ICE NOT DET : This memo appears in green, if no ice has been detected 190 s after the flight crew has selected the ENG ANTI ICE pb-sw are ON.

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DESCRIPTION

Ident.: DSC-30-40-10-00017458.0001001 / 21 MAR 16
Applicable to: ALL

The aircraft uses electrical heating for anti-icing each windshield and defogging the cockpit side windows.
Two independent Window Heat Computers (WHCs), one on each side, automatically regulate the system, protect it against overheating, and indicate faults.

Window heating comes on:
- automatically when at least one engine is running, or when the aircraft is in flight.
- manually, before engine start, when the flight crew switches ON the PROBE/WINDOW HEAT pushbutton switch.

Windshield heating operates at low power on the ground and at normal power in flight. The changeover is automatic.
Only one heating level exists for the windows.

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OVERHEAD PANEL

Ident.: DSC-30-40-20-00001165.0001001 / 21 MAR 16
Applicable to: ALL

Refer to DSC-30-50-20 Overhead Panel

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DESCRIPTION

Ident.: DSC-30-50-10-00017459.0001001 / 21 MAR 16
Applicable to: ALL

Electrical heating protects:
- Pitot probes
- Static ports
- Angle-Of-Attack (AOAs) probes
- Total Air Temperature (TAT) probes.

Three independent Probe Heat Computers (PHCs) automatically control and monitor:
- Captain probes
- F/O probes
- STBY probes.

They protect against overheating and indicate faults.

The probes are heated:
- Automatically when at least one engine is running, or when the aircraft is in flight.
- Manually, when the flight crew switches ON the PROBE/WINDOW HEAT pb.

On the ground, the TAT probes are not heated and pitot heating operates at a low level (the changeover to normal power in flight is automatic).

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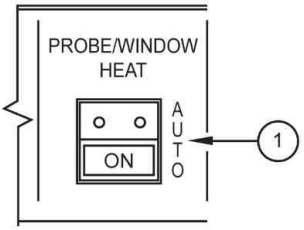
OVERHEAD PANEL

Ident.: DSC-30-50-20-00017460.0001001 / 21 MAR 16
Applicable to: ALL



(1) PROBE/WINDOW HEAT pb

AUTO : Probes/Windows are heated automatically :
- In flight, or
- On the ground (except TAT probes) provided one engine is running.

ON : Light comes on blue. Probes and windows are heated permanently.

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WIPERS

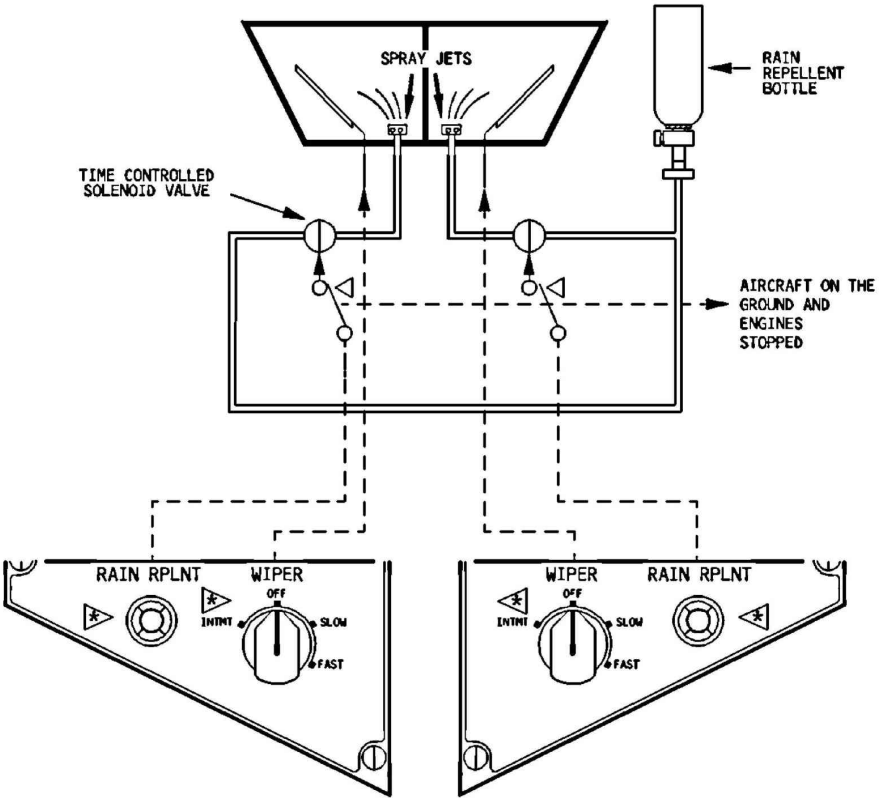
Ident.: DSC-30-60-10-00017461.0001001 / 21 MAR 16
Applicable to: ALL

Each front windshield has an electrical wiper with two speeds, and with an intermittent sweep function ◁ . A rotary selector controls each wiper.

RAIN REPELLENT ◁

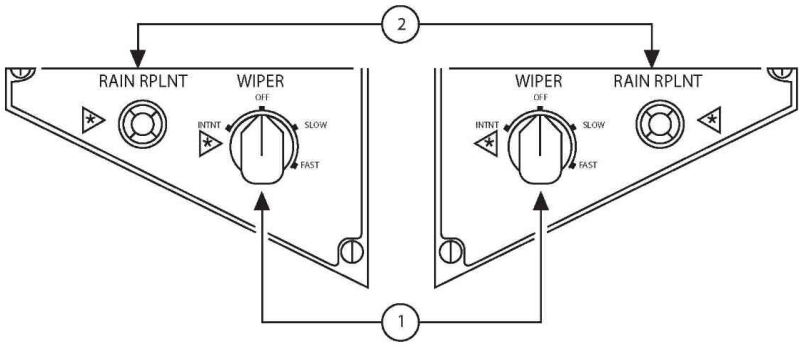
Ident.: DSC-30-60-10-00017462.0001001 / 01 JUN 17
Applicable to: ALL

In moderate to heavy rain, the flight crew can spray a rain repellent liquid on the windshield to improve visibility.
After about 30 s, the windows are covered with spray.
Separate pushbuttons control rain repellent application on each side of the windshield.


SPRAY JETS
RAIN REPELLENT BOTTLE
TIME CONTROLLED SOLENOID VALVE
AIRCRAFT ON THE GROUND AND ENGINES STOPPED
RAIN RPLNT
WIPER
OFF
INTMT
SLOW
FAST
WIPER
RAIN RPLNT
OFF
INTMT
SLOW
FAST

OVERHEAD PANEL

Ident.: DSC-30-60-20-00017466.0001001 / 21 MAR 16
Applicable to: ALL

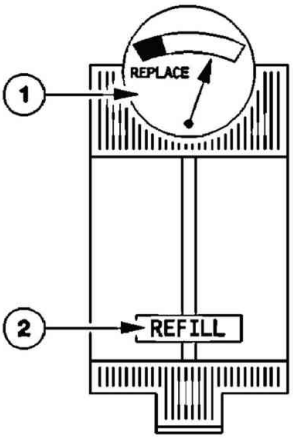


(1) WIPER rotary selector
Each rotary selector controls its wiper at low speed, high speed, or intermittent sweeping .
When turned off, the wiper stops out of view.

(2) RAIN RPLNT pb-sw
Each of these buttons controls the application of rain repellent fluid to the corresponding side of the front windshield.
When the flight crew pushes the button, the timer applies a measured quantity of rain repellent to the windshield. To repeat the cycle, the flight crew must push the button again.
This function is inhibited when the aircraft is on the ground and the engines are stopped.

RAIN REPELLENT ◁ SYSTEM INDICATORS

Ident.: DSC-30-60-20-00017587.0001001 / 21 MAR 16
Applicable to: ALL



(1) Rain Repellent pressure indicator
This gauge shows the nitrogen pressure and therefore the remaining fluid in the rain repellent bottle. When the needle is in the yellow sector the bottle should be replaced.

(2) Rain Repellent low level indicator (depending on aircraft configuration)
When the REFILL float is in view the bottle should be replaced.

VISUAL ICE INDICATOR

Ident.: DSC-30-70-10-00017471.0001001 / 21 MAR 16
Applicable to: ALL

An external visual ice indicator is installed between the two windshields.
There can be also an external ice detector light.

ICE DETECTION SYSTEM

Ident.: DSC-30-70-10-00017472.0001001 / 21 MAR 16
Applicable to: MSN 01767, 02584-02649, 04314, 04393-04397

The ice detection system has two separate ice detector probes on the forward lower section of the fuselage.
The probes detect ice accretion. They also indicate, through the MEMO display, that icing conditions have disappeared. The system logic generates ECAM messages according to ice detector signals and the flight crew's selection of engine or wing anti-icing systems.
The ice detection system does not control the ENG or WING anti-icing systems.

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AIRCRAFT SYSTEMS

INDICATING/RECORDING SYSTEMS

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DSC-31-05 EIS General

DSC-31-05-10 Introduction

Introduction....A

DSC-31-05-20 Cockpit Arrangement

Cockpit Arrangement....A

DSC-31-05-30 Architecture

Display Unit (DU)....A
Display Management Computer (DMC)....B
System Data Acquisition Concentrator (SDAC)....C
Flight Warning Computer (FWC)....D
Attention - Getters....E
Loudspeaker....F
EIS Block Diagram....G

DSC-31-05-40 Controls and Switching

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EIS DMC Switching Selector....B
ECAM/ND Switching....C
EFIS Switching....D

DSC-31-05-50 Reconfiguring the DMC

Reconfiguring the Display Management Computer (DMC)....A

DSC-31-05-60 Reconfiguring DUs

Failure of Upper ECAM DU (or CTL/Brightness Knob Turned to Off)....A
Failure of Lower ECAM DU (or CTL/Brightness Knob Turned to Off)....B
Failure of both ECAM DUs....C
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DU Reconfiguration....E
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Failure of a DU....G
Feedback Messages....H
Side1/Side2 Discrepancy Messages....I
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DSC-31-10 ECAM Description

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Types of Failures....E
Audio Indicators....F

DSC-31-15 Indications on E/WD

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Independent Failure....B
Primary and Secondary Failure....C
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Memos....E
Configuration Warnings....F

DSC-31-20 Indications on SD

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System Pages....B
Status Page....C
Permanent Data....D
Amber Crosses "XX" on the SD....E
Amber dashes on the SD....F

DSC-31-25 ECAM Sequence

DSC-31-25-10 General

General....A

DSC-31-25-20 Example

1 - The Ecam Detects No Failure....A
2 - The Ecam Detects a Failure....B
2 - The Ecam Detects A Failure....C
2 - The ECAM Detects a Failure....D
3 - The Flight Crew Follows the Instruction Displayed on the E/WD....E
4 - One of the Pilots Pushes the CLR Pushbutton on The ECP....F
4 - One of the Pilots Pushes the CLR Pushbutton on the ECP....G
5 - One of the Pilots Pushes the CLR Pushbutton a Second Time....H
6 - One of the Pilots Pushes the CLR Pushbutton a Third Time....I

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Description....B
OEB Database....C

DSC-31-30 ECAM Controls

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Switching Panel....B
Attention Getters....C
Memo Display....D

DSC-31-40 Indications on PFD

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Specific Ground Indications....B
Attitude Data....C
Airspeed....D
Altitude....E
Altitude (CONT'D)....F
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Flight Path Vector....I
Guidance....J
Trajectory Deviation....K
Flight Mode Annunciator....L
Tailstrike Pitch Limit Indicator ◁ ....M
Altitude Alert....N
Flags and Messages Displayed on PFD....O
Backup Speed/Altitude Scale....P

DSC-31-45 Indications on ND

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ROSE Modes....B
ROSE LS Mode....C
Rose VOR Mode....D
ROSE NAV Mode/ARC Mode....E
Plan Mode....F
Weather Radar indications....G
PWS ◁ indications....H
EGPWS....I

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GPWS....J
EGPWS....K
GPWS....L
Flags and Messages Displayed on ND....M

DSC-31-50 EFIS Controls

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DSC-31-55 Clock

DSC-31-55-10 General

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DSC-31-55-20 Controls and Indicators

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Operation in Internal Mode....B

DSC-31-60 FLT Recorders

DSC-31-60-10 Flight Data Recording System

Description....A

DSC-31-60-20 Controls and Indicators

Overhead Panel....A
Pedestal....B

DSC-31-60-30 Aircraft Integrated Data System

Description....A
Controls On Pedestal....B

Localization Title	Toc Index	ID	Reason
DSC-31-05-10 Introduction	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-31-05-10 Introduction	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-31-05-30 Display Unit (DU)	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-05-30 Display Management Computer (DMC)	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-05-30 EIS Block Diagram	G	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-05-50 Reconfiguring the Display Management Computer (DMC)	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-05-60 General	F	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-05-60 Failure of a DU	G	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-05-60 Feedback Messages	H	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-05-60 Side1/Side2 Discrepancy Messages	I	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-05-60 DU Reset	J	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 ECAM DU Arrangement	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-31-10 ECAM DU Arrangement	A	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - TRIPLE CLICK	F	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - STOP RUDDER INPUT	F	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-31-10 Audio Indicators - STOP RUDDER INPUT	F	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - TRIPLE CLICK	F	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - WINDSHEAR	F	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - STOP RUDDER INPUT	F	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - TRIPLE CLICK	F	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - WINDSHEAR	F	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - PITCH, PITCH	F	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - STOP RUDDER INPUT	F	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - TRIPLE CLICK	F	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - TRIPLE CLICK	F	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - PITCH, PITCH	F	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - STOP RUDDER INPUT	F	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - TRIPLE CLICK	F	17	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-31-10 Audio Indicators - WINDSHEAR	F	18	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - TRIPLE CLICK	F	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - WINDSHEAR	F	20	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-10 Audio Indicators - PITCH, PITCH	F	21	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-15 General	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-31-15 General	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-31-15 Memos - TO and LDG Memos	E	3	Effectivity update: The information now also applies to MSN 09063.
DSC-31-15 Memos - TO and LDG Memos	E	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-31-15 Configuration Warnings	F	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-20 System Pages	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-20 Permanent Data	D	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-25-20 1 - The Ecam Detects No Failure	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-31-25-20 1 - The Ecam Detects No Failure	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-31-25-20 2 - The Ecam Detects A Failure	C	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-31-25-20 2 - The ECAM Detects a Failure	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-31-25-20 3 - The Flight Crew Follows the Instruction Displayed on the E/WD	E	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-31-25-20 4 - One of the Pilots Pushes the CLR Pushbutton on The ECP	F	6	Effectivity update: The information no longer applies to MSN 05449.
DSC-31-25-20 4 - One of the Pilots Pushes the CLR Pushbutton on the ECP	G	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-31-25-20 5 - One of the Pilots Pushes the CLR Pushbutton a Second Time	H	8	Effectivity update: The information no longer applies to MSN 05449.
DSC-31-25-20 5 - One of the Pilots Pushes the CLR Pushbutton a Second Time	H	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-31-25-20 6 - One of the Pilots Pushes the CLR Pushbutton a Third Time	I	10	Effectivity update: The information no longer applies to MSN 05449.
DSC-31-25-20 6 - One of the Pilots Pushes the CLR Pushbutton a Third Time	I	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-31-30 ECAM Control Panel	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-30 Switching Panel	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-40 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-40 Attitude Data	C	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-31-40 Attitude Data	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-31-40 Airspeed	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-40 Altitude	E	5	Effectivity update: The information now also applies to MSN 09063.
DSC-31-40 Altitude	E	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-31-40 Altitude (CONT'D)	F	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-40 Vertical Speed	G	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-40 Heading	H	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-40 Trajectory Deviation - ILS Approach (CONT'D)	K	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-40 Trajectory Deviation - Non Precision Approach	K	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-40 Altitude Alert	N	12	Effectivity update: The information no longer applies to MSN 05449.
DSC-31-40 Altitude Alert	N	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-31-40 Flags and Messages Displayed on PFD	O	14	Effectivity update: The information no longer applies to MSN 05449.
DSC-31-40 Flags and Messages Displayed on PFD	O	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-31-40 Backup Speed/Altitude Scale - General	P	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-31-40 Backup Speed/Altitude Scale - General	P	17	Effectivity update: The information no longer applies to MSN 05449.
DSC-31-40 Backup Speed/Altitude Scale - Backup Speed Scale	P	18	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-45 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-45 ROSE Modes	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-31-45 ROSE NAV Mode/ARC Mode	E	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-45 EGPWS	K	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-45 Flags and Messages Displayed on ND	M	5	Effectivity update: The information no longer applies to MSN 05449.
DSC-31-50 EFIS Control Panel	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-31-50 Other EFIS Controls	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

INTRODUCTION

Ident.: DSC-31-05-10-00001182.0001001 / 21 MAR 16

[1] **Applicable to: MSN 01767-06336**

The Electronic Instrument System (EIS) presents data on six identical Display Units (DUs):

- The Electronic Flight Instrument System (EFIS) displays mostly flight parameters and navigation data on the Primary Flight Displays (PFDs) and Navigation Displays (NDs).
- The Electronic Centralized Aircraft Monitor (ECAM) presents data on the Engine/Warning Display (E/WD) and System Display (SD) :
  - Primary engine indications, fuel quantity, flap and slat position
  - Warning and caution alerts, or memos
  - Synoptic diagrams of aircraft systems, and status messages
  - Permanent flight data

INTRODUCTION

Ident.: DSC-31-05-10-00001182.0002001 / 09 OCT 14

[2] **Applicable to: MSN 06720-09063**

The Electronic Instrument System (EIS) presents data on six identical Display Units (DUs):

- The Electronic Flight Instrument System (EFIS) displays mostly flight parameters and navigation data on the Primary Flight Displays (PFDs) and Navigation Displays (NDs).
- The Electronic Centralized Aircraft Monitor (ECAM) presents data on the Engine/Warning Display (E/WD) and System Display (SD) :
  - Primary engine indications, fuel quantity, flap and slat position, bleed air configuration
  - Warning and caution alerts, or memos
  - Synoptic diagrams of aircraft systems, and status messages
  - Permanent flight data

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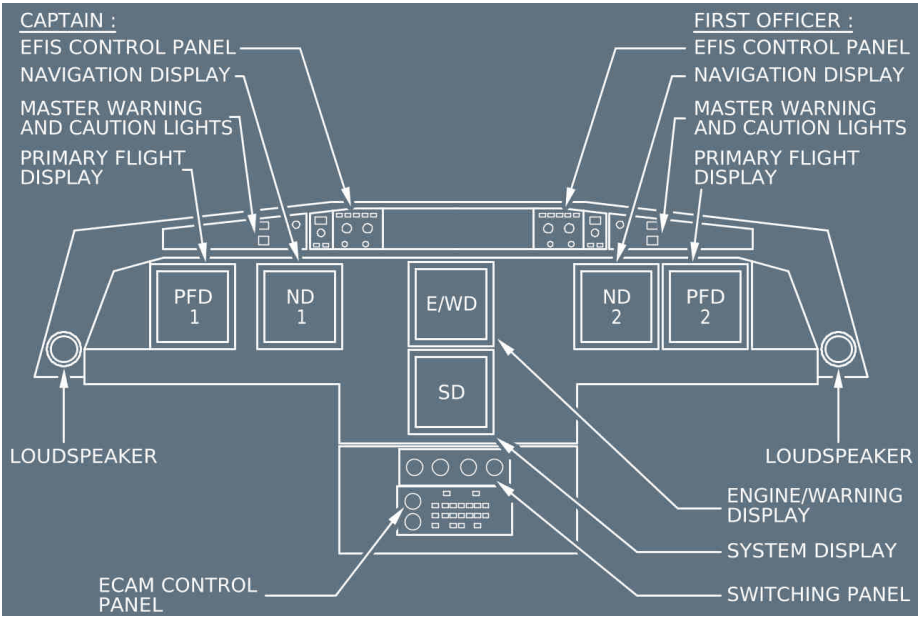
COCKPIT ARRANGEMENT

Ident.: DSC-31-05-20-00001183.0001001 / 09 OCT 12
Applicable to: ALL



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DISPLAY UNIT (DU)

Ident.: DSC-31-05-30-00001184.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

The instrument panels have six identical units.
These DUs are full-color cathode ray tubes.

DISPLAY UNIT (DU)

Ident.: DSC-31-05-30-00001184.0002001 / 21 MAR 16
1 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

The instrument panels have six identical units.
These DUs are full-color Liquid Crystal Displays (LCD).

DISPLAY MANAGEMENT COMPUTER (DMC)

Ident.: DSC-31-05-30-00001185.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

Three identical Display Management Computers acquire and process all the signals received from sensors and other computers to generate the images to be displayed on the primary flight displays, navigation displays, engine/warning display, and system display.
Each DMC has two independent channels : An EFIS channel and an ECAM channel. Each DMC is able to simultaneously drive one PFD, one ND, and either one of the ECAMs in its engine warning or system status mode.

DISPLAY MANAGEMENT COMPUTER (DMC)

Ident.: DSC-31-05-30-00001185.0002001 / 20 DEC 10
2 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

Three identical Display Management Computers (DMCs) obtain data from the different sensors and computers, and send it to the display units. The display units then generate and display the applicable images. Each DMC has a single DMC channel, and can simultaneously supply one PFD, one ND and both ECAM display units (E/WD and SD).

SYSTEM DATA ACQUISITION CONCENTRATOR (SDAC)

Ident.: DSC-31-05-30-00001186.0001001 / 21 MAR 16
Applicable to: ALL

The two identical SDACs acquire data, then generate signals. Some of these signals go to the three DMCs, which use them to generate displays of system pages and engines parameters. Others go to the flight warning computers, which use them to generate ECAM messages and aural alerts.

FLIGHT WARNING COMPUTER (FWC)

Ident.: DSC-31-05-30-00001187.0001001 / 13 JAN 14
Applicable to: ALL

The two identical FWCs generate alert messages, memos, aural alerts, and synthetic voice messages. For this purpose they acquire data:

- Directly from aircraft sensors, or systems, to generate red warnings
- Through the SDACs to generate amber cautions.

The ECAM display units display the alert messages generated by the FWCs.

The FWCs also generate:

- Radio height callouts
- Decision height callouts
- Landing distance and landing speed increments.

ATTENTION - GETTERS

Ident.: DSC-31-05-30-00001188.0001001 / 21 MAR 16
Applicable to: ALL

The FWCs also drive the attention-getters. Each pilot has a set of these on the panel under the glareshield. They are :

- A master warning light, that flashes “MASTER WARN” in red, for red warnings.
- A master caution light, that illuminates “MASTER CAUT” in amber, for amber cautions.

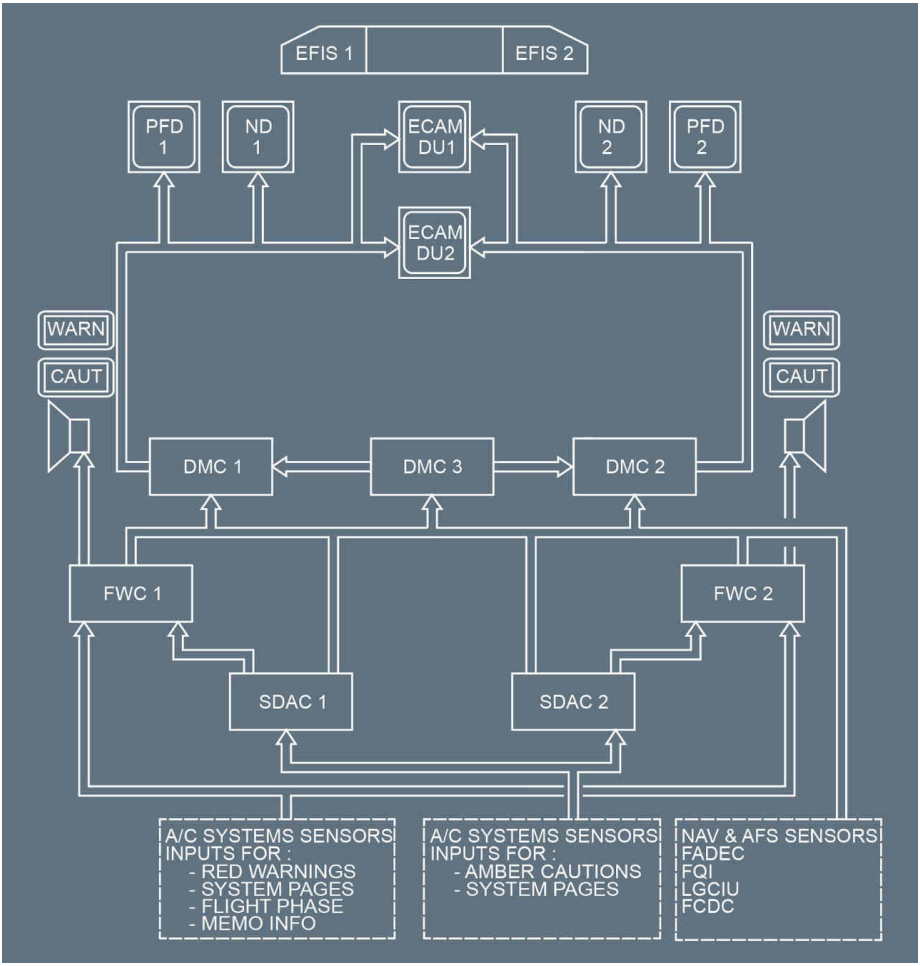
LOUDSPEAKER

Ident.: DSC-31-05-30-00001189.0001001 / 21 MAR 16
Applicable to: ALL

The communications loudspeakers announce aural alerts and voice messages, and do so even when they are turned off.

EIS BLOCK DIAGRAM

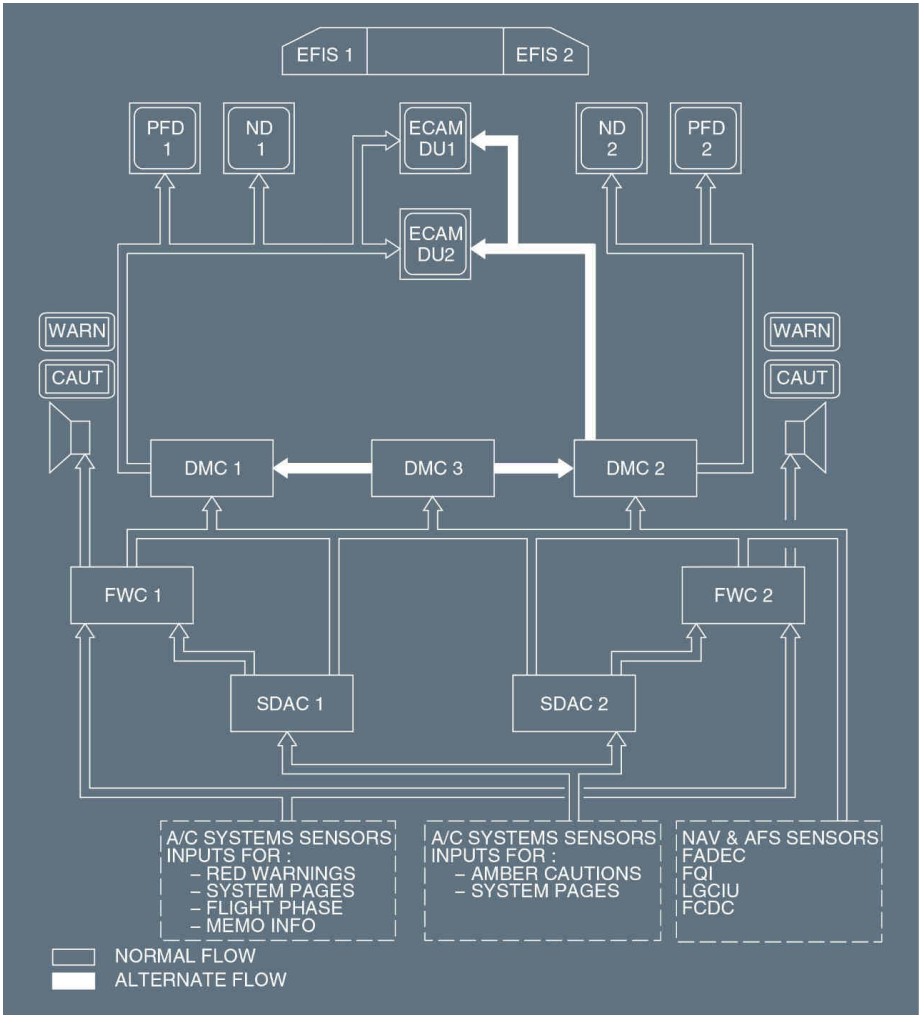
Ident.: DSC-31-05-30-00001190.0001001 / 06 JUL 17
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



EIS BLOCK DIAGRAM

Ident.: DSC-31-05-30-00001190.0002001 / 06 JUL 17

[3] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



ECAM CONTROL PANEL (ECP)

Ident.: DSC-31-05-40-00001191.0001001 / 21 MAR 16
Applicable to: ALL

The ECAM Control Panel, located on the pedestal, includes :

- Such E/WD controls, as CLR, STS, and the brightness control knob.
- Such SD controls, as ENG, BLEED, PRESS..., system page selector, and the brightness control knob.

EIS DMC SWITCHING SELECTOR

Ident.: DSC-31-05-40-00001192.0001001 / 22 MAR 16
Applicable to: ALL

A switch near the center of the SWITCHING panel which is located just above the ECAM control panel, enables the flight crew to replace the Captain or First Officer's Display Management Computer (DMC 1, or DMC 2) by DMC 3.

ECAM/ND SWITCHING

Ident.: DSC-31-05-40-00001193.0001001 / 21 MAR 16
Applicable to: ALL

A switch on the right-hand side of the SWITCHING panel enables the flight crew to transfer the ECAM System Display to either the Captain or First Officer's Navigation Display.

EFIS SWITCHING

Ident.: DSC-31-05-40-00001194.0001001 / 21 MAR 16
Applicable to: ALL

A PFD/ND XFR pushbutton on each side console enables the pilot to swap displays to the respective onside DUs.

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RECONFIGURING THE DISPLAY MANAGEMENT COMPUTER (DMC)

Ident.: DSC-31-05-50-00001195.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

In normal operation, each DMC drives the following Display Units :
- DMC 1 drives the CAPT PFD, CAPT ND and the upper ECAM DUs.
- DMC 2 drives the F/O PFD and F/O ND, and the lower ECAM DU.
- DMC 3 is on standby.

If a DMC fails (corresponding DU shows a diagonal line), the flight crew can replace DMC 1 or 2 with DMC 3 by turning the EIS DMC switch on the SWITCHING panel to “CAPT 3” or “F/O 3”.

RECONFIGURING THE DISPLAY MANAGEMENT COMPUTER (DMC)

Ident.: DSC-31-05-50-00001195.0002001 / 21 MAR 16
1 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

In normal operation, each DMC drives the following Display Units :
- DMC 1 drives the CAPT PFD, CAPT ND and the ECAM DUs.
- DMC 2 drives the F/O PFD and F/O ND.
- DMC 3 is on standby, ready to drive any DU.

If DMC 1 or 2 fails (the “INVALID DATA” message is displayed on the DUs), the crew manually selects the DMC 3 source (“CAPT 3” or “F/O 3”).
If DMC 1 fails (or DMC 3, if “CAPT 3” was selected), DMC 2 automatically drives the ECAM.

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FAILURE OF UPPER ECAM DU (OR CTL/BRIGHTNESS KNOB TURNED TO OFF)

Ident.: DSC-31-05-60-00001196.0001001 / 21 MAR 16
Applicable to: ALL

If the upper ECAM display fails, or is switched off :
- The engine/warning page automatically replaces the system/status page on the lower ECAM DU.

The flight crew can display the system/status page by :
- Using the “ECAM/ND XFR“ switch, on the SWITCHING panel, to move it to a Navigation Display Unit (NDU), or
- Pushing and holding (for a maximum of 3 min) the related system page pushbutton, on the ECAM control panel, to temporarily display it on the lower ECAM DU (instead of the engine/warning page).

FAILURE OF LOWER ECAM DU (OR CTL/BRIGHTNESS KNOB TURNED TO OFF)

Ident.: DSC-31-05-60-00001197.0001001 / 21 MAR 16
Applicable to: ALL

If the lower ECAM display fails, or is switched off, the flight crew can display the system/status page by :
- Using the "ECAM/ND XFR" switch, on the SWITCHING panel, to display it on the NDU, or
- Pushing and holding (for a maximum of 3 min) the related system page pushbutton, on the ECAM control panel, to temporarily display it on the upper ECAM DU (instead of the engine/warning page).

FAILURE OF BOTH ECAM DUs

Ident.: DSC-31-05-60-00001198.0001001 / 21 MAR 16
Applicable to: ALL

If both ECAM displays fail, the flight crew may :
- Use the "ECAM/ND XFR", on the SWITCHING panel, to display the engine/warning page on a navigation display and, if needed,
- Push and hold (for a maximum of 3 min) the related system page pushbutton, on the ECAM control panel, to temporarily display the system/status page on an ND.

PFDU/NDU RECONFIGURATION

Ident.: DSC-31-05-60-00001199.0001001 / 21 MAR 16
Applicable to: ALL

If a PFDU fails, the system automatically transfers the PFD image to the NDU.

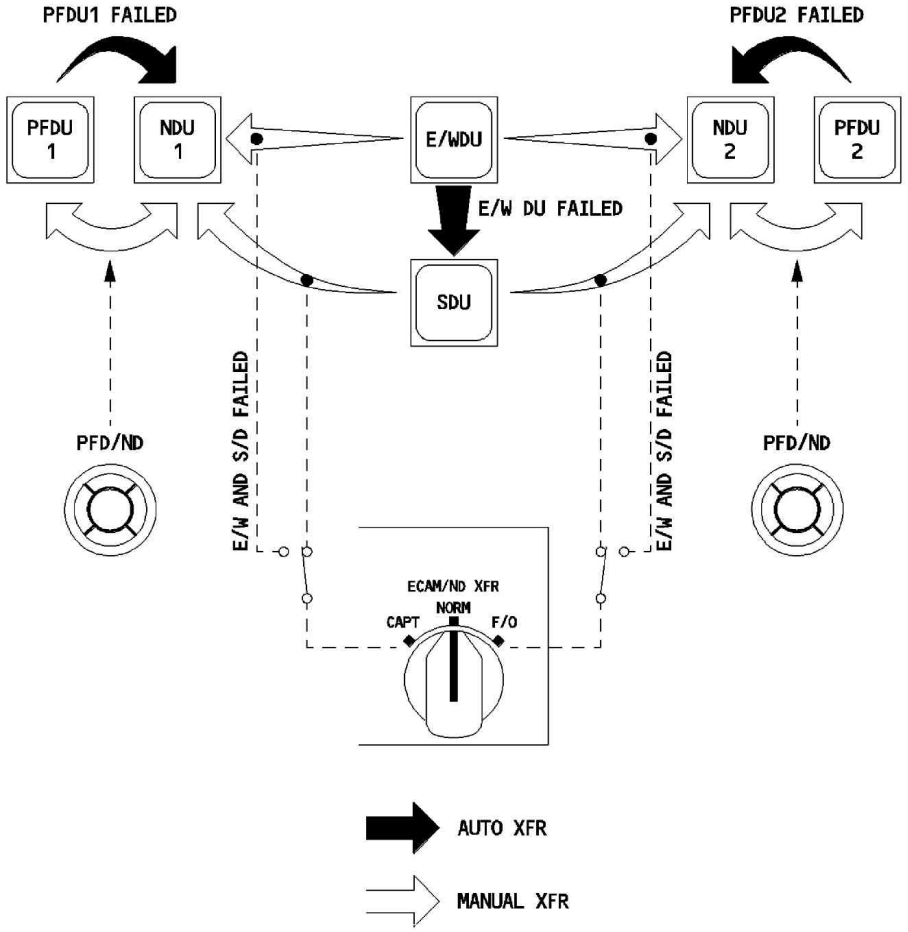
The pilot can also make this transfer manually by :

- turning the PFD ON-OFF/brightness control OFF, or
- pressing the PFD/ND/XFR pushbutton, which cross-changes the images between the PFDU and the NDU.

If an NDU fails, the pilot can use the PFD/ND/XFR pushbutton to transfer the ND image to the PFDU.

DU RECONFIGURATION

Ident.: DSC-31-05-60-00001200.0001001 / 21 MAR 16
Applicable to: ALL



GENERAL

Ident.: DSC-31-05-60-00012844.0001001 / 20 DEC 10

1 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

These messages are displayed on either the EFIS or the ECAM Display Unit (DU) depending on the current EFIS or ECAM configuration.

FAILURE OF A DU

Ident.: DSC-31-05-60-00012846.0001001 / 20 DEC 10

2 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

If a DU fails, the flight crew may find one of the following displays:

- A blank screen with an “F” letter in amber, or
- A distorted display, or
- A blank screen with the “INVALID DISPLAY UNIT” message in amber.

FEEDBACK MESSAGES

Ident.: DSC-31-05-60-00012847.0001001 / 20 DEC 10

3 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

The DU displays the following messages in amber when the Display Management Computer (DMC) detects a discrepancy between the parameters obtained by the DMC and the operational parameters displayed on the DU:

- ”CHECK CAPT PFD” (“CHECK F/O PFD”) if the discrepancy concerns the PFD parameters
- ”CHECK CAPT ND” (“CHECK F/O ND”) if the discrepancy concerns the ND parameters
- ”CHECK EWD” if the discrepancy concerns the E/WD parameters
- ”CHECK SD” if the discrepancy concerns the SD parameters.

In addition, if the aircraft is on ground, the “DU NOT MONITORED” message is displayed in amber when there is only one DMC, instead of two DMCs, that provides the affected DU with feedback information.
This message means that there is either a DMC test in progress or that there is an EIS failure.
In the case of an EIS failure, a maintenance action is necessary.

SIDE1/SIDE2 DISCREPANCY MESSAGES

Ident.: DSC-31-05-60-00012848.0001001 / 20 DEC 10

4 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

The DU displays the following messages along with a caution on the ECAM E/WD when there is a discrepancy between the parameters displayed on the Captain's EFIS and the First Officer's EFIS:

- Both PFDs display the message "CHECK ATT" if there is a discrepancy of at least 5 ° between the attitude values, pitch and/or roll
- Both PFDs display the message "CHECK ALT" if there is a discrepancy between the altitude values greater than 250 ft when the flight crew selects a QNH different from STD, or 500 ft when the flight crew selects a QNH STD
- Both PFDs and NDs display the message "CHECK HDG" if there is a discrepancy of at least 5 ° between the heading values.

Note: *The message "CHECK HDG" flashes for a few seconds on the NDs, and then it remains steady. If the flight crew selects the PLAN mode on the NDs the message "CHECK HDG" does not appear.*

DU RESET

Ident.: DSC-31-05-60-00012849.0001001 / 20 DEC 10

5 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

In the case of a DU reset, the message "SELF TEST IN PROGRESS" can be displayed in green and/or the message "WAITING FOR DATA" may be displayed in green during the EIS initialization.

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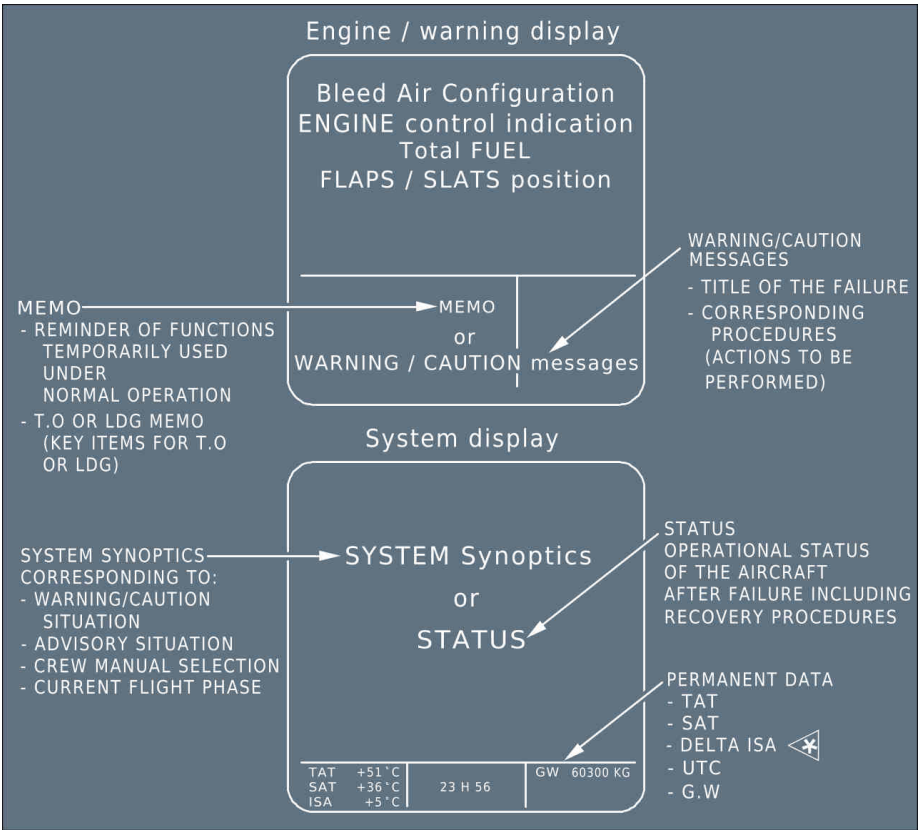
ECAM DU ARRANGEMENT

Ident.: DSC-31-10-00017519.0002001 / 21 MAR 16

[1] **Applicable to: MSN 06720-09063**

The ECAM has two display units:

- One for the engine/warning display (E/WD).
- One for the system/status display (SD).



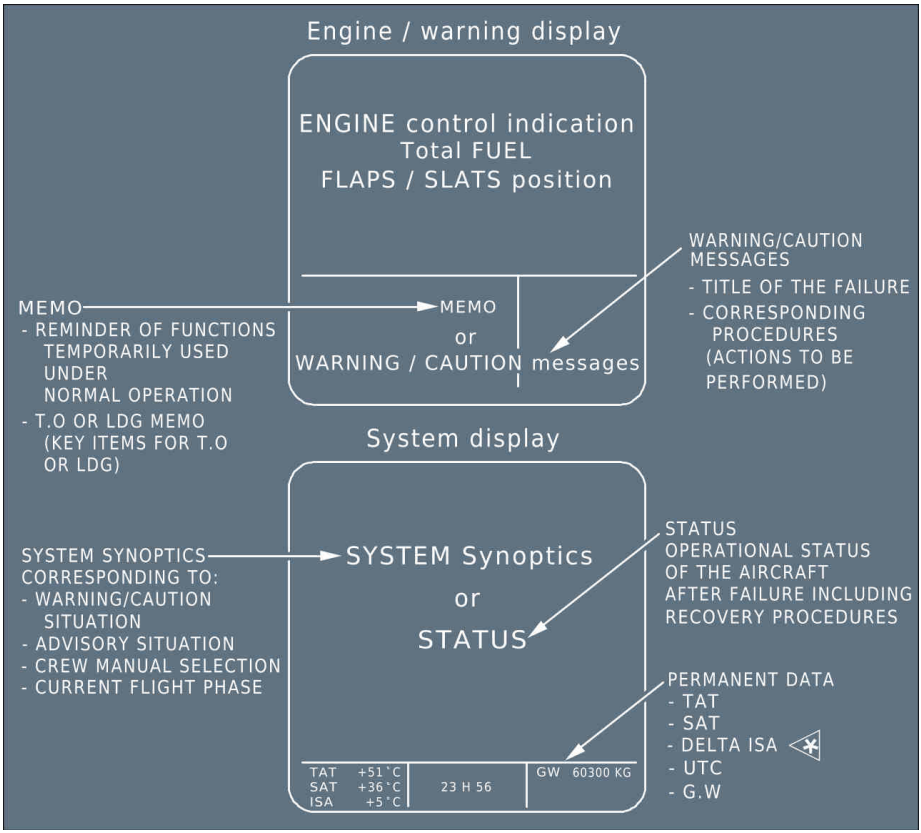
ECAM DU ARRANGEMENT

Ident.: DSC-31-10-00017519.0001001 / 21 MAR 16

[2] **Applicable to: MSN 01767-06336**

The ECAM has two display units:

- One for the engine/warning display (E/WD).
- One for the system/status display (SD).



COLOR CODE

Ident.: DSC-31-10-00001202.0001001 / 21 MAR 16
Applicable to: ALL

The ECAM display uses a color code that indicates the importance of the failure or the indication.

- RED : The configuration or failure requires immediate action.
- AMBER : The flight crew should be aware of the configuration or failure, but need not take immediate action.
- GREEN : The item is operating normally.
- WHITE : These titles and remarks guide the flight crew, as they execute various procedures.
- BLUE : These are actions to be carried out, or limitations.
- MAGENTA : These are particular messages that apply to particular pieces of equipment or situations (inhibition messages, for example).

WARNING/CAUTION CLASSIFICATION

Ident.: DSC-31-10-00001203.0001001 / 21 MAR 16
Applicable to: ALL

	LEVEL	SIGNIFICATION	AURAL	VISUAL
FAILURE MODE	Level 3	Red warning : The configuration, or failure requires immediate action : - Aircraft in dangerous configuration, or limit flight conditions (eg: stall, o/speed) - System failure altering flight safety (eg : Eng fire, excess cab alt)	Continuous Repetitive Chime (CRC) or specific sound or synthetic voice	- MASTER WARN light red flashing or specific red light - Warning message (red) on E/WD - Automatic call of the relevant system page on the S/D (1).
	Level 2	Amber caution : The flight crew should be aware of the configuration or failure, but does not need to take any immediate action. However, time and situation permitting, these cautions should be considered without delay to prevent any further degradation of the affected system : - System failure without any direct consequence on the flight safety (eg: HYD G SYS LO PR)	Single Chime (SC)	- MASTER CAUT light amber steady - Caution message (amber) on E/WD - Automatic call of the relevant system page on the S/D (1).
	Level 1	Amber caution : Requires crew monitoring : - Failures leading to a loss of redundancy or system degradation (eg : FCDC fault)	NONE	- Caution message (amber) on E/WD generally without procedure.
INFORMATION	ADVISORY	System parameters monitoring	NONE	- Automatic call of the relevant system page on the S/D. The affected parameter pulses green.
	MEMO	Information : Recalls normal or automatic selection of functions which are temporarily used	NONE	- Green, Amber, or Magenta message on E/WD

(1) *except in some cases*

PRIORITY RULES

Ident.: DSC-31-10-00001204.0001001 / 17 MAR 17
Applicable to: ALL

There are three priority levels for warnings and cautions :
- A level 3 warning has priority over a level 2 caution which has priority over a level 1 caution.
The FWC observes these priorities.

INFORMATION PROVIDED WHEN NEEDED

One of the main advantages of the ECAM is that it displays applicable information to the flight crew, on an "as needed" basis. The following outlines the ECAM's operating modes:

- **Normal Mode**:
  Automatically displays systems and memos, in accordance with the flight phase.
- **Failure Mode**:
  Automatically displays the appropriate emergency/abnormal procedures, in addition to their associated system synoptic.
- **Advisory Mode**:
  Automatically displays the appropriate system synoptic, associated with a drifting parameter.
- **Manual Mode**:
  Enables the flight crew to manually select any system synoptic via the ECAM Control Panel (ECP).

Most warnings and cautions are inhibited during critical phases of flight (T/O INHIBIT – LDG INHIBIT), because most system failures will not affect the aircraft's ability to continue a takeoff or landing.

TYPES OF FAILURES

Ident.: DSC-31-10-00001205.0001001 / 21 MAR 16
Applicable to: ALL

Independent	:	a failure that affects an isolated system or item of equipment without degrading the performance of others in the aircraft.
Primary	:	a failure of a system or an item of equipment that costs the aircraft the use of other systems or items of equipment.
Secondary	:	the loss of a system or an item of equipment resulting from a primary failure.

AUDIO INDICATORS

Applicable to: MSN 01767, 02204, 02359-02405

AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015446.0001001 / 22 JUL 16			
CONTINUOUS REPETITIVE CHIME	RED WARNINGS	PERMANENT	Press MASTER WARN lt
Ident.: DSC-31-10-A-00015447.0001001 / 22 JUL 16			
SINGLE CHIME	AMBER CAUTION	0.5 s	
Ident.: DSC-31-10-A-00015448.0001001 / 04 FEB 14			
CAVALRY CHARGE	A/P DISCONNECTION BY TAKE OVER pb	1.5 s	Second push on TAKE OVER pb
	A/P DISCONNECTION DUE TO FAILURE	PERMANENT	Press MASTER WARN lt or TAKE OVER pb
Ident.: DSC-31-10-A-00015449.0006001 / 22 JUL 16			
3 TRIPLE CLICK	Landing capability downgrade or some cases of mode reversion	0.5 s (3 pulses)	
Ident.: DSC-31-10-A-00015450.0001001 / 04 FEB 14			
CRICKET + "STALL" message (synthetic voice)	STALL	PERMANENT	NIL
Ident.: DSC-31-10-A-00015451.0001001 / 23 JUN 15			
BUZZER	CABIN CALL	3 s	NIL
	EMER CABIN CALL	3 s REPEATED 3 TIMES	NIL
	MECH CALL	As long as outside pb pressed	Press MASTER CAUT pb
Ident.: DSC-31-10-A-00015452.0001001 / 23 JUN 15			
CONTINUOUS BUZZER	SELCAL CALL	PERMANENT	Press RESET key on ACP or press MASTER CAUT pb

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AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015453.0001001 / 04 FEB 14			
"WINDSHEAR" (synthetic voice)	WINDSHEAR	REPEATED 3 TIMES	NIL
Ident.: DSC-31-10-A-00015454.0001001 / 04 FEB 14			
C CHORD	ALTITUDE ALERT (*Refer to DSC-31-40 Altitude Alert*)	1.5 s or PERMANENT	new ALTITUDE selection or press MASTER WARN pb
Ident.: DSC-31-10-A-00015455.0001001 / 21 MAR 16			
AUTO CALL OUT (synthetic voice)	HEIGHT ANNOUNCEMENT BELOW 2 500 ft (*Refer to DSC-34-NAV-40-10 Automatic Callout*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015456.0001001 / 21 MAR 17			
GROUND PROXIMITY WARNING (synthetic voice)	(*Refer to DSC-34-SURV-40-10 Overview*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015457.0001001 / 04 FEB 14			
"PRIORITY LEFT" "PRIORITY RIGHT" (synthetic voice)	A/P TAKE OVER pb	1 s	NIL
Ident.: DSC-31-10-A-00015458.0001001 / 04 FEB 14			
"RETARD" (synthetic voice)	Thrust levers not in IDLE or REVERSE position for landing	ONE TIME at 20 ft (10 ft in autoland with A/THR ON), Then PERMANENT	All Thrust levers are set to IDLE or REVERSE
Ident.: DSC-31-10-A-00015459.0001001 / 04 FEB 14			
"RETARD-RETARD" (synthetic voice)	At least one Thrust Lever above IDLE after touchdown	Above 40 kt, PERMANENT	All Thrust levers are set to IDLE or REVERSE
Ident.: DSC-31-10-A-00015460.0001001 / 04 FEB 14			
TCAS (synthetic voice)	(*Refer to DSC-34-SURV-60-20 Aural Messages*)	PERMANENT	NIL

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AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015461.0001001 / 04 FEB 14			
″SPEED, SPEED, SPEED″ (Synthetic voice)	Current thrust is not sufficient to recover a positive flight through pitch control	Every 5 s until thrust is increased	THRUST LEVER(s)
Ident.: DSC-31-10-A-00015463.0001001 / 04 FEB 14			
"DUAL INPUT" (synthetic voice)	Both sidesticks are moved simultaneously	Every 5 s	One sidestick deactivated
Ident.: DSC-31-10-A-00015466.0001001 / 04 FEB 14			
"STOP RUDDER INPUT" (synthetic voice)	Inappropriate rudder pedal inputs detected in cruise at high speed.	Message repeated at least TWO TIMES	NIL

(a) *The pilot can cancel any audio indicator, by pressing:*
- *The EMER CANC pb on the ECAM control panel, or*
- *The MASTER WARN pushbutton, except for OVERSPEED or L/G NOT DOWN warnings.*

AUDIO INDICATORS

Applicable to: MSN 01920

AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015446.0001001 / 22 JUL 16			
CONTINUOUS REPETITIVE CHIME	RED WARNINGS	PERMANENT	Press MASTER WARN lt
Ident.: DSC-31-10-A-00015447.0001001 / 22 JUL 16			
SINGLE CHIME	AMBER CAUTION	0.5 s	
Ident.: DSC-31-10-A-00015448.0001001 / 04 FEB 14			
CAVALRY CHARGE	A/P DISCONNECTION BY TAKE OVER pb	1.5 s	Second push on TAKE OVER pb
	A/P DISCONNECTION DUE TO FAILURE	PERMANENT	Press MASTER WARN lt or TAKE OVER pb
Ident.: DSC-31-10-A-00015449.0001001 / 22 JUL 16			
TRIPLE CLICK	LANDING CAPABILITY CHANGE	0.5 s (3 pulses)	
Ident.: DSC-31-10-A-00015450.0001001 / 04 FEB 14			
CRICKET + "STALL" message (synthetic voice)	STALL	PERMANENT	NIL
Ident.: DSC-31-10-A-00015451.0001001 / 23 JUN 15			
BUZZER	CABIN CALL	3 s	NIL
	EMER CABIN CALL	3 s REPEATED 3 TIMES	NIL
	MECH CALL	As long as outside pb pressed	Press MASTER CAUT pb
Ident.: DSC-31-10-A-00015452.0001001 / 23 JUN 15			
CONTINUOUS BUZZER	SELCAL CALL	PERMANENT	Press RESET key on ACP or press MASTER CAUT pb

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AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION [(a)]
Ident.: DSC-31-10-A-00015453.0001001 / 04 FEB 14			
"WINDSHEAR" (synthetic voice)	WINDSHEAR	REPEATED 3 TIMES	NIL
Ident.: DSC-31-10-A-00015454.0001001 / 04 FEB 14			
C CHORD	ALTITUDE ALERT (*Refer to DSC-31-40 Altitude Alert*)	1.5 s or PERMANENT	new ALTITUDE selection or press MASTER WARN pb
Ident.: DSC-31-10-A-00015455.0001001 / 21 MAR 16			
AUTO CALL OUT (synthetic voice)	HEIGHT ANNOUNCEMENT BELOW 2 500 ft (*Refer to DSC-34-NAV-40-10 Automatic Callout*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015456.0001001 / 21 MAR 17			
GROUND PROXIMITY WARNING (synthetic voice)	(*Refer to DSC-34-SURV-40-10 Overview*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015457.0001001 / 04 FEB 14			
"PRIORITY LEFT" "PRIORITY RIGHT" (synthetic voice)	A/P TAKE OVER pb	1 s	NIL
Ident.: DSC-31-10-A-00015458.0001001 / 04 FEB 14			
"RETARD" (synthetic voice)	Thrust levers not in IDLE or REVERSE position for landing	ONE TIME at 20 ft (10 ft in autoland with A/THR ON), Then PERMANENT	All Thrust levers are set to IDLE or REVERSE
Ident.: DSC-31-10-A-00015459.0001001 / 04 FEB 14			
"RETARD-RETARD" (synthetic voice)	At least one Thrust Lever above IDLE after touchdown	Above 40 kt, PERMANENT	All Thrust levers are set to IDLE or REVERSE
Ident.: DSC-31-10-A-00015460.0001001 / 04 FEB 14			
TCAS (synthetic voice)	(*Refer to DSC-34-SURV-60-20 Aural Messages*)	PERMANENT	NIL

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AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015461.0001001 / 04 FEB 14			
″SPEED, SPEED, SPEED″ (Synthetic voice)	Current thrust is not sufficient to recover a positive flight through pitch control	Every 5 s until thrust is increased	THRUST LEVER(s)
Ident.: DSC-31-10-A-00015463.0001001 / 04 FEB 14			
"DUAL INPUT" (synthetic voice)	Both sidesticks are moved simultaneously	Every 5 s	One sidestick deactivated
Ident.: DSC-31-10-A-00015466.0001001 / 04 FEB 14			
"STOP RUDDER INPUT" (synthetic voice)	Inappropriate rudder pedal inputs detected in cruise at high speed.	Message repeated at least TWO TIMES	NIL

(a) *The pilot can cancel any audio indicator, by pressing:*
- *The EMER CANC pb on the ECAM control panel, or*
- *The MASTER WARN pushbutton, except for OVERSPEED or L/G NOT DOWN warnings.*

AUDIO INDICATORS

Applicable to: MSN 01957-02121, 02138, 02275-02334, 02457, 02584, 02649-02712, 02804-02914, 03138-03618, 03782-04156, 04328-04384, 04481-04488, 04506, 04518, 04552, 04609-04637, 04752-05036, 05090-05094, 05155, 05190, 05230

AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015446.0001001 / 22 JUL 16			
CONTINUOUS REPETITIVE CHIME	RED WARNINGS	PERMANENT	Press MASTER WARN lt
Ident.: DSC-31-10-A-00015447.0001001 / 22 JUL 16			
SINGLE CHIME	AMBER CAUTION	0.5 s	
Ident.: DSC-31-10-A-00015448.0001001 / 04 FEB 14			
CAVALRY CHARGE	A/P DISCONNECTION BY TAKE OVER pb	1.5 s	Second push on TAKE OVER pb
	A/P DISCONNECTION DUE TO FAILURE	PERMANENT	Press MASTER WARN lt or TAKE OVER pb
Ident.: DSC-31-10-A-00015449.0006001 / 22 JUL 16			
6 TRIPLE CLICK	Landing capability downgrade or some cases of mode reversion	0.5 s (3 pulses)	
Ident.: DSC-31-10-A-00015450.0001001 / 04 FEB 14			
CRICKET + "STALL" message (synthetic voice)	STALL	PERMANENT	NIL
Ident.: DSC-31-10-A-00015451.0001001 / 23 JUN 15			
BUZZER	CABIN CALL	3 s	NIL
	EMER CABIN CALL	3 s REPEATED 3 TIMES	NIL
	MECH CALL	As long as outside pb pressed	Press MASTER CAUT pb
Ident.: DSC-31-10-A-00015452.0001001 / 23 JUN 15			
CONTINUOUS BUZZER	SELCAL CALL	PERMANENT	Press RESET key on ACP or press MASTER CAUT pb

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AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015453.0002001 / 06 APR 17			
7 "WINDSHEAR" (synthetic voice)	WINDSHEAR	REPEATED 3 TIMES	NIL
"GO AROUND WINDSHEAR AHEAD" (synthetic voice)	Windshear ahead detected during the landing phase	PERMANENT	NIL
"WINDSHEAR AHEAD" (twice) (synthetic voice)	Windshear ahead detected during the takeoff phase	PERMANENT	NIL
"MONITOR RADAR DISPLAY" (synthetic voice)	Windshear ahead detected caution message	PERMANENT	NIL
Ident.: DSC-31-10-A-00015454.0001001 / 04 FEB 14			
C CHORD	ALTITUDE ALERT (*Refer to DSC-31-40 Altitude Alert*)	1.5 s or PERMANENT	new ALTITUDE selection or press MASTER WARN pb
Ident.: DSC-31-10-A-00015455.0001001 / 21 MAR 16			
AUTO CALL OUT (synthetic voice)	HEIGHT ANNOUNCEMENT BELOW 2 500 ft (*Refer to DSC-34-NAV-40-10 Automatic Callout*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015456.0001001 / 21 MAR 17			
GROUND PROXIMITY WARNING (synthetic voice)	(*Refer to DSC-34-SURV-40-10 Overview*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015457.0001001 / 04 FEB 14			
“PRIORITY LEFT” ”PRIORITY RIGHT“ (synthetic voice)	A/P TAKE OVER pb	1 s	NIL
Ident.: DSC-31-10-A-00015458.0001001 / 04 FEB 14			
“RETARD“ (synthetic voice)	Thrust levers not in IDLE or REVERSE position for landing	ONE TIME at 20 ft (10 ft in autoland with A/THR ON), Then PERMANENT	All Thrust levers are set to IDLE or REVERSE

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AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015459.0001001 / 04 FEB 14			
"RETARD-RETARD" (synthetic voice)	At least one Thrust Lever above IDLE after touchdown	Above 40 kt, PERMANENT	All Thrust levers are set to IDLE or REVERSE
Ident.: DSC-31-10-A-00015460.0001001 / 04 FEB 14			
TCAS (synthetic voice)	(*Refer to DSC-34-SURV-60-20 Aural Messages*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015461.0001001 / 04 FEB 14			
″SPEED, SPEED, SPEED″ (Synthetic voice)	Current thrust is not sufficient to recover a positive flight through pitch control	Every 5 s until thrust is increased	THRUST LEVER(s)
Ident.: DSC-31-10-A-00015463.0001001 / 04 FEB 14			
"DUAL INPUT" (synthetic voice)	Both sidesticks are moved simultaneously	Every 5 s	One sidestick deactivated
Ident.: DSC-31-10-A-00015466.0001001 / 04 FEB 14			
"STOP RUDDER INPUT" (synthetic voice)	Inappropriate rudder pedal inputs detected in cruise at high speed.	Message repeated at least TWO TIMES	NIL

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(a) *The pilot can cancel any audio indicator, by pressing:*
- *The EMER CANC pb on the ECAM control panel, or*
- *The MASTER WARN pushbutton, except for OVERSPEED or L/G NOT DOWN warnings.*

AUDIO INDICATORS

Applicable to: MSN 02135, 02139, 03071, 03750, 04294, 04314, 04393-04438, 04491, 04532, 04645, 05158, 05218, 05259, 05291, 05313-09063

AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015446.0001001 / 22 JUL 16			
CONTINUOUS REPETITIVE CHIME	RED WARNINGS	PERMANENT	Press MASTER WARN lt
Ident.: DSC-31-10-A-00015447.0001001 / 22 JUL 16			
SINGLE CHIME	AMBER CAUTION	0.5 s	
Ident.: DSC-31-10-A-00015448.0001001 / 04 FEB 14			
CAVALRY CHARGE	A/P DISCONNECTION BY TAKE OVER pb	1.5 s	Second push on TAKE OVER pb
	A/P DISCONNECTION DUE TO FAILURE	PERMANENT	Press MASTER WARN lt or TAKE OVER pb
Ident.: DSC-31-10-A-00015449.0006001 / 22 JUL 16			
9 TRIPLE CLICK	Landing capability downgrade or some cases of mode reversion	0.5 s (3 pulses)	
Ident.: DSC-31-10-A-00015450.0001001 / 04 FEB 14			
CRICKET + "STALL" message (synthetic voice)	STALL	PERMANENT	NIL
Ident.: DSC-31-10-A-00015451.0001001 / 23 JUN 15			
BUZZER	CABIN CALL	3 s	NIL
	EMER CABIN CALL	3 s REPEATED 3 TIMES	NIL
	MECH CALL	As long as outside pb pressed	Press MASTER CAUT pb
Ident.: DSC-31-10-A-00015452.0001001 / 23 JUN 15			
CONTINUOUS BUZZER	SELCAL CALL	PERMANENT	Press RESET key on ACP or press MASTER CAUT pb

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AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION [(a)]
Ident.: DSC-31-10-A-00015453.0002001 / 06 APR 17			
10 "WINDSHEAR" (synthetic voice)	WINDSHEAR	REPEATED 3 TIMES	NIL
"GO AROUND WINDSHEAR AHEAD" (synthetic voice)	Windshear ahead detected during the landing phase	PERMANENT	NIL
"WINDSHEAR AHEAD" (twice) (synthetic voice)	Windshear ahead detected during the takeoff phase	PERMANENT	NIL
"MONITOR RADAR DISPLAY" (synthetic voice)	Windshear ahead detected caution message	PERMANENT	NIL
Ident.: DSC-31-10-A-00015454.0001001 / 04 FEB 14			
C CHORD	ALTITUDE ALERT (*Refer to DSC-31-40 Altitude Alert*)	1.5 s or PERMANENT	new ALTITUDE selection or press MASTER WARN pb
Ident.: DSC-31-10-A-00015455.0001001 / 21 MAR 16			
AUTO CALL OUT (synthetic voice)	HEIGHT ANNOUNCEMENT BELOW 2 500 ft (*Refer to DSC-34-NAV-40-10 Automatic Callout*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015456.0001001 / 21 MAR 17			
GROUND PROXIMITY WARNING (synthetic voice)	(*Refer to DSC-34-SURV-40-10 Overview*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015457.0001001 / 04 FEB 14			
“PRIORITY LEFT” ”PRIORITY RIGHT“ (synthetic voice)	A/P TAKE OVER pb	1 s	NIL
Ident.: DSC-31-10-A-00015458.0001001 / 04 FEB 14			
“RETARD" (synthetic voice)	Thrust levers not in IDLE or REVERSE position for landing	ONE TIME at 20 ft (10 ft in autoland with A/THR ON), Then PERMANENT	All Thrust levers are set to IDLE or REVERSE

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AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015459.0001001 / 04 FEB 14			
"RETARD-RETARD" (synthetic voice)	At least one Thrust Lever above IDLE after touchdown	Above 40 kt, PERMANENT	All Thrust levers are set to IDLE or REVERSE
Ident.: DSC-31-10-A-00015460.0001001 / 04 FEB 14			
TCAS (synthetic voice)	(*Refer to DSC-34-SURV-60-20 Aural Messages*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015461.0001001 / 04 FEB 14			
″SPEED, SPEED, SPEED″ (Synthetic voice)	Current thrust is not sufficient to recover a positive flight through pitch control	Every 5 s until thrust is increased	THRUST LEVER(s)
Ident.: DSC-31-10-A-00015463.0001001 / 04 FEB 14			
"DUAL INPUT" (synthetic voice)	Both sidesticks are moved simultaneously	Every 5 s	One sidestick deactivated
Ident.: DSC-31-10-A-00015465.0001001 / 04 FEB 14			
11 "PITCH, PITCH" (synthetic voice)	The aircraft pitch attitude is becoming excessive during flare and landing.	one time	NIL
Ident.: DSC-31-10-A-00015466.0001001 / 04 FEB 14			
12 "STOP RUDDER INPUT" (synthetic voice)	Inappropriate rudder pedal inputs detected in cruise at high speed.	Message repeated at least TWO TIMES	NIL

(a) *The pilot can cancel any audio indicator, by pressing:*
- *The EMER CANC pb on the ECAM control panel, or*
- *The MASTER WARN pushbutton, except for OVERSPEED or L/G NOT DOWN warnings.*

AUDIO INDICATORS

Applicable to: MSN 02195, 02443, 02482

AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015446.0001001 / 22 JUL 16			
CONTINUOUS REPETITIVE CHIME	RED WARNINGS	PERMANENT	Press MASTER WARN lt
Ident.: DSC-31-10-A-00015447.0001001 / 22 JUL 16			
SINGLE CHIME	AMBER CAUTION	0.5 s	
Ident.: DSC-31-10-A-00015448.0001001 / 04 FEB 14			
CAVALRY CHARGE	A/P DISCONNECTION BY TAKE OVER pb	1.5 s	Second push on TAKE OVER pb
	A/P DISCONNECTION DUE TO FAILURE	PERMANENT	Press MASTER WARN lt or TAKE OVER pb
Ident.: DSC-31-10-A-00015449.0006001 / 22 JUL 16			
13 TRIPLE CLICK	Landing capability downgrade or some cases of mode reversion	0.5 s (3 pulses)	
Ident.: DSC-31-10-A-00015450.0001001 / 04 FEB 14			
CRICKET + "STALL" message (synthetic voice)	STALL	PERMANENT	NIL
Ident.: DSC-31-10-A-00015451.0001001 / 23 JUN 15			
BUZZER	CABIN CALL	3 s	NIL
	EMER CABIN CALL	3 s REPEATED 3 TIMES	NIL
	MECH CALL	As long as outside pb pressed	Press MASTER CAUT pb
Ident.: DSC-31-10-A-00015452.0001001 / 23 JUN 15			
CONTINUOUS BUZZER	SELCAL CALL	PERMANENT	Press RESET key on ACP or press MASTER CAUT pb

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AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015453.0001001 / 04 FEB 14			
"WINDSHEAR" (synthetic voice)	WINDSHEAR	REPEATED 3 TIMES	NIL
Ident.: DSC-31-10-A-00015454.0001001 / 04 FEB 14			
C CHORD	ALTITUDE ALERT (*Refer to DSC-31-40 Altitude Alert*)	1.5 s or PERMANENT	new ALTITUDE selection or press MASTER WARN pb
Ident.: DSC-31-10-A-00015455.0001001 / 21 MAR 16			
AUTO CALL OUT (synthetic voice)	HEIGHT ANNOUNCEMENT BELOW 2 500 ft (*Refer to DSC-34-NAV-40-10 Automatic Callout*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015456.0001001 / 21 MAR 17			
GROUND PROXIMITY WARNING (synthetic voice)	(*Refer to DSC-34-SURV-40-10 Overview*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015457.0001001 / 04 FEB 14			
"PRIORITY LEFT" "PRIORITY RIGHT" (synthetic voice)	A/P TAKE OVER pb	1 s	NIL
Ident.: DSC-31-10-A-00015458.0001001 / 04 FEB 14			
"RETARD" (synthetic voice)	Thrust levers not in IDLE or REVERSE position for landing	ONE TIME at 20 ft (10 ft in autoland with A/THR ON), Then PERMANENT	All Thrust levers are set to IDLE or REVERSE
Ident.: DSC-31-10-A-00015459.0001001 / 04 FEB 14			
"RETARD-RETARD" (synthetic voice)	At least one Thrust Lever above IDLE after touchdown	Above 40 kt, PERMANENT	All Thrust levers are set to IDLE or REVERSE
Ident.: DSC-31-10-A-00015460.0001001 / 04 FEB 14			
TCAS (synthetic voice)	(*Refer to DSC-34-SURV-60-20 Aural Messages*)	PERMANENT	NIL

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AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015461.0001001 / 04 FEB 14			
″SPEED, SPEED, SPEED″ (Synthetic voice)	Current thrust is not sufficient to recover a positive flight through pitch control	Every 5 s until thrust is increased	THRUST LEVER(s)
Ident.: DSC-31-10-A-00015463.0001001 / 04 FEB 14			
"DUAL INPUT" (synthetic voice)	Both sidesticks are moved simultaneously	Every 5 s	One sidestick deactivated

(a) *The pilot can cancel any audio indicator, by pressing:*
- *The EMER CANC pb on the ECAM control panel, or*
- *The MASTER WARN pushbutton, except for OVERSPEED or L/G NOT DOWN warnings.*

AUDIO INDICATORS

Applicable to: MSN 02609-02626

AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015446.0001001 / 22 JUL 16			
CONTINUOUS REPETITIVE CHIME	RED WARNINGS	PERMANENT	Press MASTER WARN lt
Ident.: DSC-31-10-A-00015447.0001001 / 22 JUL 16			
SINGLE CHIME	AMBER CAUTION	0.5 s	
Ident.: DSC-31-10-A-00015448.0001001 / 04 FEB 14			
CAVALRY CHARGE	A/P DISCONNECTION BY TAKE OVER pb	1.5 s	Second push on TAKE OVER pb
	A/P DISCONNECTION DUE TO FAILURE	PERMANENT	Press MASTER WARN lt or TAKE OVER pb
Ident.: DSC-31-10-A-00015449.0006001 / 22 JUL 16			
14 TRIPLE CLICK	Landing capability downgrade or some cases of mode reversion	0.5 s (3 pulses)	
Ident.: DSC-31-10-A-00015450.0001001 / 04 FEB 14			
CRICKET + "STALL" message (synthetic voice)	STALL	PERMANENT	NIL
Ident.: DSC-31-10-A-00015451.0001001 / 23 JUN 15			
BUZZER	CABIN CALL	3 s	NIL
	EMER CABIN CALL	3 s REPEATED 3 TIMES	NIL
	MECH CALL	As long as outside pb pressed	Press MASTER CAUT pb
Ident.: DSC-31-10-A-00015452.0001001 / 23 JUN 15			
CONTINUOUS BUZZER	SELCAL CALL	PERMANENT	Press RESET key on ACP or press MASTER CAUT pb

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AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION [(a)]
Ident.: DSC-31-10-A-00015453.0001001 / 04 FEB 14			
"WINDSHEAR" (synthetic voice)	WINDSHEAR	REPEATED 3 TIMES	NIL
Ident.: DSC-31-10-A-00015454.0001001 / 04 FEB 14			
C CHORD	ALTITUDE ALERT (*Refer to DSC-31-40 Altitude Alert*)	1.5 s or PERMANENT	new ALTITUDE selection or press MASTER WARN pb
Ident.: DSC-31-10-A-00015455.0001001 / 21 MAR 16			
AUTO CALL OUT (synthetic voice)	HEIGHT ANNOUNCEMENT BELOW 2 500 ft (*Refer to DSC-34-NAV-40-10 Automatic Callout*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015456.0001001 / 21 MAR 17			
GROUND PROXIMITY WARNING (synthetic voice)	(*Refer to DSC-34-SURV-40-10 Overview*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015457.0001001 / 04 FEB 14			
"PRIORITY LEFT" "PRIORITY RIGHT" (synthetic voice)	A/P TAKE OVER pb	1 s	NIL
Ident.: DSC-31-10-A-00015458.0001001 / 04 FEB 14			
"RETARD" (synthetic voice)	Thrust levers not in IDLE or REVERSE position for landing	ONE TIME at 20 ft (10 ft in autoland with A/THR ON), Then PERMANENT	All Thrust levers are set to IDLE or REVERSE
Ident.: DSC-31-10-A-00015459.0001001 / 04 FEB 14			
"RETARD-RETARD" (synthetic voice)	At least one Thrust Lever above IDLE after touchdown	Above 40 kt, PERMANENT	All Thrust levers are set to IDLE or REVERSE
Ident.: DSC-31-10-A-00015460.0001001 / 04 FEB 14			
TCAS (synthetic voice)	(*Refer to DSC-34-SURV-60-20 Aural Messages*)	PERMANENT	NIL

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AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015461.0001001 / 04 FEB 14			
″SPEED, SPEED, SPEED″ (Synthetic voice)	Current thrust is not sufficient to recover a positive flight through pitch control	Every 5 s until thrust is increased	THRUST LEVER(s)
Ident.: DSC-31-10-A-00015463.0001001 / 04 FEB 14			
"DUAL INPUT" (synthetic voice)	Both sidesticks are moved simultaneously	Every 5 s	One sidestick deactivated
Ident.: DSC-31-10-A-00015465.0001001 / 04 FEB 14			
15 "PITCH, PITCH" (synthetic voice)	The aircraft pitch attitude is becoming excessive during flare and landing.	one time	NIL
Ident.: DSC-31-10-A-00015466.0001001 / 04 FEB 14			
16 "STOP RUDDER INPUT" (synthetic voice)	Inappropriate rudder pedal inputs detected in cruise at high speed.	Message repeated at least TWO TIMES	NIL

(a) *The pilot can cancel any audio indicator, by pressing:*
- *The EMER CANC pb on the ECAM control panel, or*
- *The MASTER WARN pushbutton, except for OVERSPEED or L/G NOT DOWN warnings.*

AUDIO INDICATORS

Applicable to: MSN 02737, 04216, 04312, 04535, 04603, 05076-05080, 05231

AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION [(a)]
Ident.: DSC-31-10-A-00015446.0001001 / 22 JUL 16			
CONTINUOUS REPETITIVE CHIME	RED WARNINGS	PERMANENT	Press MASTER WARN lt
Ident.: DSC-31-10-A-00015447.0001001 / 22 JUL 16			
SINGLE CHIME	AMBER CAUTION	0.5 s	
Ident.: DSC-31-10-A-00015448.0001001 / 04 FEB 14			
CAVALRY CHARGE	A/P DISCONNECTION BY TAKE OVER pb	1.5 s	Second push on TAKE OVER pb
	A/P DISCONNECTION DUE TO FAILURE	PERMANENT	Press MASTER WARN lt or TAKE OVER pb
Ident.: DSC-31-10-A-00015449.0006001 / 22 JUL 16			
17 TRIPLE CLICK	Landing capability downgrade or some cases of mode reversion	0.5 s (3 pulses)	
Ident.: DSC-31-10-A-00015450.0001001 / 04 FEB 14			
CRICKET + "STALL" message (synthetic voice)	STALL	PERMANENT	NIL
Ident.: DSC-31-10-A-00015451.0001001 / 23 JUN 15			
BUZZER	CABIN CALL	3 s	NIL
	EMER CABIN CALL	3 s REPEATED 3 TIMES	NIL
	MECH CALL	As long as outside pb pressed	Press MASTER CAUT pb
Ident.: DSC-31-10-A-00015452.0001001 / 23 JUN 15			
CONTINUOUS BUZZER	SELCAL CALL	PERMANENT	Press RESET key on ACP or press MASTER CAUT pb

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AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015453.0002001 / 06 APR 17			
18 "WINDSHEAR" (synthetic voice)	WINDSHEAR	REPEATED 3 TIMES	NIL
"GO AROUND WINDSHEAR AHEAD" (synthetic voice)	Windshear ahead detected during the landing phase	PERMANENT	NIL
"WINDSHEAR AHEAD" (twice) (synthetic voice)	Windshear ahead detected during the takeoff phase	PERMANENT	NIL
"MONITOR RADAR DISPLAY" (synthetic voice)	Windshear ahead detected caution message	PERMANENT	NIL
Ident.: DSC-31-10-A-00015454.0001001 / 04 FEB 14			
C CHORD	ALTITUDE ALERT (*Refer to DSC-31-40 Altitude Alert*)	1.5 s or PERMANENT	new ALTITUDE selection or press MASTER WARN pb
Ident.: DSC-31-10-A-00015455.0001001 / 21 MAR 16			
AUTO CALL OUT (synthetic voice)	HEIGHT ANNOUNCEMENT BELOW 2 500 ft (*Refer to DSC-34-NAV-40-10 Automatic Callout*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015456.0001001 / 21 MAR 17			
GROUND PROXIMITY WARNING (synthetic voice)	(*Refer to DSC-34-SURV-40-10 Overview*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015457.0001001 / 04 FEB 14			
“PRIORITY LEFT” ”PRIORITY RIGHT“ (synthetic voice)	A/P TAKE OVER pb	1 s	NIL
Ident.: DSC-31-10-A-00015458.0001001 / 04 FEB 14			
“RETARD“ (synthetic voice)	Thrust levers not in IDLE or REVERSE position for landing	ONE TIME at 20 ft (10 ft in autoland with A/THR ON), Then PERMANENT	All Thrust levers are set to IDLE or REVERSE

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AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION [(a)]
Ident.: DSC-31-10-A-00015459.0001001 / 04 FEB 14			
"RETARD-RETARD" (synthetic voice)	At least one Thrust Lever above IDLE after touchdown	Above 40 kt, PERMANENT	All Thrust levers are set to IDLE or REVERSE
Ident.: DSC-31-10-A-00015460.0001001 / 04 FEB 14			
TCAS (synthetic voice)	(*Refer to DSC-34-SURV-60-20 Aural Messages*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015461.0001001 / 04 FEB 14			
″SPEED, SPEED, SPEED″ (Synthetic voice)	Current thrust is not sufficient to recover a positive flight through pitch control	Every 5 s until thrust is increased	THRUST LEVER(s)
Ident.: DSC-31-10-A-00015463.0001001 / 04 FEB 14			
"DUAL INPUT" (synthetic voice)	Both sidesticks are moved simultaneously	Every 5 s	One sidestick deactivated

(a) The pilot can cancel any audio indicator, by pressing:
- *The EMER CANC pb on the ECAM control panel, or*
- *The MASTER WARN pushbutton, except for OVERSPEED or L/G NOT DOWN warnings.*

AUDIO INDICATORS

Applicable to: MSN 04510, 05120, 05262, 05298

AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015446.0001001 / 22 JUL 16			
CONTINUOUS REPETITIVE CHIME	RED WARNINGS	PERMANENT	Press MASTER WARN lt
Ident.: DSC-31-10-A-00015447.0001001 / 22 JUL 16			
SINGLE CHIME	AMBER CAUTION	0.5 s	
Ident.: DSC-31-10-A-00015448.0001001 / 04 FEB 14			
CAVALRY CHARGE	A/P DISCONNECTION BY TAKE OVER pb	1.5 s	Second push on TAKE OVER pb
	A/P DISCONNECTION DUE TO FAILURE	PERMANENT	Press MASTER WARN lt or TAKE OVER pb
Ident.: DSC-31-10-A-00015449.0006001 / 22 JUL 16			
19 TRIPLE CLICK	Landing capability downgrade or some cases of mode reversion	0.5 s (3 pulses)	
Ident.: DSC-31-10-A-00015450.0001001 / 04 FEB 14			
CRICKET + "STALL" message (synthetic voice)	STALL	PERMANENT	NIL
Ident.: DSC-31-10-A-00015451.0001001 / 23 JUN 15			
BUZZER	CABIN CALL	3 s	NIL
	EMER CABIN CALL	3 s REPEATED 3 TIMES	NIL
	MECH CALL	As long as outside pb pressed	Press MASTER CAUT pb
Ident.: DSC-31-10-A-00015452.0001001 / 23 JUN 15			
CONTINUOUS BUZZER	SELCAL CALL	PERMANENT	Press RESET key on ACP or press MASTER CAUT pb

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AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015453.0002001 / 06 APR 17			
20 "WINDSHEAR" (synthetic voice)	WINDSHEAR	REPEATED 3 TIMES	NIL
"GO AROUND WINDSHEAR AHEAD" (synthetic voice)	Windshear ahead detected during the landing phase	PERMANENT	NIL
"WINDSHEAR AHEAD" (twice) (synthetic voice)	Windshear ahead detected during the takeoff phase	PERMANENT	NIL
"MONITOR RADAR DISPLAY" (synthetic voice)	Windshear ahead detected caution message	PERMANENT	NIL
Ident.: DSC-31-10-A-00015454.0001001 / 04 FEB 14			
C CHORD	ALTITUDE ALERT (*Refer to DSC-31-40 Altitude Alert*)	1.5 s or PERMANENT	new ALTITUDE selection or press MASTER WARN pb
Ident.: DSC-31-10-A-00015455.0001001 / 21 MAR 16			
AUTO CALL OUT (synthetic voice)	HEIGHT ANNOUNCEMENT BELOW 2 500 ft (*Refer to DSC-34-NAV-40-10 Automatic Callout*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015456.0001001 / 21 MAR 17			
GROUND PROXIMITY WARNING (synthetic voice)	(*Refer to DSC-34-SURV-40-10 Overview*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015457.0001001 / 04 FEB 14			
“PRIORITY LEFT” ”PRIORITY RIGHT“ (synthetic voice)	A/P TAKE OVER pb	1 s	NIL
Ident.: DSC-31-10-A-00015458.0001001 / 04 FEB 14			
“RETARD" (synthetic voice)	Thrust levers not in IDLE or REVERSE position for landing	ONE TIME at 20 ft (10 ft in autoland with A/THR ON), Then PERMANENT	All Thrust levers are set to IDLE or REVERSE

Continued on the following page

Continued from the previous page

AUDIO INDICATORS	MEANING	DURATION	AUDIO INDICATOR CANCELLATION (a)
Ident.: DSC-31-10-A-00015459.0001001 / 04 FEB 14			
"RETARD-RETARD" (synthetic voice)	At least one Thrust Lever above IDLE after touchdown	Above 40 kt, PERMANENT	All Thrust levers are set to IDLE or REVERSE
Ident.: DSC-31-10-A-00015460.0001001 / 04 FEB 14			
TCAS (synthetic voice)	(*Refer to DSC-34-SURV-60-20 Aural Messages*)	PERMANENT	NIL
Ident.: DSC-31-10-A-00015461.0001001 / 04 FEB 14			
″SPEED, SPEED, SPEED″ (Synthetic voice)	Current thrust is not sufficient to recover a positive flight through pitch control	Every 5 s until thrust is increased	THRUST LEVER(s)
Ident.: DSC-31-10-A-00015463.0001001 / 04 FEB 14			
"DUAL INPUT" (synthetic voice)	Both sidesticks are moved simultaneously	Every 5 s	One sidestick deactivated
Ident.: DSC-31-10-A-00015465.0001001 / 04 FEB 14			
"PITCH, PITCH" (synthetic voice)	The aircraft pitch attitude is becoming excessive during flare and landing.	one time	NIL

21

(a) *The pilot can cancel any audio indicator, by pressing:*
- *The EMER CANC pb on the ECAM control panel, or*
- *The MASTER WARN pushbutton, except for OVERSPEED or L/G NOT DOWN warnings.*

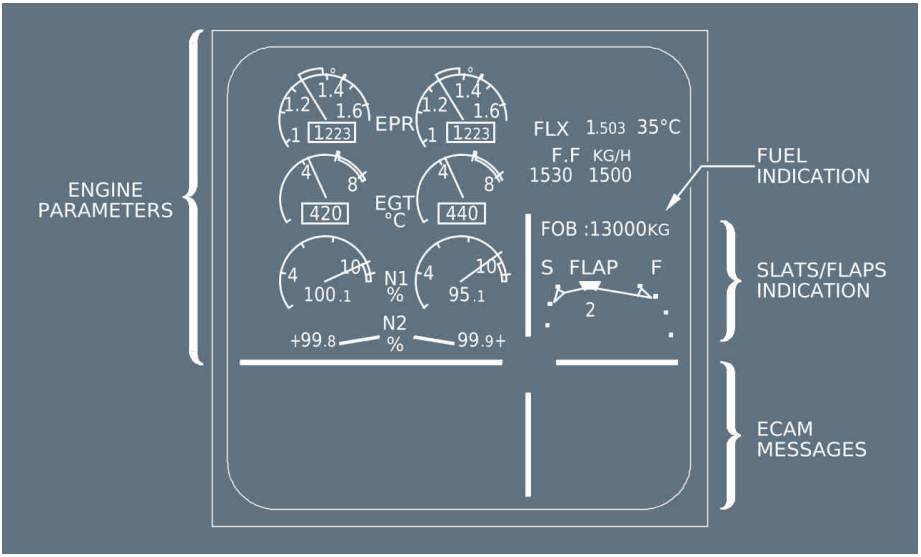
Intentionally left blank

GENERAL

Ident.: DSC-31-15-00001207.0002001 / 21 MAR 17
Applicable to: MSN 02108, 02195-02359, 02405, 02482

The Engine Warning Display (E/WD) appears on the ECAM's upper Display Unit (DU).

- The upper part of this DU displays :
  - Engine parameters (*Refer to DSC-70-90-40 Engine Warning Display*)
  - Fuel On Board (FOB) (*Refer to DSC-28-20 ECAM Upper Display*)
  - Slats/Flaps' position (*Refer to DSC-27-20-30 ECAM F/CTL Page*)
- The lower part of this DU displays messages generated by the FWC :
  - Warning and caution messages, when a failure occurs.
  - Memos, when there is no failure.



The lower part, dedicated to ECAM messages, is divided into two sections of several lines each.

Bottom left : - Primary or independent warnings and cautions, or
- Memo information.

Bottom right : - Title of the system affected by a primary or independent warning or caution, in case of overflow on the bottom left part, or
- Secondary failure, or
- Memo, or
- Special lines (such as “AP OFF”, “LAND ASAP”).

As soon as the FWC detects a failure, and if there is no flight phase inhibition active, the E/WD displays the title of the failure and actions to be taken.
The action line automatically clears, when the flight crew has performed the required action.

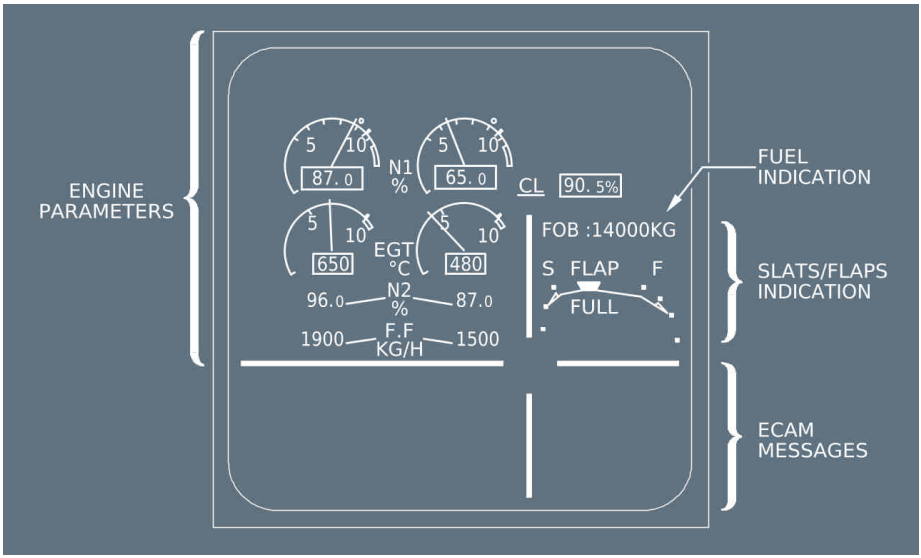
Note: *Certain actions lines will not disappear after being done.*

GENERAL

Ident.: DSC-31-15-00001207.0001001 / 21 MAR 17
Applicable to: MSN 01767-01920

The Engine Warning Display (E/WD) appears on the ECAM's upper Display Unit (DU).

- The upper part of this DU displays :
  - Engine parameters (*Refer to DSC-70-90-40 Engine Warning Display*)
  - Fuel On Board (FOB) (*Refer to DSC-28-20 ECAM Upper Display*)
  - Slats/Flaps' position (*Refer to DSC-27-20-30 ECAM F/CTL Page*)
- The lower part of this DU displays messages generated by the FWC :
  - Warning and caution messages, when a failure occurs.
  - Memos, when there is no failure.



The lower part, dedicated to ECAM messages, is divided into two sections of several lines each.

Bottom left : - Primary or independent warnings and cautions, or
- Memo information.

Bottom right : - Title of the system affected by a primary or independent warning or caution, in case of overflow on the bottom left part, or
- Secondary failure, or
- Memo, or
- Special lines (such as “AP OFF”, “LAND ASAP”).

As soon as the FWC detects a failure, and if there is no flight phase inhibition active, the E/WD displays the title of the failure and actions to be taken.
The action line automatically clears, when the flight crew has performed the required action.

Note: *Certain actions lines will not disappear after being done.*

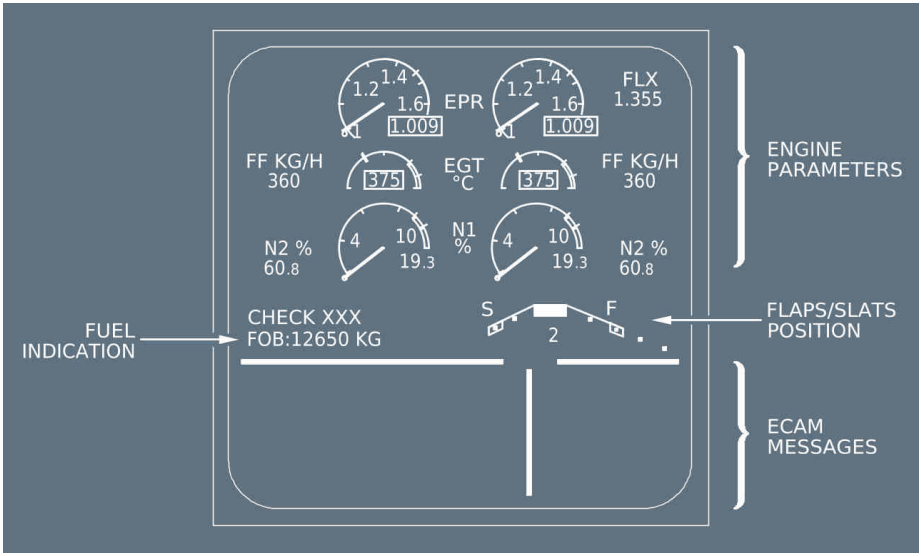
GENERAL

Ident.: DSC-31-15-00001207.0004001 / 21 MAR 17

1 **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

The Engine Warning Display (E/WD) appears on the ECAM's upper Display Unit (DU).

- The upper part of this DU displays:
  - Engine parameters (*Refer to DSC-70-90-40 Engine Warning Display*)
  - Feedback messages (*Refer to DSC-31-05-60 Feedback Messages*)
  - Fuel On Board (FOB) (*Refer to DSC-28-20 ECAM Upper Display*)
  - Slats/Flaps' position (*Refer to DSC-27-20-30 ECAM F/CTL Page*)
- The lower part of this DU displays messages generated by the FWC:
  - Warning and caution messages, when a failure occurs
  - Memos when there is no failure.



The lower part of the DU, dedicated to ECAM messages, is divided into two sections of several lines each.

Bottom left : - Primary or independent warnings and cautions, or
- Memo information.

Bottom right : - Title of the system affected by a primary or independent warning or caution, in case of overflow on the bottom left part, or
- Secondary failure, or
- Memo, or
- Special lines (such as “AP OFF”, “LAND ASAP”).

As soon as the FWC detects a failure, and if there is no flight phase inhibition active, the E/WD displays the title of the failure and actions that the flight crew must perform.
The action line automatically clears, when the flight crew has performed the necessary action.

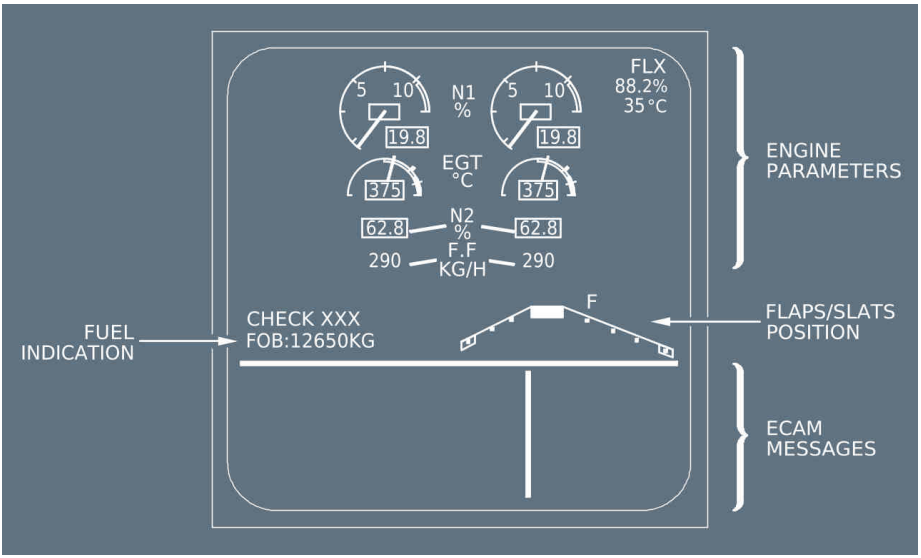
Note: *Some action lines do not disappear from the E/WD even after the flight crew performs the necessary action.*

GENERAL

Ident.: DSC-31-15-00001207.0003001 / 21 MAR 17
Applicable to: MSN 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The Engine Warning Display (E/WD) appears on the ECAM's upper Display Unit (DU).

- The upper part of this DU displays:
  - Engine parameters (*Refer to DSC-70-90-40 Engine Warning Display*)
  - Feedback messages (*Refer to DSC-31-05-60 Feedback Messages*)
  - Fuel On Board (FOB) (*Refer to DSC-28-20 ECAM Upper Display*)
  - Slats/Flaps' position (*Refer to DSC-27-20-30 ECAM F/CTL Page*)
- The lower part of this DU displays messages generated by the FWC:
  - Warning and caution messages, when a failure occurs
  - Memos when there is no failure.



The lower part of the DU, dedicated to ECAM messages, is divided into two sections that have several lines each.

Bottom left :
- Primary or independent warnings and cautions, or
- Memo information.

Bottom right :
- Title of the system affected by a primary or independent warning or caution, in the case of overflow on the bottom left part, or
- Secondary failure, or
- Memo, or
- Special lines (such as “AP OFF”, “LAND ASAP”).

As soon as the FWC detects a failure, and if there is no flight phase inhibition active, the E/WD displays the title of the failure and actions that the flight crew must perform.
The action line automatically clears, when the flight crew has performed the necessary action.

Note: Some action lines do not disappear from the E/WD even after the flight crew performs the necessary action.

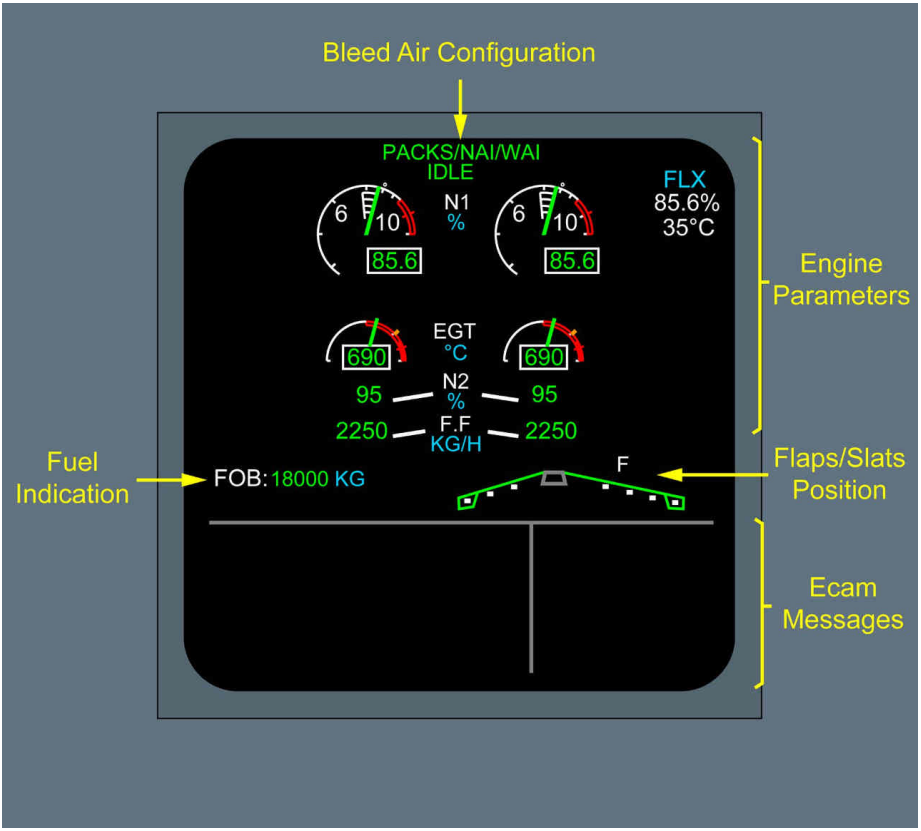
GENERAL

Ident.: DSC-31-15-00001207.0007001 / 21 MAR 17

2 **Applicable to: MSN 06720-09063**

The Engine Warning Display (E/WD) appears on the ECAM's upper Display Unit (DU).

- The upper part of this DU displays:
  - Engine parameters (*Refer to DSC-70-90-40 Engine Warning Display*)
  - Feedback messages (*Refer to DSC-31-05-60 Feedback Messages*)
  - Fuel On Board (FOB) (*Refer to DSC-28-20 ECAM Upper Display*)
  - Slats/Flaps' position (*Refer to DSC-27-20-30 ECAM F/CTL Page*)
  - Bleed Air Configuration (*Refer to DSC-21-10-50 Engine Warning Display* , *Refer to DSC-30-20-20 Engine Warning Display* , *Refer to DSC-30-30-20 Engine Warning Display*)
- The lower part of this DU displays messages generated by the FWC:
  - Warning and caution messages, when a failure occurs
  - Memos when there is no failure.



The lower part of the DU, dedicated to ECAM messages, is divided into two sections of several lines each.

Bottom left : - Primary or independent warnings and cautions, or
- Memo information.

Bottom right : - Title of the system affected by a primary or independent warning or caution, in case of overflow on the bottom left part, or
- Secondary failure, or
- Memo, or
- Special lines (such as “AP OFF”, “LAND ASAP”).

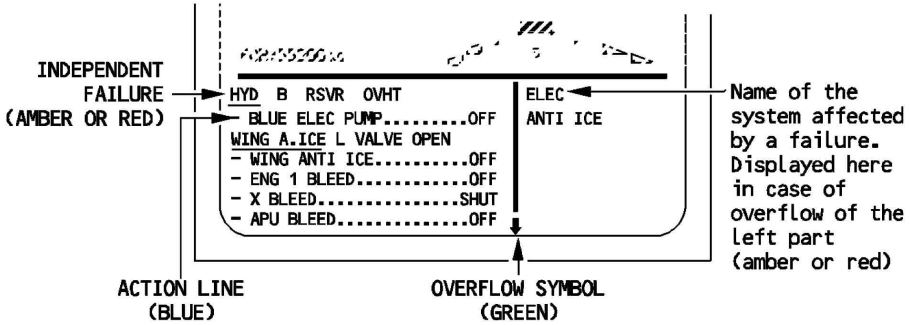
As soon as the FWC detects a failure, and if there is no flight phase inhibition active, the E/WD displays the title of the failure and actions that the flight crew must perform.

The action line automatically clears, when the flight crew has performed the necessary action.

Note: Some action lines do not disappear from the E/WD even after the flight crew performs the necessary action.

INDEPENDENT FAILURE

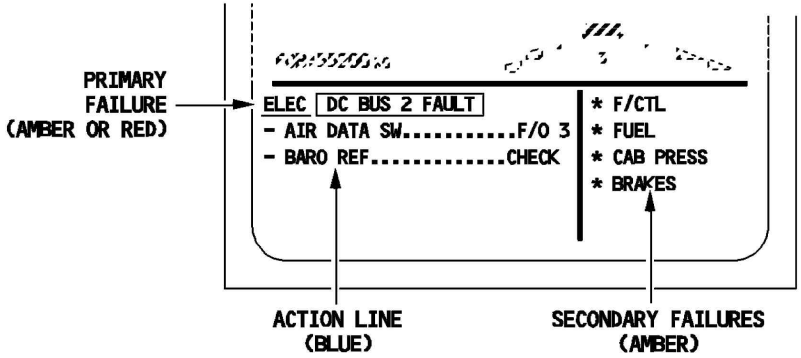
Ident.: DSC-31-15-00001208.0001001 / 03 FEB 11
Applicable to: ALL



If there are too many ECAM messages for the amount of space available in the lower part of the E/WD, a green arrow appears at the bottom of the display, pointing down to show that the information has overflowed off the screen. The pilot can scroll down to view additional messages by pushing the CLR pushbutton on the ECAM control panel (on the pedestal, just below the lower ECAM DU).

PRIMARY AND SECONDARY FAILURE

Ident.: DSC-31-15-00001209.0001001 / 03 FEB 11
Applicable to: ALL



The ECAM DU displays a primary failure as a boxed title.
It identifies a secondary failure by putting a star in front of the title of the affected system.

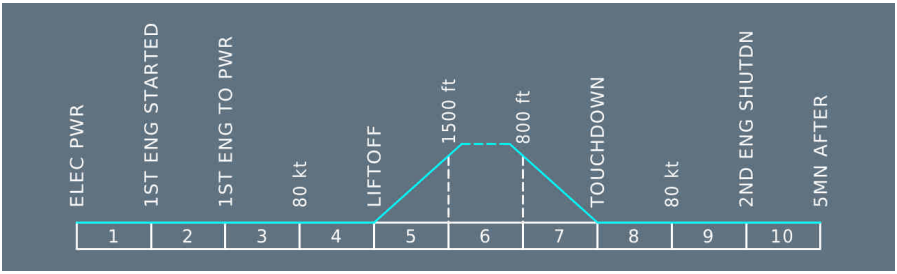
Note: *The DU displays the overflow symbol, if primary or secondary failures overflow. In case of ELEC EMER CONFIG, the secondary failures are inhibited.*

FLIGHT PHASES

Ident.: DSC-31-15-00001210.0001001 / 21 MAR 16
Applicable to: ALL

GENERAL

The FWC divides its functions according to these ten flight phases :



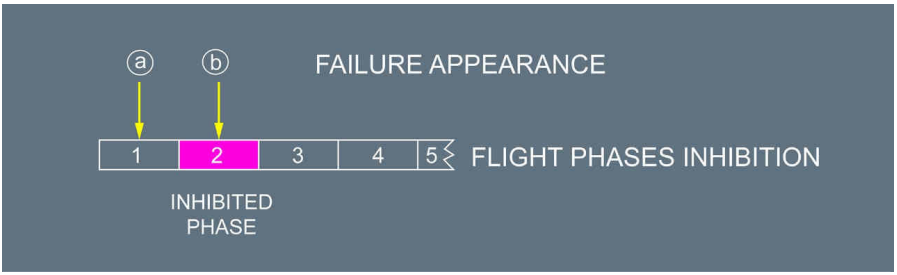
To improve its operational efficacy, the computer inhibits some warnings and cautions for certain flight phases. It does so to avoid alerting the pilots unnecessarily at times when they have high

workloads, such as during takeoff or landing. In these two phases, the DU displays magenta memos : “T.O. INHIBIT” (flight phases 3, 4, and 5), and “LDG INHIBIT” (flight phases 7 and 8).

Note: These flight phases are different from and independent of the ones that the FMGC uses.

FLIGHT PHASE INHIBITION

Two cases are possible (for instance) :



Effect on E/WD :

(a) The failure occurs during phase 1. The E/WD displays the warning immediately and continues to display it as long as the failure is present, even in phase 2.

(b) The failure occurs during phase 2. The E/WD displays the warning only when the aircraft has entered phase 3, where it is not inhibited. Then the warning remains displayed as long as the failure is present.

MEMOS

Ident.: DSC-31-15-A-00001211.0001001 / 21 MAR 16
Applicable to: ALL

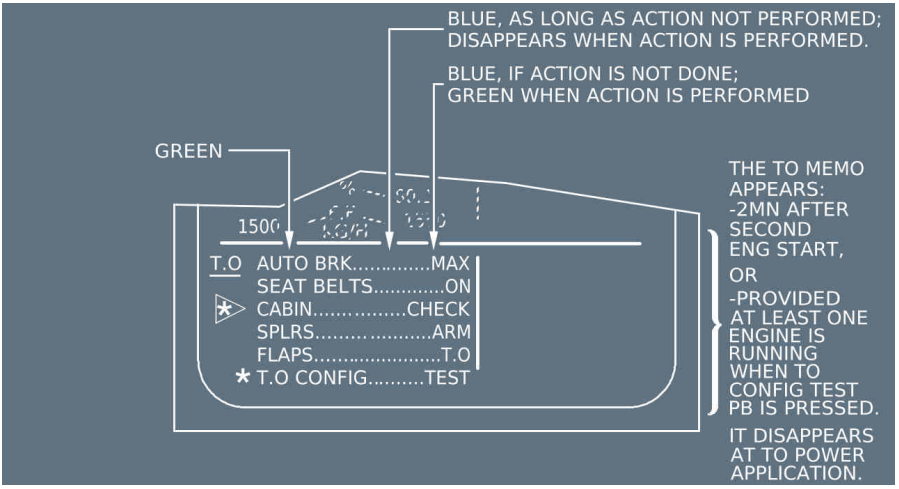
DISPLAY

Memos appear in the lower part of the E/WD. They are normally in green, but may be amber in abnormal situations.
Memos list functions or systems that are temporarily used in normal operations.

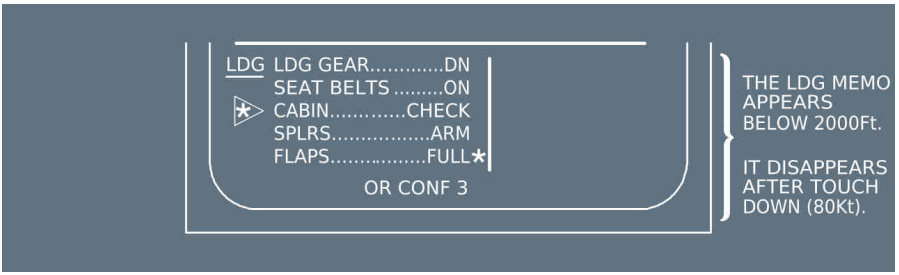
Ident.: DSC-31-15-A-00001212.0010001 / 09 FEB 18
3 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

TO AND LDG MEMOS

During the takeoff and landing phases, the right side of the memo area displays specific TO INHIBIT or LDG INHIBIT (magenta) memos.
Takeoff and landing memos are displayed, as follows, during the related flight phases:



(*) This line disappears when the test is completed. It is replaced by "TO CONFIG NORMAL", if aircraft configuration is correct.
The test is requested again, if the configuration becomes abnormal.



(*) "CONF 3" is displayed in alternate or direct law, or if the GPWS LDG FLAP 3 pushbutton is ON.

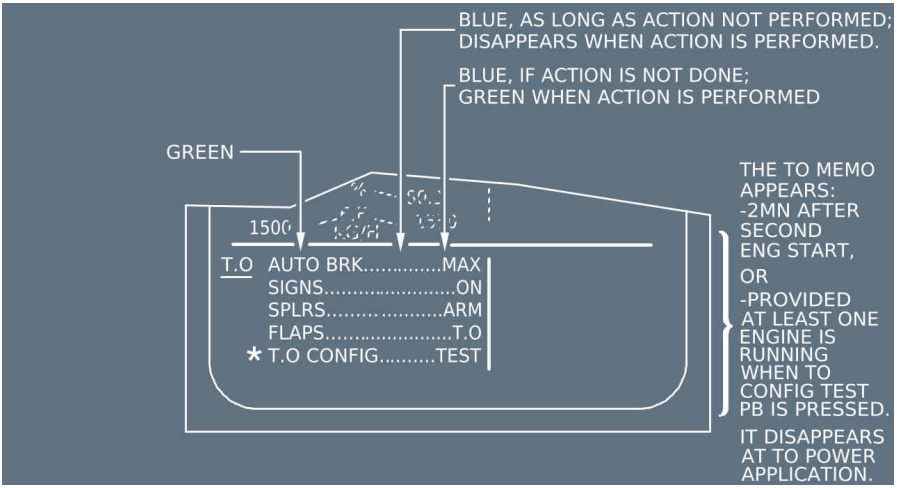
Note: *After a go-around, if the aircraft does not climb above 2 200 ft RA, the landing memo appears only below 800 ft RA during the subsequent approach.*

Ident.: DSC-31-15-A-00001212.0001001 / 22 APR 16
Applicable to: MSN 02405, 02482

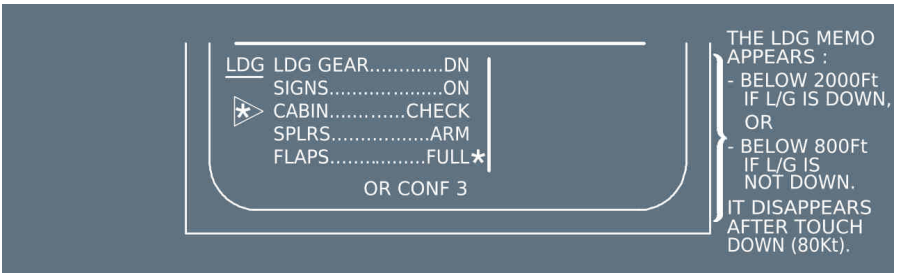
TO AND LDG MEMOS

During the takeoff and landing phases, the right side of the memo area displays specific TO INHIBIT or LDG INHIBIT (magenta) memos.

Takeoff and landing memos are displayed, as follows, during the related flight phases:



(*) This line disappears when the test is completed. It is replaced by “TO CONFIG NORMAL”, if aircraft configuration is correct.
The test is requested again, if the configuration becomes abnormal.



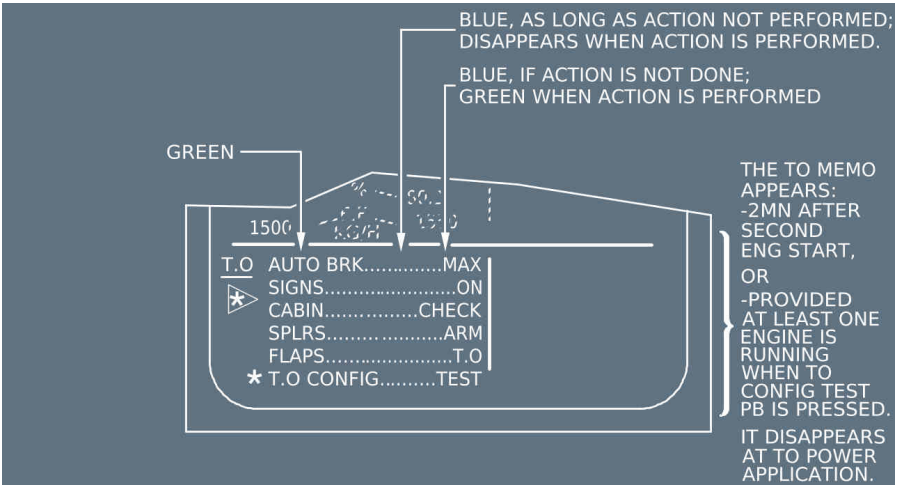
(*) “CONF 3” is displayed in alternate or direct law, or if the GPWS LDG FLAP 3 pushbutton is ON.

Note: *After a go-around, if the aircraft does not climb above 2 200 ft RA, the landing memo appears only below 800 ft RA during the subsequent approach.*

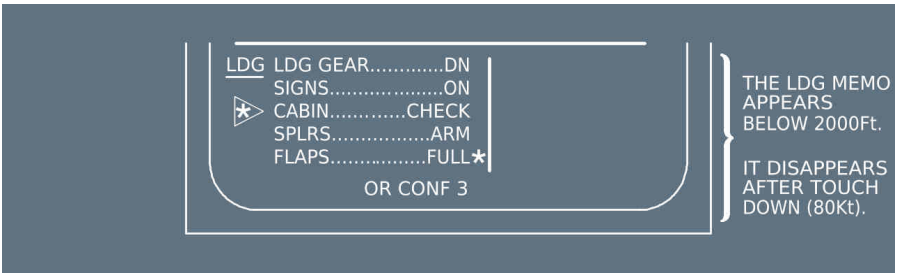
Ident.: DSC-31-15-A-00001212.0002001 / 22 APR 16
4 Applicable to: MSN 01767-02388, 02443-02457, 02584-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

TO AND LDG MEMOS

During the takeoff and landing phases, the right side of the memo area displays specific TO INHIBIT or LDG INHIBIT (magenta) memos.
Takeoff and landing memos are displayed, as follows, during the related flight phases:



(*) This line disappears when the test is completed. It is replaced by “TO CONFIG NORMAL”, if aircraft configuration is correct.
The test is requested again, if the configuration becomes abnormal.



(*) “CONF 3” is displayed in alternate or direct law, or if the GPWS LDG FLAP 3 pushbutton is ON.

Note: After a go-around, if the aircraft does not climb above 2 200 ft RA, the landing memo appears only below 800 ft RA during the subsequent approach.

CONFIGURATION WARNINGS

Ident.: DSC-31-15-00001214.0012001 / 03 FEB 11
Applicable to: MSN 02649

The following warnings and cautions appear in the lower part of the E/WD if the aircraft is not in takeoff configuration when the flight crew presses the TO CONFIG pushbutton on the ECAM control panel or applies takeoff power.

WARNINGS/CAUTIONS	TO CONFIG TEST	TO POWER
CONFIG RUD TRIM NOT IN TO RANGE (R)	TRIGGERED	TRIGGERED
CONFIG PITCH TRIM NOT IN TO RANGE (R)		
CONFIG FLAPS NOT IN TO CONFIG (R)		
CONFIG SPD BRK NOT RETRACTED (R)		
CONFIG SLATS NOT IN TO CONFIG (R)		
CONFIG L SIDESTICK FAULT (R)		
CONFIG R SIDESTICK FAULT (R)		
DOOR (A)		
FWS OEB/FWC DISCREPANCY (A)		
BRAKES HOT (A)		
ENG 1 OIL LO TEMP (A)		NOT TRIGGERED
ENG 2 OIL LO TEMP (A)		
CONFIG PARK BRK ON (R)	NOT TRIGGERED	TRIGGERED
ENG FLEX THR LEVERS NOT SET (A)		

(R) Red warning

(A) Amber caution

CONFIGURATION WARNINGS

Ident.: DSC-31-15-00001214.0016001 / 16 MAR 11
Applicable to: MSN 02405, 03357, 03457-03497, 04328, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

The following warnings and cautions appear in the lower part of the E/WD if the aircraft is not in takeoff configuration when the flight crew presses the TO CONFIG pushbutton on the ECAM control panel or applies takeoff power.

WARNINGS/CAUTIONS	TO CONFIG TEST	TO POWER
CONFIG RUD TRIM NOT IN TO RANGE (R)	TRIGGERED	TRIGGERED
CONFIG PITCH TRIM NOT IN TO RANGE (R)		
CONFIG FLAPS NOT IN TO CONFIG (R)		
CONFIG SPD BRK NOT RETRACTED (R)		
CONFIG SLATS NOT IN TO CONFIG (R)		
CONFIG L SIDESTICK FAULT (R)		
CONFIG R SIDESTICK FAULT (R)		
DOOR (A)		
FWS OEB/FWC DISCREPANCY (A)		
BRAKES HOT (A)		
FUEL R(L) TK PUMP 1+2 LO PR (A)		NOT TRIGGERED
HYD G(Y) ENG 1(2) PUMP LO PR (A)		
HYD G(Y)(B) SYS LO PR (A)		
ELEC IDG 1(2) DISCONNECTED (A)	TRIGGERED if the two GENs are inop.	
ELEC GEN 1(2) FAULT (A)		
ELEC GEN 1(2) OFF (A)		
ENG 1 OIL LO TEMP (A)	TRIGGERED	
ENG 2 OIL LO TEMP (A)		
CONFIG PARK BRK ON (R)	NOT TRIGGERED	TRIGGERED
ENG FLEX THR LEVERS NOT SET (A)		

(R) Red warning

(A) Amber caution

CONFIGURATION WARNINGS

Ident.: DSC-31-15-00001214.0015001 / 16 MAR 11
Applicable to: MSN 04393-04397, 04433

The following warnings and cautions appear in the lower part of the E/WD if the aircraft is not in takeoff configuration when the flight crew presses the TO CONFIG pushbutton on the ECAM control panel or applies takeoff power.

WARNINGS/CAUTIONS	TO CONFIG TEST	TO POWER
CONFIG RUD TRIM NOT IN TO RANGE (R)	TRIGGERED	TRIGGERED
CONFIG PITCH TRIM NOT IN TO RANGE (R)		
CONFIG FLAPS NOT IN TO CONFIG (R)		
CONFIG SPD BRK NOT RETRACTED (R)		
CONFIG SLATS NOT IN TO CONFIG (R)		
CONFIG L SIDESTICK FAULT (R)		
CONFIG R SIDESTICK FAULT (R)		
DOOR (A)		
FWS OEB/FWC DISCREPANCY (A)		
BRAKES HOT (A)		
FUEL R(L) TK PUMP 1+2 LO PR (A)		NOT TRIGGERED
HYD G(Y) ENG 1(2) PUMP LO PR (A)		
HYD G(Y)(B) SYS LO PR (A)		
ELEC IDG 1(2) DISCONNECTED (A)	TRIGGERED if the two GENs are inop.	
ELEC GEN 1(2) FAULT (A)		
ELEC GEN 1(2) OFF (A)		
CONFIG PARK BRK ON (R)	NOT TRIGGERED	TRIGGERED
ENG THR LEVERS NOT SET (A)		

(R) Red warning

(A) Amber caution

CONFIGURATION WARNINGS

Ident.: DSC-31-15-00001214.0019001 / 27 JAN 15

5 **Applicable to: MSN 01957-02359, 02443-02482, 02609-02626, 02670, 02737-03071, 03264-03330, 03414-03453, 03541-03618, 03782-04216, 04312, 04384, 04488-04506, 04518-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063**

The following warnings and cautions appear in the lower part of the E/WD if the aircraft is not in takeoff configuration when the flight crew presses the TO CONFIG pushbutton on the ECAM control panel or applies takeoff power.

WARNINGS/CAUTIONS	TO CONFIG TEST	TO POWER
CONFIG RUD TRIM NOT IN TO RANGE (R)	TRIGGERED	TRIGGERED
CONFIG PITCH TRIM NOT IN TO RANGE (R)		
CONFIG FLAPS NOT IN TO CONFIG (R)		
CONFIG SPD BRK NOT RETRACTED (R)		
CONFIG SLATS NOT IN TO CONFIG (R)		
CONFIG L SIDESTICK FAULT (R)		
CONFIG R SIDESTICK FAULT (R)		
DOOR (A)		
FWS OEB/FWC DISCREPANCY (A)		
BRAKES HOT (A)		
F/CTL FLAP/MCDU DISAGREE (A)		
T.O SPEEDS TOO LOW (A)		
T.O V1/VR/V2 DISAGREE (A)		
T.O SPEEDS NOT INSERTED (A)		
FUEL R(L) TK PUMP 1+2 LO PR (A)		NOT TRIGGERED
HYD G(Y) ENG 1(2) PUMP LO PR (A)		
HYD G(Y)(B) SYS LO PR (A)		
ELEC IDG 1(2) DISCONNECTED (A)	TRIGGERED if the two GENs are inop.	
ELEC GEN 1(2) FAULT (A)		
ELEC GEN 1(2) OFF (A)		
ENG 1 OIL LO TEMP (A)	TRIGGERED	
ENG 2 OIL LO TEMP (A)		
CONFIG PARK BRK ON (R)	NOT TRIGGERED	TRIGGERED
ENG FLEX THR LEVERS NOT SET (A)		

(R) Red warning

(A) Amber caution

Note: *F/CTL FLAP/MCDU DISAGREE caution is inhibited in case of CONFIG FLAPS NOT IN T.O CONFIG warning.*

CONFIGURATION WARNINGS

Ident.: DSC-31-15-00001214.0020001 / 27 JAN 15
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04399, 04438, 04510

The following warnings and cautions appear in the lower part of the E/WD if the aircraft is not in takeoff configuration when the flight crew presses the TO CONFIG pushbutton on the ECAM control panel or applies takeoff power.

<table>
<tr><th>WARNINGS/CAUTIONS</th><th>TO CONFIG TEST</th><th>TO POWER</th></tr>
<tr><td>CONFIG RUD TRIM NOT IN TO RANGE (R)</td><td rowspan="16">TRIGGERED</td><td rowspan="12">TRIGGERED</td></tr>
<tr><td>CONFIG PITCH TRIM NOT IN TO RANGE (R)</td></tr>
<tr><td>CONFIG FLAPS NOT IN TO CONFIG (R)</td></tr>
<tr><td>CONFIG SPD BRK NOT RETRACTED (R)</td></tr>
<tr><td>CONFIG SLATS NOT IN TO CONFIG (R)</td></tr>
<tr><td>CONFIG L SIDESTICK FAULT (R)</td></tr>
<tr><td>CONFIG R SIDESTICK FAULT (R)</td></tr>
<tr><td>DOOR (A)</td></tr>
<tr><td>FWS OEB/FWC DISCREPANCY (A)</td></tr>
<tr><td>BRAKES HOT (A)</td></tr>
<tr><td>F/CTL FLAP/MCDU DISAGREE (A)</td></tr>
<tr><td>T.O SPEEDS TOO LOW (A)</td></tr>
<tr><td>T.O V1/VR/V2 DISAGREE (A)</td></tr>
<tr><td>T.O SPEEDS NOT INSERTED (A)</td></tr>
<tr><td>FUEL R(L) TK PUMP 1+2 LO PR (A)</td><td rowspan="7">NOT TRIGGERED</td></tr>
<tr><td>HYD G(Y) ENG 1(2) PUMP LO PR (A)</td></tr>
<tr><td>HYD G(Y)(B) SYS LO PR (A)</td></tr>
<tr><td>ELEC IDG 1(2) DISCONNECTED (A)</td><td rowspan="3">TRIGGERED if the two GENs are inop.</td></tr>
<tr><td>ELEC GEN 1(2) FAULT (A)</td></tr>
<tr><td>ELEC GEN 1(2) OFF (A)</td></tr>
<tr><td>CONFIG PARK BRK ON (R)</td><td rowspan="2">NOT TRIGGERED</td><td rowspan="2">TRIGGERED</td></tr>
<tr><td>ENG THR LEVERS NOT SET (A)</td></tr>
</table>

(R) Red warning

(A) Amber caution

Note: *F/CTL FLAP/MCDU DISAGREE caution is inhibited in case of CONFIG FLAPS NOT IN T.O CONFIG warning.*

GENERAL

Ident.: DSC-31-20-00001215.0001001 / 21 MAR 16
Applicable to: ALL

The system/status display (SD) uses the lower ECAM DU to display :
- pages showing synoptic diagrams of the aircraft systems, or
- the status page.

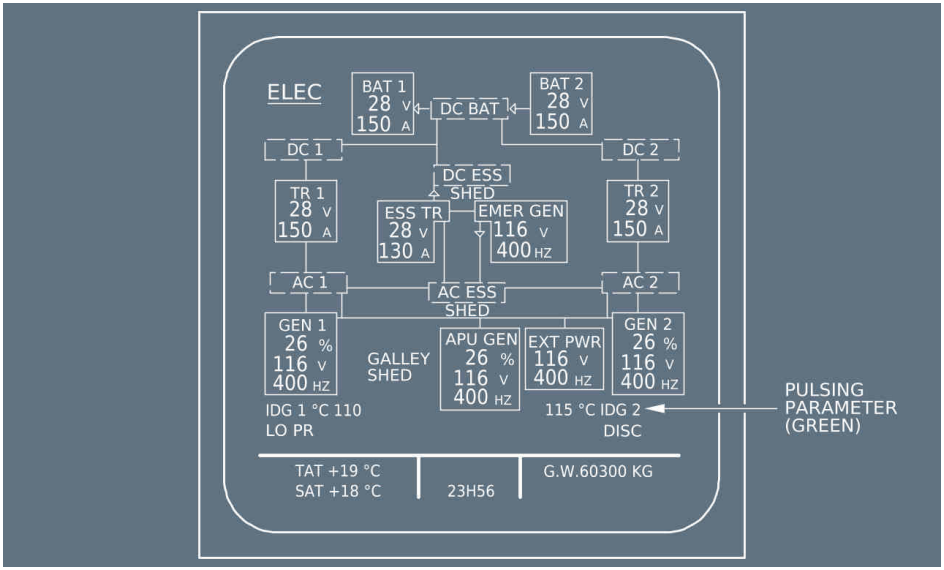
SYSTEM PAGES

Ident.: DSC-31-20-00001216.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

The lower ECAM DU can display 12 system pages (For description see relevant FCOM chapter):
- ENGINE (secondary engine parameters)
- BLEED (air bleed)
- CAB PRESS (cabin pressurization)
- ELEC (electric power)
- HYD (hydraulic)
- FUEL (fuel)
- APU (auxiliary power unit)
- COND (air conditioning)
- DOOR/OXY (doors/oxygen)
- WHEEL (landing gear, braking, ground spoilers, etc.)
- F/CTL (flight controls)
- CRUISE (cruise)

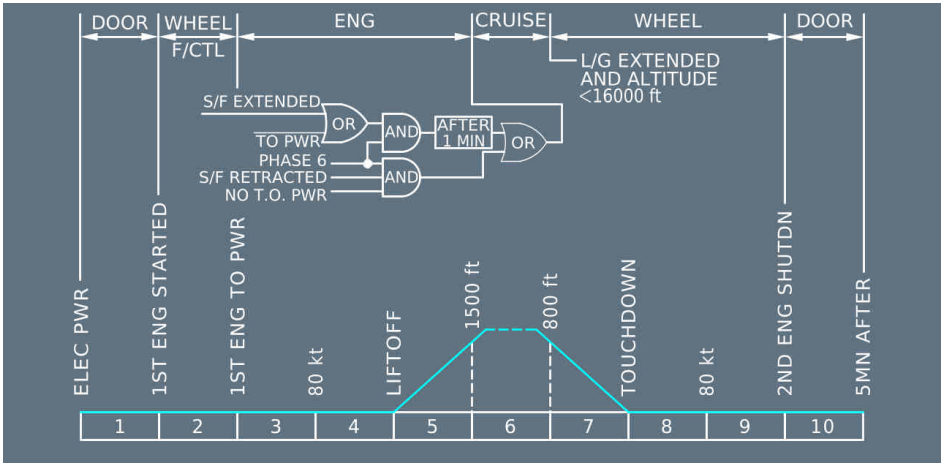
The pilot may manually call up a system page for display on the lower ECAM DU, or the system may automatically display a page.
- Manual:
  - The pilot can, at any time, use the pushbutton on the ECAM's control panel to call up and display any system page, except the CRUISE page.
  - The corresponding pushbutton on the ECAM control panel lights up.
  - A failure-related or advisory display automatically replaces a page the pilot has manually called up.
- Automatic, related to a failure:
  - The relevant system page automatically appears, as soon as any fault or malfunction triggers a caution or warning message.

- Automatic, advisory:
  - The relevant system page automatically appears, when a parameter drifts out of its normal range.
  - The value (shown in green) pulses, as long as it is outside its limits.
  - The advisory mode is inhibited in some flight phases.



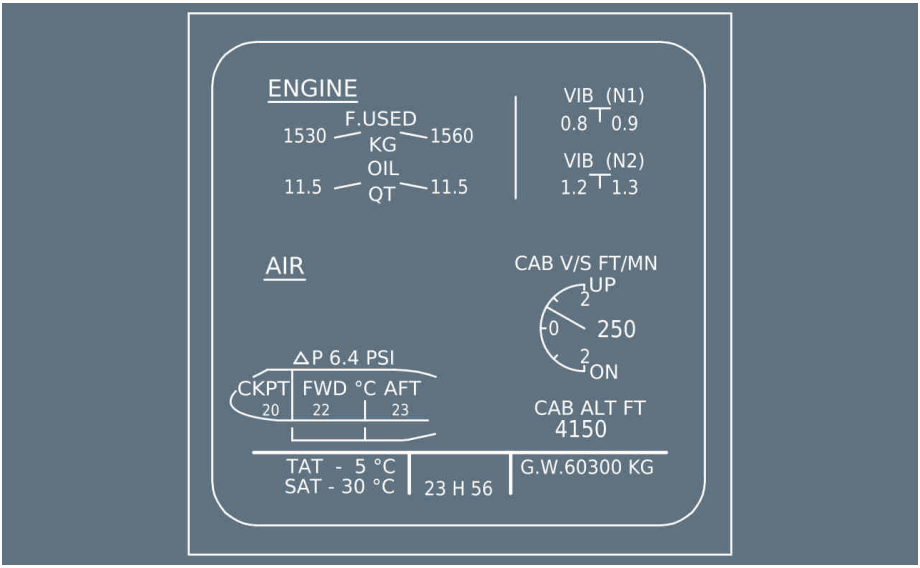
Note: *If an advisory is triggered, when the ECAM is in the single-display configuration, an advisory message appears on the upper part of the E/WD, and the associated key on the ECAM control panel flashes to identify the appropriate system page.*

- Automatic, flight phase mode
  - If no other mode is engaged, the SD displays the system page related to the present flight phase, as shown in the following diagram.



- Phase 2 : The F/CTL page replaces the WHEEL page for 20 s when either pilot moves his sidestick (more than 3 ° in pitch or roll) or when the rudder pedal deflection is more than 22 °.
- The APU page appears when the APU MASTER switch is ON. It disappears when APU RPM has been above 95 % for 10 s, or when the APU MASTER switch is switched OFF.
- The ENGINE page appears at the beginning of start sequence or when a pilot selects “CRANK”. It disappears 10 s after the end of the start sequence, when the ENG MODE sel is set to NORM.

For a description of the ENGINE and AIR indications that appear when the SD is displaying the CRUISE page, see the relevant FCOM chapter.



SYSTEM PAGES

Ident.: DSC-31-20-00001216.0002001 / 21 MAR 16

1 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

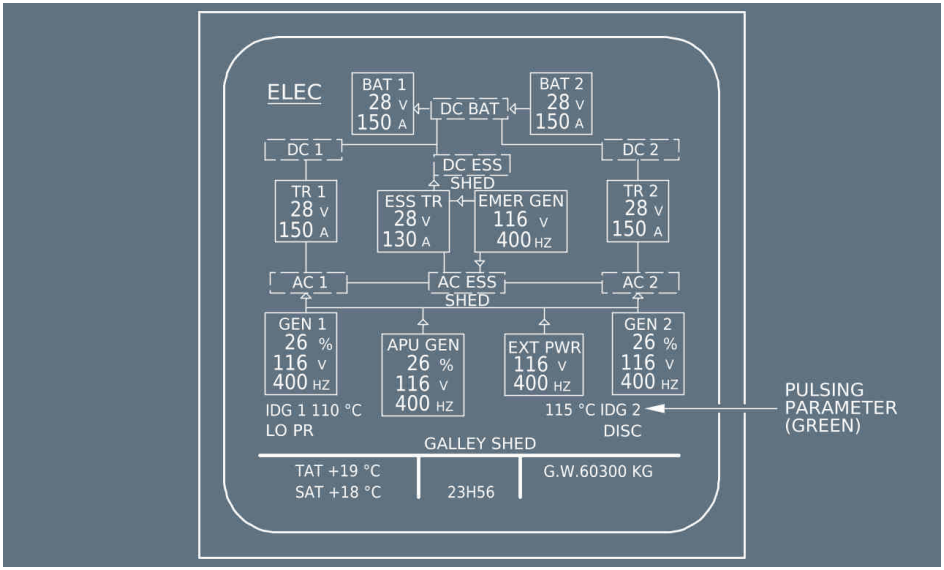
The lower ECAM DU can display 12 system pages (For description see relevant FCOM chapter):

- ENGINE (secondary engine parameters)
- BLEED (air bleed)
- CAB PRESS (cabin pressurization)
- ELEC (electric power)
- HYD (hydraulic)
- FUEL (fuel)
- APU (auxiliary power unit)
- COND (air conditioning)
- DOOR/OXY (doors/oxygen)
- WHEEL (landing gear, braking, ground spoilers, etc.)
- F/CTL (flight controls)
- CRUISE (cruise)

The pilot may manually call up a system page for display on the lower ECAM DU, or the system may automatically display a page.

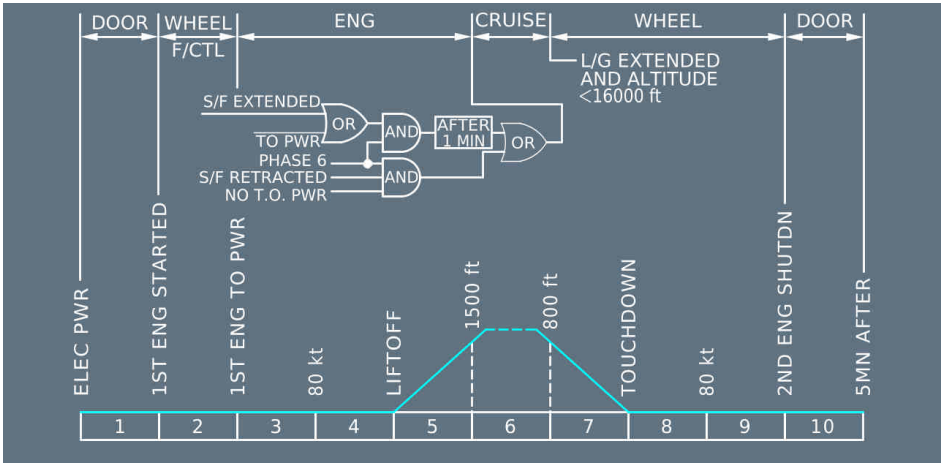
- Manual:
  - The pilot can, at any time, use the pushbutton on the ECAM's control panel to call up and display any system page, except the CRUISE page.
  - The corresponding pushbutton on the ECAM control panel lights up.
  - A failure-related or advisory display automatically replaces a page the pilot has manually called up.
- Automatic, related to a failure:
  - The relevant system page automatically appears, as soon as any fault or malfunction triggers a caution or warning message.

- Automatic, advisory:
  - The relevant system page automatically appears, when a parameter drifts out of its normal range.
  - The value (shown in green) pulses, as long as it is outside its limits.
  - The advisory mode is inhibited in some flight phases.



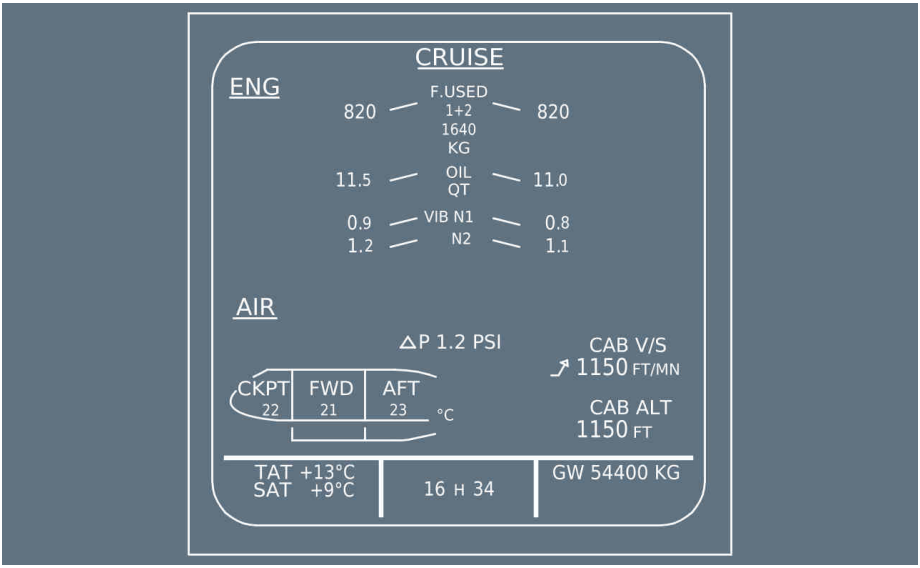
Note: *If an advisory is triggered, when the ECAM is in the single-display configuration, an advisory message appears on the upper part of the E/WD, and the associated key on the ECAM control panel flashes to identify the appropriate system page.*

- Automatic, flight phase mode
  - If no other mode is engaged, the SD displays the system page related to the present flight phase, as shown in the following diagram.



- Phase 2 : The F/CTL page replaces the WHEEL page for 20 s when either pilot moves his sidestick (more than 3 ° in pitch or roll) or when the rudder pedal deflection is more than 22 °.
- The APU page appears when the APU MASTER switch is ON. It disappears when APU RPM has been above 95 % for 10 s, or when the APU MASTER switch is switched OFF.
- The ENGINE page appears at the beginning of start sequence or when a pilot selects “CRANK”. It disappears 10 s after the end of the start sequence, when the ENG MODE sel is set to NORM.

For a description of the ENGINE and AIR indications that appear when the SD is displaying the CRUISE page, see the relevant FCOM chapter.

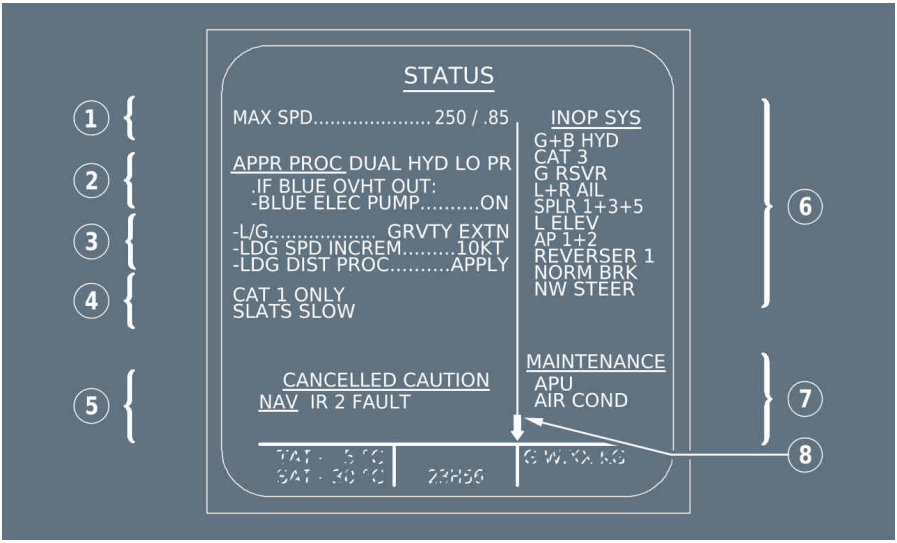


STATUS PAGE

Ident.: DSC-31-20-00001217.0001001 / 12 APR 16
Applicable to: ALL

PURPOSE

The STATUS page provides an operational summary of the state of the aircraft. As illustrated in the following image, this operational summary includes all of the following:



(1) Limitations (speed, flight level): Blue

(2) Approach procedures: White (Red) (Amber)

(3) Procedures (corrections to apply for landing): Blue

(4) Information: Green

(5) Cancelled caution: White

(6) Inoperative system: Amber

(7) Maintenance status: White

(8) The arrow appears if the data on the STATUS page overflows the left or right area of the page.

The flight crew can press the CLR pb, in order to scroll the display to view the overflow.

Note: *The titles of the different parts of the display appear in white and underlined.*

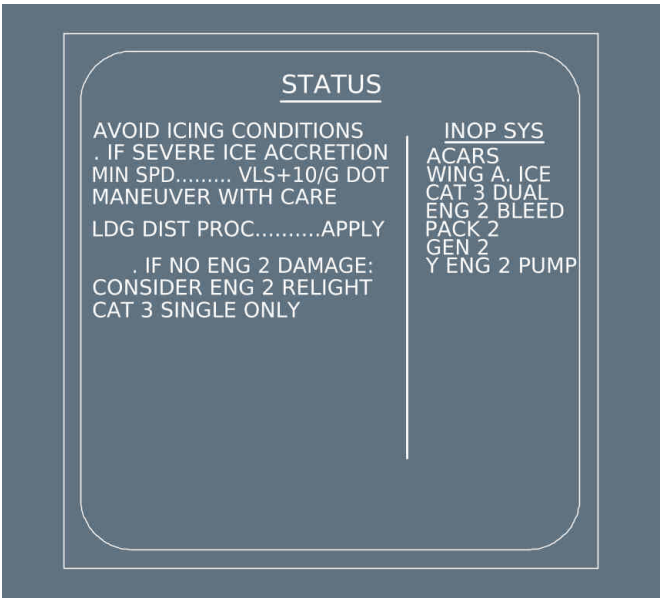
STATUS PAGE DISPLAY

The STATUS page appears when the flight crew presses the STS pb on the ECAM Control Panel (ECP).

The STATUS page automatically appears in abnormal operations if one of the following applies:
- The STATUS page is not empty, and the flight crew clears the last alert on the E/WD, or
- The STATUS page is not empty, and the flight crew selects the CONF1 for approach.

BLANK LINES

Each block that is described above (limitation block (1), approach procedure block (2), etc.) is separated by a blank line.
Therefore, a condition that is included in a limitation block (1) and the associated action line that is included in the procedure block (3) are separated by a blank line.
Example: Illustration with the ECAM alert ENG 1(2) SHUTDOWN.



In this example, the action line “LDG DIST PROC … APPLY” applies only in the case of severe ice accretion.

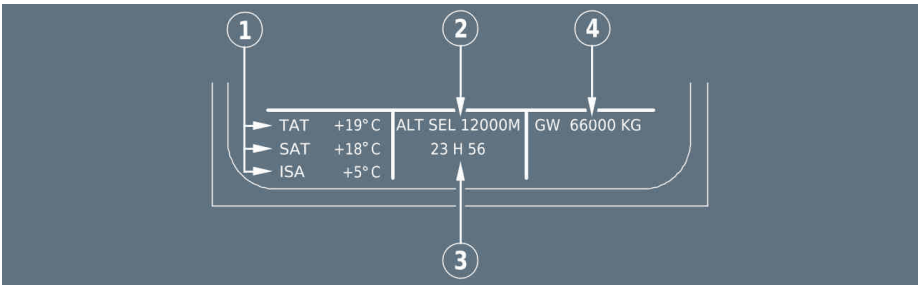
STS REMINDER

The STS reminder appears on the E/WD if both the following conditions apply:
- The STATUS page is not empty: The STATUS page displays message other than “CANCELLED CAUTION” or MAINTENANCE status.
- There is a MAINTENANCE status at engines shutdown.

The MAINTENANCE status can appear only when the aircraft is on the ground, before engine start or after engine shutdown.

PERMANENT DATA

Ident.: DSC-31-20-00017520.0002001 / 25 JUL 16
Applicable to: MSN 01767, 02195-02204, 02359, 02405, 02482



(1) Temperature

The screen displays the Total Air Temperature (TAT) and Static Air Temperature (SAT) in green.

The difference between the SAT and the International Standard Atmosphere (ISA) temperature (Delta ISA ◁) is displayed in green, in standard altitude mode and when the SAT is valid.

(2) G LOAD - ALT SEL

The screen displays one of the following items:

- The Load factor (G LOAD) in amber, when the value is above 1.4 g or below 0.7 g for more than 2 s. The G LOAD amber indication remains displayed 5 s after the excessive load occurrence. The display of the load factor is inhibited during flight phases 1, 2 and 3.
- Altitude in green selected via the Flight Control Unit (FCU), if the flight crew selects metric units, and provided the load factor is not displayed.

(3) UTC

The screen displays the Universal Time Coordinated (UTC), synchronized with the cockpit clock, in green.

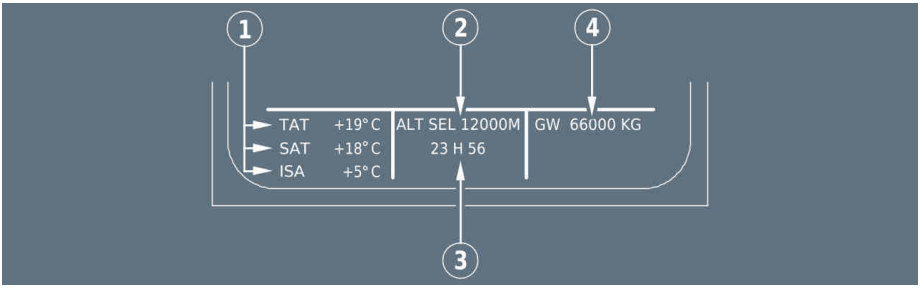
(4) GW

The screen displays the gross weight (GW) in green, as soon as the first engine is started. The last two digits are dashed, if accuracy is degraded. On ground, the indication is replaced by blue dashes, if no computed data is available.

PERMANENT DATA

Ident.: DSC-31-20-00017520.0011001 / 25 JUL 16

[2] **Applicable to: MSN 02135, 02139, 02388, 02443, 02584, 02670-02914, 03138-04216, 04312-04399, 04438-04506, 04518-09063**



(1) Temperature

The screen displays the Total Air Temperature (TAT) and Static Air Temperature (SAT) in green.

The difference between the SAT and the International Standard Atmosphere temperature (ISA) temperature (Delta ISA ◁) is displayed in green, in standard altitude mode and when the SAT is valid.

(2) G LOAL - ALT SEL

The screen displays one of the following items:

- Load factor (G LOAD) in amber, when the value is above 1.4 g or below 0.7 g for more than 2 s. The G LOAD amber indication remains displayed 5 s after the excessive load occurrence. The display of the load factor is inhibited during flight phases 1, 2, 3, 9 and 10.
- Altitude in green selected via the Flight Control Unit (FCU), if the flight crew selects metric units, and provided the load factor is not displayed.
- "CHECK CAPT (F/O) PFD", "CHECK CAPT (F/O) ND" or "CHECK SD" all in amber (*Refer to DSC-31-05-20 Cockpit Arrangement*).

Note: The display of the feedback messages takes priority over the load factor indication.

(3) UTC

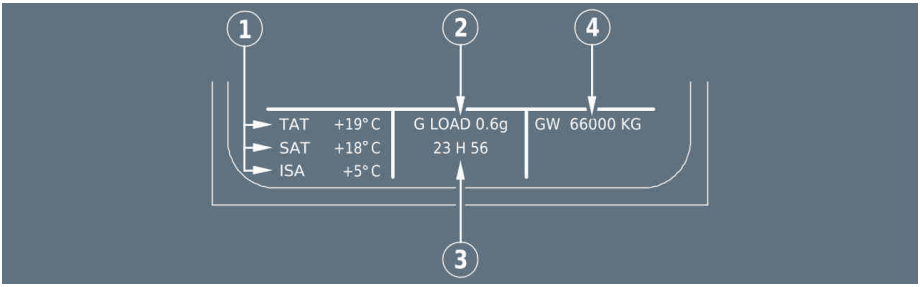
The screen displays the Universal Time Coordinated (UTC), synchronized with the cockpit clock, in green.

(4) GW

The screen displays the Gross Weight (GW) in green, as soon as the flight crew starts the first engine. The last two digits are dashed, if accuracy is degraded. On ground, blue dashes are displayed instead of the indication, if no computed data is available.

PERMANENT DATA

Ident.: DSC-31-20-00017520.0014001 / 25 JUL 16
Applicable to: MSN 01920, 02108, 02275-02334



(1) Temperature
The screen displays the Total Air Temperature (TAT) and Static Air Temperature (SAT) in green.
The difference between the SAT and the International Standard Atmosphere (ISA) temperature (Delta ISA ◁)is displayed in green, in standard altitude mode and when the SAT is valid.

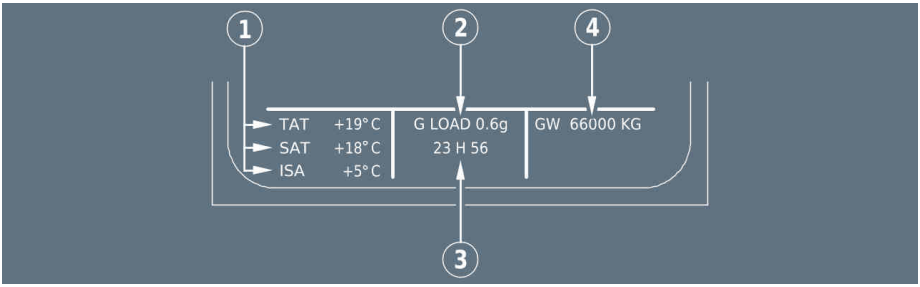
(2) G LOAD
The screen displays the load factor (G LOAD) in amber, when the value is above 1.4 g or below 0.7 g for more than 2 s. The G LOAD amber indication remains displayed 5 s after the excessive load occurrence. The display of the load factor is inhibited during flight phases 1, 2 and 3.

(3) UTC
The screen displays the Universal Time Coordinated (UTC), synchronized with the cockpit clock, in green.

(4) GW
The screen displays the Gross Weight (GW) in green, as soon as the flight crew starts the first engine. The last two digits are dashed, if accuracy is degraded. On ground, blue dashes are displayed instead of the indication, if no computed data is available.

PERMANENT DATA

Ident.: DSC-31-20-00017520.0025001 / 25 JUL 16
Applicable to: MSN 01957-02097, 02121, 02138, 02457, 02609-02649, 03071, 04294, 04433, 04510



(1) Temperature

The screen displays the Total Air Temperature (TAT) and Static Air Temperature (SAT) in green.

The difference between the International Standard Atmosphere (ISA) temperature (Delta ISA ◁) is displayed in green, in standard altitude mode and when the SAT is valid.

(2) G LOAD

The screen displays one of the following items:

- Load factor (G LOAD) in amber, when the value is above 1.4 g or below 0.7 g for more than 2 s. The G LOAD amber indication remains displayed 5 s after the excessive load occurrence. The display of the load factor is inhibited during flight phases 1, 2, 3, 9 and 10.
- "CHECK CAPT (F/O) PFD", "CHECK CAPT (F/O) ND" or "CHECK SD" all in amber (*Refer to DSC-31-05-20 Cockpit Arrangement*).

Note: *The display of the feedback messages takes priority over the load factor indication.*

(3) UTC

The screen displays the Universal Time Coordinated (UTC), synchronized with the cockpit clock, in green.

(4) GW

The screen displays the Gross Weight (GW) in green, as soon as the flight crew starts the first engine. The last two digits are dashed, if accuracy is degraded. On ground, blue dashes are displayed instead of the indication, if no computed data is available.

AMBER CROSSES "XX" ON THE SD

Ident.: DSC-31-20-00013602.0001001 / 18 MAR 11
Applicable to: ALL

If a parameter value on any SD page is not available for display, amber crosses "XX" appear instead of the value.

AMBER DASHES ON THE SD

Ident.: DSC-31-20-00015526.0001001 / 01 APR 14
Applicable to: ALL

If the accuracy of a parameter value on any SD page is degraded, amber dashes are displayed over the last digits.

Intentionally left blank

GENERAL

Ident.: DSC-31-25-10-00001219.0001001 / 22 MAR 16
Applicable to: ALL

If ECAM detects a failure :

- The E/WD displays warning or caution messages.
- The master warning or master caution lights light up (except in the case of a level 1 caution).
- The system sounds an aural signal (except in the case of a level 1 caution).
- The system display (SD) shows the system page for the affected system.
- The CLR pushbutton on the ECAM control panel lights up.

In addition, a local warning light controlled directly by the affected system can light up.

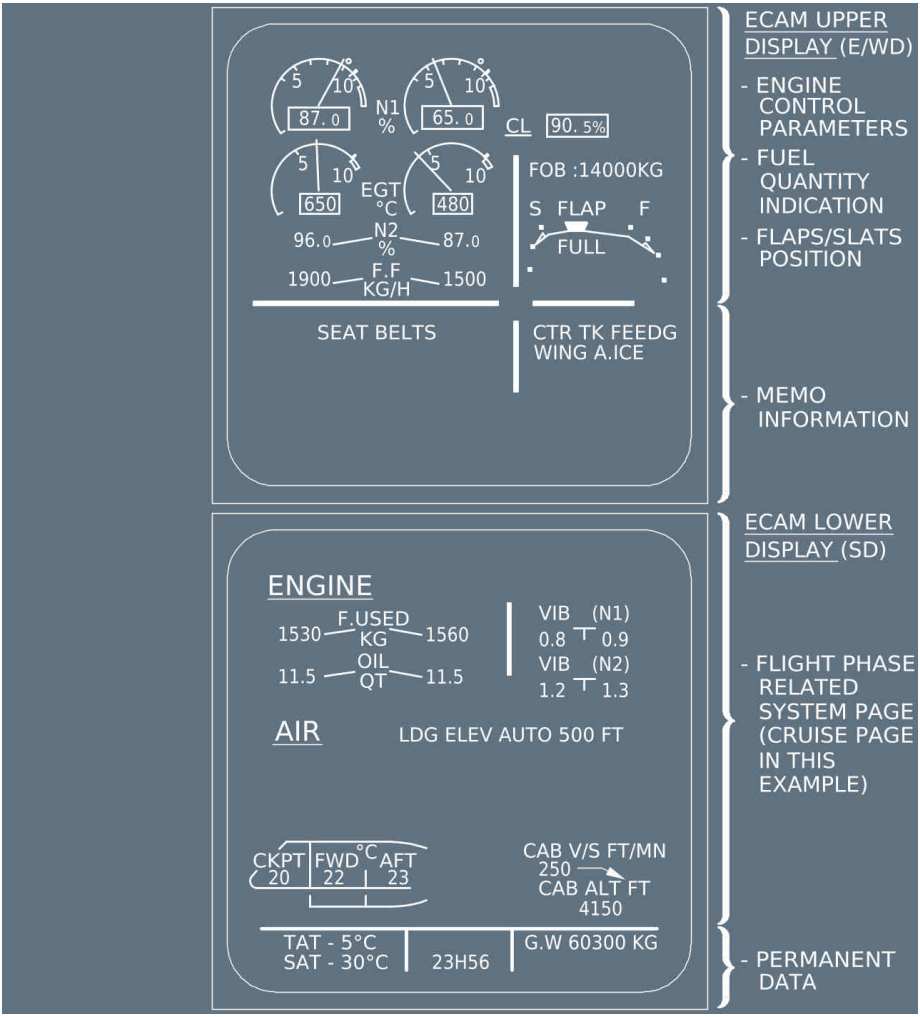
After completing remedial procedures, the flight crew must push the CLR pushbutton repeatedly until the displays return to their normal configurations :

- MEMO messages on the E/WD
- The system page related to the present flight phase on the SD.
- The CLR light on the ECAM control panel turned off.

Intentionally left blank

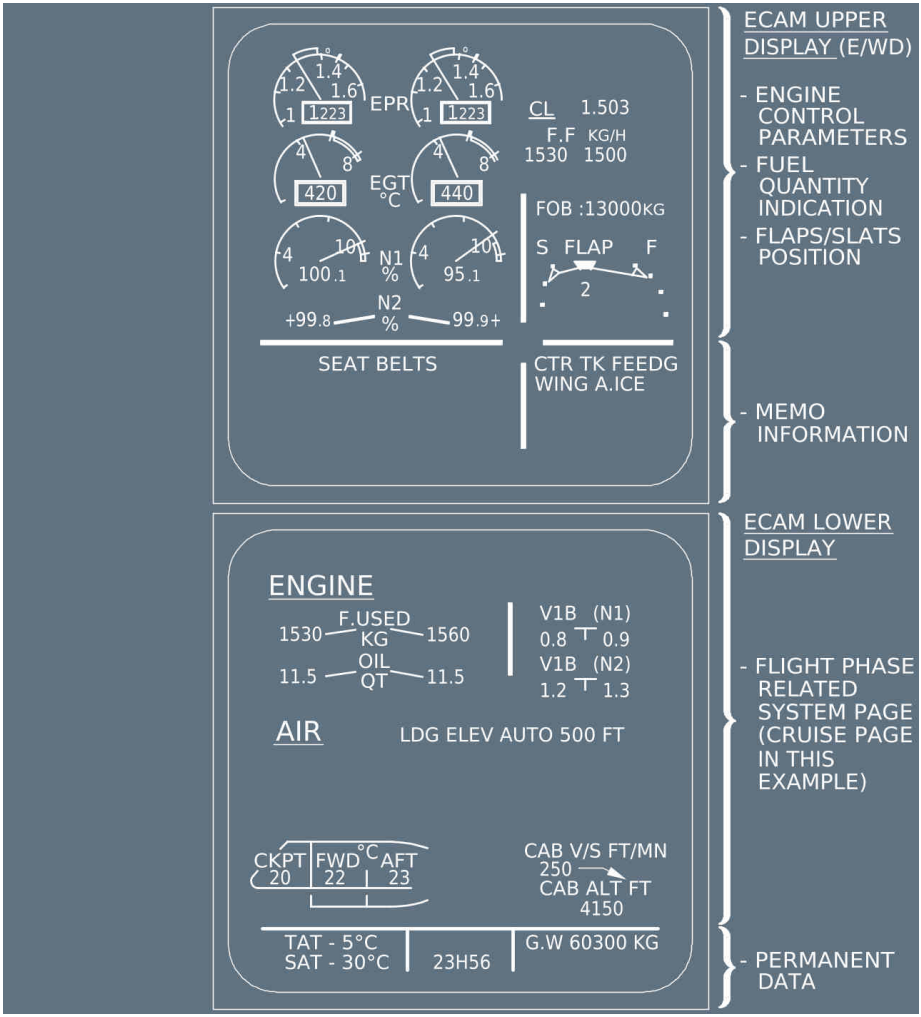
1 - THE ECAM DETECTS NO FAILURE

Ident.: DSC-31-25-20-00001220.0001001 / 09 OCT 12
Applicable to: MSN 01767-01920



1 - THE ECAM DETECTS NO FAILURE

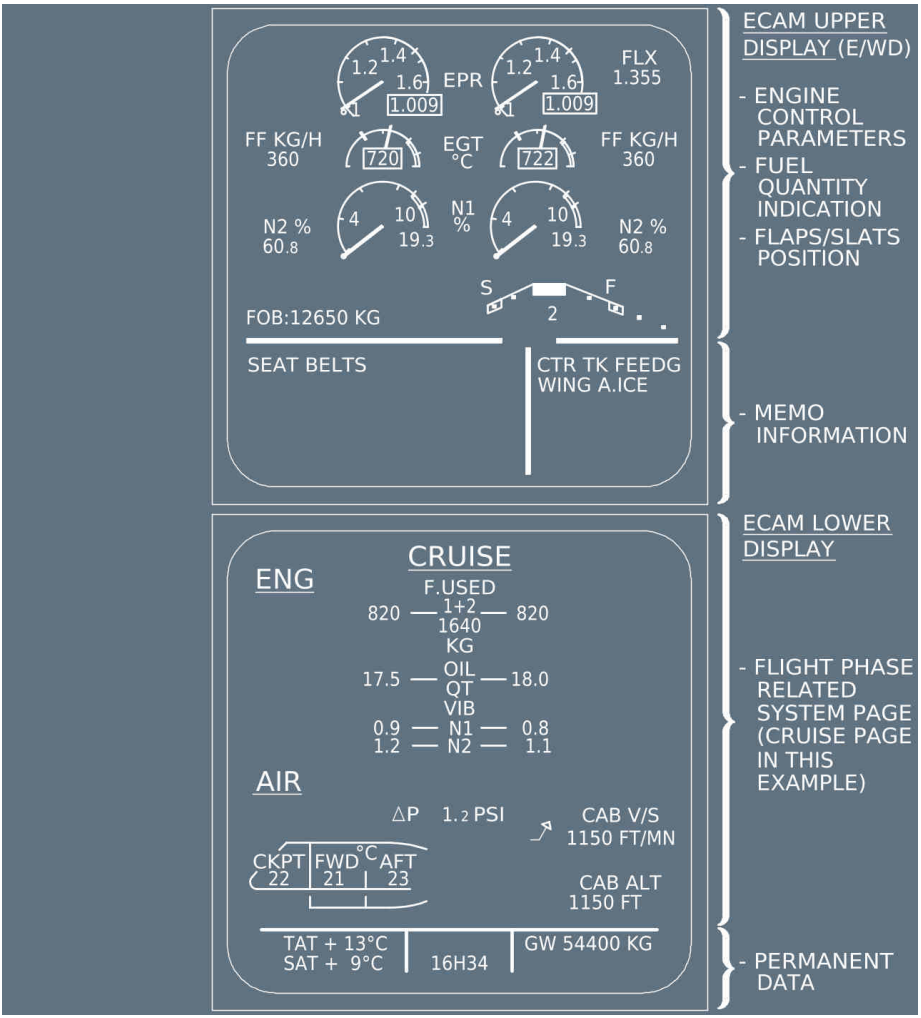
Ident.: DSC-31-25-20-00001220.0002001 / 09 OCT 12
Applicable to: MSN 02108, 02195-02359, 02405, 02482



1 - THE ECAM DETECTS NO FAILURE

Ident.: DSC-31-25-20-00001220.0003001 / 09 OCT 12

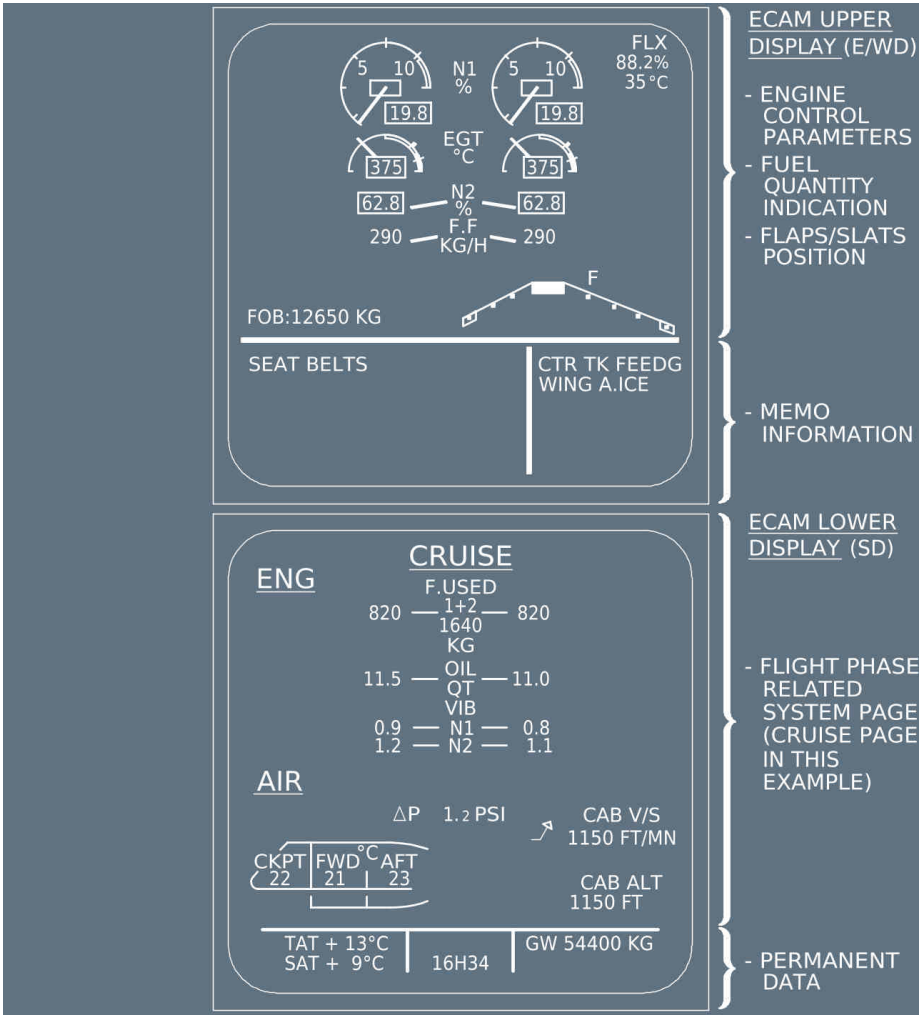
[1] **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**



1 - THE ECAM DETECTS NO FAILURE

Ident.: DSC-31-25-20-00001220.0004001 / 09 OCT 12

[2] **Applicable to: MSN 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**



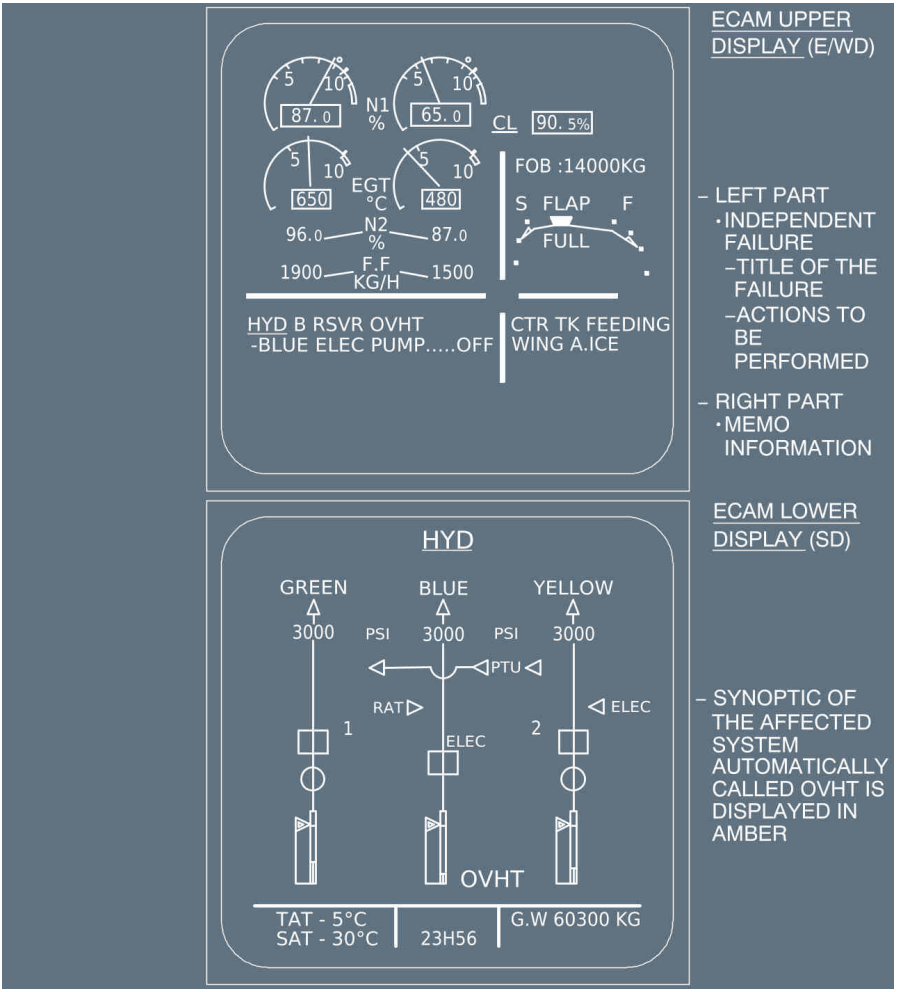
2 - THE ECAM DETECTS A FAILURE

Ident.: DSC-31-25-20-00001221.0001001 / 09 OCT 12
Applicable to: MSN 01767-01920

For example, a hydraulic reservoir is overheat.

COCKPIT INDICATIONS

- A single chime sounds
- Both MASTER CAUTION lights come on, and stay on
- A FAULT light, on the overhead HYD panel, comes on
- The memo space on the E/WD displays the “HYD B RSVR OVHT” message, and the “BLUE ELEC PUMP . . . . . OFF” instruction
- The lower ECAM display (SD) automatically calls up the hydraulic system's diagram, and displays “OVHT” in amber next to the blue system
- The ECAM's CLR pushbutton lights up.



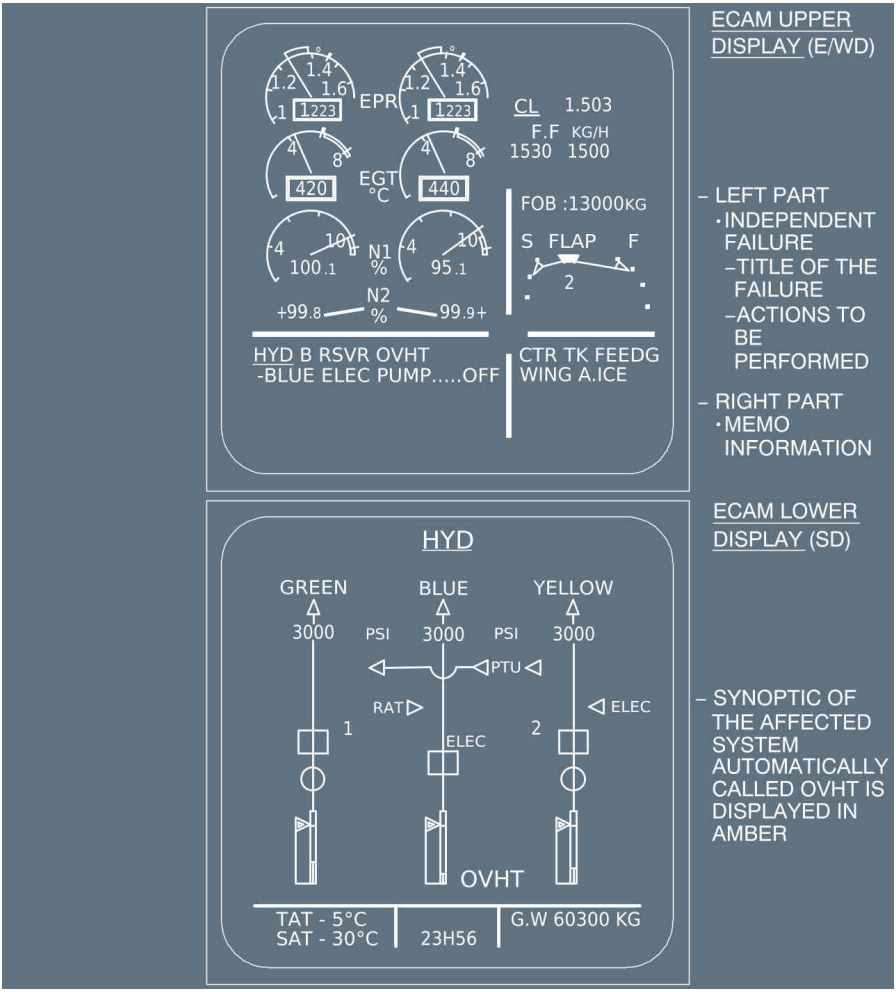
2 - THE ECAM DETECTS A FAILURE

Ident.: DSC-31-25-20-00001221.0002001 / 09 OCT 12
Applicable to: MSN 02108, 02195-02359, 02405, 02482

For example, a hydraulic reservoir is overheat.

COCKPIT INDICATIONS

- A single chime sounds
- Both MASTER CAUTION lights come on, and stay on
- A FAULT light, on the overhead HYD panel, comes on
- The memo space on the E/WD displays the “HYD B RSVR OVHT” message, and the “BLUE ELEC PUMP . . . . . OFF” instruction
- The lower ECAM display (SD) automatically calls up the hydraulic system's diagram, and displays “OVHT” in amber next to the blue system
- The ECAM's CLR pushbutton lights up.



2 - THE ECAM DETECTS A FAILURE

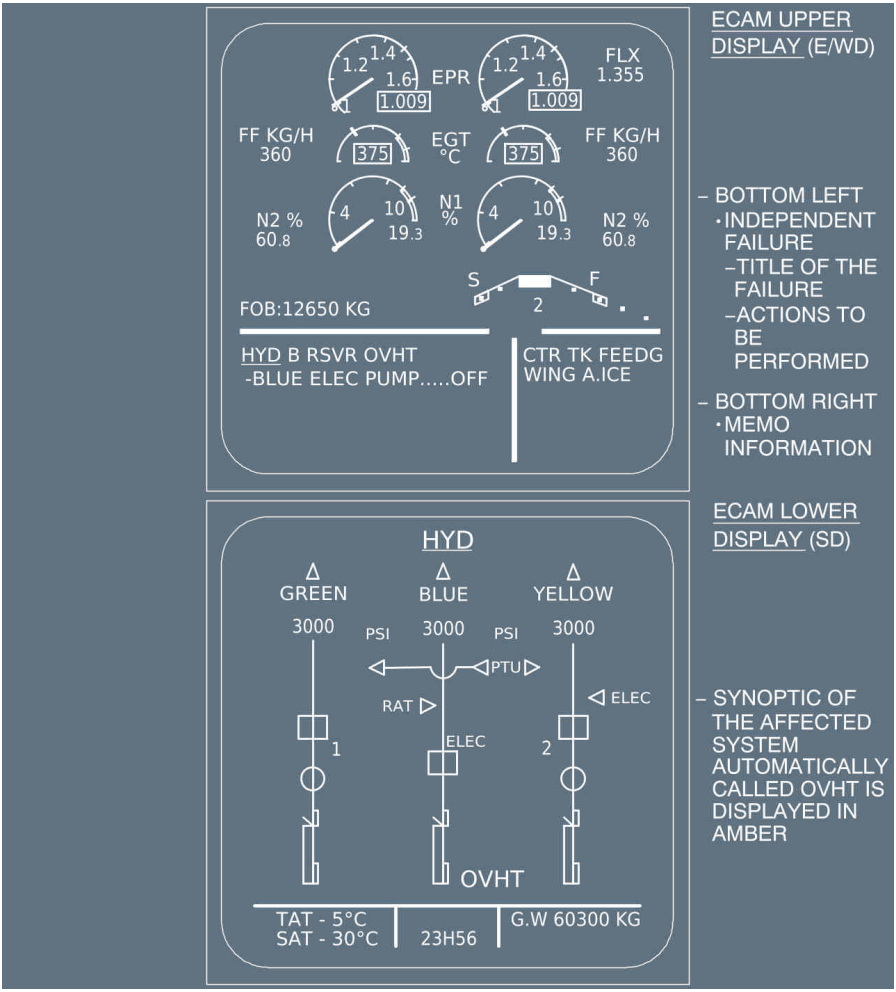
Ident.: DSC-31-25-20-00001221.0003001 / 09 OCT 12

3 **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

For example, a hydraulic reservoir is overheat.

COCKPIT INDICATIONS

- A single chime sounds
- Both MASTER CAUTION lights come on, and stay on
- A FAULT light, on the overhead HYD panel, comes on
- The memo space on the E/WD displays the “HYD B RSVR OVHT” message, and the “BLUE ELEC PUMP . . . . . OFF” instruction
- The lower ECAM display (SD) automatically calls up the hydraulic system's diagram, and displays “OVHT” in amber next to the blue system
- The ECAM's CLR pushbutton lights up.



2 - THE ECAM DETECTS A FAILURE

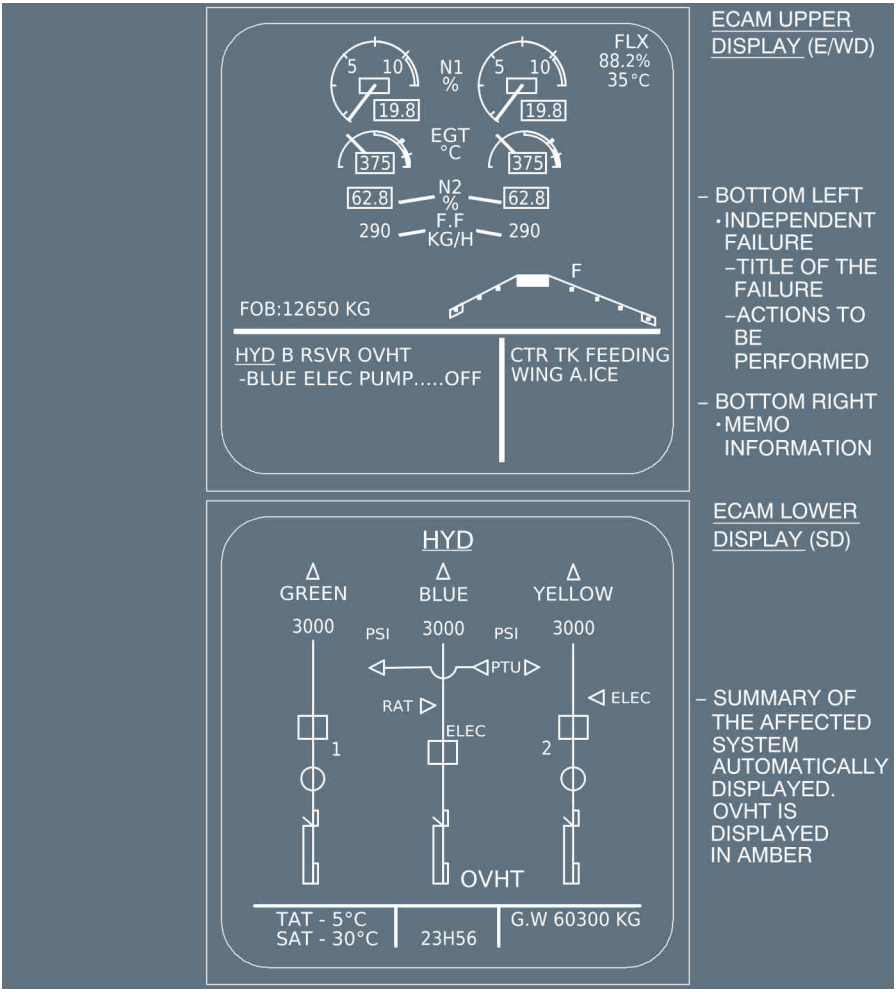
Ident.: DSC-31-25-20-00001221.0004001 / 09 OCT 12

4 **Applicable to: MSN 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

For example, a hydraulic reservoir is overheat.

COCKPIT INDICATIONS

- A single chime sounds
- Both MASTER CAUTION lights come on, and stay on
- A FAULT light, on the overhead HYD panel, comes on
- The memo space on the E/WD displays the “HYD B RSVR OVHT” message, and the “BLUE ELEC PUMP . . . . . OFF” instruction
- The lower ECAM display (SD) automatically calls up the hydraulic system's diagram, and displays “OVHT” in amber next to the blue system
- The ECAM's CLR pushbutton lights up.



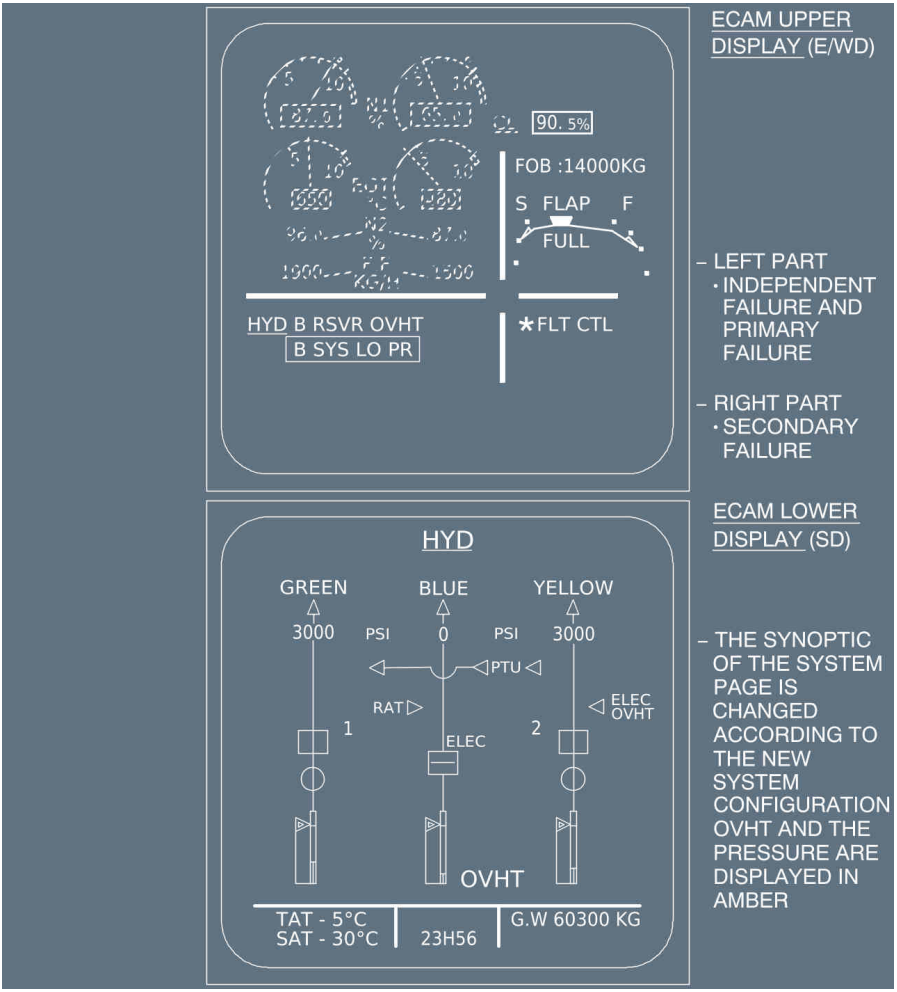
3 - THE FLIGHT CREW FOLLOWS THE INSTRUCTION DISPLAYED ON THE E/WD

Ident.: DSC-31-25-20-00001222.0001001 / 09 OCT 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

The flight crew switches off the BLUE ELEC PUMP pushbutton, depressurizing the blue hydraulic circuit.

COCKPIT INDICATIONS

- A single chime sounds.
- Both MASTER CAUTION lights stay on.
- A FAULT/OFF light, on the overhead panel, comes on.
- The second part of the message on the E/WD changes to “B SYS LO PR”.
- The SD's system diagram shows an amber zero for the pressure in the blue system, along with the amber “OVHT”.
- The right side of the memo area indicates a secondary failure in the flight control system.
- The ECAM control panel's CLR pushbutton remains on.



3 - THE FLIGHT CREW FOLLOWS THE INSTRUCTION DISPLAYED ON THE E/WD

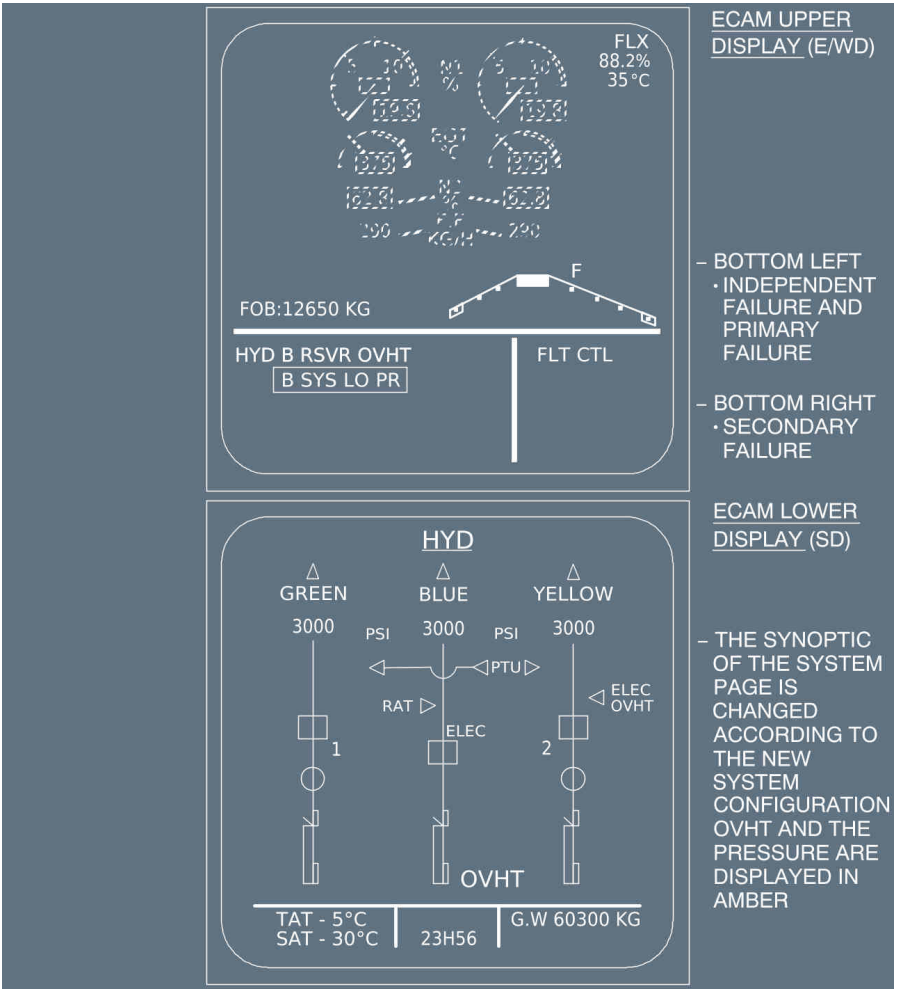
Ident.: DSC-31-25-20-00001222.0002001 / 09 OCT 12

5 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

The flight crew switches off the BLUE ELEC PUMP pushbutton, depressurizing the blue hydraulic circuit.

COCKPIT INDICATIONS

- A single chime sounds.
- Both MASTER CAUTION lights stay on.
- A FAULT/OFF light, on the overhead panel, comes on.
- The second part of the message on the E/WD changes to “B SYS LO PR”.
- The SD's system diagram shows an amber zero for the pressure in the blue system, along with the amber “OVHT”.
- The right side of the memo area indicates a secondary failure in the flight control system.
- The ECAM control panel's CLR pushbutton remains on.



ECAM UPPER DISPLAY (E/WD)

– BOTTOM LEFT
· INDEPENDENT FAILURE AND PRIMARY FAILURE

– BOTTOM RIGHT
· SECONDARY FAILURE

ECAM LOWER DISPLAY (SD)

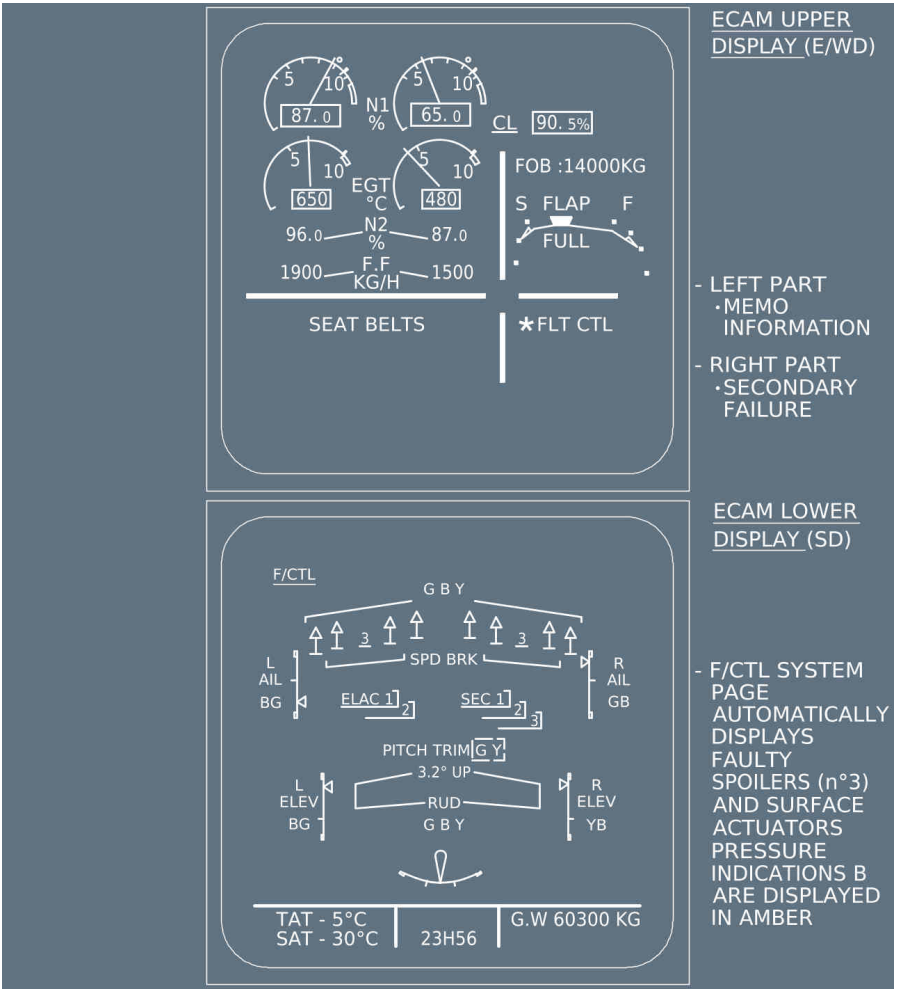
– THE SYNOPTIC OF THE SYSTEM PAGE IS CHANGED ACCORDING TO THE NEW SYSTEM CONFIGURATION OVHT AND THE PRESSURE ARE DISPLAYED IN AMBER

4 - ONE OF THE PILOTS PUSHES THE CLR PUSHBUTTON ON THE ECP

Ident.: DSC-31-25-20-00001223.0001001 / 09 OCT 12
Applicable to: MSN 01767-01920

COCKPIT INDICATIONS

- The CLR pushbutton stays on.
- The FAULT/OFF light stays on.
- Hydraulic system messages disappear from the E/WD, and the right side of the memo area indicates a secondary failure in the flight control system.
- The SD automatically calls up the flight control system page, with surface actuator indications (associated with the blue hydraulic system) shown in amber.

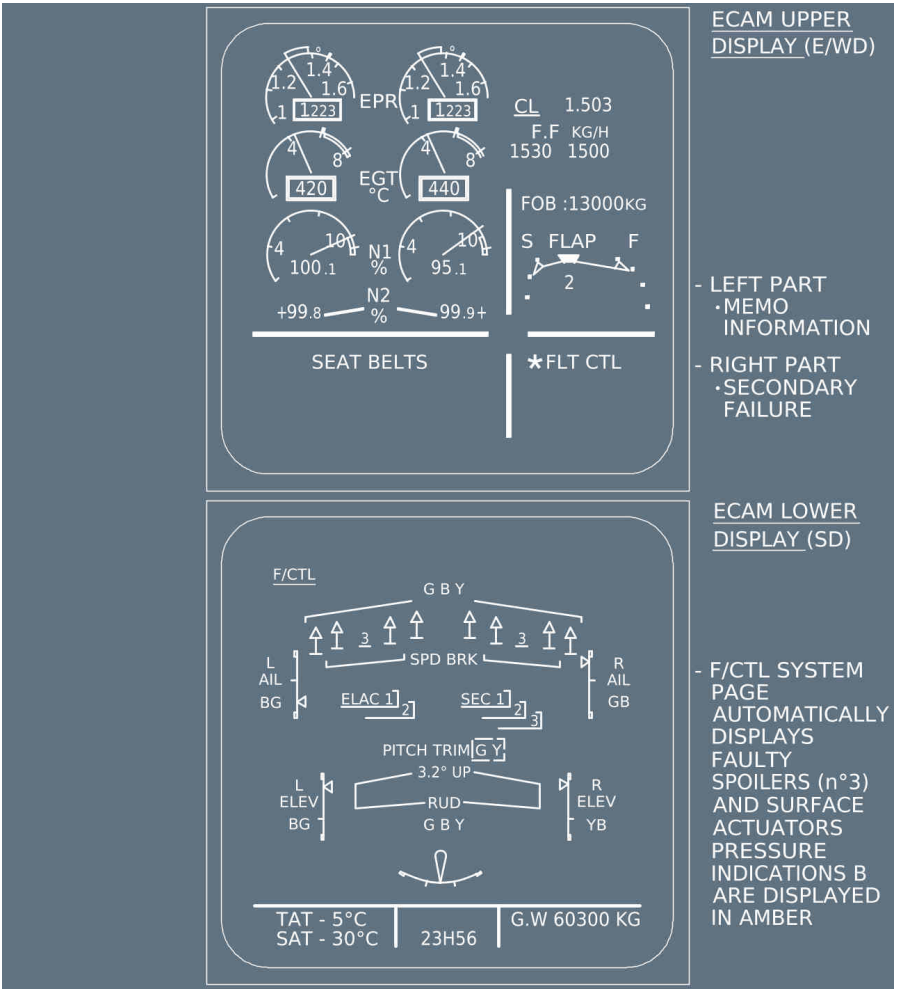

ECAM UPPER DISPLAY (E/WD)
87.0
N1 %
65.0
CL
90.5%
650
EGT °C
480
FOB :14000KG
S FLAP F
FULL
96.0
N2 %
87.0
1900
F.F KG/H
1500
SEAT BELTS
*FLT CTL
- LEFT PART
·MEMO INFORMATION
- RIGHT PART
·SECONDARY FAILURE
ECAM LOWER DISPLAY (SD)
F/CTL
G B Y
3
3
SPD BRK
L AIL BG
R AIL GB
ELAC 1 2
SEC 1 2 3
PITCH TRIM G Y
3.2° UP
RUD
G B Y
L ELEV BG
R ELEV YB
TAT - 5°C
SAT - 30°C
23H56
G.W 60300 KG
- F/CTL SYSTEM PAGE AUTOMATICALLY DISPLAYS FAULTY SPOILERS (n°3) AND SURFACE ACTUATORS PRESSURE INDICATIONS B ARE DISPLAYED IN AMBER

4 - ONE OF THE PILOTS PUSHES THE CLR PUSHBUTTON ON THE ECP

Ident.: DSC-31-25-20-00001223.0002001 / 09 OCT 12
Applicable to: MSN 02108, 02195-02359, 02405, 02482

COCKPIT INDICATIONS

- The CLR pushbutton stays on.
- The FAULT/OFF light stays on.
- Hydraulic system messages disappear from the E/WD, and the right side of the memo area indicates a secondary failure in the flight control system.
- The SD automatically calls up the flight control system page, with surface actuator indications (associated with the blue hydraulic system) shown in amber.


ECAM UPPER DISPLAY (E/WD)
EPR
CL 1.503
F.F KG/H
1530 1500
EGT °C
420
440
FOB :13000KG
N1 %
100.1
95.1
S FLAP F
N2 %
+99.8
99.9+
SEAT BELTS
*FLT CTL
- LEFT PART
·MEMO INFORMATION
- RIGHT PART
·SECONDARY FAILURE
ECAM LOWER DISPLAY (SD)
F/CTL
G B Y
SPD BRK
L AIL BG
R AIL GB
ELAC 1
SEC 1
PITCH TRIM G Y
3.2° UP
L ELEV BG
RUD
G B Y
R ELEV YB
TAT - 5°C
SAT - 30°C
23H56
G.W 60300 KG
- F/CTL SYSTEM PAGE AUTOMATICALLY DISPLAYS FAULTY SPOILERS (n°3) AND SURFACE ACTUATORS PRESSURE INDICATIONS B ARE DISPLAYED IN AMBER

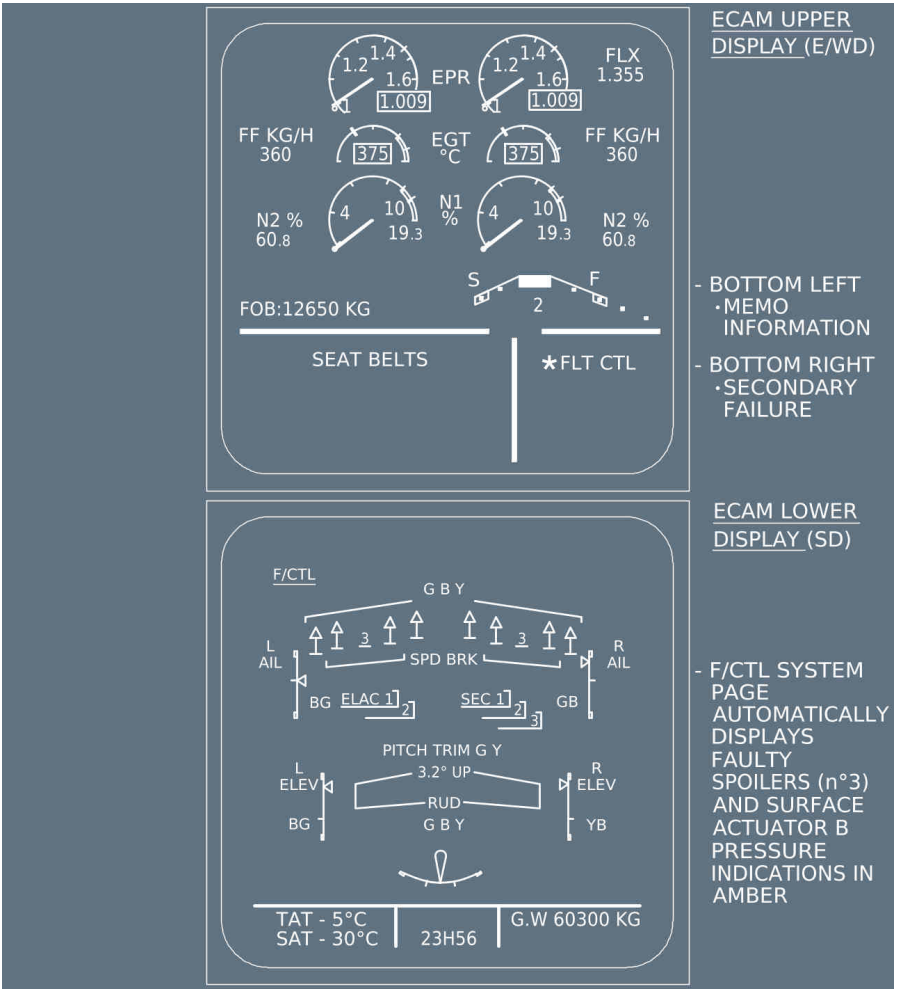
4 - ONE OF THE PILOTS PUSHES THE CLR PUSHBUTTON ON THE ECP

Ident.: DSC-31-25-20-00001223.0004001 / 09 OCT 12

6 **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

COCKPIT INDICATIONS

- The CLR pushbutton stays on.
- The FAULT/OFF light stays on.
- Hydraulic system messages disappear from the E/WD, and the right side of the memo area indicates a secondary failure in the flight control system.
- The SD automatically calls up the flight control system page, with surface actuator indications (associated with the blue hydraulic system) shown in amber.


ECAM UPPER DISPLAY (E/WD)
1.2
1.4
1.6
1.009
EPR
FLX
1.355
FF KG/H
360
375
EGT
°C
N2 %
60.8
4
10
19.3
N1
%
S
F
2
FOB:12650 KG
SEAT BELTS
*FLT CTL
- BOTTOM LEFT
•MEMO INFORMATION
- BOTTOM RIGHT
•SECONDARY FAILURE
ECAM LOWER DISPLAY (SD)
F/CTL
G B Y
L AIL
R AIL
SPD BRK
BG
ELAC 1
SEC 1
GB
PITCH TRIM G Y
3.2° UP
L ELEV
R ELEV
RUD
G B Y
YB
TAT - 5°C
SAT - 30°C
23H56
G.W 60300 KG
- F/CTL SYSTEM PAGE AUTOMATICALLY DISPLAYS FAULTY SPOILERS (n°3) AND SURFACE ACTUATOR B PRESSURE INDICATIONS IN AMBER

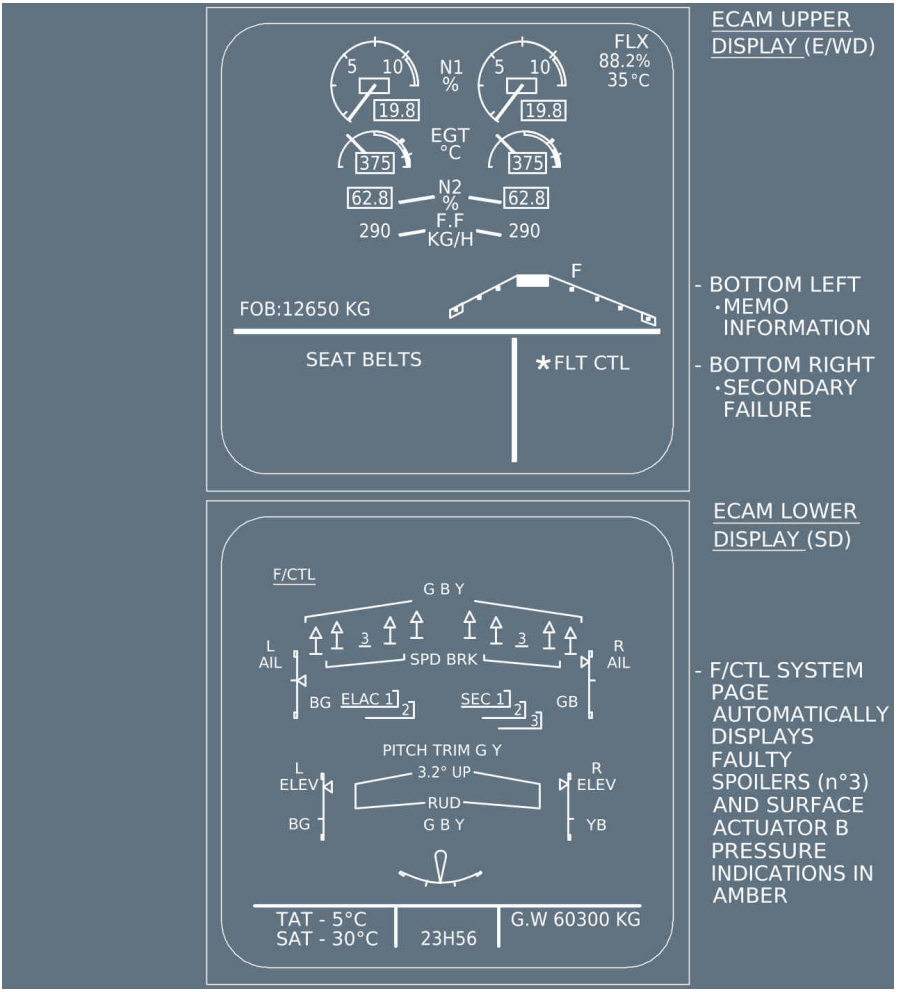
4 - ONE OF THE PILOTS PUSHES THE CLR PUSHBUTTON ON THE ECP

Ident.: DSC-31-25-20-00001223.0003001 / 09 OCT 12

7 **Applicable to: MSN 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

COCKPIT INDICATIONS

- The CLR pushbutton stays on.
- The FAULT/OFF light stays on.
- Hydraulic system messages disappear from the E/WD, and the right side of the memo area indicates a secondary failure in the flight control system.
- The SD automatically calls up the flight control system page, with surface actuator indications (associated with the blue hydraulic system) shown in amber.

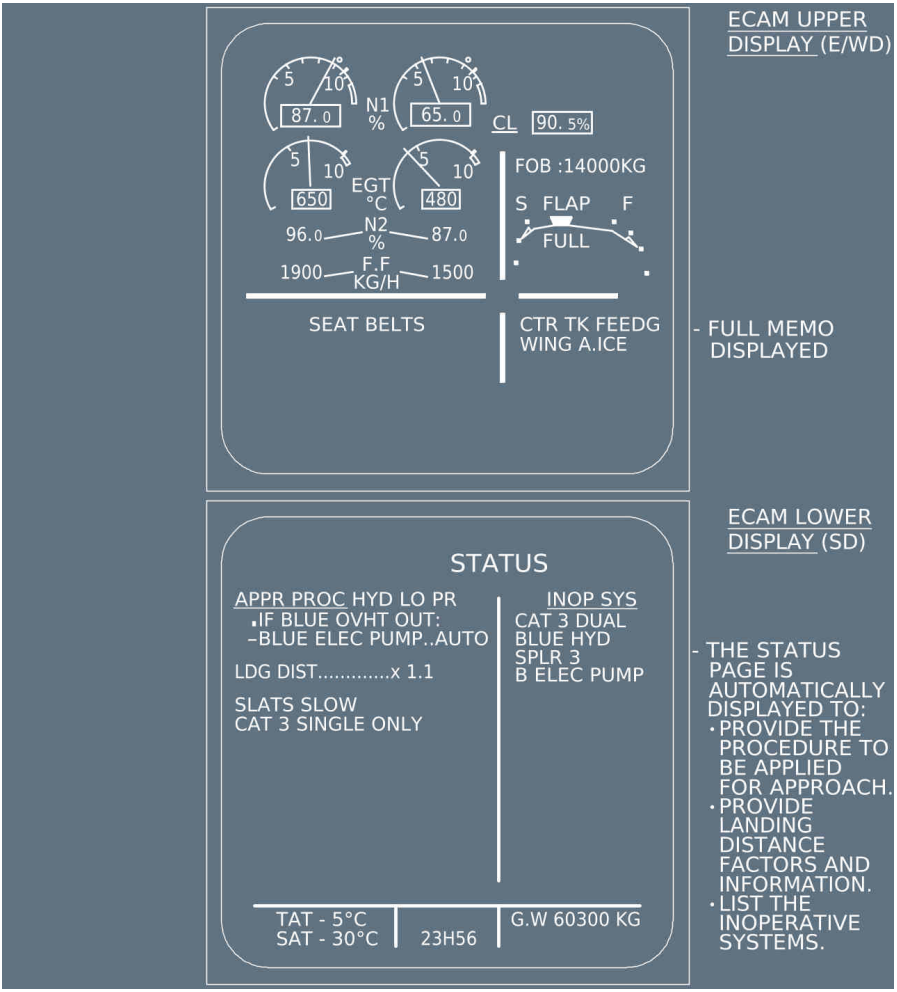

ECAM UPPER DISPLAY (E/WD)
FLX
88.2%
35°C
N1
%
5
10
19.8
EGT
°C
375
N2
%
62.8
F.F
KG/H
290
F
FOB:12650 KG
SEAT BELTS
*FLT CTL
- BOTTOM LEFT
·MEMO
INFORMATION
- BOTTOM RIGHT
·SECONDARY
FAILURE
ECAM LOWER DISPLAY (SD)
F/CTL
G B Y
L AIL
R AIL
SPD BRK
BG
ELAC 1
SEC 1
GB
PITCH TRIM G Y
L ELEV
R ELEV
3.2° UP
RUD
YB
TAT - 5°C
SAT - 30°C
23H56
G.W 60300 KG
- F/CTL SYSTEM PAGE AUTOMATICALLY DISPLAYS FAULTY SPOILERS (n°3) AND SURFACE ACTUATOR B PRESSURE INDICATIONS IN AMBER

5 - ONE OF THE PILOTS PUSHES THE CLR PUSHBUTTON A SECOND TIME

Ident.: DSC-31-25-20-00001224.0001001 / 09 OCT 12
Applicable to: MSN 01767-01920

COCKPIT INDICATIONS

- The ECP's CLR and STS pushbuttons light up.
- The FAULT/OFF lights stay on.
- The E/WD's memo area returns to normal.
- The STATUS page automatically appears on the SD, displaying the procedures for completing the flight with a faulty blue system.

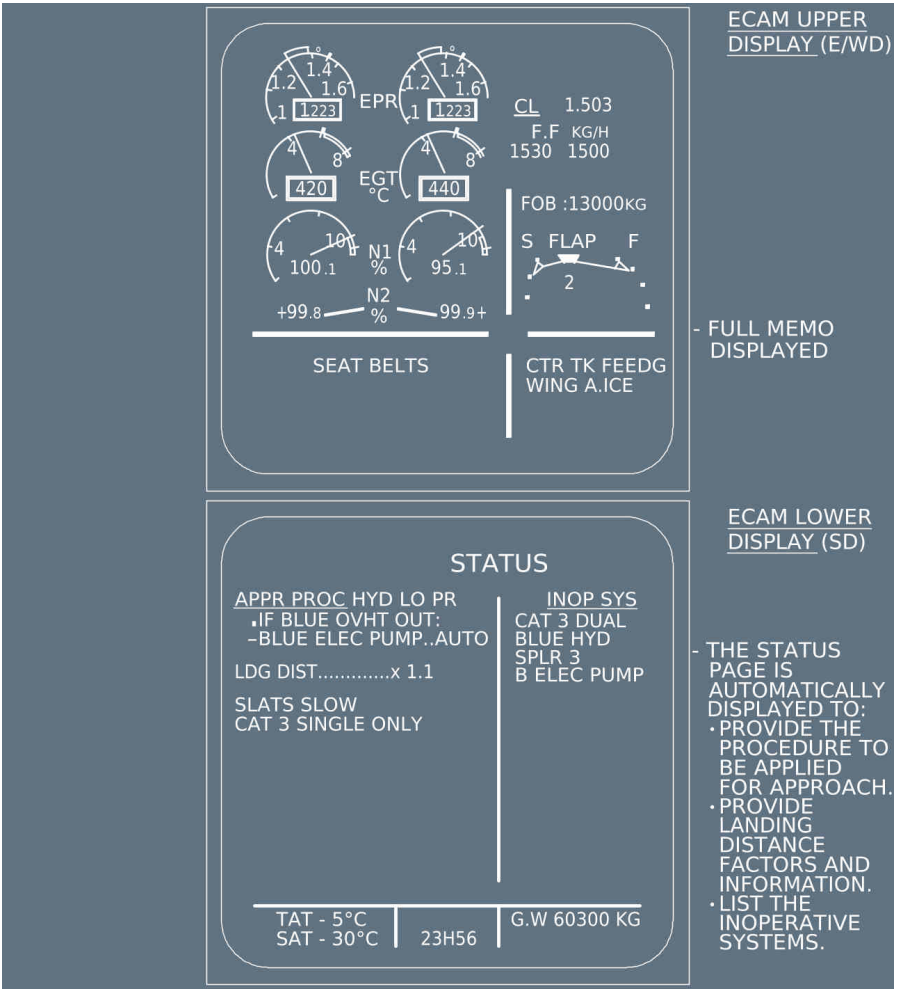

ECAM UPPER DISPLAY (E/WD)
5
10
87.0
N1 %
65.0
CL
90.5%
EGT °C
650
480
FOB :14000KG
S FLAP F
FULL
96.0
N2 %
87.0
1900
F.F KG/H
1500
SEAT BELTS
CTR TK FEEDG
WING A.ICE
- FULL MEMO DISPLAYED
ECAM LOWER DISPLAY (SD)
STATUS
APPR PROC HYD LO PR
.IF BLUE OVHT OUT:
-BLUE ELEC PUMP..AUTO
LDG DIST.....x 1.1
SLATS SLOW
CAT 3 SINGLE ONLY
INOP SYS
CAT 3 DUAL
BLUE HYD
SPLR 3
B ELEC PUMP
TAT - 5°C
SAT - 30°C
23H56
G.W 60300 KG
- THE STATUS PAGE IS AUTOMATICALLY DISPLAYED TO:
• PROVIDE THE PROCEDURE TO BE APPLIED FOR APPROACH.
• PROVIDE LANDING DISTANCE FACTORS AND INFORMATION.
• LIST THE INOPERATIVE SYSTEMS.

5 - ONE OF THE PILOTS PUSHES THE CLR PUSHBUTTON A SECOND TIME

Ident.: DSC-31-25-20-00001224.0002001 / 09 OCT 12
Applicable to: MSN 02108, 02195-02359, 02405, 02482

COCKPIT INDICATIONS

- The ECP's CLR and STS pushbuttons light up.
- The FAULT/OFF lights stay on.
- The E/WD's memo area returns to normal.
- The STATUS page automatically appears on the SD, displaying the procedures for completing the flight with a faulty blue system.


ECAM UPPER DISPLAY (E/WD)
EPR
CL 1.503
F.F KG/H
1530 1500
EGT °C
420
440
FOB :13000KG
S FLAP F
N1 %
100.1
95.1
N2 %
+99.8
99.9+
SEAT BELTS
CTR TK FEEDG
WING A.ICE
- FULL MEMO DISPLAYED
ECAM LOWER DISPLAY (SD)
STATUS
APPR PROC HYD LO PR
.IF BLUE OVHT OUT:
-BLUE ELEC PUMP..AUTO
LDG DIST.....x 1.1
SLATS SLOW
CAT 3 SINGLE ONLY
INOP SYS
CAT 3 DUAL
BLUE HYD
SPLR 3
B ELEC PUMP
TAT - 5°C
SAT - 30°C
23H56
G.W 60300 KG
- THE STATUS PAGE IS AUTOMATICALLY DISPLAYED TO:
• PROVIDE THE PROCEDURE TO BE APPLIED FOR APPROACH.
• PROVIDE LANDING DISTANCE FACTORS AND INFORMATION.
• LIST THE INOPERATIVE SYSTEMS.

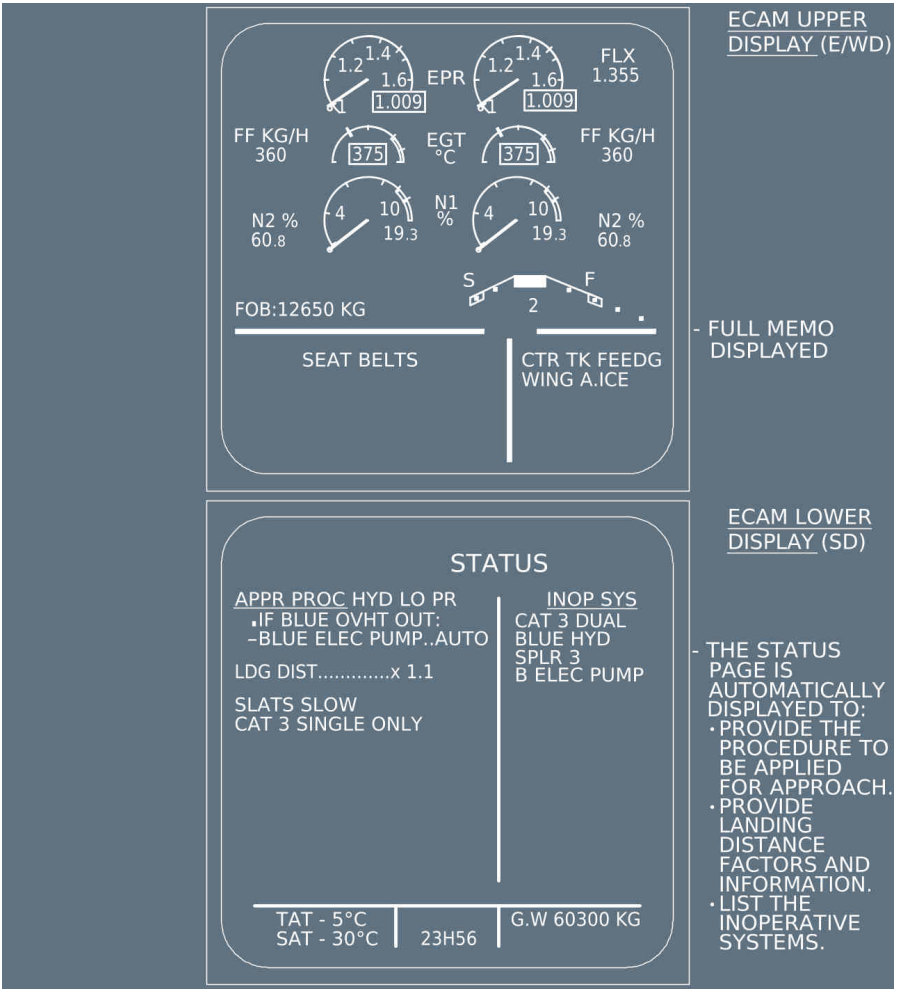
5 - ONE OF THE PILOTS PUSHES THE CLR PUSHBUTTON A SECOND TIME

Ident.: DSC-31-25-20-00001224.0004001 / 09 OCT 12

[8] **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

COCKPIT INDICATIONS

- The ECP's CLR and STS pushbuttons light up.
- The FAULT/OFF lights stay on.
- The E/WD's memo area returns to normal.
- The STATUS page automatically appears on the SD, displaying the procedures for completing the flight with a faulty blue system.


1.2
1.4
1.6
EPR
1.009
FLX
1.355
FF KG/H
360
EGT
°C
375
N2 %
60.8
N1
%
4
10
19.3
S
F
2
FOB:12650 KG
SEAT BELTS
CTR TK FEEDG
WING A.ICE
STATUS
APPR PROC HYD LO PR
.IF BLUE OVHT OUT:
-BLUE ELEC PUMP..AUTO
LDG DIST.....x 1.1
SLATS SLOW
CAT 3 SINGLE ONLY
INOP SYS
CAT 3 DUAL
BLUE HYD
SPLR 3
B ELEC PUMP
TAT - 5°C
SAT - 30°C
23H56
G.W 60300 KG
ECAM UPPER DISPLAY (E/WD)
- FULL MEMO DISPLAYED
ECAM LOWER DISPLAY (SD)
- THE STATUS PAGE IS AUTOMATICALLY DISPLAYED TO:
• PROVIDE THE PROCEDURE TO BE APPLIED FOR APPROACH.
• PROVIDE LANDING DISTANCE FACTORS AND INFORMATION.
• LIST THE INOPERATIVE SYSTEMS.

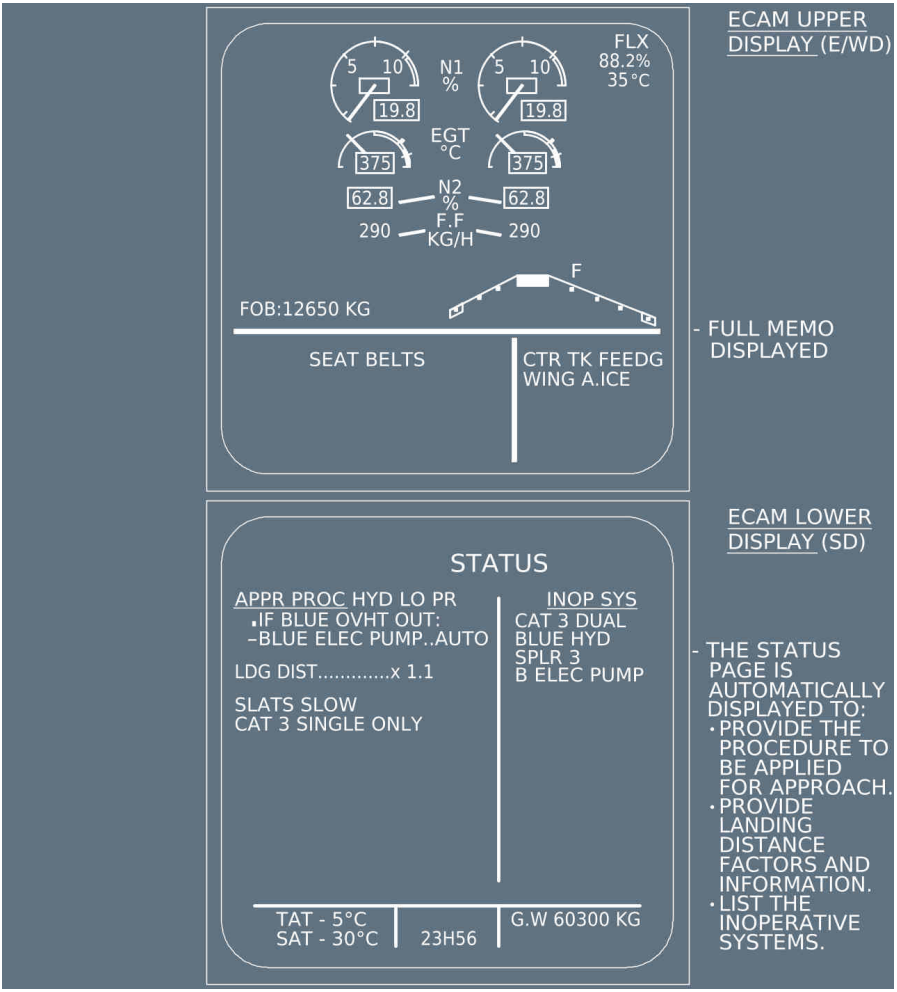
5 - ONE OF THE PILOTS PUSHES THE CLR PUSHBUTTON A SECOND TIME

Ident.: DSC-31-25-20-00001224.0003001 / 09 OCT 12

[9] **Applicable to: MSN 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

COCKPIT INDICATIONS

- The ECP's CLR and STS pushbuttons light up.
- The FAULT/OFF lights stay on.
- The E/WD's memo area returns to normal.
- The STATUS page automatically appears on the SD, displaying the procedures for completing the flight with a faulty blue system.

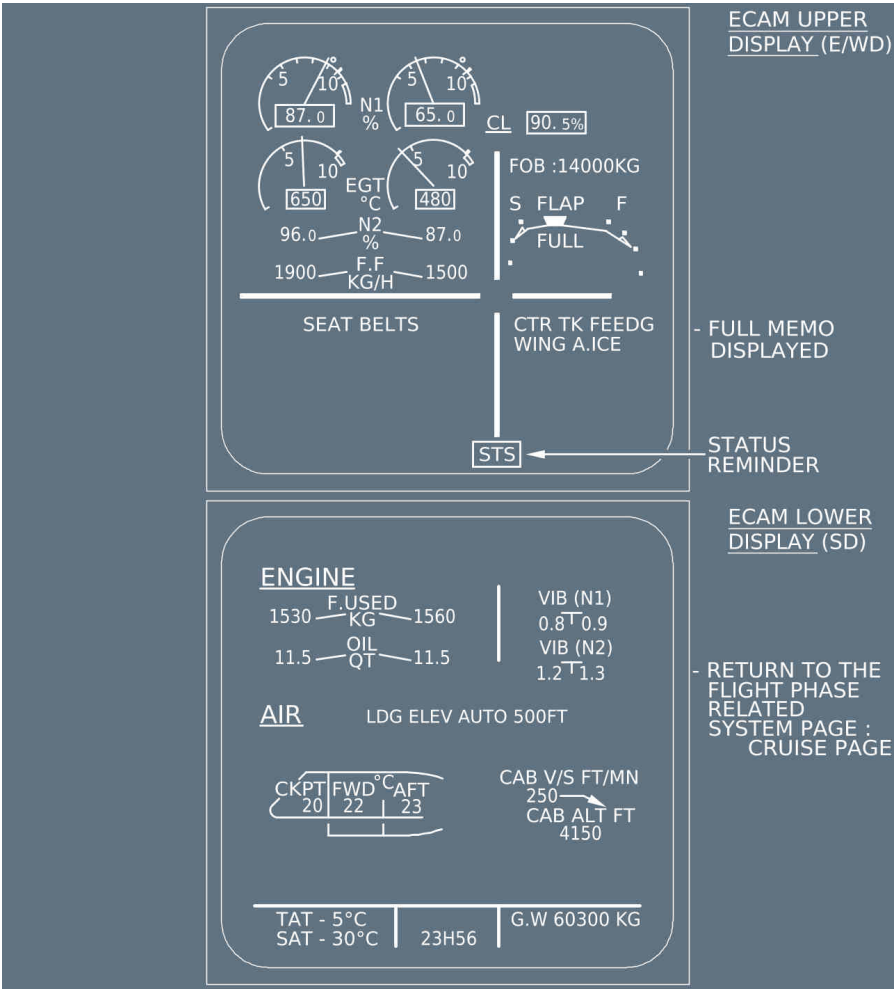

5 10
19.8
N1
%
5 10
19.8
FLX
88.2%
35°C
375
EGT
°C
375
62.8
N2
%
62.8
290
F.F
KG/H
290
F
FOB:12650 KG
SEAT BELTS
CTR TK FEEDG
WING A.ICE
STATUS
APPR PROC HYD LO PR
.IF BLUE OVHT OUT:
-BLUE ELEC PUMP..AUTO
LDG DIST.....x 1.1
SLATS SLOW
CAT 3 SINGLE ONLY
INOP SYS
CAT 3 DUAL
BLUE HYD
SPLR 3
B ELEC PUMP
TAT - 5°C
SAT - 30°C
23H56
G.W 60300 KG
ECAM UPPER DISPLAY (E/WD)
- FULL MEMO DISPLAYED
ECAM LOWER DISPLAY (SD)
- THE STATUS PAGE IS AUTOMATICALLY DISPLAYED TO:
• PROVIDE THE PROCEDURE TO BE APPLIED FOR APPROACH.
• PROVIDE LANDING DISTANCE FACTORS AND INFORMATION.
• LIST THE INOPERATIVE SYSTEMS.

6 - ONE OF THE PILOTS PUSHES THE CLR PUSHBUTTON A THIRD TIME

Ident.: DSC-31-25-20-00001225.0001001 / 09 OCT 12
Applicable to: MSN 01767-01920

COCKPIT INDICATIONS

- The CLR pushbutton light goes off.
- The FAULT/OFF lights stay on.
- A status reminder appears at the bottom of the E/WD.
- The SD automatically displays the system page corresponding to the flight phase.

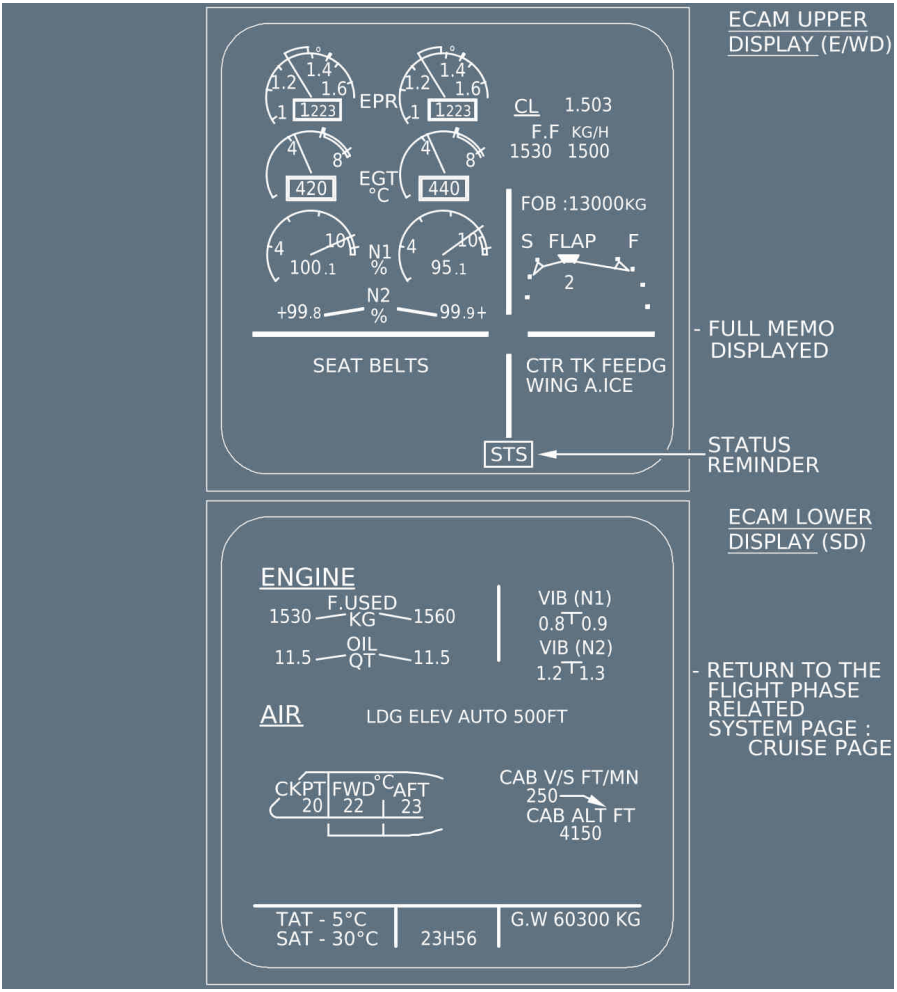

ECAM UPPER DISPLAY (E/WD)
N1 %
87.0
65.0
CL
90.5%
EGT °C
650
480
FOB :14000KG
S FLAP F
FULL
N2 %
96.0
87.0
F.F KG/H
1900
1500
SEAT BELTS
CTR TK FEEDG
WING A.ICE
- FULL MEMO DISPLAYED
STS
STATUS REMINDER
ECAM LOWER DISPLAY (SD)
ENGINE
F.USED KG
1530
1560
OIL QT
11.5
11.5
VIB (N1)
0.8
0.9
VIB (N2)
1.2
1.3
AIR
LDG ELEV AUTO 500FT
CKPT
FWD °C
AFT
20
22
23
CAB V/S FT/MN
250
CAB ALT FT
4150
TAT - 5°C
SAT - 30°C
23H56
G.W 60300 KG
- RETURN TO THE FLIGHT PHASE RELATED SYSTEM PAGE : CRUISE PAGE

6 - ONE OF THE PILOTS PUSHES THE CLR PUSHBUTTON A THIRD TIME

Ident.: DSC-31-25-20-00001225.0002001 / 09 OCT 12
Applicable to: MSN 02108, 02195-02359, 02405, 02482

COCKPIT INDICATIONS

- The CLR pushbutton light goes off.
- The FAULT/OFF lights stay on.
- A status reminder appears at the bottom of the E/WD.
- The SD automatically displays the system page corresponding to the flight phase.


ECAM UPPER DISPLAY (E/WD)
EPR
1.4
1.2
1.6
1
1223
CL 1.503
F.F KG/H
1530 1500
EGT °C
420
440
FOB :13000KG
S FLAP F
2
N1 %
100.1
95.1
N2 %
+99.8
99.9+
SEAT BELTS
CTR TK FEEDG
WING A.ICE
STS
- FULL MEMO DISPLAYED
STATUS REMINDER
ECAM LOWER DISPLAY (SD)
ENGINE
F.USED
1530 KG 1560
OIL
11.5 QT 11.5
VIB (N1)
0.8 0.9
VIB (N2)
1.2 1.3
AIR
LDG ELEV AUTO 500FT
CKPT FWD °C AFT
20 22 23
CAB V/S FT/MN
250
CAB ALT FT
4150
TAT - 5°C
SAT - 30°C
23H56
G.W 60300 KG
- RETURN TO THE FLIGHT PHASE RELATED SYSTEM PAGE : CRUISE PAGE

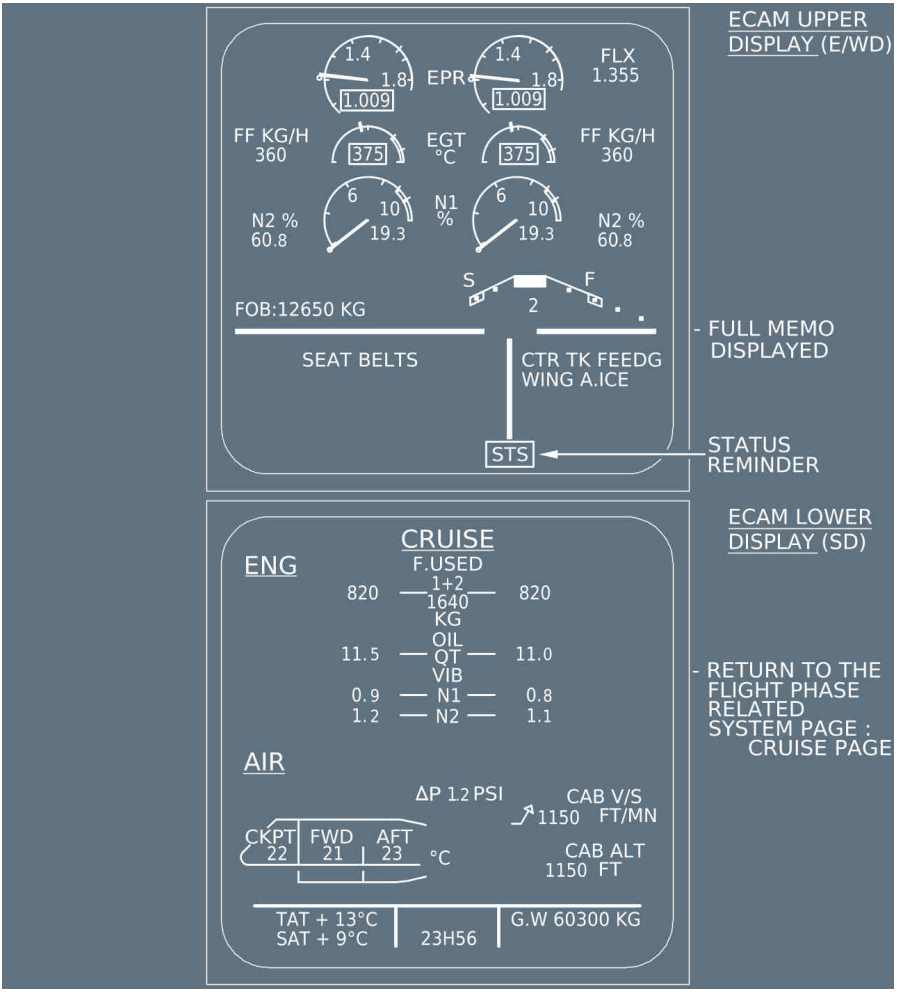
6 - ONE OF THE PILOTS PUSHES THE CLR PUSHBUTTON A THIRD TIME

Ident.: DSC-31-25-20-00001225.0004001 / 09 OCT 12

10 **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

COCKPIT INDICATIONS

- The CLR pushbutton light goes off.
- The FAULT/OFF lights stay on.
- A status reminder appears at the bottom of the E/WD.
- The SD automatically displays the system page corresponding to the flight phase.


ECAM UPPER DISPLAY (E/WD)
1.4
1.8
1.009
EPR
FLX
1.355
FF KG/H
360
375
EGT
°C
N2 %
60.8
6
10
19.3
N1
%
S
F
2
FOB:12650 KG
SEAT BELTS
CTR TK FEEDG
WING A.ICE
STS
- FULL MEMO DISPLAYED
STATUS REMINDER
ECAM LOWER DISPLAY (SD)
CRUISE
ENG
F.USED
1+2
820
1640
KG
OIL
QT
11.5
11.0
VIB
N1
N2
0.9
1.2
0.8
1.1
- RETURN TO THE FLIGHT PHASE RELATED SYSTEM PAGE : CRUISE PAGE
AIR
ΔP 1.2 PSI
CAB V/S
1150 FT/MN
CKPT
FWD
AFT
22
21
23
CAB ALT
1150 FT
TAT + 13°C
SAT + 9°C
23H56
G.W 60300 KG

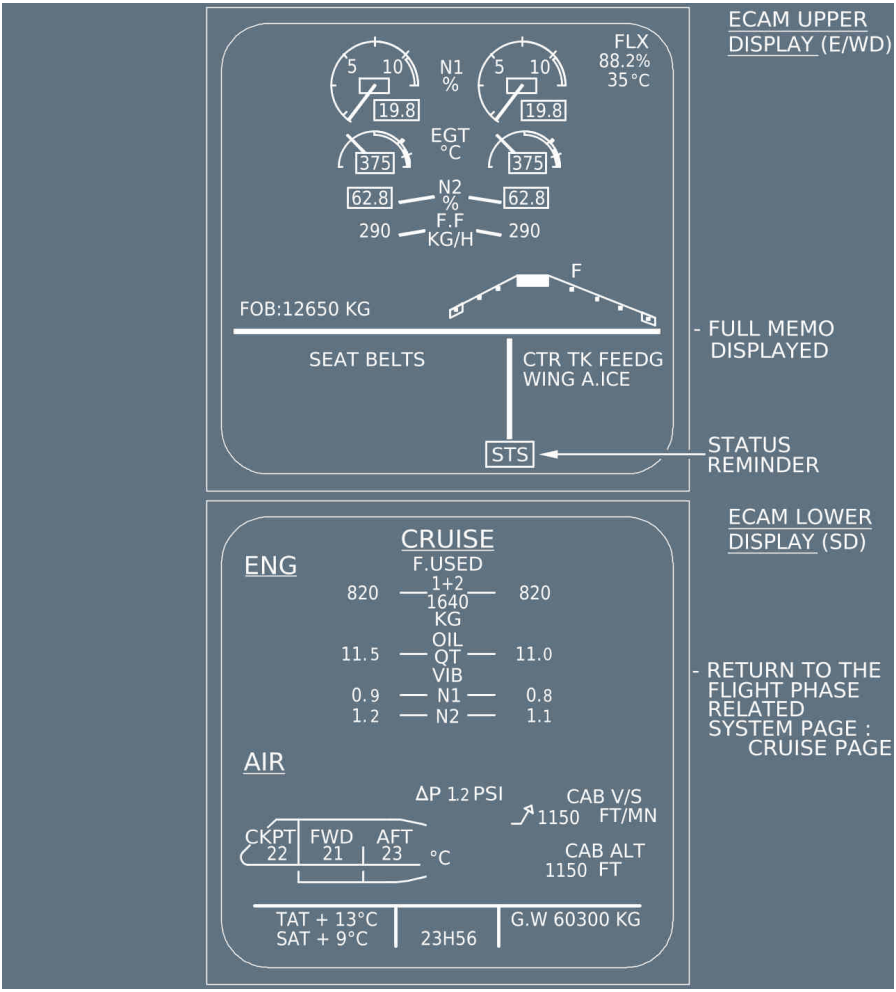
6 - ONE OF THE PILOTS PUSHES THE CLR PUSHBUTTON A THIRD TIME

Ident.: DSC-31-25-20-00001225.0003001 / 09 OCT 12

11 **Applicable to: MSN 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

COCKPIT INDICATIONS

- The CLR pushbutton light goes off.
- The FAULT/OFF lights stay on.
- A status reminder appears at the bottom of the E/WD.
- The SD automatically displays the system page corresponding to the flight phase.


ECAM UPPER DISPLAY (E/WD)
FLX
88.2%
35°C
N1
%
5
10
19.8
EGT
°C
375
N2
%
62.8
F.F
KG/H
290
F
FOB:12650 KG
SEAT BELTS
CTR TK FEEDG
WING A.ICE
STS
- FULL MEMO DISPLAYED
STATUS REMINDER
ECAM LOWER DISPLAY (SD)
CRUISE
ENG
F.USED
1+2
820
1640
KG
OIL
QT
11.5
11.0
VIB
N1
0.9
0.8
N2
1.2
1.1
- RETURN TO THE FLIGHT PHASE RELATED SYSTEM PAGE : CRUISE PAGE
AIR
ΔP 1.2 PSI
CAB V/S
1150 FT/MN
CKPT
FWD
AFT
22
21
23
°C
CAB ALT
1150 FT
TAT + 13°C
SAT + 9°C
23H56
G.W 60300 KG

GENERAL

Ident.: DSC-31-27-00001226.0001001 / 21 MAR 16
Applicable to: ALL

The OEB reminder function provides operational help to the crew by enabling them to clearly identify (on the ECAM) all procedures and status messages affected by an OEB.
When a situation leading to a warning/caution occurs, a message informs the crew in real time that an OEB exists for the displayed warning and/or status and, consequently, that the procedure and/or status presented on the ECAM is not applicable.
Then the crew must refer to the QRH where the correct information is provided.

DESCRIPTION

Ident.: DSC-31-27-00001227.0003001 / 22 MAY 12
Applicable to: ALL

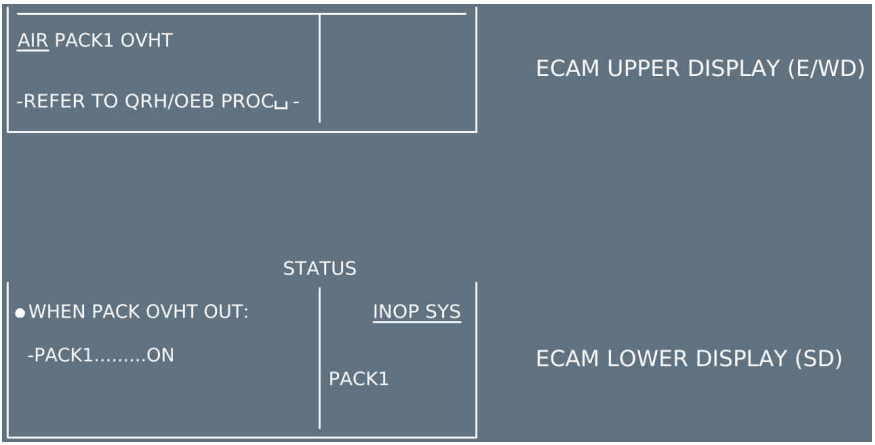
The OEB reminder flag may apply to the:

- ECAM procedure only,
- ECAM procedure and corresponding status messages,
- Status message only.

PROCEDURE ONLY AFFECTED

- The ECAM warning title remains unaltered,
- All corresponding actions are suppressed and replaced by the “REFER TO QRH/OEB PROC” message,
- The related status messages on the ECAM system display remains unaltered.

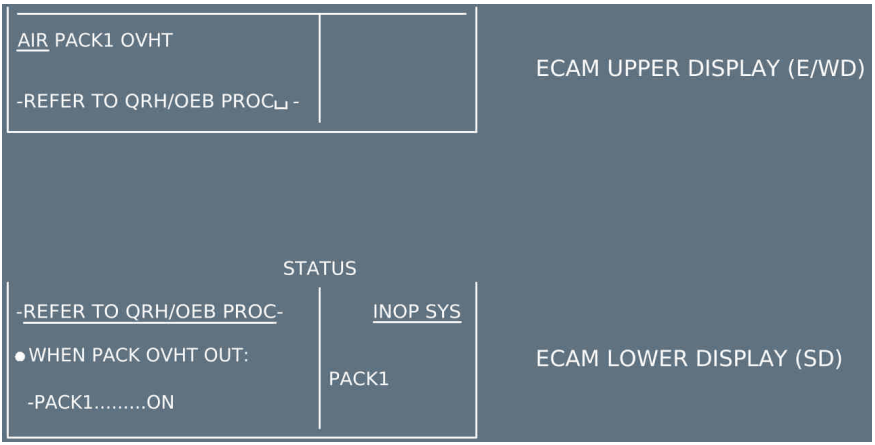
COCKPIT INDICATION



PROCEDURE AND STATUS AFFECTED

- The ECAM warning title remains unaltered,
- All corresponding actions are suppressed and replaced by the “REFER TO QRH/OEB PROC” message,
- The related status messages on the ECAM system display remains unchanged, except for the additional “REFER TO QRH/OEB PROC” title.

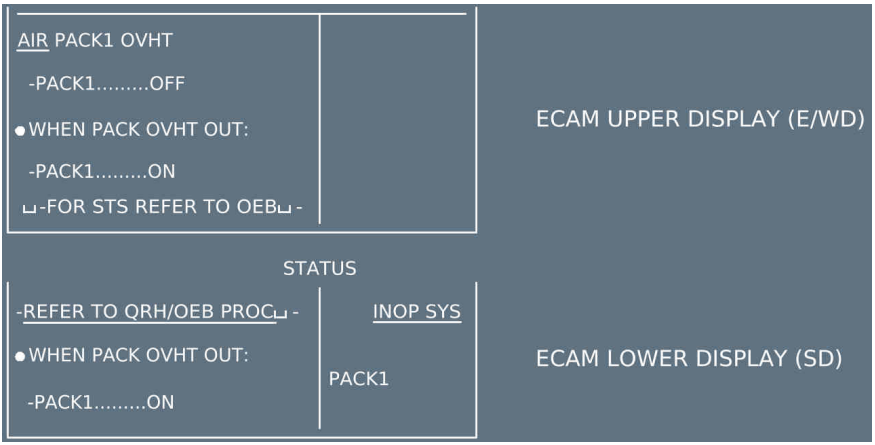
COCKPIT INDICATION



STATUS MESSAGE ONLY AFFECTED

- The ECAM warning title remains unaltered,
- The corresponding procedure remains unchanged, except for the additional “FOR STS REFER TO OEB" line.
- The related status messages on the ECAM system display remains unchanged, except for the additional " REFER TO QRH/OEB PROC" title.

COCKPIT INDICATION



OEB DATABASE

Ident.: DSC-31-27-00001228.0001001 / 21 MAR 16
Applicable to: ALL

The OEB database lists the warnings and cautions affected by an OEB.

The OEB database can be :

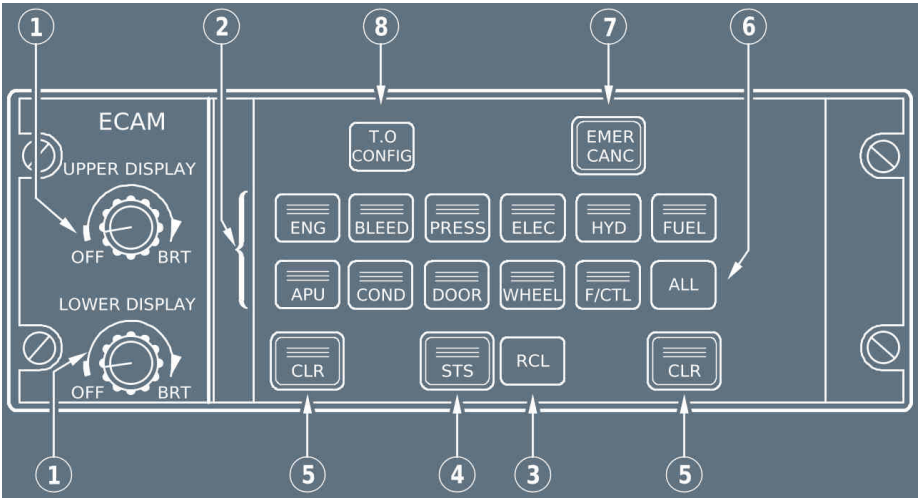
- Loaded manually on the aircraft via the MCDU, and stored in both FWCs.
- Crossloaded from one FWC to the other FWC.
- Updated by entering a code via the MCDU.
- Checked via the MCDU.

Note: *The code provided on the OEB is designed to ensure that the OEB database is not updated before the OEB is available.*

ECAM CONTROL PANEL

Ident.: DSC-31-30-00001229.0002001 / 26 JUL 17

[1] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



(1) OFF / BRT knobs

Used to turn the ECAM DUs on and off, and to control their brightness (automatic adjustment of brightness for ambient light conditions is superimposed on this manual control).

Note: When the pilot turns the UPPER DISPLAY knob to OFF, the engine/warning (E/W) display appears on the lower display unit (automatic transfer).

(2) System page pushbuttons

- Call up the corresponding system pages on the SD
- Light up, when pushed for manual selection, or when an advisory is detected
- Call up the aircraft system page corresponding to the present flight phase or the current warning when pushed a second time.

When only one ECAM display is on, the pilot can display a system page for up to 3 min by pushing and holding the system page pushbutton.

- If an advisory condition arises, the relevant system page is not automatically displayed, but the pushbutton light pulses
- If an ECAM warning is triggered, the relevant system page is not automatically displayed, and the system page pushbutton does not light up.

(3) RCL pb

- When pressed, the E/WD displays all alerts previously cleared via the CLR pb that are still active.
- When pressed for more than 3 s, the E/WD displays:
  - All alerts previously cleared via the CLR pb that are still active
  - All alerts previously cancelled via the EMER CANC pb.

Note: 1. If there is no alert to recall, the "NORMAL" message appears for 3 s on the E/WD.
2. This action on the RCL pb also suppresses the flight phase inhibition function until the next flight phase. As a consequence, all new alerts that should normally be inhibited will be displayed.

(4) STS pb

The pilot pushes this pushbutton to display the STATUS page on the lower SD. The pushbutton remains lit, as long as the SD displays the STS page. If the system has no status messages, the status page displays "NORMAL" for 3 s.
The pilot can clear the STATUS page by pushing the CLR pb, or by pushing the STS pb a second time.

When only one ECAM display is on :

- It displays the STATUS page only when the pilot pushes the STATUS pushbutton and holds it. He can display the next STATUS page, if any, by releasing the pushbutton and pushing it again (before 2 s have elapsed). The new page then appears after a short delay.
- The pilot can keep the STS pb pressed to display the STATUS page for a maximum of 3 min, after which the ECAM automatically displays the engine/warning page.

(5) CLR pb

This pushbutton remains lit as long as the E/WD is displaying a warning or caution message, or a status message on the SD.
If it is lit, pressing it changes the ECAM display.

(6) ALL pb

When this pushbutton is pressed and held down, the SD successively displays all the system pages at 3 s intervals.
If the ECAM control panel fails, the pilot can use this pushbutton to page through the system pages until he comes to the one he wants to look at. He then releases the pushbutton to select that page.

(7) EMER CANC pb

This pushbutton affects the following :

- Warnings :
  - Cancels (stops) an aural warning for as long as the failure condition continues
  - Extinguishes the MASTER WARNINGS lights
  - Does not affect the ECAM message display.
- Cautions :
  - Cancels any present caution (single chime, MASTER CAUTION lights, ECAM message) for the rest of the flight.

The flight crew can press the RCL pb for more than 3 s in order to restore all the alerts previously canceled via the EMER CANC pb.
All the alerts previously canceled via the EMER CANC pb automatically reappear on the E/WD in flight phase 1 or 2, immediately after the alignment of IRs 1 and 2.

Note: This pushbutton should only be used to suppress spurious MASTER CAUTIONS.

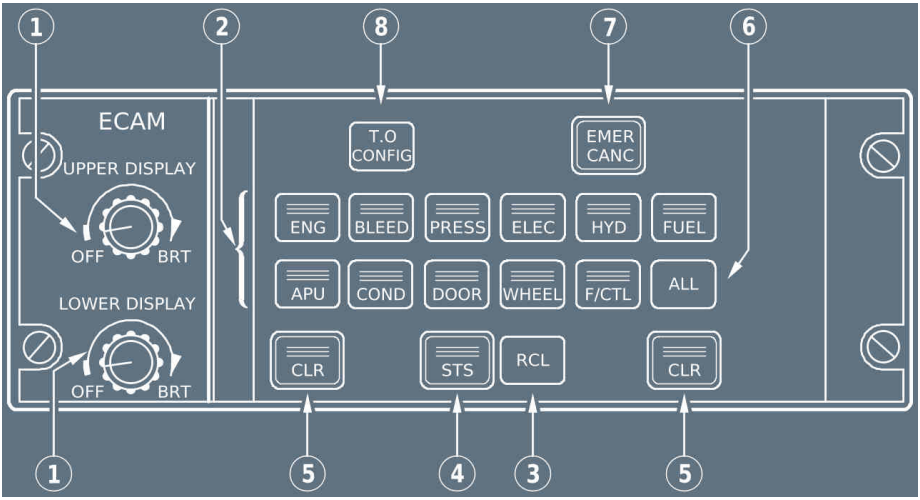
(8) T.O CONFIG pb

This pushbutton simulates the application of takeoff power. This is a test that triggers a warning, if the aircraft is not in takeoff configuration. (*Refer to DSC-31-15 Configuration Warnings*).
If the configuration is correct, the E/WD displays the “TO CONFIG NORMAL” message in the TO MEMO section.

Note: If the ECAM control panel fails, the CLR, RCL, STS, EMER CANC, and ALL pushbuttons remain operative, because their contacts are directly wired to the flight warning and display management computers.

ECAM CONTROL PANEL

Ident.: DSC-31-30-00001229.0001001 / 26 JUL 17
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) <u>OFF / BRT knobs</u>
Used to turn the ECAM DUs on and off, and to control their brightness (automatic adjustment of brightness for ambient light conditions is superimposed on this manual control).

<u>Note:</u> When the pilot turns the UPPER DISPLAY knob to OFF, the engine/warning (E/W) display appears on the lower display unit (automatic transfer).

(2) <u>System page pushbuttons</u>

- Call up the corresponding system pages on the SD
- Light up, when pushed for manual selection, or when an advisory is detected
- Call up the aircraft system page corresponding to the present flight phase or the current warning when pushed a second time.

When only one ECAM display is on, the pilot can display a system page for up to 3 min by pushing and holding the system page pushbutton.

- If an advisory condition arises, the relevant system page is not automatically displayed, but the pushbutton light pulses
- If an ECAM warning is triggered, the relevant system page is not automatically displayed, and the system page pushbutton does not light up.

(3) RCL pb

- When pressed, the E/WD displays all alerts previously cleared via the CLR pb that are still active.
- When pressed for more than 3 s, the E/WD displays:
  - All alerts previously cleared via the CLR pb that are still active
  - All alerts previously cancelled via the EMER CANC pb.

Note: 1. If there is no alert to recall, the "NORMAL" message appears for 3 s on the E/WD.
2. This action on the RCL pb also suppresses the flight phase inhibition function until the next flight phase. As a consequence, all new alerts that should normally be inhibited will be displayed.

(4) STS pb

The pilot pushes this pushbutton to display the STATUS page on the lower SD. The pushbutton remains lit, as long as the SD displays the STS page. If the system has no status messages, the status page displays "NORMAL" for 3 s.
The pilot can clear the STATUS page by pushing the CLR pb, or by pushing the STS pb a second time.

When only one ECAM display is on :

- It displays the STATUS page only when the pilot pushes the STATUS pushbutton and holds it. He can display the next STATUS page, if any, by releasing the pushbutton and pushing it again (before 2 s have elapsed). The new page then appears after a short delay.
- The pilot can keep the STS pb pressed to display the STATUS page for a maximum of 3 min, after which the ECAM automatically displays the engine/warning page.

(5) CLR pb

This pushbutton remains lit as long as the E/WD is displaying a warning or caution message, or a status message on the SD.
If it is lit, pressing it changes the ECAM display.

(6) ALL pb

When this pushbutton is pressed and held down, the SD successively displays all the system pages at one-second intervals.
If the ECAM control panel fails, the pilot can use this pushbutton to page through the system pages until he comes to the one he wants to look at. He then releases the pushbutton to select that page.

(7) EMER CANC pb

This pushbutton affects the following :

- Warnings :
  - Cancels (stops) an aural warning for as long as the failure condition continues
  - Extinguishes the MASTER WARNINGS lights
  - Does not affect the ECAM message display.
- Cautions :
  - Cancels any present caution (single chime, MASTER CAUTION lights, ECAM message) for the rest of the flight.

The flight crew can press the RCL pb for more than 3 s in order to restore all the alerts previously canceled via the EMER CANC pb.
All the alerts previously canceled via the EMER CANC pb automatically reappear on the E/WD in flight phase 1 or 2, immediately after the alignment of IRs 1 and 2.

Note: This pushbutton should only be used to suppress spurious MASTER CAUTIONS.

(8) T.O CONFIG pb

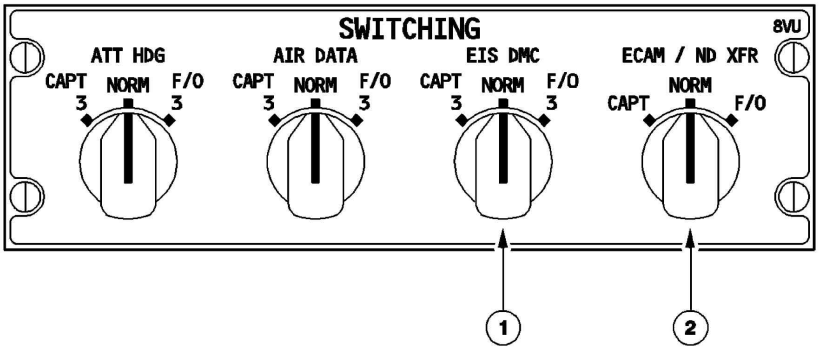
This pushbutton simulates the application of takeoff power. This is a test that triggers a warning, if the aircraft is not in takeoff configuration. (*Refer to DSC-31-15 Configuration Warnings*).
If the configuration is correct, the E/WD displays the “TO CONFIG NORMAL” message in the TO MEMO section.

Note: If the ECAM control panel fails, the CLR, RCL, STS, EMER CANC, and ALL pushbuttons remain operative, because their contacts are directly wired to the flight warning and display management computers.

SWITCHING PANEL

Ident.: DSC-31-30-00001230.0001001 / 17 MAR 11
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

ON PEDESTAL



(1) EIS DMC rotsel

NORM : DMC 1 drives the CAPT's PFD, the CAPT's ND, and the upper ECAM DU. DMC 2 drives the F/O's PFD and the F/O's ND, .and the lower ECAM DU

CAPT 3 : DMC 3 replaces DMC 1.

F/O 3 : DMC 3 replaces DMC 2.

Note: If a DMC fails, each of its associated DUs displays a diagonal line.

(2) ECAM/ND XFR rostel

Transfers the system/status display to either the Captain's or the First Officer's ND.

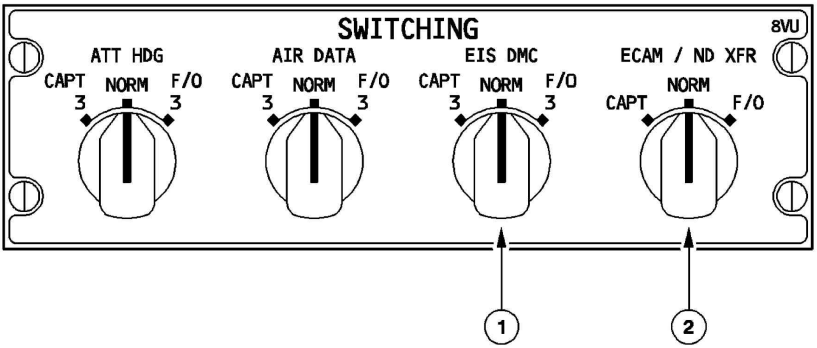
Note: If both ECAM DUs (E/WD and SD) fail, the flight crew can use this switch to transfer the E/WD display to either navigation display.

SWITCHING PANEL

Ident.: DSC-31-30-00001230.0002001 / 17 MAR 11

[2] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

ON PEDESTAL



(1) EIS DMC rotary selector

NORM : DMC 1 supplies the CAPT's PFD, the CAPT's ND, and the ECAM's DUs.
DMC 2 supplies the F/O's PFD and the F/O's ND.

CAPT 3 : DMC 3 replaces DMC 1.

F/O 3 : DMC 3 replaces DMC 2.

Note: If a DMC fails, each of its associated DUs displays an "INVALID DATA" message.

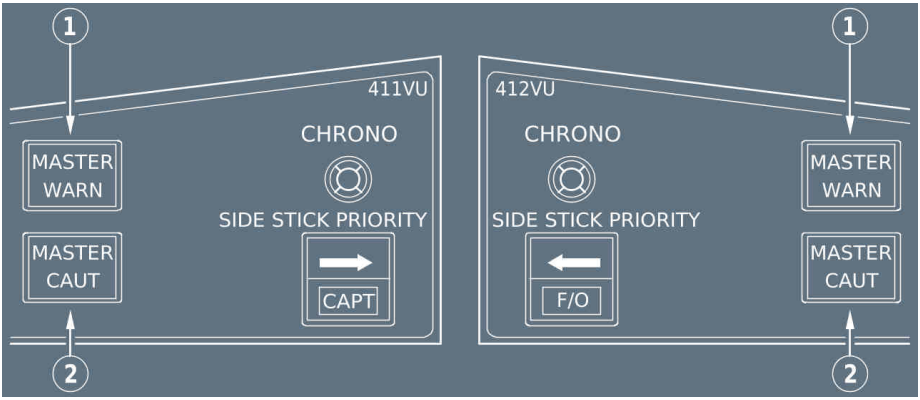
(2) ECAM/ND XFR rotary selector

Transfers the system/status display to either the Captain's or the First Officer's ND.
The "ECAM ON ND" message is displayed on the lower ECAM display.

Note: If both ECAM DUs (E/WD and SD) fail, the flight crew may use this switch to transfer the E/WD display to either navigation display. In this case, the "ECAM ON ND" message is not displayed.

ATTENTION GETTERS

Ident.: DSC-31-30-00001231.0001001 / 09 OCT 12
Applicable to: ALL



(1) MASTER WARN lights

- Flash red for level 3 warning
- Accompanied by an aural warning (continuous repetitive chime, specific sounds or synthetic voice).

(2) MASTER CAUT lights

- Light up steady amber for a level 2 caution
- Accompanied by a single chime.

These lights go out when :

- One pilot presses the light (except for some red warnings, such as the overspeed and stall warnings)
- The warning/caution situation is over
- The pilot presses the CLR pb on the ECAM control panel (except for some red warnings, such as the overspeed and stall warnings).
- The pilot presses the EMER CANC pb on the ECAM control panel.

The aural warnings cease when :

- One pilot presses the MASTER WARN light (except for some red warnings, such as the overspeed and stall warnings)
- The warning situation is over
- The pilot presses the EMER CANC pb on the ECAM control panel.

MEMO DISPLAY

Ident.: DSC-31-30-00018053.0001001 / 21 MAR 16
Applicable to: ALL

SWITCHING PNL : This memo appears in green, when:

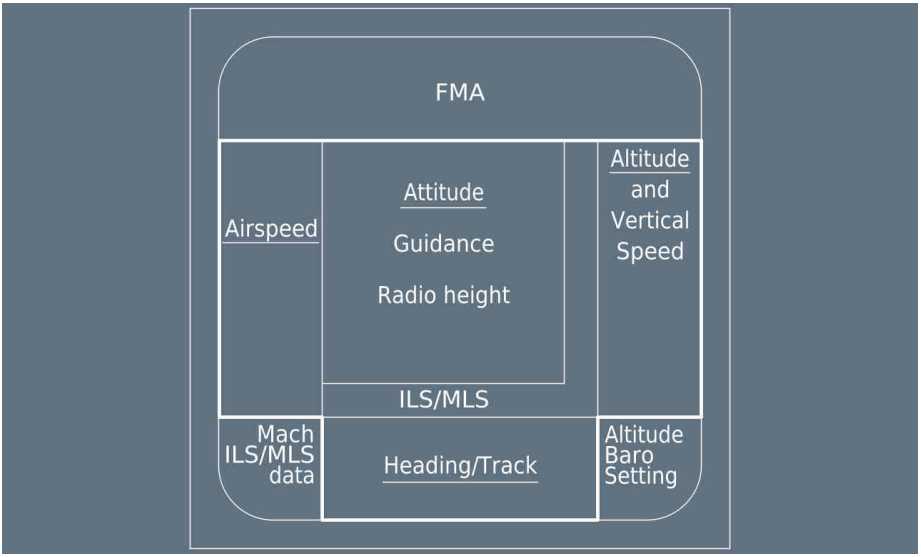
1. PFD/ND XFR pb is pressed and ECAM/ND XFR rotary selector is selected at CAPT or F/O side simultaneously, or
2. ATT HDG rotary selector is selected at CAPT or F/O side, or
3. AIR DATA rotary selector is selected at CAPT or F/O side, or
4. EIS DMC rotary selector is selected at CAPT or F/O side.

GENERAL

Ident.: DSC-31-40-00017531.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

The Primary Flight Display (PFD) provides the following information to the flight crew:

- Attitude and guidance
- Airspeed
- Altitude (BARO and radio) and vertical speed
- Heading and track
- FMGS modes (Flight Mode Annunciator)
- Vertical and lateral deviations
- Radio navigation information (ILS, MLS, DME).



The FWC monitors main parameters such as attitude, heading, and altitude. For more information, *Refer to DSC-31-40 Flags and Messages Displayed on PFD*.

Note: *A grey background appears on the speed, the heading vertical speed, and the altitude speed scales of the PFD. If the Primary Flight Display (PFD) Unit temperature exceeds a defined threshold, the grey background disappears, in order to limit power consumption and prevent a DU overheat. Any additional increase in temperature will lead to a complete cut off of the power supply to this display unit.*

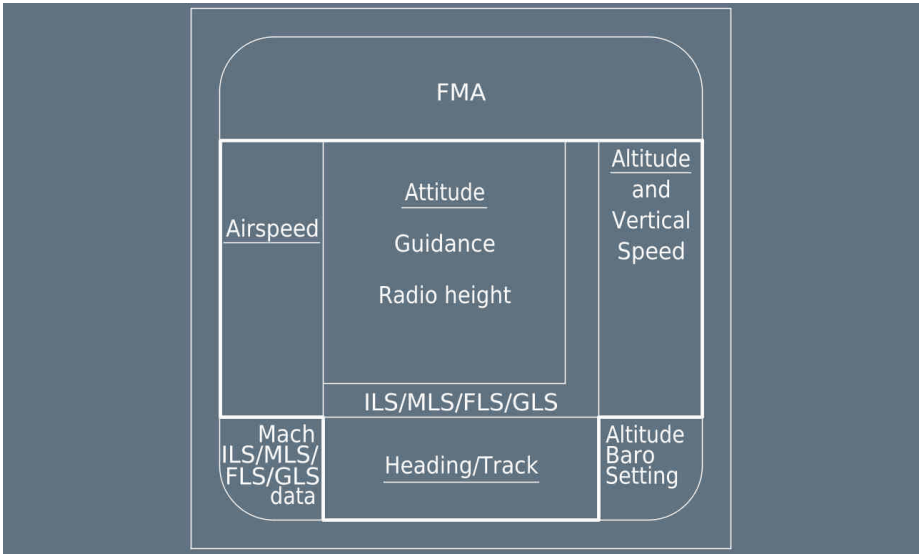
GENERAL

Ident.: DSC-31-40-00017531.0003001 / 21 MAR 16

1 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

The Primary Flight Display (PFD) provides the following information to the flight crew:

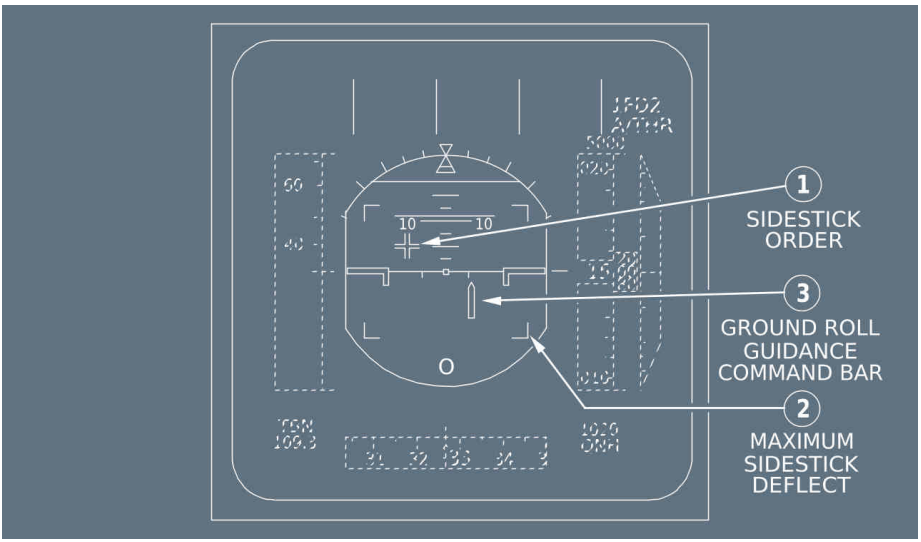
- Attitude and guidance
- Airspeed
- Altitude (BARO and radio) and vertical speed
- Heading and track
- FMGS modes (Flight Mode Annunciator)
- Vertical and lateral deviations
- Radio navigation information (ILS, MLS ◁✠ , FLS ◁✠ , GLS ◁✠ , DME).



The FWC monitors main parameters such as attitude, heading, and altitude. For more information, *Refer to DSC-31-40 Flags and Messages Displayed on PFD*.

SPECIFIC GROUND INDICATIONS

Ident.: DSC-31-40-00001233.0001001 / 13 JAN 14
Applicable to: ALL



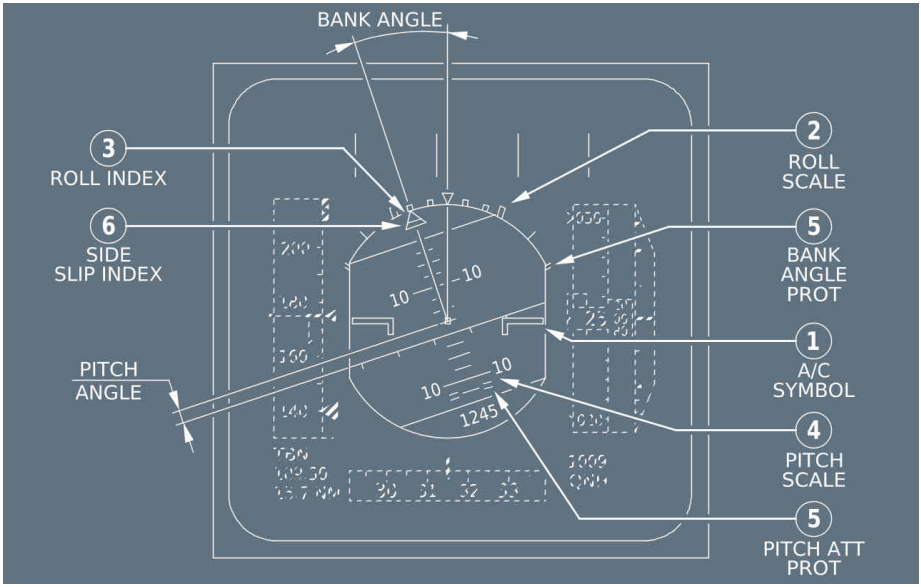
(1) Sidestick order indication
This symbol is in white, and appears as soon as one engine is started.
It indicates the total of the Captain's and First Officer's sidestick orders (shown here as left wing down, pitch up).

(2) Max Sidestick Deflection
This symbol is in white, and appears as soon as one engine is started.

(3) Ground Roll Guidance Command Bar
This symbol is in green, and appears when the aircraft is on ground, or below 30 ft radio height, provided that a localizer signal is available. It indicates the Flight Director yaw orders, to maintain the aircraft on the runway centerline.

ATTITUDE DATA

Ident.: DSC-31-40-00001234.0002001 / 09 OCT 12
Applicable to: MSN 02195, 02482



(1) Fixed Aircraft Symbol
This symbol is in black, and outlined in yellow. The yellow outline is dimmed if the flight crew selects TRK-FPA, unless the FMA is in TOGA or FLX mode.

(2) Roll Scale
This scale is in white, and has markers at 0, 10, 20, 30, and 45 ° of bank.

(3) Roll Index (yellow)
This pointer indicates the bank angle. When the bank angle exceeds 45 °, all the PFD symbols, except those for attitude, speed, heading, altitude, and vertical speed, disappear. The display returns to normal when the bank angle decreases below 40 °.

(4) Pitch Scale (white)
This scale has markers every 10 ° between 80 ° nose up and 80 ° nose down (every 2.5 ° between 10 ° nose down and 30 ° nose up). When pitch angle exceeds 25 ° nose up or 13 ° nose down, all the PFD displays except attitude, speed, speed trend, heading, altitude, and vertical speed disappear. Beyond 30 °, large red arrowheads indicate that the attitude has

become excessive and show the direction to move the nose in order to reduce it. The display returns to normal when pitch angle becomes less than 22 ° nose up or 10 ° nose down.

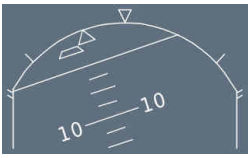
(5) Flight Control Protection Symbols

The display shows these symbols (=) in green:
- On the roll scale to mark the bank angle protection availability.
- On the pitch scale at 15 ° nose down or 30 ° nose up to mark the pitch limits.

An amber x replaces these symbols if the corresponding protection is lost.
(*Refer to DSC-27-20-10-20 Protections - General*)

(6) Sideslip Index (yellow)

This trapezoidal index moves beneath the roll index. On the ground it represents the lateral acceleration of the aircraft: In flight it shows sideslip (as computed by the FAC). One centimeter of displacement indicates 0.2 g. The sideslip index is against its stop at 0.3 g.



In case of engine failure at takeoff or go around, the sideslip index changes from yellow to blue.

Note: *The sideslip target is blue, if:*
- *CONF 1, 2, or 3 is selected, and*
- *Any ENG EPR > 1.25, and*
- *The difference between the ENG EPR's exceeds 0.25.*

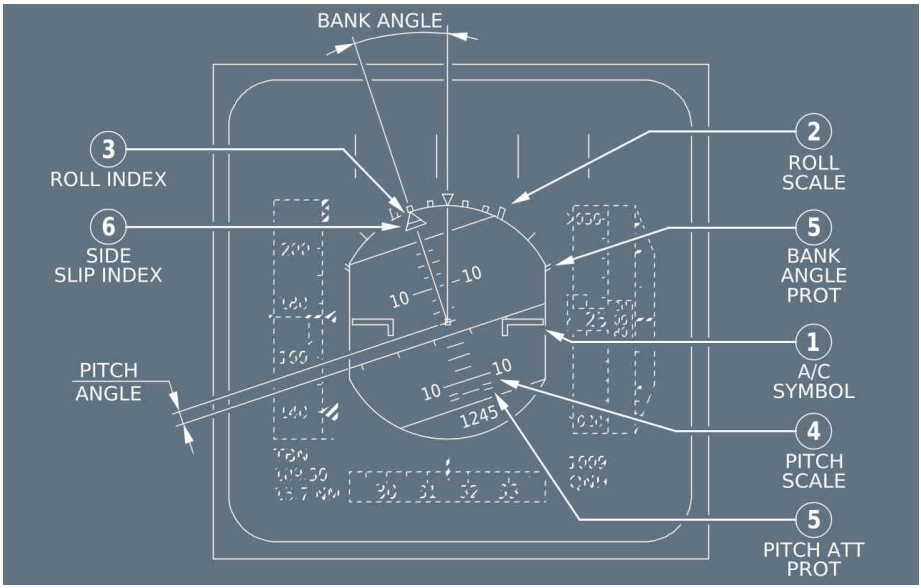
In this case the sideslip index is called β target.

When this index is centered with the roll index, the sideslip equals the sideslip target for optimum aircraft performance.

ATTITUDE DATA

Ident.: DSC-31-40-00001234.0004001 / 09 OCT 12

[2] **Applicable to: MSN 01957-02139, 02204-02359, 02405-02457, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**



(1) Fixed Aircraft Symbol
This symbol is in black, and outlined in yellow. The yellow outline is dimmed if the flight crew selects TRK-FPA, unless the FMA is in TOGA or FLX mode.

(2) Roll Scale
This scale is in white, and has markers at 0, 10, 20, 30, and 45 ° of bank.

(3) Roll Index (yellow)
This pointer indicates the bank angle. When the bank angle exceeds 45 °, all the PFD symbols except those for attitude, speed, heading, altitude, and vertical speed, disappear. The display returns to normal when the bank angle decreases below 40 °.

(4) Pitch Scale (white)
This scale has markers every 10 ° between 80 ° nose up and 80 ° nose down (every 2.5 ° between 10 ° nose down and 30 ° nose up). When pitch angle exceeds 25 ° nose up or 13 ° nose down, all the PFD displays except attitude, speed, speed trend, heading, altitude, and vertical speed disappear. Beyond 30 °, large red arrowheads indicate that the attitude has

become excessive and show the direction to move the nose in order to reduce it. The display returns to normal when pitch angle becomes less than 22 ° nose up or 10 ° nose down.

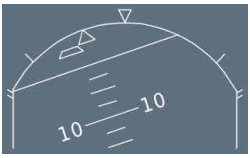
(5) Flight Control Protection Symbols

The display shows these symbols (=) in green:
- On the roll scale to mark the bank angle protection availability.
- On the pitch scale at 15 ° nose down or 30 ° nose up to mark the pitch limits.

An amber x replaces these symbols if the corresponding protection is lost.
(*Refer to DSC-27-20-10-20 Protections - General*)

(6) Sideslip Index (yellow)

This trapezoidal index moves beneath the roll index. On ground, it represents the lateral acceleration of the aircraft. In flight, it shows sideslip (as computed by the FAC). One centimeter of displacement indicates 0.2 g. The sideslip index is against its stop at 0.3 g.



In case of engine failure at takeoff or go around, the sideslip index changes from yellow to blue.

Note: *The sideslip target is blue, if:*
- *CONF 1, 2, or 3 is selected, and*
- *Any ENG EPR > 1.25 or one Thrust Lever > MCT (≥ FLX if FLX or DERATED TO), and*
- *The difference between the ENG EPR's exceeds 0.25.*

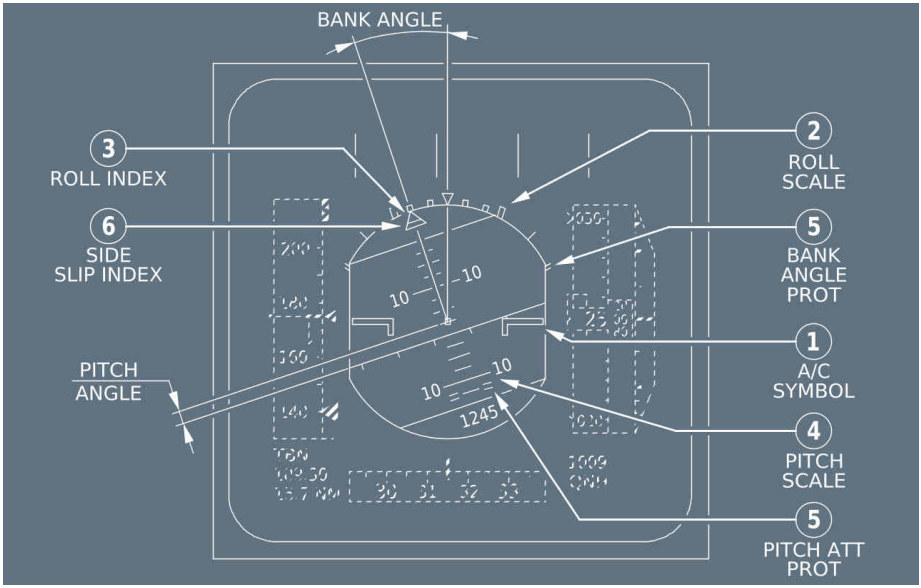
In this case, the sideslip index is called β target.

When this index is centered with the roll index, the sideslip equals the sideslip target for optimum aircraft performance.

ATTITUDE DATA

Ident.: DSC-31-40-00001234.0003001 / 09 OCT 12

[3] **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**



(1) Fixed Aircraft Symbol
This symbol is in black, and outlined in yellow. The yellow outline is dimmed if the crew selects TRK-FPA, unless the FMA is in the TOGA or FLX mode.

(2) Roll Scale
This scale is in white, and has markers at 0, 10, 20, 30, and 45 ° of bank.

(3) Roll Index (yellow)
This pointer indicates the bank angle. When the bank angle exceeds 45 °, all the PFD symbols, except those for attitude, speed, heading, altitude, and vertical speed, disappear. The display returns to normal when the bank angle decreases below 40 °.

(4) Pitch Scale (white)
This scale has markers every 10 ° between 80 ° nose up and 80 ° nose down (every 2.5 ° between 10 ° nose down and 30 ° nose up). When pitch angle exceeds 25 ° nose up or 13 ° nose down, all the PFD displays except attitude, speed, speed trend, heading, altitude, and vertical speed disappear. Beyond 30 °, large red arrowheads indicate that the attitude has

become excessive and show the direction to move the nose in order to reduce it. The display returns to normal when pitch angle becomes less than 22 ° nose up or 10 ° nose down.

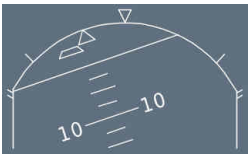
(5) Flight Control Protection Symbols

The display shows these symbols (=) in green:
- On the roll scale to mark the bank angle protection availability.
- On the pitch scale at 15 ° nose down or 30 ° nose up to mark the pitch limits.

An amber x replaces these symbols if the corresponding protection is lost.
(*Refer to DSC-27-20-10-20 Protections - General*)

(6) Sideslip Index (yellow)

This trapezoidal index moves beneath the roll index. On ground, it represents the lateral acceleration of the aircraft. In flight, it shows sideslip (as computed by the FAC). One centimeter of displacement indicates 0.2 g. The sideslip index is against its stop at 0.3 g.



In case of engine failure at takeoff or go around, the sideslip index changes from yellow to blue.

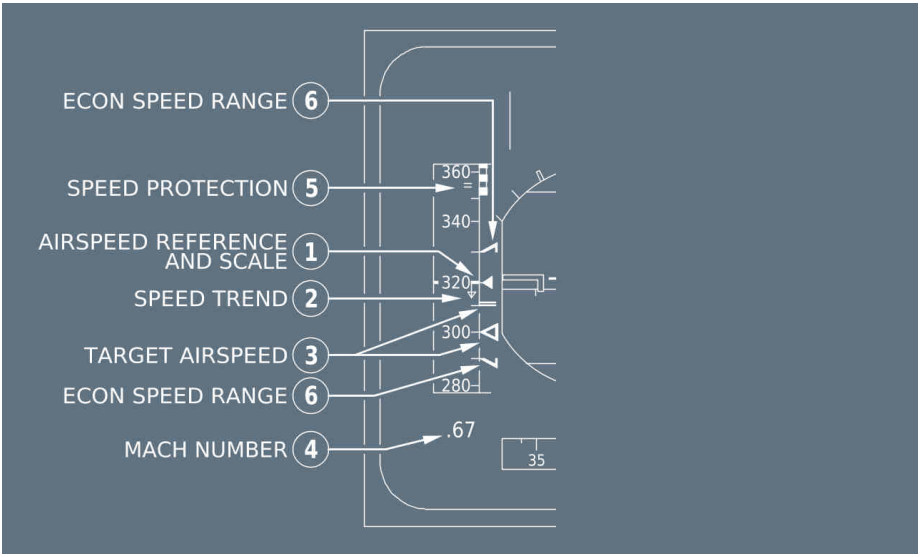
Note: *The sideslip target is blue, if:*
- *CONF 1, 2, or 3 is selected, and*
- *Any ENG N1 > 80 %or one Thrust Lever > MCT (≥ FLX if FLX or DERATED TO), and*
- *The difference between the ENG N1's exceeds 35 %.*

In this case, the sideslip index is called β target.

When this index is centered with the roll index, the sideslip equals the sideslip target for optimum aircraft performance.

AIRSPEED

Ident.: DSC-31-40-00001235.0002001 / 21 MAR 17
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) Actual Airspeed Reference Line and Scale
A white scale on a grey background moves in front of a fixed yellow reference line next to a yellow triangle to show airspeed. The minimum airspeed indication is 30 kt.

(2) Speed Trend (yellow)
This pointer starts at the speed symbol. The tip shows the speed the aircraft will reach in 10 s if its acceleration remains constant. The pointer appears only when it is greater than 2 kt and disappears when it is less than 1 kt.
It also disappears, if the FACs fail.

(3) Target Airspeed (magenta or blue)
This symbol gives the target airspeed or the airspeed corresponding to the target Mach number.
The target airspeed is the airspeed computed by FMGC in managed speed mode (magenta) or entered manually on the FCU for selected speed mode (blue). The target speed is a magenta double bar (=) when associated with the ECON speed range.
Otherwise it is a triangle (magenta or blue).

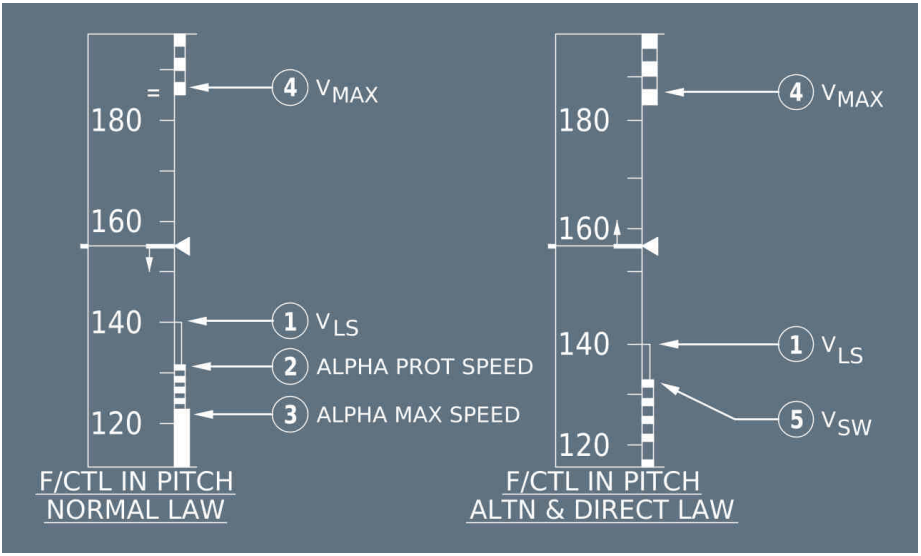
When the target speed is off the speed scale, its value is displayed as numbers below or above the speed scale.

(4) Mach Number (green)
This is displayed when it is greater than 0.5.

(5) Speed Protection (green)
This symbol indicates the speed (VMO +6 kt or MMO +0.01) at which overspeed protection becomes active (*Refer to DSC-27-20-10-20 Protections - General*).

(6) ECON Speed Range (magenta)

In descent mode with the ECON/AUTO SPD mode active, these two half triangles replace the selected speed symbol. It shows the upper and lower limits calculated by the FMGC:
- The upper speed is target speed +20 kt, limited to VMAX or VMO -3 kt or MMO -0.006, whichever is lowest.
  If a speed limit or a speed constraint applies, the upper margin is limited to ECON SPD +5 kt
- The lower speed margin is the target speed -20 kt, limited to green dot, F, S, or VLS, whichever is higher.



(1) Minimum Selectable Speed (VLS)
The top of the amber strip along the speed scale indicates this speed. It represents the lowest selectable speed providing an appropriate margin to the stall speed. (*Refer to DSC-27-20-10-20 Protections - High Speed Protection*)
VLS information is inhibited from touchdown until 10 s after liftoff.

(2) Alpha Protection Speed
The top of a black and amber strip along the speed scale indicates this speed.
It represents the speed corresponding to the angle of attack at which alpha protection becomes active (*Refer to DSC-27-20-10-20 Protections - General*).
It is displayed when in pitch normal law.

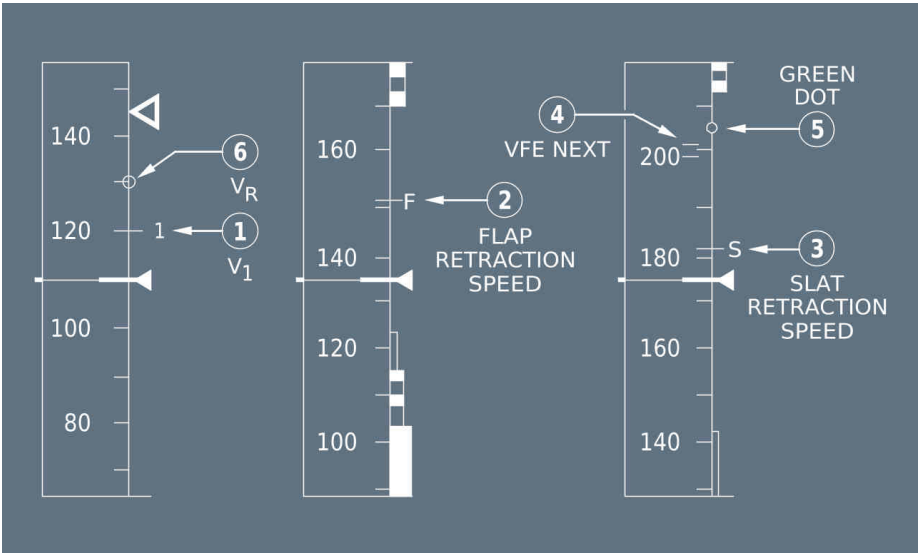
(3) Alpha MAX Speed
The top of a red strip along the speed scale indicates this speed. It represents the speed corresponding to the maximum angle of attack that the aircraft can attain in pitch normal law (*Refer to DSC-27-20-10-20 Protections - General*).
It is displayed when in pitch normal law.

(4) VMAX
The lower end of a red and black strip along the speed scale defines this speed.

It is the lowest of the following:
- VMO or the speed corresponding to MMO
- VLE
- VFE

(*Refer to DSC-27-20-10-20 Protections - High Speed Protection*)

(5) Stall Warning Speed (VSW)
The top of a red and black strip along the speed scale defines this speed.
It is the speed corresponding to the stall warning. (*Refer to DSC-27-20-10-20 Protections - General*).
VSW information is inhibited from touchdown until 5 s after liftoff.
It is displayed when operating in pitch alternate or pitch direct law.



(1) Decision Speed (V1)
This is a blue symbol (numeral one) that the crew manually inserts via the MCDU. When it is off the scale, the upper part of the scale shows it in numbers.
It disappears after liftoff (*Refer to DSC-22_10-50-50 Other Speeds*).

(2) Minimum Flap Retraction Speed
This is a green symbol (letter F).
It appears when the flap selector is in position 3 or 2. (*Refer to DSC-27-20-10-20 Protections - High Speed Protection*).

(3) Minimum Slat Retraction Speed
This is a green symbol (letter S).
It appears when the flap selector is in position 1. (*Refer to DSC-27-20-10-20 Protections - High Speed Protection*).

(4) VFE NEXT
The VFE next symbol is an amber equal sign showing the VFE corresponding to the next flap lever position.
It appears when the aircraft altitude is below 15 000 ft or 20 000 ft, depending upon the FAC standard (*Refer to DSC-22_10-50-30 Limit Speeds*).

(5) Green Dot (Engine-out operating speed in clean configuration)
This green dot appears, when the aircraft is flying in the clean configuration.

It shows the speed corresponding to the best lift-to-drag ratio.

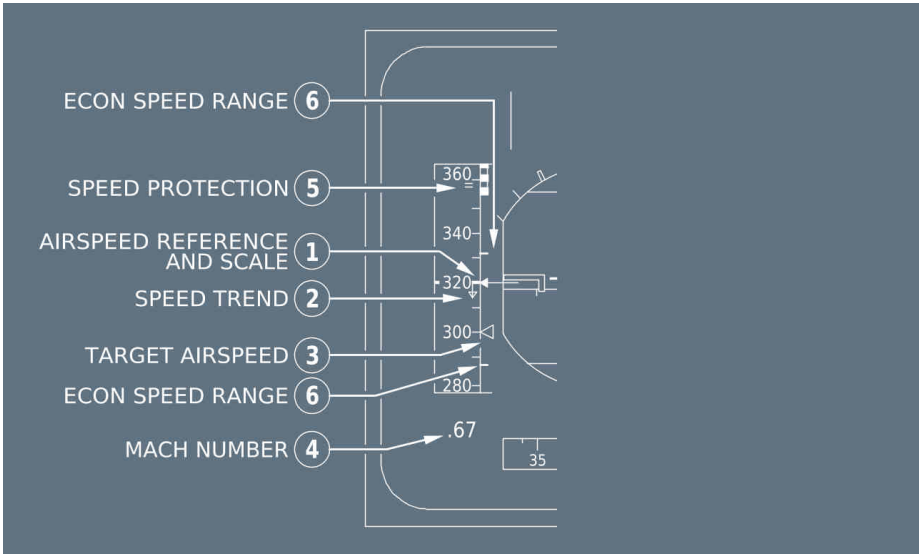
(6) Rotation speed: (VR)
VR is entered on the PERF takeoff page of the MCDU, and is indicated by a cyan circle.
This cyan circle is visible during takeoff.

Note: V2 is represented by the target speed index during takeoff.
V2 is manually inserted by the crew via the MCDU.

AIRSPEED

Ident.: DSC-31-40-00001235.0004001 / 21 MAR 17

4 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



(1) Actual Airspeed Reference Line and Scale
A white scale, on a grey background, moves in front of a fixed yellow reference line (next to a yellow triangle) to indicate airspeed. The minimum airspeed indication is 30 kt.

(2) Speed Trend (yellow)
This pointer starts at the speed symbol. The tip indicates the speed the aircraft will reach in 10 s, if its acceleration remains constant. The pointer only appears, when it is greater than 2 kt, and disappears when it is less than 1 kt.
It also disappears, if the FACs fail.

(3) Target Airspeed (magenta or blue)

This symbol gives the target airspeed, or the airspeed corresponding to the target Mach number.

The target airspeed is the airspeed computed by FMGC in managed speed mode (magenta), or the airspeed manually entered on the FCU in selected speed mode (blue). The target speed is indicated by a magenta or blue triangle.

When the target speed is off the speed scale, its value is displayed as numbers, either above or below the speed scale.

(4) Mach Number (green)

It is displayed, when it is greater than0.5.

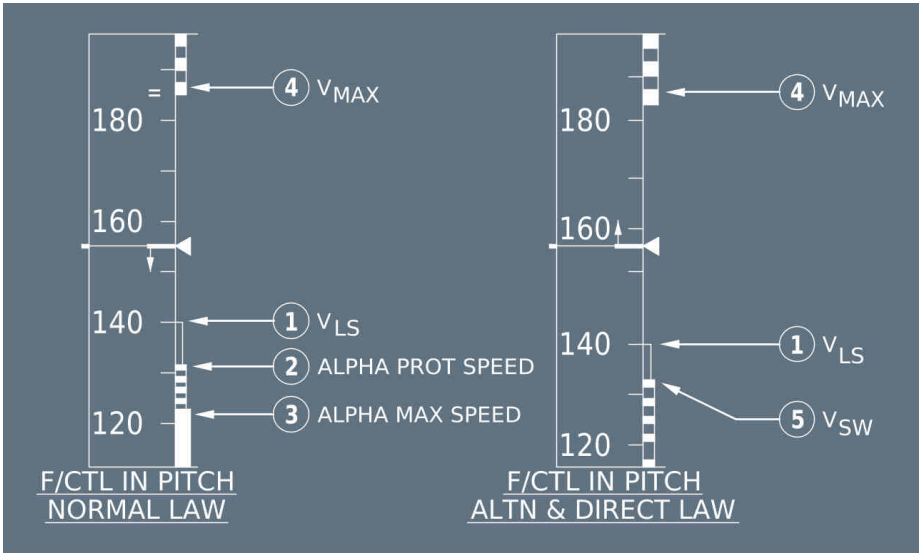
(5) Speed Protection (green)

This symbol indicates the speed (VMO +6 kt or MMO +0.01) at which overspeed protection becomes active (*Refer to DSC-27-20-10-20 Protections - General*).

(6) ECON Speed Range (magenta)

In descent mode with the ECON/AUTO SPD mode active, these two thick lines replace the selected speed symbol. It shows the upper and lower limits, calculated by the FMGC.

- The upper speed is target speed +20 kt, limited to VMAX or VMO -3 kt or MMO -0.006, whichever is lowest.
  If a speed limit or a speed constraint applies, the upper margin is limited to ECON SPD +5 kt.
- The lower speed margin is the target speed -20 kt, limited to green dot, F, S, or VLS, whichever is higher.



(1) Minimum Selectable Speed (VLS)
The top of the amber strip along the speed scale indicates this speed. It represents the lowest selectable speed providing an appropriate margin to the stall speed. (*Refer to DSC-27-20-10-20 Protections - High Speed Protection*)
VLS information is inhibited from touchdown until 10 s after liftoff.

(2) Alpha Protection Speed
The top of a black and amber strip along the speed scale indicates this speed.
It represents the speed corresponding to the angle of attack at which alpha protection becomes active (*Refer to DSC-27-20-10-20 Protections - General*).
It is displayed when in pitch normal law.

(3) Alpha MAX Speed
The top of a red strip along the speed scale indicates this speed. It represents the speed corresponding to the maximum angle of attack that the aircraft can attain in pitch normal law (*Refer to DSC-27-20-10-20 Protections - General*).
It is displayed when in pitch normal law.

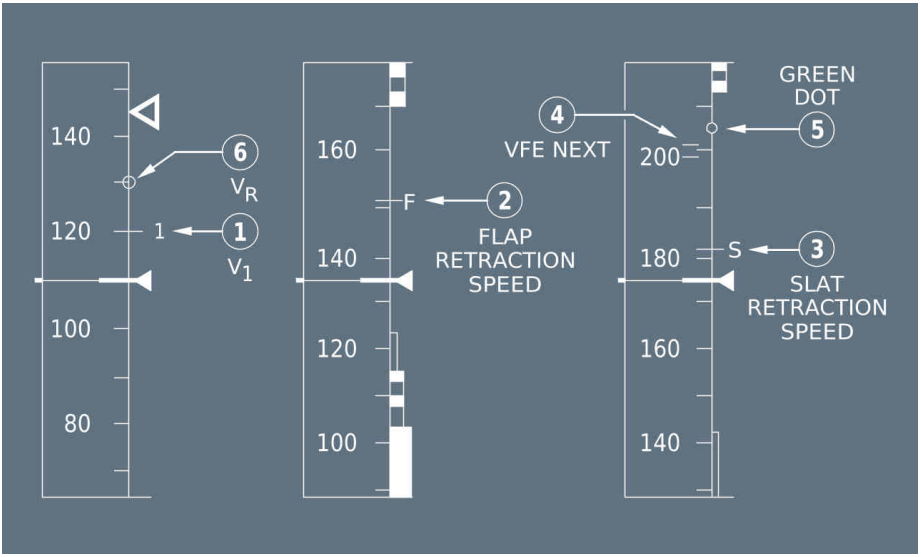
(4) VMAX
The lower end of a red and black strip along the speed scale defines this speed.

It is the lowest of the following:
- VMO or the speed corresponding to MMO
- VLE
- VFE

(*Refer to DSC-27-20-10-20 Protections - High Speed Protection*)

(5) Stall Warning Speed (VSW)

The top of a red and black strip along the speed scale defines this speed.
It is the speed corresponding to the stall warning. (*Refer to DSC-27-20-10-20 Protections - General*).
VSW information is inhibited from touchdown until 5 s after liftoff.
It is displayed when operating in pitch alternate or pitch direct law.



(1) Decision Speed (V1)

This is a blue symbol (numeral one) that the crew manually inserts via the MCDU. When it is off the scale, the upper part of the scale shows it in numbers.
It disappears after liftoff (*Refer to DSC-22_10-50-50 Other Speeds*).

(2) Minimum Flap Retraction Speed

This is a green symbol (letter F).
It appears when the flap selector is in position 3 or 2. (*Refer to DSC-27-20-10-20 Protections - High Speed Protection*).

(3) Minimum Slat Retraction Speed
This is a green symbol (letter S).
It appears when the flap selector is in position 1. (*Refer to DSC-27-20-10-20 Protections - High Speed Protection*).

(4) VFE NEXT
The VFE next symbol is an amber equal sign showing the VFE corresponding to the next flap lever position.
It appears when the aircraft altitude is below 15 000 ft or 20 000 ft, depending upon the FAC standard (*Refer to DSC-22_10-50-30 Limit Speeds*).

(5) Green Dot (Engine-out operating speed in clean configuration)
This green dot appears, when the aircraft is flying in the clean configuration.
It shows the speed corresponding to the best lift-to-drag ratio.

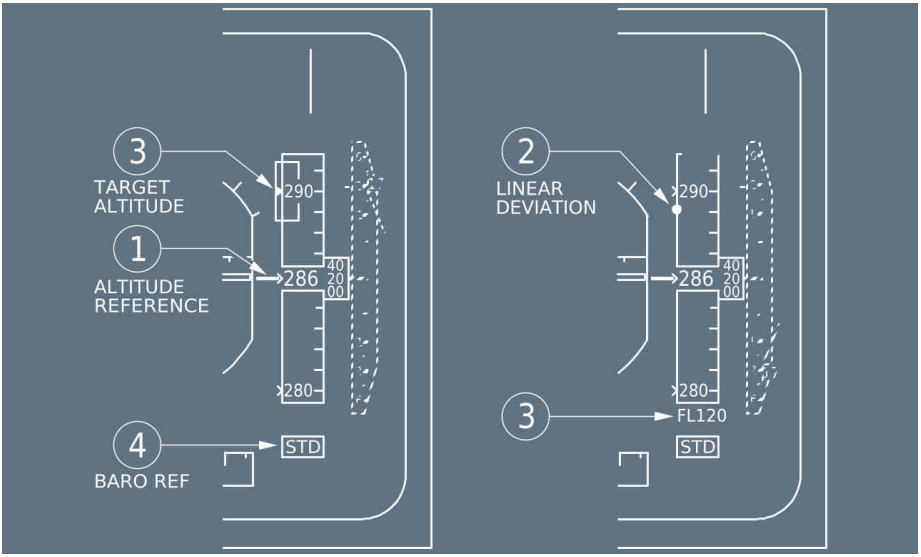
(6) Rotation speed: (VR)
VR is entered on the PERF takeoff page of the MCDU, and is indicated by a cyan circle.
This cyan circle is visible during takeoff.

Note: *V2 is represented by the target speed index during takeoff.*
V2 is manually inserted by the crew via the MCDU.

ALTITUDE

Ident.: DSC-31-40-00001237.0064001 / 18 JUL 17

[5] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



(1) Altitude Indication

This appears both as a white moving scale, and as a green digital readout on a grey background. Small white marks are positioned on the scale against the round values (e.g. 280, 290...). “NEG” appears in the window in white for negative values. The altitude window changes from yellow to amber, if the aircraft deviates from the FCU-selected altitude or flight level.

On any approach for which an MDA (MDH) is entered in the FMGS, the altitude numbers change from green to amber, when the aircraft goes below the MDA (MDH).

(2) Linear Deviation (green filled circle)

This symbol appears next to the altitude corresponding to the theoretical vertical profile computed by the FMGC. It is displayed from the top of descent down to the MAP altitude. The flight crew can read the linear deviation directly from the altitude scale. The range is ±500 ft.

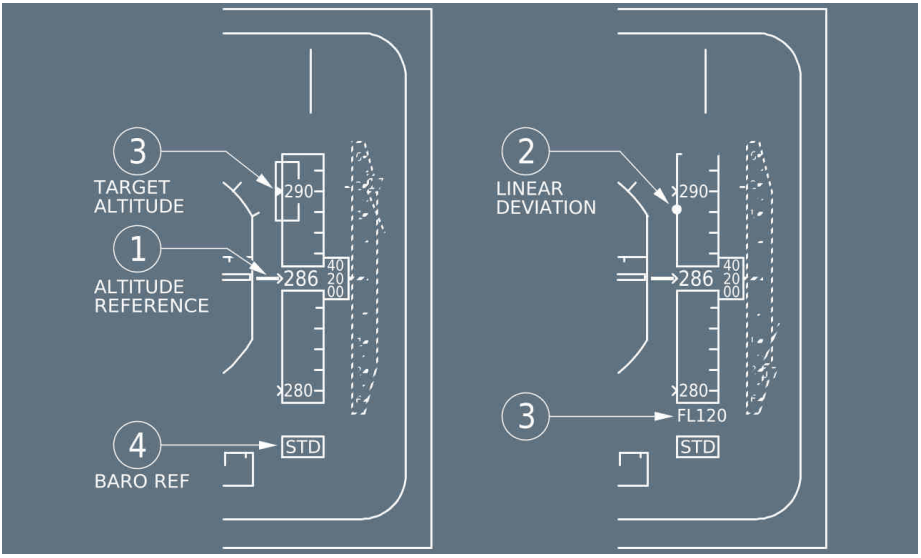
When the vertical deviation value exceeds ± 500 ft :
- The symbol stays at the range limit, but changes to a filled half circle, and
- The value is indicated on the left of the symbol in hundreds of feet, and
- The MCDU PROG page displays the exact value.

(3) Target Altitude or Selected Flight Level Symbol (white)
This symbol shows the FCU selected altitude (if QNH BARO reference is selected) or the selected flight level (if STD BARO reference is selected.)
When the FMGC operates in the vertical managed mode, this symbol is magenta if it represents a flight plan altitude constraint that the FMGC will follow.
When the aircraft disregards the FCU target altitude, this target altitude is displayed in white.
If the target altitude or flight level is on the scale, the symbol is displayed and the numerical value appears inside the symbol.
If the target altitude is off the scale, the symbol is not displayed, and the numerical value appears above or underneath the scale.

(4) Barometric Reference
The display shows “STD” or it shows “QNH” and the numerical setting in hectoPascals or inches of mercury.
It pulses when the selection made by the flight crew is not correct (STD not selected above transition altitude in climb or STD still selected in approach below transition level).

ALTITUDE

Ident.: DSC-31-40-00001237.0061001 / 29 OCT 13
Applicable to: MSN 02649



(1) Altitude Indication

This appears both as a white moving scale, and as a green digital readout on a grey background. Small white marks are positioned on the scale against the round values (e.g. 280, 290...). “NEG” appears in the window in white for negative values. The altitude window changes from yellow to amber, if the aircraft deviates from the FCU-selected altitude or flight level.

On any approach for which an minimum is entered in the FMGS, the altitude numbers change from green to amber, when the aircraft goes below the minimum.

(2) Linear Deviation (green filled circle)

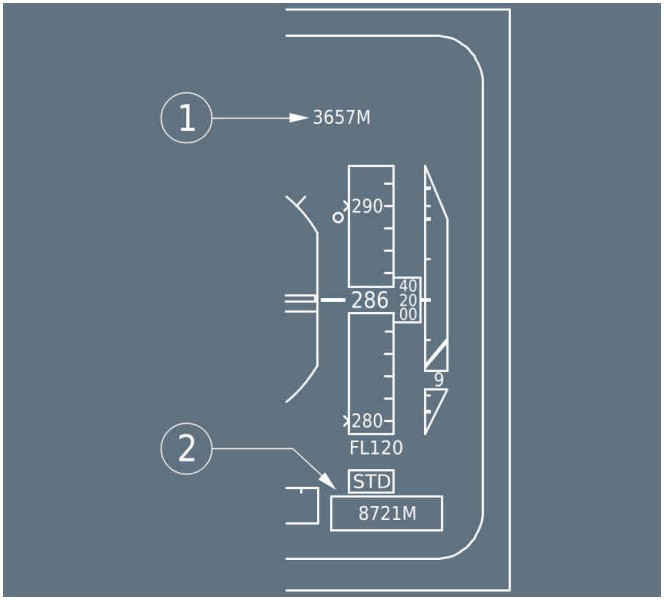
This symbol appears next to the altitude corresponding to the theoretical vertical profile computed by the FMGC. It is displayed from the top of descent down to the MAP altitude. The flight crew can read the linear deviation directly from the altitude scale. The range is ±500 ft. When the linear deviation value exceeds ±500 ft, the symbol stays at the range limit but changes to a half filled circle and the PROG page displays the exact value.

(3) Target Altitude or Selected Flight Level Symbol (blue)
This symbol shows the FCU selected altitude (if QNH or QFE BARO reference is selected) or the selected flight level (if STD BARO reference is selected.)
When the FMGC operates in the vertical managed mode, this symbol is magenta if it represents a flight plan altitude constraint that the FMGC will follow. If the target altitude or flight level is on the scale, the symbol is displayed and the numerical value appears inside the symbol.
If it is off the scale, the symbol is not displayed, and the numerical value appears above or underneath the scale.

(4) Barometric Reference
The display shows “STD” or it shows “QNH” or "QFE" and the numerical setting in hectoPascals or inches of mercury.
It pulses when the selection made by the flight crew is not correct (STD not selected above transition altitude in climb or STD still selected in approach below transition level).

METRIC ALTITUDE INDICATION

If metric reference is selected on the FCU two additional symbols are displayed on PFD.



(1) Target altitude or selected flight level (magenta or blue)
The display shows the selected altitude value in meters.

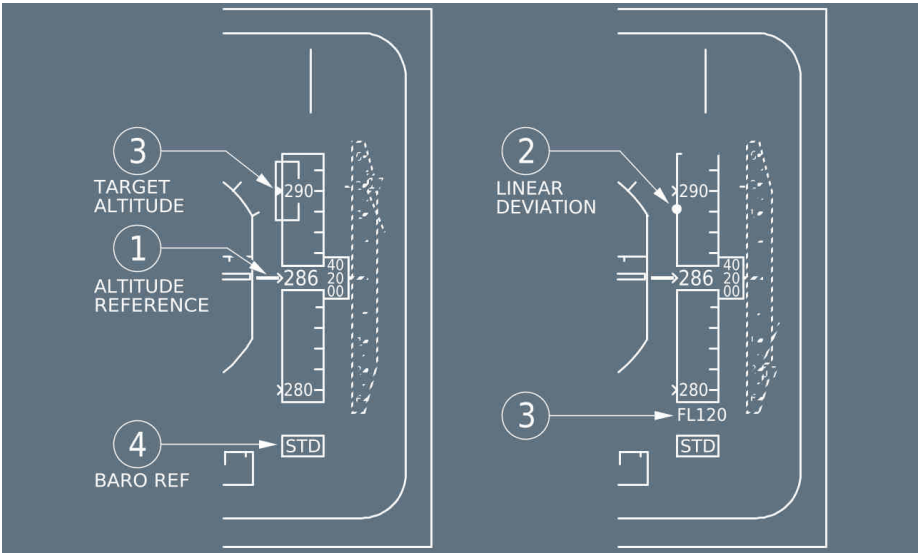
(2) Altitude indication (green)
The display shows the actual aircraft altitude value in meters.

APPROACH MINIMUM INDICATION

Approach minimum is displayed on the altitude scale by an amber indication.

ALTITUDE

Ident.: DSC-31-40-00001237.0056001 / 29 OCT 13
Applicable to: MSN 01957-02097, 02121, 02138, 02457, 03071



(1) Altitude Indication
This appears both as a white moving scale, and as a green digital readout on a grey background. Small white marks are positioned on the scale against the round values (e.g. 280, 290...). “NEG” appears in the window in white for negative values. The altitude window changes from yellow to amber, if the aircraft deviates from the FCU-selected altitude or flight level.
On any approach for which an minimum is entered in the FMGS, the altitude numbers change from green to amber, when the aircraft goes below the minimum.

(2) Linear Deviation (green filled circle)
This symbol appears next to the altitude corresponding to the theoretical vertical profile computed by the FMGC. It is displayed from the top of descent down to the MAP altitude.

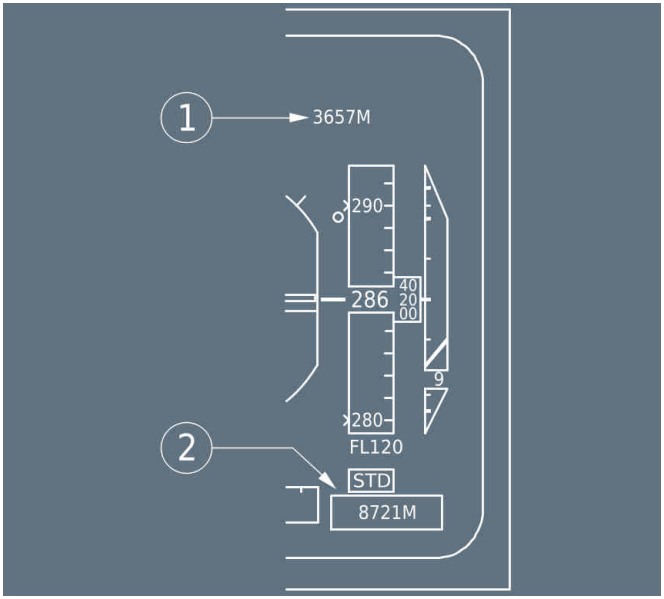
The flight crew can read the linear deviation directly from the altitude scale. The range is ±500 ft. When the linear deviation value exceeds ±500 ft, the symbol stays at the range limit but changes to a half filled circle and the PROG page displays the exact value.

(3) Target Altitude or Selected Flight Level Symbol (blue)
This symbol shows the FCU selected altitude (if QNH BARO reference is selected) or the selected flight level (if STD BARO reference is selected.)
When the FMGC operates in the vertical managed mode, this symbol is magenta if it represents a flight plan altitude constraint that the FMGC will follow. If the target altitude or flight level is on the scale, the symbol is displayed and the numerical value appears inside the symbol.
If it is off the scale, the symbol is not displayed, and the numerical value appears above or underneath the scale.

(4) Barometric Reference
The display shows “STD” or it shows “QNH” and the numerical setting in hectoPascals or inches of mercury.
It pulses when the selection made by the flight crew is not correct (STD not selected above transition altitude in climb or STD still selected in approach below transition level).

METRIC ALTITUDE INDICATION

If metric reference is selected on the FCU two additional symbols are displayed on PFD.



(1) Target altitude or selected flight level (magenta or blue)
The display shows the selected altitude value in meters.

(2) Altitude indication (green)
The display shows the actual aircraft altitude value in meters.

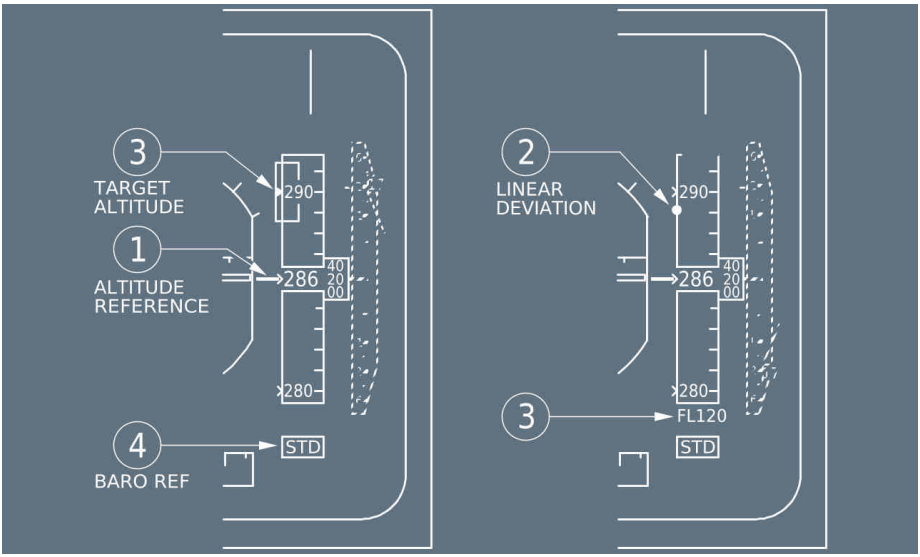
APPROACH MINIMUM INDICATION

Approach minimum is displayed on the altitude scale by an amber indication.

ALTITUDE

Ident.: DSC-31-40-00001237.0049001 / 29 OCT 13

[6] **Applicable to: MSN 02135, 02139, 02443, 02670-02737, 02908-02914, 03138-03264, 03330-04216, 04312-04399, 04438-04506, 04518-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



(1) Altitude Indication

This appears both as a white moving scale, and as a green digital readout on a grey background. Small white marks are positioned on the scale against the round values (e.g. 280, 290...). “NEG” appears in the window in white for negative values. The altitude window changes from yellow to amber, if the aircraft deviates from the FCU-selected altitude or flight level.

On any approach for which an minimum is entered in the FMGC, the altitude numbers change from green to amber, when the aircraft goes below the minimum.

(2) Linear Deviation (green filled circle)

This symbol appears next to the altitude corresponding to the theoretical vertical profile computed by the FMGC. It is displayed from the top of descent down to the MAP altitude. The flight crew can read the linear deviation directly from the altitude scale. The range is ±500 ft. When the linear deviation value exceeds ±500 ft, the symbol stays at the range limit but changes to a half filled circle and the PROG page displays the exact value.

(3) Target Altitude or Selected Flight Level Symbol (blue)
This symbol shows the FCU selected altitude (if QNH BARO reference is selected) or the selected flight level (if STD BARO reference is selected.)
When the FMGC operates in the vertical managed mode, this symbol is magenta if it represents a flight plan altitude constraint that the FMGC will follow. If the target altitude or flight level is on the scale, the symbol is displayed and the numerical value appears inside the symbol.
If it is off the scale, the symbol is not displayed, and the numerical value appears above or underneath the scale.

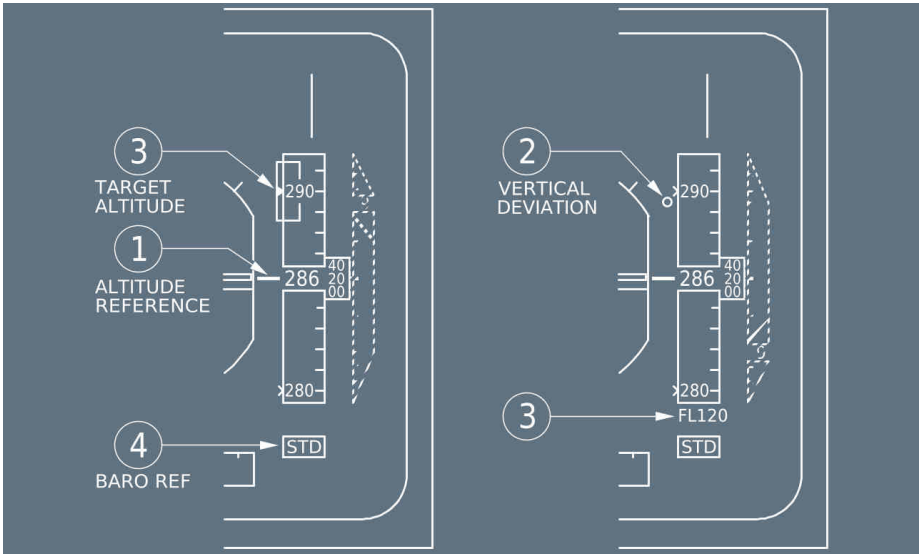
(4) Barometric Reference
The display shows “STD” or it shows “QNH” and the numerical setting in hectoPascals or inches of mercury.
It pulses when the selection made by the flight crew is not correct (STD not selected above transition altitude in climb or STD still selected in approach below transition level).

APPROACH MINIMUM INDICATION

Approach minimum is displayed on the altitude scale by an amber indication.

ALTITUDE

Ident.: DSC-31-40-00001237.0001001 / 27 JUN 12
Applicable to: MSN 01767, 02195-02204, 02359, 02405, 02482



(1) Altitude Indication

This appears both as a white moving scale, and as a green digital readout on a grey background. Small white marks are positioned on the scale against the round values (e.g. 280, 290...). “NEG” appears in the window in white for negative values. The altitude window changes from yellow to amber, if the aircraft deviates from the FCU-selected altitude or flight level.

On any approach for which an MDA (MDH) is entered in the FMGS, the altitude numbers change from green to amber, when the aircraft goes below the MDA (MDH).

(2) Vertical Deviation (magenta)

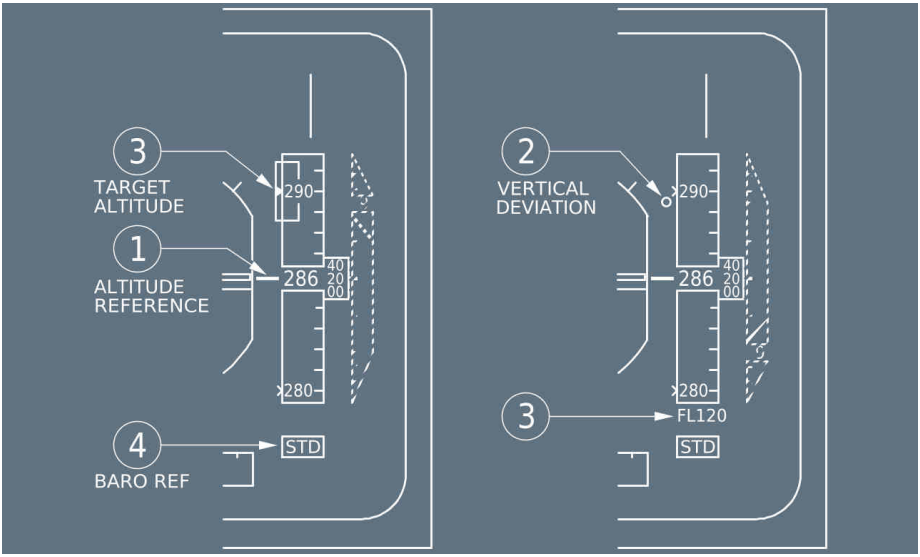
This symbol appears next to the altitude corresponding to the theoretical vertical profile computed by the FMGC. It is displayed from the top of descent down to the MAP altitude. The pilot can read the VDEV directly from the altitude scale. The range is ±500 ft. When the VDEV value exceeds ±500 ft, the symbol stays at the range limit and the PROG page displays the exact value.

(3) Target Altitude or Selected Flight Level Symbol (blue)
This symbol shows the FCU selected altitude (if QNH BARO reference is selected) or the selected flight level (if STD BARO reference is selected.)
When the FMGC operates in the vertical managed mode, this symbol is magenta if it represents a flight plan altitude constraint that the FMGC will follow. If the target altitude or flight level is on the scale, the symbol is displayed and the numerical value appears inside the symbol.
If it is off the scale, the symbol is not displayed, and the numerical value appears above or underneath the scale.

(4) Barometric Reference
The display shows “STD” or it shows “QNH” and the numerical setting in hectoPascals or inches of mercury.
It pulses when the selection made by the pilot is not correct (STD not selected above transition altitude in climb or STD still selected in approach below transition level).

ALTITUDE

Ident.: DSC-31-40-00001237.0003001 / 27 JUN 12
Applicable to: MSN 01920, 02108, 02275-02334



(1) Altitude Indication
This appears both as a white moving scale, and as a green digital readout on a grey background. Small white marks are positioned on the scale against the round values (e.g. 280, 290...). “NEG” appears in the window in white for negative values. The altitude window changes from yellow to amber, if the aircraft deviates from the FCU-selected altitude or flight level.
On any approach for which an MDA (MDH) is entered in the FMGS, the altitude numbers change from green to amber, when the aircraft goes below the MDA (MDH).

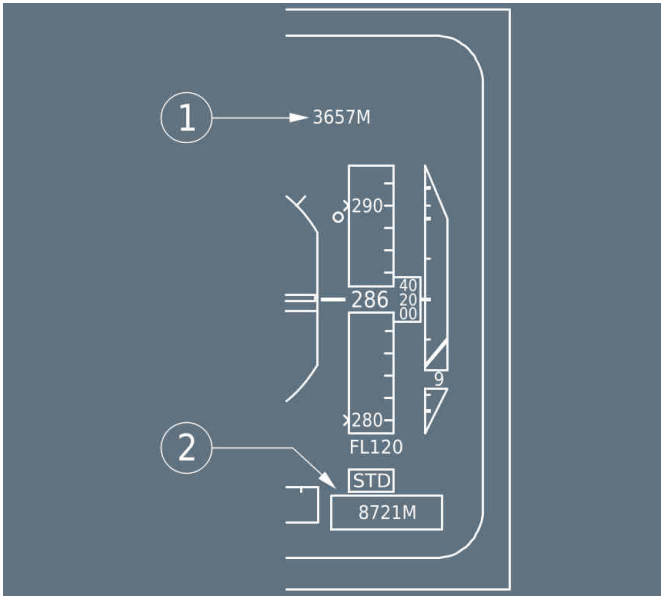
(2) Vertical Deviation (magenta)
This symbol appears next to the altitude corresponding to the theoretical vertical profile computed by the FMGC. It is displayed from the top of descent down to the MAP altitude. The pilot can read the VDEV directly from the altitude scale. The range is ±500 ft. When the VDEV value exceeds ±500 ft, the symbol stays at the range limit and the PROG page displays the exact value.

(3) Target Altitude or Selected Flight Level Symbol (blue)
This symbol shows the FCU selected altitude (if QNH BARO reference is selected) or the selected flight level (if STD BARO reference is selected.)
When the FMGC operates in the vertical managed mode, this symbol is magenta if it represents a flight plan altitude constraint that the FMGC will follow. If the target altitude or flight level is on the scale, the symbol is displayed and the numerical value appears inside the symbol.
If it is off the scale, the symbol is not displayed, and the numerical value appears above or underneath the scale.

(4) Barometric Reference
The display shows “STD” or it shows “QNH” and the numerical setting in hectoPascals or inches of mercury.
It pulses when the selection made by the pilot is not correct (STD not selected above transition altitude in climb or STD still selected in approach below transition level).

METRIC ALTITUDE INDICATION

If metric reference is selected on the FCU two additional symbols are displayed on PFD.

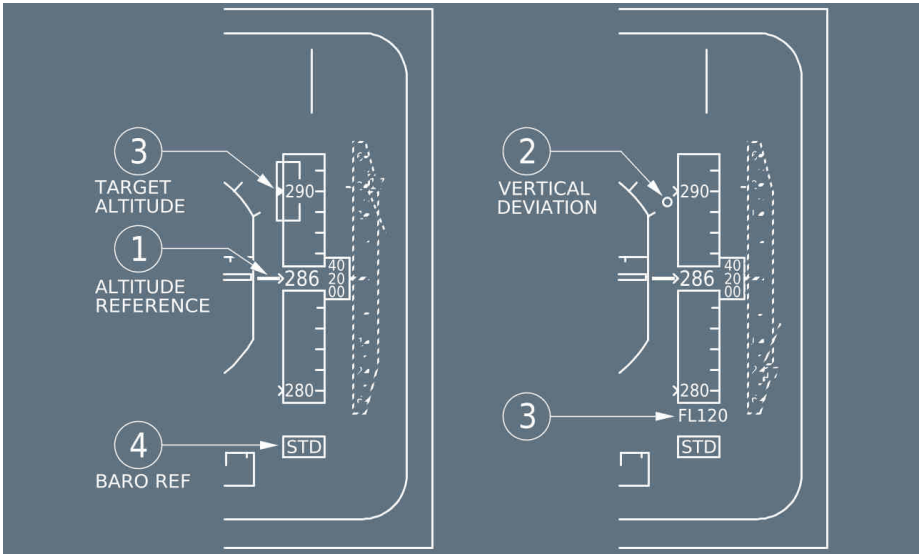


(1) Target altitude or selected flight level (magenta or blue)
The display shows the selected altitude value in meters.

(2) Altitude indication (green)
The display shows the actual aircraft altitude value in meters.

ALTITUDE

Ident.: DSC-31-40-00001237.0023001 / 29 OCT 13
Applicable to: MSN 02388, 02584, 02804, 03308



(1) Altitude Indication

This appears both as a white moving scale, and as a green digital readout on a grey background. Small white marks are positioned on the scale against the round values (e.g. 280, 290...). “NEG” appears in the window in white for negative values. The altitude window changes from yellow to amber, if the aircraft deviates from the FCU-selected altitude or flight level.

On any approach for which an minimum is entered in the FMGS, the altitude numbers change from green to amber, when the aircraft goes below the minimum.

(2) Vertical Deviation (magenta)

This symbol appears next to the altitude corresponding to the theoretical vertical profile computed by the FMGC. It is displayed from the top of descent down to the MAP altitude. The pilot can read the VDEV directly from the altitude scale. The range is ±500 ft. When the VDEV value exceeds ±500 ft, the symbol stays at the range limit and the PROG page displays the exact value.

(3) Target Altitude or Selected Flight Level Symbol (blue)
This symbol shows the FCU selected altitude (if QNH BARO reference is selected) or the selected flight level (if STD BARO reference is selected.)
When the FMGC operates in the vertical managed mode, this symbol is magenta if it represents a flight plan altitude constraint that the FMGC will follow. If the target altitude or flight level is on the scale, the symbol is displayed and the numerical value appears inside the symbol.
If it is off the scale, the symbol is not displayed, and the numerical value appears above or underneath the scale.

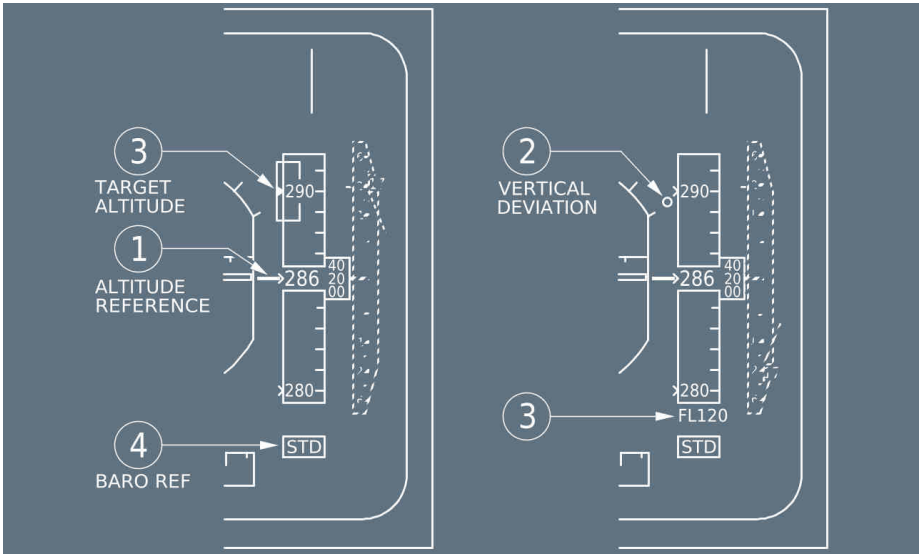
(4) Barometric Reference
The display shows “STD” or it shows “QNH” and the numerical setting in hectoPascals or inches of mercury.
It pulses when the selection made by the pilot is not correct (STD not selected above transition altitude in climb or STD still selected in approach below transition level).

APPROACH MINIMUM INDICATION

Approach minimum is displayed on the altitude scale by an amber indication.

ALTITUDE

Ident.: DSC-31-40-00001237.0032001 / 29 OCT 13
Applicable to: MSN 02609-02626, 04294, 04433, 04510



(1) Altitude Indication

This appears both as a white moving scale, and as a green digital readout on a grey background. Small white marks are positioned on the scale against the round values (e.g. 280, 290...). “NEG” appears in the window in white for negative values. The altitude window changes from yellow to amber, if the aircraft deviates from the FCU-selected altitude or flight level.

On any approach for which an minimum is entered in the FMGS, the altitude numbers change from green to amber, when the aircraft goes below the minimum.

(2) Vertical Deviation (magenta)

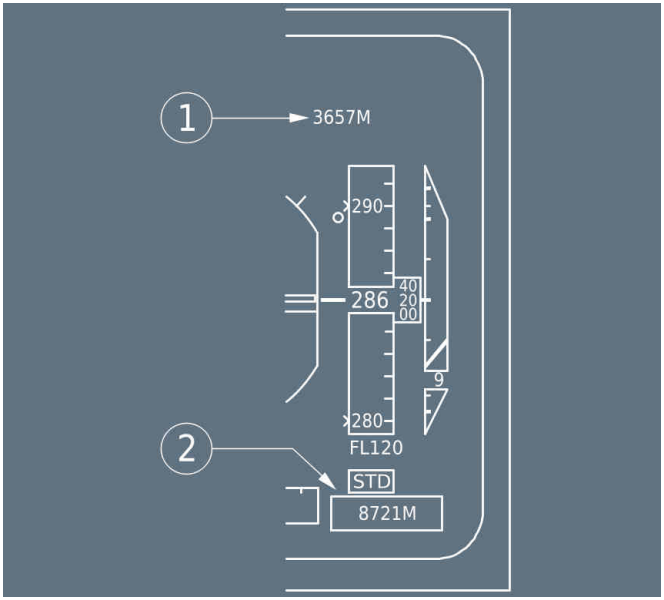
This symbol appears next to the altitude corresponding to the theoretical vertical profile computed by the FMGC. It is displayed from the top of descent down to the MAP altitude. The pilot can read the VDEV directly from the altitude scale. The range is ±500 ft. When the VDEV value exceeds ±500 ft, the symbol stays at the range limit and the PROG page displays the exact value.

(3) Target Altitude or Selected Flight Level Symbol (blue)
This symbol shows the FCU selected altitude (if QNH BARO reference is selected) or the selected flight level (if STD BARO reference is selected.)
When the FMGC operates in the vertical managed mode, this symbol is magenta if it represents a flight plan altitude constraint that the FMGC will follow. If the target altitude or flight level is on the scale, the symbol is displayed and the numerical value appears inside the symbol.
If it is off the scale, the symbol is not displayed, and the numerical value appears above or underneath the scale.

(4) Barometric Reference
The display shows "STD" or it shows "QNH" and the numerical setting in hectoPascals or inches of mercury.
It pulses when the selection made by the pilot is not correct (STD not selected above transition altitude in climb or STD still selected in approach below transition level).

METRIC ALTITUDE INDICATION

If metric reference is selected on the FCU two additional symbols are displayed on PFD.



(1) Target altitude or selected flight level (magenta or blue)
The display shows the selected altitude value in meters.

(2) Altitude indication (green)

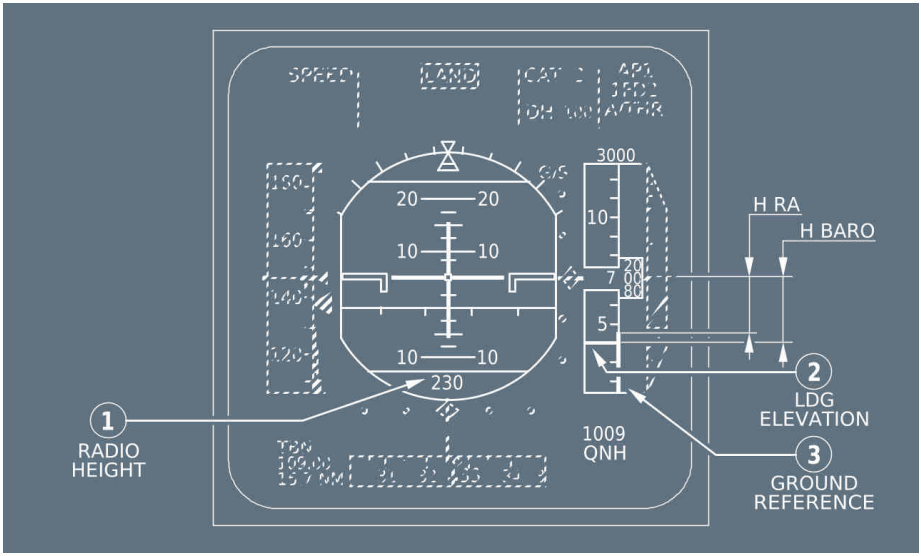
The display shows the actual aircraft altitude value in meters.

APPROACH MINIMUM INDICATION

Approach minimum is displayed on the altitude scale by an amber indication.

ALTITUDE (CONT'D)

Ident.: DSC-31-40-00006121.0001001 / 13 JAN 14
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) Radio Height

This quantity appears when it is less than 2 500 ft.

- If a DH has been entered, the radio height appears:
  - In green, when DH +100 ft < RA < 2 500 ft
  - In amber, when RA < DH +100 ft

  If "NO" is entered as the DH on the MCDU APPROACH page, 0 ft becomes a default value. When the aircraft reaches the decision height selected on the MCDU, DH letters flash amber for 3 s, then remain amber above the radio height indication.
- If no DH has been entered, or if both FMGCs fail, the radio height appears:
  - In green, when 400 ft < RA < 2 500 ft
  - In amber, when RA ≤ 400 ft

The radio height indication changes every 10 ft down to 50 ft, then every 5 ft down to 10 ft, then every foot.

(2) Landing Elevation (blue)
The horizontal bar on the altitude scale shows the landing elevation at the flight-planned destination.

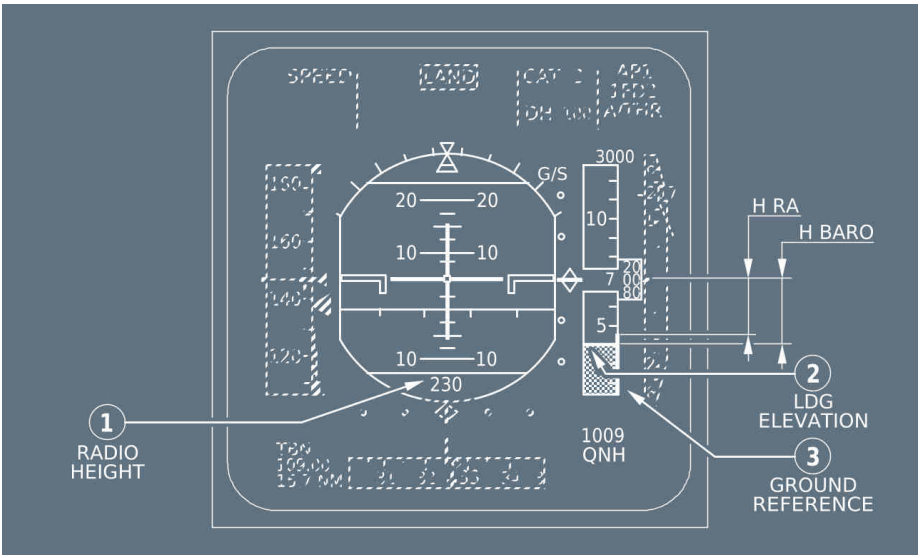
It is displayed:
- during flight phases 7 and 8 and
- if the QNH reference mode is selected.

(3) Ground reference
A red ribbon on the right of the altitude scale represents the field elevation. This ribbon, which is driven by the radio altimeter signal, is displayed below 570 ft.
It moves up, as does the lower line of the attitude sphere, with the altitude scale as the aircraft descends. When the aircraft has touched down, the top of this ribbon is at the middle of the altitude window.

ALTITUDE (CONT'D)

Ident.: DSC-31-40-00006121.0002001 / 13 JAN 14

7 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



(1) Radio Height

A value appears, when the aircraft is lower than 2 500 ft.

- If a DH has been entered, the radio height appears:
  - In green, when DH +100 ft < RA < 2 500 ft
  - In amber, when RA < DH +100 ft

  If "NO" is entered as the DH on the MCDU APPROACH page, 0 ft becomes a default value.
  When the aircraft reaches the decision height selected on the MCDU, DH letters flash amber for 9 s, then remain amber above the radio height indication.
- If no DH has been entered, or if both FMGCs fail, the radio height appears:
  - In green, when 400 ft < RA < 2 500 ft
  - In amber, when RA ≤ 400 ft

The radio height indication changes every 10 ft down to 50 ft, then every 5 ft down to 10 ft, then every foot.

(2) Landing Elevation (brown)

The top of the brown surface on the altitude scale represents the landing elevation at the flight-planned destination.

It is displayed:

- during flight phases 7 and 8 and
- if the STD reference mode is not selected.

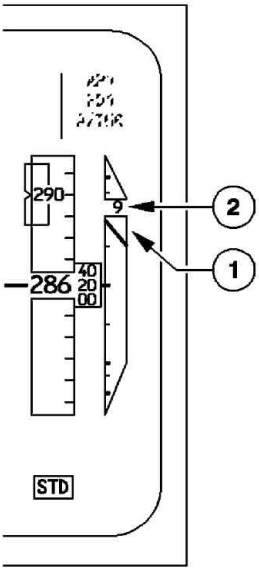
(3) Ground reference

A red ribbon on the right of the altitude scale represents the field elevation. This ribbon, which is driven by the radio altimeter signal, is displayed below 570 ft.
It moves up, as does the lower line of the attitude sphere, with the altitude scale as the aircraft descends. When the aircraft has touched down, the top of this ribbon is at the middle of the altitude window.

VERTICAL SPEED

Ident.: DSC-31-40-00001239.0001001 / 21 MAR 17
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

The displayed vertical speed information is normally based on both inertial and barometric data. If inertial data is not available, it is automatically replaced by barometric information.
In this case, the window around the numerical value becomes amber.



(1) Analog pointer
This pointer, which is normally in green, points to a white vertical speed scale, displayed on a grey background and graduated at intervals of 500 ft/min.
If the V/S is greater than 6 000 ft/min, the pointer stays at the end of the scale.

(2) Digital indication
This number, normally in green, is the vertical speed in hundreds of feet per minute.
It disappears, if the vertical speed is less than 200 ft/min.

The analog pointer and the digital indication become amber, if:
- V/S is greater than 6 000 ft/min, (climb or descent)
- V/S is greater than 2 000 ft/min, during descent when 1 000 ft < RA < 2 500 ft, or
- V/S is greater than 1 200 ft/min, during descent and RA < 1 000 ft.

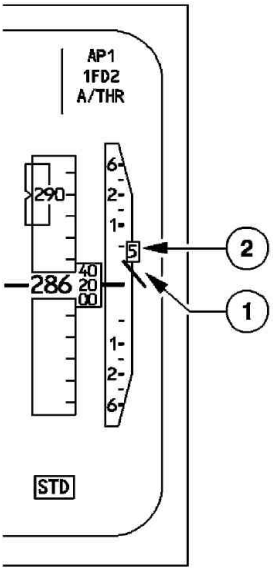
Note: *For TCAS, Refer to DSC-34-SURV-60-20 TCAS Messages.*

VERTICAL SPEED

Ident.: DSC-31-40-00001239.0002001 / 21 MAR 17

[8] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

The displayed vertical speed information is normally based on both inertial and barometric data. If inertial data is not available, it is automatically replaced by barometric information.
In this case, the window around the numerical value becomes amber.



(1) Analog pointer
This pointer, which is normally in green, points to a white vertical speed scale, displayed on a grey background and graduated at intervals of 500 ft/min.
If the V/S is greater than 6 000 ft/min, the pointer stays at the end of the scale.

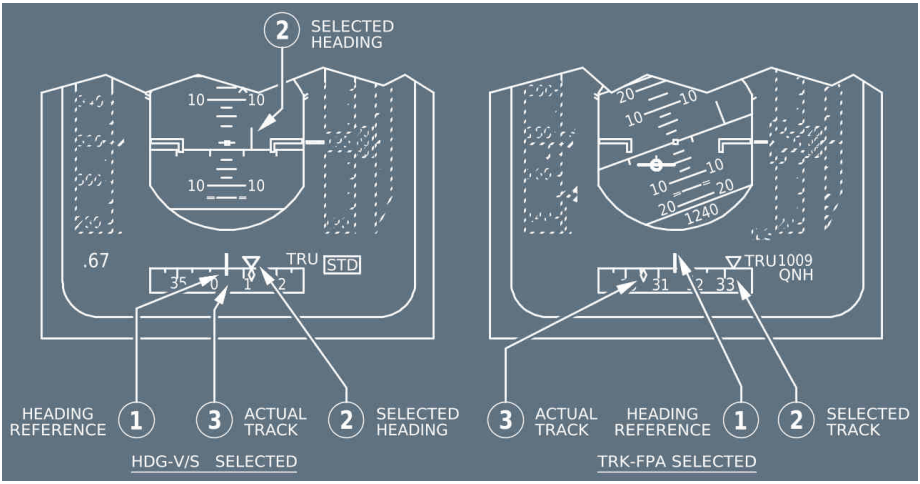
(2) Digital indication
This number, normally in green, is the vertical speed in hundreds of feet per minute.
It disappears, if the vertical speed is less than 200 ft/min.

The analog pointer and the digital indication become amber, if:
- V/S is greater than 6 000 ft/min, (climb or descent)
- V/S is greater than 2 000 ft/min, during descent when 1 000 ft < RA < 2 500 ft, or
- V/S is greater than 1 200 ft/min, during descent and RA < 1 000 ft.

Note: *For TCAS, Refer to DSC-34-SURV-60-20 TCAS Messages.*

HEADING

Ident.: DSC-31-40-00001240.0001001 / 22 MAY 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) Heading Reference Line and Scale
A white scale on a grey background moves in front of a fixed yellow reference line to indicate the actual magnetic heading.
"TRU" appears, when the display indicates the true heading, rather than the magnetic heading (latitude above 73 ° North or below 60 ° South).

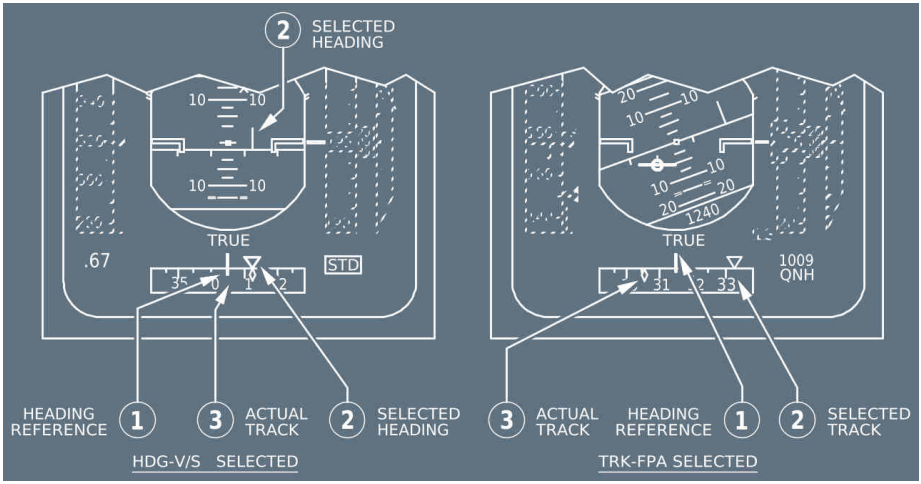
(2) Selected Heading or Track Index (blue)
The pointer indicates the heading or track displayed on the FCU HDG-TRK window.
The index is replaced by digits on the right or left side of the scale, when the selected value is off the scale.
If the FD pushbutton is OFF, a second heading/track symbol appears on the horizon line, and markers are displayed every 10 °.

(3) Actual Track Symbol
This symbol is a small green diamond.

HEADING

Ident.: DSC-31-40-00001240.0002001 / 07 MAY 13

9 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



(1) Heading Reference Line and Scale

A white scale on a grey background moves in front of a fixed yellow reference line to indicate the actual magnetic heading.

"TRUE" appears, when the display indicates the true heading, rather than the magnetic heading (latitude above 73 ° North or below 60 ° South).

(2) Selected Heading or Track Index (blue)

This pointer is in blue, and indicates the heading or track displayed on the FCU HDG-TRK window.

The index is replaced by digits on the right or left side of the scale, when the selected value is off the scale.

If the FD pushbutton is OFF, a second heading/track symbol appears on the horizon line, and markers are displayed every 10 °.

(3) Actual Track Symbol

This symbol is a small green diamond.

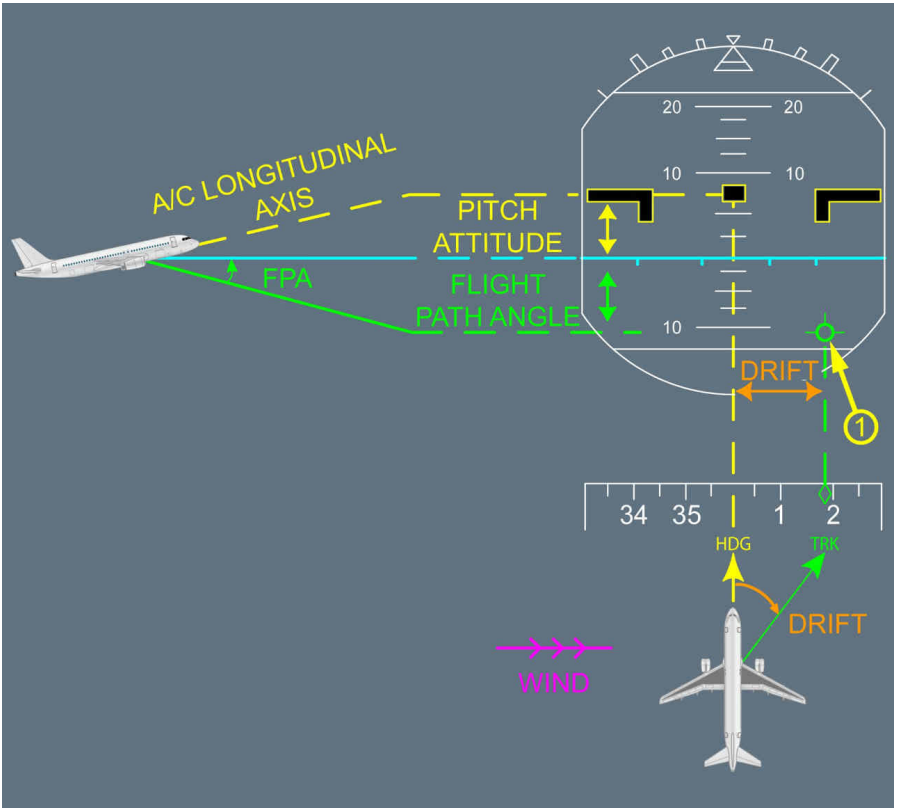
FLIGHT PATH VECTOR

Ident.: DSC-31-40-00001241.0001001 / 17 MAR 17
Applicable to: ALL

The Flight Path Vector (FPV) is the flight reference with the TRK and FPA as basic guidance parameters. When the TRK/FPA is selected on the FCU, the FPV appears on the PFD.

INFORMATION PRESENTATION

The FPV appears on the PFD as a symbol, known as the "bird". The bird indicates the track and flight patch angle in relation to the ground.
The track is indicated on the PFD by a green diamond on the compass, in addition to the lateral movement of the bird in relation to the fixed aircraft symbol. On the ND, the track is indicated by a green diamond on the compass scale. The difference in angle between track and heading indicates the drift.
The flight path angle is indicated on the PFD by the vertical movement of the bird in relation to the pitch scale.
With the flight directors (FD) ON, the Flight Path Director (FPD) replaces the HDG-VS Flight Director (FD). With both FD pb set to OFF, the blue track index appears on the PFD horizon.



(1) Flight Path Vector (FPV)

This symbol appears, when the pilot selects TRK/FPA on the FCU.

The flight path vector represents the lateral and vertical trajectory of the aircraft with respect to the ground.

- On the lateral scale, it indicates the aircraft's track.
- On the vertical scale, it indicates the aircraft's flight path angle.

Example : The aircraft flies a track of 009 ° (heading 360 °, wind from west) and descends with a flight path angle of minus 7.5 °.

USE OF FPV

The bird is the flying reference that should be used when flying a stabilized segment of trajectory, e.g.: non-precision approach when the FLS function is not used or visual circuit.

In dynamic manoeuvres, the bird is directly affected by the aircraft inertia and has a delayed reaction. As a result, the bird should not be used as a flight reference in dynamic manoeuvres.
Refer to FCTM/AS-BIRD Introduction for more information.

GUIDANCE

Ident.: DSC-31-40-00001242.0001001 / 13 JAN 14
Applicable to: ALL

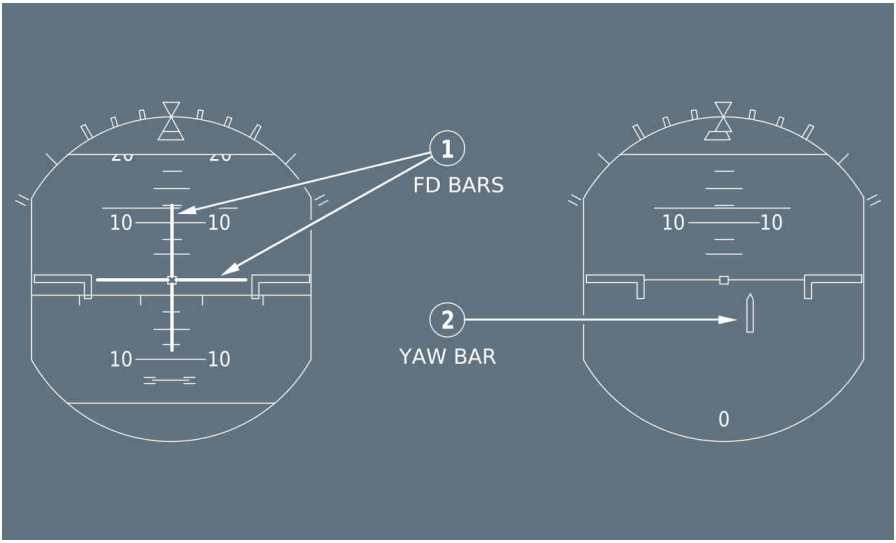
Two completely different flight director modes are available, each with its own characteristic symbols. The symbol displayed corresponds to the basic operating reference the pilot has selected – either HDG V/S or TRK FPA.
In normal operation, PFD1 displays FD1 orders.
If FD1 fails, PFD1 automatically displays FD2 orders on PFD1, the FD2 indication in the right column of the FMA flashes for a few seconds.
This is also applicable to FD2 orders, that are displayed on PFD2.

IF THE CREW HAS SELECTED HDG V/S TO BE THE BASIC REFERENCE:

The PFD displays FD bars in green. They automatically move out of view at touchdown in ROLL OUT mode.

They flash for 10 s, and then remain steady, if the following occur:
- A reversion to the HDG V/S basic mode (manual or automatic), or
- The selected flight level is changed, when ALT CAPTURE mode is engaged, or
- The loss of LOC or G/S in LAND mode or loss of LAND mode, or
- At the first AP or FD engagement.

The PFD displays a yaw bar in green below 30 ft radio height, if a localizer signal is available:
- During takeoff (in RWY mode)
- Upon landing (in FLARE and ROLL OUT mode).

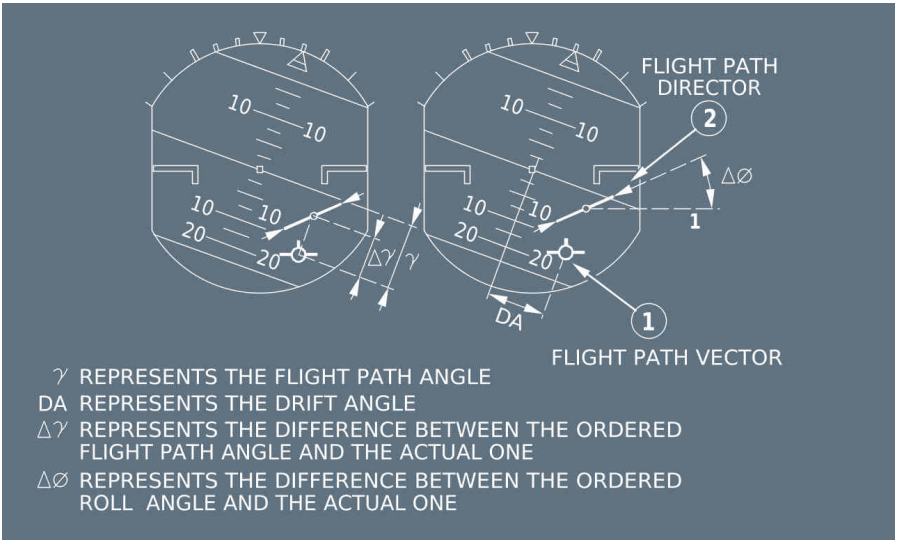


(1) FD Crossed Bars (green)

(2) Yaw Bar (green)

THE CREW HAS SELECTED TRK FPA AS THE BASIC REFERENCE:

An inertial flight path vector defines the aircraft's horizontal and vertical track, taking wind effect into account.
An associated flight path director symbol guides the flight crew onto the vertical and horizontal flight path targets.



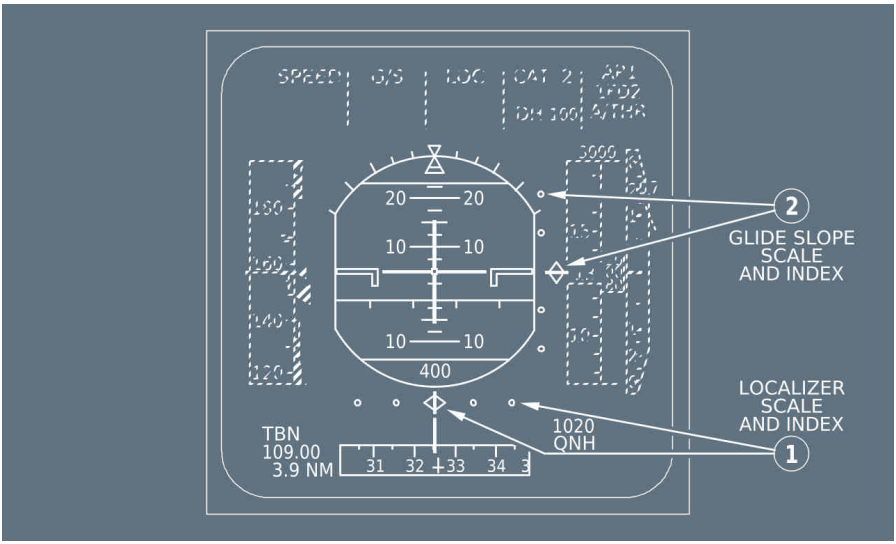
(1) Flight Path Vector (green)

(2) Flight Path Director (green)

TRAJECTORY DEVIATION

Ident.: DSC-31-40-A-00017532.0001001 / 21 MAR 16
Applicable to: ALL

ILS/GLS ⩤ /MLS ⩤ APPROACH



(1) Localizer Deviation Scale and Index

(2) Glide slope Deviation Scale and Index

Deviation scales appear as soon as the flight crew presses an LS/ILS pb on the EFIS control panel. Deviation indexes appear when the glide slope and localizer signals of the ILS/GLS ⩤ (or the elevation and azimuth signals of the MLS ⩤) are valid, if deviation scales are displayed.

When a deviation index is out of the displayed range, only half a symbol appears at the end of the scale.

The LOC scale flashes and continues to flash if the deviation exceeds 1/4 dot for two seconds while the aircraft is between 15 ft and 1 000 ft, and CAT2 or CAT3 capability displayed on the FMA, and either LOC, LAND, or FLARE is engaged. The glideslope scale flashes and continues to flash if the deviation exceeds one dot for two seconds (above 100 ft RA).

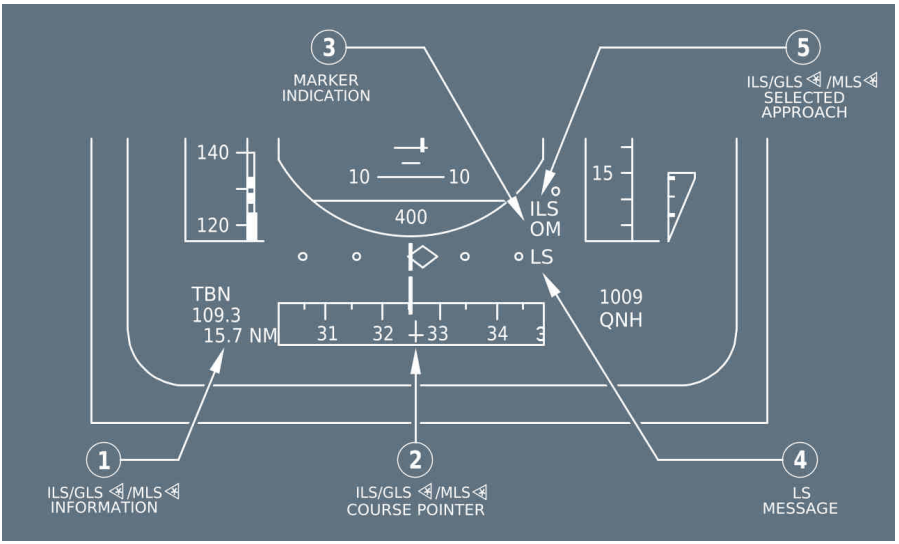
“LOC” and the glideslope scale half index symbols flash, and continue to flash, when the deviation exceeds two dots for two seconds.

One dot represents a deviation of ± 0.8 ° on the localizer scale, and ± 0.4 ° on the glideslope scale.

Ident.: DSC-31-40-A-00017533.0004001 / 21 MAR 16

10 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

ILS/GLS ⋖ /MLS ⋖ APPROACH (CONT'D)



(1) ILS/GLS ⋖ /MLS ⋖ information (magenta)

The following information appears on the PFD, when the crew has selected an ILS frequency/GLS channel/MLS channel and course, and pressed the LS pb:

- ILS/GLS/MLS identification, as decoded by the ILS/GLS/MLS receiver;
- ILS frequency/GLS channel/MLS channel;
- For ILS/MLS: DME distance, if the ILS/MLS has a DME. For GLS: distance to runway threshold computed by the MMR.

(2) ILS/GLS ⋖ /MLS ⋖ course Pointer (magenta)

This pointer appears on the PFD, when the crew has selected an ILS frequency/GLS channel/MLS channel and course, and pressed the LS pb.
It is a dagger-shaped symbol on the heading scale.
The ILS/GLS/MLS course pointer is replaced by digits on the right or left hand of the heading scale (in a white box) when the ILS/GLS/MLS course value is outside the displayed portion of the heading scale.

(3) Marker Indications

OM appears in blue, when the aircraft flies over the outer marker.
MM appears in amber, when it flies over the middle marker.
IM appears in white, when it flies over an airways marker beacon or the ILS/GLS ◁ inner marker.

(4) LS Message

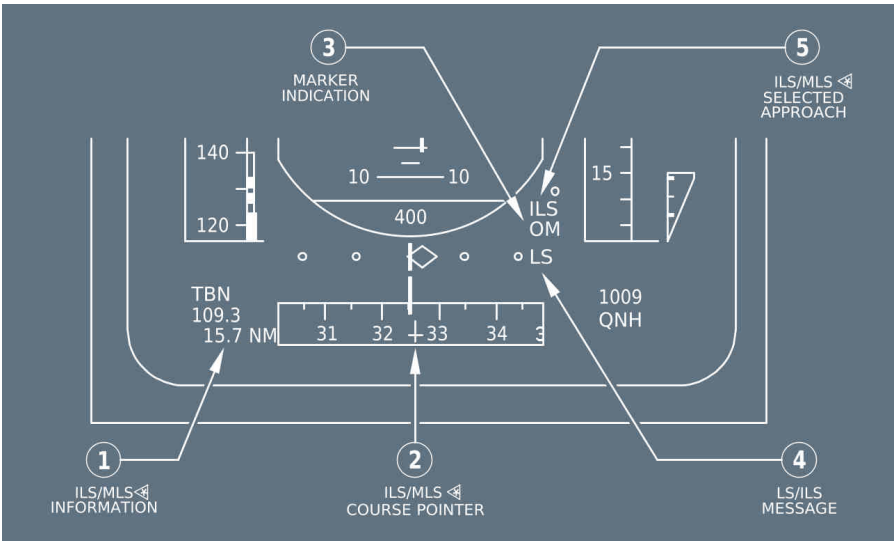
This flashes amber, when the APPR mode is armed, but the LS pb has not been selected.

(5) Selected approach

The ILS/GLS/MLS indication is displayed in magenta according to the approach selected by the crew.

Ident.: DSC-31-40-A-00017533.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

ILS/MLS ◁ APPROACH (CONT'D)



(1) ILS/MLS ◁ information (magenta)

The following information appears on the PFD, when the crew has selected an ILS frequency/MLS channel and course, and pressed the LS pb:
- ILS/MLS identification, as decoded by the ILS/MLS receiver;
- ILS frequency/MLS channel;
- DME distance, if the ILS/MLS has a DME

(2) ILS/MLS course Pointer (magenta)
This pointer appears on the PFD, when the crew has selected an ILS frequency/MLS channel and course, and pressed the LS pb.
It is a dagger-shaped symbol on the heading scale.
The ILS/MLS course pointer is replaced by digits on the right or left hand of the heading scale (in a white box) when the ILS/MLS course value is outside the displayed portion of the heading scale.

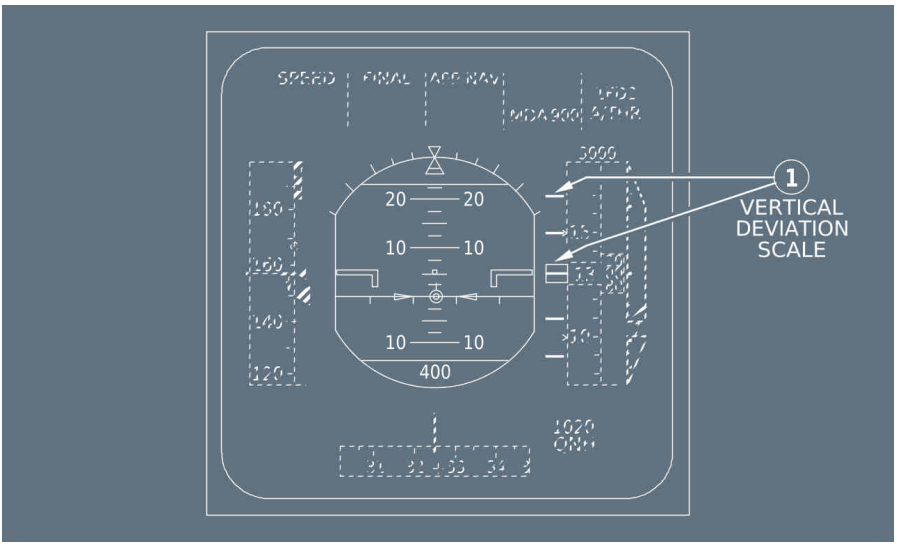
(3) Marker Indications
OM appears in blue, when the aircraft flies over the outer marker.
MM appears in amber, when it flies over the middle marker.
AWY appears in white, when it flies over an airways marker beacon or the ILS/MLS inner marker.

(4) LS/ILS Message
This flashes amber, when the APPR mode is armed, but the LS pb has not been selected.

(5) Selected approach
The ILS or MLS indication is displayed in magenta according to the approach selected by the crew.

Ident.: DSC-31-40-A-00001245.0021001 / 09 OCT 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

NON PRECISION APPROACH



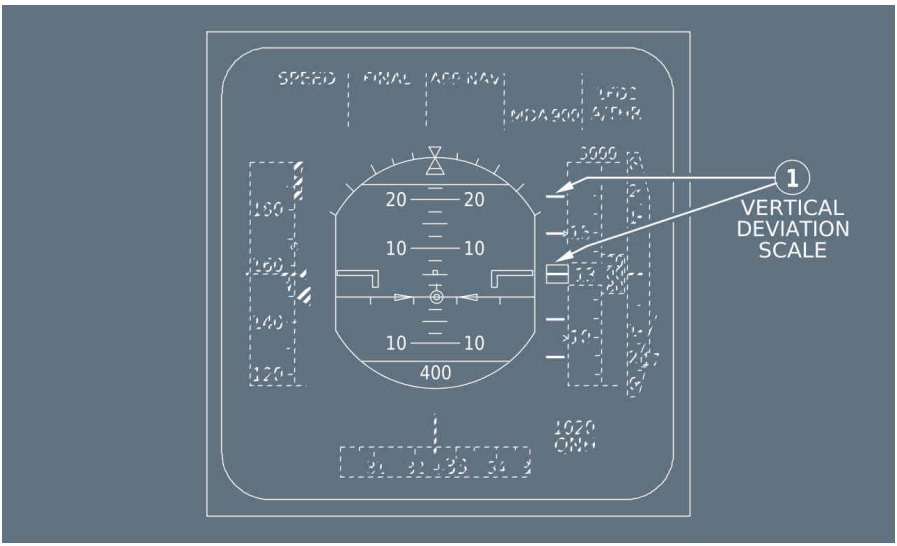
(1) Vertical Deviation Scale and Index

These symbols appear when in the approach phase and, when either FINAL is armed/engaged or a non-LS approach has been entered. They are displayed in the approach or go-around phase, until the MDA has been reached, or the MAP or the runway has been sequenced. They give the vertical deviation from the trajectory defined by the FMGC. Each index scale graduation represents 100 ft. The range is ± 200 ft.

Note: *If the LS pb is pressed, glide deviation has priority over vertical deviation information. As long as VDEV display conditions are met, and the LS pb is selected, an amber VDEV message flashes above the glide scale.*

Ident.: DSC-31-40-A-00001245.0022001 / 09 OCT 12
11 Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063

NON PRECISION APPROACH



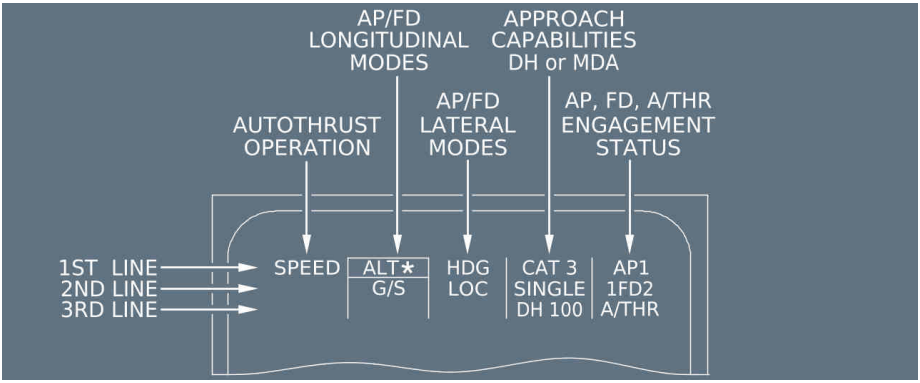
(1) Vertical Deviation Scale and Index

These symbols appear when in the approach phase and, when either FINAL is armed/engaged or a non-LS approach has been entered. They are displayed in the approach or go-around phase, until the MDA has been reached, or the MAP or the runway has been sequenced. They give the vertical deviation from the trajectory defined by the FMGC. Each index scale graduation represents 100 ft. The range is ± 200 ft.

Note: *If the LS pb is pressed, glide deviation has priority over vertical deviation information. As long as VDEV display conditions are met, and the LS pb is selected, an amber VDEV message flashes above the glide scale.*

FLIGHT MODE ANNUNCIATOR

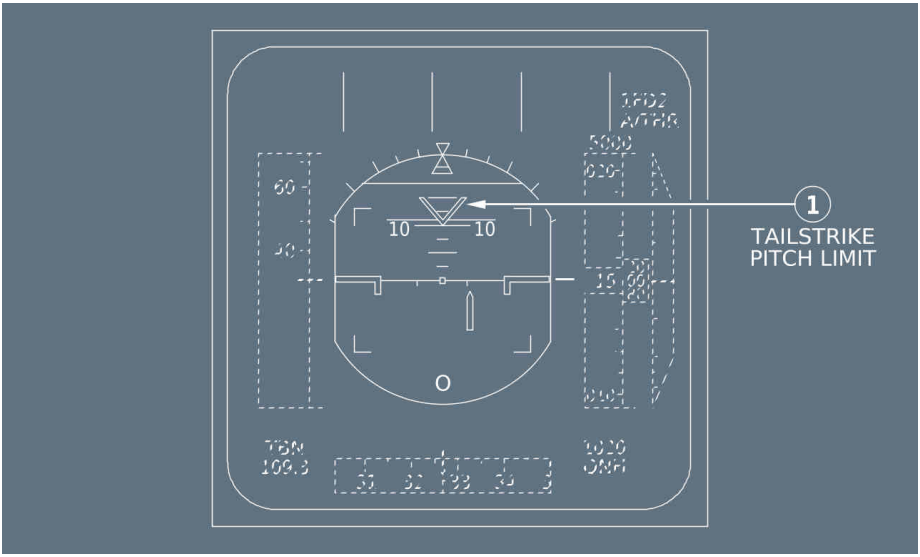
Ident.: DSC-31-40-00001246.0002001 / 09 OCT 12
Applicable to: ALL



For a detailed discussion of legends and messages that may appear during FMGS operations, see FLIGHT GUIDANCE chapter (*Refer to DSC-22_30-100 Flight Mode Annunciator (FMA) - General*).

TAILSTRIKE PITCH LIMIT INDICATOR

Ident.: DSC-31-40-00017534.0003001 / 21 MAR 16
Applicable to: ALL

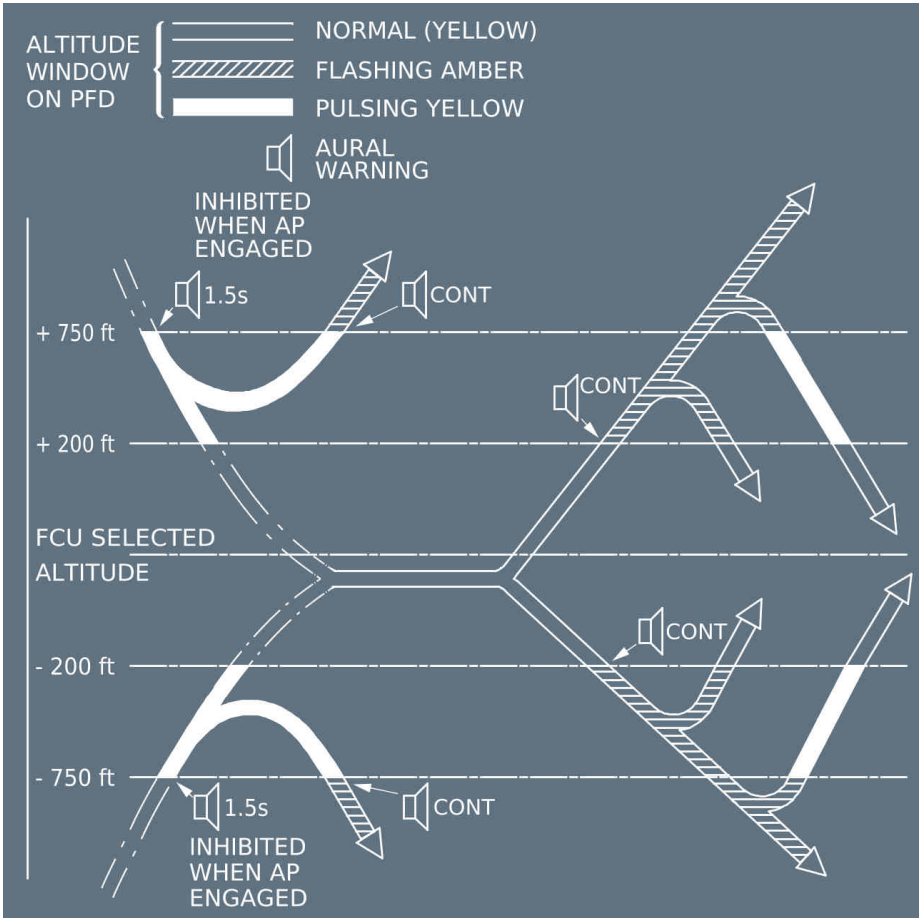


(1) Tailstrike Pitch Limit
The pitch limit indicates the maximum pitch attitude to avoid the tailstrike risk at landing. The indication is a fixed value corresponding to the main landing gear compressed. The indication appears at 400 ft radio height. The indication disappears, when there is no longer a risk of tailstrike.

ALTITUDE ALERT

Ident.: DSC-31-40-00001247.0002001 / 22 MAY 12
12 **Applicable to: MSN 01767-06868, 06914, 06952-07053, 07252-07396**

The FWC generates an altitude warning (C chord sound and PFD's altitude window pulses in yellow or flashes in amber), when the aircraft approaches a preselected altitude or flight level, or when it deviates from its selected altitude or flight level.
This warning results from a comparison between the altitude (ADIRS) and the preselected altitude displayed on FCU.



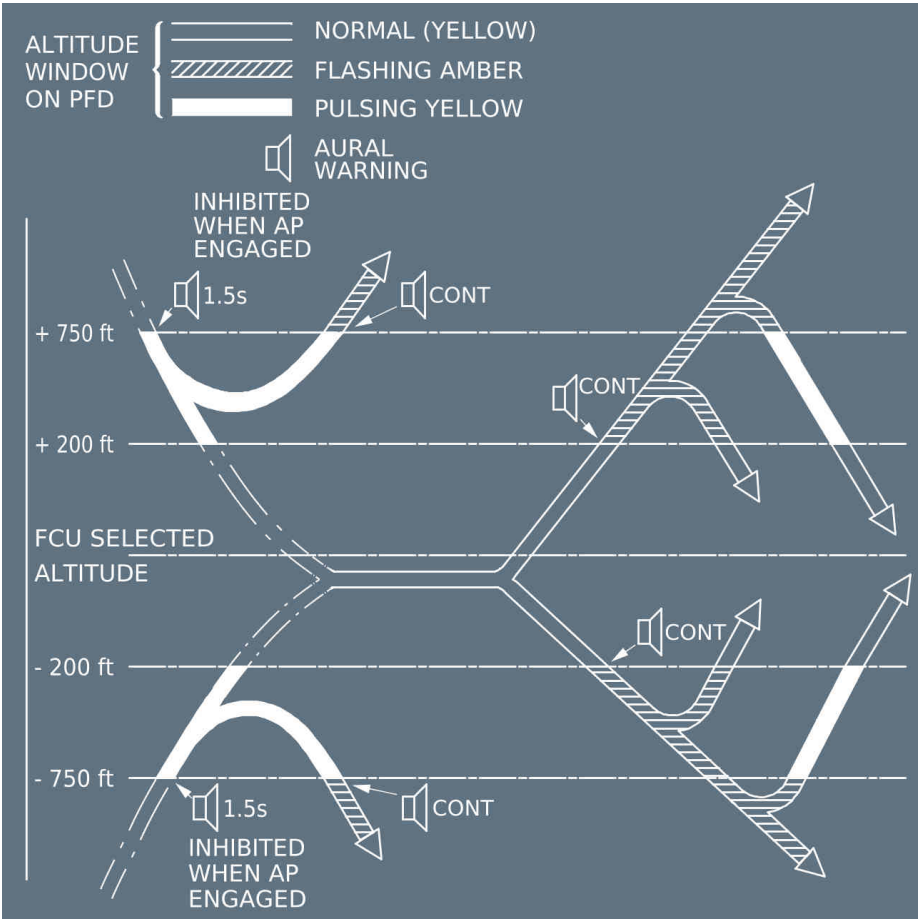
- Selecting a new altitude, or pushing the ECAM's EMER CANC pushbutton, or pressing either MASTER WARN pushbutton, cancels the continuous C chord.
- Selecting a new altitude stops the flashing of the altitude window.
- The altitude alert is inhibited:
  - When the slats are out, with the landing gear is selected down, or
  - In approach after the aircraft captures the glideslope, or
  - When the landing gear is locked down.

ALTITUDE ALERT

Ident.: DSC-31-40-00001247.0003001 / 22 MAY 12

[13] **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

The FWC generates an altitude warning (C chord sound and PFD's altitude window pulses in yellow or flashes in amber), when the aircraft approaches a preselected altitude or flight level, or when it deviates from its selected altitude or flight level.
This warning results from a comparison between the altitude (ADIRS) and the preselected altitude displayed on FCU.

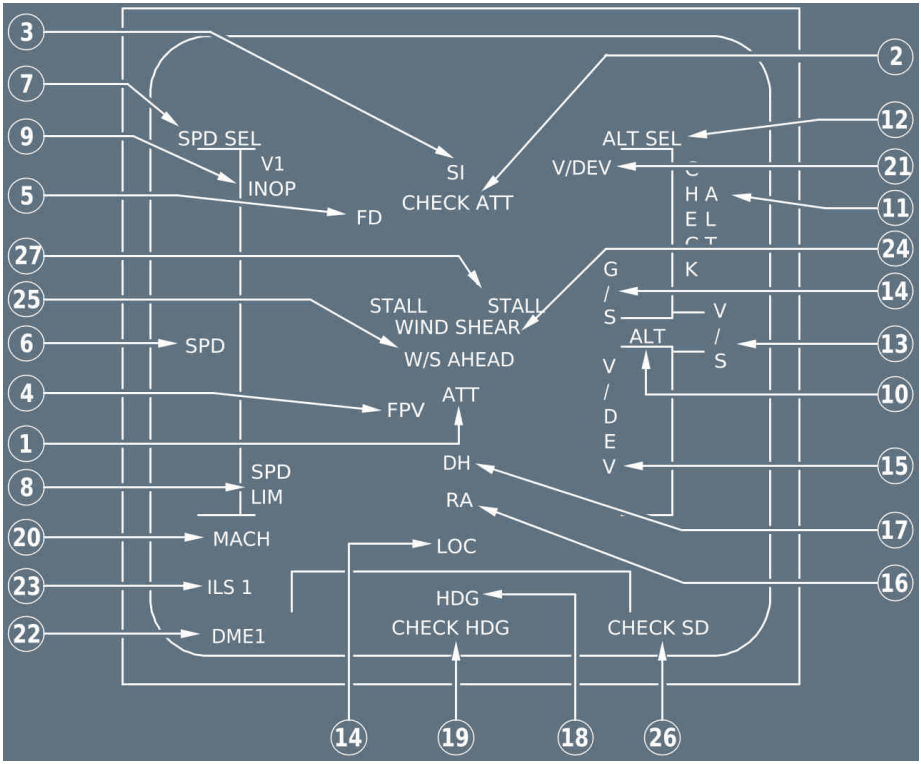


- Selecting a new altitude, or pushing the ECAM's EMER CANC pb, or pressing either MASTER WARN pb, cancels the continuous C chord
- Selecting a new altitude stops the flashing of the altitude window
- The altitude alert is inhibited:
  - When the slats are out, with the landing gear is selected down, or
  - In approach after the aircraft captures the glideslope, or
  - When the landing gear is locked down, or
  - In the case of a TCAS RA.

FLAGS AND MESSAGES DISPLAYED ON PFD

Ident.: DSC-31-40-00001248.0098001 / 19 DEC 17

14 **Applicable to: MSN 05120, 05158**



1. ATT flag (red)

If the PFD loses all attitude data, its entire sphere is cleared to display the ATT flag.

2. CHECK ATT, CHECK CAPT (F/O) PFD, CHECK EWD, DU NOT MONITORED (amber)
   For CHECK ATT, *Refer to DSC-31-05-60 Side1/Side2 Discrepancy Messages*.
   For more information, *Refer to DSC-31-05-10 Introduction*.
3. SI flag (red)
   If the sideslip information is lost or any reverse is deployed in flight, the index disappears and a red SI flag appears.
4. FPV flag (red)
   In the TRK FPA mode, when the drift angle or flight path angle is not valid, an FPV flag appears.
5. FD flag (red)
   If both FMGCs fail, or if both FDs are disengaged and the FD pushbutton is on and the attitude is valid, a red FD flag appears.
6. SPD flag (red)
   If the speed information fails, a SPD flag replaces the speed scale.
7. SPD SEL flag (red)
   If the selected speed information fails, a SPD SEL flag appears.
8. SPD LIM flag (red)
   This flag appears when both FACs are inoperative, or in case of SFCC dual flap/slat channel failure.
   In this case, the following PFD information is lost: VLS, S, F, Green Dot, Vtrend, Vmax, VFE next, VSW.
9. V1 INOP flag (red)
   When the V1 signal is not valid, a V1 INOP flag replaces the digital value.
10. ALT flag (red)
    If the altitude information fails, the ALT flag replaces the altitude scale.
11. CHECK ALT flag (amber)
    For more information, *Refer to DSC-31-05-60 Side1/Side2 Discrepancy Messages*.
12. ALT SEL flag (red)
    If the selected altitude information fails, an ALT SEL flag appears.
13. V/S flag (red)
    If the vertical speed information fails, the V/S flag replaces the vertical speed scale.
14. LOC, G/S, F-LOC, and F-G/S flags (red)
    If the localizer or glideslope receiver fails, a LOC or G/S flag appears on the deviation scale. If the pseudo localizer or pseudo glideslope deviation is invalid, a F-G/S or F-LOC flag appears on the deviation scale. If there is an inconsistency in the approach mode selection within one MMR, LOC and F-LOC flags and G/S and F-G/S flags appear.
15. VDEV flag (red)
    If the vertical deviation information fails, and the LS pb is not pressed, a VDEV flag replaces the VDEV scale.
16. RA flag (red)

If both radio altimeters fail, this flag appears in place of the radio height indication.

17. DH flag (amber)
    A DH flag appears, when the aircraft reaches the selected DH.
18. HDG flag (red)
    If the heading information fails, the HDG flag replaces the heading scale.
19. CHECK HDG flag (red)
    For more information, *Refer to DSC-31-05-60 Side1/Side2 Discrepancy Messages*
20. MACH flag (red)
    This flag appears, if the Mach data fails.
21. VDEV (amber)
    At the top of the glide scale, this message flashes in approach phase and, when either the FINAL mode is armed/engaged, or a non-LS approach has been selected, and the LS pb is selected.
22. DME 1 flag (red)
    When the DME distance is not valid, a DME 1 (on PFD 1) or DME 2 (on PFD 2) flag replaces the DME distance indication.
23. ILS 1 or FLS 1 or LS 1 flag (red)
    An ILS 1 (on PFD 1) or ILS 2 (on PFD 2) flag is displayed instead of the ILS frequency, if the ILS frequency fails, or either the LOC or the G/S signal fails.
    An FLS 1 (on PFD 1) or FLS 2 (on PFD 2) flag is displayed instead of the FLS slope, when the F-LOC or F-G/S signal or anchor point distance is not available.
    A LOC / FLS 1 (on PFD 1) or LOC / FLS 2 (on PFD 2) flag is displayed instead of the FLS slope, when the LOC or F-G/S signal or anchor point distance is not available.
    An LS 1 (on PFD 1) or LS 2 (on PFD 2) flag is displayed when both ILS and FLS are lost, or when one MMR is lost, or when there is an inconsistency in approach solution within one MMR.
24. WINDSHEAR warning (red)
    This message is displayed, when windshear is detected (reactive windshear warning) by the FAC.
    Refer to DSC-22_40-40 Windshear Detection Function.
25. W/S AHEAD
    This message is displayed, when the predictive windshear system has detected windshear ahead of the aircraft.
    The message is in amber or red, depending on the alert level.
    Refer to DSC-34-SURV-30-20 Windshear Alerts Inhibition.

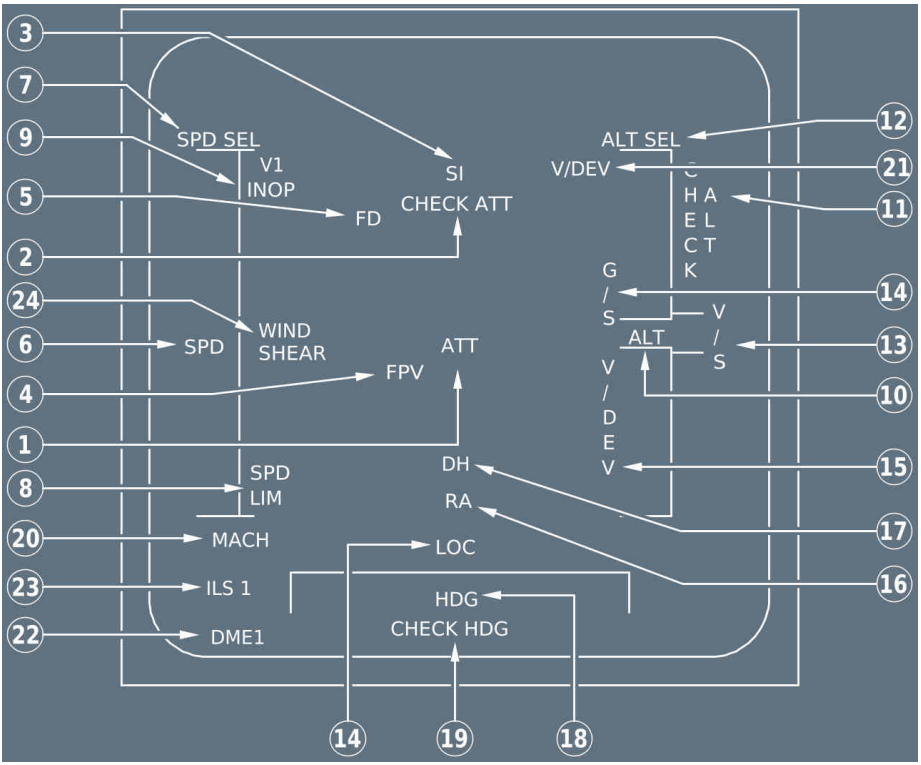
    Note: - *All flags, except, V1 INOP which is steady, flash for 9 s, then remain steady.*
    - *For information on the TCAS flag, Refer to DSC-34-SURV-60-20 PFD Indications.*

26. CHECK SD, CHECK CAPT (F/O) ND (amber)
    For more information, *Refer to DSC-31-05-10 Introduction*.
27. STALL STALL warning (red)
    PFD displays this message when the AOA is greater than a predetermined angle.

WINDSHEAR message inhibits this message in normal law.

FLAGS AND MESSAGES DISPLAYED ON PFD

Ident.: DSC-31-40-00001248.0006001 / 21 MAR 17
Applicable to: MSN 02359, 02405, 02482



(1) ATT flag (red)
If the PFD loses all attitude data, its entire sphere is cleared to display the ATT flag.

(2) CHECK ATT (amber)
"CHECK ATT" appears, when there is a disagreement (of a least 5 °) between the attitude information displayed by the two PFDs. The CHECK ATT flag appears on both PFDs, and a caution appears on the ECAM.

(3) SI flag (red)
If the sideslip information is lost or any reverse is deployed in flight, the index disappears and a red SI flag appears.

(4) FPV flag (red)
In the TRK FPA mode, when the drift angle or flight path angle is not valid, an FPV flag appears.

(5) FD flag (red)
If both FMGCs fail, or if both FDs are disengaged and the FD pushbutton is on and the attitude is valid, a red FD flag appears.

(6) SPD flag (red)
If the speed information fails, a SPD flag replaces the speed scale.

(7) SPD SEL flag (red)
If the selected speed information fails, a SPD SEL flag appears.

(8) SPD LIM flag (red)
This flag appears when both FACs are inoperative, or in case of SFCC dual flap/slat channel failure.
In this case, the following PFD information is lost : VLS, S, F, Green Dot, Vtrend, VMAX, VFE next, VSW.

(9) V1 INOP flag (red)
When the V1 signal is not valid, a V1 INOP flag replaces the digital value.

(10) ALT flag (red)
If the altitude information fails, the ALT flag replaces the altitude scale.

(11) CHECK ALT flag (amber)
The CHECK ALT flag appears, as does an ECAM caution, if the disagree between the two PFD altitude indications is greater than 250 ft when QNH is selected, or 500 ft when STD is selected.
The caution and the flag disappear, when the Pilot's and the Co-pilot's barometer references disagree.

(12) ALT SEL flag (red)
If the selected altitude information fails, an ALT SEL flag appears.

(13) V/S flag (red)
If the vertical speed information fails, the V/S flag replaces the vertical speed scale.

(14) LOC and G/S flags (red)
If the localizer or glideslope receiver fails, a LOC or G/S flag appears on the deviation scale.

(15) VDEV flag (red)
If the vertical deviation information fails, and the LS pb is not pressed, a VDEV flag replaces the VDEV scale.

(16) RA flag (red)
If both radio altimeters fail, this flag appears in place of the radio height indication.

(17) DH flag (amber)
A DH flag appears, when the aircraft reaches the selected DH.

(18) HDG flag (red)
If the heading information fails, the HDG flag replaces the heading scale.

(19) CHECK HDG flag (amber)
The CHECK HDG flag appears, as does an ECAM caution, if there is a discrepancy (5 °) between pilots's, and copilot's heading indications.

(20) MACH flag (red)
This flag appears, if the Mach data fails.

(21) VDEV (amber)
At the top of the glide scale, this message flashes in approach phase and, when either the FINAL mode is armed/engaged, or a non-LS approach has been selected, and the LS pushbutton is selected.

(22) DME 1 flag (red)
When the DME distance is not valid, a DME1 (on PFD1) or DME2 (on PFD2) flag replaces the DME distance indication.

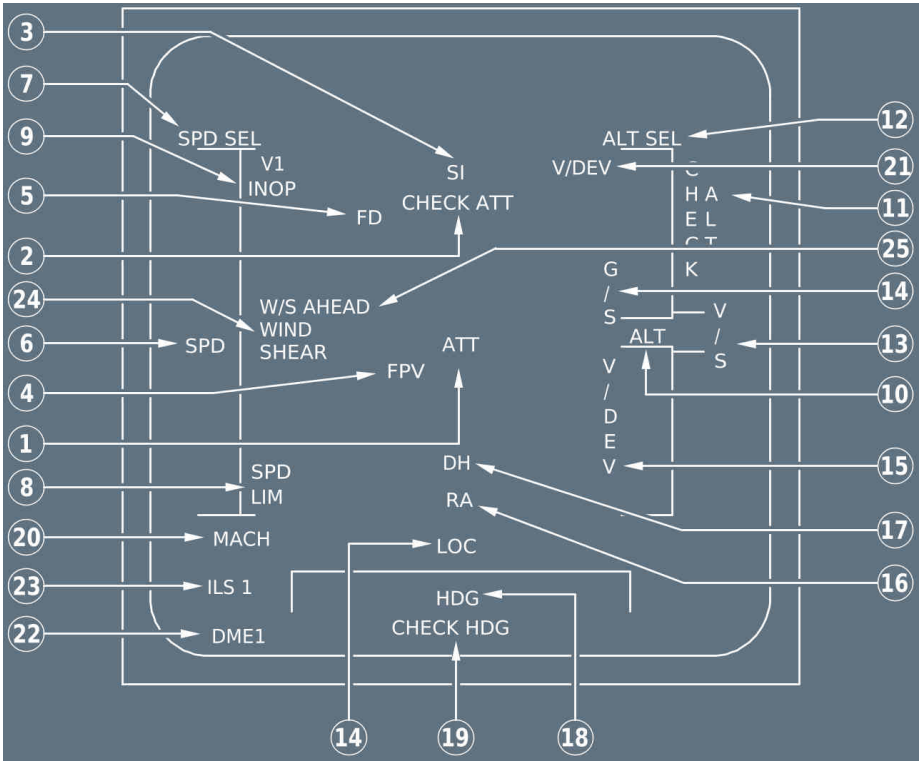
(23) ILS1 flag (red)
If an ILS frequency fails, or if either the LOC or G/S signals fail, an ILS1 (on PFD1) or ILS2 (on PFD2) flag replaces the ILS frequency indication.

(24) WINDSHEAR warning (red)
This message is displayed, when windshear is detected (reactive windshear warning) by the FAC.
Refer to DSC-22_40-40 Windshear Detection Function

Note: *1. All flags, except SI, V1 INOP and DME 1 which are steady, flash for 9 s, then remain steady.*
The DH flag flashes for 3 s, then remains steady.
2. For information on the TCAS flag, Refer to DSC-34-SURV-60-10 TCAS Modes.

FLAGS AND MESSAGES DISPLAYED ON PFD

Ident.: DSC-31-40-00001248.0009001 / 21 MAR 17
Applicable to: MSN 01767-01920, 02108, 02195-02334



(1) ATT flag (red)
If the PFD loses all attitude data, its entire sphere is cleared to display the ATT flag.

(2) CHECK ATT (amber)
"CHECK ATT" appears, when there is a disagreement (of a least 5 °) between the attitude information displayed by the two PFDs. The CHECK ATT flag appears on both PFDs, and a caution appears on the ECAM.

(3) SI flag (red)
If the sideslip information is lost or any reverse is deployed in flight, the index disappears and a red SI flag appears.

(4) FPV flag (red)
In the TRK FPA mode, when the drift angle or flight path angle is not valid, an FPV flag appears.

(5) FD flag (red)
If both FMGCs fail, or if both FDs are disengaged and the FD pushbutton is on and the attitude is valid, a red FD flag appears.

(6) SPD flag (red)
If the speed information fails, a SPD flag replaces the speed scale.

(7) SPD SEL flag (red)
If the selected speed information fails, a SPD SEL flag appears.

(8) SPD LIM flag (red)
This flag appears when both FACs are inoperative, or in case of SFCC dual flap/slat channel failure.
In this case, the following PFD information is lost : VLS, S, F, Green Dot, Vtrend, VMAX, VFE next, VSW.

(9) V1 INOP flag (red)
When the V1 signal is not valid, a V1 INOP flag replaces the digital value.

(10) ALT flag (red)
If the altitude information fails, the ALT flag replaces the altitude scale.

(11) CHECK ALT flag (amber)
The CHECK ALT flag appears, as does an ECAM caution, if the disagree between the two PFD altitude indications is greater than 250 ft when QNH is selected, or 500 ft when STD is selected.
The caution and the flag disappear, when the Pilot's and the Co-pilot's barometer references disagree.

(12) ALT SEL flag (red)
If the selected altitude information fails, an ALT SEL flag appears.

(13) V/S flag (red)
If the vertical speed information fails, the V/S flag replaces the vertical speed scale.

(14) LOC and G/S flags (red)
If the localizer or glideslope receiver fails, a LOC or G/S flag appears on the deviation scale.

(15) VDEV flag (red)
If the vertical deviation information fails, and the LS pb is not pressed, a VDEV flag replaces the VDEV scale.

(16) RA flag (red)
If both radio altimeters fail, this flag appears in place of the radio height indication.

(17) DH flag (amber)
A DH flag appears, when the aircraft reaches the selected DH.

(18) HDG flag (red)
If the heading information fails, the HDG flag replaces the heading scale.

(19) CHECK HDG flag (amber)
The CHECK HDG flag appears, as does an ECAM caution, if there is a discrepancy (5 °) between pilots's, and copilot's heading indications.

(20) MACH flag (red)
This flag appears, if the Mach data fails.

(21) VDEV (amber)
At the top of the glide scale, this message flashes in approach phase and, when either the FINAL mode is armed/engaged, or a non-LS approach has been selected, and the LS pushbutton is selected.

(22) DME 1 flag (red)
When the DME distance is not valid, a DME1 (on PFD1) or DME2 (on PFD2) flag replaces the DME distance indication.

(23) ILS1 flag (red)
If an ILS frequency fails, or if either the LOC or G/S signals fail, an ILS1 (on PFD1) or ILS2 (on PFD2) flag replaces the ILS frequency indication.

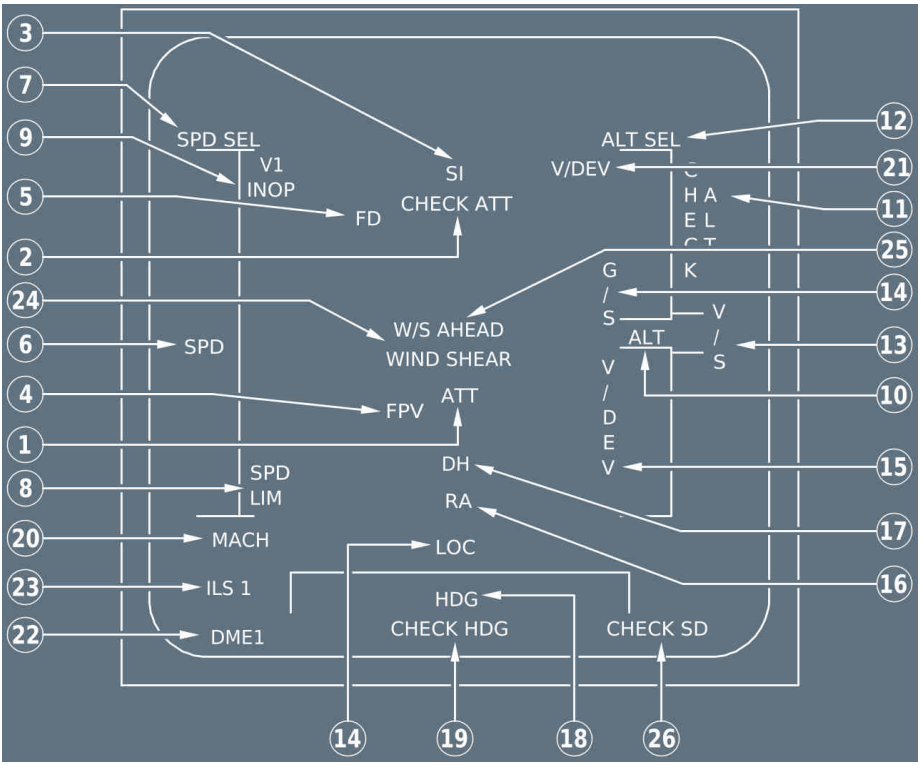
(24) WINDSHEAR warning (red)
This message is displayed, when windshear is detected (reactive windshear warning) by the FAC.
Refer to DSC-22_40-40 Windshear Detection Function

(25) W/S AHEAD
This message is displayed, when the predictive windshear system has detected windshear ahead of the aircraft.
The message is in amber or red, depending on the alert level.
Refer to DSC-34-SURV-30-20 Windshear Alerts Inhibition

Note: *1. All flags, except SI, V1 INOP and DME 1 which are steady, flash for 9 s, then remain steady.*
The DH flag flashes for 3 s, then remains steady.
2. For information on the TCAS flag, Refer to DSC-34-SURV-60-10 TCAS Modes.

FLAGS AND MESSAGES DISPLAYED ON PFD

Ident.: DSC-31-40-00001248.0012001 / 21 MAR 17
Applicable to: MSN 02097, 02121, 02138, 02388, 02443-02457, 02584-02626, 02670, 02737-03138, 03308, 03357-03618, 03782-04397, 04433, 04481-04954, 05094, 05218, 05262, 05365-05411, 05473, 05577-05641, 05712, 05744-05807, 05992, 06247, 06289-06336



(1) ATT flag (red)
If the PFD loses all attitude data, its entire sphere is cleared to display the ATT flag.

(2) CHECK ATT, CHECK CAPT (F/O) PFD, CHECK EWD, DU NOT MONITORED (amber)
For CHECK ATT, *Refer to DSC-31-05-60 Side1/Side2 Discrepancy Messages*
For more information, *Refer to DSC-31-05-10 Introduction*

(3) SI flag (red)
If the sideslip information is lost or any reverse is deployed in flight, the index disappears and a red SI flag appears.

(4) FPV flag (red)
In the TRK FPA mode, when the drift angle or flight path angle is not valid, an FPV flag appears.

(5) FD flag (red)
If both FMGCs fail, or if both FDs are disengaged and the FD pushbutton is on and the attitude is valid, a red FD flag appears.

(6) SPD flag (red)
If the speed information fails, a SPD flag replaces the speed scale.

(7) SPD SEL flag (red)
If the selected speed information fails, a SPD SEL flag appears.

(8) SPD LIM flag (red)
This flag appears when both FACs are inoperative, or in case of SFCC dual flap/slat channel failure.
In this case, the following PFD information is lost : VLS, S, F, Green Dot, Vtrend, Vmax, VFE next, VSW.

(9) V1 INOP flag (red)
When the V1 signal is not valid, a V1 INOP flag replaces the digital value.

(10) ALT flag (red)
If the altitude information fails, the ALT flag replaces the altitude scale.

(11) CHECK ALT flag (amber)
For more information, *Refer to DSC-31-05-60 Side1/Side2 Discrepancy Messages*

(12) ALT SEL flag (red)
If the selected altitude information fails, an ALT SEL flag appears.

(13) V/S flag (red)
If the vertical speed information fails, the V/S flag replaces the vertical speed scale.

(14) LOC and G/S flags (red)
If the localizer or glideslope receiver fails, a LOC or G/S flag appears on the deviation scale.

(15) VDEV flag (red)
If the vertical deviation information fails, and the LS pb is not pressed, a VDEV flag replaces the VDEV scale.

(16) RA flag (red)
If both radio altimeters fail, this flag appears in place of the radio height indication.

(17) DH flag (amber)
A DH flag appears, when the aircraft reaches the selected DH.

(18) HDG flag (red)
If the heading information fails, the HDG flag replaces the heading scale.

(19) CHECK HDG flag (amber)
For more information, *Refer to DSC-31-05-60 Side1/Side2 Discrepancy Messages*

(20) MACH flag (red)
This flag appears, if the Mach data fails.

(21) VDEV (amber)
At the top of the glide scale, this message flashes in approach phase and, when either the FINAL mode is armed/engaged, or a non-LS approach has been selected, and the LS pushbutton is selected.

(22) DME 1 flag (red)
When the DME distance is not valid, a DME1 (on PFD1) or DME2 (on PFD2) flag replaces the DME distance indication.

(23) ILS1 flag (red)
If an ILS frequency fails, or if either the LOC or G/S signals fail, an ILS1 (on PFD1) or ILS2 (on PFD2) flag replaces the ILS frequency indication.

(24) WINDSHEAR warning (red)
This message is displayed, when windshear is detected (reactive windshear warning) by the FAC.
Refer to DSC-22_40-40 Windshear Detection Function

(25) W/S AHEAD
This message is displayed, when the predictive windshear system has detected windshear ahead of the aircraft.
The message is in amber or red, depending on the alert level.
Refer to DSC-34-SURV-30-20 Windshear Alerts Inhibition

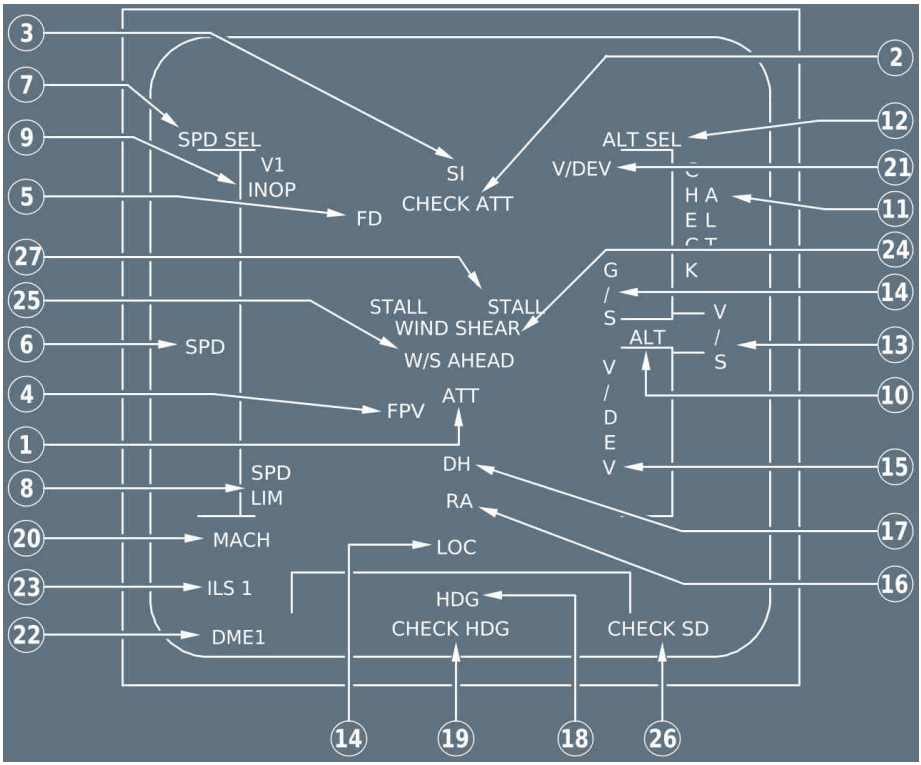
Note: *1. All flags, except, V1 INOP which is steady, flash for 9 s, then remain steady.*
2. For information on the TCAS flag, *Refer to DSC-34-SURV-60-20 PFD Indications.*

(26) CHECK SD, CHECK CAPT (F/O) ND (amber)
For more information, *Refer to DSC-31-05-10 Introduction*.

FLAGS AND MESSAGES DISPLAYED ON PFD

Ident.: DSC-31-40-00001248.0096001 / 19 DEC 17

15 **Applicable to: MSN 01957, 02135, 02139, 02649, 02712, 03264, 03330, 03750, 04399, 04438, 04965-05092, 05155, 05190, 05230-05259, 05291-05313, 05437-05460, 05476-05537, 05676-05683, 05727, 05829-05952, 06010-06208, 06275-06287, 06720-09063**



1. ATT flag (red)
   If the PFD loses all attitude data, its entire sphere is cleared to display the ATT flag.
2. CHECK ATT, CHECK CAPT (F/O) PFD, CHECK EWD, DU NOT MONITORED (amber)
   For CHECK ATT, *Refer to DSC-31-05-60 Side1/Side2 Discrepancy Messages*.
   For more information, *Refer to DSC-31-05-10 Introduction*.
3. SI flag (red)
   If the sideslip information is lost or any reverse is deployed in flight, the index disappears and a red SI flag appears.
4. FPV flag (red)
   In the TRK FPA mode, when the drift angle or flight path angle is not valid, an FPV flag appears.

5. FD flag (red)
   If both FMGCs fail, or if both FDs are disengaged and the FD pushbutton is on and the attitude is valid, a red FD flag appears.
6. SPD flag (red)
   If the speed information fails, a SPD flag replaces the speed scale.
7. SPD SEL flag (red)
   If the selected speed information fails, a SPD SEL flag appears.
8. SPD LIM flag (red)
   This flag appears when both FACs are inoperative, or in case of SFCC dual flap/slat channel failure.
   In this case, the following PFD information is lost: VLS, S, F, Green Dot, Vtrend, Vmax, VFE next, VSW.
9. V1 INOP flag (red)
   When the V1 signal is not valid, a V1 INOP flag replaces the digital value.
10. ALT flag (red)
    If the altitude information fails, the ALT flag replaces the altitude scale.
11. CHECK ALT flag (amber)
    For more information, *Refer to DSC-31-05-60 Side1/Side2 Discrepancy Messages*.
12. ALTSEL flag (red)
    If the selected altitude information fails, an ALT SEL flag appears.
13. V/S flag (red)
    If the vertical speed information fails, the V/S flag replaces the vertical speed scale.
14. LOC and G/S flags (red)
    If the localizer or glideslope receiver fails, a LOC or G/S flag appears on the deviation scale.
15. VDEV flag (red)
    If the vertical deviation information fails, and the LS pb is not pressed, a VDEV flag replaces the VDEV scale.
16. RA flag (red)
    If both radio altimeters fail, this flag appears in place of the radio height indication.
17. DH flag (amber)
    A DH flag appears, when the aircraft reaches the selected DH.
18. HDG flag (red)
    If the heading information fails, the HDG flag replaces the heading scale.
19. CHECK HDG flag (red)
    For more information, *Refer to DSC-31-05-60 Side1/Side2 Discrepancy Messages*
20. MACH flag (red)
    This flag appears, if the Mach data fails.
21. VDEV (amber)
    At the top of the glide scale, this message flashes in approach phase and, when either the FINAL mode is armed/engaged, or a non-LS approach has been selected, and the LS pb is selected.

22. DME 1 flag (red)
When the DME distance is not valid, a DME 1 (on PFD 1) or DME 2 (on PFD 2) flag replaces the DME distance indication.
23. ILS 1 flag (red)
If the ILS frequency fails, or if either the LOC or G/S signals fail, an ILS 1 (on PFD 1) or ILS 2 (on PFD 2) flag replaces the ILS frequency indication.
24. WINDSHEAR warning (red)
This message is displayed, when windshear is detected (reactive windshear warning) by the FAC.
Refer to DSC-22_40-40 Windshear Detection Function.
25. W/S AHEAD
This message is displayed, when the predictive windshear system has detected windshear ahead of the aircraft.
The message is in amber or red, depending on the alert level.
Refer to DSC-34-SURV-30-20 Windshear Alerts Inhibition.

Note: - *All flags, except, V1 INOP which is steady, flash for 9 s, then remain steady.*
- *For information on the TCAS flag,* *Refer to DSC-34-SURV-60-20 PFD Indications.*

26. CHECK SD, CHECK CAPT (F/O) ND (amber)
For more information, *Refer to DSC-31-05-10 Introduction.*
27. STALL STALL warning (red)
PFD displays this message when the AOA is greater than a predetermined angle.
WINDSHEAR message inhibits this message in normal law.

BACKUP SPEED/ALTITUDE SCALE

Ident.: DSC-31-40-B-00019127.0002001 / 20 MAR 17
16 **Applicable to: MSN 07618-09063**

GENERAL

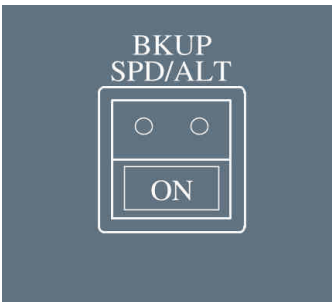
The BackUp Speed Scale (BUSS) enables to fly the aircraft when airspeed indications are unreliable.

When the BUSS is activated:
- The BUSS replaces the normal speed
- The GPS altitude replaces the barometric altitude scale.

The use of the BUSS is reversible.

The reversible BUSS is activated and deactivated with two BKUP SPD/ALT pb available on the main instrument panel:
- One on the left of the Captain PFD
- One on the right of the F/O PFD.

Each BKUP SPD/ALT pb independently commands the display of the BUSS on its associated side.



The BUSS information is based on the angle of attack (AOA), and depends on the slat/flap configuration.

ECAM ALERT AND MEMO

The ECAM displays a memo when the flight crew activates the BKUP SPD/ALT on one side: BKUP SPD/ALT.

The ECAM displays an alert when the flight crew activates the BKUP SPD/ALT:
- On one side with the AP and/or FD engaged on the same side,
  Refer to PRO-ABN-NAV NAV BKUP SPD/ALT ON CAPT(F/O) PFD, or
- On both sides,
  Refer to PRO-ABN-NAV NAV BKUP SPD/ALT ON CAPT+F/O PFD.

Ident.: DSC-31-40-B-00019127.0001001 / 16 MAY 17

17 **Applicable to: MSN 01957-02097, 02121, 02138, 02670, 02804, 03071-03138, 03357-03618, 03782-04216, 04312-04397, 04481-07510**

GENERAL

The BackUp Speed Scale (BUSS) enables to fly the aircraft when airspeed indications are unreliable.

When the BUSS is activated:
- The BUSS replaces the normal speed,
- The GPS altitude replaces the barometric altitude scales.

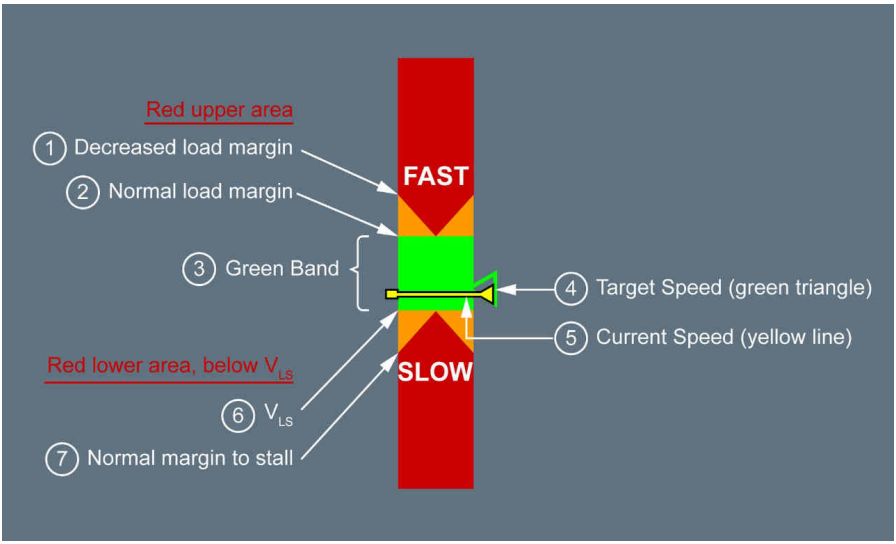
The BUSS is displayed on both PFDs when the flight crew turn off all ADRs.

The activation of this BUSS is not reversible.
The BUSS information is based on the angle of attack (AOA), and depends on the slat/flap configuration.

Ident.: DSC-31-40-B-00019128.0001001 / 21 MAR 16

18 **Applicable to: MSN 01957-02097, 02121, 02138, 02670, 02804, 03071-03138, 03357-03618, 03782-04216, 04312-04397, 04481-09063**

BACKUP SPEED SCALE



(1) Red FAST area
This area indicates the excessive speed range while decreasing the margin to the maximum structural speed.

(2) Amber FAST area
This area indicates the excessive speed range while keeping an appropriate margin to the maximum structural speed.

(3) Green area
The green area indicates the safe speed range.

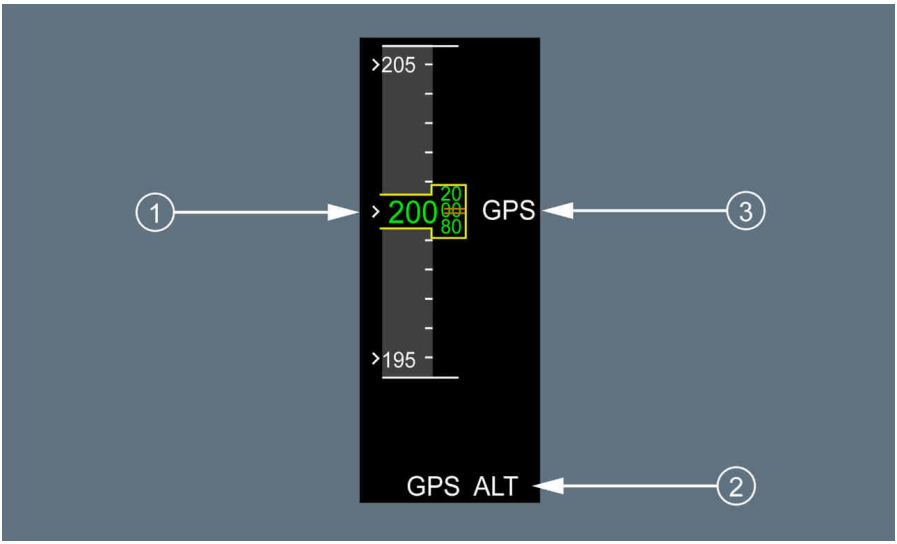
(4) Target speed (green triangle)
This symbol indicates the optimum target speed.
During the approach, it indicates the target speed for the approach.

(5) Actual speed reference (yellow line)
This line indicates the current speed of the aircraft.

(6) Amber SLOW area
This area indicates the too low speed range while keeping an appropriate margin to the stall speed.

(7) Red SLOW area
This area indicates the too low speed range while reducing the margin to the stall speed.

BACKUP ALTITUDE SCALE



(1) Current GPS altitude
Two amber dashes cover the last two digits.

(2) GPS ALT flag
This flag indicates that the barometric altitude is replaced by the GPS altitude.

(3) GPS flag (displayed depending of the aircraft configuration)
This flag indicates that the barometric altitude is replaced by the GPS altitude.

Note: The vertical speed indication is no longer displayed.

Intentionally left blank

GENERAL

Ident.: DSC-31-45-00001249.0002001 / 24 FEB 11
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

There are five different displays (five modes to display navigation information):
- ROSE LS
- ROSE VOR
- ROSE NAV
- ARC
- PLAN

The Navigation Display (ND) can provide a weather radar image in all modes, except PLAN.

Note: *In case avionics ventilation is not sufficient (e.g. due to a blower and extract fan failure), and the Navigation Display (ND) Unit temperature exceeds a defined threshold, the ND will not display the weather radar image, in order to limit power consumption and prevent a DU overheat. Any additional increase in temperature will lead to a complete cut off of the power supply to this display unit.*

GENERAL

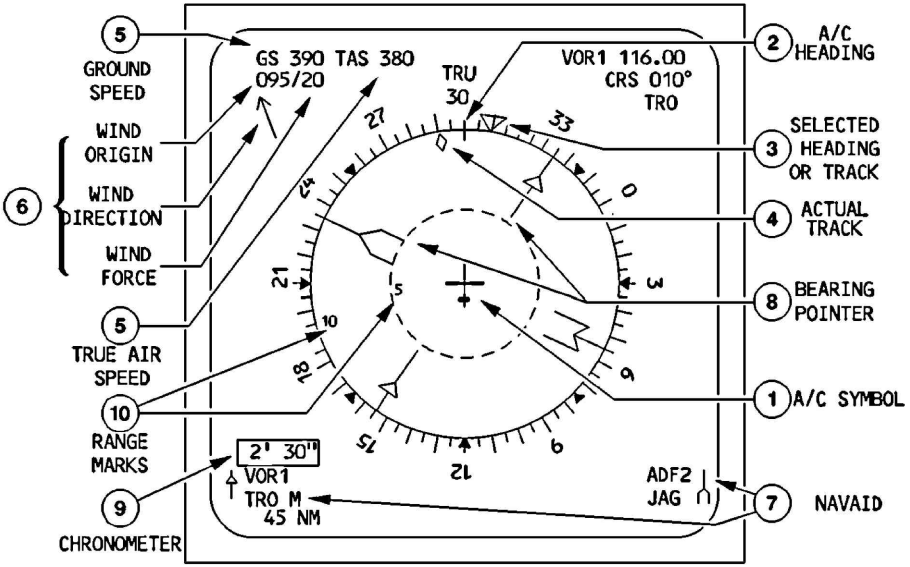
Ident.: DSC-31-45-00001249.0003001 / 21 MAR 16
1 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

There are five different displays (five modes to display navigation information) :
- ROSE LS
- ROSE VOR
- ROSE NAV
- ARC
- PLAN

The Navigation Display (ND) can provide a weather radar image in all modes, except PLAN.

ROSE MODES

Ident.: DSC-31-45-00001250.0001001 / 19 MAY 14
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) Aircraft symbol (yellow)
Fixed and centered in the display, this symbol points to the yellow lubber line.

(2) Aircraft heading
The fixed yellow lubber line points to the aircraft magnetic heading on the moving white compass rose. Small white triangles are fixed at 45 ° intervals on the circumference of the compass rose.
"TRU" appears at the top of the compass rose, when it is displaying true heading instead of magnetic heading (latitude above 73 ° North or 60 ° South).

(3) Selected heading or track (blue)
This pointer shows the heading or track indicated on the FCU's HDG TRK counter.

(4) Actual aircraft track (green)
This symbol is a small green diamond.

(5) Ground speed and true air speed (green)
ADIRS furnishes these speeds.

(6) Wind direction and speed

ADIRS provides the wind direction and speed. The digital direction reflects the true north reference, and the analog direction (indicated by the green arrow) reflects the magnetic north reference. The green arrow only appears, if the wind speed is above two knots.
If the display does not receive either wind speed or direction, dashes replace the numbers on the display.

(7) NAVAIDs

When the ADF-OFF-VOR selector switch on either the pilot's or copilot's EFIS control panel is set to ADF or VOR, the onside ND displays the following characteristics of the corresponding NAVAID in white for VOR or in green for ADF (left side for receiver 1 and right side for receiver 2):

- Type of NAVAID (ADF or VOR)
- Shape and color of the associated bearing pointer (if the bearing pointer is in view).
- NAVAID identification (or frequency by default)
- DME distance if a DME is collocated with the selected VOR. ADF and DME distance are never displayed at the same time.
- Mode of tuning
  - M for a NAVAID tuned manually by the pilot through the MCDU (underlined and dimmed),
  - R for a NAVAID tuned from an RMP (Radio Management Panel) (underlined and dimmed),
  - Nothing for a NAVAID tuned automatically by the FMGC.

If reception fails, the ND stops displaying the associated data (except for the identification or frequency).

(8) Bearing pointer (green for ADF, white for VOR)

This pointer appears when bearing data is available.
If the aircraft is not receiving the beacon or if a receiver fails, the associated bearing pointer disappears.

(9) Chronometer Indication (white)

These numbers appear when the onside chronometer is started.
They display the elapsed time.
The indication is in minutes and seconds from 0 to 59 min 59 s, and in hours and minutes from 1 h to 99 h 59 min (Seconds are not displayed beyond 59 min 59 s.).

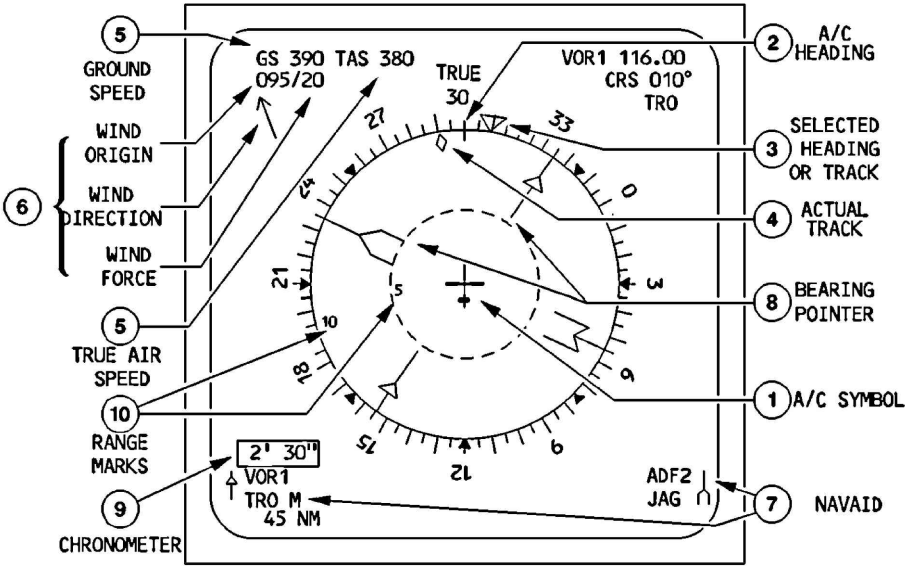
(10) Range marks

The range scale value selected on the EFIS control panel (10 to 320 NM) governs the scale of the ND.

ROSE MODES

Ident.: DSC-31-45-00001250.0002001 / 19 MAY 14

[2] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



(1) Aircraft symbol (yellow)
Fixed and centered in the display, this symbol points to the yellow lubber line.

(2) Aircraft heading
The fixed yellow lubber line points to the aircraft magnetic heading on the moving white compass rose. Small white triangles are fixed at 45 ° intervals on the circumference of the compass rose.
“TRUE” appears at the top of the compass rose, when it is displaying true heading instead of magnetic heading (latitude above 73 ° North or 60 ° South).

(3) Selected heading or track (blue)
This pointer shows the heading or track indicated on the FCU's HDG TRK counter.

(4) Actual aircraft track (green)
This symbol is a small green diamond.

(5) Ground speed and true air speed (green)
ADIRS furnishes these speeds.

(6) Wind direction and speed

ADIRS provides the wind direction and speed. The digital direction and the analog direction (indicated by the green arrow) both reflect the true north reference. The green arrow only appears, if the wind speed is above two knots.

If the display does not receive either wind speed or direction, dashes replace the numbers on the display.

(7) NAVAIDs

When the ADF-OFF-VOR selector switch on either the pilot's or copilot's EFIS control panel is set to ADF or VOR, the onside ND displays the following characteristics of the corresponding NAVAID in white for VOR or in green for ADF (left side for receiver 1 and right side for receiver 2):

- Type of NAVAID (ADF or VOR)
- Shape and color of the associated bearing pointer (if the bearing pointer is in view).
- NAVAID identification (or frequency by default)
- DME distance if a DME is collocated with the selected VOR. ADF and DME distance are never displayed at the same time.
- Mode of tuning
  - M for a NAVAID tuned manually by the pilot through the MCDU (underlined and dimmed),
  - R for a NAVAID tuned from an RMP (Radio Management Panel) (underlined and dimmed),
  - Nothing for a NAVAID tuned automatically by the FMGC.

If reception fails, the ND stops displaying the associated data (except for the identification or frequency).

(8) Bearing pointer (green for ADF, white for VOR)

This pointer appears when bearing data is available.

If the aircraft is not receiving the beacon or if a receiver fails, the associated bearing pointer disappears.

(9) Chronometer Indication (white)

These numbers appear when the onside chronometer is started.

They display the elapsed time.

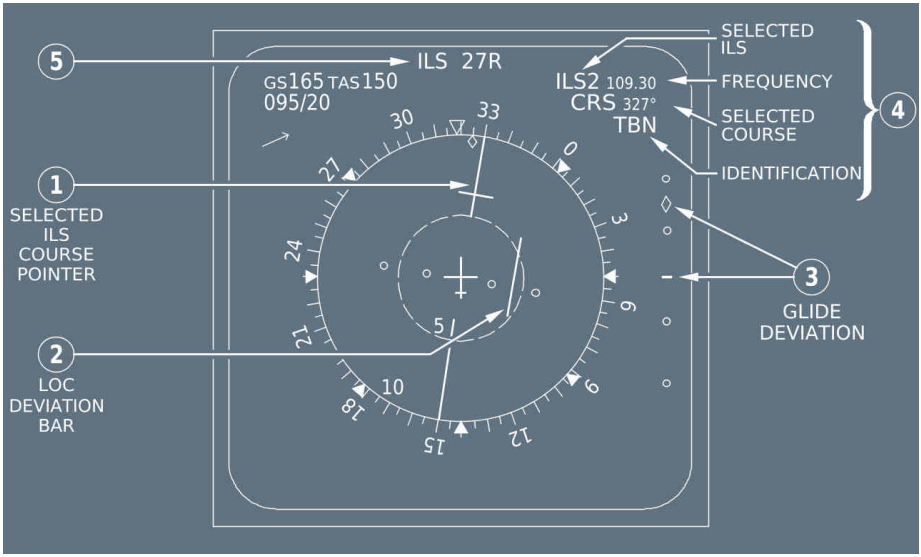
The indication is in minutes and seconds from 0 to 59 min 59 s, and in hours and minutes from 1 h to 99 h 59 min (Seconds are not displayed beyond 59 min 59 s).

(10) Range marks

The range scale value selected on the EFIS control panel (10 to 320 NM) governs the scale of the ND.

ROSE LS MODE

Ident.: DSC-31-45-00009584.0065001 / 24 NOV 15
Applicable to: ALL



(1) ILS Course Pointer (Magenta)
This symbol points at the selected ILS course.
The ILS is either selected by the FMGC (autotuned or manually) or manually selected by the flight crew via the RMP backup mode. If no course has been entered, the default value is 360 °.

(2) Localizer Deviation Bar (Magenta)
This bar moves laterally with respect to the course pointer. Its scale has two white dots on each side of the zero deviation. Each dot corresponds to a deviation of approximately ±0.8 °.
If the lateral deviation exceeds 1/4 dot (0.2 °) above 15 ft RA, both the bar and the scale flash.

(3) Glide Deviation (Magenta)
This diamond moves on a vertical scale that has two white dots on each side of the yellow reference line. Each dot corresponds to a deviation of approximately ±0.4 °.
If the deviation exceeds one dot above 100 ft RA, both the scale and the diamond flash.

(4) Selected ILS Information
This area displays the ILS frequency (magenta), selected course (magenta), and identification (magenta).

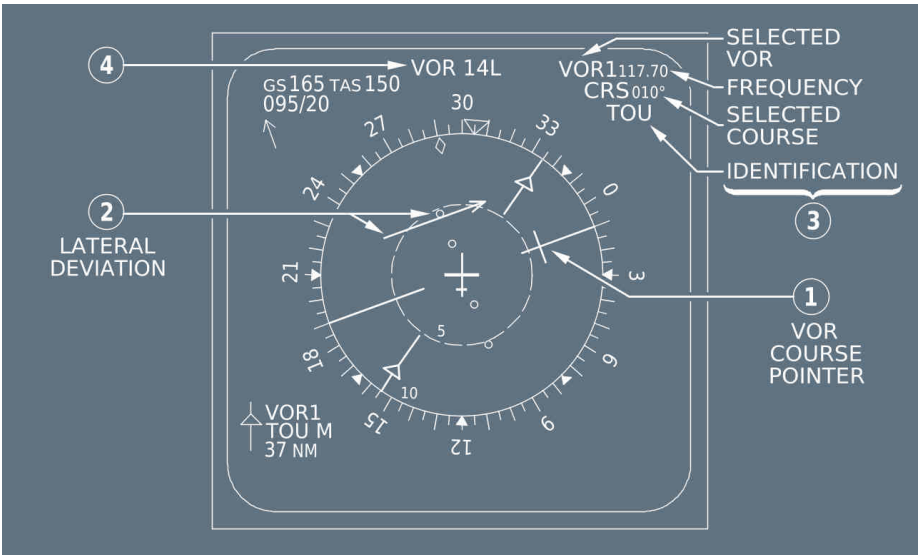
(5) ILS Message (Green)

This message indicates the full runway name of the selected approach. This message appears:
- The flight crew selects an ILS approach on the MCDU, and
- The FMS flight phase is DES, APP or GA, or the FMS phase is CRZ and the along track distance to destination is less than 250 NM.

Note: ILS 1 information appears on PFD 1 and ND 2.
ILS 2 information appears on PFD 2 and ND 1.

ROSE VOR MODE

Ident.: DSC-31-45-00001252.0029001 / 05 NOV 15
Applicable to: ALL



(1) VOR Course Pointer (Cyan)
This symbol points at the selected VOR course.
The VOR course is either automatically selected by the FMGC or manually selected by the flight crew via the MCDU pages or the RMP backup mode.

(2) Lateral Deviation Bar (Cyan)
This bar indicates the VOR deviation on a lateral scale.
Each dot corresponds to 5 ° of lateral deviation. When the lateral deviation exceeds 10 °, the bar remains displayed on the outer dot.

The arrow on the bar provides the TO/FROM indication.

(3) VOR Information (White and cyan)
This area displays the frequency and identification (if decoded by the receiver) of the selected VOR in white, the selected course in cyan, and the tuning mode in white.

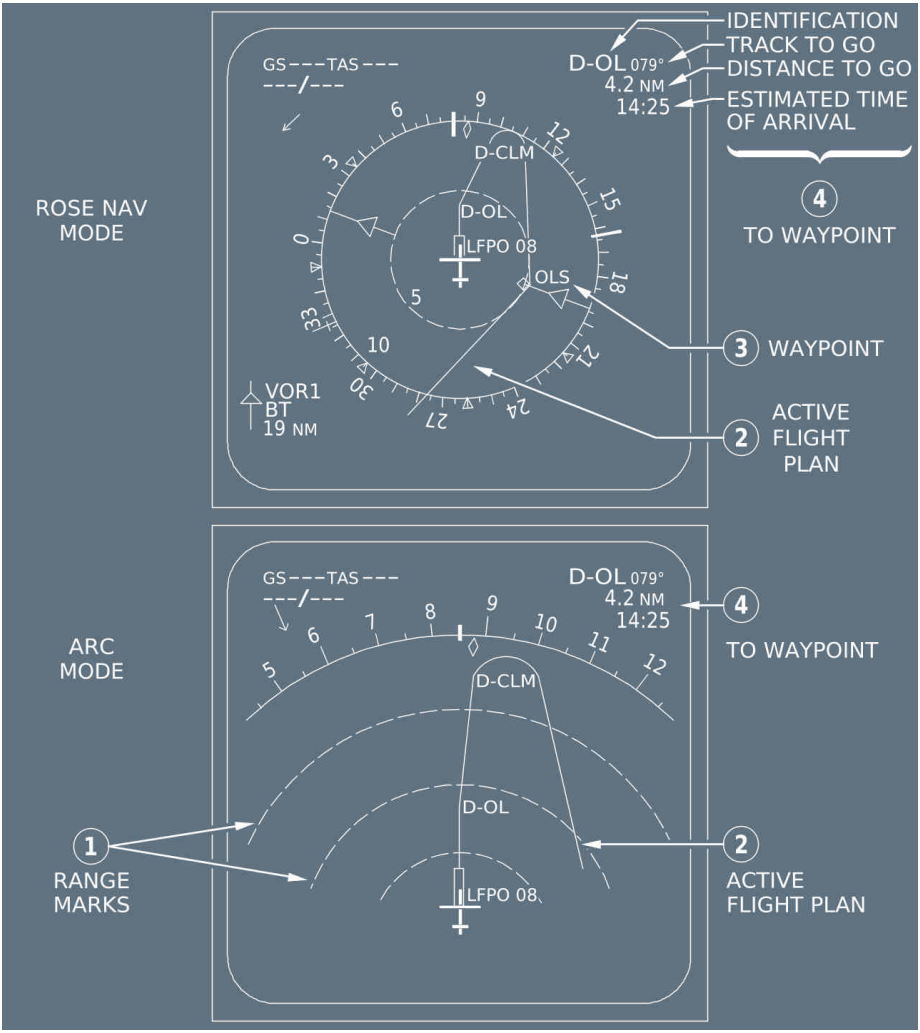
(4) VOR or GPS Message (Green)
VOR 14L appears when the flight crew selects a VOR approach on the MCDU.
GPS 14L appears when the flight crew selects a GPS approach.

ROSE NAV MODE/ARC MODE

Ident.: DSC-31-45-00001253.0017001 / 08 FEB 13

3 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02609-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

ROSE NAV and ARC modes give the pilot the same information, but ARC mode limits it to the forward 90 ° sector.


ROSE NAV MODE
GS---TAS---
---/---
D-OL 079°
4.2 NM
14:25
IDENTIFICATION
TRACK TO GO
DISTANCE TO GO
ESTIMATED TIME OF ARRIVAL
4
TO WAYPOINT
D-CLM
D-OL
LFPO 08
OLS
3 WAYPOINT
VOR1
BT
19 NM
2 ACTIVE FLIGHT PLAN
ARC MODE
GS---TAS---
---/---
D-OL 079°
4.2 NM
14:25
4
TO WAYPOINT
D-CLM
D-OL
LFPO 08
1
RANGE MARKS
2
ACTIVE FLIGHT PLAN

(1) Range Marks and Values

The values displayed on the ND are:

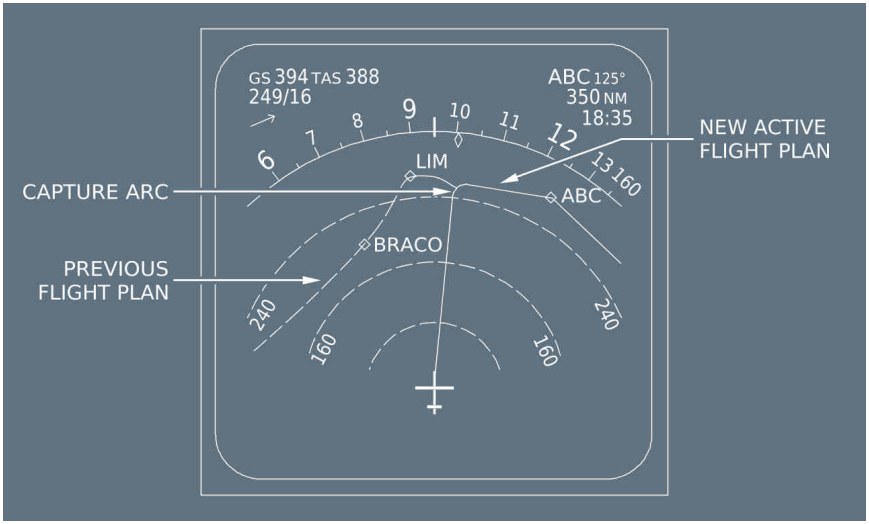
In ROSE NAV mode	1/4 of the selected range for the inner circle.
	1/2 of the selected range for the heading scale circle.
In ARC mode	1/4 of the selected range for the first inner arc.
	1/2 of the selected range for the second inner arc.
	3/4 of the selected range for the third inner arc.

(2) Flight Plan

The crew can use the MCDU to select various types of flight plan:

- The active flight plan (the flight plan the aircraft is actually following when the NAV mode is engaged) is represented by a continuous green line. The ND shows only the part of the flight plan that is ahead of the aircraft, as well as the waypoints that are still to be overflown and the waypoint from which the aircraft is coming.
  The ND does not show a SID or a STAR, except for the last waypoint of the SID and the first waypoint of the STAR, when the selected range is 160 or 320 NM.
  If the primary flight plan is not active, it is represented by a dotted green line.
- A continuous blue line portrays the missed approach procedure, and a dashed blue line portrays the flight plan to the alternate.

  The missed approach and the alternate flight plan are displayed when:
  - In ARC or ROSE NAV mode, a missed approach waypoint or an alternate flight plan waypoint is displayed on the onside MCDU.
  - In PLAN mode a missed approach or alternate waypoint is displayed in the 2L field of the onside MCDU.
- The secondary flight plan is represented by a continuous white line. The ND continues to display the active flight plan
- Temporary flight plan
  The revised portion of the flight plan is represented by a dotted yellow line
- Flight plan capture
  When the aircraft is off the primary flight plan and is flying toward it in HDG mode with the NAV mode armed, the ND shows the new active flight plan as a continuous green line if the FMGC has computed the intercept path.
  The part of the flight plan before the interception point shows as a dotted green line.



(3) Waypoint

The ND can display various kinds of waypoints:

Flight plan waypoints

The ND displays these as green diamonds (white, for TO waypoints). When the flight crew selects the WPT option on his EFIS control panel, all waypoints other than flight plan waypoints are displayed in magenta.

Pseudo waypoint

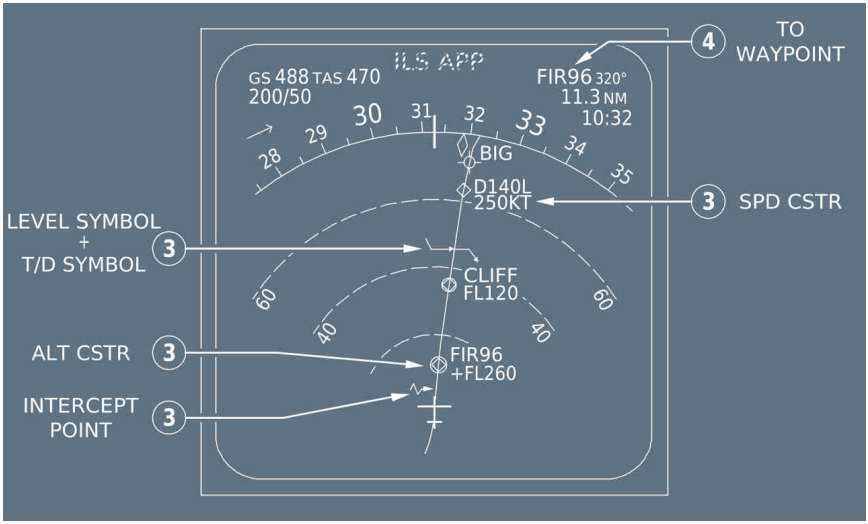
Point of the flight path where the aircraft is predicted to reach a selected altitude or speed.

Pseudo waypoint	Definition
	Level symbol (top of climb or level-off position), when the aircraft reaches: - The FCU-selected altitude (blue arrow), or - The constrained altitude, if it is more restrictive than the FCU altitude and if appropriate modes are engaged (magenta) - It does not appear when the aircraft is within 100 ft above, or below, the selected altitude.
	Top of descent symbol, or continue descent symbol: - White, if DES is not armed - Blue, if DES is armed.

Continued on the following page

Continued from the previous page

Pseudo waypoint	Definition
	Start of CLIMB symbol: - White, if CLB is not armed - Blue, if CLB is armed.
	Intercept point symbol: - White, if only the NAV mode is engaged - Blue, if DES mode is engaged - Indicates the point at which the aircraft is predicted to intercept the descent path, if there is any vertical deviation while the aircraft is in DES mode.
	Speed change symbol (magenta): Indicates the point at which the aircraft will start an automatic acceleration or deceleration from the current speed to a new computed speed for SPD LIM, SPD CSTR, or HOLDING SPD.
	Decelerate point symbol: - Indicates the point at which the aircraft is predicted to decelerate for approach (and thus switch to the approach phase) - Magenta, if in managed speed and NAV or approach mode is engaged - White, if in selected speed or HDG/TRK mode - Automatic decelerations only occur when displayed in magenta.
	ALT CSTR symbol set around the constrained waypoint: - Magenta, when the ALT CSTR is predicted to be met - Amber, when the ALT CSTR is predicted to be missed - White, when the ALT CSTR is not taken into account by the FMGS, and NAV mode is engaged.
	Energy circle symbol (green arc) centered on the aircraft position and oriented to the current track line. Represents the Required Distance to Land. Only displayed if the lateral guidance mode is heading or track, and the current FMS flight phase is in cruise, descent or approach, and the aircraft is within 180 NM of the destination.

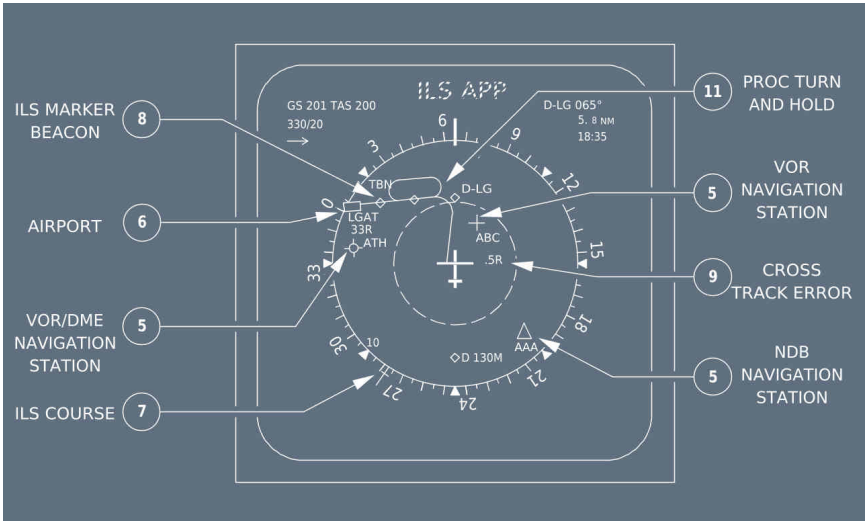


(4) TO waypoint

This is the next waypoint to be overflown.

This area of the screen also shows:

- Waypoint identification (white)
- Track to go (green)
- Distance to go (green)
- Estimated time of arrival (green), assuming the aircraft will fly directly from its present position to the TO waypoint at the current ground speed.



(5) NAVAIDs

The display uses specific symbols for NAVAIDs:

DME or TACAN

VOR

VOR/DME

NDB

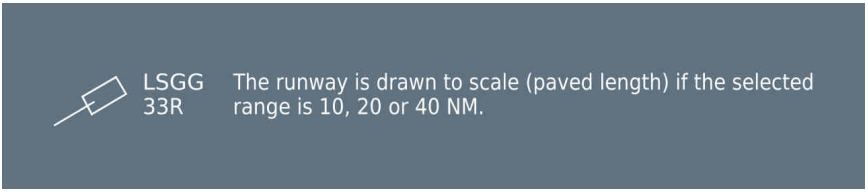
The symbol appears:

- In green if the NAVAID is a current waypoint of the flight plan
- In white if it is the TO waypoint
- In blue when the NAVAID is tuned for display either automatically by the FMGC or manually through the MCDU
- In magenta when the NAVAID is not part of the flight plan and is called for display as an option (corresponding option pushbutton pressed on the FCU EFIS control panel).

(6) Airport

Airport included in the flight plan:

- If the runway is not specified, the airport is represented by a star and the identification is displayed in white.
  Example: * LSGG
- If the runway is specified, it is represented by an oriented runway symbol in white.



Optional airport information
The airports that are not displayed as part of the flight plan may be called for display (ARPT pb on the EFIS control panel).
They are represented by a star and the identification in magenta.

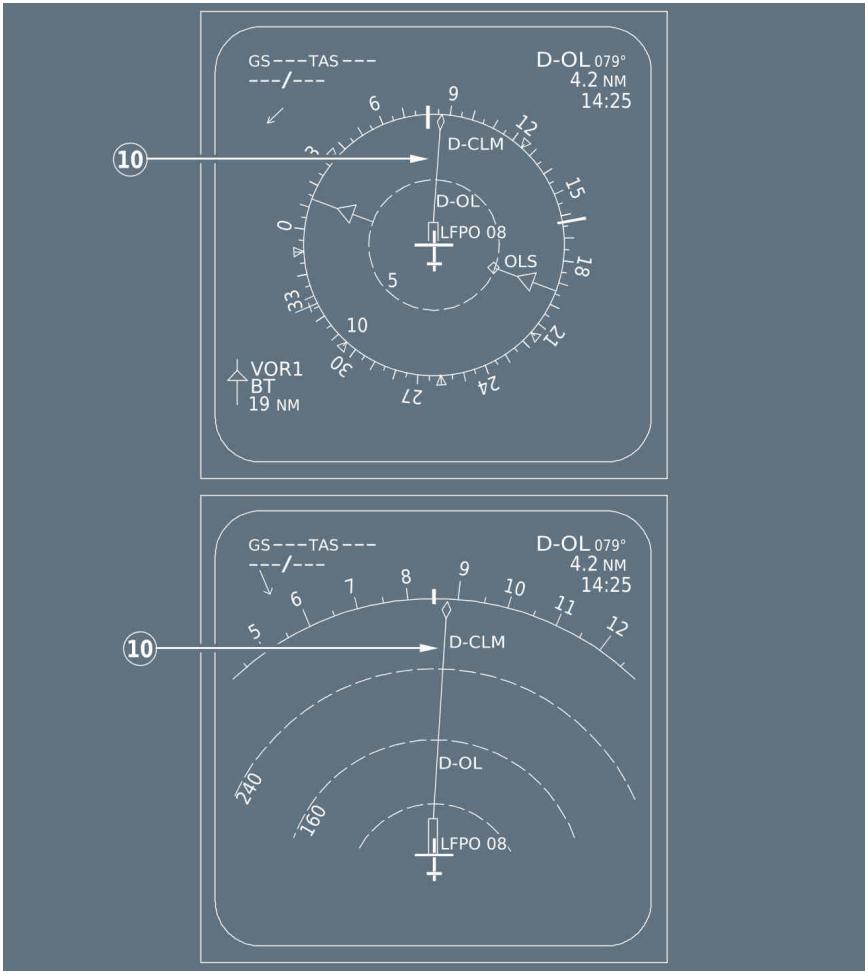
(7) ILS Course (Magenta)
When the pilot pushes the LS pb-sw on the EFIS control panel, and if an ILS station has been selected, the display shows an ILS course symbol.

(8) ILS Marker Beacons
The screen shows these as waypoints (diamonds).

When the aircraft overflies a marker beacon, the corresponding symbol flashes:
Blue for the outer marker.
Amber for the middle marker.
White for the inner marker.

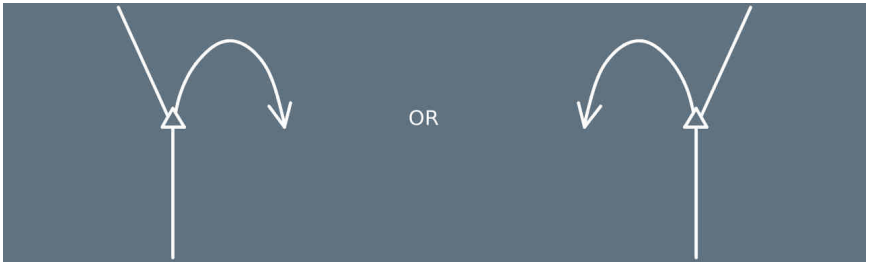
(9) Cross Track Error
This is the aircraft's lateral deviation from the active leg of the flight plan (related to the great circle route). It is indicated in nautical miles (NM), with the letter R (right) or L (left), according to the position of the aircraft with respect to the flight plan.

(10) Track Line
This line appears in green only in the ROSE NAV or ARC mode when HDG or TRK has been selected on the FCU.



(11) Procedure turns and holding patterns

These only appear when they are part of the flight plan. For the 160 and 320 NM range scales, each one is represented by a white arrow that originates at the associated fix and indicates the direction of the turn.

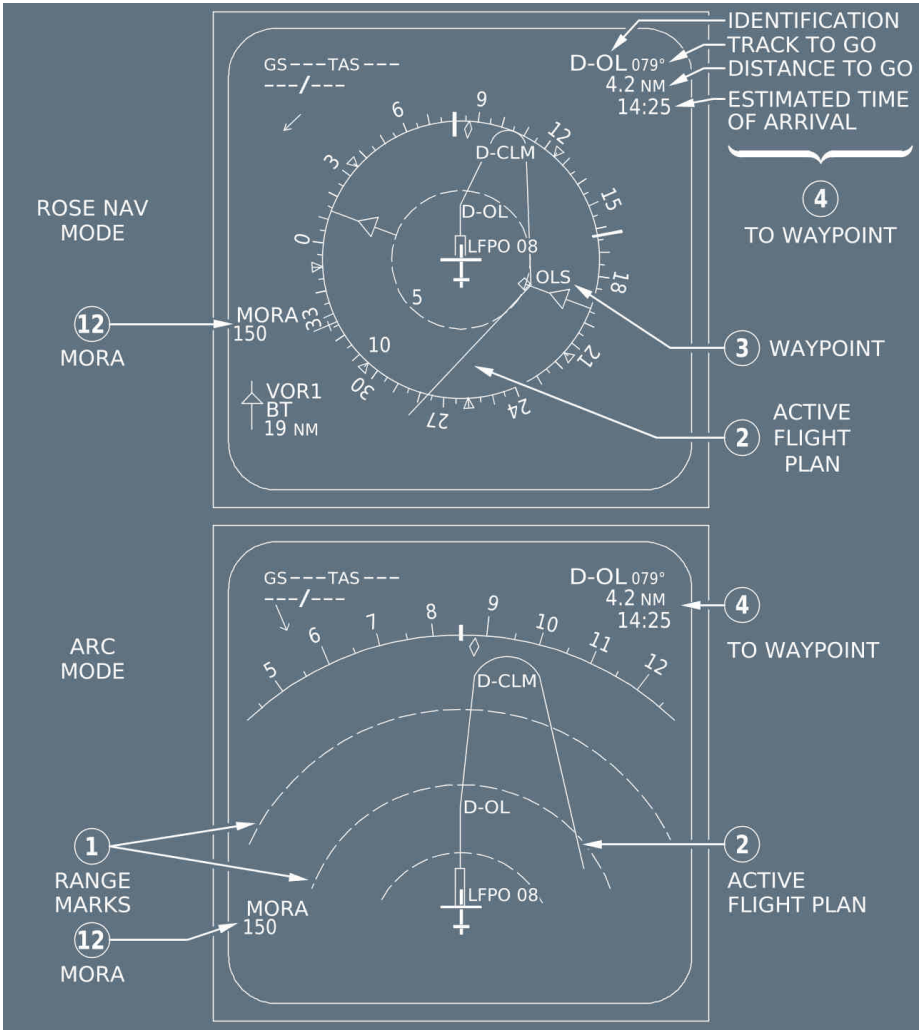


For shorter range scales, and if the procedure turn or the holding pattern is in the next or the active leg, the display shows the full circuit or pattern.

ROSE NAV MODE/ARC MODE

Ident.: DSC-31-45-00001253.0065001 / 08 FEB 13
Applicable to: MSN 02584

ROSE NAV and ARC modes give the pilot the same information, but ARC mode limits it to the forward 90 ° sector.


IDENTIFICATION
TRACK TO GO
DISTANCE TO GO
ESTIMATED TIME OF ARRIVAL
GS---TAS---
---/---
D-OL 079°
4.2 NM
14:25
4
TO WAYPOINT
ROSE NAV MODE
D-CLM
D-OL
LFPO 08
OLS
12
MORA
MORA 150
VOR1
BT
19 NM
3
WAYPOINT
2
ACTIVE FLIGHT PLAN
ARC MODE
1
RANGE MARKS
MORA 150
12
MORA
2
ACTIVE FLIGHT PLAN

(1) Range Marks and Values

The values displayed on the ND are:

In ROSE NAV mode	1/4 of the selected range for the inner circle.
	1/2 of the selected range for the heading scale circle.
In ARC mode	1/4 of the selected range for the first inner arc.
	1/2 of the selected range for the second inner arc.
	3/4 of the selected range for the third inner arc.

(2) Flight Plan

The crew can use the MCDU to select various types of flight plan:

- The active flight plan (the flight plan the aircraft is actually following when the NAV mode is engaged) is represented by a continuous green line. The ND shows only the part of the flight plan that is ahead of the aircraft, as well as the waypoints that are still to be overflown and the waypoint from which the aircraft is coming.
  The ND does not show a SID or a STAR, except for the last waypoint of the SID and the first waypoint of the STAR, when the selected range is 160 or 320 NM.
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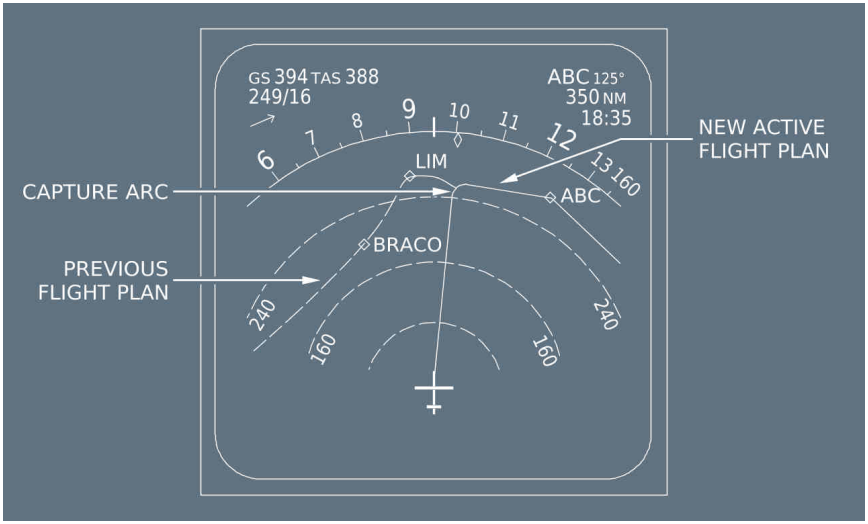

(3) Waypoint

The ND can display various kinds of waypoints:

Flight plan waypoints

The ND displays these as green diamonds (white, for TO waypoints). When the flight crew selects the WPT option on his EFIS control panel, all waypoints other than flight plan waypoints are displayed in magenta.

Pseudo waypoint

Point of the flight path where the aircraft is predicted to reach a selected altitude or speed.

Pseudo waypoint	Definition
	Level symbol (top of climb or level-off position), when the aircraft reaches: - The FCU-selected altitude (blue arrow), or - The constrained altitude, if it is more restrictive than the FCU altitude and if appropriate modes are engaged (magenta) - It does not appear when the aircraft is within 100 ft above, or below, the selected altitude.
	Top of descent symbol, or continue descent symbol: - White, if DES is not armed - Blue, if DES is armed.

Continued on the following page

Continued from the previous page

Pseudo waypoint	Definition
	Start of CLIMB symbol: - White, if CLB is not armed - Blue, if CLB is armed.
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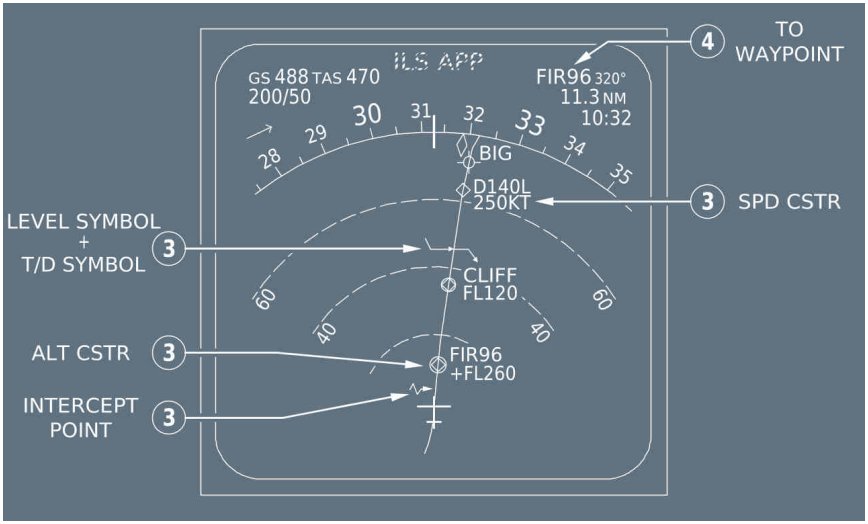
	Energy circle symbol (green arc) centered on the aircraft position and oriented to the current track line. Represents the Required Distance to Land. Only displayed if the lateral guidance mode is heading or track, and the current FMS flight phase is in cruise, descent or approach, and the aircraft is within 180 NM of the destination.

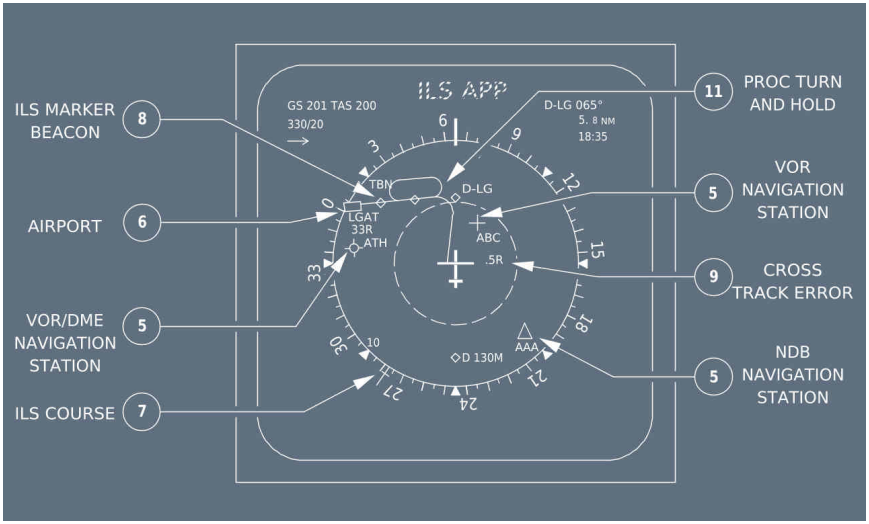


(4) TO waypoint

This is the next waypoint to be overflown.

This area of the screen also shows:

- Waypoint identification (white)
- Track to go (green)
- Distance to go (green)
- Estimated time of arrival (green), assuming the aircraft will fly directly from its present position to the TO waypoint at the current ground speed.



(5) NAVAIDs

The display uses specific symbols for NAVAIDs:

DME or TACAN

VOR

VOR/DME

NDB

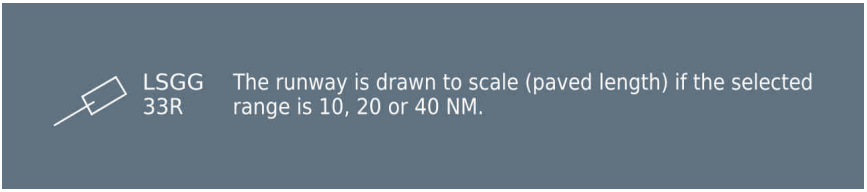
The symbol appears:

- In green if the NAVAID is a current waypoint of the flight plan
- In white if it is the TO waypoint
- In blue when the NAVAID is tuned for display either automatically by the FMGC or manually through the MCDU
- In magenta when the NAVAID is not part of the flight plan and is called for display as an option (corresponding option pushbutton pressed on the FCU EFIS control panel).

(6) Airport

Airport included in the flight plan:

- If the runway is not specified, the airport is represented by a star and the identification is displayed in white.
  Example: * LSGG
- If the runway is specified, it is represented by an oriented runway symbol in white.



Optional airport information
The airports that are not displayed as part of the flight plan may be called for display (ARPT pb on the EFIS control panel).
They are represented by a star and the identification in magenta.

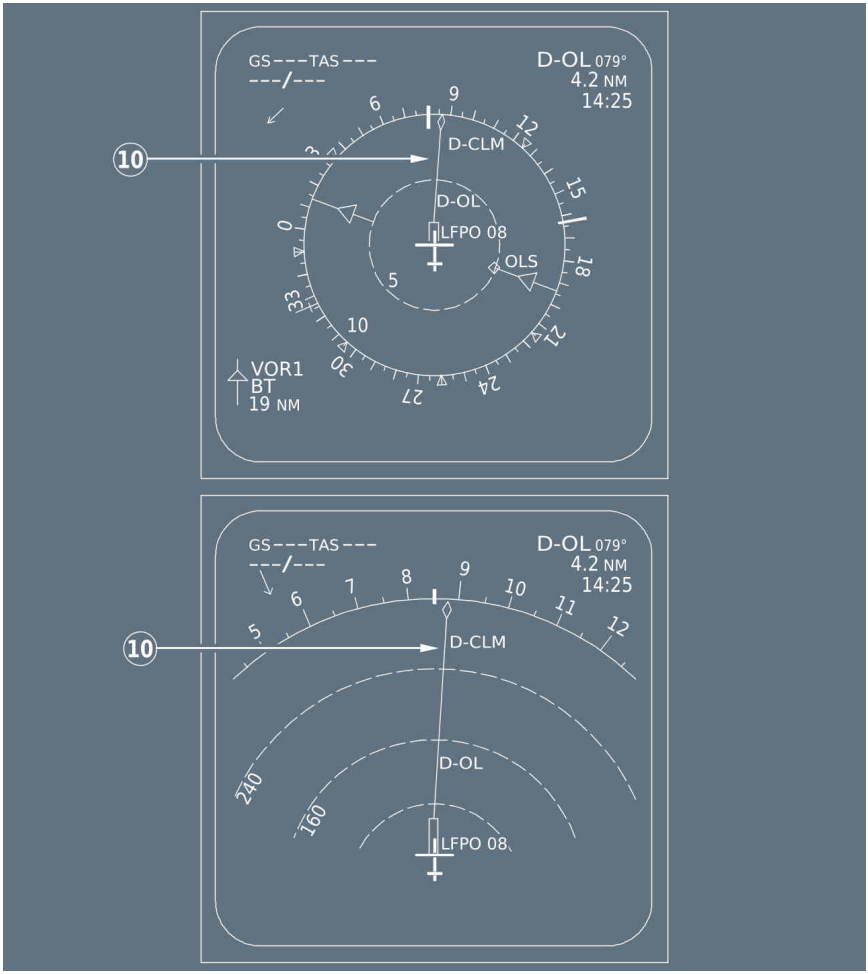
(7) ILS Course (Magenta)
When the pilot pushes the LS pb-sw on the EFIS control panel, and if an ILS station has been selected, the display shows an ILS course symbol.

(8) ILS Marker Beacons
The screen shows these as waypoints (diamonds).

When the aircraft overflies a marker beacon, the corresponding symbol flashes:
Blue for the outer marker.
Amber for the middle marker.
White for the inner marker.

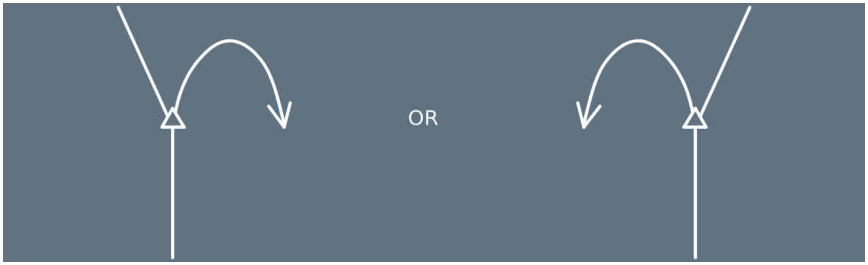
(9) Cross Track Error
This is the aircraft's lateral deviation from the active leg of the flight plan (related to the great circle route). It is indicated in nautical miles (NM), with the letter R (right) or L (left), according to the position of the aircraft with respect to the flight plan.

(10) Track line
This line appears in green only in the ROSE NAV or ARC mode when HDG or TRK has been selected on the FCU.



(11) Procedure turns and holding patterns

These only appear when they are part of the flight plan. For the 160 and 320 NM range scales, each one is represented by a white arrow that originates at the associated fix and indicates the direction of the turn.



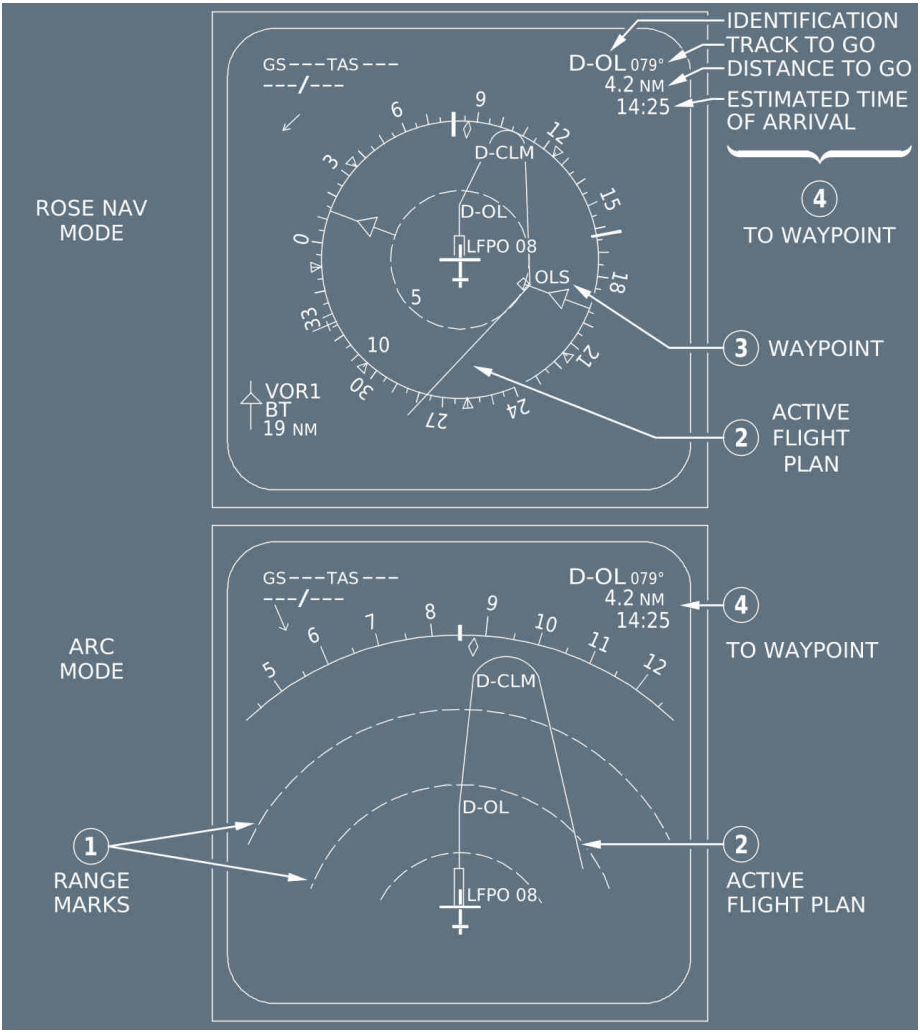
For shorter range scales, and if the procedure turn or the holding pattern is in the next or the active leg, the display shows the full circuit or pattern.

(12) Minimum Off Route Altitude (MORA)
Provided CSTR is selected and range is selected equal to or above 40 NM, a digital readout (Flight Level) is displayed, which represents the Minimum Off Route Altitude allowed, within a circular area centered on present A/C position and bounded by 40 NM of radius limit. Nothing is displayed, if MORA for the chosen flight route is not available in the FMGS database.

ROSE NAV MODE/ARC MODE

Ident.: DSC-31-45-00001253.0072001 / 08 FEB 13
Applicable to: MSN 01957, 02195-02204, 02359, 02405, 02482, 02712, 03071-03618, 03782-04216, 04312, 04328-04384, 04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

ROSE NAV and ARC modes give the pilot the same information, but ARC mode limits it to the forward 90 ° sector.


ROSE NAV MODE
GS---TAS---
---/---
D-OL 079°
4.2 NM
14:25
IDENTIFICATION
TRACK TO GO
DISTANCE TO GO
ESTIMATED TIME OF ARRIVAL
4
TO WAYPOINT
D-CLM
D-OL
LFPO 08
OLS
3 WAYPOINT
VOR1
BT
19 NM
2 ACTIVE FLIGHT PLAN
ARC MODE
GS---TAS---
---/---
D-OL 079°
4.2 NM
14:25
4
TO WAYPOINT
D-CLM
D-OL
LFPO 08
1
RANGE MARKS
2
ACTIVE FLIGHT PLAN

(1) Range Marks and Values

The values displayed on the ND are:

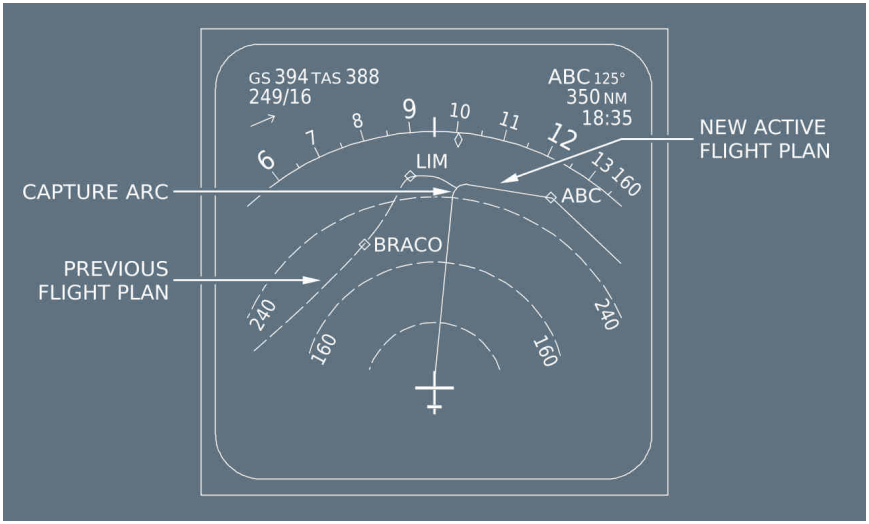
In ROSE NAV mode	1/4 of the selected range for the inner circle.
	1/2 of the selected range for the heading scale circle.
In ARC mode	1/4 of the selected range for the first inner arc.
	1/2 of the selected range for the second inner arc.
	3/4 of the selected range for the third inner arc.

(2) Flight Plan

The crew can use the MCDU to select various types of flight plan:

- The active flight plan (the flight plan the aircraft is actually following when the NAV mode is engaged) is represented by a continuous green line. The ND shows only the part of the flight plan that is ahead of the aircraft, as well as the waypoints that are still to be overflown and the waypoint from which the aircraft is coming.
  The ND does not show a SID or a STAR, except for the last waypoint of the SID and the first waypoint of the STAR, when the selected range is 160 or 320 NM.
  If the primary flight plan is not active, it is represented by a dotted green line.
- A continuous blue line portrays the missed approach procedure, and a dashed blue line portrays the flight plan to the alternate.

  The missed approach and the alternate flight plan are displayed when:
  - In ARC or ROSE NAV mode, a missed approach waypoint or an alternate flight plan waypoint is displayed on the onside MCDU.
  - In PLAN mode a missed approach or alternate waypoint is displayed in the 2L field of the onside MCDU.
- The secondary flight plan is represented by a continuous white line. The ND continues to display the active flight plan
- Temporary flight plan
  The revised portion of the flight plan is represented by a dotted yellow line
- Flight plan capture
  When the aircraft is off the primary flight plan and is flying toward it in HDG mode with the NAV mode armed, the ND shows the new active flight plan as a continuous green line if the FMGC has computed the intercept path.
  The part of the flight plan before the interception point shows as a dotted green line.



(3) Waypoint

The ND can display various kinds of waypoints:

Flight plan waypoints

The ND displays these as green diamonds (white, for TO waypoints). When the flight crew selects the WPT option on his EFIS control panel, all waypoints other than flight plan waypoints are displayed in magenta.

Pseudo waypoint

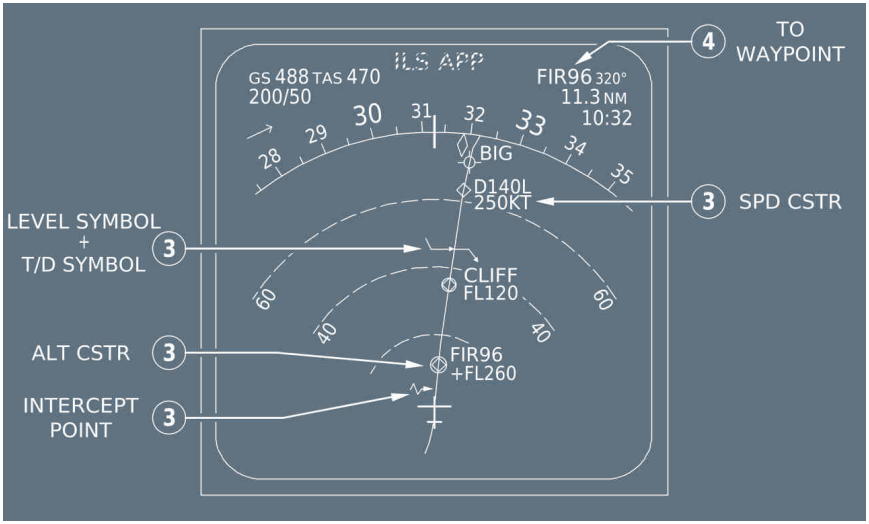
Point of the flight path where the aircraft is predicted to reach a selected altitude or speed.

Pseudo waypoint	Definition
	Level symbol (top of climb or level-off position), when the aircraft reaches: - The FCU-selected altitude (blue arrow), or - The constrained altitude, if it is more restrictive than the FCU altitude and if appropriate modes are engaged (magenta) - It does not appear when the aircraft is within 100 ft above, or below, the selected altitude.
	Top of descent symbol, or continue descent symbol: - White, if DES is not armed - Blue, if DES is armed.

Continued on the following page

Continued from the previous page

Pseudo waypoint	Definition
	Start of CLIMB symbol: - White, if CLB is not armed - Blue, if CLB is armed.
	Intercept point symbol: - White, if only the NAV mode is engaged - Blue, if DES mode is engaged - Indicates the point at which the aircraft is predicted to intercept the descent path, if there is any vertical deviation while the aircraft is in DES mode.
	Speed change symbol (magenta): Indicates the point at which the aircraft will start an automatic acceleration or deceleration from the current speed to a new computed speed for SPD LIM, SPD CSTR, or HOLDING SPD.
	Decelerate point symbol: - Indicates the point at which the aircraft is predicted to decelerate for approach (and thus switch to the approach phase) - Magenta, if in managed speed and NAV or approach mode is engaged - White, if in selected speed or HDG/TRK mode - Automatic decelerations only occur when displayed in magenta.
	ALT CSTR symbol set around the constrained waypoint: - Magenta, when the ALT CSTR is predicted to be satisfied - Amber, when the ALT CSTR is predicted to be missed - White, when the ALT CSTR is not taken into account by the guidance, and NAV mode is engaged.
(ETP) (HHMM)	TIME MARKERS or EQUI-TIME POINT (ETP) symbol appears in green, to indicate where the aircraft will reach the time marker or equitime point.
	ENERGY CIRCLE symbol (green arc): - Is centered on the aircraft position and oriented to the current track line - Represents the Required Distance to Land - Only displayed in the descent and approach phases, when a selected lateral mode is engaged (HDG or TRK).

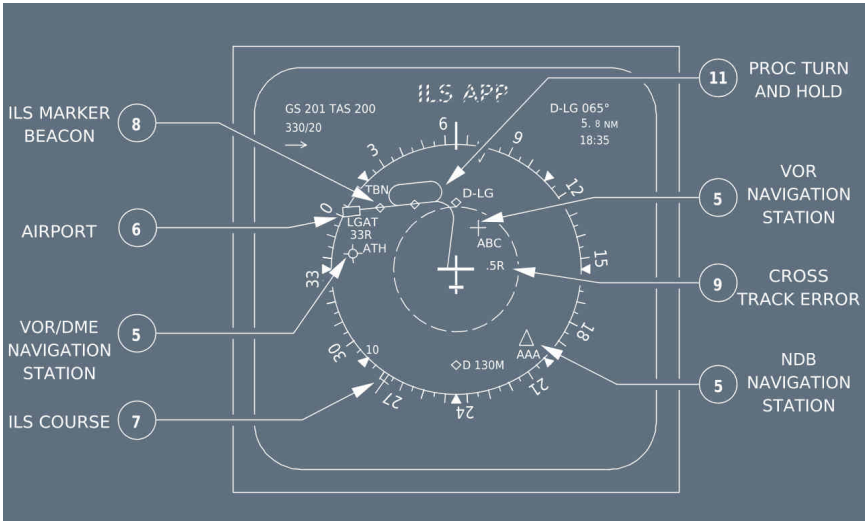


(4) TO Waypoint

This is the next waypoint to be overflown, except when a DIR TO with ABEAM PTS has been performed (in this case, the DIR TO waypoint is displayed on the top of the screen instead of the NEXT ABEAM waypoint).

This area of the screen also shows:

- Waypoint identification (white)
- Track to go (green)
- Distance to go (green)
- Estimated time of arrival (green), assuming the aircraft will fly directly from its present position to the TO waypoint at the current ground speed.



(5) NAVAIDs

The display uses specific symbols for NAVAIDs:

DME or TACAN

VOR

VOR/DME

NDB

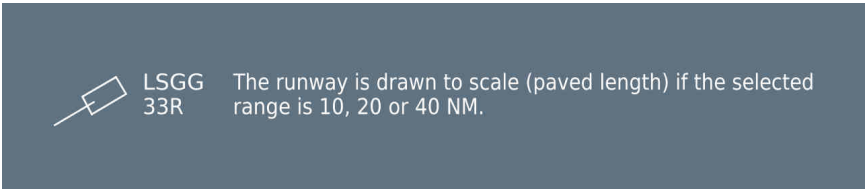
The symbol appears:

- In green if the NAVAID is a current waypoint of the flight plan
- In white if it is the TO waypoint
- In blue when the NAVAID is tuned for display either automatically by the FMGC or manually through the MCDU
- In magenta when the NAVAID is not part of the flight plan and is called for display as an option (corresponding option pushbutton pressed on the FCU EFIS control panel).

(6) Airport

Airport included in the flight plan:

- If the runway is not specified, the airport is represented by a star and the identification is displayed in white.
  Example: * LSGG
- If the runway is specified, it is represented by an oriented runway symbol in white.



Optional airport information
The airports that are not displayed as part of the flight plan may be called for display (ARPT pushbutton on the EFIS control panel).
They are represented by a star and the identification in magenta.

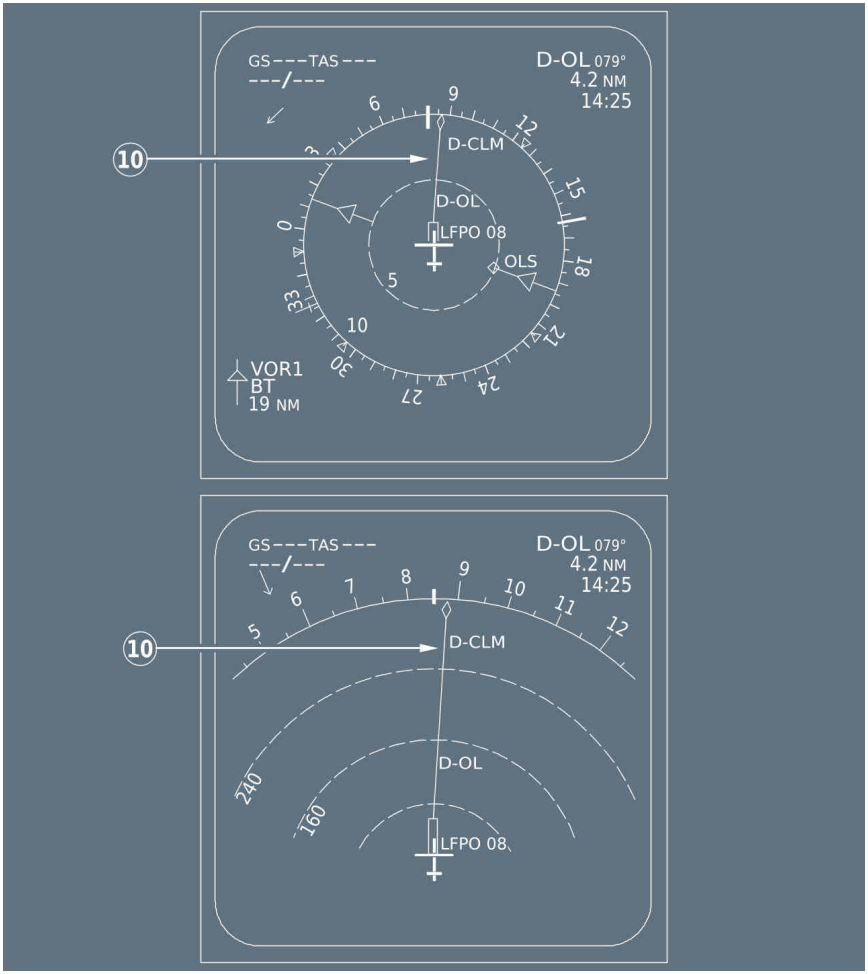
(7) ILS Course (Magenta)
When the pilot pushes the LS pushbutton switch on the EFIS control panel, and if an ILS station has been selected, the display shows an ILS course symbol.

(8) ILS Marker Beacons
The screen shows these as waypoints (diamonds).

When the aircraft overflies a marker beacon, the corresponding symbol flashes:
Blue for the outer marker.
Amber for the middle marker.
White for the inner marker.

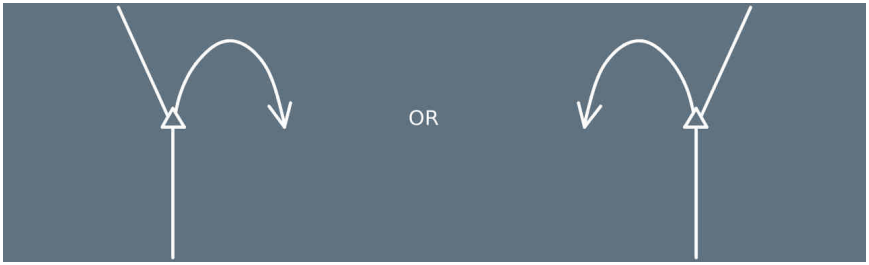
(9) Cross Track Error
This is the aircraft's lateral deviation from the active leg of the flight plan (related to the great circle route). It is indicated in nautical miles (NM), with the letter R (right) or L (left), according to the position of the aircraft with respect to the flight plan.

(10) Track Line
This line appears in green only in the ROSE NAV or ARC mode when HDG or TRK has been selected on the FCU.



(11) Procedure Turns and Holding Patterns

These only appear when they are part of the flight plan. For the 160 and 320 NM range scales, each one is represented by a white arrow that originates at the associated fix and indicates the direction of the turn.

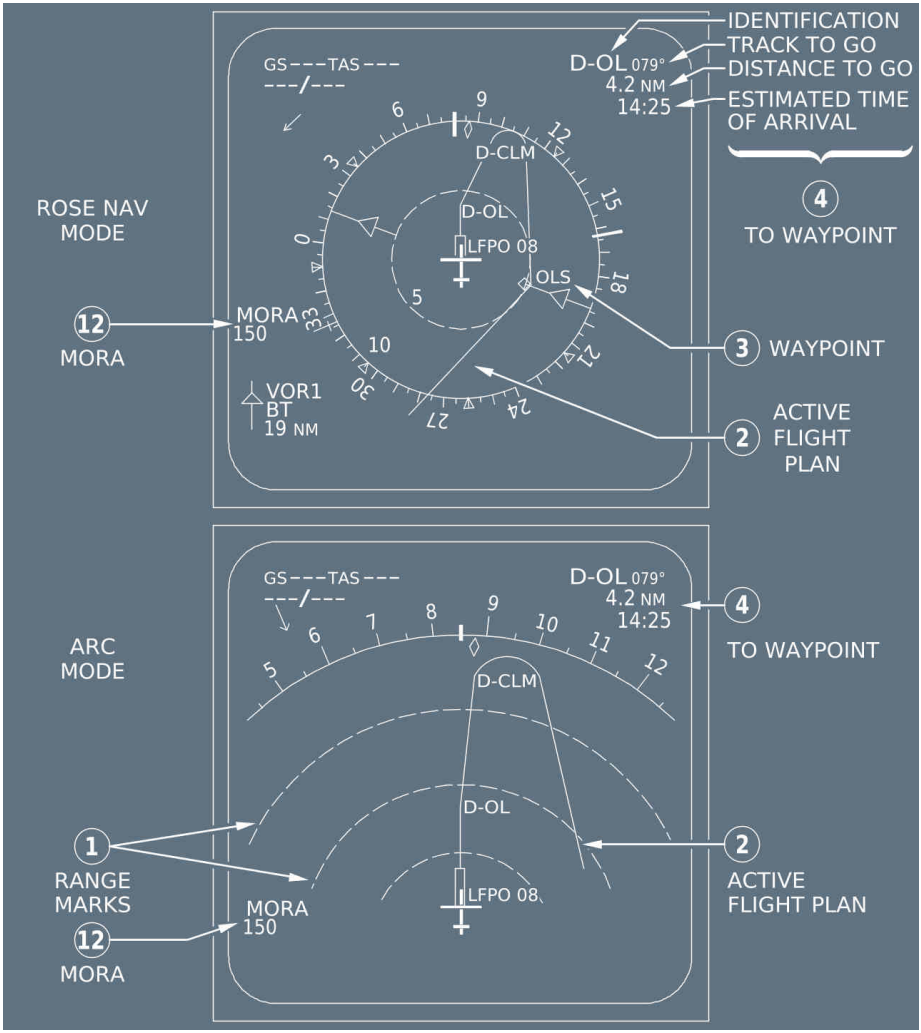


For shorter range scales, and if the procedure turn or the holding pattern is in the next or the active leg, the display shows the full circuit or pattern.

ROSE NAV MODE/ARC MODE

Ident.: DSC-31-45-00001253.0111001 / 08 FEB 13
Applicable to: MSN 04294, 04314, 04393-04397, 04433, 04510

ROSE NAV and ARC modes give the pilot the same information, but ARC mode limits it to the forward 90 ° sector.


IDENTIFICATION
TRACK TO GO
DISTANCE TO GO
ESTIMATED TIME OF ARRIVAL
GS---TAS---
---/---
D-OL 079°
4.2 NM
14:25
4
TO WAYPOINT
ROSE NAV MODE
D-CLM
D-OL
LFPO 08
OLS
12
MORA
MORA 150
VOR1
BT
19 NM
3
WAYPOINT
2
ACTIVE FLIGHT PLAN
ARC MODE
1
RANGE MARKS
MORA 150
12
MORA
2
ACTIVE FLIGHT PLAN

(1) Range Marks and Values

The values displayed on the ND are:

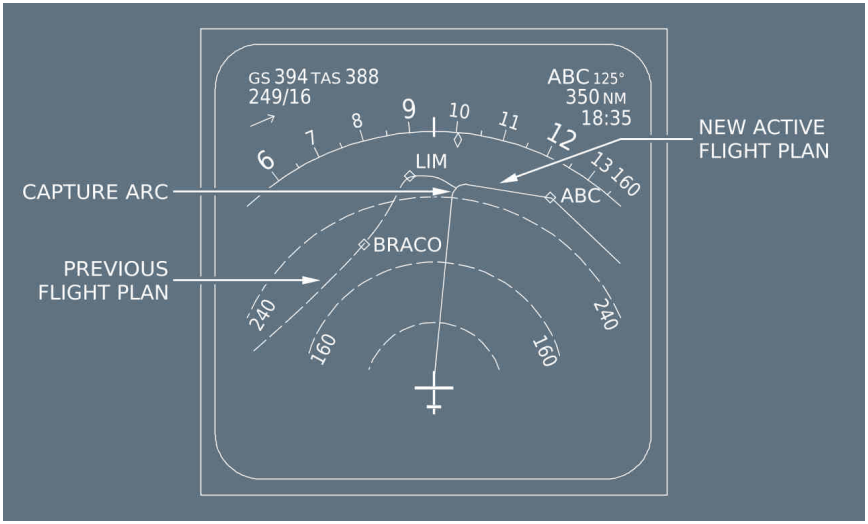
In ROSE NAV mode	1/4 of the selected range for the inner circle.
	1/2 of the selected range for the heading scale circle.
In ARC mode	1/4 of the selected range for the first inner arc.
	1/2 of the selected range for the second inner arc.
	3/4 of the selected range for the third inner arc.

(2) Flight Plan

The crew can use the MCDU to select various types of flight plan:

- The active flight plan (the flight plan the aircraft is actually following when the NAV mode is engaged) is represented by a continuous green line. The ND shows only the part of the flight plan that is ahead of the aircraft, as well as the waypoints that are still to be overflown and the waypoint from which the aircraft is coming.
  The ND does not show a SID or a STAR, except for the last waypoint of the SID and the first waypoint of the STAR, when the selected range is 160 or 320 NM.
  If the primary flight plan is not active, it is represented by a dotted green line.
- A continuous blue line portrays the missed approach procedure, and a dashed blue line portrays the flight plan to the alternate.

  The missed approach and the alternate flight plan are displayed when:
  - In ARC or ROSE NAV mode, a missed approach waypoint or an alternate flight plan waypoint is displayed on the onside MCDU.
  - In PLAN mode a missed approach or alternate waypoint is displayed in the 2L field of the onside MCDU.
- The secondary flight plan is represented by a continuous white line. The ND continues to display the active flight plan
- Temporary flight plan
  The revised portion of the flight plan is represented by a dotted yellow line
- Flight plan capture
  When the aircraft is off the primary flight plan and is flying toward it in HDG mode with the NAV mode armed, the ND shows the new active flight plan as a continuous green line if the FMGC has computed the intercept path.
  The part of the flight plan before the interception point shows as a dotted green line.



(3) Waypoint

The ND can display various kinds of waypoints:

Flight plan waypoints

The ND displays these as green diamonds (white, for TO waypoints). When the flight crew selects the WPT option on his EFIS control panel, all waypoints other than flight plan waypoints are displayed in magenta.

Pseudo waypoint

Point of the flight path where the aircraft is predicted to reach a selected altitude or speed.

Pseudo waypoint	Definition
	Level symbol (top of climb or level-off position), when the aircraft reaches: - The FCU-selected altitude (blue arrow), or - The constrained altitude, if it is more restrictive than the FCU altitude and if appropriate modes are engaged (magenta) - It does not appear when the aircraft is within 100 ft above, or below, the selected altitude.
	Top of descent symbol, or continue descent symbol: - White, if DES is not armed - Blue, if DES is armed.

Continued on the following page

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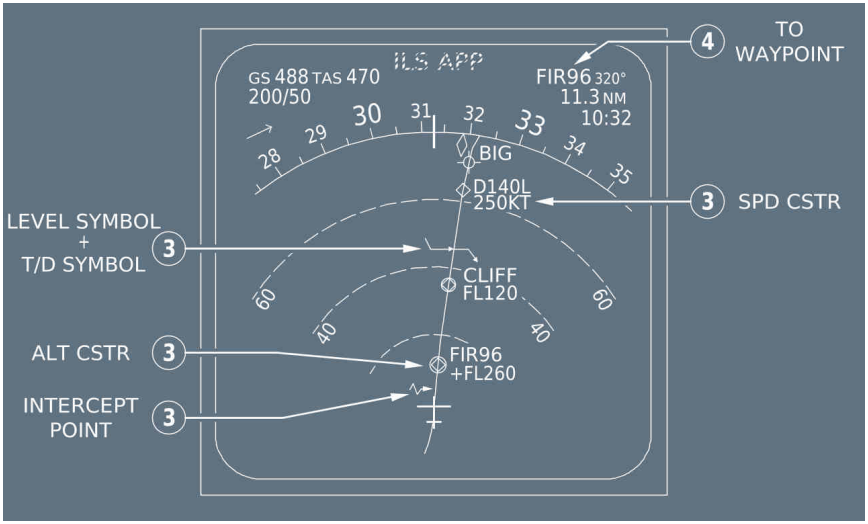
Pseudo waypoint	Definition
	Start of CLIMB symbol: - White, if CLB is not armed - Blue, if CLB is armed.
	Intercept point symbol: - White, if only the NAV mode is engaged - Blue, if DES mode is engaged - Indicates the point at which the aircraft is predicted to intercept the descent path, if there is any vertical deviation while the aircraft is in DES mode.
	Speed change symbol (magenta): Indicates the point at which the aircraft will start an automatic acceleration or deceleration from the current speed to a new computed speed for SPD LIM, SPD CSTR, or HOLDING SPD.
	Decelerate point symbol: - Indicates the point at which the aircraft is predicted to decelerate for approach (and thus switch to the approach phase) - Magenta, if in managed speed and NAV or approach mode is engaged - White, if in selected speed or HDG/TRK mode - Automatic decelerations only occur when displayed in magenta.
	ALT CSTR symbol set around the constrained waypoint: - Magenta, when the ALT CSTR is predicted to be satisfied - Amber, when the ALT CSTR is predicted to be missed - White, when the ALT CSTR is not taken into account by the guidance, and NAV mode is engaged.
(ETP) (HHMM)	TIME MARKERS or EQUI-TIME POINT (ETP) symbol appears in green, to indicate where the aircraft will reach the time marker or equitime point.
	ENERGY CIRCLE symbol (green arc): - Is centered on the aircraft position and oriented to the current track line - Represents the Required Distance to Land - Only displayed in the descent and approach phases, when a selected lateral mode is engaged (HDG or TRK).

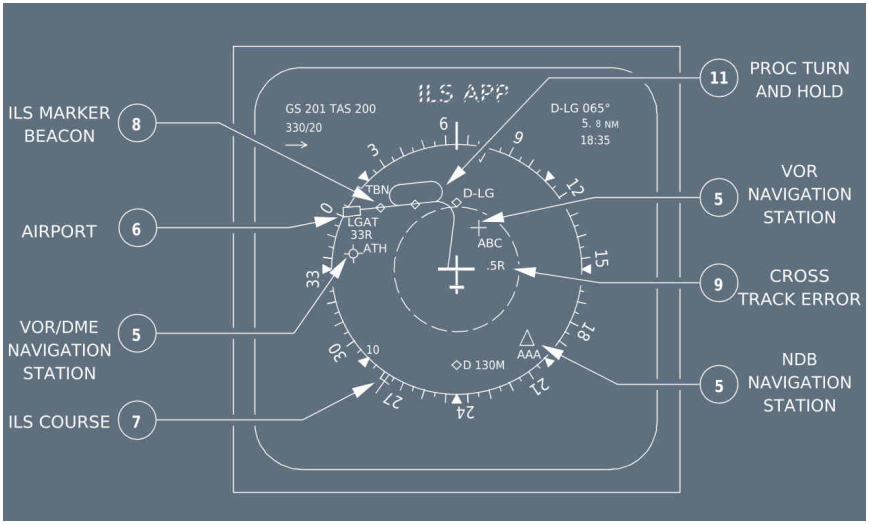


(4) TO waypoint

This is the next waypoint to be overflown, except when a DIR TO with ABEAM PTS has been performed (in this case, the DIR TO waypoint is displayed on the top of the screen instead of the NEXT ABEAM waypoint).

This area of the screen also shows:

- Waypoint identification (white)
- Track to go (green)
- Distance to go (green)
- Estimated time of arrival (green), assuming the aircraft will fly directly from its present position to the TO waypoint at the current ground speed.



(5) NAVAIDs

The display uses specific symbols for NAVAIDs:

DME or TACAN

VOR

VOR/DME

NDB

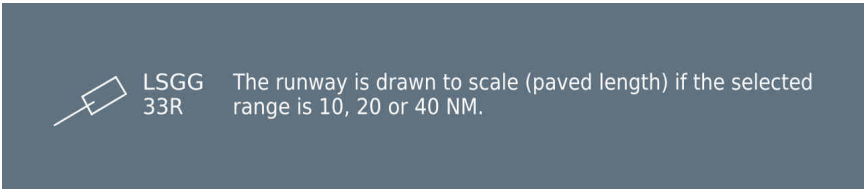
The symbol appears:

- In green if the NAVAID is a current waypoint of the flight plan
- In white if it is the TO waypoint
- In blue when the NAVAID is tuned for display either automatically by the FMGC or manually through the MCDU
- In magenta when the NAVAID is not part of the flight plan and is called for display as an option (corresponding option pushbutton pressed on the FCU EFIS control panel).

(6) Airport

Airport included in the flight plan:

- If the runway is not specified, the airport is represented by a star and the identification is displayed in white.
  Example: * LSGG
- If the runway is specified, it is represented by an oriented runway symbol in white.



Optional airport information
The airports that are not displayed as part of the flight plan may be called for display (ARPT pushbutton on the EFIS control panel).
They are represented by a star and the identification in magenta.

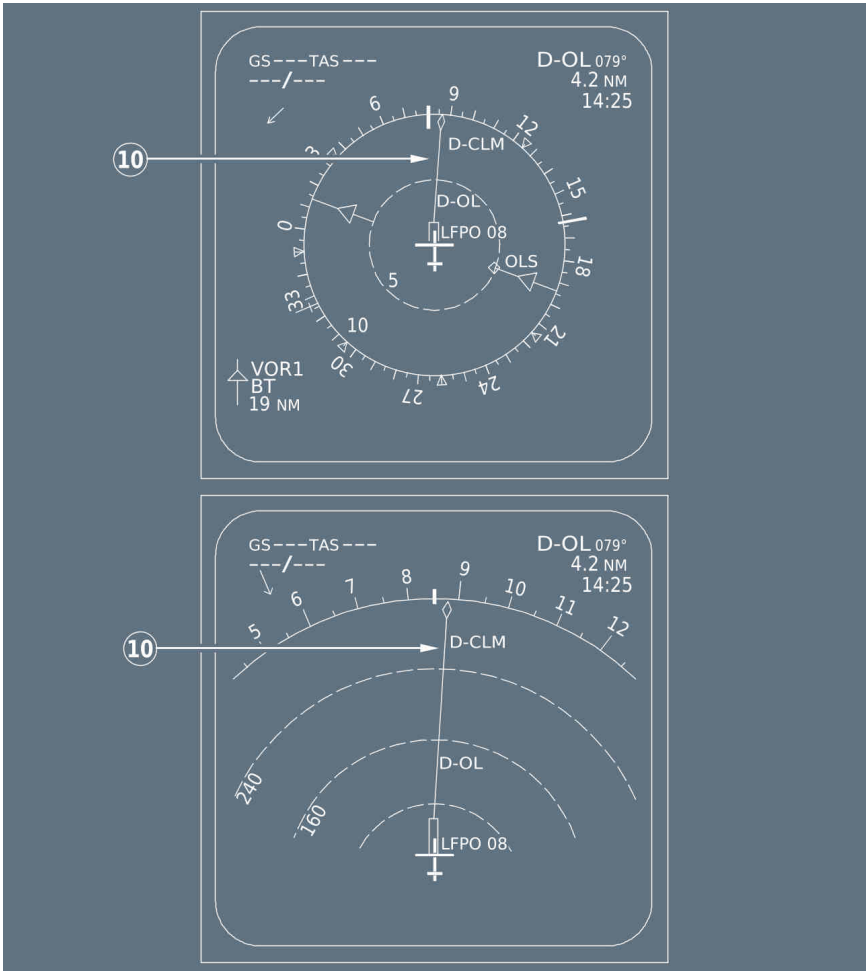
(7) ILS Course (Magenta)
When the pilot pushes the LS pb-sw on the EFIS control panel, and if an ILS station has been selected, the display shows an ILS course symbol.

(8) ILS Marker Beacons
The screen shows these as waypoints (diamonds).

When the aircraft overflies a marker beacon, the corresponding symbol flashes:
Blue for the outer marker.
Amber for the middle marker.
White for the inner marker.

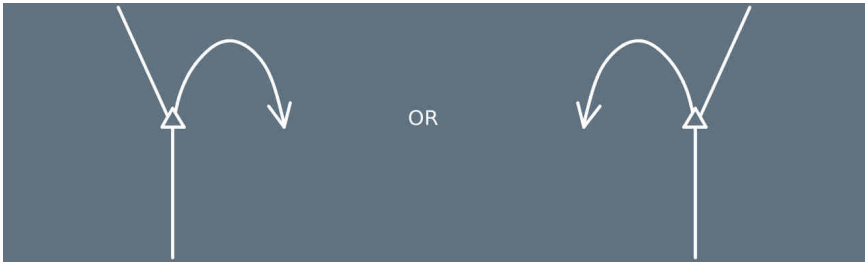
(9) Cross Track Error
This is the aircraft's lateral deviation from the active leg of the flight plan (related to the great circle route). It is indicated in nautical miles (NM), with the letter R (right) or L (left), according to the position of the aircraft with respect to the flight plan.

(10) Track line
This line appears in green only in the ROSE NAV or ARC mode when HDG or TRK has been selected on the FCU.



(11) Procedure turns and holding patterns

These only appear when they are part of the flight plan. For the 160 and 320 NM range scales, each one is represented by a white arrow that originates at the associated fix and indicates the direction of the turn.



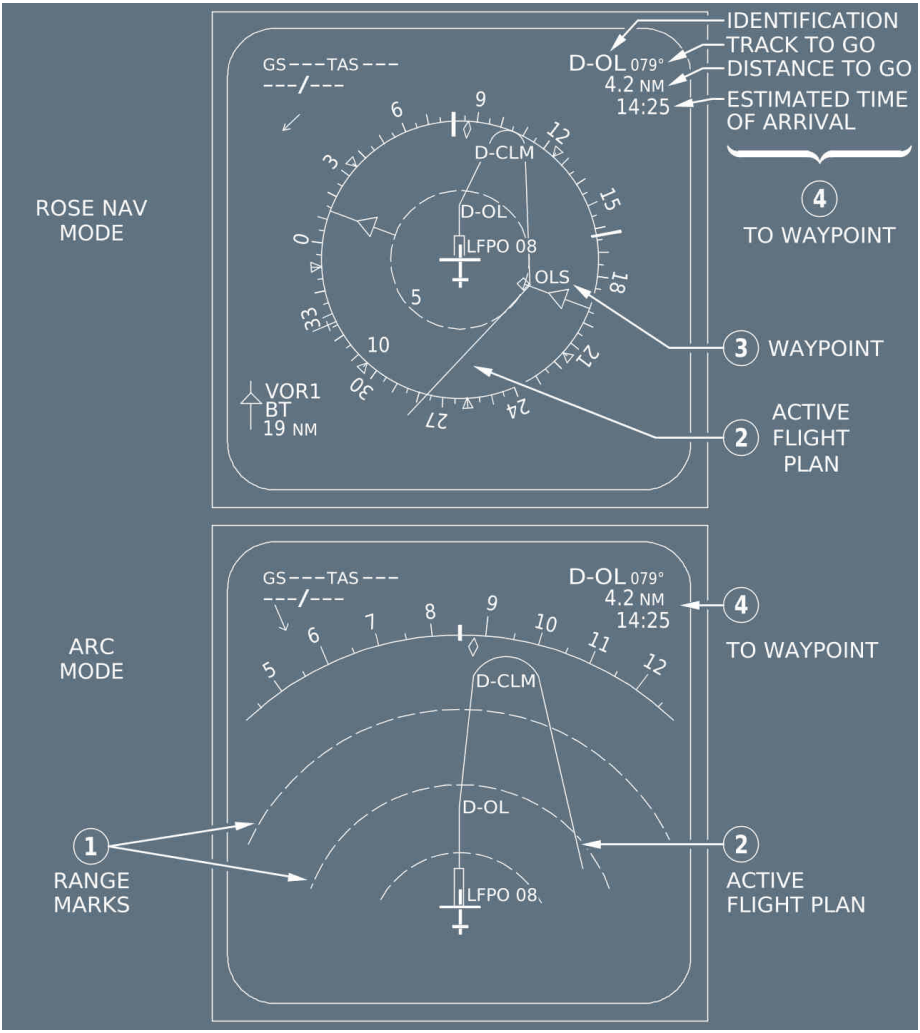
For shorter range scales, and if the procedure turn or the holding pattern is in the next or the active leg, the display shows the full circuit or pattern.

(12) Minimum Off Route Altitude (MORA)
Provided CSTR is selected and range is selected equal to or above 40 NM, a digital readout (Flight Level) is displayed, which represents the Minimum Off Route Altitude allowed, within a circular area centered on present A/C position and bounded by 40 NM of radius limit. Nothing is displayed, if MORA for the chosen flight route is not available in the FMGS database.

ROSE NAV MODE/ARC MODE

Ident.: DSC-31-45-00001253.0125001 / 13 MAY 14
Applicable to: MSN 02097, 02121-02139, 02443, 02908-02914

ROSE NAV and ARC modes give the pilot the same information, but ARC mode limits it to the forward 90 ° sector.


IDENTIFICATION
TRACK TO GO
DISTANCE TO GO
ESTIMATED TIME OF ARRIVAL
ROSE NAV MODE
GS---TAS---
---/---
D-OL 079°
4.2 NM
14:25
D-CLM
D-OL
LFPO 08
OLS
VOR1
BT
19 NM
4 TO WAYPOINT
3 WAYPOINT
2 ACTIVE FLIGHT PLAN
ARC MODE
1 RANGE MARKS
2 ACTIVE FLIGHT PLAN
4 TO WAYPOINT

(1) Range Marks and Values

The values displayed on the ND are:

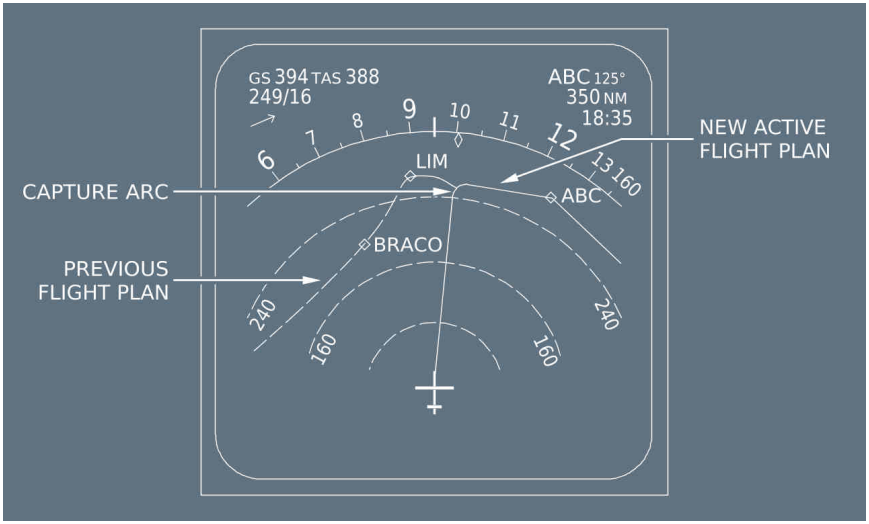
In ROSE NAV mode	1/4 of the selected range for the inner circle.
	1/2 of the selected range for the heading scale circle.
In ARC mode	1/4 of the selected range for the first inner arc.
	1/2 of the selected range for the second inner arc.
	3/4 of the selected range for the third inner arc.

(2) Flight Plan

The crew can use the MCDU to select various types of flight plan:

- The active flight plan (the flight plan the aircraft is actually following when the NAV mode is engaged) is represented by a continuous green line. The ND shows only the part of the flight plan that is ahead of the aircraft, as well as the waypoints that are still to be overflown and the waypoint from which the aircraft is coming.
  The ND does not show a SID or a STAR, except for the last waypoint of the SID and the first waypoint of the STAR, when the selected range is 160 or 320 NM.
  If the primary flight plan is not active, it is represented by a dotted green line.
- A continuous blue line portrays the missed approach procedure, and a dashed blue line portrays the flight plan to the alternate.

  The missed approach and the alternate flight plan are displayed when:
  - In ARC or ROSE NAV mode, a missed approach waypoint or an alternate flight plan waypoint is displayed on the onside MCDU.
  - In PLAN mode a missed approach or alternate waypoint is displayed in the 2L field of the onside MCDU.
- The secondary flight plan is represented by a continuous white line. The ND continues to display the active flight plan
- Temporary flight plan
  The revised portion of the flight plan is represented by a dotted yellow line
- Flight plan capture
  When the aircraft is off the primary flight plan and is flying toward it in HDG mode with the NAV mode armed, the ND shows the new active flight plan as a continuous green line if the FMGC has computed the intercept path.
  The part of the flight plan before the interception point shows as a dotted green line.



(3) Waypoint

The ND can display various kinds of waypoints:

Flight plan waypoints

The ND displays these as green diamonds (white, for TO waypoints). When the flight crew selects the WPT option on his EFIS control panel, all waypoints other than flight plan waypoints are displayed in magenta.

Pseudo waypoint

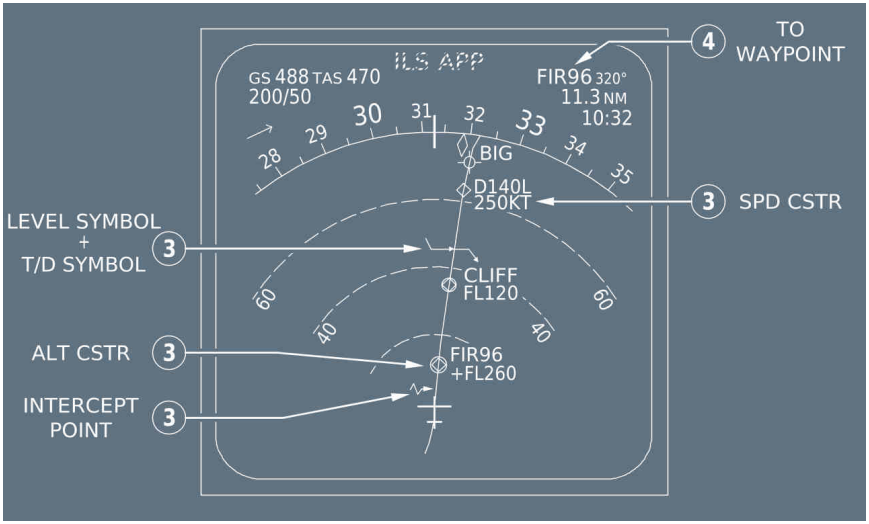
Point of the flight path where the aircraft is predicted to reach a selected altitude or speed.

Pseudo waypoint	Definition
	Level symbol (top of climb or level-off position), when the aircraft reaches: - The FCU-selected altitude (blue arrow), or - The constrained altitude, if it is more restrictive than the FCU altitude and if appropriate modes are engaged (magenta) - It does not appear when the aircraft is within 100 ft above, or below, the selected altitude.
	Top of descent symbol, or continue descent symbol: - White, if DES is not armed - Blue, if DES is armed.

Continued on the following page

Continued from the previous page

Pseudo waypoint	Definition
	Start of CLIMB symbol: - White, if CLB is not armed - Blue, if CLB is armed.
	Intercept point symbol: - White, if only the NAV mode is engaged - Blue, if DES mode is engaged - Indicates the point at which the aircraft is predicted to intercept the descent path, if there is any vertical deviation while the aircraft is in DES mode.
	Speed change symbol (magenta): Indicates the point at which the aircraft will start an automatic acceleration or deceleration from the current speed to a new computed speed for SPD LIM, SPD CSTR, or HOLDING SPD.
	Decelerate point symbol: - Indicates the point at which the aircraft is predicted to decelerate for approach (and thus switch to the approach phase) - Magenta, if in managed speed and NAV or approach mode is engaged - White, if in selected speed or HDG/TRK mode - Automatic decelerations only occur when displayed in magenta.
	ALT CSTR symbol set around the constrained waypoint: - Magenta, when the ALT CSTR is predicted to be satisfied - Amber, when the ALT CSTR is predicted to be missed - White, when the ALT CSTR is not taken into account by the guidance, and NAV mode is engaged.
(ETP) (HHMM)	TIME MARKERS or EQUI-TIME POINT (ETP) symbol appears in green, to indicate where the aircraft will reach the time marker or equitime point.
	ENERGY CIRCLE symbol (green arc): - Is centered on the aircraft position and oriented to the current track line - Represents the Required Distance to Land - Only displayed in the descent and approach phases, when a selected lateral mode is engaged (HDG or TRK).

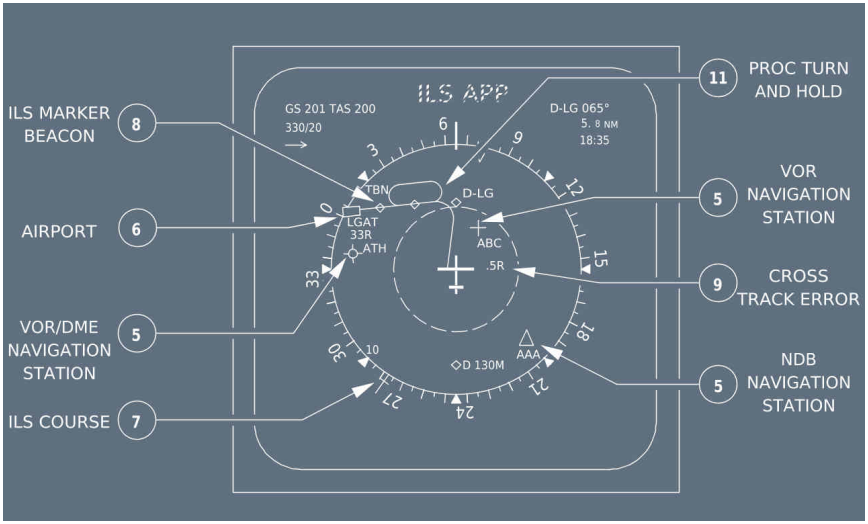


(4) TO waypoint

This is the next waypoint to be overflown, except when a DIR TO with ABEAM PTS has been performed (in this case, the DIR TO waypoint is displayed on the top of the screen instead of the NEXT ABEAM waypoint).

This area of the screen also shows:

- Waypoint identification (white)
- Track to go (green)
- Distance to go (green)
- Estimated time of arrival (green), assuming the aircraft will fly directly from its present position to the TO waypoint at the current ground speed.



(5) NAVAIDs

The display uses specific symbols for NAVAIDs:

DME or TACAN

VOR

VOR/DME

NDB

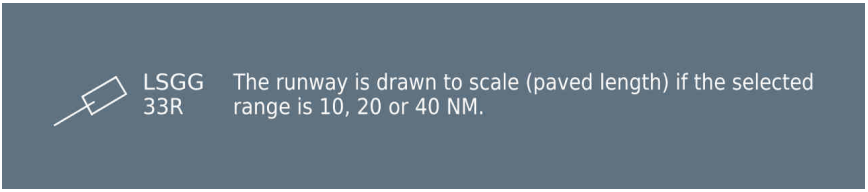
The symbol appears:

- In green if the NAVAID is a current waypoint of the flight plan
- In white if it is the TO waypoint
- In blue when the NAVAID is tuned for display either automatically by the FMGC or manually through the MCDU
- In magenta when the NAVAID is not part of the flight plan and is called for display as an option (corresponding option pushbutton pressed on the FCU EFIS control panel).

(6) Airport

Airport included in the flight plan:

- If the runway is not specified, the airport is represented by a star and the identification is displayed in white.
  Example: * LSGG
- If the runway is specified, it is represented by an oriented runway symbol in white.



Optional airport information
The airports that are not displayed as part of the flight plan may be called for display (ARPT pb on the EFIS control panel).
They are represented by a star and the identification in magenta.

(7) ILS Course (Magenta)
When the pilot pushes the LS pb-sw on the EFIS control panel, and if an ILS station has been selected, the display shows an ILS course symbol.

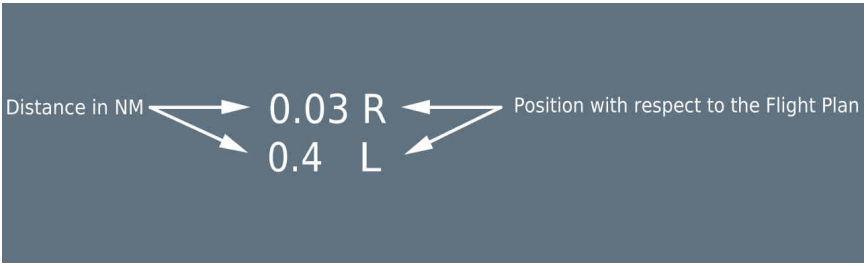
(8) ILS Marker Beacons
The screen shows these as waypoints (diamonds).

When the aircraft overflies a marker beacon, the corresponding symbol flashes:
Blue for the outer marker.
Amber for the middle marker.
White for the inner marker.

(9) Cross Track Error
This is the aircraft's lateral deviation from the active leg of the flight plan (related to the great circle route). It is indicated in nautical miles (NM), with the letter R (right) or L (left), according to the position of the aircraft with respect to the flight plan.

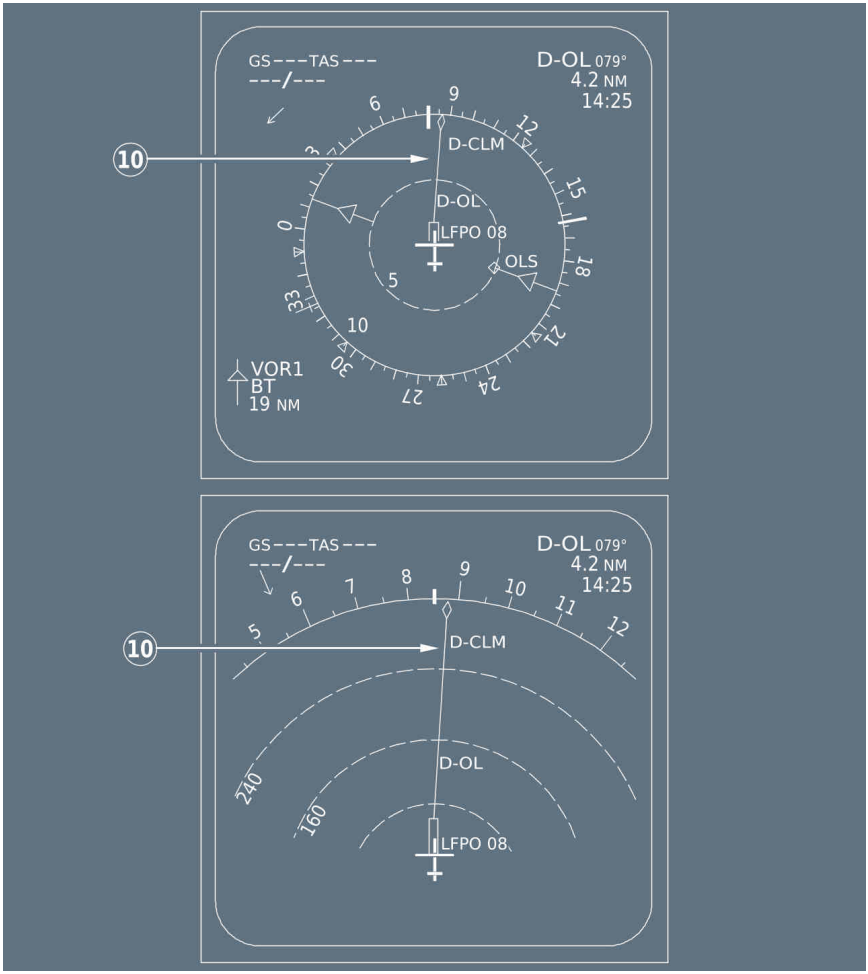
Conditions of display

1. The cross-track error is displayed with a precision of one digit (0.1 NM), when the cross-track error is strictly greater than 0.29 NM
2. The cross-track error is displayed with a precision of 2 digits (0.01 NM), from 0.02 NM to 0.29 NM and when the aircraft current altitude is less than the transition altitude or the transition level.
3. When displayed, the cross-track error is removed when it is becomes less than 0.01 NM



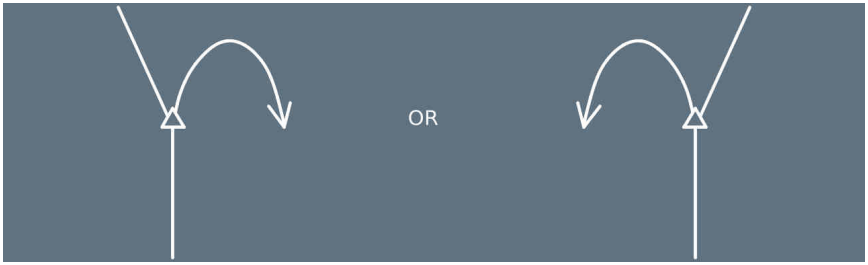
(10) Track Line

This line appears in green only in the ROSE NAV or ARC mode when HDG or TRK has been selected on the FCU.



(11) Procedure turns and holding patterns

These only appear when they are part of the flight plan. For the 160 and 320 NM range scales, each one is represented by a white arrow that originates at the associated fix and indicates the direction of the turn.

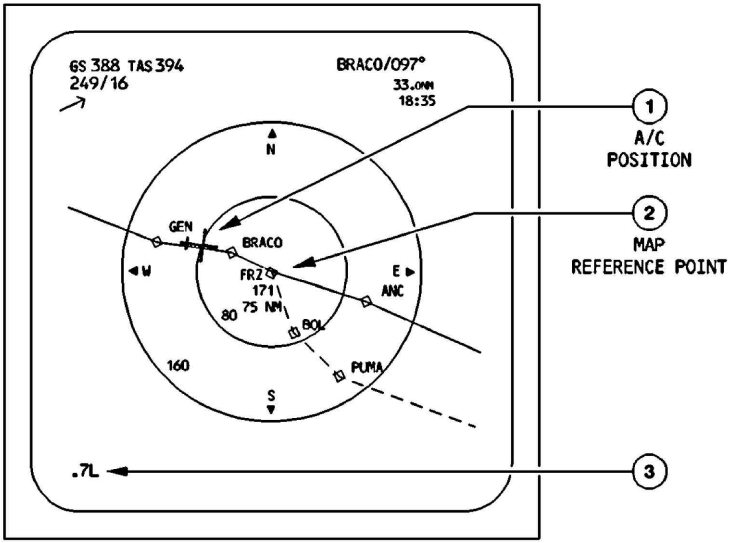


For shorter range scales, and if the procedure turn or the holding pattern is in the next or the active leg, the display shows the full circuit or pattern.

PLAN MODE

Ident.: DSC-31-45-00001254.0002001 / 24 FEB 11
Applicable to: ALL

This mode statically displays the flight plan legs on a map oriented to true north. The map is centered on a map reference point, that the pilot selects by scrolling to it on his MCDU.
The map reference point is the waypoint displayed on the second line of the MCDU's F-PLN page. It can either be the active waypoint (next waypoint to be overflown), or any other waypoint of the flight plan.
The pilot can scroll through the overall flight plan, and display it in PLAN mode.
The pilot chooses the scale of the map with the range selector (the diameter of the outer circle corresponds to the selected range).
Data on NAVAIDs and on their characteristics and associated bearing pointers are not available in this mode.



(1) Aircraft Position and True Track
The orientation of the yellow aircraft symbol always indicates the true track of the aircraft. Its position represents the aircraft position given by the FMGS.

(2) Map Reference Point
If the CSTR option is not selected, the track and distance from the map reference point to the next F-PLN waypoint is displayed in magenta.

(3) Cross Track Error
Refer to DSC-31-45 ROSE NAV Mode/ARC Mode.

WEATHER RADAR INDICATIONS

Ident.: DSC-31-45-00015503.0001001 / 21 MAR 17
Applicable to: ALL

Refer to DSC-34-SURV-30-30 Weather Radar indication on ND.

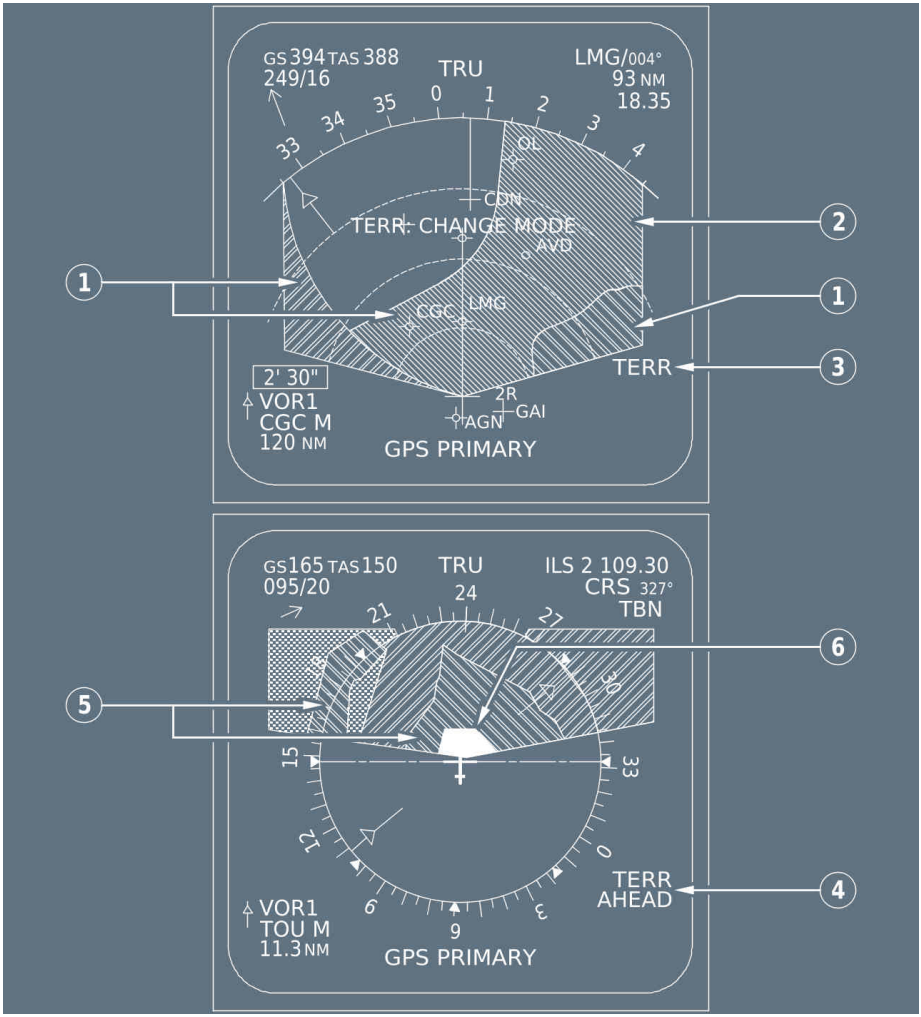
PWS INDICATIONS

Ident.: DSC-31-45-00015504.0001001 / 21 MAR 17
Applicable to: ALL

Refer to DSC-34-SURV-30-30 PWS (if installed) indication on PFD and ND

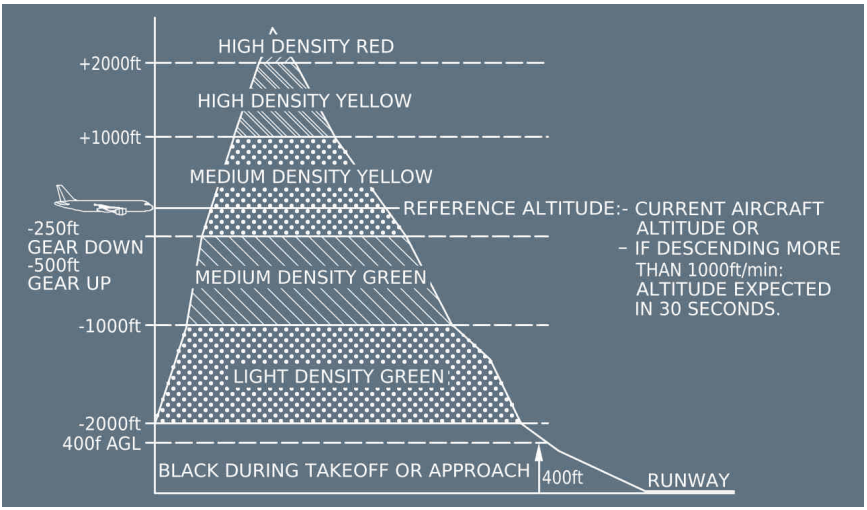
EGPWS

Ident.: DSC-31-45-00009586.0001001 / 22 MAY 12
Applicable to: MSN 01767



(1) EGPWS terrain picture

The ND displays the EGPWS terrain picture, when the TERR ON ND switch is selected ON, and the ND is not in PLAN mode. The terrain picture replaces the weather radar image.
The terrain appears in different colors and densities, in accordance with its relative height:



Note: *Areas without available terrain data in the EGPWS database appear in magenta.*

(2) Center Part Messages

- The “TERR CHANGE MODE” indication is displayed in red (or amber), in the case of a Terrain Awareness Display (TAD) warning (or caution) alert, if the current selected display mode is PLAN
- The “TERR REDUCE RANGE” indication is displayed in red (or amber), in the case of a Terrain Awareness Display (TAD) warning (or caution) alert, if the selected range is 160 NM or 320 NM.

(3) TERR indication

To differentiate between the terrain and the weather display, the weather radar TILT is replaced by a blue TERR, and the terrain display sweeps from the center outward to both ND sides.

(4) Warning and caution messages

TERR AHEAD (amber) : For a caution.

TERR AHEAD (red) : For a warning.

When triggered, these messages flash for 9 s, then remain steady until the caution or warning alert condition disappears.

TERR RNG (red) : For a RANGE error warning.

TERR TST (amber) : Appears during the EGPWS test, when the terrain pattern is displayed, and there is no failure.

(5) Terrain caution alert

Generated when a conflict exists between the terrain caution envelope, ahead of the aircraft, and the terrain data stored in the database. The conflict area is shown in solid yellow.

(6) Terrain warning alert

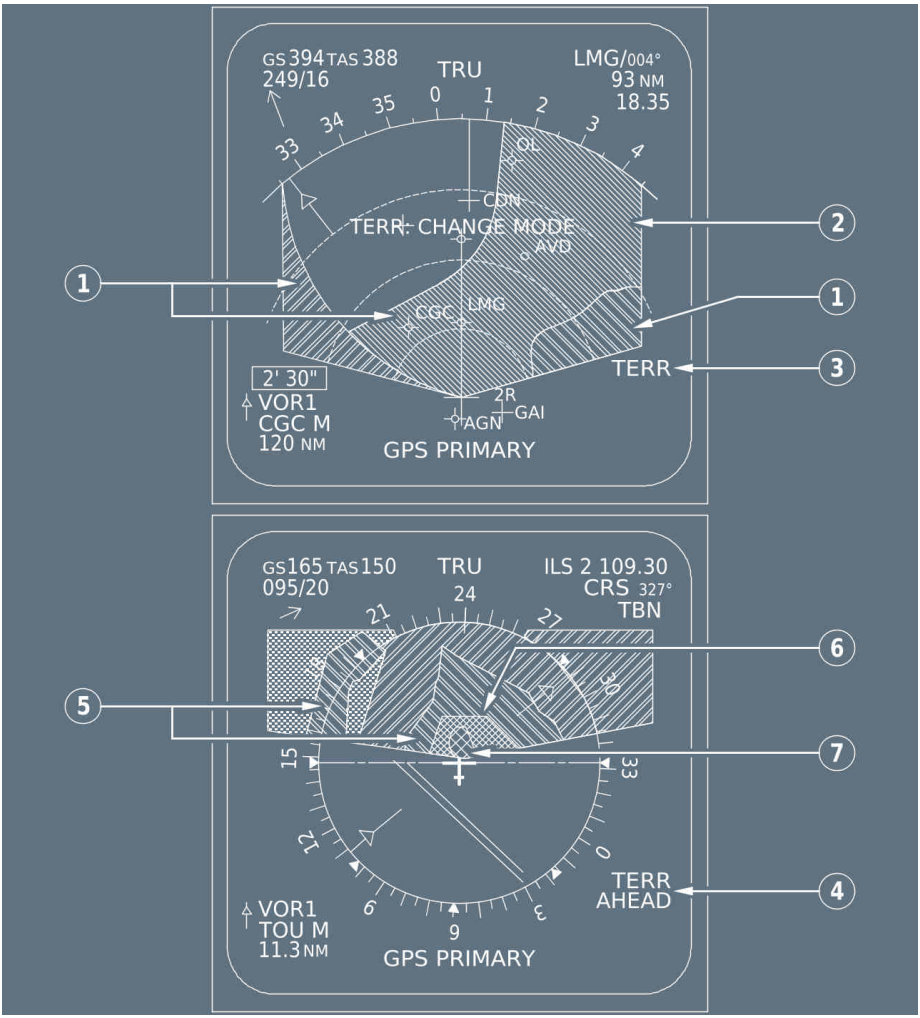
Generated when a conflict exists between the terrain warning envelope, ahead of the aircraft, and the terrain data stored in the database. The conflict area is shown in solid red.

Note: When an alert is generated (either caution or warning) and TERR ON ND is not selected, the terrain is automatically displayed and the TERR ON ND's pushbutton ON light comes on.

GPWS

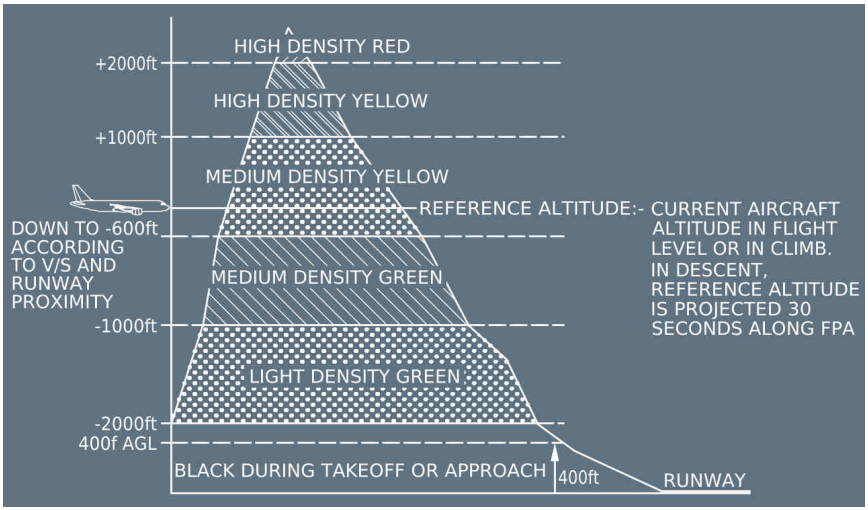
Ident.: DSC-31-45-00009586.0004001 / 22 MAY 12

Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03264-03618, 03782-04312, 04328-04384, 04433, 04481-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336



(1) GPWS terrain picture

The ND displays the GPWS terrain picture, when the TERR ON ND switch is selected ON, and the ND is not in PLAN mode. The terrain picture replaces the weather radar image.
The terrain appears in different colors and densities, in accordance with its relative height:



Note: *Areas without available terrain data in the GPWS database appear in magenta.*

(2) Center Part Messages

- The “TERR CHANGE MODE” indication is displayed in red (or amber), in the case of a predictive mode warning (or caution) alert, if the current selected display mode is PLAN.
- The “TERR REDUCE RANGE” indication is displayed in red (or amber), in the case of a predictive mode warning (or caution) alert, if the selected range is 160 NM or 320 NM.

(3) TERR indication

To differentiate between the terrain and the weather display, the weather radar TILT is replaced by a blue TERR, and the terrain display sweeps from the center outward to both ND sides.

(4) Warning and caution messages

TERR AHEAD (amber) : For a caution.

TERR AHEAD (red) : For a warning.

When triggered, these messages flash for 9 s, then remain steady until the caution or warning alert condition disappears.

TERR RNG (red) : For a RANGE error warning.

TERR TST (amber) : Appears during the GPWS test, when the terrain pattern is displayed, and there is no failure.

(5) Terrain caution alert

Generated when a conflict exists between the terrain caution envelope, ahead of the aircraft, and the terrain data stored in the database. The conflict area is shown in solid yellow.

(6) Terrain warning

Generated when:
- A conflict exists between the terrain warning envelope, ahead of the aircraft, and the terrain data stored in the database
- The aircraft is able to climb over the terrain.

The conflict area is shown in solid red.

(7) Avoid Terrain warning

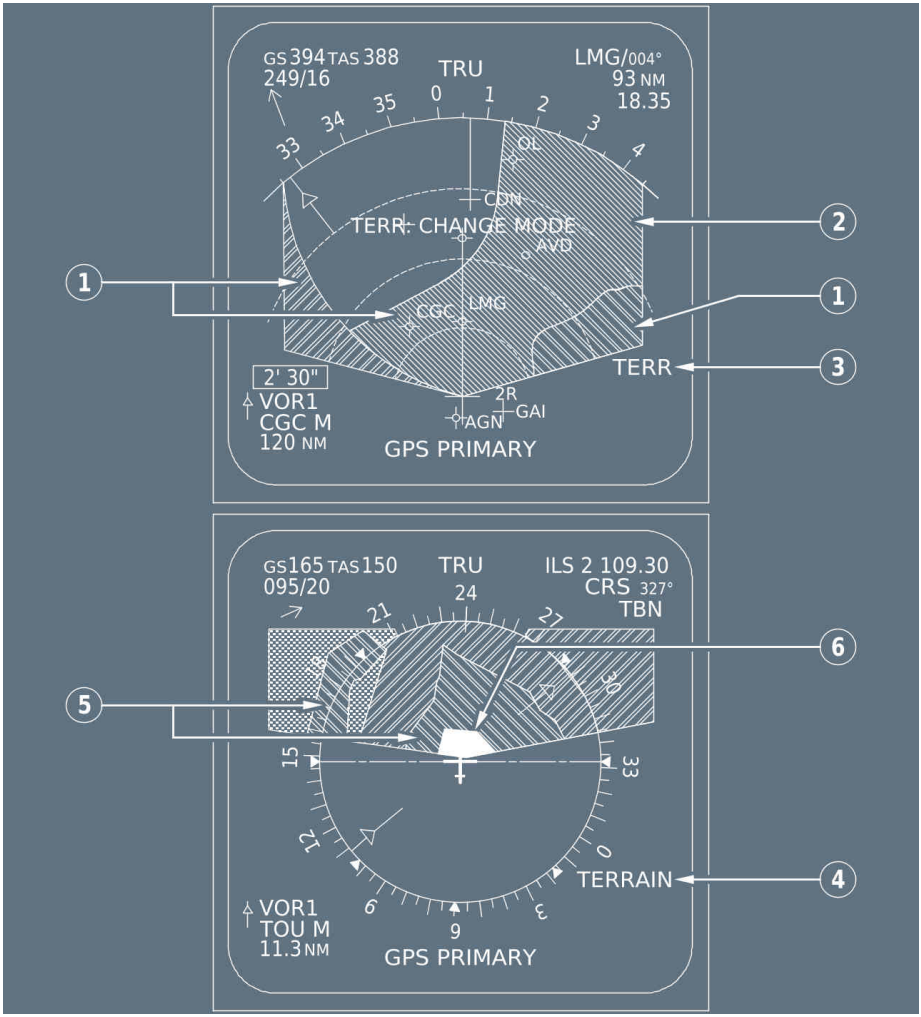
Generated when:
- There is a conflict between the terrain warning envelope, ahead of the aircraft, and the terrain data stored in the database
- The aircraft is not able to climb over the terrain with sufficient safety margin.

The conflict area is indicated by a red and black crosshatched pattern.

Note: When an alert is generated (either caution or warning) and TERR ON ND is not selected, the terrain is automatically displayed and the ON light on the TERR ON ND pushbutton comes on.

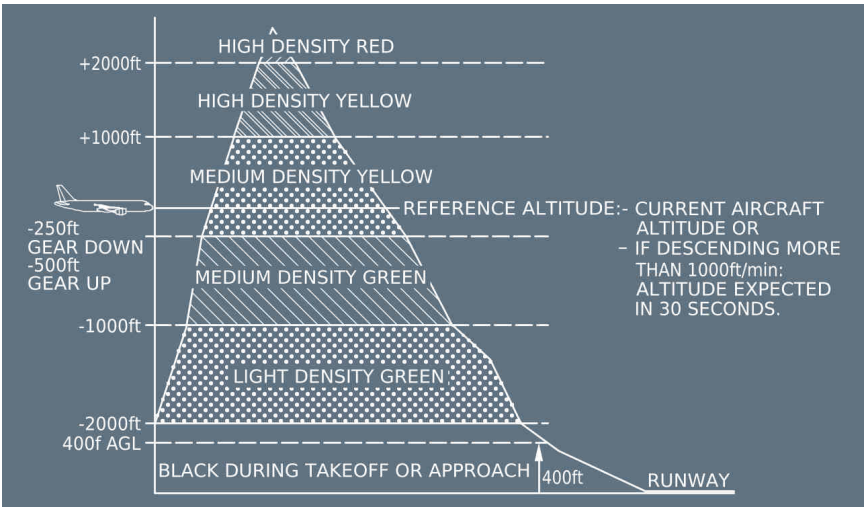
EGPWS

Ident.: DSC-31-45-00009586.0010001 / 22 MAY 12
Applicable to: MSN 02405



(1) EGPWS terrain picture

The ND displays the EGPWS terrain picture, when the TERR ON ND switch is selected ON, and the ND is not in PLAN mode. The terrain picture replaces the weather radar image.
The terrain appears in different colors and densities, in accordance with its relative height:



Note: *Areas without available terrain data in the EGPWS database appear in magenta.*

(2) Center Part Messages

- The “TERR CHANGE MODE” indication is displayed in red (or amber), in the case of a Terrain Awareness Display (TAD) warning (or caution) alert, if the current selected display mode is PLAN
- The “TERR REDUCE RANGE” indication is displayed in red (or amber), in the case of a Terrain Awareness Display (TAD) warning (or caution) alert, if the selected range is 160 NM or 320 NM.

(3) TERR indication

To differentiate between the terrain and the weather display, the weather radar TILT is replaced by a blue TERR, and the terrain display sweeps from the center outward to both ND sides.

(4) Warning and caution messages

TERRAIN (amber) : For a caution.

TERRAIN (red) : For a warning.

When triggered, these messages flash for 9 s, then remain steady until the caution or warning alert condition disappears.

TERR RNG (red) : For a RANGE error warning.

TERR TST (amber) : Appears during the EGPWS test, when the terrain pattern is displayed, and there is no failure.

(5) Terrain caution alert

Generated when a conflict exists between the terrain caution envelope, ahead of the aircraft, and the terrain data stored in the database. The conflict area is shown in solid yellow.

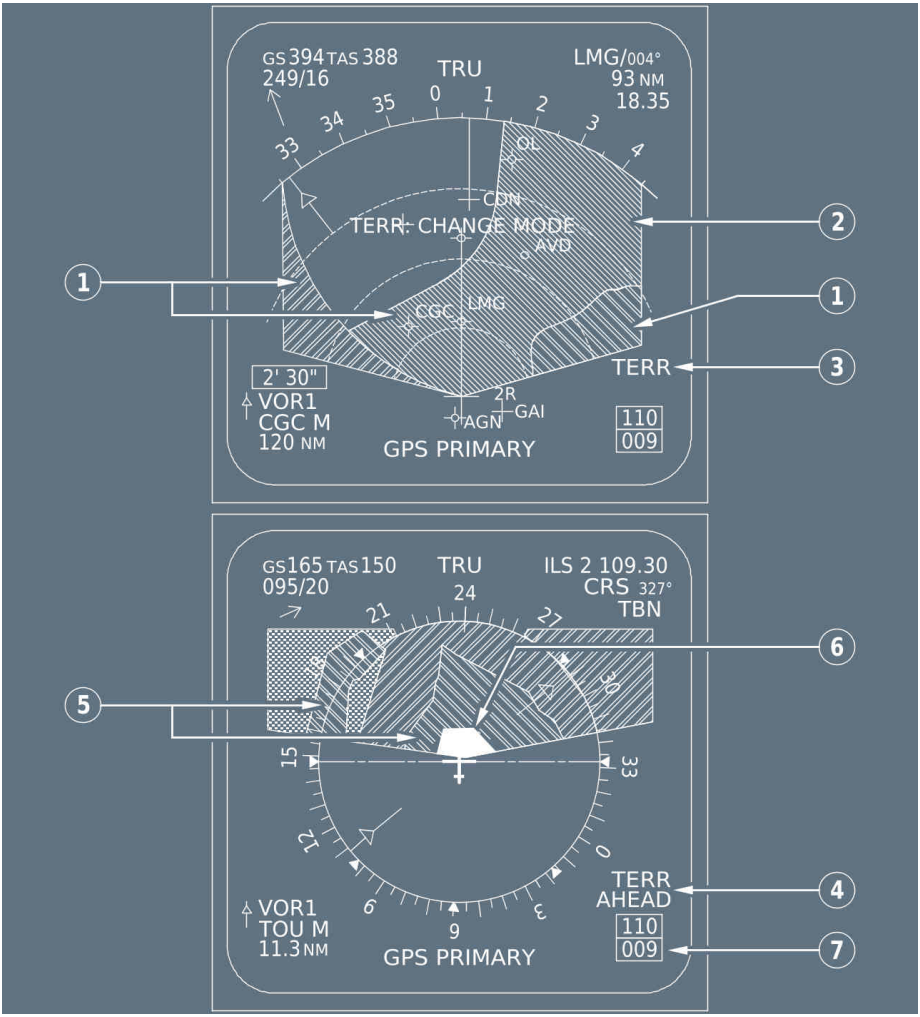
(6) Terrain warning alert

Generated when a conflict exists between the terrain warning envelope, ahead of the aircraft, and the terrain data stored in the database. The conflict area is shown in solid red.

Note: When an alert is generated (either caution or warning) and TERR ON ND is not selected, the terrain is automatically displayed and the TERR ON ND's pushbutton ON light comes on.

EGPWS

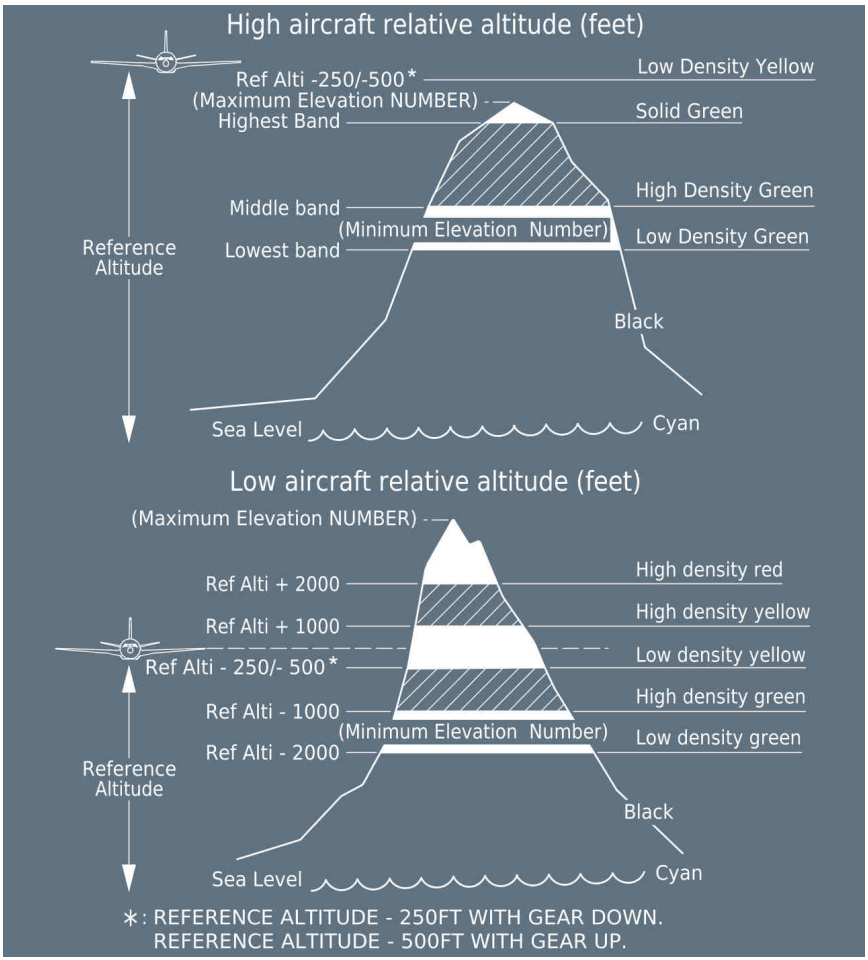
Ident.: DSC-31-45-00009586.0011001 / 08 AUG 13
Applicable to: MSN 02737



(1) EGPWS terrain picture

The ND displays the EGPWS terrain picture, when the TERR ON ND switch is selected ON, and the ND is not in PLAN mode. The terrain picture replaces the weather radar image. Terrain data is displayed independently of the aircraft relative altitude.

The terrain appears in different colors and densities, in accordance with its relative height:



Note: - *Areas without available terrain data in the EGPWS database appear in magenta*
- *The reference altitude is computed based on the current aircraft altitude or, if descending more than 1 000 ft/min, the altitude expected in 30 s*
- *In case of flight above the maximum elevation number, the relief between the minimum and maximum displayed elevations is displayed by using three different green levels.*

(2) Center Part Messages

- The "TERR CHANGE MODE" indication is displayed in red (or amber), in the case of a Terrain Awareness Display (TAD) warning (or caution) alert, if the current selected display mode is PLAN
- The "TERR REDUCE RANGE" indication is displayed in red (or amber), in the case of a Terrain Awareness Display (TAD) warning (or caution) alert, if the selected range is 160 NM or 320 NM.

(3) TERR indication

To differentiate between the terrain and the weather display, the weather radar TILT is replaced by a blue TERR, and the terrain display sweeps from the center outward to both ND sides.

(4) Warning and caution messages

TERR AHEAD (amber) : For a caution.

TERR AHEAD (red) : For a warning.

When triggered, these messages flash for 9 s, then remain steady until the caution or warning alert condition disappears.

TERR RNG (red) : For a RANGE error warning.

TERR TST (amber) : Appears during the EGPWS test, when the terrain pattern is displayed, and there is no failure.

(5) Terrain caution alert

Generated when a conflict exists between the terrain caution envelope, ahead of the aircraft, and the terrain data stored in the database. The conflict area is shown in solid yellow.

(6) Terrain warning alert

Generated when a conflict exists between the terrain warning envelope, ahead of the aircraft, and the terrain data stored in the database. The conflict area is shown in solid red.

Note: *When an alert is generated (either caution or warning) and TERR ON ND is not selected, the terrain is automatically displayed and the TERR ON ND's pushbutton ON light comes on.*

(7) Lowest and highest elevations

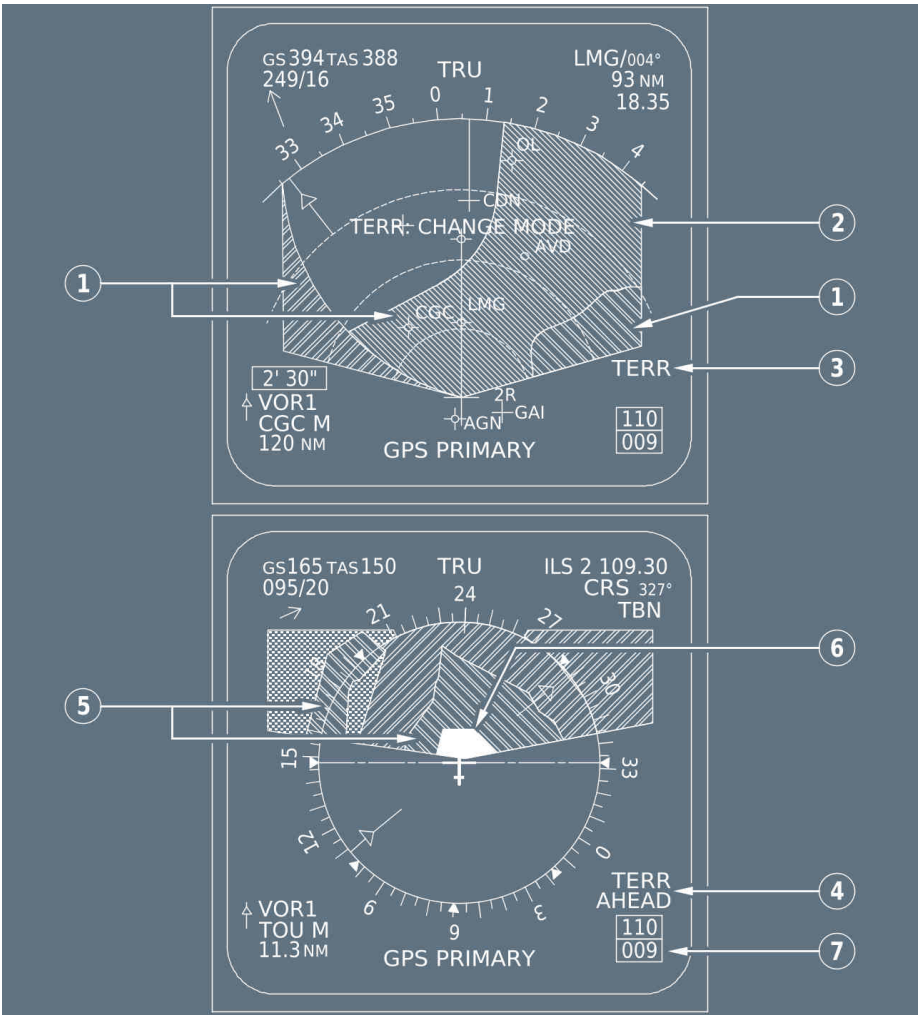
Minimum and maximum elevations encountered ahead of the aircraft, within the selected ND range. The color code of the elevation figures is the same as for the EGPWS terrain picture.

Note: The elevations shown on the ND correspond to the terrain included in the selected ND range, ahead of the aircraft. In ARC mode, the elevations are linked with the terrain displayed on the ND. In ROSE mode, the elevations may not represent the lowest and highest terrain currently displayed on the ND.

EGPWS

Ident.: DSC-31-45-00009586.0012001 / 08 AUG 13

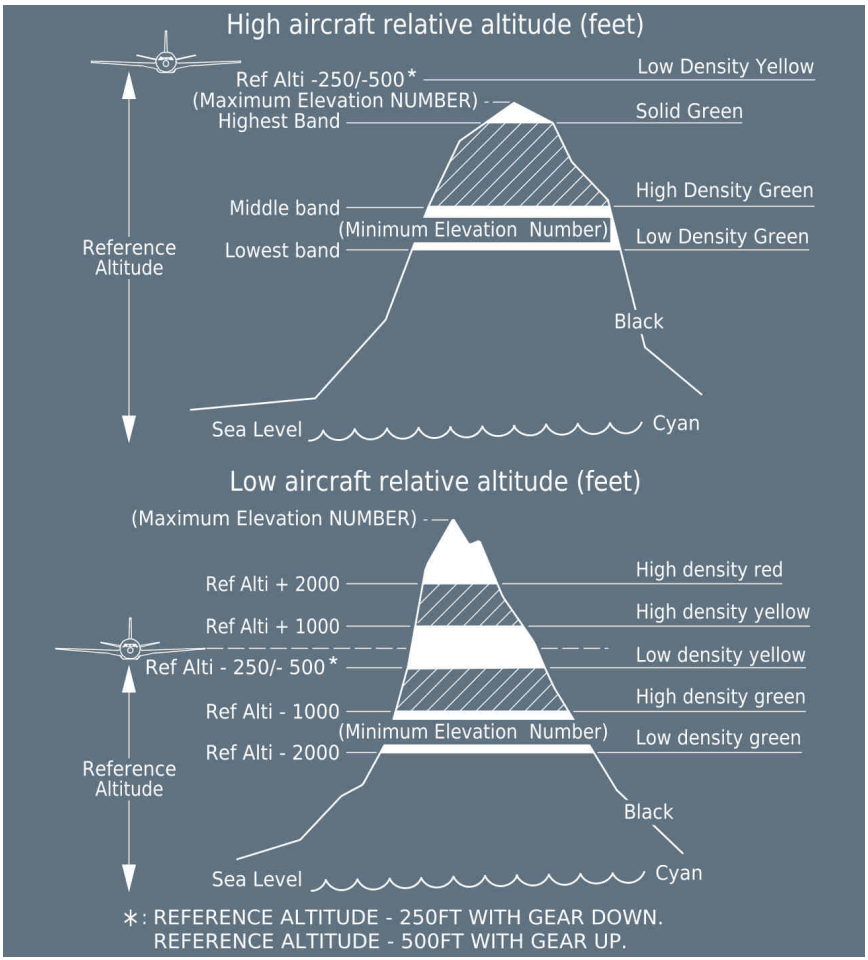
[4] **Applicable to: MSN 02135, 02139, 02388, 02443-02457, 02584-02712, 02804-02914, 03750, 04491, 04532, 04645, 05120, 05158, 05218, 06720-09063**



(1) EGPWS terrain picture

The ND displays the EGPWS terrain picture, when the TERR ON ND switch is selected ON, and the ND is not in PLAN mode. The terrain picture replaces the weather radar image. Terrain data is displayed independently of the aircraft relative altitude.

The terrain appears in different colors and densities, in accordance with its relative height:



Note: - *Areas without available terrain data in the EGPWS database appear in magenta*
- *The reference altitude is computed based on the current aircraft altitude or, if descending more than 1 000 ft/min, the altitude expected in 30 s*
- *In case of flight above the maximum elevation number, the relief between the minimum and maximum displayed elevations is displayed by using three different green levels.*

(2) Center Part Messages

- The "TERR CHANGE MODE" indication is displayed in red (or amber), in the case of a Terrain Awareness Display (TAD) warning (or caution) alert, if the current selected display mode is PLAN
- The "TERR REDUCE RANGE" indication is displayed in red (or amber), in the case of a Terrain Awareness Display (TAD) warning (or caution) alert, if the selected range is 160 NM or 320 NM.

(3) TERR indication

To differentiate between the terrain and the weather display, the weather radar TILT is replaced by a blue TERR, and the terrain display sweeps from the center outward to both ND sides.

(4) Warning and caution messages

TERR AHEAD or OBST AHEAD (amber) : For a caution.

TERR AHEAD or OBST AHEAD (red) : For a warning.

When triggered, these messages flash for 9 s, then remain steady until the caution or warning alert condition disappears.

TERR RNG (red) : For a RANGE error warning.

TERR TST (amber) : Appears during the EGPWS test, when the terrain pattern is displayed, and there is no failure.

(5) Terrain or obstacle caution alert

Generated when a conflict exists between the terrain caution envelope, ahead of the aircraft, and database-stored terrain/obstacles. The conflict area is shown in solid yellow.

(6) Terrain or obstacle warning alert

Generated when a conflict exists between the terrain warning envelope, ahead of the aircraft, and terrain/obstacles data stored in the database. The conflict area is shown in solid red.

Note: *When an alert is generated (either caution or warning) and TERR ON ND is not selected, the terrain is automatically displayed and the TERR ON ND's pushbutton ON light comes on.*

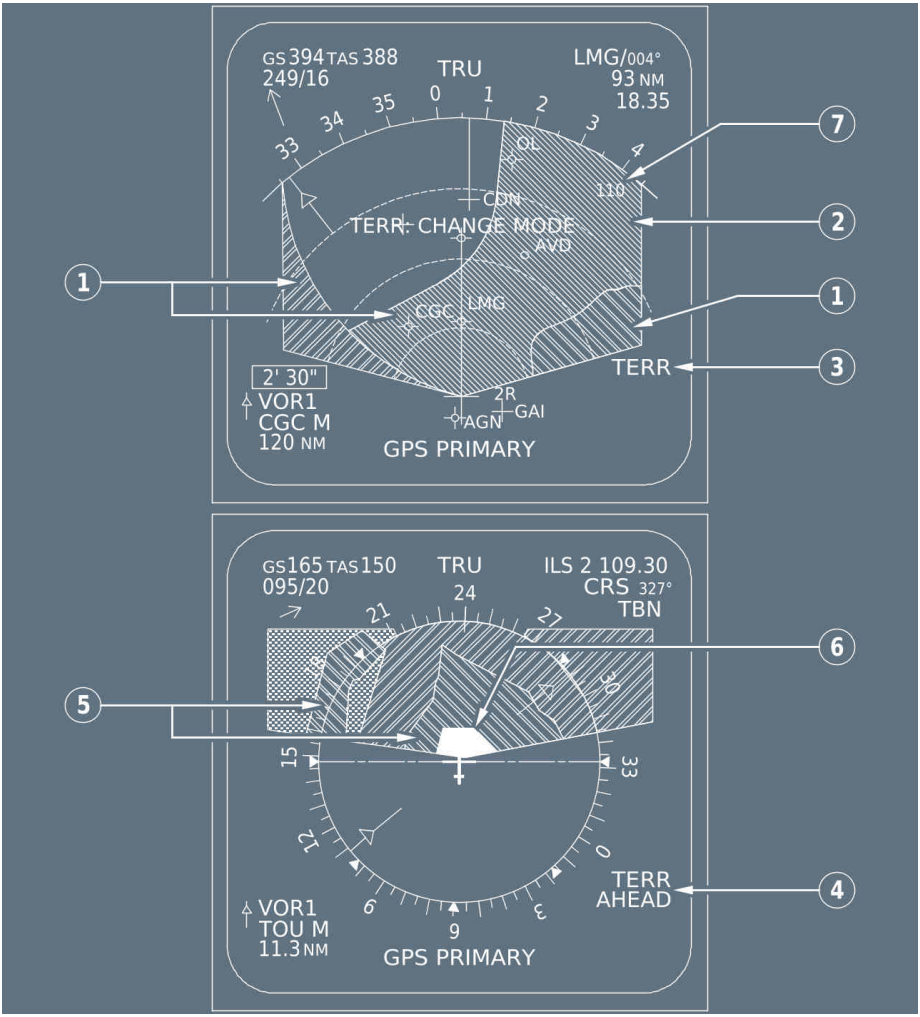
(7) Lowest and highest elevations

Minimum and maximum elevations encountered ahead of the aircraft, within the selected ND range. The color code of the elevation figures is the same as for the EGPWS terrain picture.

Note: The elevations shown on the ND correspond to the terrain included in the selected ND range, ahead of the aircraft. In ARC mode, the elevations are linked with the terrain displayed on the ND. In ROSE mode, the elevations may not represent the lowest and highest terrain currently displayed on the ND.

EGPWS

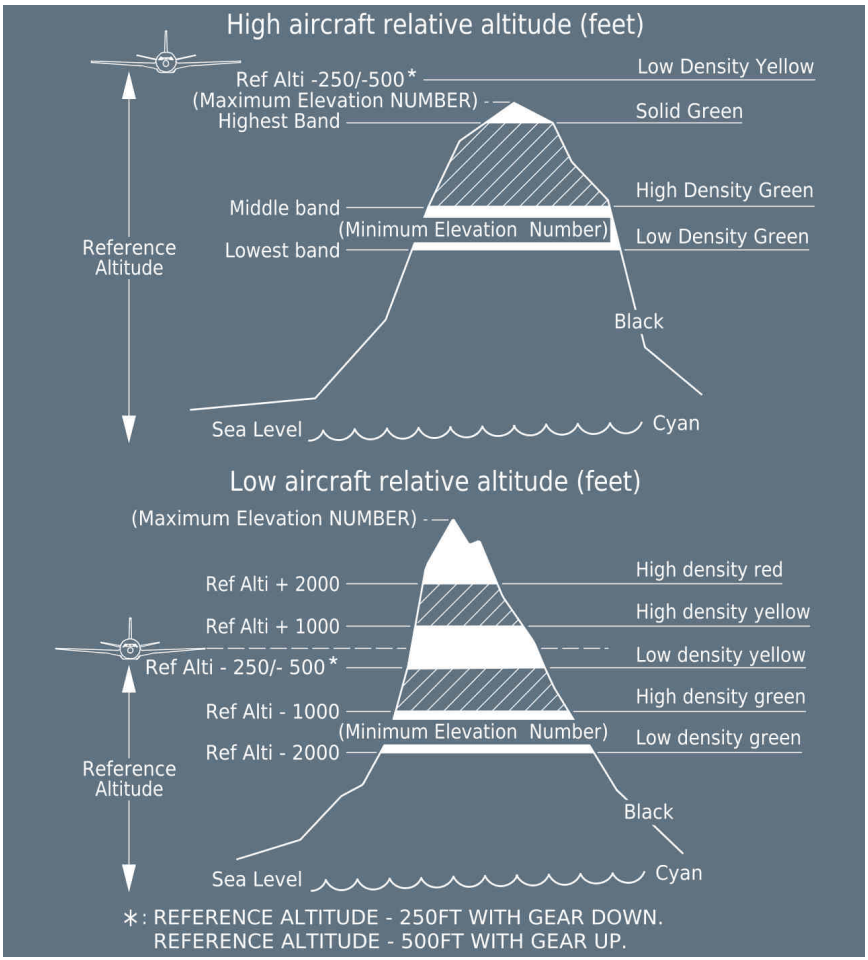
Ident.: DSC-31-45-00009586.0008001 / 08 AUG 13
Applicable to: MSN 01920, 02108, 02195, 02275-02334



(1) EGPWS terrain picture

The ND displays the EGPWS terrain picture, when the TERR ON ND switch is selected ON, and the ND is not in PLAN mode. The terrain picture replaces the weather radar image. Terrain data is displayed independently of the aircraft relative altitude.

The terrain appears in different colors and densities, accordance with its relative height:



Note: - *Areas without available terrain data in the EGPWS database appear in magenta*
- *The reference altitude is computed based on the current aircraft altitude or, if descending more than 1 000 ft/min, the altitude expected in 30 s*
- *In case of flight above the maximum elevation number, the relief between the minimum and maximum displayed elevations is displayed by using three different green levels.*

(2) Center Part Messages

- The "TERR CHANGE MODE" indication is displayed in red (or amber), in the case of a Terrain Awareness Display (TAD) warning (or caution) alert, if the current selected display mode is PLAN
- The "TERR REDUCE RANGE" indication is displayed in red (or amber), in the case of a Terrain Awareness Display (TAD) warning (or caution) alert, if the selected range is 160 NM or 320 NM.

(3) TERR indication

To differentiate between the terrain and the weather display, the weather radar TILT is replaced by a blue TERR, and the terrain display sweeps from the center outward to both ND sides.

(4) Warning and caution messages

TERR AHEAD or OBST AHEAD (amber) : For a caution.

TERR AHEAD or OBST AHEAD (red) : For a warning.

When triggered, these messages flash for 9 s, then remain steady until the caution or warning alert condition disappears.

TERR RNG (red) : For a RANGE error warning.

TERR TST (amber) : Appears during the EGPWS test, when the terrain pattern is displayed, and there is no failure.

(5) Terrain or obstacle caution alert

Generated when a conflict exists between the terrain caution envelope, ahead of the aircraft, and database-stored terrain/obstacles. The conflict area is shown in solid yellow.

(6) Terrain or obstacle warning alert

Generated when a conflict exists between the terrain warning envelope, ahead of the aircraft, and terrain/obstacles data stored in the database. The conflict area is shown in solid red.

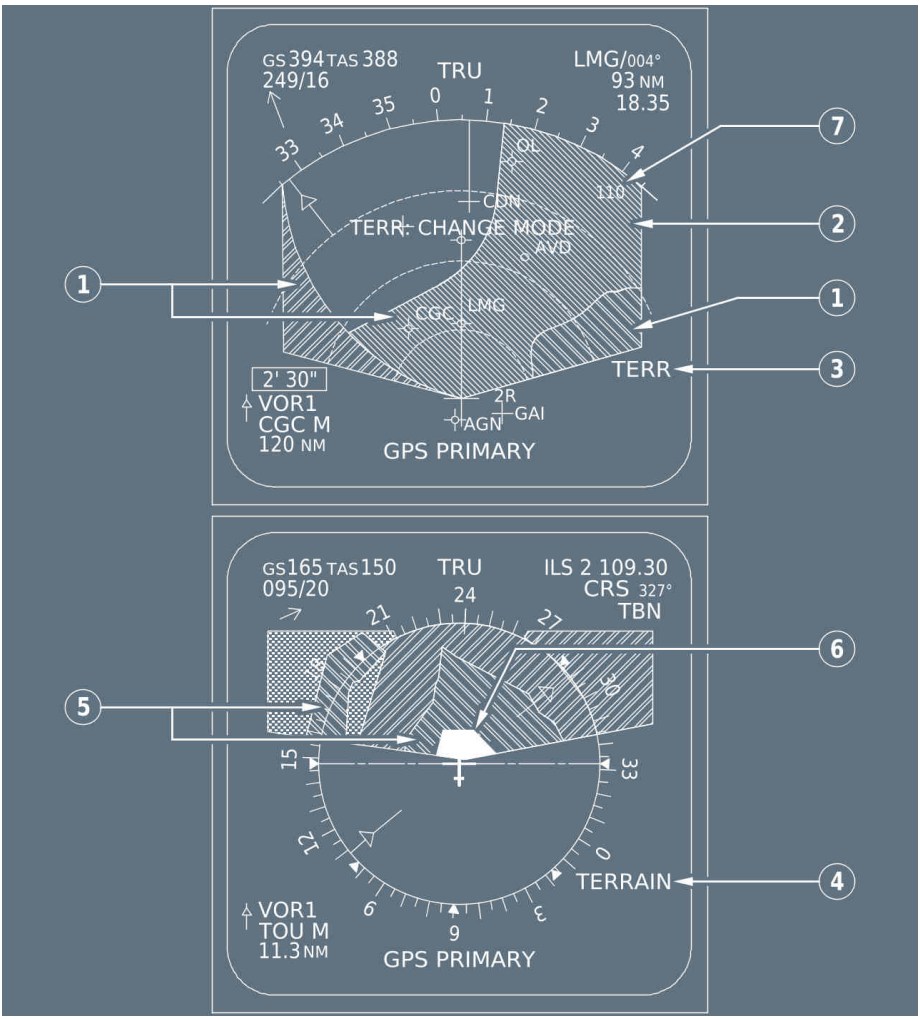
Note: *When an alert is generated (either caution or warning) and TERR ON ND is not selected, the terrain is automatically displayed and the TERR ON ND pushbutton ON light comes on.*

(7) Highest Elevation

Maximum elevations encountered ahead of the aircraft, within the selected ND range in ARC mode. The color code of the elevation figures is the same as for the EGPWS terrain picture.

EGPWS

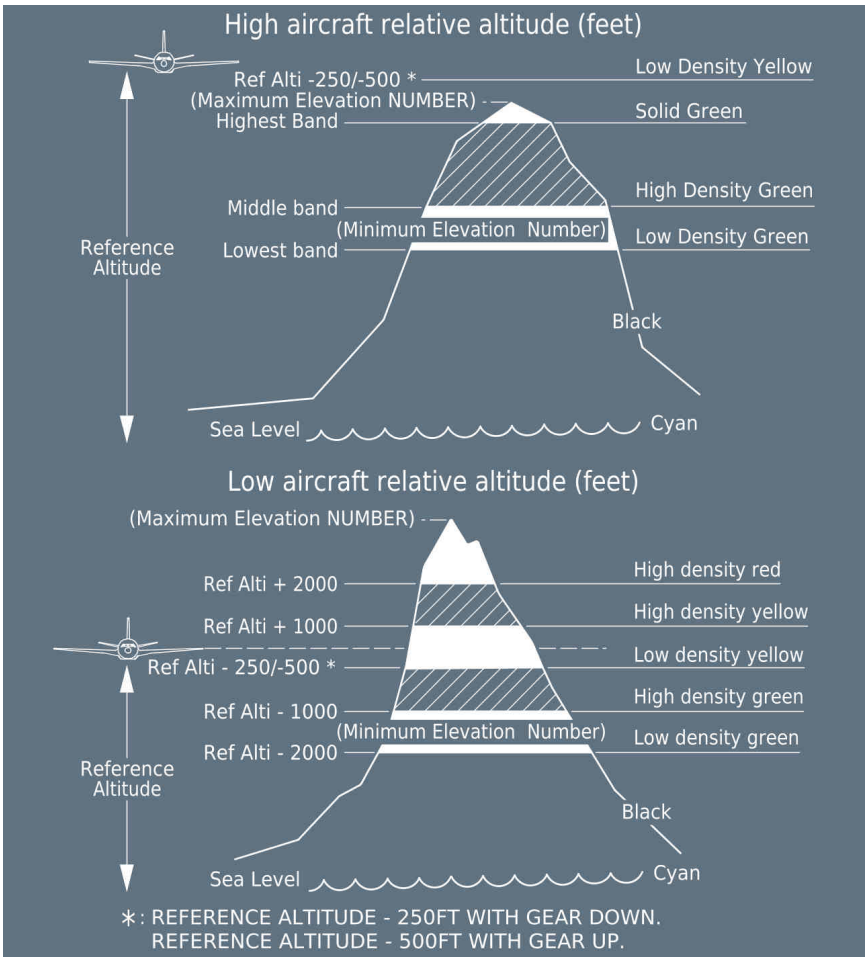
Ident.: DSC-31-45-00009586.0009001 / 08 AUG 13
Applicable to: MSN 02204, 02359, 02482



(1) EGPWS terrain picture

The ND displays the EGPWS terrain picture, when the TERR ON ND switch is selected ON, and the ND is not in PLAN mode. The terrain picture replaces the weather radar image. Terrain data is displayed independently of the aircraft relative altitude.

The terrain appears in different colors and densities, in accordance with its relative height:



Note: - *Areas without available terrain data in the EGPWS database appear in magenta*
- *The reference altitude is computed based on the current aircraft altitude or, if descending more than 1 000 ft/min, the altitude expected in 30 s*
- *In case of flight above the maximum elevation number, the relief between the minimum and maximum displayed elevations is displayed by using three different green levels.*

(2) Center Part Messages

- The "TERR CHANGE MODE" indication is displayed in red (or amber), in the case of a Terrain Awareness Display (TAD) warning (or caution) alert, if the current selected display mode is PLAN
- The "TERR REDUCE RANGE" indication is displayed in red (or amber), in the case of a Terrain Awareness Display (TAD) warning (or caution) alert, if the selected range is 160 NM or 320 NM.

(3) TERR indication

To differentiate between the terrain and the weather display, the weather radar TILT is replaced by a blue TERR, and the terrain display sweeps from the center outward to both ND sides.

(4) Warning and caution messages

TERRAIN or OBST (amber) : For a caution.

TERRAIN or OBST (red) : For a warning.

When triggered, these messages flash for 9 s, then remain steady until the caution or warning alert condition disappears.

TERR RNG (red) : For a RANGE error warning.

TERR TST (amber) : Appears during the EGPWS test, when the terrain pattern is displayed, and there is no failure.

(5) Terrain or obstacle caution alert

Generated when a conflict exists between the terrain caution envelope, ahead of the aircraft, and database-stored terrain/obstacles. The conflict area is shown in solid yellow.

(6) Terrain or obstacle warning alert

Generated when a conflict exists between the terrain warning envelope, ahead of the aircraft, and terrain/obstacles data stored in the database. The conflict area is shown in solid red.

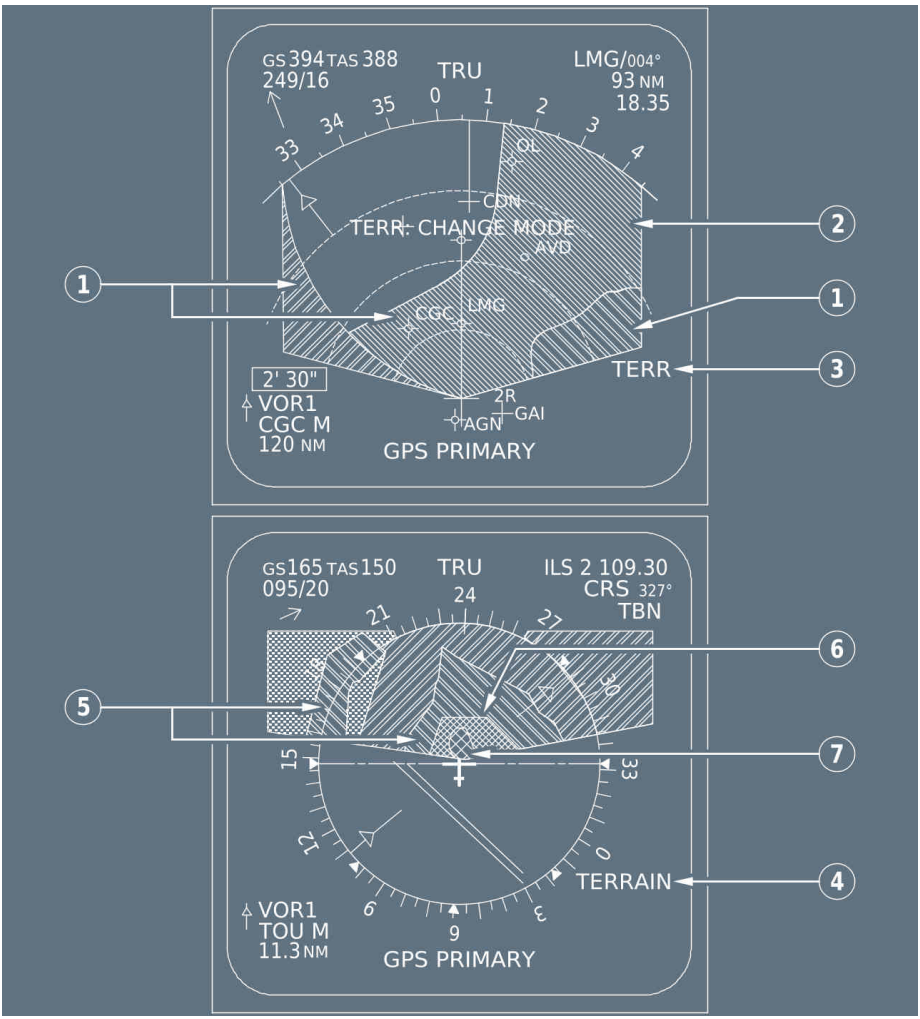
Note: *When an alert is generated (either caution or warning) and TERR ON ND is not selected, the terrain is automatically displayed and the TERR ON ND's pushbutton ON light comes on.*

(7) Highest Elevation

Maximum elevations encountered ahead of the aircraft, within the selected ND range in ARC mode. The color code of the elevation figures is the same as for the EGPWS terrain picture.

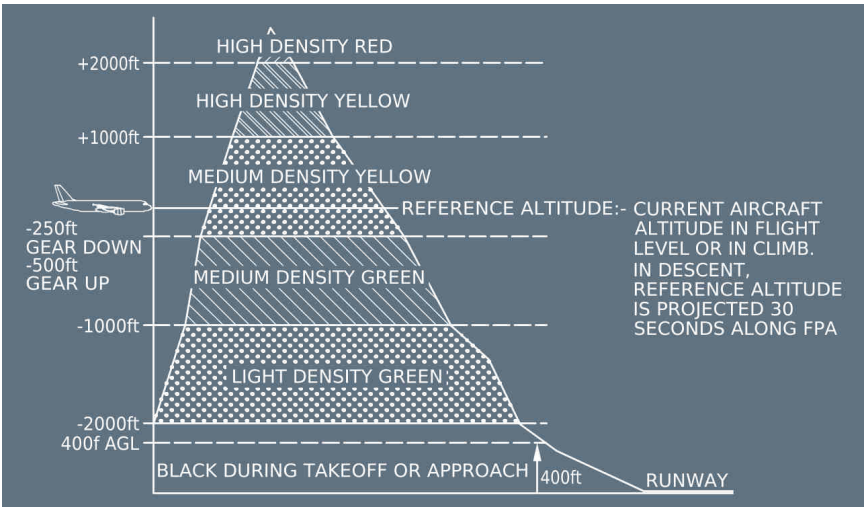
GPWS

Ident.: DSC-31-45-00009586.0005001 / 22 MAY 12
Applicable to: MSN 04314, 04393-04399, 04438



(1) GPWS terrain picture

The ND displays the GPWS terrain picture, when the TERR ON ND switch is selected ON, and the ND is not in PLAN mode. The terrain picture replaces the weather radar image.
The terrain appears in different colors and densities, in accordance with its relative height :



Note: *Areas without available terrain data in the GPWS database appear in magenta.*

(2) Center Part Messages

- The “TERR CHANGE MODE” indication is displayed in red (or amber), in the case of a predictive mode warning (or caution) alert, if the current selected display mode is PLAN.
- The “TERR REDUCE RANGE” indication is displayed in red (or amber), in the case of a predictive mode warning (or caution) alert, if the selected range is 160 NM or 320 NM.

(3) TERR indication

To differentiate between the terrain and the weather display, the weather radar TILT is replaced by a blue TERR, and the terrain display sweeps from the center outward to both ND sides.

(4) Warning and caution messages

TERRAIN (amber) : For a caution.

TERRAIN (red) : For a warning.

When triggered, these messages flash for 9 s, then remain steady until the caution or warning alert condition disappears.

TERR RNG (red) : For a RANGE error warning.

TERR TST (amber) : Appears during the GPWS test, when the terrain pattern is displayed, and there is no failure.

(5) Terrain caution alert

Generated when a conflict exists between the terrain caution envelope, ahead of the aircraft, and the terrain data stored in the database. The conflict area is shown in solid yellow.

(6) Terrain warning

Generated when a conflict exists between the terrain warning envelope, ahead of the aircraft, and the terrain data stored in the database. The conflict area is shown in solid red.

(7) Avoid Terrain warning

Generated when:

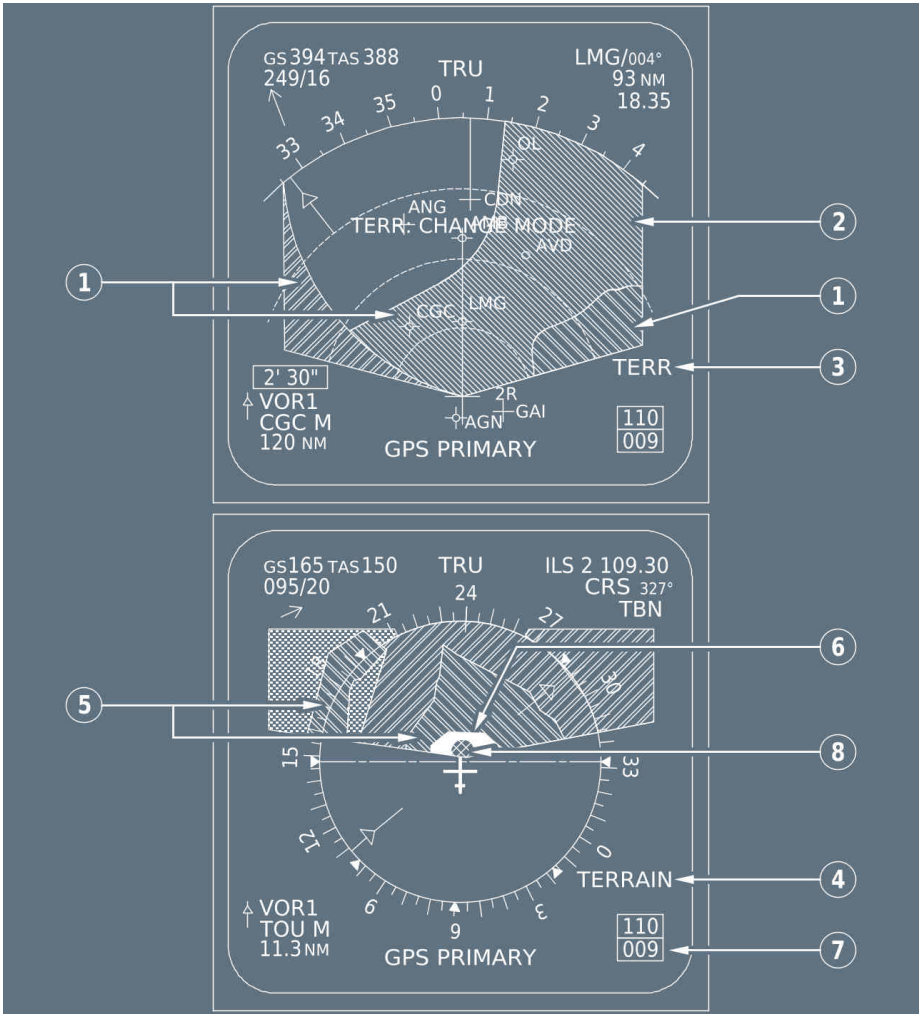
- There is a conflict between the terrain warning envelope, ahead of the aircraft, and the terrain data stored in the database
- The aircraft is not able to climb over the terrain with sufficient safety margin.

The conflict area is indicated by a red and black crosshatched pattern.

Note: When an alert is generated (either caution or warning) and TERR ON ND is not selected, the terrain is automatically displayed and the ON light on the TERR ON ND pushbutton comes on.

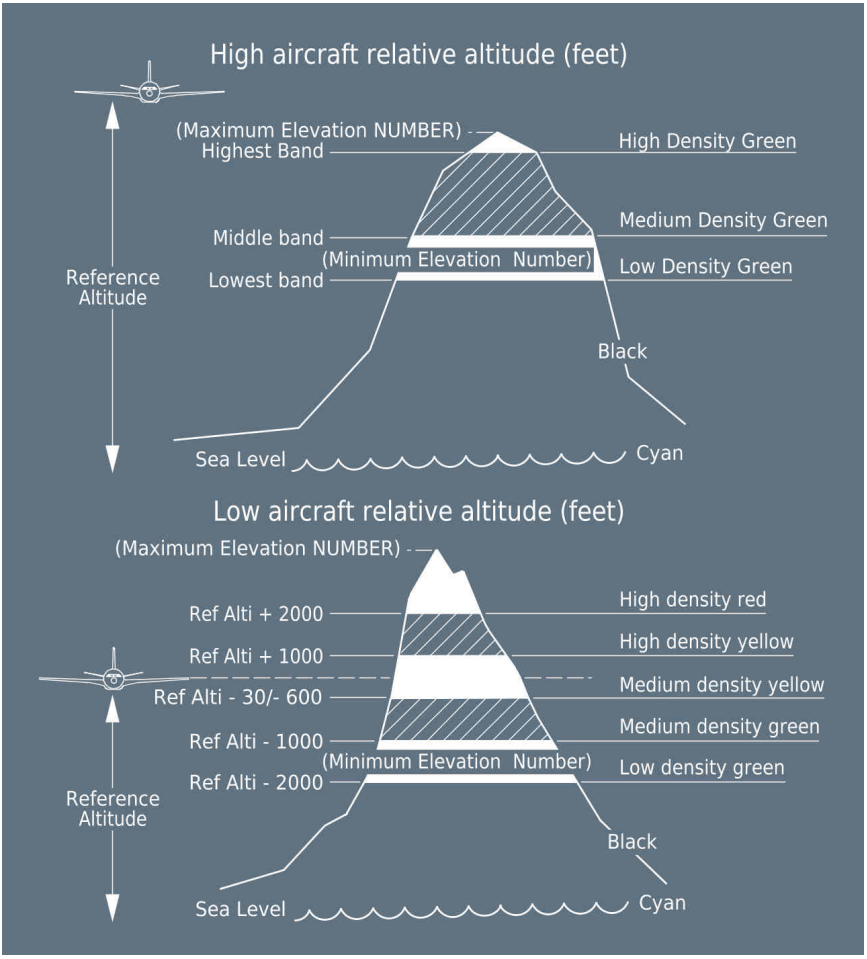
GPWS

Ident.: DSC-31-45-00009586.0044001 / 08 AUG 13
Applicable to: MSN 03138



(1) GPWS terrain picture

The ND displays the GPWS terrain picture, when the TERR ON ND switch is selected ON, and the ND is not in PLAN mode. The terrain picture replaces the weather radar image. Terrain data is displayed independently of the aircraft relative altitude. The terrain appears in different colors and densities, according to its relative and absolute height :



Note: - *Areas without available terrain data in the GPWS database appear in magenta*
- *The reference altitude is computed based on the current aircraft altitude or, if descending more than 1 000 ft/min, the altitude expected in 30 s*
- *In case of flight above the maximum elevation number, the relief between the minimum and maximum displayed elevations is displayed by using three different green levels.*

(2) Center Part Messages

- The "TERR CHANGE MODE" indication is displayed in red (or amber), in the case of a predictive mode warning (or caution) alert, if the current selected display mode is PLAN
- The "TERR REDUCE RANGE" indication is displayed in red (or amber), in the case of a predictive mode warning (or caution) alert, if the selected range is 160 NM or 320 NM.

(3) TERR indication

To differentiate between the terrain and weather display, the weather radar TILT is replaced by a blue TERR, and the terrain display sweeps from the center outward to both ND sides.

(4) Warning and caution messages

TERR AHEAD or OBST AHEAD (amber) : For a caution.

TERR AHEAD or OBST AHEAD (red) : For a warning.

When triggered, these messages flash for 9 s, then remain steady until the caution or warning alert condition disappears.

TERR RNG (red) : For a RANGE error warning.

TERR TST (amber) : Appears during the GPWS test, when the terrain pattern is displayed, and there is no failure.

(5) Terrain or obstacle caution alert

Generated when a conflict exists between the terrain caution envelope, ahead of the aircraft, and database-stored terrain/obstacles. The conflict area is displayed in solid yellow.

(6) Terrain or obstacle warning alert

Generated when :

- A conflict exists between the terrain/obstacle warning envelope, ahead of the aircraft, and the terrain/obstacle data stored in the database
- The aircraft is able to climb over the terrain/obstacle.

The conflict area is displayed in solid red.

Note: *When an alert is generated (either caution or warning) and TERR ON ND is not selected, the terrain is automatically displayed and the TERR ON ND pushbutton ON light comes on.*

(7) Lowest and highest elevations

Minimum and maximum elevations encountered ahead of the aircraft, within the selected ND range. The color code of the elevation figures is the same as for the GPWS terrain picture.

Note: The elevations shown on the ND (ROSE or ARC mode) correspond to the terrain (obstacles ◁) included in the selected ND range, ahead of the aircraft.

(8) Avoid Terrain warning

The conflict area is indicated by a red and black crosshatched pattern.

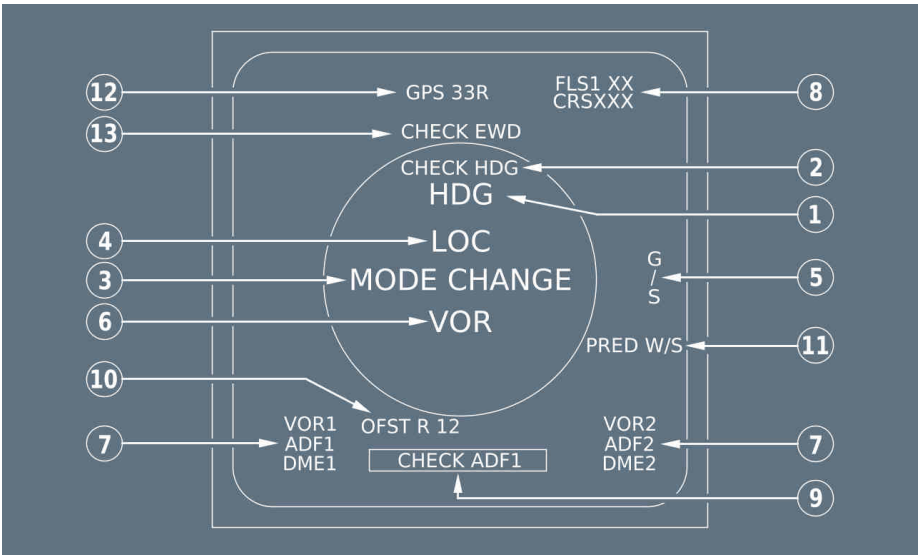
Generated when :

- There is a conflict between the terrain warning envelope, ahead of the aircraft, and the terrain data stored in the database
- The aircraft is not able to climb over the terrain with sufficient safety margin.

Note: When an alert is generated (either caution or warning) and TERR ON ND is not selected, the terrain is automatically displayed and the ON light on the TERR ON ND pushbutton comes on.

FLAGS AND MESSAGES DISPLAYED ON ND

Ident.: DSC-31-45-00001256.0615001 / 21 MAR 17
Applicable to: MSN 02443, 02737



(1) HDG Flag (red)
If the heading data fails, the rose, arc and associated symbols disappear.
A HDG flag flashes for 9 s, then remains steady in the upper part of the ND.

(2) CHECK HDG Flag (amber)
For more information: *Refer to DSC-31-05-60 Side1/Side2 Discrepancy Messages*

(3) Center Part Messages

- The screen displays a MODE CHANGE message in green if there is a discrepancy between the selected mode on the EFIS control panel and the mode sent from the onside FMGC, or while the DMC is preparing a new page for display
- The screen displays a RANGE CHANGE message in green if there is a discrepancy between the range selected on the EFIS control panel and the range sent from the onside FMGC. A MODE CHANGE message has priority over a RANGE CHANGE message
- The screen displays a MAP NOT AVAIL message in red for several reasons:
  - The MODE CHANGE or RANGE CHANGE message has been displayed more than 6 s, or
  - The FMGC has failed, or
  - The FMGC has delivered an invalid aircraft position.
- The screen displays a W/S SET RNG 10 NM message if a predictive windshear alert is triggered and the range is above 10 NM.
  The message is displayed in the color corresponding to the windshear alert: red for a warning, amber for a caution
- The screen displays a W/S CHANGE MODE message if a predictive windshear alert is triggered and the ND is not in ARC or ROSE mode. The message appears in red for a warning, or amber for a caution.

(4) LOC Flag/F-LOC Flag (red)
If LOC or F-LOC data fails, this flag flashes for 9 s, then remains steady.
If there is an inconsistency in the approach mode selection within one MMR, both LOC and F-LOC flags flash for 9 s, then remain steady.

(5) G/S Flag/F-G/S Flag (red)
If G/S or F-G/S data fails, this flag flashes for 9 s, then remains steady.
If there is an inconsistency in the approach mode selection, both G/S and F-G/S flags flash for 9 s, then remain steady.

(6) VOR Flag (red)
In ROSE VOR mode, when the VOR bearing is not valid, this flag flashes for 9 s, then remains steady.

(7) VOR 1(2) or ADF 1(2) or DME 1(2) Flag (red)
If a navigation receiver fails, the appropriate one of these flags flashes for 9 s, then remains steady.

(8) VOR/FLS/ILS Course Flag and FLS Slope Flag
If the VOR/FLS/ILS course fails, a red CRSXXX flag appears.
If there is non-computed data (NCD) for the course, a blue CRS - - - flag appears.
If the FLS Slope is invalid, a red XX flag appears.
If there is a non-computed data (NCD) for the slope a magenta flag - - appears.

(9) Other messages

MAP PARTLY DISPLAYED (amber)	:	In case of incomplete data transmission between the FMGC (priority criteria) and the DMC, or if the DMC cannot draw the complete MAP. This message is also displayed when a very long leg exists in the flight plan. A leg is considered as “very long” when the starting point (or endpoint) is located at more than 45 ° from the aircraft location (45 ° of longitude or latitude). This DMC limitation results from a compromise between accurate drawing precision and maximum leg length that can be displayed.
NAV ACCUR UPGRAD, or (white) NAV ACCUR DOWNGRAD (amber)	:	Signals a change in navigation accuracy.
SPECIFIC VOR/D UNAVAIL (amber)	:	If the NAVAID, that is tuned for the selected approach or departure, is not available.
BACK-UP NAV (amber)	:	If the MCDU back-up navigation mode is activated (*Refer to DSC-22_10-40-10 MCDU - MCDU Interface*)
SET OFFSIDE RNG/MODE (amber)	:	Displayed on ND 1(2), in case of an FMGC 1(2) failure when the two ND ranges or modes selected on the EFIS control panels are different.
OFFSIDE FM CONTROL (amber)	:	If the offside FM supplies the onside ND.
GPS PRIMARY (white, boxed white)	:	This message appears when GPS PRIMARY mode is available, or has been recovered. The pilot can clear this message by pressing the CLR key on the MCDU.
GPS PRIMARY LOST (amber, boxed white)	:	This message appears when GPS PRIMARY is not available, and not clearable by pilot action.

↓ (green) : Overflow arrow, displayed when more than one of the following messages are present at the same time:
- NAV ACCUR DOWNGRAD
- NAV ACCUR UPGRAD
- SPECIF VOR-D UNAVAIL
- MAP PARTLY DISPLAYED
- SET OFFSIDE RNG/MODE
- GPS PRIMARY
- GPS PRIMARY LOST

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

(10) OFST R(L) XX message (yellow)
The screen displays this message, when a temporary or an offset flight plan is entered.
The offset value is given in NM.

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

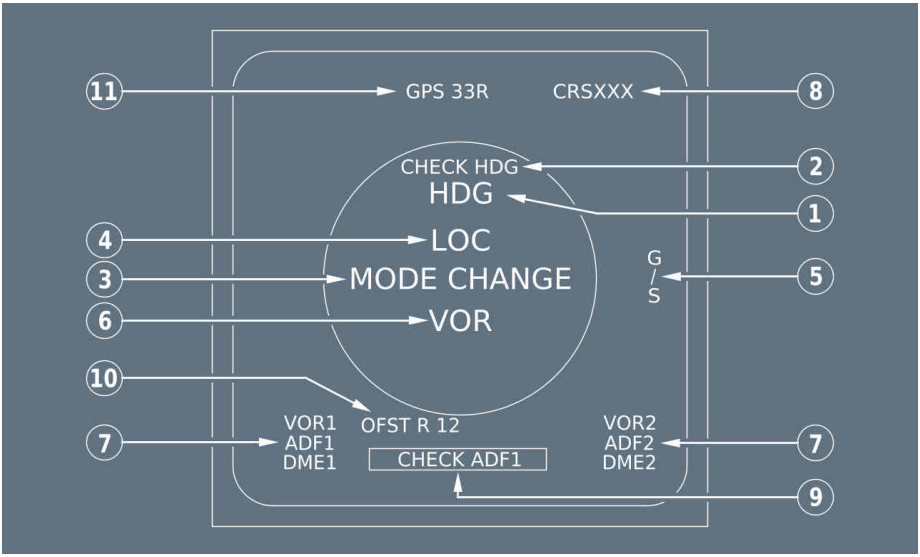
(11) PRED W/S flag (amber)
The WINDSHEAR sw on the weather radar panel is set to AUTO, and a Predictive Windshear System fault is detected. This message appears on ground, or when flaps and slats are extended.
It is associated with a single chime. The radar image remains available, provided that the fault does not affect the radar mode.

(12) GPS message (green)
This message shows the full runway name of the selected approach. It is displayed, when the flight crew selects a GPS approach.

(13) CHECK EWD, CHECK CAPT (F/O) PFD, CHECK SD, CHECK CAPT (F/O) ND (amber)
For more information: *Refer to DSC-31-05-60 Feedback Messages*

FLAGS AND MESSAGES DISPLAYED ON ND

Ident.: DSC-31-45-00001256.0545001 / 21 MAR 17
Applicable to: MSN 02275-02359, 02405, 02482



(1) HDG Flag (red)
If the heading data fails, the rose, arc and associated symbols disappear.
A HDG flag flashes for 9 s, then remains steady in the upper part of the ND.

(2) CHECK HDG Flag (amber)
When the flight warning computer detects a disagree (5 °) between sides 1 and 2, a CHECK HDG flag appears on both NDs, and a caution appears on the ECAM.

(3) Center Part Messages

- The screen displays a MODE CHANGE message in green if there is a discrepancy between the selected mode on the EFIS control panel and the mode sent from the onside FMGC, or while the DMC is preparing a new page for display
- The screen displays a RANGE CHANGE message in green if there is a discrepancy between the range selected on the EFIS control panel and the range sent from the onside FMGC. A MODE CHANGE message has priority over a RANGE CHANGE message
- The screen displays a MAP NOT AVAIL message in red for several reasons:
  - The MODE CHANGE or RANGE CHANGE message has been displayed more than 6 s, or
  - The FMGC has failed, or
  - The FMGC has delivered an invalid aircraft position.

(4) LOC Flag (red)
If LOC data fails, this flag flashes for 9 s, then remains steady.

(5) G/S Flag (red)
If G/S data fails, this flag flashes for 9 s, then remains steady.

(6) VOR Flag (red)
In ROSE VOR mode, when the VOR bearing is not valid, this flag flashes for 9 s, then remains steady.

(7) VOR 1(2) or ADF 1(2) or DME 1(2) Flag (red)
If a navigation receiver fails, the appropriate one of these flags flashes for 9 s, then remains steady.

(8) VOR Course Flag
If the VOR course fails, a red CRSXXX flag appears.
If there is non-computed data (NCD), a blue CRS - - - flag appears.

(9) Other messages

MAP PARTLY DISPLAYED (amber) : In case of incomplete data transmission between the FMGC (priority criteria) and the DMC, or if the DMC cannot draw the complete MAP.
This message is also displayed when a very long leg exists in the flight plan. A leg is considered as “very long” when the starting point (or endpoint) is located at more than 45 ° from the aircraft location (45 ° of longitude or latitude).
This DMC limitation results from a compromise between accurate drawing precision and maximum leg length that can be displayed.

NAV ACCUR UPGRAD, or (white) NAV ACCUR DOWNGRAD (amber)	:	Signals a change in navigation accuracy.
SPECIFIC VOR/D UNAVAIL (amber)	:	If the NAVAID, that is tuned for the selected approach or departure, is not available.
SET OFFSIDE RNG/MODE (amber)	:	Displayed on ND 1(2), in case of an FMGC 1(2) failure when the two ND ranges or modes selected on the EFIS control panels are different.
GPS PRIMARY (white, boxed white)	:	This message appears when GPS PRIMARY mode is available, or has been recovered. The pilot can clear this message by pressing the CLR key on the MCDU.
GPS PRIMARY LOST (amber, boxed white)	:	This message appears when GPS PRIMARY is not available, and not clearable by pilot action.
↓ (green)	:	Overflow arrow, displayed when more than one of the following messages are present at the same time: - NAV ACCUR DOWNGRAD (inhibited when the navigation mode is IRS/GPS) - NAV ACCUR UPGRAD (inhibited when the navigation mode is IRS/GPS) - SPECIF VOR-D UNAVAIL - MAP PARTLY DISPLAYED - SET OFFSIDE RNG/MODE - GPS PRIMARY - GPS PRIMARY LOST.

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

(10) OFST R(L) XX message (yellow)

The screen displays this message, when the flight crew enters a temporary, or an offset flight plan.

The offset value is given in NM.

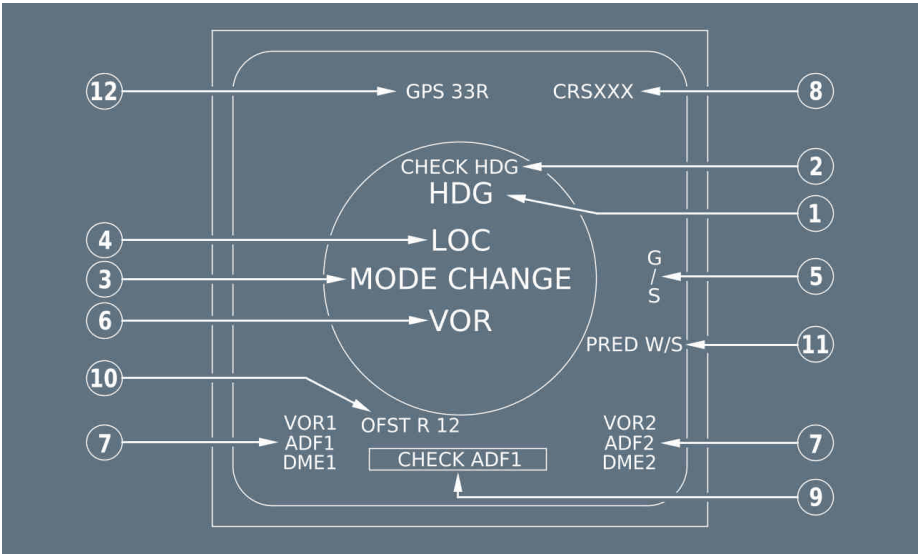
Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

(11) GPS APP (green)

This message is displayed, when the flight crew selects a GPS approach.

FLAGS AND MESSAGES DISPLAYED ON ND

Ident.: DSC-31-45-00001256.0354001 / 21 MAR 17
Applicable to: MSN 02457, 02609-02626, 03138



(1) HDG Flag (red)
If the heading data fails, the rose, arc and associated symbols disappear.
A HDG flag flashes for 9 s, then remains steady in the upper part of the ND.

(2) CHECK HDG Flag (amber)
When the flight warning computer detects a disagree (5 °) between sides 1 and 2, a CHECK HDG flag appears on both NDs, and a caution appears on the ECAM.

(3) Center Part Messages

- The screen displays a MODE CHANGE message in green if there is a discrepancy between the selected mode on the EFIS control panel and the mode sent from the onside FMGC, or while the DMC is preparing a new page for display
- The screen displays a RANGE CHANGE message in green if there is a discrepancy between the range selected on the EFIS control panel and the range sent from the onside FMGC. A MODE CHANGE message has priority over a RANGE CHANGE message

- The screen displays a MAP NOT AVAIL message in red for several reasons:
  - The MODE CHANGE or RANGE CHANGE message has been displayed more than 6 s, or
  - The FMGC has failed, or
  - The FMGC has delivered an invalid aircraft position.
- The screen displays a W/S SET RNG 10 NM message if a predictive windshear alert is triggered and the range is above 10 NM.
  The message is displayed in the color corresponding to the windshear alert: red for a warning, amber for a caution
- The screen displays a W/S CHANGE MODE message if a predictive windshear alert is triggered and the ND is not in ARC or ROSE mode. The message appears in red for a warning, or amber for a caution.

(4) LOC Flag (red)
If LOC data fails, this flag flashes for 9 s, then remains steady.

(5) G/S Flag (red)
If G/S data fails, this flag flashes for 9 s, then remains steady.

(6) VOR Flag (red)
In ROSE VOR mode, when the VOR bearing is not valid, this flag flashes for 9 s, then remains steady.

(7) VOR 1(2) or ADF 1(2) or DME 1(2) Flag (red)
If a navigation receiver fails, the appropriate one of these flags flashes for 9 s, then remains steady.

(8) VOR Course Flag
If the VOR course fails, a red CRSXXX flag appears.
If there is non-computed data (NCD), a blue CRS - - - flag appears.

(9) Other messages

MAP PARTLY DISPLAYED (amber)	:	In case of incomplete data transmission between the FMGC (priority criteria) and the DMC, or if the DMC cannot draw the complete MAP. This message is also displayed when a very long leg exists in the flight plan. A leg is considered as “very long” when the starting point (or endpoint) is located at more than 45 ° from the aircraft location (45 ° of longitude or latitude). This DMC limitation results from a compromise between accurate drawing precision and maximum leg length that can be displayed.

NAV ACCUR UPGRAD, or (white) NAV ACCUR DOWNGRAD (amber)	:	Signals a change in navigation accuracy.
SPECIFIC VOR/D UNAVAIL (amber)	:	If the NAVAID, that is tuned for the selected approach or departure, is not available.
SET OFFSIDE RNG/MODE (amber)	:	Displayed on ND 1(2), in case of an FMGC 1(2) failure when the two ND ranges or modes selected on the EFIS control panels are different.
GPS PRIMARY (white, boxed white)	:	This message appears when GPS PRIMARY mode is available, or has been recovered. The pilot can clear this message by pressing the CLR key on the MCDU.
GPS PRIMARY LOST (amber, boxed white)	:	This message appears when GPS PRIMARY is not available, and not clearable by pilot action.
↓ (green)	:	Overflow arrow, displayed when more than one of the following messages are present at the same time: - NAV ACCUR DOWNGRAD (inhibited when the navigation mode is IRS/GPS) - NAV ACCUR UPGRAD (inhibited when the navigation mode is IRS/GPS) - SPECIF VOR-D UNAVAIL - MAP PARTLY DISPLAYED - SET OFFSIDE RNG/MODE - GPS PRIMARY - GPS PRIMARY LOST.

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

(10) OFST R(L) XX message (yellow)

The screen displays this message, when a temporary or an offset flight plan is entered.
The offset value is given in NM.

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

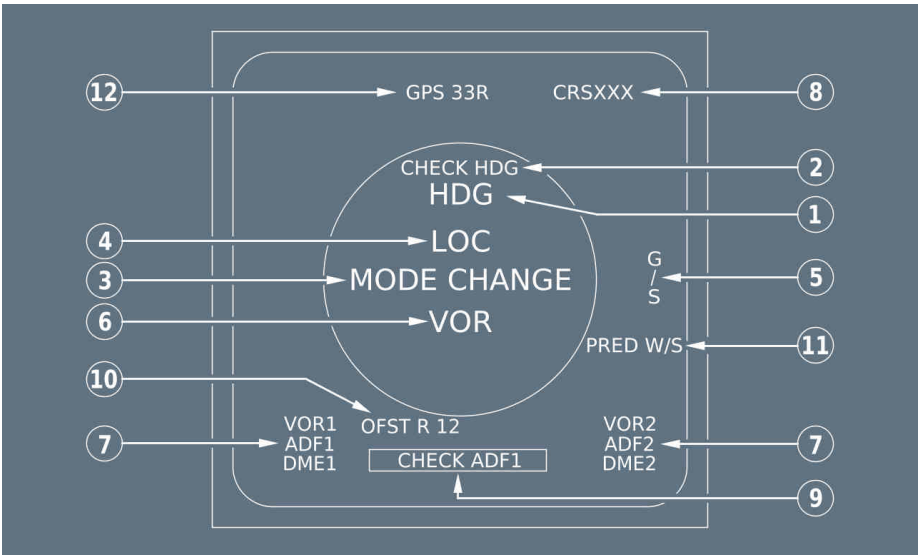
(11) PRED W/S flag (amber)

The WINDSHEAR sw on the weather radar panel is set to AUTO, and a Predictive Windshear System fault is detected. This message appears on ground, or when flaps and slats are extended.
It is associated with a single chime. The radar image remains available, provided that the fault does not affect the radar mode.

(12) GPS APP (green)
This message is displayed, when a GPS approach has been selected.

FLAGS AND MESSAGES DISPLAYED ON ND

Ident.: DSC-31-45-00001256.0349001 / 21 MAR 17
Applicable to: MSN 01767-01920, 02108, 02195-02204



(1) HDG Flag (red)
If the heading data fails, the rose, arc and associated symbols disappear.
A HDG flag flashes for 9 s, then remains steady in the upper part of the ND.

(2) CHECK HDG Flag (amber)
When the flight warning computer detects a disagree (5 °) between sides 1 and 2, a CHECK HDG flag appears on both NDs, and a caution appears on the ECAM.

(3) Center Part Messages

- The screen displays a MODE CHANGE message in green if there is a discrepancy between the selected mode on the EFIS control panel and the mode sent from the onside FMGC, or while the DMC is preparing a new page for display
- The screen displays a RANGE CHANGE message in green if there is a discrepancy between the range selected on the EFIS control panel and the range sent from the onside FMGC. A MODE CHANGE message has priority over a RANGE CHANGE message

- The screen displays a MAP NOT AVAIL message in red for several reasons:
  - The MODE CHANGE or RANGE CHANGE message has been displayed more than 6 s, or
  - The FMGC has failed, or
  - The FMGC has delivered an invalid aircraft position.
- The screen displays a W/S SET RNG 10 NM message if a predictive windshear alert is triggered and the range is above 10 NM.
  The message is displayed in the color corresponding to the windshear alert: red for a warning, amber for a caution
- The screen displays a W/S CHANGE MODE message if a predictive windshear alert is triggered and the ND is not in ARC or ROSE mode. The message appears in red for a warning, or amber for a caution.

(4) LOC Flag (red)
If LOC data fails, this flag flashes for 9 s, then remains steady.

(5) G/S Flag (red)
If G/S data fails, this flag flashes for 9 s, then remains steady.

(6) VOR Flag (red)
In ROSE VOR mode, when the VOR bearing is not valid, this flag flashes for 9 s, then remains steady.

(7) VOR 1(2) or ADF 1(2) or DME 1(2) Flag (red)
If a navigation receiver fails, the appropriate one of these flags flashes for 9 s, then remains steady.

(8) VOR Course Flag
If the VOR course fails, a red CRSXXX flag appears.
If there is non-computed data (NCD), a blue CRS - - - flag appears.

(9) Other messages

MAP PARTLY DISPLAYED (amber)	:	In case of incomplete data transmission between the FMGC (priority criteria) and the DMC, or if the DMC cannot draw the complete MAP. This message is also displayed when a very long leg exists in the flight plan. A leg is considered as “very long” when the starting point (or endpoint) is located at more than 45 ° from the aircraft location (45 ° of longitude or latitude). This DMC limitation results from a compromise between accurate drawing precision and maximum leg length that can be displayed.

NAV ACCUR UPGRAD, or (white) NAV ACCUR DOWNGRAD (amber)	:	Signals a change in navigation accuracy.
SPECIFIC VOR/D UNAVAIL (amber)	:	If the NAVAID, that is tuned for the selected approach or departure, is not available.
SET OFFSIDE RNG/MODE (amber)	:	Displayed on ND 1(2), in case of an FMGC 1(2) failure when the two ND ranges or modes selected on the EFIS control panels are different.
GPS PRIMARY (white, boxed white)	:	This message appears when GPS PRIMARY mode is available, or has been recovered. The pilot can clear this message by pressing the CLR key on the MCDU.
GPS PRIMARY LOST (amber, boxed white)	:	This message appears when GPS PRIMARY is not available, and not clearable by pilot action.
↓ (green)	:	Overflow arrow, displayed when more than one of the following messages are present at the same time: - NAV ACCUR DOWNGRAD (inhibited when the navigation mode is IRS/GPS) - NAV ACCUR UPGRAD (inhibited when the navigation mode is IRS/GPS) - SPECIF VOR-D UNAVAIL - MAP PARTLY DISPLAYED - SET OFFSIDE RNG/MODE - GPS PRIMARY - GPS PRIMARY LOST.

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

(10) OFST R(L) XX message (yellow)

The screen displays this message, when a temporary or an offset flight plan is entered. The offset value is given in NM.

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

(11) PRED W/S flag (amber)

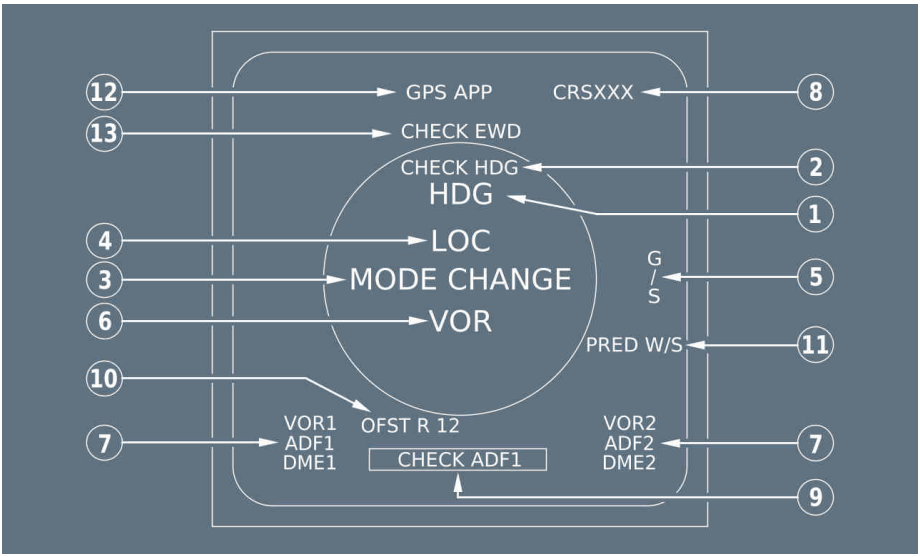
The WINDSHEAR sw on the weather radar panel is set to AUTO, and a Predictive Windshear System fault is detected. This message appears on ground, or when flaps and slats are extended.

It is associated with a single chime. The radar image remains available, provided that the fault does not affect the radar mode.

(12) GPS message (green)
This message shows the full runway name of the selected approach. It is displayed, when a GPS approach has been selected.

FLAGS AND MESSAGES DISPLAYED ON ND

Ident.: DSC-31-45-00001256.0370001 / 21 MAR 17
Applicable to: MSN 02584



(1) HDG Flag (red)
If the heading data fails, the rose, arc and associated symbols disappear.
A HDG flag flashes for 9 s, then remains steady in the upper part of the ND.

(2) CHECK HDG Flag (amber)
For more information: *Refer to DSC-31-05-60 Side1/Side2 Discrepancy Messages*

(3) Center Part Messages

- The screen displays a MODE CHANGE message in green if there is a discrepancy between the selected mode on the EFIS control panel and the mode sent from the onside FMGC, or while the DMC is preparing a new page for display
- The screen displays a RANGE CHANGE message in green if there is a discrepancy between the range selected on the EFIS control panel and the range sent from the onside FMGC. A MODE CHANGE message has priority over a RANGE CHANGE message

- The screen displays a MAP NOT AVAIL message in red for several reasons:
  - The MODE CHANGE or RANGE CHANGE message has been displayed more than 6 s, or
  - The FMGC has failed, or
  - The FMGC has delivered an invalid aircraft position.
- The screen displays a W/S SET RNG 10 NM message if a predictive windshear alert is triggered and the range is above 10 NM.
  The message is displayed in the color corresponding to the windshear alert: red for a warning, amber for a caution
- The screen displays a W/S CHANGE MODE message if a predictive windshear alert is triggered and the ND is not in ARC or ROSE mode. The message appears in red for a warning, or amber for a caution.

(4) LOC Flag (red)
If LOC data fails, this flag flashes for 9 s, then remains steady.

(5) G/S Flag (red)
If G/S data fails, this flag flashes for 9 s, then remains steady.

(6) VOR Flag (red)
In ROSE VOR mode, when the VOR bearing is not valid, this flag flashes for 9 s, then remains steady.

(7) VOR 1(2) or ADF 1(2) or DME 1(2) Flag (red)
If a navigation receiver fails, the appropriate one of these flags flashes for 9 s, then remains steady.

(8) VOR Course Flag
If the VOR course fails, a red CRSXXX flag appears.
If there is non-computed data (NCD), a blue CRS - - - flag appears.

(9) Other Messages

MAP PARTLY DISPLAYED (amber)	:	In case of incomplete data transmission between the FMGC (priority criteria) and the DMC, or if the DMC cannot draw the complete MAP. This message is also displayed when a very long leg exists in the flight plan. A leg is considered as “very long” when the starting point (or endpoint) is located at more than 45 ° from the aircraft location (45 ° of longitude or latitude). This DMC limitation results from a compromise between accurate drawing precision and maximum leg length that can be displayed.

NAV ACCUR UPGRAD, or (white) NAV ACCUR DOWNGRAD (amber)	:	Signals a change in navigation accuracy.
SPECIFIC VOR/D UNAVAIL (amber)	:	If the NAVAID, that is tuned for the selected approach or departure, is not available.
SET OFFSIDE RNG/MODE (amber)	:	Displayed on ND 1(2), in case of an FMGC 1(2) failure when the two ND ranges or modes selected on the EFIS control panels are different.
OFFSIDE FM CONTROL (amber)	:	If the offside FM supplies the onside ND.
GPS PRIMARY (white, boxed white)	:	This message appears when GPS PRIMARY mode is available, or has been recovered. The pilot can clear this message by pressing the CLR key on the MCDU.
GPS PRIMARY LOST (amber, boxed white)	:	This message appears when GPS PRIMARY is not available, and not clearable by pilot action.
↓ (green)	:	Overflow arrow, displayed when more than one of the following messages are present at the same time: - NAV ACCUR DOWNGRAD - NAV ACCUR UPGRAD - SPECIF VOR-D UNAVAIL - MAP PARTLY DISPLAYED - SET OFFSIDE RNG/MODE - GPS PRIMARY - GPS PRIMARY LOST

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

(10) OFST R(L) XX message (yellow)
The screen displays this message, when a temporary or an offset flight plan is entered. The offset value is given in NM.

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

(11) PRED W/S flag (amber)
The WINDSHEAR sw on the weather radar panel is set to AUTO, and a Predictive Windshear System fault is detected. This message appears on ground, or when flaps and slats are extended.

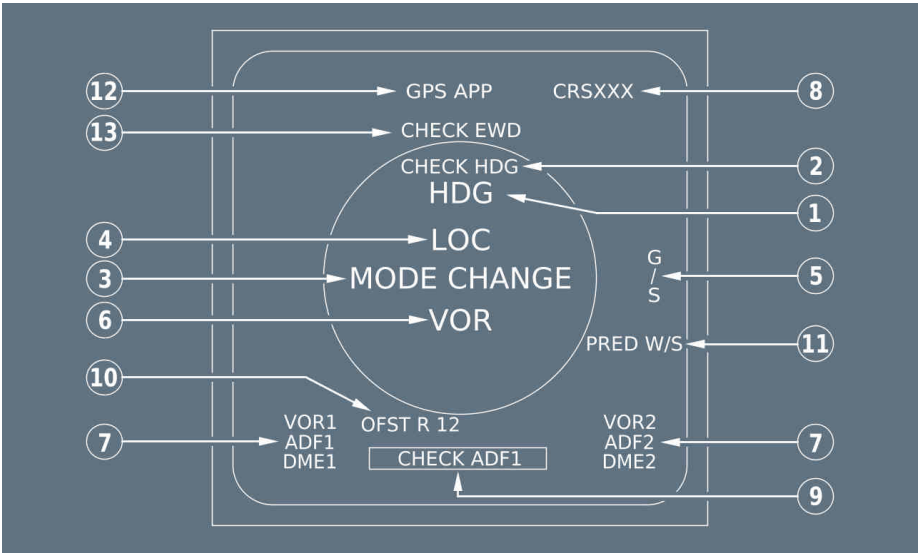
It is associated with a single chime. The radar image remains available, provided that the fault does not affect the radar mode.

(12) GPS message (green)
This message shows the full runway name of the selected approach. It is displayed, when the flight crew selects a GPS approach.

(13) CHECK EWD, CHECK CAPT (F/O) PFD, CHECK SD, CHECK CAPT (F/O) ND (amber)
For more information: *Refer to DSC-31-05-60 Feedback Messages*

FLAGS AND MESSAGES DISPLAYED ON ND

Ident.: DSC-31-45-00001256.0394001 / 21 MAR 17
Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192



(1) HDG Flag (red)
If the heading data fails, the rose, arc and associated symbols disappear.
A HDG flag flashes for 9 s, then remains steady in the upper part of the ND.

(2) CHECK HDG Flag (amber)
For more information: *Refer to DSC-31-05-60 Side1/Side2 Discrepancy Messages*

(3) Center Part Messages

- The screen displays a MODE CHANGE message in green if there is a discrepancy between the selected mode on the EFIS control panel and the mode sent from the onside FMGC, or while the DMC is preparing a new page for display
- The screen displays a RANGE CHANGE message in green if there is a discrepancy between the range selected on the EFIS control panel and the range sent from the onside FMGC. A MODE CHANGE message has priority over a RANGE CHANGE message
- The screen displays a MAP NOT AVAIL message in red for several reasons:
  - The MODE CHANGE or RANGE CHANGE message has been displayed more than 6 s, or
  - The FMGC has failed, or
  - The FMGC has delivered an invalid aircraft position.
- The screen displays a W/S SET RNG 10 NM message if a predictive windshear alert is triggered and the range is above 10 NM.
  The message is displayed in the color corresponding to the windshear alert: red for a warning, amber for a caution
- The screen displays a W/S CHANGE MODE message if a predictive windshear alert is triggered and the ND is not in ARC or ROSE mode. The message appears in red for a warning, or amber for a caution.

(4) LOC Flag (red)
If LOC data fails, this flag flashes for 9 s, then remains steady.

(5) G/S Flag (red)
If G/S data fails, this flag flashes for 9 s, then remains steady.

(6) VOR Flag (red)
In ROSE VOR mode, when the VOR bearing is not valid, this flag flashes for 9 s, then remains steady.

(7) VOR 1(2) or ADF 1(2) or DME 1(2) Flag (red)
If a navigation receiver fails, the appropriate one of these flags flashes for 9 s, then remains steady.

(8) VOR Course Flag
If the VOR course fails, a red CRSXXX flag appears.
If there is non-computed data (NCD), a blue CRS - - - flag appears.

(9) Other messages

MAP PARTLY DISPLAYED (amber)	:	In case of incomplete data transmission between the FMGC (priority criteria) and the DMC, or if the DMC cannot draw the complete MAP. This message is also displayed when a very long leg exists in the flight plan. A leg is considered as "very long" when the starting point (or endpoint) is located at more than 45 ° from the aircraft location (45 ° of longitude or latitude). This DMC limitation results from a compromise between accurate drawing precision and maximum leg length that can be displayed.
NAV ACCUR UPGRAD, or (white) NAV ACCUR DOWNGRAD (amber)	:	Signals a change in navigation accuracy.
SPECIFIC VOR/D UNAVAIL (amber)	:	If the NAVAID, that is tuned for the selected approach or departure, is not available.
BACK-UP NAV (amber)	:	If the MCDU back-up navigation mode is activated (*Refer to DSC-22_10-40-10 MCDU - MCDU Interface*)
SET OFFSIDE RNG/MODE (amber)	:	Displayed on ND 1(2), in case of an FMGC 1(2) failure when the two ND ranges or modes selected on the EFIS control panels are different.
OFFSIDE FM CONTROL (amber)	:	If the offside FM supplies the onside ND.
GPS PRIMARY (white, boxed white)	:	This message appears when GPS PRIMARY mode is available, or has been recovered. The pilot can clear this message by pressing the CLR key on the MCDU.
GPS PRIMARY LOST (amber, boxed white)	:	This message appears when GPS PRIMARY is not available, and not clearable by pilot action.
↓ (green)	:	Overflow arrow, displayed when more than one of the following messages are present at the same time: - NAV ACCUR DOWNGRAD - NAV ACCUR UPGRAD - SPECIF VOR-D UNAVAIL - MAP PARTLY DISPLAYED - SET OFFSIDE RNG/MODE - GPS PRIMARY - GPS PRIMARY LOST

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

(10) OFST R(L) XX message (yellow)
The screen displays this message, when a temporary or an offset flight plan is entered.
The offset value is given in NM.

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

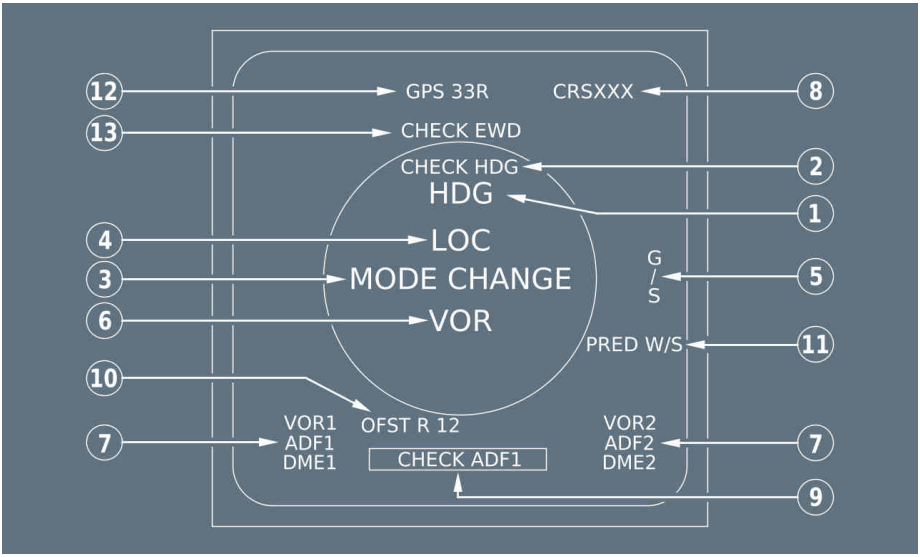
(11) PRED W/S flag (amber)
The WINDSHEAR sw on the weather radar panel is set to AUTO, and a Predictive Windshear System fault is detected. This message appears on ground, or when flaps and slats are extended.
It is associated with a single chime. The radar image remains available, provided that the fault does not affect the radar mode.

(12) GPS message (green)
This message shows the full runway name of the selected approach. It is displayed, when the flight crew selects a GPS approach.

(13) CHECK EWD, CHECK CAPT (F/O) PFD, CHECK SD, CHECK CAPT (F/O) ND (amber)
For more information: *Refer to DSC-31-05-60 Feedback Messages*

FLAGS AND MESSAGES DISPLAYED ON ND

Ident.: DSC-31-45-00001256.0396001 / 21 MAR 17
Applicable to: MSN 02135, 02139, 02388, 02649-02712, 02908-03071, 03264-03541



(1) HDG Flag (red)
If the heading data fails, the rose, arc and associated symbols disappear.
A HDG flag flashes for 9 s, then remains steady in the upper part of the ND.

(2) CHECK HDG Flag (amber)
For more information: *Refer to DSC-31-05-60 Side1/Side2 Discrepancy Messages*

(3) Center Part Messages

- The screen displays a MODE CHANGE message in green if there is a discrepancy between the selected mode on the EFIS control panel and the mode sent from the onside FMGC, or while the DMC is preparing a new page for display
- The screen displays a RANGE CHANGE message in green if there is a discrepancy between the range selected on the EFIS control panel and the range sent from the onside FMGC. A MODE CHANGE message has priority over a RANGE CHANGE message

- The screen displays a MAP NOT AVAIL message in red for several reasons:
  - The MODE CHANGE or RANGE CHANGE message has been displayed more than six seconds, or
  - The FMGC has failed, or
  - The FMGC has delivered an invalid aircraft position.
- The screen displays a W/S SET RNG 10 NM message if a predictive windshear alert is triggered and the range is above 10 NM.
  The message is displayed in the color corresponding to the windshear alert : red for a warning, amber for a caution.
- The screen displays a W/S CHANGE MODE message if a predictive windshear alert is triggered and the ND is not in ARC or ROSE mode. The message appears in red for a warning, or amber for a caution.

(4) LOC Flag (red)
If LOC data fails, this flag flashes for 9 s, then remains steady.

(5) G/S Flag (red)
If G/S data fails, this flag flashes for 9 s, then remains steady.

(6) VOR Flag (red)
In ROSE VOR mode, when the VOR bearing is not valid, this flag flashes for 9 s, then remains steady.

(7) VOR 1(2) or ADF 1(2) or DME 1(2) Flag (red)
If a navigation receiver fails, the appropriate one of these flags flashes for 9 s, then remains steady.

(8) VOR Course Flag
If the VOR course fails, a red CRSXXX flag appears.
If there is non-computed data (NCD), a blue CRS - - - flag appears.

(9) Other Messages

MAP PARTLY DISPLAYED (amber)	:	In case of incomplete data transmission between the FMGC (priority criteria) and the DMC, or if the DMC cannot draw the complete MAP. This message is also displayed when a very long leg exists in the flight plan. A leg is considered as “very long” when the starting point (or endpoint) is located at more than 45 ° from the aircraft location (45 ° of longitude or latitude). This DMC limitation results from a compromise between accurate drawing precision and maximum leg length that can be displayed.

NAV ACCUR UPGRAD, or (white) NAV ACCUR DOWNGRAD (amber)	:	Signals a change in navigation accuracy.
SPECIFIC VOR/D UNAVAIL (amber)	:	If the NAVAID, that is tuned for the selected approach or departure, is not available.
SET OFFSIDE RNG/MODE (amber)	:	Displayed on ND 1(2), in case of an FMGC 1(2) failure when the two ND ranges or modes selected on the EFIS control panels are different.
OFFSIDE FM CONTROL (amber)	:	If the offside FM supplies the onside ND.
GPS PRIMARY (white, boxed white)	:	This message appears when GPS PRIMARY mode is available, or has been recovered. The pilot can clear this message by pressing the CLR key on the MCDU.
GPS PRIMARY LOST (amber, boxed white)	:	This message appears when GPS PRIMARY is not available, and not clearable by pilot action.
↓ (green)	:	Overflow arrow, displayed when more than one of the following messages are present at the same time: - NAV ACCUR DOWNGRAD - NAV ACCUR UPGRAD - SPECIF VOR-D UNAVAIL - MAP PARTLY DISPLAYED - SET OFFSIDE RNG/MODE - GPS PRIMARY - GPS PRIMARY LOST

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

(10) OFST R(L) XX message (yellow)
The screen displays this message, when a temporary or an offset flight plan is entered. The offset value is given in NM.

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

(11) PRED W/S flag (amber)
The WINDSHEAR sw on the weather radar panel is set to AUTO, and a Predictive Windshear System fault is detected. This message appears on ground, or when flaps and slats are extended.

It is associated with a single chime. The radar image remains available, provided that the fault does not affect the radar mode.

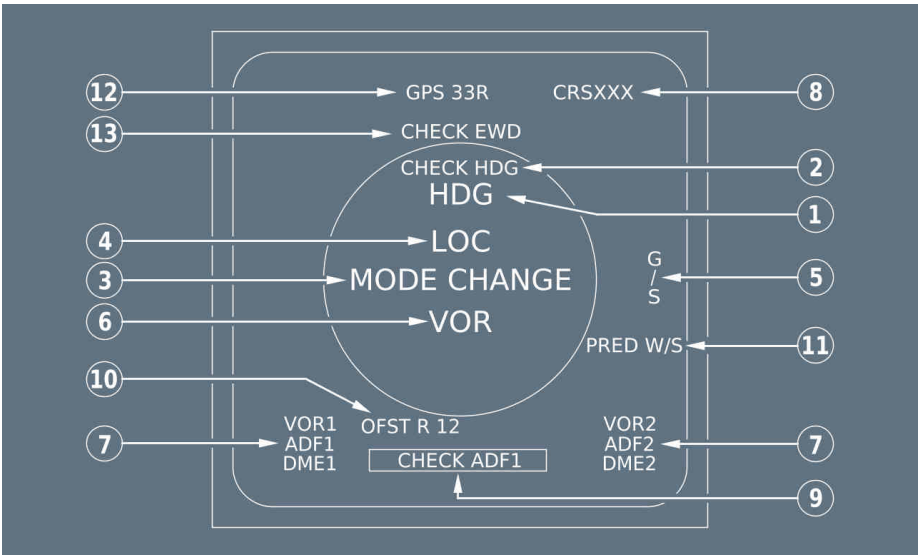
(12) GPS message (green)
This message shows the full runway name of the selected approach. It is displayed, when the flight crew selects a GPS approach.

(13) CHECK EWD, CHECK CAPT (F/O) PFD, CHECK SD, CHECK CAPT (F/O) ND (amber)
For more information: *Refer to DSC-31-05-60 Feedback Messages*

FLAGS AND MESSAGES DISPLAYED ON ND

Ident.: DSC-31-45-00001256.0425001 / 21 MAR 17

5 **Applicable to: MSN 01957-02097, 02121, 02138, 03618-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252-08710**



(1) HDG Flag (red)
If the heading data fails, the rose, arc and associated symbols disappear.
A HDG flag flashes for 9 s, then remains steady in the upper part of the ND.

(2) CHECK HDG Flag (amber)
For more information: *Refer to DSC-31-05-60 Side1/Side2 Discrepancy Messages*

(3) Center Part Messages

- The screen displays a MODE CHANGE message in green if there is a discrepancy between the selected mode on the EFIS control panel and the mode sent from the onside FMGC, or while the DMC is preparing a new page for display
- The screen displays a RANGE CHANGE message in green if there is a discrepancy between the range selected on the EFIS control panel and the range sent from the onside FMGC. A MODE CHANGE message has priority over a RANGE CHANGE message
- The screen displays a MAP NOT AVAIL message in red for several reasons:
  - The MODE CHANGE or RANGE CHANGE message has been displayed more than 6 s, or
  - The FMGC has failed, or
  - The FMGC has delivered an invalid aircraft position.
- The screen displays a W/S SET RNG 10 NM message if a predictive windshear alert is triggered and the range is above 10 NM.
  The message is displayed in the color corresponding to the windshear alert: red for a warning, amber for a caution
- The screen displays a W/S CHANGE MODE message if a predictive windshear alert is triggered and the ND is not in ARC or ROSE mode. The message appears in red for a warning, or amber for a caution.

(4) LOC Flag (red)
If LOC data fails, this flag flashes for 9 s, then remains steady.

(5) G/S Flag (red)
If G/S data fails, this flag flashes for 9 s, then remains steady.

(6) VOR Flag (red)
In ROSE VOR mode, when the VOR bearing is not valid, this flag flashes for 9 s, then remains steady.

(7) VOR 1(2) or ADF 1(2) or DME 1(2) Flag (red)
If a navigation receiver fails, the appropriate one of these flags flashes for 9 s, then remains steady.

(8) VOR Course Flag
If the VOR course fails, a red CRSXXX flag appears.
If there is non-computed data (NCD), a blue CRS - - - flag appears.

(9) Other messages

MAP PARTLY DISPLAYED (amber)	:	In case of incomplete data transmission between the FMGC (priority criteria) and the DMC, or if the DMC cannot draw the complete MAP. This message is also displayed when a very long leg exists in the flight plan. A leg is considered as “very long” when the starting point (or endpoint) is located at more than 45 ° from the aircraft location (45 ° of longitude or latitude). This DMC limitation results from a compromise between accurate drawing precision and maximum leg length that can be displayed.
NAV ACCUR UPGRAD, or (white) NAV ACCUR DOWNGRAD (amber)	:	Signals a change in navigation accuracy.
SPECIFIC VOR/D UNAVAIL (amber)	:	If the NAVAID, that is tuned for the selected approach or departure, is not available.
BACK-UP NAV (amber)	:	If the MCDU back-up navigation mode is activated (*Refer to DSC-22_10-40-10 MCDU - MCDU Interface*)
SET OFFSIDE RNG/MODE (amber)	:	Displayed on ND 1(2), in case of an FMGC 1(2) failure when the two ND ranges or modes selected on the EFIS control panels are different.
OFFSIDE FM CONTROL (amber)	:	If the offside FM supplies the onside ND.
GPS PRIMARY (white, boxed white)	:	This message appears when GPS PRIMARY mode is available, or has been recovered. The pilot can clear this message by pressing the CLR key on the MCDU.
GPS PRIMARY LOST (amber, boxed white)	:	This message appears when GPS PRIMARY is not available, and not clearable by pilot action.
↓ (green)	:	Overflow arrow, displayed when more than one of the following messages are present at the same time: - NAV ACCUR DOWNGRAD - NAV ACCUR UPGRAD - SPECIF VOR-D UNAVAIL - MAP PARTLY DISPLAYED - SET OFFSIDE RNG/MODE - GPS PRIMARY - GPS PRIMARY LOST

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

(10) OFST R(L) XX message (yellow)
The screen displays this message, when a temporary or an offset flight plan is entered. The offset value is given in NM.

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

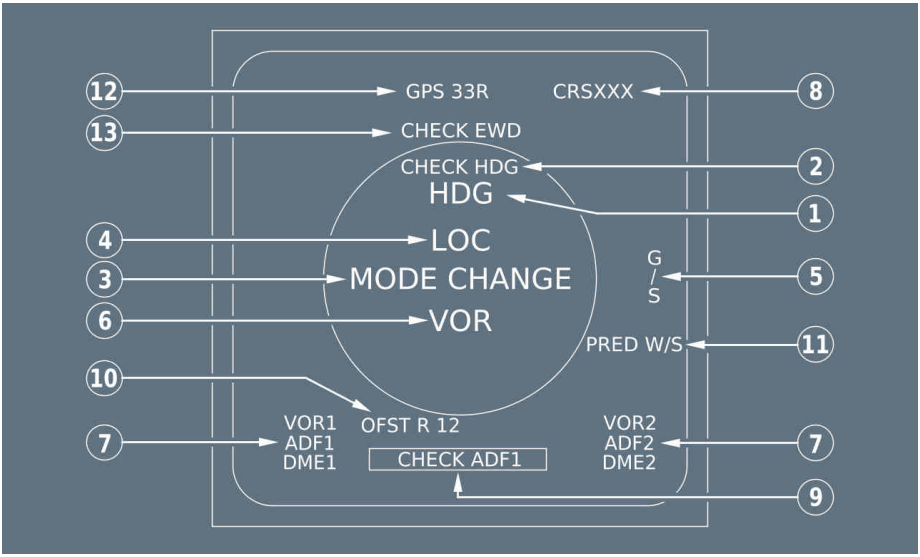
(11) PRED W/S flag (amber)
The WINDSHEAR sw on the weather radar panel is set to AUTO, and a Predictive Windshear System fault is detected. This message appears on ground, or when flaps and slats are extended.
It is associated with a single chime. The radar image remains available, provided that the fault does not affect the radar mode.

(12) GPS message (green)
This message shows the full runway name of the selected approach. It is displayed, when the flight crew selects a GPS approach.

(13) CHECK EWD, CHECK CAPT (F/O) PFD, CHECK SD, CHECK CAPT (F/O) ND (amber)
For more information: *Refer to DSC-31-05-60 Feedback Messages*

FLAGS AND MESSAGES DISPLAYED ON ND

Ident.: DSC-31-45-00001256.0455001 / 21 MAR 17
Applicable to: MSN 02804



(1) HDG Flag (red)
If the heading data fails, the rose, arc and associated symbols disappear.
A HDG flag flashes for 9 s, then remains steady in the upper part of the ND.

(2) CHECK HDG Flag (amber)
For more information: *Refer to DSC-31-05-60 Side1/Side2 Discrepancy Messages*

(3) Center Part Messages

- The screen displays a MODE CHANGE message in green if there is a discrepancy between the selected mode on the EFIS control panel and the mode sent from the onside FMGC, or while the DMC is preparing a new page for display
- The screen displays a RANGE CHANGE message in green if there is a discrepancy between the range selected on the EFIS control panel and the range sent from the onside FMGC. A MODE CHANGE message has priority over a RANGE CHANGE message

- The screen displays a MAP NOT AVAIL message in red for several reasons:
  - The MODE CHANGE or RANGE CHANGE message has been displayed more than 6 s, or
  - The FMGC has failed, or
  - The FMGC has delivered an invalid aircraft position.
- The screen displays a W/S SET RNG 10 NM message if a predictive windshear alert is triggered and the range is above 10 NM.
  The message is displayed in the color corresponding to the windshear alert: red for a warning, amber for a caution
- The screen displays a W/S CHANGE MODE message if a predictive windshear alert is triggered and the ND is not in ARC or ROSE mode. The message appears in red for a warning, or amber for a caution.

(4) LOC Flag (red)
If LOC data fails, this flag flashes for 9 s, then remains steady.

(5) G/S Flag (red)
If G/S data fails, this flag flashes for 9 s, then remains steady.

(6) VOR Flag (red)
In ROSE VOR mode, when the VOR bearing is not valid, this flag flashes for 9 s, then remains steady.

(7) VOR 1(2) or ADF 1(2) or DME 1(2) Flag (red)
If a navigation receiver fails, the appropriate one of these flags flashes for 9 s, then remains steady.

(8) VOR Course Flag
If the VOR course fails, a red CRSXXX flag appears.
If there is non-computed data (NCD), a blue CRS - - - flag appears.

(9) Other messages

MAP PARTLY DISPLAYED (amber)	:	In case of incomplete data transmission between the FMGC (priority criteria) and the DMC, or if the DMC cannot draw the complete MAP. This message is also displayed when a very long leg exists in the flight plan. A leg is considered as “very long” when the starting point (or endpoint) is located at more than 45 ° from the aircraft location (45 ° of longitude or latitude). This DMC limitation results from a compromise between accurate drawing precision and maximum leg length that can be displayed.

NAV ACCUR UPGRAD, or (white) NAV ACCUR DOWNGRAD (amber)	:	Signals a change in navigation accuracy.
SPECIFIC VOR/D UNAVAIL (amber)	:	If the NAVAID, that is tuned for the selected approach or departure, is not available.
BACK-UP NAV (amber)	:	If the MCDU back-up navigation mode is activated (*Refer to DSC-22_20-20-05 Navigation*).
SET OFFSIDE RNG/MODE (amber)	:	Displayed on ND 1(2), in case of an FMGC 1(2) failure when the two ND ranges or modes selected on the EFIS control panels are different.
OFFSIDE FM CONTROL (amber)	:	If the offside FM supplies the onside ND.
GPS PRIMARY (white, boxed white)	:	This message appears when GPS PRIMARY mode is available, or has been recovered. The pilot can clear this message by pressing the CLR key on the MCDU.
GPS PRIMARY LOST (amber, boxed white)	:	This message appears when GPS PRIMARY is not available, and not clearable by pilot action.
↓ (green)	:	Overflow arrow, displayed when more than one of the following messages are present at the same time: - NAV ACCUR DOWNGRAD (inhibited when the navigation mode is IRS/GPS) - NAV ACCUR UPGRAD (inhibited when the navigation mode is IRS/GPS) - SPECIF VOR-D UNAVAIL - MAP PARTLY DISPLAYED - SET OFFSIDE RNG/MODE - GPS PRIMARY - GPS PRIMARY LOST.

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

(10) OFST R(L) XX message (yellow)

The screen displays this message, when a temporary or an offset flight plan is entered. The offset value is given in NM.

Note: *For information about the TCAS messages:* *Refer to DSC-34-SURV-60-20 TCAS Messages.*

(11) PRED W/S flag (amber)
The WINDSHEAR switch on the weather radar panel is set to AUTO, and a Predictive Windshear System fault is detected. This message appears on ground, or when flaps and slats are extended.
It is associated with a single chime. The radar image remains available, provided that the fault does not affect the radar mode.

(12) GPS message (green)
This message shows the full runway name of the selected approach. It is displayed, when the flight crew selects a GPS approach.

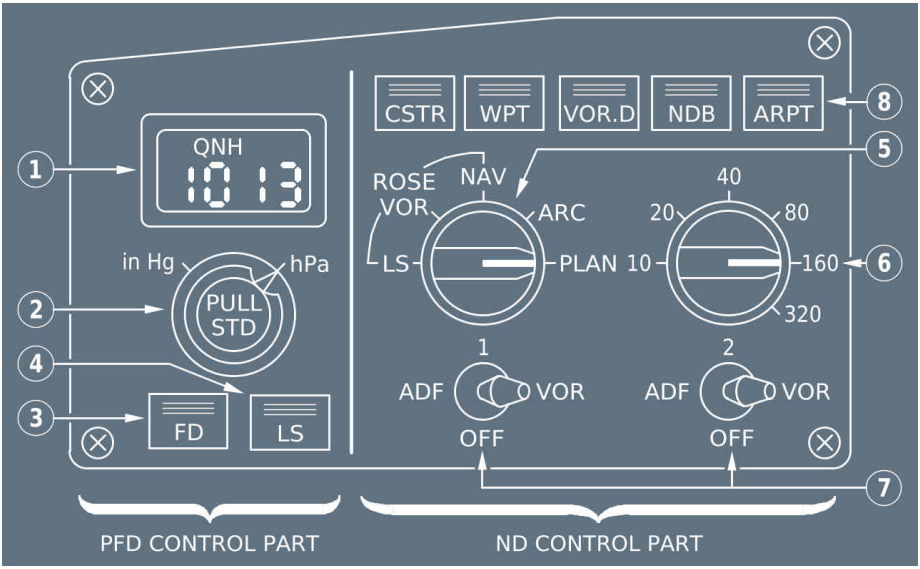
(13) CHECK EWD, CHECK CAPT (F/O) PFD, CHECK SD, CHECK CAPT (F/O) ND (amber)
For more information: *Refer to DSC-31-05-60 Feedback Messages*

Intentionally left blank

EFIS CONTROL PANEL

Ident.: DSC-31-50-00001257.0003001 / 09 OCT 12

[1] **Applicable to: MSN 01920-02097, 02121-02204, 02359-02626, 02670-09063**



(1) Barometer Reference Display Window

Range : 745 hPa to 1 100 hPa.

(2) Barometer Reference Selector

a. Outer ring : For selection of the units for the barometer reference-either hectoPascals or inches of mercury.

Note: The unit selected does not appear on the PFD.

b. Inner knob : For selection of the reference value displayed in the barometer reference display window and on the PFD below the altitude scale.

At FCU initialization, the window displays 1 013 or 29.92, depending on the unit selected.

- Pulling the knob selects the standard BARO reference setting. The PFD then displays “STD.” (Rotating the knob has no effect.)
- Pushing the knob from the STD position makes the last selected QNH BARO setting available.

(3) FD pb
Pushing this button removes the FD bars from the associated PFD (or removes the flight path director symbol if the TRK FPA reference is selected).
The pushbutton light goes out.
Pushing it again restores the FD bars (or the FPD symbol) and the green pushbutton light comes on.

(4) LS pb
Pushing this button displays the localizer and glide slope scales on the PFD.
Deviation symbols appear if there is a valid ILS signal.
The green pushbutton light comes on.

(5) Mode Select Switch
This switch selects a navigation display for the onside ND.

(6) Range Select Switch
This switch selects a range scale for the onside ND.

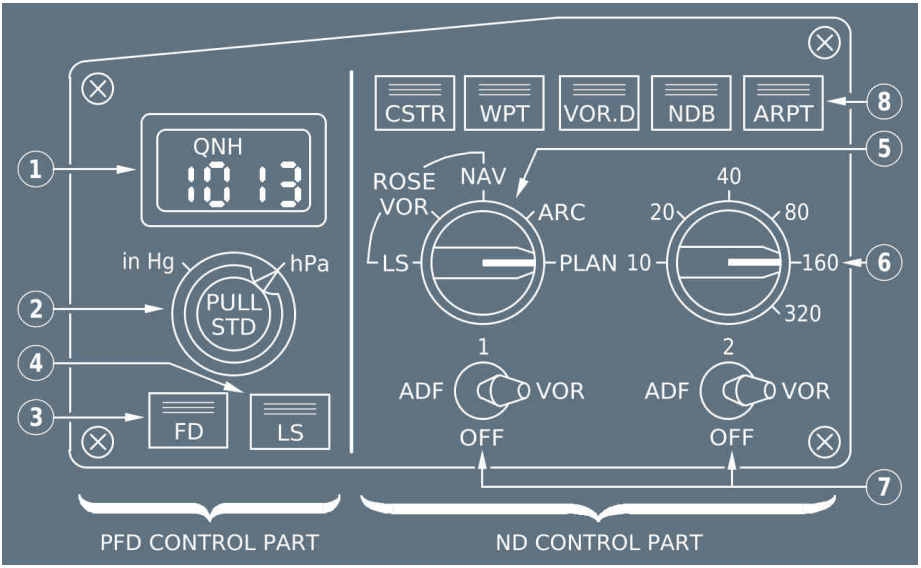
Note: If the mode or the range data fails, the default selection is the ROSE NAV mode and 80 NM range.

(7) ADF-VOR Select Switches
These switches select ADF or VOR bearing pointers and DME distance on the onside ND, as well as the corresponding NAVAID data characteristics in any mode except PLAN mode.

(8) Optional Data Display Pushbutton
Pushing this button displays optional data in addition to the data permanently displayed in PLAN, ARC, or ROSE NAV modes. The green pushbutton light comes on.
Only one option can be activated at a time.

EFIS CONTROL PANEL

Ident.: DSC-31-50-00001257.0006001 / 09 OCT 12
Applicable to: MSN 01767, 02108, 02275-02334, 02649



(1) Barometer Reference Display Window

Range : 745 hPa to 1 100 hPa.

(2) Barometer Reference Selector

a. Outer ring : For selection of the units for the barometer reference-either, hectoPascals (HPA) or inches of mercury (in Hg).

Note: The unit selected does not appear on the PFD.

b. Inner knob : For selection of the reference value displayed in the barometer reference display window and on the PFD below the altitude scale.

At FCU initialization, the window displays 1 013 or 29.92, depending on the unit selected.

- Pulling the knob selects the standard BARO reference setting. The PFD then displays "STD." (Rotating the knob has no effect.)
- Pushing the knob from the STD position makes the last selected QFE or QNH BARO setting available.
- Pushing the knob again changes from QNH to QFE or vice versa.
  The window displays "QNH" or "QFE" according to the pilot selection.

Note: *QFE option is a pin program installed on the FMGC. The FMGC operates using the selected pin program (QNH or QFE), independently of the BARO reference setting selected on the EFIS CTL panel.*

(3) FD pb
Pushing this button removes the FD bars from the associated PFD (or removes the flight path director symbol if the TRK FPA reference is selected).
The pushbutton light goes out.
Pushing it again restores the FD bars (or the FPD symbol) and the green pushbutton light comes on.

(4) LS pb
Pushing this button displays the localizer and glide slope scales on the PFD.
Deviation symbols appear if there is a valid ILS signal.
The green pushbutton light comes on.

(5) Mode Select Switch
This switch selects a navigation display for the onside ND.

(6) Range Select Switch
This switch selects a range scale for the onside ND.

Note: *If the mode or the range data fails, the default selection is the ROSE NAV mode and 80 NM range.*

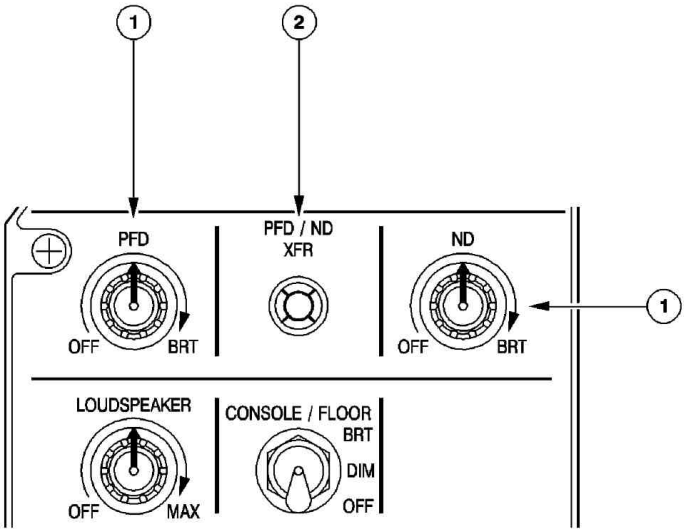
(7) ADF-VOR Select Switches
These switches select ADF or VOR bearing pointers and DME distance on the onside ND, as well as the corresponding NAVAID data characteristics in any mode except PLAN mode.

(8) Optional Data Display Pushbutton
Pushing this button displays optional data in addition to the data permanently displayed in PLAN, ARC, or ROSE NAV modes. The green pushbutton light comes on.
Only one option can be activated at a time.

OTHER EFIS CONTROLS

Ident.: DSC-31-50-00001258.0002001 / 15 FEB 11

[2] **Applicable to: MSN 01767-01920, 02108, 02135, 02139-02914, 03138, 03750, 04491, 04532, 04645, 05120, 05158, 05218, 06720-09063**



(1) OFF/BRT knobs

- These knobs turn the PFD and ND display units on and off, and control their brightness.
- The display brightness adjusts automatically for changing light conditions, and is also adjusted manually.

PFD Brightness Control Knob

Rotating this knob all the way counterclockwise switches off the PFD. In this case, the PFD image is automatically displayed on the NDU, but the pilot may recover the ND by means of the PFD-ND XFR pushbutton .

ND Brightness Control Knob

The outer knob controls the brightness of both the weather radar image and EGPWS terrain display.

The inner knob controls the general brightness of the ND symbols.

Rotating this knob all the way counterclockwise switches off the NDU.

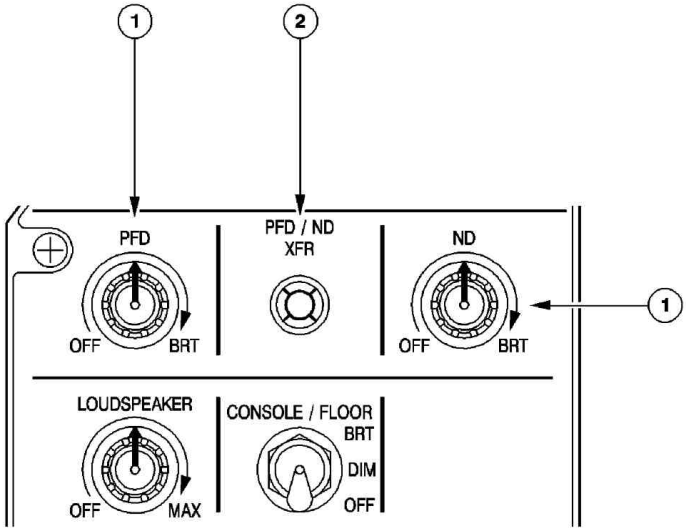
(2) PFD/ND Pushbutton

Pushing this button interchanges the PFD and the ND.

If the PFDU fails, the PFD automatically transfers to the NDU.

OTHER EFIS CONTROLS

Ident.: DSC-31-50-00001258.0003001 / 15 FEB 11
Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03264-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336



(1) OFF/BRT knobs

- These knobs turn the PFD and ND display units on and off, and control their brightness.
- The display brightness adjusts automatically for changing light conditions, and is also adjusted manually.

PFD Brightness Control Knob

Rotating this knob all the way counterclockwise switches off the PFD. In this case, the PFD image is automatically displayed on the NDU, but the pilot may recover the ND by means of the PFD-ND XFR pushbutton .

ND Brightness Control Knob

The outer knob controls the brightness of both the weather radar image and GPWS terrain display.

The inner knob controls the general brightness of the ND symbols.

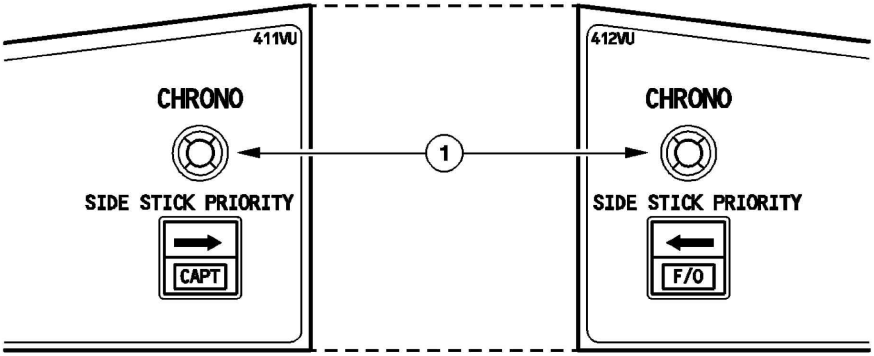
Rotating this knob all the way counterclockwise switches off the NDU.

(2) PFD/ND Pushbutton

Pushing this button interchanges the PFD and the ND.
If the PFDU fails, the PFD automatically transfers to the NDU.

CHRONOMETER

Ident.: DSC-31-50-00001259.0001001 / 15 FEB 11
Applicable to: ALL



(1) CHRONO Pushbutton

Pushing this button displays chronometer time on the onside ND.
Pushing it again freezes the displayed value.
Pushing it a third time resets the chronometer, and the chronometer time disappears from the display.

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GENERAL

Ident.: DSC-31-55-10-00001260.0002001 / 21 MAR 16
Applicable to: ALL

A fully independent clock is on the right side of the control panel.
It sends time to the centralized fault data interface unit, the flight data interface unit, and the flight management and guidance computer.
The clock has two electrical supplies, one of which is a direct connection to the aircraft battery hot bus.

The clock performs four functions :

- It displays “UTC” (GMT) time in hours, minutes and seconds on the center counter.
- It displays elapsed time (ET) (from engine startup) in hours and minutes on the lower counter.
- It drives the chronometer (CHR), which measures a time interval (from the pushing of the CHRONO button) in minutes and seconds.
- It can replace the UTC with the date.

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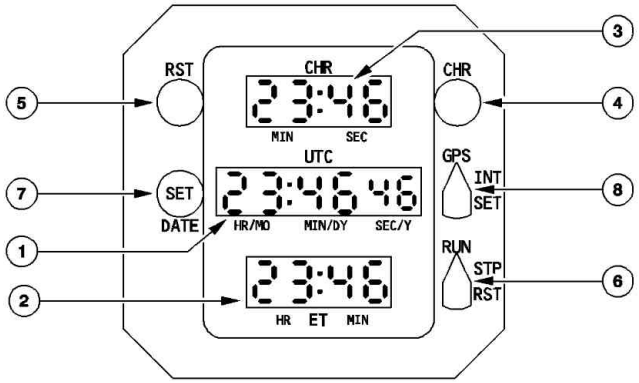
GENERAL

Ident.: DSC-31-55-20-00001261.0003001 / 16 MAR 11
Applicable to: ALL



(1) UTC (GMT) counter
This counter displays the present time in 24 h format from 0 to 23 h 59 min 59 s.

(2) Elapsed Time (ET)
This counter registers the elapsed time up to 99 h and 59 min.

(3) Chrono (CHR) counter
This Counter registers elapsed time from 0 to 99 min 59 s. It is controlled by the CHR pushbutton.

(4) CHR pushbutton

First push : starts the CHR counter

Second push : stops the CHR counter, keeps the display at its last indication.

(5) Reset (RST) pushbutton
When pressed, the CHR counter restarts from 0 if the chrono is running.

(6) ET selector

"RUN" : the ET counter starts

"STP" : the ET counter stops counting

spring loaded "RST" : the ET counter is blanked. The selector returns to its STP position when the selector is released.

Note: A cumulative elapsed time can be realized by alternatively setting this switch in "RUN" and "STP" position.

(7) DATE/SET pushbutton

First push : sets the clock to date mode. The UTC time display is replaced by the date (day month year).

Second push : sets the clock to time mode. The date display disappears.

Note: in order to select the date mode, the UTC selector must be set on "GPS" or "INT" position.

(8) UTC selector

"GPS" : Time (or date, if selected) is displayed, and this data is synchronized on GPS information.

Note:
- *If the signal between the GPS and the clock is not detected, dashes are displayed. Only the "INT" and "SET" positions are then available.*
- *If the signal is detected, but GPS data is invalid, the clock automatically runs on its internal time.*
- *The clock will automatically resynchronize on the GPS information, as soon as the GPS data becomes available.*

"INT" : Internal time (or date, if selected) is displayed.

Note:
- *The clock's internal time is initialized with the latest valid GPS information.*
- *If there is no valid GPS information at power up, the internal time will be 00:00:00, until the clock is initialized.*

"SET" : Allows the internal time and date to be initialized.

OPERATION IN INTERNAL MODE

Ident.: DSC-31-55-20-00007126.0001001 / 21 MAR 17
Applicable to: ALL

DATE INITIALIZATION

Set the UTC selector on "SET". The minute digits flash, and the seconds' digits are blank.
To increase data, turn the DATE/SET button clockwise.

To decrease data, turn the DATE/SET button counterclockwise.

- First, push on DATE/SET : To set the hour.
- Second, push on DATE/SET : To set the year.
- Third, push on DATE/SET : To set the month.
- Fourth, push on DATE/SET : To set the day.

Switch the UTC selector to the "INT" position, and the clock starts with the seconds' digits at 00.

Note: This process must be completed in less than one minute. Otherwise, it will be necessary to reset the CFDS in order to synchronize the lower ECAM time display with the cockpit clock display. Resetting the CFDS is a maintenance operation.

PRECAUTION IN CASE OF ATC DATALINK COMMUNICATION

If the clock is set to internal (INT) mode and the flight crew manually sets the time and date, the clock does not comply with the time precision required for ATC datalink communication (+/-1 s UTC). This may lead to the rejection of messages, or to the acceptance of obsolete messages:

- The CPDLC function will send CPDLC messages with an erroneous date/time
- The CPDLC function will accept obsolete uplink messages and may reject uplink messages with a correct date/time
- The uplink messages for oceanic and departure clearance will be displayed in the Datalink Control and Display Unit (DCDU) with an erroneous time
- The ADS-C function will continue to operate, but in a degraded mode.

To comply with the time precision requirement for ATC datalink communication, the flight crew must either:

- Use the clock in GPS mode, or
- Use the clock in INT mode and synchronize the clock with the GPS at least one time per day. This synchronization ensures that the UTC time drift is below +/- 1 s UTC.

GPS SYNCHRONIZATION IN INTERNAL MODE

When the clock is set to INT mode, the UTC time is only based on the internal clock and is not synchronized with the GPS. To reset the drift that results from the UTC internal time, the flight crew must perform the following actions:

- Set the UTC selector of the clock to the GPS mode and keep this setting during at least 10 seconds
- Then reset the UTC selector of the clock to INT mode.

These actions result in a resynchronization of the internal clock with the GPS.

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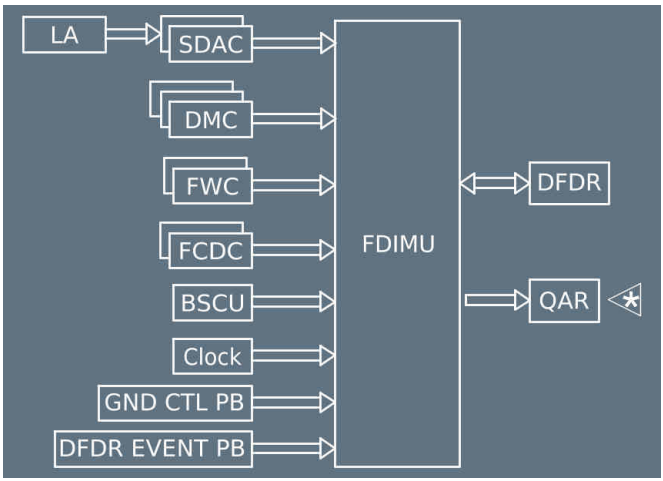
DESCRIPTION

Ident.: DSC-31-60-10-00001262.0002001 / 09 OCT 12
Applicable to: ALL

The Flight Data Recording System, which records the mandatory parameters, consists of the following components:

- A Flight Data Interface and Management Unit (FDIMU)
- A Digital Flight Data Recorder (DFDR)
- A three-axis Linear Accelerometer (LA)

The FDIMU collects and processes parameters from the SDACs, DMCs, FWCs, FCDCs, BSCU, the DFDR event pushbutton, the GND CTL pushbutton and the Clock.
It stores the mandatory flight parameters in the DFDR.
The DFDR can store the last 25 h data, at least. It stores this data on a fireproof and shockproof device. An underwater locator beacon is attached to the DFDR.
The linear accelerometer measures the acceleration of the aircraft along each of the three axes.
The QAR is an operational recorder that stores the same data as the DFDR. However the QAR is more accessible for the maintenance crew.



The recording system is automatically active:

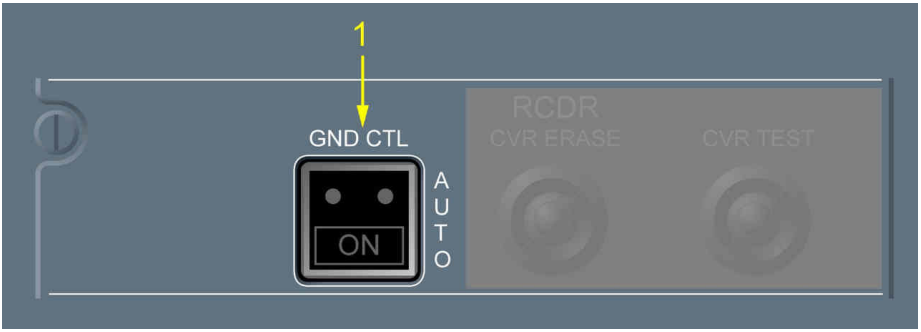
- On the ground, during the first five minutes after the aircraft electric network is energized.
- On the ground, after the first engine start.
- In flight (whether the engines are running or not).

On the ground, the recording system stops automatically five minutes after the second engine shuts down.

On the ground, the crew can start the recording system manually by pressing the GND CTL pushbutton.

OVERHEAD PANEL

Ident.: DSC-31-60-20-00001263.0001001 / 04 SEP 18
Applicable to: ALL



(1) GND CTL pb-sw

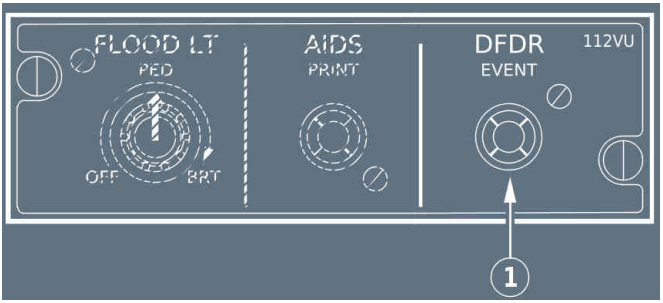
The CVR, DFDR and QAR ◁ automatically operate (AUTO), according to the logic (*Refer to DSC-31-60-10 Description*).

The flight crew manually starts the CVR, DFDR, and QAR ◁.
After engine start, the ON light goes off and the recorders automatically operate.

Note: The GND CTL pb-sw may revert to AUTO (active or inactive, according to the logic) during an electrical transient.

PEDESTAL

Ident.: DSC-31-60-20-00001264.0001001 / 22 MAY 12
Applicable to: ALL

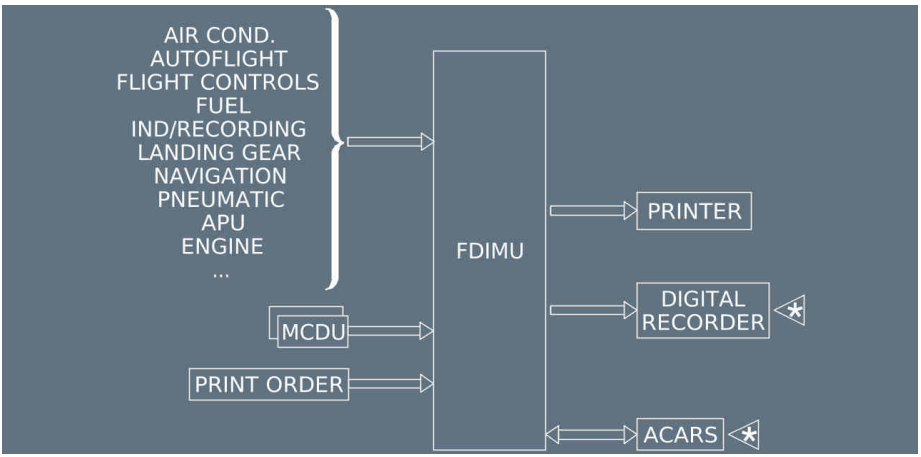


(1) DFDR EVENT pushbutton
Pressing this button (briefly) sets an event mark on the Flight Data records.

DESCRIPTION

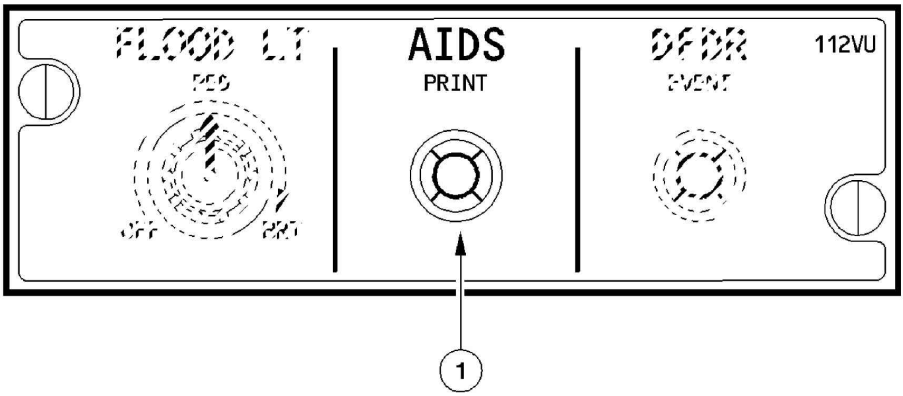
Ident.: DSC-31-60-30-00005369.0002001 / 09 OCT 12
Applicable to: ALL

The AIDS is used to monitor various aircraft system parameters in order to make maintenance easier and to allow formulating operational recommendations.
The AIDS can generate system reports. The Airbus Standard Reports are preprogrammed reports available at aircraft delivery. The operator can create its own reports.
The AIDS uses the Flight Data Interface and Management Unit (FDIMU) to acquire the relevant aircraft system parameters. The FDIMU is connected to the rest of the AIDS as shown below.
The system may be programmed using the MCDUs. The crew can select any report to be displayed on the MCDUs.
The Printer prints the flight phase programmed reports or any report selected on the MCDU.
This printing may be automatic or in response to the AIDS PRINT pushbutton.
The AIDS may send automatic reports via ACARS .
An optional Digital Recorder may be installed to extend the recording capacity.



CONTROLS ON PEDESTAL

Ident.: DSC-31-60-30-00005370.0001001 / 20 DEC 10
Applicable to: ALL



(1) AIDS PRINT pushbutton
Pushing this pushbutton causes the immediate printing of a specific report, depending on the flight phase. The crew may then use the MCDU to select another report for immediate printing.

AIRCRAFT SYSTEMS

LANDING GEAR

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DSC-32-10 Gears and Doors

DSC-32-10-10 Description

General....A
Main Landing Gear (MLG)....B
Nose Landing Gear (NLG)....C
Landing Gear Extension and Retraction Equipment....D
Landing Gears and Doors Operation....E

DSC-32-10-20 Landing Gear System/Interface

Landing Gear Control Interface Unit (LGCIU)....A
Proximity Detector Output Signals....B
Proximity Detector Output Signals (Cont'd)....C

DSC-32-10-30 Interactions between Landing Gear and Aircraft Systems

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Proximity Detectors on Shock Absorbers....B
Proximity Detectors on Uplocks....C
Proximity Detectors on Doors....D
Proximity Detectors on Downlocks....E
Proximity Detectors on Cargo Doors....F
Proximity Detectors on Flaps Attachments....G

DSC-32-10-40 Controls and Indicators

Landing Gear Indicator Panel....A
Landing Gear Selector Lever....B
Landing Gear Gravity Extension....C
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DSC-32-20 Nose Wheel Steering

DSC-32-20-10 Description

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DSC-32-20-20 Controls and Indicators

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DSC-32-30 Brakes and Antiskid

DSC-32-30-10 Description

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Anti-Skid System....B
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DSC-32-30-20 Controls and Indicators

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Brake Fan ◁ C
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Memo Display....F

DSC-32-40 Tire Pressure Indicating System

DSC-32-40-10 Description

Description....A

DSC-32-40-20 Controls and Indicators

WHEEL SD Page....A

Localization Title	Toc Index	ID	Reason
DSC-32-10-30 Proximity Detectors on Shock Absorbers	B	1	Effectivity update: The information no longer applies to MSN 08864, 08877, 08896, 08901, 08905, 08922, 08928, 08932, 08967, 08978.
DSC-32-10-30 Proximity Detectors on Shock Absorbers	B	2	Effectivity update: The information now also applies to MSN 08864, 08877, 08896, 08901, 08905, 08922, 08928, 08932, 08961, 08967, 08978, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-32-10-40 WHEEL SD Page	D	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-32-20-10 Description	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-32-20-10 Architecture	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-32-20-20 WHEEL SD Page	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-32-30-10 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-32-30-10 Auto Brake - System Arming	C	2	Effectivity update: The information now also applies to MSN 09063.
DSC-32-30-10 Auto Brake - System Arming	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-32-30-10 Auto Brake - System Activation	C	4	Effectivity update: The information now also applies to MSN 09063.
DSC-32-30-10 Auto Brake - System Activation	C	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-32-30-10 Braking Modes - Alternate Braking with Anti-Skid	D	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-32-30-10 Braking Modes - Alternate Braking without Anti-Skid	D	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-32-30-10 Braking Modes - Parking Brake	D	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-32-30-10 Braking Schematic	E	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-32-30-20 Center Instrument Panel	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-32-30-20 Auto BRK Panel	B	2	Effectivity update: The information now also applies to MSN 09063.
DSC-32-30-20 Auto BRK Panel	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-32-30-20 WHEEL SD Page	E	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

GENERAL

Ident.: DSC-32-10-10-00018598.0001001 / 21 MAR 16
Applicable to: ALL

The landing gear consists of :
- Two main landing gears that retract inboard
- One nose landing gear that retracts forward.

Doors enclose the landing gear bays. Gear and doors are electrically controlled and hydraulically operated.
The doors, which are fitted to the landing gear struts, are operated mechanically by the gear and close at the end of gear retraction.
All gear doors open while the gear is retracting or extending.
Two Landing Gear Control and Interface Units (LGCIUs) control the extension and retraction of the gear and the operation of the doors. They also supply information about the landing gear to ECAM for display, and send signals indicating whether the aircraft is in flight or on the ground to other aircraft systems.
A hand crank on the center pedestal allows the flight crew to extend the landing gear if the aircraft loses hydraulic systems or electrical power.

MAIN LANDING GEAR (MLG)

Ident.: DSC-32-10-10-00018599.0001001 / 21 MAR 16
Applicable to: ALL

Each main gear has twin wheels and an oleopneumatic shock absorber.
Each main wheel has an antiskid brake.

NOSE LANDING GEAR (NLG)

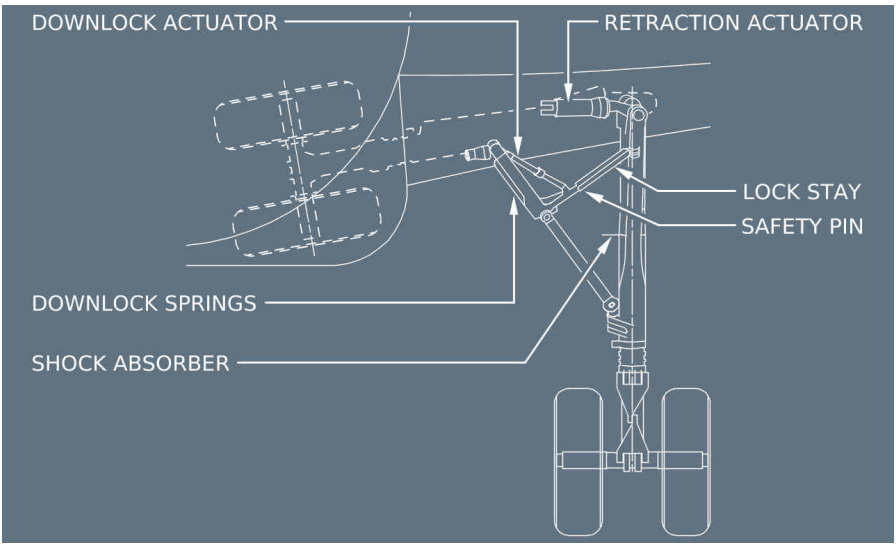
Ident.: DSC-32-10-10-00018600.0001001 / 21 MAR 16
Applicable to: ALL

The two-wheeled nose gear has an oleopneumatic shock strut and a nose wheel steering system.

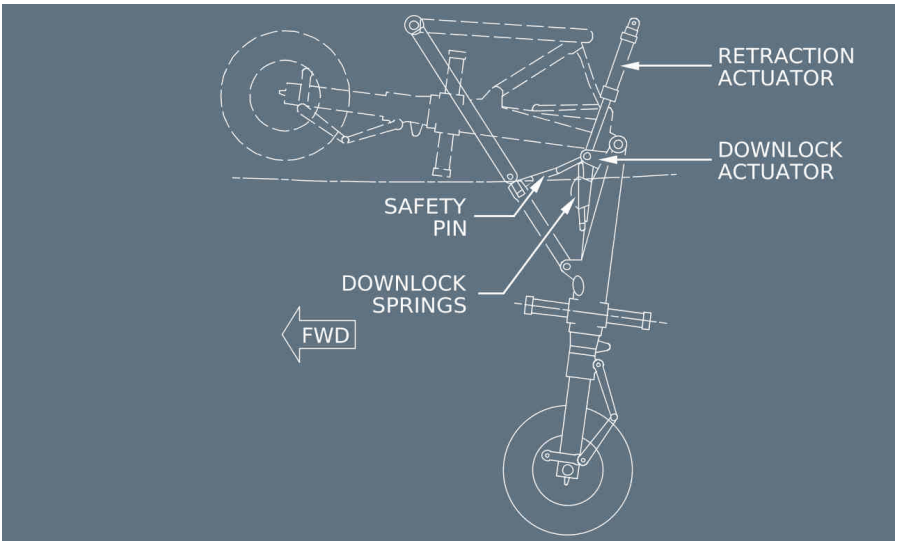
LANDING GEAR EXTENSION AND RETRACTION EQUIPMENT

Ident.: DSC-32-10-10-00018601.0001001 / 21 MAR 16
Applicable to: ALL

MAIN LANDING GEAR



NOSE LANDING GEAR



LANDING GEARS AND DOORS OPERATION

Applicable to: ALL

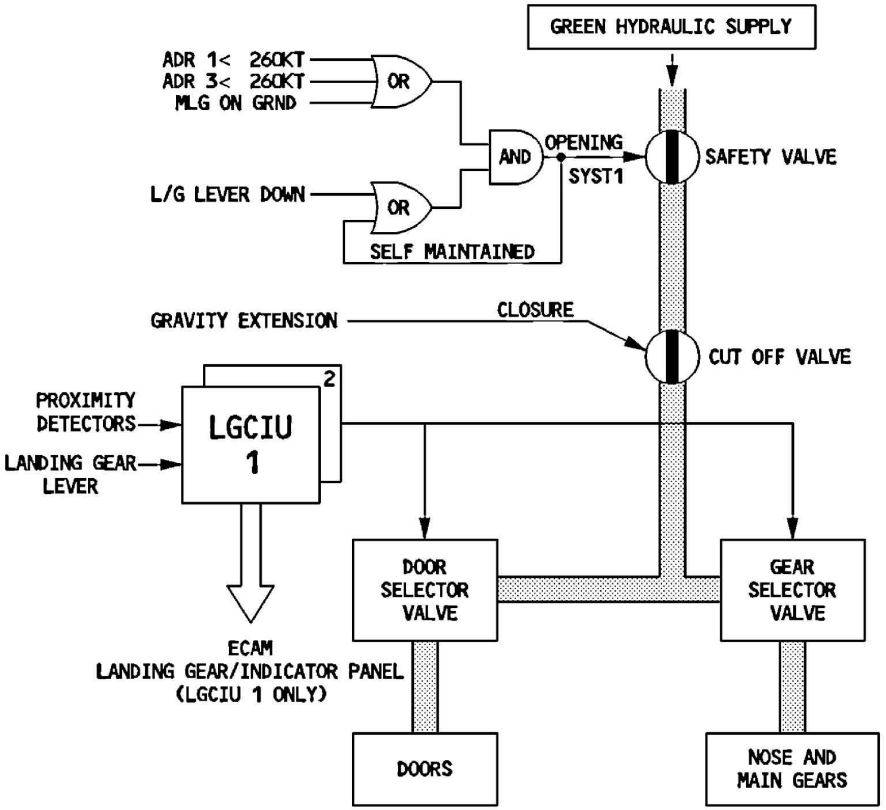
Ident.: DSC-32-10-10-A-00018602.0001001 / 21 MAR 16

NORMAL OPERATION

The flight crew normally operates the landing gear by means of the lever on the center instrument panel.

The LGCIUs control the sequencing of gear and doors electrically. One LGCIU controls one complete gear cycle, then switches over automatically to the other LGCIU at the completion of the retraction cycle. It also switches over in case of failure.

The green hydraulic system actuates all gear and doors. When the aircraft is flying faster than 260 kt, a safety valve automatically cuts off hydraulic supply to the landing gear system. Below 260 kt, the hydraulic supply remains cut off as long as the landing gear lever is up.



Ident.: DSC-32-10-10-A-00018603.0001001 / 21 MAR 16

LANDING GEAR GRAVITY EXTENSION

If the normal system fails to extend the landing gear hydraulically, the flight crew can use a crank to extend it mechanically.

When a crew member turns the crank, it :

- Isolates the landing gear hydraulics from the green hydraulic system
- Unlocks the landing gear doors and the main and nose main gear
- Allows gravity to drop the gear into the extended position.

Locking springs help the crew to crank the main gear into the locked condition, and aerodynamic forces assist in the locking of the nose gear.

The gear doors remain open.
The flight crew can reset the emergency extension system in flight after using it for training (if green hydraulic pressure is available).

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LANDING GEAR CONTROL INTERFACE UNIT (LGCIU)

Applicable to: ALL

Ident.: DSC-32-10-20-A-00018604.0001001 / 21 MAR 16

GENERAL

The LGCIUs receive position information from the landing gear, cargo door, and landing flap systems.

Ident.: DSC-32-10-20-A-00018605.0001001 / 21 MAR 16

LANDING GEAR INFORMATION

The LGCIUs receive landing gear position information from proximity detectors when:
- The landing gears are locked down or up, or
- The shock absorbers are compressed or extended, or
- The landing gear doors are open, or closed, or
- The bogie are aligned or not.

The LGCIUs send the landing gear position data to other aircraft systems.
In case of a LGCIU failure, the landing gear is controlled by the remaining healthy LGCIU.

Ident.: DSC-32-10-20-A-00018606.0001001 / 21 MAR 16

CARGO DOORS INFORMATION

Sensors send to the LGCIUs the position of the following components :
- Manuel selector valves
- Locking shaft
- Locking handle
- Safety shaft
- Door sills ◁ .

The LGCIUs detect electrical failures only in certain proximity switches in the cargo door system :
- Locking shaft
- Locking handle
- Safety shaft.

When an LGCIU makes such a detection, it indicates the NON LOCKED condition for that component.

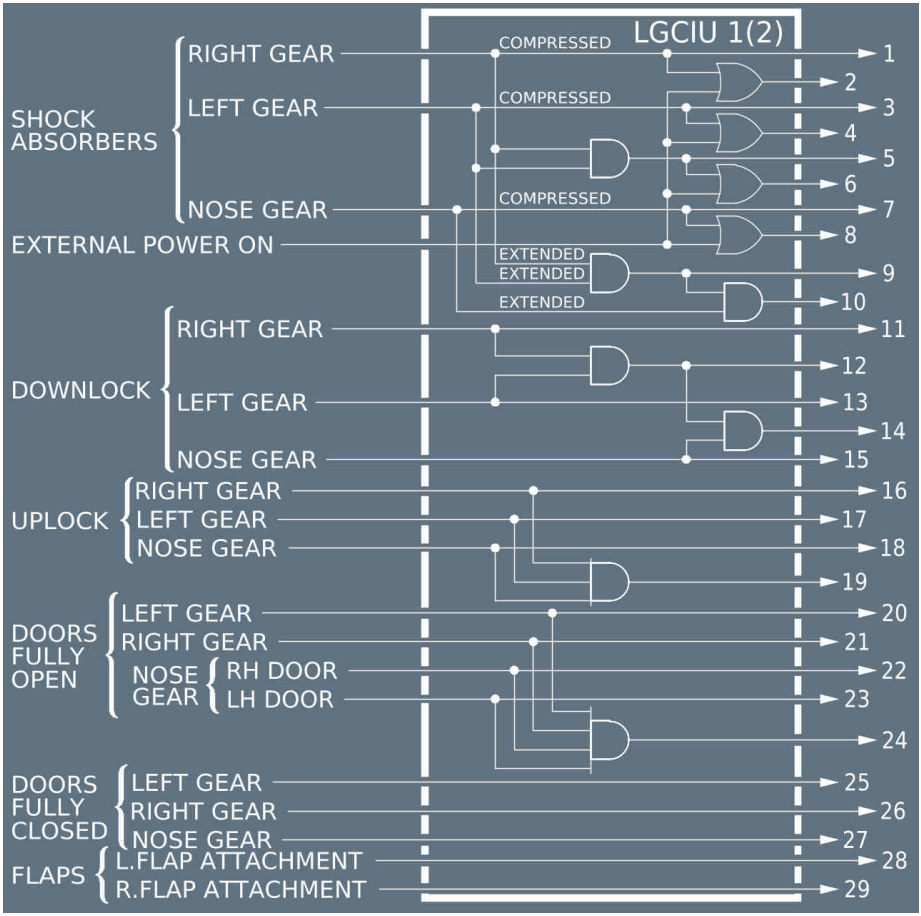
Ident.: DSC-32-10-20-A-00018607.0001001 / 21 MAR 16

LANDING FLAPS INFORMATION

The LGCIUs process the signals from four flap disconnect proximity switches, then send them to the Slat/Flap Control Computers (SFCCs).
The LGCIUs do not monitor failures in the SFCC system.

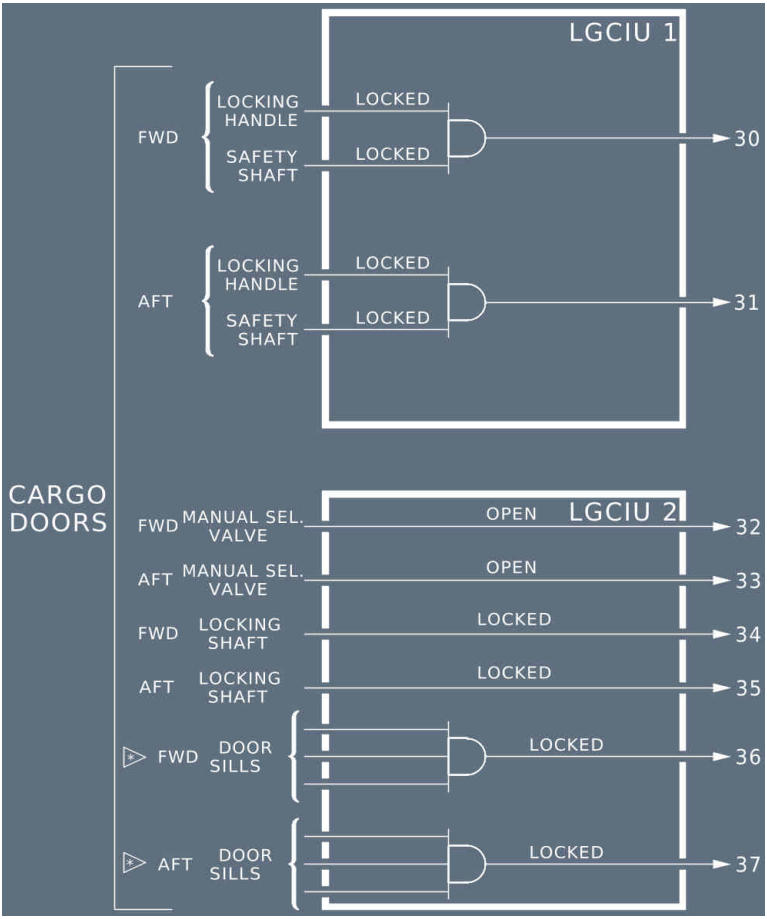
PROXIMITY DETECTOR OUTPUT SIGNALS

Ident.: DSC-32-10-20-00001278.0001001 / 22 MAY 12
Applicable to: ALL



PROXIMITY DETECTOR OUTPUT SIGNALS (CONT'D)

Ident.: DSC-32-10-20-00001279.0001001 / 21 MAR 16
Applicable to: ALL



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GENERAL

Ident.: DSC-32-10-30-00001285.0001001 / 10 DEC 09
Applicable to: ALL

The following tables present the operational effects of the proximity detectors on aircraft systems.
How to read the tables :

SYSTEM	LGCIU 1	LGCIU 2	A/C IN FLT	A/C ON GROUND
SERVICE INTERPHONE	**6**	**6**	.....	.....
SFCC 1(2)	**5**	(**5**)	.....	.....

The above lines mean that the service interphone receives the output n° 6 from both LGCIUs, while SFCC 1 receive the output 5 from LGCIU 1 and SFCC 2 the output 5 from LGCIU 2.
The two additional columns give the system functioning when the aircraft is in flight and on the ground.

PROXIMITY DETECTORS ON SHOCK ABSORBERS

Ident.: DSC-32-10-30-00018608.0001001 / 06 SEP 16

1 **Applicable to: MSN 01767-01920, 02108, 02334, 02388, 02443-02457, 02584, 02649-02670, 02737-02908, 03138, 03750, 04294, 04399-04438, 04510, 05158, 06720-08832**

	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
GENERAL	STROBE lts		**5**	On when AUTO selected	Off when AUTO selected
	LOGO lts		**5**	Off when flaps retracted	On
	AIRSTAIRS	**3**	**1**	Control inhibited(1)	Control not inhibited(2)
	CARGO DOOR(5)		**5**	Normal control not available	Normal control available
	WATER FILLING		**5**	Preselect water servicing inhibited	Preselect water servicing available

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
AIR COND	AVNCS COOLING	**5**	**5**	• Skin temp. < 35 °C : The system is in closed conf.(1) • Skin temp. > 35 °C : The system is in intermediate conf.(1)	• Skin temp. < 5 °C : The system is in closed conf.(2) • Skin temp. > 5 °C : The system is in open conf.(2)
	GRND COOLING	**1** **3**	**1** **3**	Inhibited(1)	Not inhibited(2)
	FWD CARGO VENT		**5**	Extract fan stopped when ΔP > 1 PSI	Extract fan on
	CAB PRESS	**5**	**5**	Climb mode active(4)	- Prepressurization active before TO (3) - Depressurization active after LDG (3)
	PACK 1(2) TEMP CONTROL		**3** **(1)**	Pack air inlet flaps opened.	Pack air inlet flap fully closed at TO and LDG
APU	APU AUTO SHUTDOWN	**5**		In case of oil low press, automatic shutdown is delayed by 15.5 s	In case of oil low press, the automatic shutdown is delayed by: • 15.5 s if the oil temp < -4 °C • 0.05 s if oil temp > -4 °C
	APU SPEED CONTROL			Speed is controlled at 100 %	Speed is controlled at 99 % (100 % for ENG start or when ambient temp is below -18 °C or above 35 °C)

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
COMMUNICATIONS	SERVICE INTERPHONE	**6**	**6**	Inhibited(6)	Available(7)
	PUBLIC ADDRESS	**1** **3**	**1** **3**	P.A. increased level(6)	P.A. low level(7)
	ADIRU and AVIONICS ground warning	**1** **3**	**1** **3**	External horn and light inhibited(6)	External horn and light not inhibited(7)
	FLT INTERPHONE	**9**		Communication with ground mechanic inhibited	Communication with ground mechanic available
	COCKPIT CALL LIGHT	**9**		Inhibited	Not inhibited
	ACARS (ACARS MU or ATSU)	**7**		Available	Available
	CVR	**1** **3** **7**	**1** **3**	Runs(6)	Runs : (7) - During the first 5 min following energization - With at least one engine running Stops : (7) 5 min after second engine shutdown
	CVR		**5**	• ERASE function inhibited • No low frequency signal in the loudspeakers if test performed	• ERASE function not inhibited • Low frequency signal in the loudspeakers if test performed
ELEC	DC generation	**5**		APU start on batteries only, is delayed by 45 s	No APU start delay when on batteries only
	GALLEY supply		**5**	Main galley not supplied when APU GEN only is supplying	Main galley supplied when APU GEN only is supplying
EIS	EIS	**5**		Display test inhibited when ANN LT TEST is selected	Display test not inhibited
FIRE	APU	**5**		No APU fire automatic extinguishing	Automatic extinguishing not inhibited

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
FLT CTL	SFCC 1(2)	**5**	**(5)**	• For SFCC 1(2): Slats alpha/speed lock function active • For SFCC(2): No flaps movement inhibition if the cargo door is opened	• For SFCC 1(2): Slats alpha/speed lock function active if speed > 60 kt • For SFCC (2): Flaps movement inhibition if cargo door is opened
FLT INST	• DFDR • QAR ✻	**1** **3** **7**	**1** **3**	Runs[6]	Runs: [7] • During the first 5 min following energization • With one engine running Stops: [7] 5 min after second engine shut down
FUEL	FQI	**5**		FQI uses flight attitude correction due to wing bending	FQI uses ground attitude correction

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
HYD	BLUE and GREEN pumps	**1** **3**		Blue or green pump "FAULT" light not inhibited when related pump is stopped(6)	Blue or green pump "FAULT" light inhibited when related pump is stopped(7)
	BLUE pump	**7**		Runs when electrical power is available	Runs when at least one engine is running
	BLUE and YELLOW pumps		**1** **3**	Blue or yellow pump "FAULT" light not inhibited when related pump is stopped(6)	Blue or yellow pump "FAULT" light inhibited when related pump is stopped(8)
	PTU		**7**	PTU runs if green/yellow diff. press > 500 PSI	PTU runs if green/yellow diff. press > 500 PSI and • Both MASTER LEVERS are at OFF or • Both MASTER LEVERS are at ON or • Nose wheel steering is not in towing position with parking brake released. PTU is inhibited during the use of the cargo door hand pump and for 40 s after its use.
ICE RAIN PROT	CAPT, (F/O), ((STBY)) probes and CAPT, (F/O) windows heating	**4,** **(2)** **((8))**	**4,** **(2)** **((8))**	• CAPT, (F/O), ((STBY)) pitots and CAPT, (F/O) windows : high heating level applied • All other probes and windows are heated(6)	• With engines stopped: no heating(8) • With at least one engine running: CAPT, (F/O), ((STBY)) pitots and CAPT, (F/O) windows are heated at low level(8)
	WING ANTI ICE	**3**	**1**	Wing anti ice valves open when the WING ANTI ICE pb is at ON(6)	Wing anti ice valves open for 30 s when the WING ANTI ICE pb is at ON(8)
	RAIN REPELLENT	**1** **3**	**1** **3**	Not inhibited(6)	Inhibited if engines are stopped(7)
	DRAIN MAST(10)		**9**	High heating level is applied	Low heating level is applied

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
LANDING GEAR	L/G SAFETY VALVE	**6**		Safety valve closes if aircraft speed > 260 kt	Safety valve opened
	L/G control	**10**	**10**	Retraction not inhibited(9)	Retraction inhibited(9)
	TIRE PRESS		**5**	"TYRE LO PRESS" warning threshold set to its flight level	"TYRE LO PRESS" warning threshold set to its ground level
NAVIGATION	STAND BY ALTI	**5**		VIBRATION function active	VIBRATION function inhibited
	ATC 1(2)	**3**	**(1)**	ATC 1(2) available in AUTO mode	ATC 1(2) inhibited in AUTO mode
	ADIRU 1(10)	**7**		No external horn when ADIRU supplied from batteries only	External horn not inhibited

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
POWER PLANT	FADEC 1(2)	**1 3 8**	**(1) (3) (8)**	On ENG 1(2): *(6)* • Reverse inhibited • No automatic start abort • FADEC always supplied • FLEX not available • If installed, BUMP not selectable	On ENG 1(2): *(8)* • Reverse available • Automatic start abort available • 5 min after eng-shut down FADEC 1(2) no more supplied • FLEX available • If installed, BUMP selectable
		1 3 8	**(1) (3) (8)**	Modulated idle and approach idle are available*(6)*	Modulated idle only available*(7)*

(1) When either LGCIU indicates flight.

(2) When both LGCIU indicate ground.

(3) When either LGCIU indicates ground.

(4) When both LGCIU indicate flight.

(5) Valid from MSN 44.

(6) When either output indicates flight.

(7) When all outputs indicate ground.

(8) When both outputs indicate ground.

(9) One valid output is sufficient.

(10) Valid from MSN 22.

PROXIMITY DETECTORS ON SHOCK ABSORBERS

Ident.: DSC-32-10-30-00018608.0004001 / 06 SEP 16
Applicable to: MSN 02195-02204

	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
GENERAL	STROBE lts		5	On when AUTO selected	Off when AUTO selected
	LOGO lts		5	Off when flaps retracted	On
	AIRSTAIRS	3	1	Control inhibited(1)	Control not inhibited(2)
	CARGO DOOR(5)		5	Normal control not available	Normal control available
	WATER FILLING		5	Preselect water servicing inhibited	Preselect water servicing available
AIR COND	AVNCS COOLING	5	5	• Skin temp. < 35 °C : The system is in closed conf.(1) • Skin temp. > 35 °C : The system is in intermediate conf.(1)	• Skin temp. < 5 °C : The system is in closed conf.(2) • Skin temp. > 5 °C : The system is in open conf.(2)
	GRND COOLING	1 3	1 3	Inhibited(1)	Not inhibited(2)
	FWD CARGO VENT		5	Extract fan stopped when ΔP > 1 PSI	Extract fan on
	CAB PRESS	5	5	Climb mode active(4)	- Prepressurization active before TO (3) - Depressurization active after LDG (3)
	PACK 1(2) TEMP CONTROL		3 (1)	Pack air inlet flaps opened.	Pack air inlet flap fully closed at TO and LDG

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
APU	APU AUTO SHUTDOWN	**5**		In case of oil low press, automatic shutdown is delayed by 15.5 s	In case of oil low press, the automatic shutdown is delayed by: • 15.5 s if the oil temp < -4 °C • 0.05 s if oil temp > -4 °C
	APU SPEED CONTROL			Speed is controlled at 100 %	Speed is controlled at 100 % (98 % for air bleed extraction for air conditioning when the ambient temperature is below 30 °C)

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
COMMUNICATIONS	SERVICE INTERPHONE	**6**	**6**	Inhibited(6)	Available(7)
	PUBLIC ADDRESS	**1** **3**	**1** **3**	P.A. increased level(6)	P.A. low level(7)
	ADIRU and AVIONICS ground warning	**1** **3**	**1** **3**	External horn and light inhibited(6)	External horn and light not inhibited(7)
	FLT INTERPHONE	**9**		Communication with ground mechanic inhibited	Communication with ground mechanic available
	COCKPIT CALL LIGHT	**9**		Inhibited	Not inhibited
	ACARS (ACARS MU or ATSU)	**7**		Available	Available
	CVR	**1** **3** **7**	**1** **3**	Runs(6)	Runs : (7) - During the first 5 min following energization - With at least one engine running Stops : (7) 5 min after second engine shutdown
	CVR		**5**	• ERASE function inhibited • No low frequency signal in the loudspeakers if test performed	• ERASE function not inhibited • Low frequency signal in the loudspeakers if test performed
ELEC	DC generation	**5**		APU start on batteries only, is delayed by 45 s	No APU start delay when on batteries only
	GALLEY supply		**5**	Main galley not supplied when APU GEN only is supplying	Main galley supplied when APU GEN only is supplying
EIS	EIS	**5**		Display test inhibited when ANN LT TEST is selected	Display test not inhibited
FIRE	APU	**5**		No APU fire automatic extinguishing	Automatic extinguishing not inhibited

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
FLT CTL	SFCC 1(2)	**5**	**(5)**	• For SFCC 1(2): Slats alpha/speed lock function active • For SFCC(2): No flaps movement inhibition if the cargo door is opened	• For SFCC 1(2): Slats alpha/speed lock function active if speed > 60 kt • For SFCC (2): Flaps movement inhibition if cargo door is opened
FLT INST	• DFDR • QAR	**1** **3** **7**	**1** **3**	Runs(6)	Runs: (7) • During the first 5 min following energization • With one engine running Stops: (7) 5 min after second engine shut down
FUEL	FQI	**5**		FQI uses flight attitude correction due to wing bending	FQI uses ground attitude correction

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
HYD	BLUE and GREEN pumps	**1** **3**		Blue or green pump "FAULT" light not inhibited when related pump is stopped(6)	Blue or green pump "FAULT" light inhibited when related pump is stopped(7)
	BLUE pump	**7**		Runs when electrical power is available	Runs when at least one engine is running
	BLUE and YELLOW pumps		**1** **3**	Blue or yellow pump "FAULT" light not inhibited when related pump is stopped(6)	Blue or yellow pump "FAULT" light inhibited when related pump is stopped(8)
	PTU		**7**	PTU runs if green/yellow diff. press > 500 PSI	PTU runs if green/yellow diff. press > 500 PSI and • Both MASTER LEVERS are at OFF or • Both MASTER LEVERS are at ON or • Nose wheel steering is not in towing position with parking brake released. PTU is inhibited during the use of the cargo door hand pump and for 40 s after its use.
ICE RAIN PROT	CAPT, (F/O), ((STBY)) probes and CAPT, (F/O) windows heating	**4,** **(2)** **((8))**	**4,** **(2)** **((8))**	• CAPT, (F/O), ((STBY)) pitots and CAPT, (F/O) windows : high heating level applied • All other probes and windows are heated(6)	• With engines stopped: no heating(8) • With at least one engine running: CAPT, (F/O), ((STBY)) pitots and CAPT, (F/O) windows are heated at low level(8)
	WING ANTI ICE	**3**	**1**	Wing anti ice valves open when the WING ANTI ICE pb is at ON(6)	Wing anti ice valves open for 30 s when the WING ANTI ICE pb is at ON(8)
	RAIN REPELLENT	**1** **3**	**1** **3**	Not inhibited(6)	Inhibited if engines are stopped(7)
	DRAIN MAST(10)		**9**	High heating level is applied	Low heating level is applied

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
LANDING GEAR	L/G SAFETY VALVE	**6**		Safety valve closes if aircraft speed > 260 kt	Safety valve opened
	L/G control	**10**	**10**	Retraction not inhibited(9)	Retraction inhibited(9)
	TIRE PRESS		**5**	"TYRE LO PRESS" warning threshold set to its flight level	"TYRE LO PRESS" warning threshold set to its ground level
NAVIGATION	STAND BY ALTI	**5**		VIBRATION function active	VIBRATION function inhibited
	ATC 1(2)	**3**	**(1)**	ATC 1(2) available in AUTO mode	ATC 1(2) inhibited in AUTO mode
	ADIRU 1(10)	**7**		No external horn when ADIRU supplied from batteries only	External horn not inhibited

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
POWER PLANT	FADEC 1(2)	**1 3 8**	**(1) (3) (8)**	On ENG 1(2): (6) • Reverse inhibited • No automatic start abort • FADEC always supplied • FLEX not available • If installed, BUMP not selectable	On ENG 1(2): (8) • Reverse available • Automatic start abort available • 5 min after eng-shut down FADEC 1(2) no more supplied • FLEX available • If installed, BUMP selectable
		1 3 8	**(1) (3) (8)**	Modulated idle and approach idle are available(6)	Modulated idle only available(7)

(1) *When either LGCIU indicates flight.*

(2) *When both LGCIU indicate ground.*

(3) *When either LGCIU indicates ground.*

(4) *When both LGCIU indicate flight.*

(5) *Valid from MSN 44.*

(6) *When either output indicates flight.*

(7) *When all outputs indicate ground.*

(8) *When both outputs indicate ground.*

(9) *One valid output is sufficient.*

(10) *Valid from MSN 22.*

PROXIMITY DETECTORS ON SHOCK ABSORBERS

Ident.: DSC-32-10-30-00018608.0003001 / 06 SEP 16

[2] **Applicable to: MSN 01957-02097, 02121-02139, 02275, 02359, 02405, 02482, 02609-02626, 02712, 02914-03071, 03264-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-06336, 08864-09063**

	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
GENERAL	STROBE lts		**5**	On when AUTO selected	Off when AUTO selected
	LOGO lts		**5**	Off when flaps retracted	On
	AIRSTAIRS ❄	**3**	**1**	Control inhibited(1)	Control not inhibited(2)
	CARGO DOOR(5)		**5**	Normal control not available	Normal control available
	WATER FILLING		**5**	Preselect water servicing inhibited	Preselect water servicing available
AIR COND	AVNCS COOLING	**5**	**5**	• Skin temp. < 35 °C : The system is in closed conf.(1) • Skin temp. > 35 °C : The system is in intermediate conf. (1)	• Skin temp. < 5 °C : The system is in closed conf.(2) • Skin temp. > 5 °C : The system is in open conf.(2)
	GRND COOLING ❄	**1** **3**	**1** **3**	Inhibited(1)	Not inhibited(2)
	FWD CARGO VENT		**5**	Extract fan stopped when ΔP > 1 PSI	Extract fan on
	CAB PRESS	**5**	**5**	Climb mode active(4)	- Prepressurization active before TO (3) - Depressurization active after LDG (3)
	PACK 1(2) TEMP CONTROL		**3** **(1)**	Pack air inlet flaps opened	Pack air inlet flap fully closed at TO and LDG
APU	APU AUTO SHUTDOWN	**5**		In case of oil low press, automatic shutdown is delayed by 15.5 s	- In case of oil low press, the automatic shutdown is delayed by : • 15.5 s if the oil temp < -4 °C • 0.05 s if oil temp > -4 °C

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
COMMUNICATIONS	SERVICE INTERPHONE	**6**	**6**	Inhibited(6)	Available(7)
	PUBLIC ADDRESS	**1** **3**	**1** **3**	P.A. increased level(6)	P.A. low level(7)
	ADIRU and AVIONICS ground warning	**1** **3**	**1** **3**	External horn and light inhibited(6)	External horn and light not inhibited(7)
	FLT INTERPHONE	**9**		Communication with ground mechanic inhibited	Communication with ground mechanic available
	COCKPIT CALL LIGHT	**9**		Inhibited	Not inhibited
	ACARS (ACARS MU or ATSU)	**7**		Available	Available
	CVR	**1** **3** **7**	**1** **3**	Runs(6)	Runs: (7) - during the first 5 min following energization - with one engine running Stops: (7) 5 min after second engine shutdown
	CVR		**5**	• ERASE function inhibited • No low frequency signal in the loudspeakers if test performed	• ERASE function not inhibited • Low frequency signal in the loudspeakers if test performed
ELEC	DC generation	**5**		APU start on batteries only, is delayed by 45 s	No APU start delay when on batteries only
	GALLEY supply		**5**	Main galley not supplied when APU GEN only is supplying	Main galley supplied when APU GEN only is supplying
EIS	EIS	**5**		Display test inhibited when ANN LT TEST is selected	Display test not inhibited
FIRE	APU	**5**		No APU fire automatic extinguishing	Automatic extinguishing not inhibited

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
FLT CTL	SFCC 1(2)	**5**	**(5)**	• For SFCC 1(2): Slats alpha/speed lock function active • For SFCC(2): No flaps movement inhibition if the cargo door is opened	• For SFCC 1(2): Slats alpha/speed lock function active if speed > 60 kt • For SFCC (2): Flaps movement inhibition if cargo door is opened
FLT INST	• DFDR • QAR	**1** **3** **7**	**1** **3**	Runs(6)	Runs: (7) • During the first 5 min following energization • With one engine running Stops: (7) 5 min after second engine shut down
FUEL	FQI	**5**		FQI uses flight attitude correction due to wing bending	FQI uses ground attitude correction
HYD	BLUE and GREEN pumps	**1** **3**		Blue or green pump "FAULT" light not inhibited when related pump is stopped(6)	Blue or green pump "FAULT" light inhibited when related pump is stopped(7)
	BLUE pump	**7**		Runs when electrical power is available	Runs when at least one engine is running
	BLUE and YELLOW pumps		**1** **3**	Blue or yellow pump "FAULT" light not inhibited when related pump is stopped(6)	Blue or yellow pump "FAULT" light inhibited when related pump is stopped(8)
	PTU		**7**	PTU runs if green/yellow diff. press > 500 PSI	PTU runs if green/yellow diff. press > 500 PSI and • both MASTER LEVERS are at OFF or • Both MASTER LEVERS are at ON or • Nose wheel steering is not in towing position with parking brake released. PTU is inhibited during the use of the cargo door hand pump and for 40 s after its use.

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
ICE RAIN PROT	CAPT, (F/O), ((STBY)) probes and CAPT, (F/O) windows heating	**4, (2) ((8))**	**4, (2) ((8))**	• CAPT, (F/O), ((STBY)) pitots and CAPT, (F/O) windows : high heating level applied • All other probes and windows are heated(6)	• With engines stopped: no heating(8) • With at least one engine running: • CAPT, (F/O), ((STBY)) pitots and CAPT, (F/O) windows are heated at low level(8)
	WING ANTI ICE	**3**	**1**	Wing anti ice valves open when the WING ANTI ICE pb is at ON(6)	Wing anti ice valves open for 30 s when the WING ANTI ICE pb is at ON(8)
	RAIN REPELLENT	**1** **3**	**1** **3**	Not inhibited(6)	Inhibited if engines are stopped(7)
	DRAIN MAST(10)		**9**	High heating level is applied	Low heating level is applied
LANDING GEAR	L/G SAFETY VALVE	**6**		Safety valve closes if aircraft speed > 260 kt	Safety valve opened
	L/G control	**10**	**10**	Retraction not inhibited(9)	Retraction inhibited(9)
	TIRE PRESS		**5**	"TYRE LO PRESS" warning threshold set to its flight level	"TYRE LO PRESS" warning threshold set to its ground level
NAVIGATION	STAND BY ALTI	**5**		VIBRATION function active	VIBRATION function inhibited
	ATC 1(2)	**3**	**(1)**	ATC 1(2) available in AUTO mode	ATC 1(2) inhibited in AUTO mode
	ADIRU 1(10)	**7**		No external horn when ADIRU supplied from batteries only	External horn not inhibited

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	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
POWER PLANT	FADEC 1(2)	**1** **3** **8**	**(1)** **(3)** **(8)**	On ENG 1(2): (6) • Reverse inhibited • No automatic start abort • FADEC always supplied • FLEX not available • If installed, BUMP not selectable	On ENG 1(2): (8) • Reverse available • Automatic start abort available • 5 min after eng-shut down FADEC 1(2) no more supplied • FLEX available • If installed, BUMP selectable
		1 **3** **8**	**(1)** **(3)** **(8)**	Modulated idle and approach idle are available(6)	Modulated idle only available (7)

(1) *When either LGCIU indicates flight.*

(2) *When both LGCIU indicate ground.*

(3) *When either LGCIU indicates ground.*

(4) *When both LGCIU indicate flight.*

(5) *Valid from MSN 44.*

(6) *When either output indicates flight.*

(7) *When all outputs indicate ground.*

(8) *When both outputs indicate ground.*

(9) *One valid output is sufficient.*

(10) *Valid from MSN 22.*

PROXIMITY DETECTORS ON UPLOCKS

Ident.: DSC-32-10-30-00018610.0002001 / 21 MAR 16
Applicable to: ALL

	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	L/G UPLOCKED	L/G NOT UPLOCKED
LANDING GEAR	L/G control	**19**	**19**	If UP selected :(1) L/G doors will close	If UP selected :(1) L/G doors will not close
	ECAM WHEEL page	**16** **17** **18**	**16** **17** **18**	If UP selected :(2) L/G uplocked indications	If UP selected :(2) L/G in transit indications
	L/G indicator panel	**16** **17** **18**		If UP selected :(2) no indication	If UP selected :(2) "UNLK" red indications

(1) *One valid output is sufficient.*

(2) *When all outputs indicate the same position.*

PROXIMITY DETECTORS ON DOORS

Ident.: DSC-32-10-30-00018611.0001001 / 21 MAR 16
Applicable to: ALL

	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	DOORS FULLY OPENED	DOORS CLOSED
LANDING GEAR	L/G control	**24**	**24**	L/G extension or retraction possible (1)	L/G extension or retraction inhibited (1)
	ECAM WHEEL page	**20** **21** **22** **23**	**20** **21** **22** **23**	Doors fully opened indication	Doors closed indication

(1) *One valid output is sufficient.*

PROXIMITY DETECTORS ON DOWNLOCKS

Ident.: DSC-32-10-30-00018613.0001001 / 21 MAR 16
Applicable to: ALL

	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	L/G DOWNLOCKED	L/G NOT DOWNLOCKED
GEN	TAXI/T.O lights		**15**	Lights not inhibited	Lights inhibited
COMM	SIGNS	**12**	**12**	"NO SMOKING" (1)and "EXIT" signs on when AUTO selected(2)	"NO SMOKING" (1)and EXIT" signs inhibited when AUTO selected(3)

Continued on the following page

Continued from the previous page

	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	L/G DOWNLOCKED	L/G NOT DOWNLOCKED
FLT INST	WBS	**15**	**15**	Active (4)	Inhibited (5)
FMGS	FAC 1(2)	**12**	**12**	VLE indication displayed on PFD 1(2)	No VLE indication
LANDING GEAR	L/G control	**14**	**14**	If DOWN selected : (6) L/G doors will close	If DOWN selected : (6) L/G doors will not close
	ECAM WHEEL page	**11** **13** **15**	**11** **13** **15**	If DOWN selected : (7) L/G down indications	If DOWN selected : (7) L/G in transit indications
	L/G INDIC panel	**11** **13** **15**		If DOWN selected :(7) L/G down indications	If DOWN selected : (7) L/G in transit indications
	BRAKING STEERING	**15**	**15**	BSCU test operative(2)	BSCU test inhibited(3)
	BRAKE COOLING FANS		**13**	Cooling available when ON selected	Cooling inhibited when ON selected
NAV	GPWS	**13**		"TOO LOW-FLAPS" or "TOO LOW TERRAIN" warning operative	"TOO LOW-GEAR" or "TOO LOW TERRAIN" warning operative

(1) *For cabin not configured for non smoking flight*

(2) *When either output indicates DOWNLOCK.*

(3) *When both outputs indicate NOT DOWNLOCK.*

(4) *When both outputs indicate DOWNLOCK.*

(5) *When either output indicates NOT DOWNLOCK.*

(6) *One valid output is sufficient.*

(7) *When all outputs indicate the same position.*

PROXIMITY DETECTORS ON CARGO DOORS

Ident.: DSC-32-10-30-00018614.0001001 / 21 MAR 16
Applicable to: ALL

LOCKING HANDLE OR SHAFT, DOOR SILLS

	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	LOCKED	UNLOCKED
CRG DOORS	ECAM DOOR PAGE	**30 (31)**		Forward (aft) door symbol appears green	Forward (aft) door symbol appears amber, associated with "CARGO" amber
	CARGO DOOR OPERATION		**34 (35)**	Forward (aft) door normal opening inhibition	Forward (aft) door normal opening possible
			36 (37)	Forward (aft) door normal operation possible	Forward (aft) door normal operation inhibited

MANUAL SELECTOR VALVE

	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	CLOSE	OPEN
CRG DOORS	CARGO DOOR OPERATION		**32 (33)**	Forward (aft) door normal opening inhibition	Forward (aft) door normal opening possible

PROXIMITY DETECTORS ON FLAPS ATTACHMENTS

Ident.: DSC-32-10-30-00001291.0001001 / 22 MAR 16
Applicable to: ALL

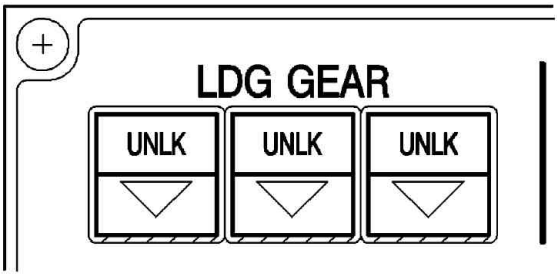
	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	FLAP ATTACHMENT	FLAP ATTACHMENT FAILURE
FLT CTL	SFCC	**28 (29)**	**28 (29)**	L(R) FLAPS normal operation (1)	"FLAPS LOCKED" warning (2)

(1) *When at least one SFCC detects normal operation*

(2) *When both SFCCs detect attachment failure*

LANDING GEAR INDICATOR PANEL

Ident.: DSC-32-10-40-00018615.0001001 / 21 MAR 16
Applicable to: ALL



This panel is connected to LGCIU1, which receives signals from proximity detectors.

▽ light: comes on green if the gear is locked down.

UNLK light: comes on red if the gear is not locked in the selected position.

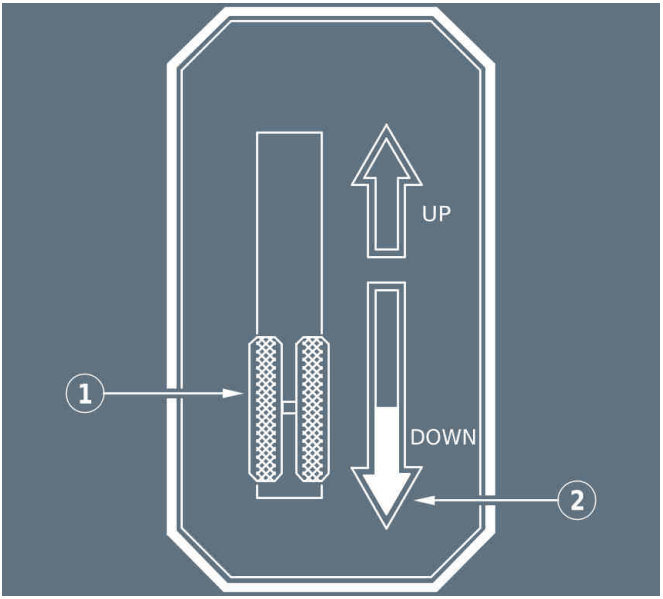
Note: This panel is connected to the LGCIU1 only, therefore, the lights on the LDG GEAR indicator panel come on as long as the LGCIU1 is electrically supplied.
If one UNLK indication remains on, the landing gear position can be confirmed using the WHEEL SD page (information from LGCIU 1 & 2). Only one green triangle on each landing gear is sufficient to confirm that the landing gear is downlocked.

LANDING GEAR SELECTOR LEVER

Ident.: DSC-32-10-40-00018616.0001001 / 20 MAY 16
Applicable to: ALL

A two-position selector lever sends electrical signals to the two LGCIUs. These control the green hydraulic supply to the landing gear system by means of selector valves.
The flight crew must always move the L/G lever in one continuous movement (i.e. with no stop between both positions).

When the flight crew selects UP or DOWN (and if the airspeed is below 260 kt):
- All landing gear doors open
- Each landing gear moves to the selected position
- All landing gear doors close.



(1) L/G LEVER

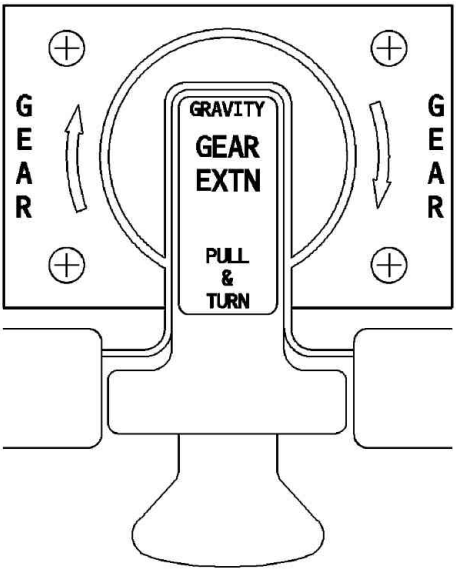
UP : This position selects landing gear retraction.
While the landing gear doors are opening, the normal brake system brakes the wheels of the main landing gear automatically.
A brake band in the nose landing gear well brakes the nose landing gear wheels as the doors close (for aircraft equipped with nose landing gear rubbing strips).

DOWN : This position selects landing gear extension.
An interlock mechanism prevents anyone from accidentally retracting the gear while the aircraft is on the ground. It does so by locking the lever in DOWN position when the shock absorber on either main gear is compressed (aircraft on ground) or the nose wheel steering is not centered.
The landing gear hydraulic system remains pressurized as long as the landing gear is extended (if green hydraulic pressure is available).

(2) RED ARROW
This red arrow lights up if the landing gear is not locked down when the aircraft is in the landing configuration, and a red warning appears on ECAM.

LANDING GEAR GRAVITY EXTENSION

Ident.: DSC-32-10-40-00018617.0001001 / 21 MAR 16
Applicable to: ALL

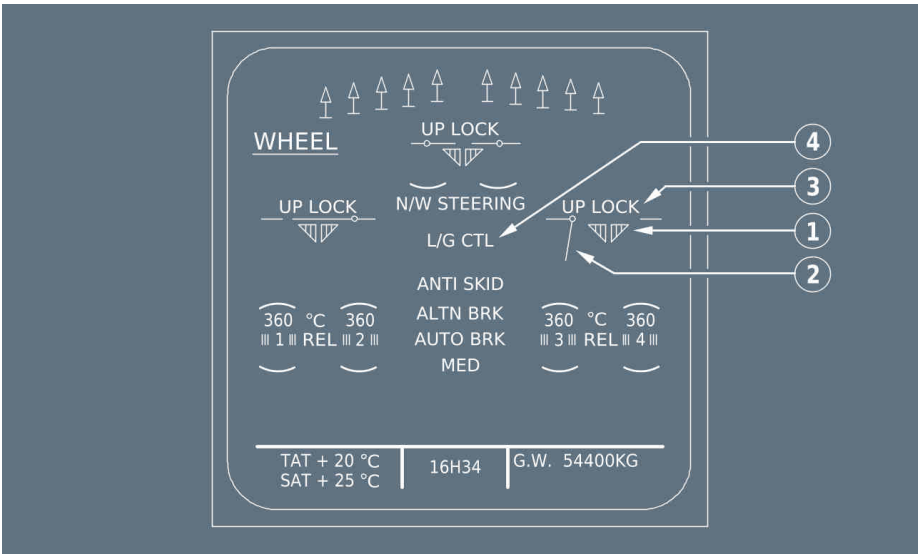


To put the landing gear down by gravity, the flight crew must pull the gear crank out, then turn it clockwise for 3 turns.
When the flight crew operates the crank handle, the cutout valve shuts off hydraulic pressure to the landing gear system and depressurizes it.

WHEEL SD PAGE

Ident.: DSC-32-10-40-00018618.0007001 / 21 MAR 16

1 **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02649-02737, 02908-03264, 03330-04216, 04312-04399, 04438-04506, 04518-09063**



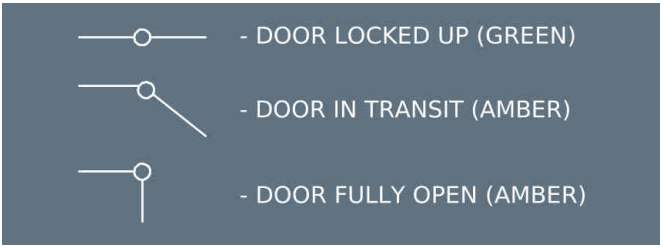
(1) Landing gear position indication

The landing gear positions are indicated by 2 triangles for each gear. The indications are as follow:

- Green triangle indicates that one LGCIU detects a landing gear downlocked
- Red triangle indicates that one LGCIU detects a landing gear in transit
- No triangle indicates that one LGCIU detects a landing gear uplocked
- Amber crosses will replace the right triangle to indicate that LGCIU 1 or LGCIU 2 has failed.

Note: Only one green triangle on each landing gear strut is sufficient to confirm that the landing gear is downlocked.

(2) Landing gear door position indication

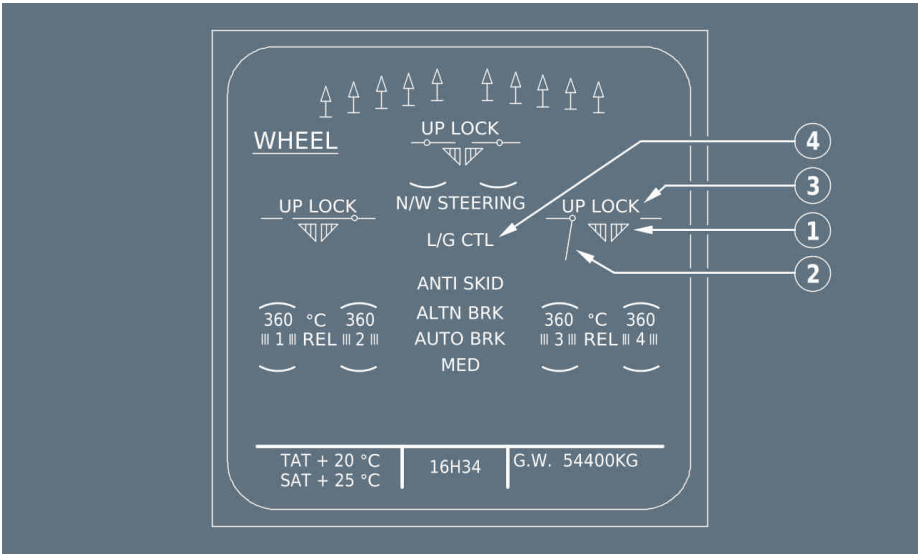


(3) UP LOCK
This legend appears amber along with a caution on the ECAM if the landing gear uplock is engaged when the landing gear is down locked.

(4) L/G CTL
This legend appears amber along with an ECAM caution if the landing gear lever and the landing gear position do not agree. This legend only appears when the landing gear is moving to the selected position.

WHEEL SD PAGE

Ident.: DSC-32-10-40-00018618.0004001 / 21 MAR 16
Applicable to: MSN 02388, 02584-02626, 02804, 03308, 04294, 04433, 04510



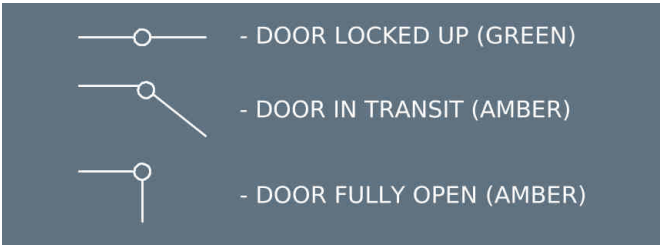
(1) Landing gear position indication

The landing gear positions are indicated by 2 triangles for each gear:

- Green triangle indicates that one LGCIU detects a landing gear downlocked
- Red triangle indicates that one LGCIU detects a landing gear in transit
- No triangle indicates that one LGCIU detects a landing gear uplocked
- Amber crosses on one triangle indicate that LGCIU1 or LGCIU2 is failed.

Note: Only one green triangle on each landing gear strut is sufficient to confirm that the landing gear is downlocked.

(2) Landing gear door position indication



(3) UP LOCK

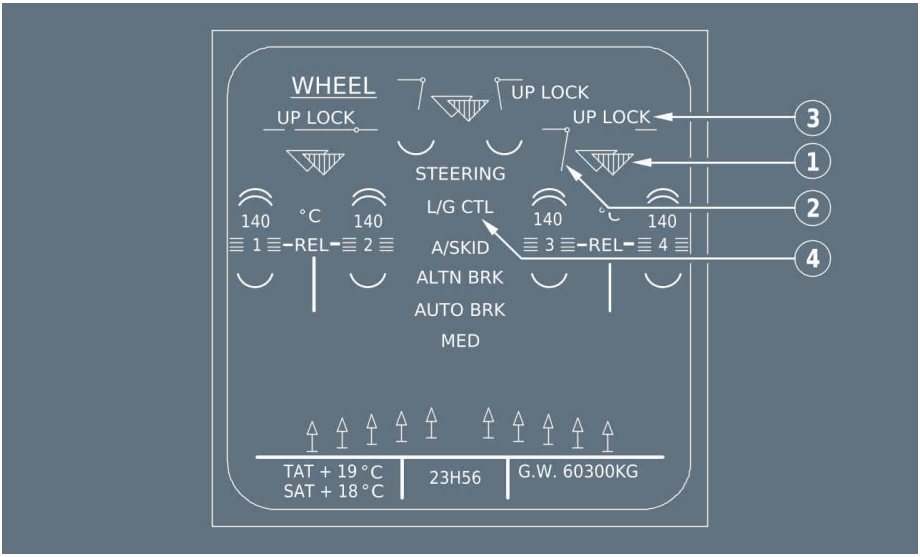
This legend appears amber along with a caution on the ECAM if the landing gear uplock is engaged when the landing gear is down locked.

(4) L/G CTL

This legend appears amber along with an ECAM caution if the landing gear lever and the landing gear position do not agree. This legend only appears when the landing gear is moving to the selected position.

WHEEL SD PAGE

Ident.: DSC-32-10-40-00018618.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



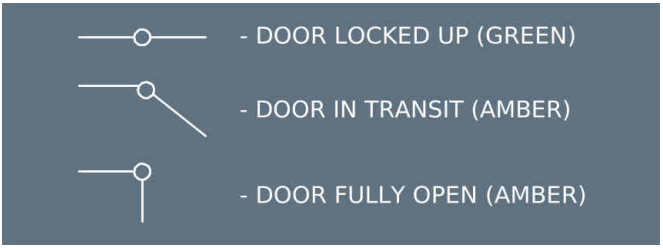
(1) Landing gear position indication

The landing gear positions are indicated by 2 triangles for each gear. The indications are as follow:

- Green triangle indicates that one LGCIU detects a landing gear downlocked
- Red triangle indicates that one LGCIU detects a landing gear in transit
- No triangle indicates that one LGCIU detects a landing gear uplocked
- Amber crosses indicate that one LGCIU is failed.

Note: Only one green triangle on each landing gear strut is sufficient to confirm that the landing gear is downlocked.

(2) Landing gear door position indication



(3) UP LOCK
This legend appears amber along with a caution on the ECAM if the landing gear uplock is engaged when the landing gear is down locked.

(4) L/G CTL
This legend appears amber along with an ECAM caution if the landing gear lever and the landing gear position do not agree. This legend only appears when the landing gear is moving to the selected position.

MEMO DISPLAY

Ident.: DSC-32-10-40-00018778.0001001 / 22 MAR 16
Applicable to: ALL

FLT L/G DOWN : This memo appears in green if the aircraft is operated in ferry flight conditions with landing gear down.

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DESCRIPTION

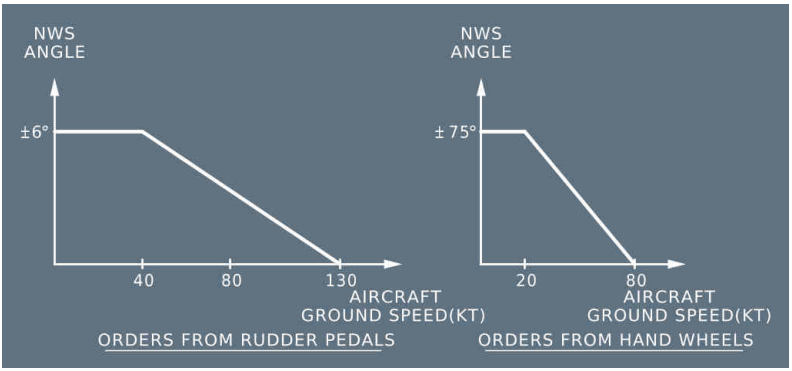
Ident.: DSC-32-20-10-00018619.0007001 / 28 FEB 18

[1] **Applicable to: MSN 02443-02457, 02584-09063**

A hydraulic actuating cylinder steers the nose wheel. The yellow hydraulic system supplies pressure to the cylinder, and electric signals from the Brake and Steering Control Unit (BSCU) control it.

The BSCU receives orders from:
- Captain's, and the First Officer's steering hand wheels (orders added algebraically), or
- Rudder pedals, or
- Autopilot.

The BSCU transforms these orders into nose wheel steering angle. That angle has the following limits, which depend on ground speed and the origin of the orders.



The steering system receives actuating hydraulic pressure when:
- A/SKID & N/W STRG switch is ON
- Towing control lever is in normal position
- At least one engine is running
- Aircraft is on ground.

The handwheel can turn the nosewheel up to 75 ° in either direction. A lever, on the towing electrical box (on nose landing gear), enables ground crew to deactivate the steering system for towing. Then the wheel can be turned 95 ° in either direction.
To prevent rudder pedal orders, or autopilot orders, from going to the BSCU, the pilots can use the pushbutton on either steering handwheel.
An internal cam mechanism returns the nose wheel to the centered position after takeoff.

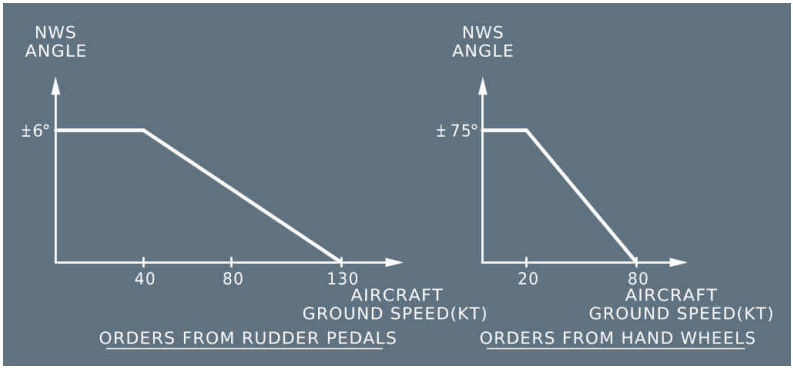
DESCRIPTION

Ident.: DSC-32-20-10-00018619.0002001 / 21 MAR 16
Applicable to: MSN 02108-02405, 02482

A hydraulic actuating cylinder steers the nose wheel. The green hydraulic system supplies pressure to the cylinder, and electric signals from the Brake and Steering Control Unit (BSCU) control it.

The BSCU receives orders from:
- Captain's, and the First Officer's steering hand wheels (orders added algebraically), or
- Rudder pedals, or
- Autopilot.

The BSCU transforms these orders into nose wheel steering angle. That angle has the following limits, which depend on ground speed and the origin of the orders.



The steering system receives actuating hydraulic pressure when:
- A/SKID & N/W STRG switch is ON
- Towing control lever is in normal position
- At least one engine is running
- Aircraft is on ground.

The nose landing gear doors must be closed in order for the green hydraulic system to apply pressure to the actuating cylinder.
The handwheel can turn the nose wheel up to 75 ° in either direction. A lever on the towing electrical box (on nose landing gear) allows ground crew to deactivate the steering system for towing. This then allows the wheel to be turned 95 ° in either direction.
The pilots can use a pushbutton on either steering handwheel to prevent rudder pedal orders or autopilot orders from going to the BSCU.
An internal cam mechanism returns the nose wheel to the centered position after takeoff.

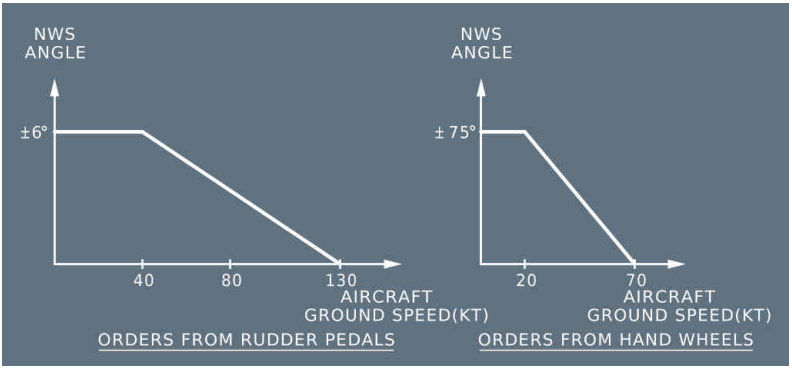
DESCRIPTION

Ident.: DSC-32-20-10-00018619.0001001 / 21 MAR 16
Applicable to: MSN 01767-02097

A hydraulic actuating cylinder steers the nose wheel. The green hydraulic system supplies pressure to the cylinder, and electric signals from the Brake and Steering Control Unit (BSCU) control it.

The BSCU receives orders from:
- Captain's, and the First Officer's steering hand wheels (orders added algebraically), or
- Rudder pedals, or
- Autopilot.

The BSCU transforms these orders into nose wheel steering angle. That angle has the following limits, which depend on ground speed and the origin of the orders.



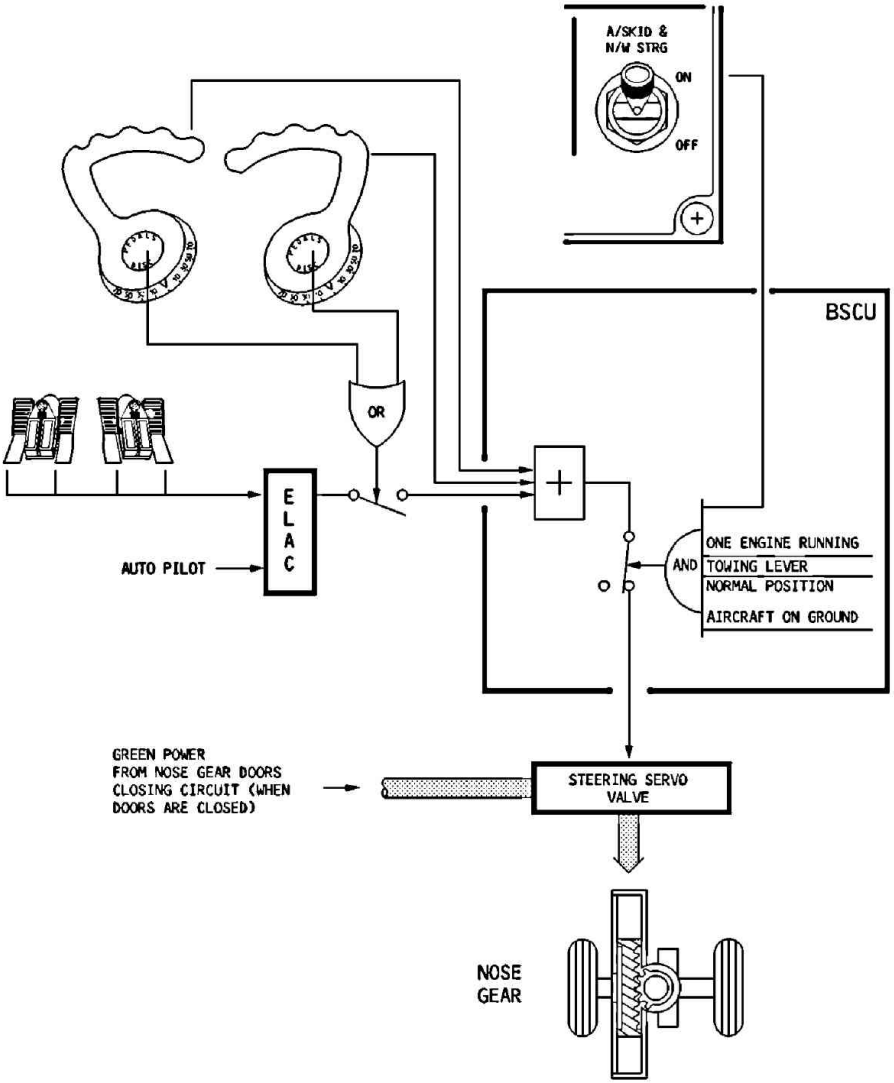
The steering system receives actuating hydraulic pressure when:
- A/SKID & N/W STRG switch is ON
- Towing control lever is in normal position
- At least one engine is running
- Aircraft is on ground.

The nose landing gear doors must be closed in order for the green hydraulic system to apply pressure to the actuating cylinder.
The handwheel can turn the nose wheel up to 75 ° in either direction. A lever on the towing electrical box (on nose landing gear) allows ground crew to deactivate the steering system for towing. This then allows the wheel to be turned 95 ° in either direction.
The pilots can use a pushbutton on either steering handwheel to prevent rudder pedal orders or autopilot orders from going to the BSCU.
An internal cam mechanism returns the nose wheel to the centered position after takeoff.

ARCHITECTURE

Ident.: DSC-32-20-10-00001298.0001001 / 21 MAR 16

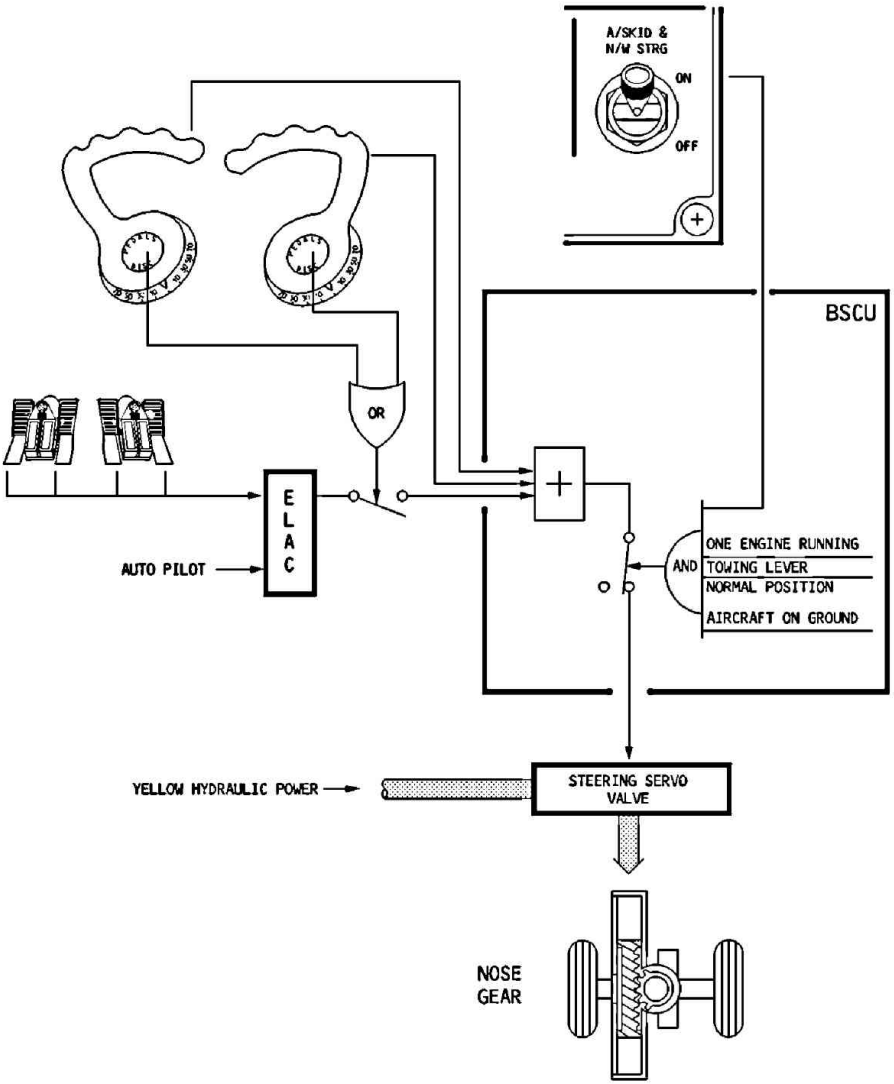
Applicable to: MSN 01767-02405, 02482



ARCHITECTURE

Ident.: DSC-32-20-10-00001298.0002001 / 21 MAR 16

2 Applicable to: MSN 02443-02457, 02584-09063



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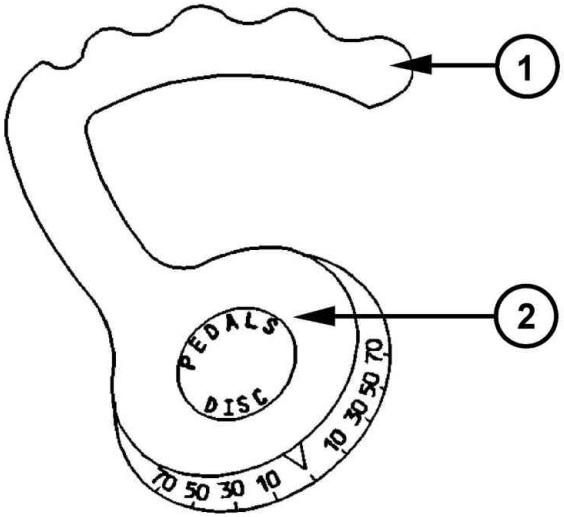
SIDE CONSOLES

Ident.: DSC-32-20-20-00018620.0001001 / 21 MAR 16
Applicable to: ALL



(1) Steering handwheels
The steering handwheels, which are interconnected, can steer the nose wheel up to 75 ° in either direction.

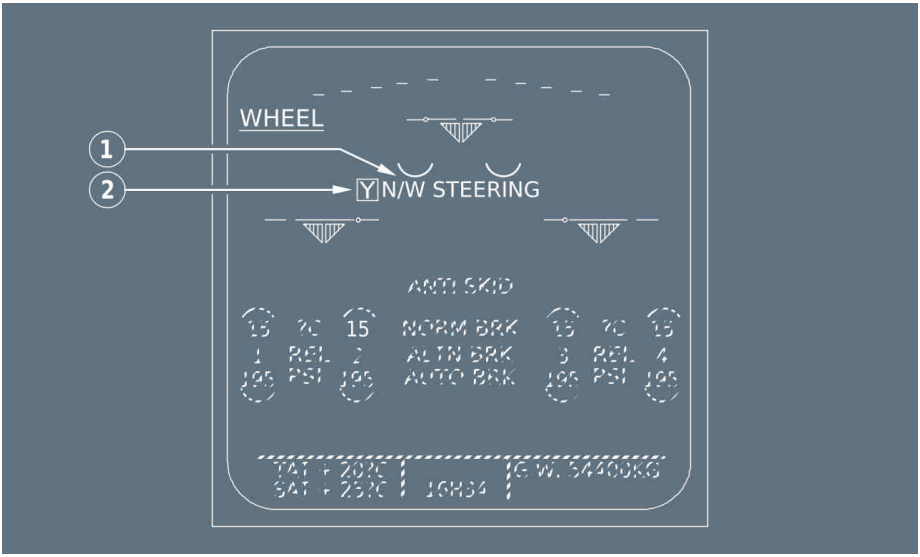
Note: *The steering system centers the nose wheel automatically after liftoff.*

(2) Rudder PEDALS DISC pb
Pressing this button on either handwheel removes control of nose wheel steering from the rudder pedals until the button is released.

WHEEL SD PAGE

Ident.: DSC-32-20-20-00018622.0004001 / 21 MAR 16

1 **Applicable to: MSN 02443-02457, 02584-09063**



(1) N/W STEERING indication

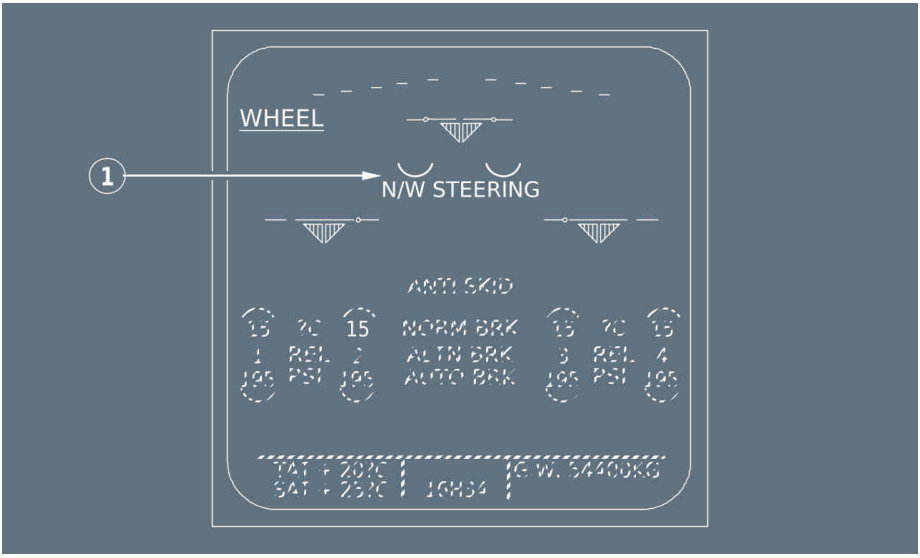
It appears in amber, when nosewheel steering is lost, due to failure of the nosewheel steering system, or of both BSCU channels, or in case of a yellow hydraulic system low pressure, or if the A/SKID & N/W STRG switch is OFF.

(2) N/W STEERING hydraulic supply indication:

Only when the N/W STEERING indication is displayed, Y is displayed:
- In green when the yellow hydraulic system is not failed, or
- In amber when the yellow hydraulic system low pressure.

WHEEL SD PAGE

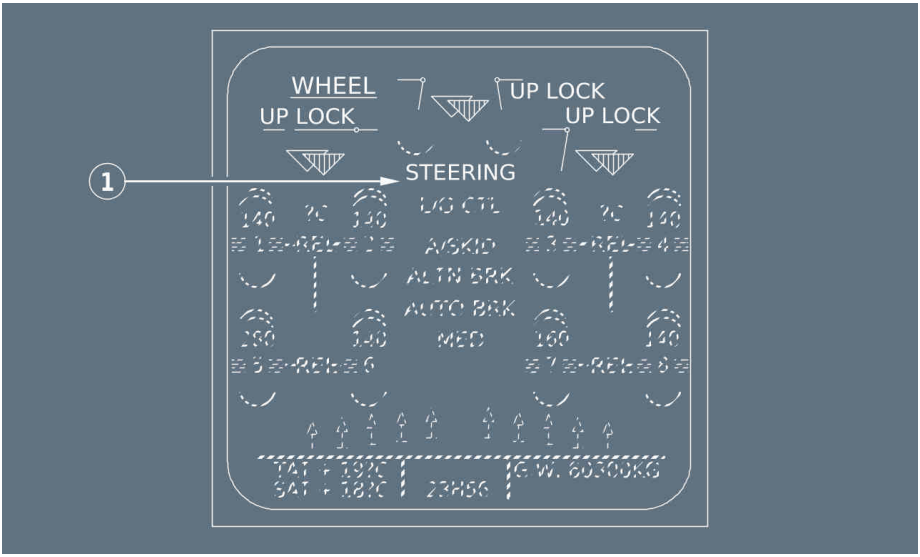
Ident.: DSC-32-20-20-00018622.0002001 / 21 MAR 16
Applicable to: MSN 01957-02097, 02121-02139, 02388



(1) N/W STEERING indication
It appears in amber, when nosewheel steering is lost, due to failure of the nosewheel steering system, or of both BSCU channels, or when the A/SKID & N/W STRG switch is OFF.

WHEEL SD PAGE

Ident.: DSC-32-20-20-00018622.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) STEERING indication
It appears along with an ECAM caution if either the nose wheel steering or the anti-skid feature fails.

MEMO DISPLAY

Ident.: DSC-32-20-20-00016853.0001001 / 10 AUG 15
Applicable to: ALL

NW STRG DISC : This memo appears in green, when the nose wheel steering selector is in the towing position.

NW STRG DISC : This memo appears in amber, if one engine is running.

GENERAL

Ident.: DSC-32-30-10-00018623.0002001 / 21 MAR 16

[1] **Applicable to: MSN 02443-02457, 02584-09063**

The main wheels are equipped with carbon multidisc brakes, which can be actuated by either of two independent brake systems.
The normal system uses green hydraulic pressure, whereas the alternate system uses the yellow hydraulic system backed up by the hydraulic accumulator.
An anti-skid and autobrake system is also provided.
Braking commands come from either the brake pedals (pilot action), or the autobrake system (deceleration rate selected by the crew).
In normal operation, a dual channel Brake and Steering Control Unit (BSCU) controls normal braking and antiskid.

Depending on the failure, braking may revert to:
- Alternate braking with antiskid. This braking mode is controlled by the Alternate Braking Control Unit (ABCU), and the antiskid is controlled by the BSCU
- Alternate braking without antiskid. This braking mode is fully-controlled by the ABCU
- Alternate braking without antiskid on accumulator. This braking mode is fully-controlled by the ABCU.

All the normal and alternate braking components are fully-monitored. Any detected failure is signaled to the crew via ECAM warnings.

The BSCU performs the following secondary functions:
- Checks the residual pressure in the brakes
- Monitors the brake temperature
- Provides discrete wheel speed information to other aircraft systems.

A changeover between the two BSCU channels takes place at each DOWN landing gear lever selection, or in case one channel fails.
The main gear wheels are fitted with fusible plugs which protect against tire burst, in the event of overheat.
Main gear wheels are also equipped with brake cooling fans ⋘ , which permit a high speed cooling of brakes.

GENERAL

Ident.: DSC-32-30-10-00018623.0001001 / 21 MAR 16

Applicable to: MSN 01767-02405, 02482

The main wheels are equipped with carbon multidisc brakes, which can be actuated by either of two independent brake systems.

The normal system uses green hydraulic pressure, whereas the alternate system uses the yellow hydraulic system backed up by the hydraulic accumulator.
An anti-skid and autobrake system is also provided.
Braking commands come from either the brake pedals (pilot action), or the autobrake system (deceleration rate selected by the crew).
Two units on each main gear monitor the temperature of the brakes.
All braking functions (normal and alternate braking control, anti-skid control, autobraking, brake temperature indication) are controlled by a two-channel Brake and Steering Control Unit (BSCU).
The main gear wheels are fitted with fusible plugs which protect against tire burst, in the event of overheat.
Main gear wheels are also equipped with brake cooling fans ◁ , which permit a high speed cooling of brakes.

ANTI-SKID SYSTEM

Ident.: DSC-32-30-10-00018624.0001001 / 21 MAR 16
Applicable to: ALL

The antiskid system provides maximum braking efficiency by maintaining the wheels at the limit of an impending skid.
At skid onset, brake release orders are sent to the normal and alternate servovalves, as well as to the ECAM system which displays the released brakes.
Without using autobrake, full braking performance is achieved only with brake pedals at full deflection.
The antiskid system is deactivated below 20 kt (ground speed).
An ON/OFF switch activates, or deactivates, the antiskid and nosewheel steering systems.

PRINCIPLE

The speed of each main gear wheel (given by a tachometer) is compared to the aircraft speed (reference speed). When the speed of a wheel decreases below approximately 0.87 times (depending on conditions) reference speed, brake release orders are given to maintain the wheel slip at that value (best braking efficiency).
In normal operation, the reference speed is determined by the BSCU from the horizontal acceleration of ADIRU 1, or ADIRU 2, or ADIRU 3.
In case all ADIRUs fail, reference speed equals the maximum of either main landing gear wheel speeds.

AUTO BRAKE

Ident.: DSC-32-30-10-A-00018625.0001001 / 21 MAR 16
Applicable to: ALL

GENERAL

The purposes of the autobrake system are the following:
- Reduce the braking distance in case of an aborted takeoff
- Establish and maintain a selected deceleration rate during landing, thereby improving passenger comfort and reducing crew workload.

Ident.: DSC-32-30-10-A-00018626.0003001 / 09 NOV 17
[2] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

SYSTEM ARMING

The crew may arm the system by pressing the LO, MED, or MAX pushbutton provided all the following arming conditions are met:
- Green pressure available
- Anti-skid electrically-powered
- No failure in the braking system
- At least one ADIRU is available.

Note: *1. Auto brake may be armed with the parking brake on.*
2. MAX autobrake mode cannot be armed in flight.

The armed AUTO BRK mode is displayed in blue on the Flight Mode Annunciator (FMA).

Ident.: DSC-32-30-10-A-00018626.0002001 / 21 MAR 16
[3] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

SYSTEM ARMING

The crew may arm the system by pressing the LO, MED, or MAX pushbutton provided all the following arming conditions are met :
- Green pressure available
- Anti-skid electrically-powered
- No failure in the braking system
- At least one ADIRU is available.

Note: *1. Auto brake may be armed with the parking brake on.*
2. MAX autobrake mode cannot be armed in flight.

Ident.: DSC-32-30-10-A-00018627.0003001 / 09 NOV 17

4 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

SYSTEM ACTIVATION

Automatic braking is activated when:

- The command for ground spoilers extension is detected (*Refer to DSC-27-10-20 Speed Brakes and Ground Spoilers - Speed Brake Control*), for LO and MED mode, or
- The command for ground spoilers extension is detected, and the wheel speed is above 40 kt, for MAX mode.

Therefore, if the aircraft makes an acceleration stop and begins to decelerate when the wheel speed is under 72 kt, the automatic braking will not activate because the ground spoilers will not extend.

For autobrake to activate, at least two SEC's must be operative.

The active AUTO BRK mode is displayed in green on the Flight Mode Annunciator (FMA).

Ident.: DSC-32-30-10-A-00018627.0002001 / 17 OCT 17

5 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

SYSTEM ACTIVATION

Automatic braking is activated when:

- The command for ground spoilers extension is detected (*Refer to DSC-27-10-20 Speed Brakes and Ground Spoilers - Speed Brake Control*), for LO and MED mode, or
- The command for ground spoilers extension is detected, and the wheel speed is above 40 kt, for MAX mode.

Therefore, if the aircraft makes an acceleration stop and begins to decelerate when the wheel speed is under 72 kt, the automatic braking will not activate because the ground spoilers will not extend.

For autobrake to activate, at least two SEC's must be operative.

Ident.: DSC-32-30-10-A-00018628.0001001 / 21 MAR 16

Applicable to: ALL

SYSTEM DEACTIVATION

The system deactivates when:

- The system disarmed (*Refer to DSC-32-30-10 Auto Brake - System Disarming*), or
- The ground spoilers retract. In this case it remains armed.

Ident.: DSC-32-30-10-A-00018629.0002001 / 09 NOV 17
Applicable to: ALL

SYSTEM DISARMING

The system disarms when:
- Flight crew presses the pushbutton switch, or
- One or more arming conditions is lost, or
- After take-off/touch and go, or
- Flight crew applies enough deflection to at least one brake pedal when autobrake is active in MAX, MED or LO mode.

BRAKING MODES

Ident.: DSC-32-30-10-B-00018630.0001001 / 21 MAR 16
Applicable to: ALL

GENERAL

There are four modes of operation:
- Normal braking
- Alternate braking with antiskid
- Alternate braking without antiskid
- Parking brake.

Ident.: DSC-32-30-10-B-00018631.0001001 / 21 MAR 16
Applicable to: ALL

NORMAL BRAKING

Normal braking is operative when:
- Green hydraulic pressure is available
- A/SKID & N/W STRG switch is ON.

During normal braking, antiskid is operative and autobrake is available.

Braking is electrically-controlled through the BSCU from:
- Pilot's pedals, or
- Automatically activates when:
  - On ground by the autobrake system, or
  - In flight when the landing gear lever is up.

The antiskid system is controlled by the BSCU via the normal servo valves.
There is no brake pressure indication in the cockpit.

Ident.: DSC-32-30-10-B-00018632.0002001 / 17 MAR 17

6 **Applicable to: MSN 02443-02457, 02584-09063**

ALTERNATE BRAKING WITH ANTI-SKID

Autobrake is inoperative.

Braking uses this mode when green hydraulic pressure is insufficient, and :
- Yellow hydraulic pressure is available
- A/SKID & N/W STRG switch is ON
- Parking brake is not ON.

Braking inputs are made by the brake pedals and sent to the ABCU. Then, taking into account the brake pedal input, the ABCU:
- Energizes the alternate brake selector valve to pressurize the yellow hydraulic circuit
- Electrically controls the Alternate Servo Valve to obtain the correct pressure for the related brakes.

Antiskid is controlled by the BSCU.
A triple indicator on the center instrument panel indicates the pressure delivered to the left and right brakes, as well as the accumulator pressure.

Note: *Initial pedal force or displacement produces more braking action in alternate mode than in normal mode.*

Ident.: DSC-32-30-10-B-00018632.0001001 / 17 MAR 17

Applicable to: MSN 01767-02405, 02482

ALTERNATE BRAKING WITH ANTI-SKID

Autobrake is inoperative.

Braking uses this mode when green hydraulic pressure is insufficient, and :
- Yellow hydraulic pressure is available
- A/SKID & N/W STRG switch is ON
- Parking brake is not ON.

An automatic hydraulic selector changes from the green to the yellow system.
The pedals brake through the auxiliary low-pressure hydraulic distribution line acting on the dual valves. The BSCU controls the anti-skid system via the alternate servo valves.
A triple indicator on the center instrument panel indicates the pressure delivered to the left and right brakes, as well as the accumulator pressure.

Note: *Initial pedal force or displacement produces more braking action in alternate mode than in normal mode.*

Ident.: DSC-32-30-10-B-00018633.0002001 / 17 MAR 17

7 **Applicable to: MSN 02443-02457, 02584-09063**

ALTERNATE BRAKING WITHOUT ANTI-SKID

Autobrake and antiskid are inoperative.

The antiskid system is either deactivated:
- Electrically (A/SKID & N/W STRG sw OFF, or power supply failure, or BSCU failure), or
- Hydraulically (Y + G system low pressure, the brakes are supplied by the brake accumulator only).

Depending on the brake pedals' demand, the ABCU controls the alternate brake selector and the alternate servovalves.
Brake pressure and accumulator pressure are indicated on a triple indicator, located on the center instrument panel. To avoid wheel locking and limit the risk of tire burst, brake pressure is automatically limited to 1 000 PSI.
The accumulator can supply at least 7 full brake applications.

Note: *Initial pedal force or displacement produces more braking action in alternate mode than in normal mode.*

Ident.: DSC-32-30-10-B-00018633.0001001 / 28 SEP 17

Applicable to: MSN 01767-02405, 02482

ALTERNATE BRAKING WITHOUT ANTI-SKID

Autobrake is inoperative.

The anti-skid system can be deactivated:
- Electrically (A/SKID & N/W STRG sw OFF, or power failure or BSCU failure), or
- Hydraulically (low pressure in both green and yellow systems, brakes being supplied by the brake accumulator only).

The pilot controls the braking with the pedals (acting on the dual valves).
Alternate servo valves are fully open.
Brake pressure and accumulator pressure are indicated on a triple indicator, located on the center instrument panel. The pilot must modulate brake pressure at, or below, 1 000 PSI in order to avoid wheel locking.
The accumulator can supply at least 7 full brake applications.

Note: *Initial pedal force or displacement produces more braking action in alternate mode than in normal mode.*

Ident.: DSC-32-30-10-B-00018634.0002001 / 21 MAR 16

8 **Applicable to: MSN 02443-02457, 02584-09063**

PARKING BRAKE

Brakes are supplied by the yellow hydraulic system, or by accumulator pressure via the parking brake control valve, which opens allowing full pressure application on the main gear wheel brakes.
The accumulator maintains the parking pressure for at least 12 h.
If the parking brake is activated and no yellow hydraulic or accumulator brake pressure is available, then the normal braking system can be applied via the brake pedals.
Yellow accumulators can be pressurized by pressing the yellow electrical pump switch.
A triple indicator on the center instrument panel indicates the pressure delivered to the left and right brakes, as well as the accumulator pressure.

Ident.: DSC-32-30-10-B-00018634.0001001 / 21 MAR 16

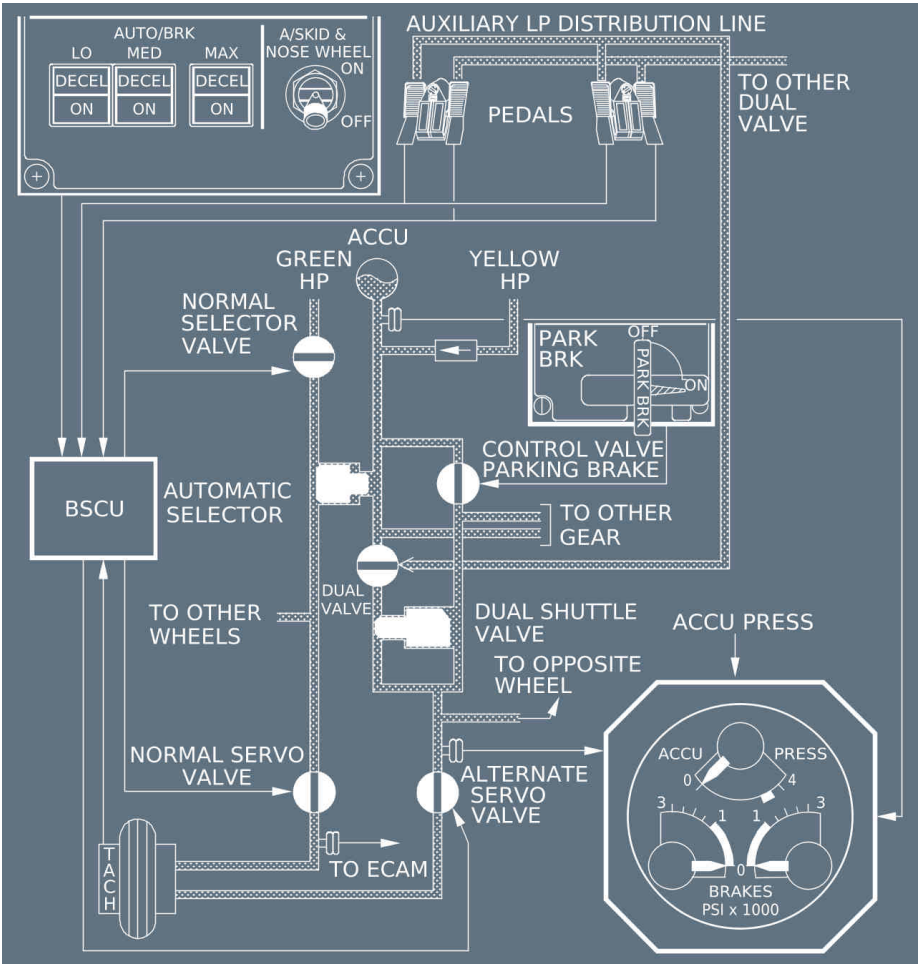
Applicable to: MSN 01767-02405, 02482

PARKING BRAKE

Brakes are supplied by the yellow hydraulic system, or by accumulator via the dual shuttle valves.
Alternate servo valves open allowing full pressure application.
The accumulator maintains the parking pressure for at least 12 h.
If the parking brake is activated and no yellow hydraulic or accumulator brake pressure is available, then the normal braking system can be applied via the brake pedals.
Yellow accumulators can be pressurized by pressing the yellow electrical pump switch.
A triple indicator on the center instrument panel indicates the pressure delivered to the left and right brakes, as well as the accumulator pressure.

BRAKING SCHEMATIC

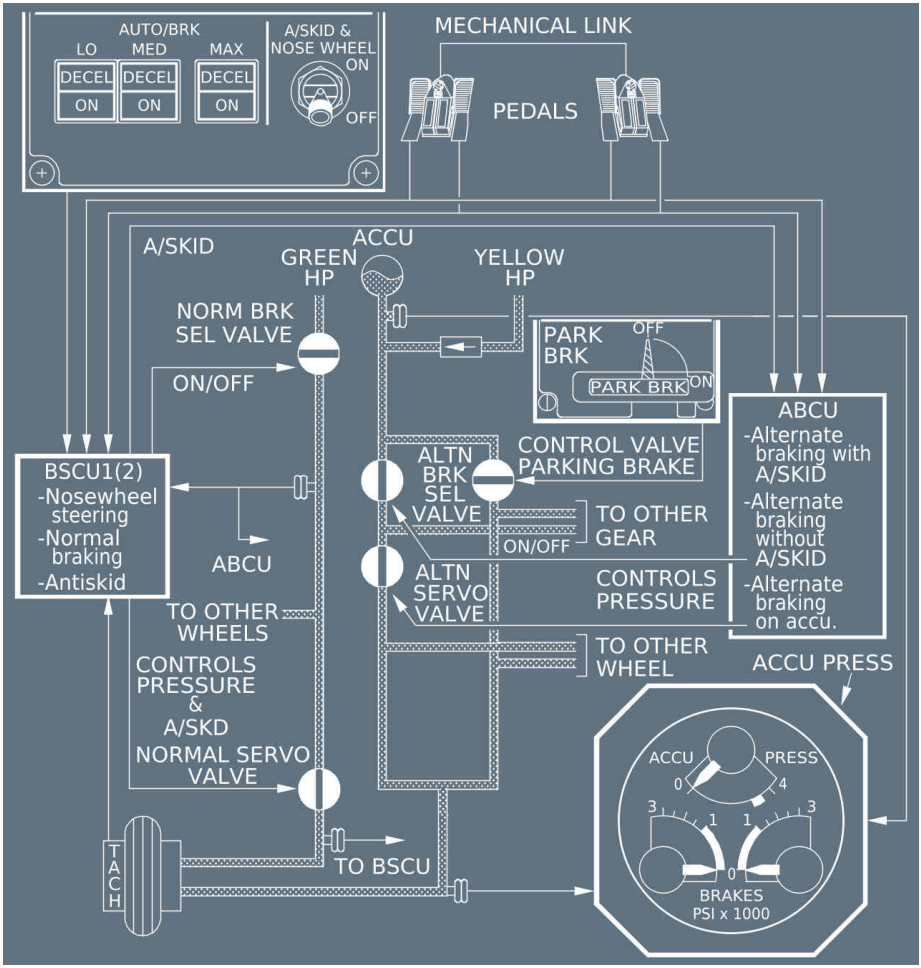
Ident.: DSC-32-30-10-00001316.0004001 / 09 OCT 12
Applicable to: MSN 01767-02405, 02482



BRAKING SCHEMATIC

Ident.: DSC-32-30-10-00001316.0003001 / 09 OCT 12

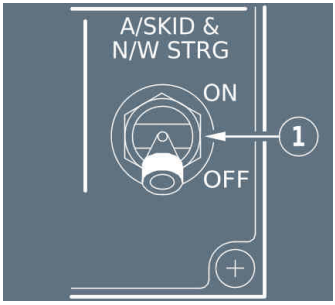
[9] **Applicable to: MSN 02443-02457, 02584-09063**



CENTER INSTRUMENT PANEL

Ident.: DSC-32-30-20-00018635.0002001 / 21 MAR 16

[1] **Applicable to: MSN 02443-02457, 02584-09063**



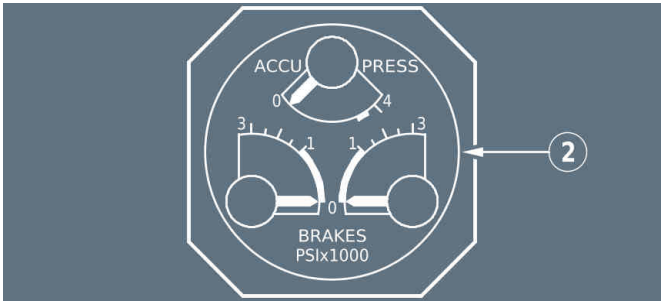
(1) A/SKID & N/W STRG sw

ON : If green hydraulic pressure is available, then antiskid is available.

If green hydraulic pressure is lost, then:
- Yellow hydraulic pressure automatically takes over to supply the brakes
- Antiskid and nosewheel steering remain available
- Triple indicator shows yellow system brake pressure.

OFF : The yellow hydraulic system supplies pressure to the brakes.

- Antiskid is deactivated. The pilot must refer to the triple indicator to limit brake pressure and avoid locking a wheel
- Nosewheel steering is lost
- Differential braking remains available through the pedals
- Triple indicator displays yellow system brake pressure.



(2) BRAKES and ACCU PRESS indicator

Brake pressure is only indicated when the yellow hydraulic system controls the brake pressure, This is when the:

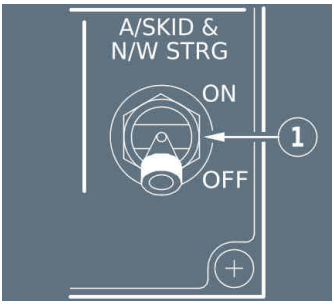
- Alternate braking system is activated, or
- Parking brake is applied.

ACCU PRESS : Indicates the pressure in the yellow brake accumulator.

BRAKES : Indicates the yellow pressure delivered to the left and right brakes, as measured upstream of the alternate servovalves.

CENTER INSTRUMENT PANEL

Ident.: DSC-32-30-20-00018635.0001001 / 21 MAR 16
Applicable to: MSN 01767-02405, 02482



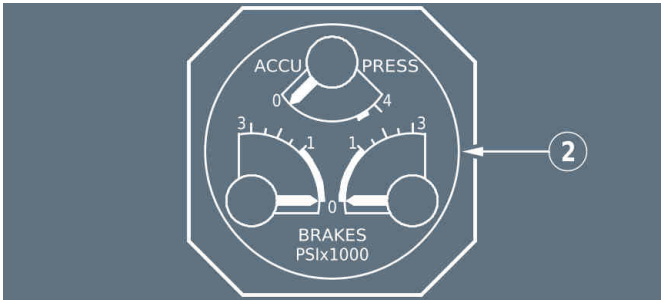
(1) A/SKID & N/W STRG sw

ON : If green hydraulic pressure is available:
- Antiskid is available
- Nosewheel steering is available.

If green hydraulic pressure is lost, then:
- Yellow hydraulic pressure automatically takes over to supply the brakes
- Antiskid remains available
- Nosewheel steering is lost
- Triple indicator displays yellow system brake pressure.

OFF : The yellow hydraulic system supplies pressure to the brakes.

- Antiskid is deactivated. The pilot must refer to the triple indicator to limit brake pressure and avoid locking a wheel
- Nosewheel steering is lost
- Differential braking remains available through the pedals
- Triple indicator displays yellow system brake pressure.



(2) BRAKES and ACCU PRESS indicator

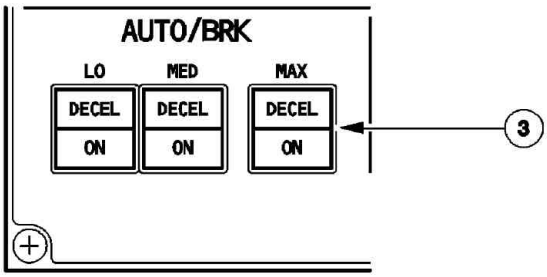
ACCU PRESS : Indicates the pressure in the yellow brake accumulator.

BRAKES : Indicates the yellow pressure delivered to the left and right brakes, as measured upstream of the alternate servovalves.

AUTO BRK PANEL

Ident.: DSC-32-30-20-00018636.0004001 / 21 MAR 16

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



(3) AUTO/BRK panel

The springloaded MAX, MED, and LO pushbutton switches arm the appropriate deceleration rate. The usage for each mode are as follow:

- MAX mode is normally selected for takeoff.
  In the case of an aborted takeoff, maximum pressure goes to the brakes, as soon as the system generates the ground spoiler deployment order
- MED or LO mode is normally selected for landing:
  - MED mode sends progressive pressure to the brakes 2 s after the ground spoilers deploy in order to decelerate the aircraft at 3 m/s² (9.8 ft/s²)
  - LO mode sends progressive pressure to the brakes 2 s after the ground spoilers deploy, in order to decelerate the aircraft at 2 m/s² (6.6 ft/s²).

The lighting on the pushbutton switches are as follow:

ON light : comes on blue to indicate positive arming

DECEL light : comes on green when the actual deceleration is 80 % of the selected rate

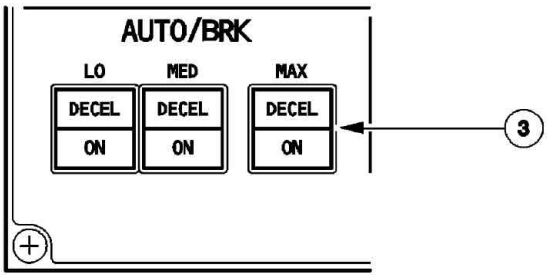
Note: On slippery runways, the predetermined deceleration may not be reached, due to antiskid operation. In this case, the DECEL light will not come on. This does not mean that autobrake is not working.

Off : The corresponding autobrake mode is not armed

AUTO BRK PANEL

Ident.: DSC-32-30-20-00018636.0002001 / 21 MAR 16

3 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



(3) AUTO/BRK panel

The springloaded MAX, MED, and LO pushbutton switches arm the appropriate deceleration rate. The usage for each mode are as follow:

- MAX mode is normally selected for takeoff.
  In the case of an aborted takeoff, maximum pressure goes to the brakes, as soon as the system generates the ground spoiler deployment order
- MED or LO mode is normally selected for landing:
  - MED mode sends progressive pressure to the brakes 2 s after the ground spoilers deploy in order to decelerate the aircraft at 3 m/s² (9.8 ft/s²)
  - LO mode sends progressive pressure to the brakes 4 s after the ground spoilers deploy, in order to decelerate the aircraft at 1.7 m/s² (5.6 ft/s²).

The lighting on the pushbutton switches are as follow:

ON light : comes on blue to indicate positive arming

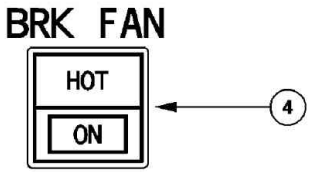
DECEL light : comes on green when the actual deceleration is 80 % of the selected rate

Note: On slippery runways, the predetermined deceleration may not be reached, due to antiskid operation. In this case, the DECEL light will not come on. This does not mean that autobrake is not working.

Off : The corresponding autobrake mode is not armed

BRAKE FAN ⋖

Ident.: DSC-32-30-20-00018637.0001001 / 21 MAR 16
Applicable to: ALL



(4) BRK FAN pb-sw ⋖

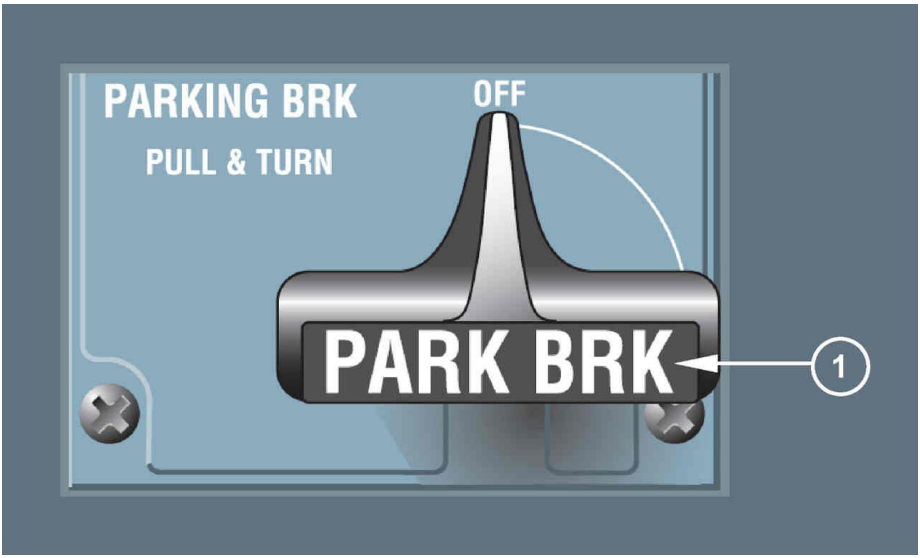
ON light : The brake fans run if the lefthand main landing gear is down and locked

Off : The brake fans stop

HOT light : This amber light comes on when the brakes get too hot (A caution appears on ECAM, also)

PEDESTAL

Ident.: DSC-32-30-20-00018638.0001001 / 21 MAR 16
Applicable to: ALL



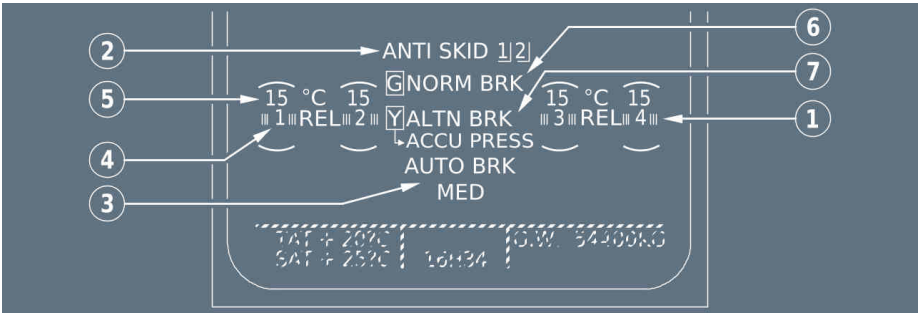
(1) PARKING BRK handle
Flight crew pulls this handle, then turns it clockwise, to apply the parking brake.
The ECAM memo page displays “PARK BRK”.

CAUTION	If the pointer is not at ON, the parking brake is not on.

WHEEL SD PAGE

Ident.: DSC-32-30-20-00018639.0008001 / 21 MAR 16

[4] **Applicable to: MSN 02443-02457, 02584-09063**



(1) Release indicators

It appears in amber in case of brake released fault.

(2) ANTI SKID indication

(A) ANTISKID label

It appears in amber, a long with an ECAM caution, in case of a total BSCU failure, or when the A/SKID & N/W STRG sw is OFF, or if the BSCU detects an ANTI-SKID failure, or in case of normal braking and yellow hydraulic system low pressure.
It appears in green in case of autobrake, normal braking, or alternate braking failure, and antiskid is still available.

(B) BSCU channel indication

When ANTISKID label is displayed, the number of the failed system(s) is (are) displayed in amber, if any.

(3) AUTO BRK

This legend appears:
- In green when auto brake is armed, or
- Flashing green for 10 s after autobrake disengagement, or
- In amber, along with an ECAM caution, to indicate a system failure.

MED, LO, or MAX appears underneath in green to show which rate has been selected.

(4) Wheel number
This white number identifies individual wheels of the main landing gear.

(5) Brake temperature

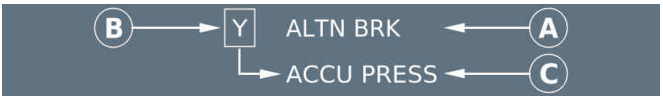
- Temperature normally appears in green.
- Green arc appears on the hottest wheel when one brake temperature exceeds 100 °C.
- Green arc becomes amber, and an ECAM caution appears, when the corresponding brake temperature exceeds 300 °C.

(6) NORM BRK indication

(A) NORM BRK label
This indication appears in green when autobrake or alternate braking is failed, and normal braking is still available.
The legend appears in amber when normal braking is failed due to total BSCU failure, or to the loss of the green hydraulic pressure, or to the loss of antiskid.

(B) NORM BRK hydraulic supply indication
G is displayed when the NORM BRK label is displayed. It is green when green hydraulic pressure is available and amber, in case of green hydraulic low pressure.

(7)



(A) ALTN BRK label
This indication appears in green, if the braking system is in alternate mode and not failed, or in case autobrake or normal braking is failed and alternate braking is still available.
This indication appears in amber when alternate braking is failed.

(B) ALTN BRK hydraulic supply indication
Y is displayed when the ALTN BRK label is displayed. It is green when yellow hydraulic pressure is available and amber, in case of yellow hydraulic low pressure.

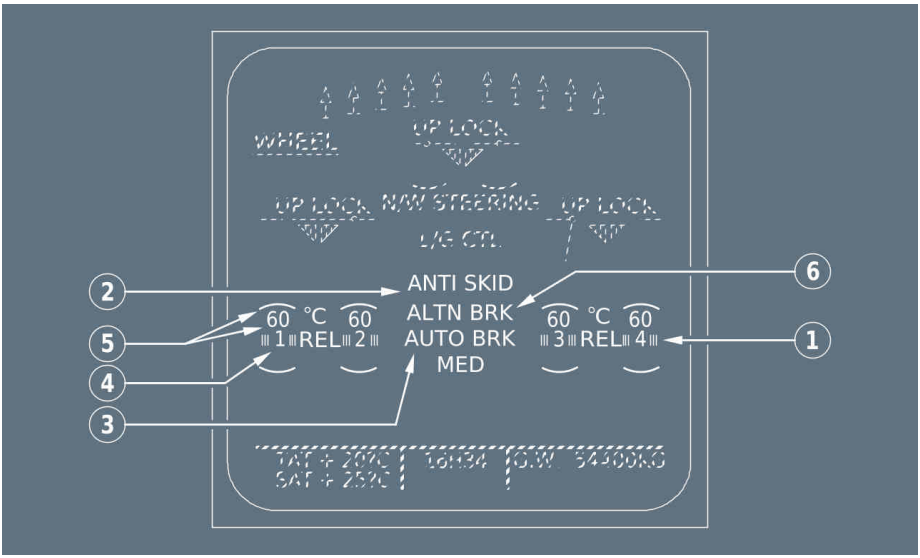
(C) ACCU indications

(*) Appears in green, when the ALTN BRK label is displayed, and the yellow hydraulic pressure is available.
Appears in amber, with no arrow, when the yellow hydraulic system and the accumulator are in low pressure.

(**) Appears in green when the alternate braking is pressurized by the yellow accumulator.

WHEEL SD PAGE

Ident.: DSC-32-30-20-00018639.0003001 / 21 MAR 16
Applicable to: MSN 01957-02097, 02121-02139, 02388



(1) Release indicators

These green lines appear temporarily after the landing gear has been lowered to indicate that the anti-skid function is ready.
They reappear after touchdown when the anti-skid is active.

(2) ANTI SKID
This legend appears in amber, along with an ECAM caution, in case of total BSCU failure, or when the A/SKID & N/W STRG sw is OFF, or if the BSCU detects an ANTI-SKID failure.

(3) AUTO BRK

This legend appears:
- In green when auto brake is armed, or
- Flashing green for 10 s after autobrake disengagement, or
- In amber, along with an ECAM caution, to indicate a system failure.

MED, LO, or MAX appears underneath in green to show which rate has been selected.

(4) Wheel number
This white number identifies individual wheels of the main landing gear.

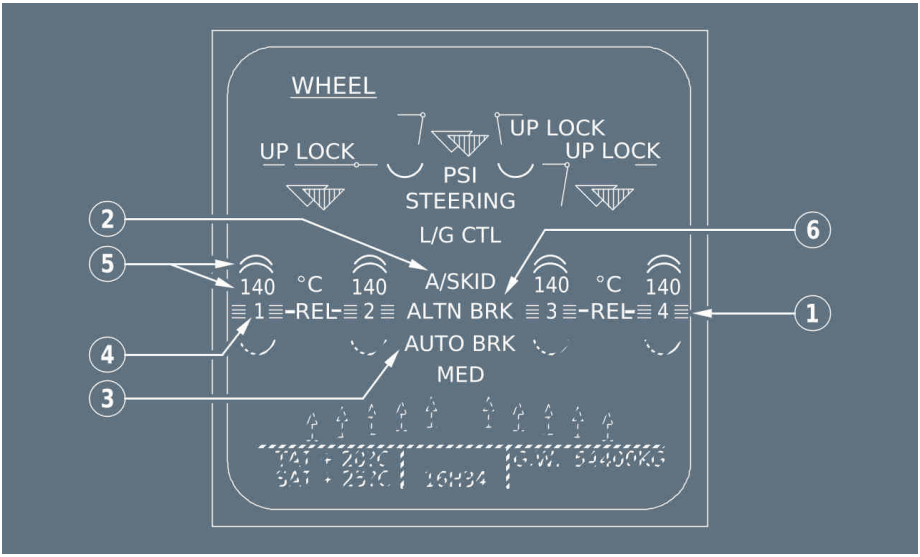
(5) Brake temperature

- Temperature normally appears in green.
- Green arc appears on the hottest wheel when one brake temperature exceeds 100 °C.
- Green arc becomes amber, and an ECAM caution appears, when the corresponding brake temperature exceeds 300 °C.

(6) ALTN BRK
This legend appears in green if the braking system is in alternate mode.

WHEEL SD PAGE

Ident.: DSC-32-30-20-00018639.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) Release indicators

These green lines appear temporarily after the landing gear has been lowered to indicate that the anti-skid function is ready.
They reappear after touchdown, along with REL (blue), when the anti-skid is active.

(2) A/SKID

This legend appears in amber, along with an ECAM caution, in case of total BSCU failure, or when the A/SKID & N/W STRG sw is OFF, or if the BSCU detects an ANTI-SKID failure.

(3) AUTO BRK

This legend appears:
- In green when auto brake is armed, or
- Flashing green for 10 s after autobrake disengagement, or
- In amber, along with an ECAM caution, to indicate a system failure.

MED, LO, or MAX appears underneath in green to show which rate has been selected.

(4) Wheel number

This white number identifies individual wheels of the main landing gear.

(5) Brake temperature

- Temperature normally appears in green.
- Green arc appears on the hottest wheel when one brake temperature exceeds 100 °C.
- Green arc becomes amber, and an ECAM caution appears, when the corresponding brake temperature exceeds 300 °C.

(6) ALTN BRK
This legend appears in green if the braking system is in alternate mode.

MEMO DISPLAY

Applicable to: ALL

Ident.: DSC-32-30-20-A-00016854.0001001 / 22 MAR 16

AUTO BRK LO/MED/MAX : This memo appears in green, depending on the selection of the AUTO BRK pb.

Ident.: DSC-32-30-20-A-00016855.0001001 / 22 MAR 16

AUTO BRK OFF : This memo appears in green if the auto brake is failed.

Ident.: DSC-32-30-20-A-00016856.0001001 / 22 MAR 16

BRK FAN : This memo appears in green if the BRK FAN pb is ON.

Ident.: DSC-32-30-20-A-00016857.0001001 / 22 MAR 16

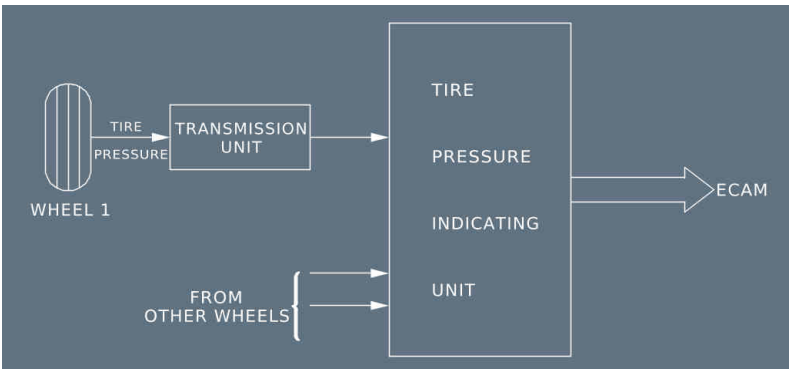
PARK BRK : This memo appears in green, if the parking brake is ON, during flight phases 1, 2, 9 and 10.

DESCRIPTION

Ident.: DSC-32-40-10-00018640.0002001 / 21 MAR 16
Applicable to: MSN 04314, 04393-04397

The tire pressure indicating system includes :

- One sensor that measures the pressure of each tire
- One transmission unit that transmits the electrical pressure signal from the sensor to the computer
- One tire pressure indicating unit computer that sends information to the ECAM for alerts and the system page display.



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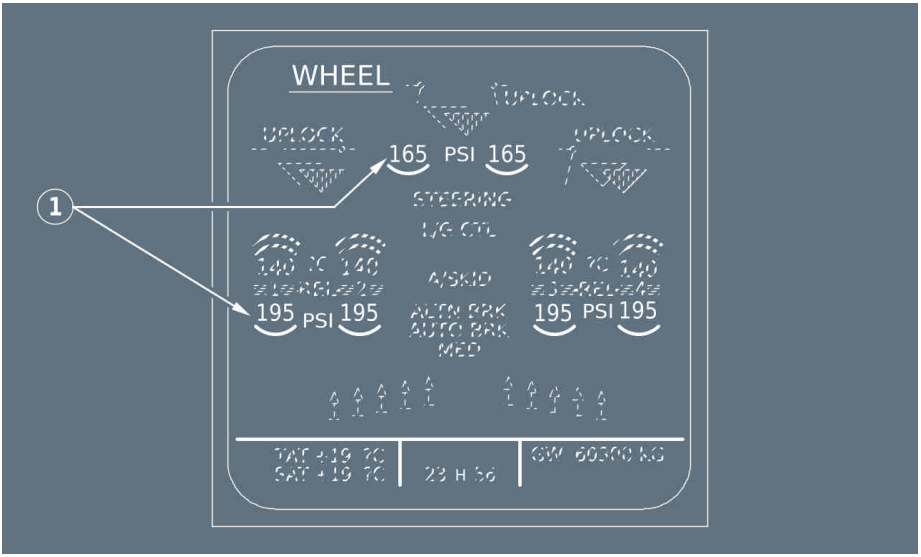
WHEEL SD PAGE

Ident.: DSC-32-40-20-00018641.0003001 / 21 MAR 16
Applicable to: MSN 04314, 04393-04397



(1) Tire press indication
The normal indication is green.
The indication becomes amber associated with an ECAM caution when tire low pressure is detected.

Note: *The prescribed tire pressure depends on the tire type and the aircraft weight.*

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AIRCRAFT SYSTEMS

LIGHTS

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DSC-33-10 Cockpit Lighting

DSC-33-10-10 General

General....A

DSC-33-10-20 Description

Description....A
Schematic....B

DSC-33-10-30 Controls and Indicators

Overhead Panel....A
Maintenance Panel....B
Lateral Window....C
Pedestal....D
Glareshield....E
Main Inst Panel....F

DSC-33-20 Exterior Lighting

DSC-33-20-10 General

General....A

DSC-33-20-20 Controls and Indicators

Schematic....A
Overhead Panel....B
Memo Display....C

DSC-33-30 Emergency Lighting

DSC-33-30-10 Description

General....A
Proximity Emergency Escape Path Marking System/Exit Signs....B

DSC-33-30-20 Controls and Indicators

Controls and Indicators....A

DSC-33-40 Signs

DSC-33-40-10 Controls and Indicators

Overhead Panel....A
Memo Display....B

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Localization Title	Toc Index	ID	Reason
DSC-33-20-20 Overhead Panel	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-33-30-10 Proximity Emergency Escape Path Marking System/Exit Signs	B	1	Effectivity update: The information now also applies to MSN 09063.
DSC-33-30-10 Proximity Emergency Escape Path Marking System/Exit Signs	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-33-30-20 Controls and Indicators	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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GENERAL

Ident.: DSC-33-10-10-00017615.0001001 / 21 MAR 16
Applicable to: ALL

The instrument panel has both integral instrument lighting and flood lighting.
The brightness of all panel lighting is adjustable.
Spot lights and flood lights provide lighting for all work surfaces and the side consoles.
Two dimmable dome lights provide lighting for the overall cockpit. When the batteries are supplying electrical power, only the right-hand dome light is on line.

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DESCRIPTION

Ident.: DSC-33-10-20-00017616.0001001 / 11 SEP 18
Applicable to: ALL

INTEGRATED LIGHTING FOR INSTRUMENTS AND PANELS

All instruments and panels in the cockpit (other than display units) have integral lighting.
The flight crew can adjust the brightness of all integral lighting.

ANNUNCIATOR LIGHTS

The ANN LT sw on the overhead panel controls the brightness of all the annunciator lights in the cockpit.
The ANN LT sw sets the brightness of all annunciator lights at the same level.
The flight crew can test the annunciator lights with the following procedure: Set the ANN LT sw to the TEST position, and check to see that all the annunciator lights come on.

DOME LIGHTS

Two dome lights provide the cockpit with shadow-free lighting.

MAP HOLDER LIGHTING

Each flight crewmember has a map holder that can be lighted.

CONSOLE AND BRIEFCASE LIGHTING

Each flight crewmember has lighting for briefcase stowage, the side console, and the floor.

CENTER INSTRUMENT PANEL

Lights under the glareshield provide lighting for the center instrument panel.

STANDBY COMPASS

The standby compass has integral lighting.

READING LIGHTS

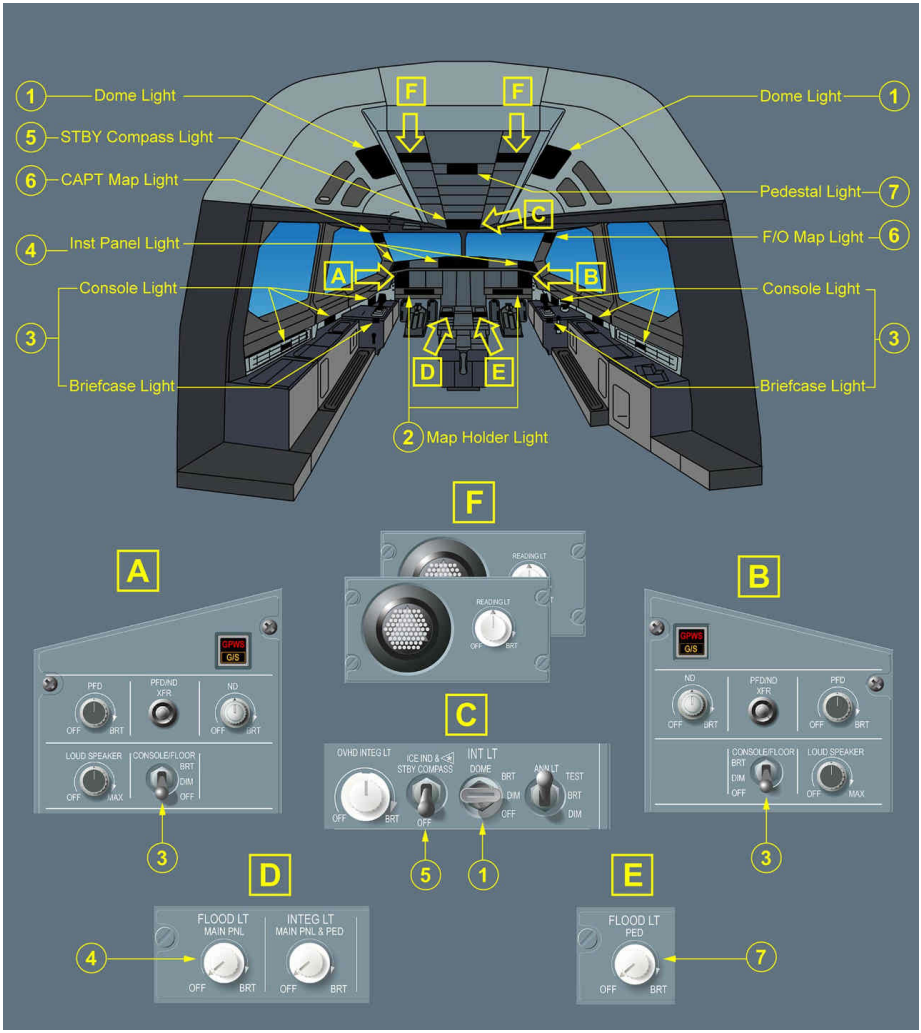
Each flight crewmember has a reading light.

PEDESTAL LIGHTING

A flood light in the middle of the overhead panel provides lighting for the center pedestal.

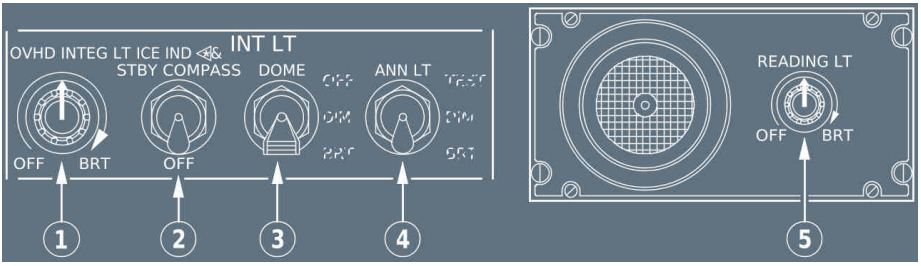
SCHEMATIC

Ident.: DSC-33-10-20-00001336.0002001 / 11 SEP 18
Applicable to: ALL



OVERHEAD PANEL

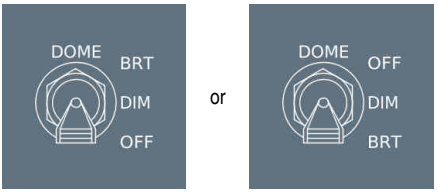
Ident.: DSC-33-10-30-00017617.0001001 / 21 MAR 16
Applicable to: ALL



(1) OVHD INTEG LT knob
This knob turns the overhead panel's integral lighting on and off, and adjusts its brightness.

(2) ICE IND & STBY COMPASS sw
This switch turns the standby compass light and the external ice detector light on and off.

(3) DOME sw
The DOME sw controls both dome lights.
The DOME sw can have one of the two following configurations:



BRT : Both dome lights are on and bright.
DIM : Both dome lights are on and dim.
OFF : Both dome lights are off.

(4) ANN LT sw
The ANN LT sw controls all the flight deck annunciator lights.
The ANN LT sw can have one of the two following configurations:

TEST : All flight deck annunciator lights turn On.
The figure '8' is displayed on all Liquid Crystal Display (LCD) of the FCU.

DIM : Reduces the brightness of all flight deck annunciator lights.

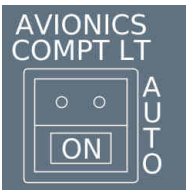
BRT : All flight deck annunciator lights operate normally.

Note: When the ANN LT sw is set to TEST, do not reconfigure the DU (ECAM/ND transfer) or the DMC (DMC switching).

(5) READING LT knob
The reading light on each side of the overhead panel has its own control knob that turns it on and off and adjusts its brightness.

MAINTENANCE PANEL

Ident.: DSC-33-10-30-00001338.0001001 / 22 MAY 12
Applicable to: ALL



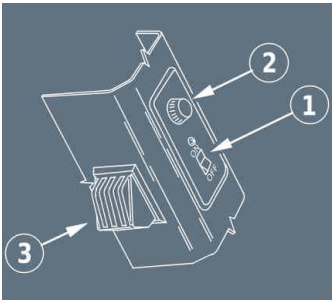
(1) AVIONICS COMPT LT pushbutton switch

AUTO : avionic compartment lighting is automatically controlled by door opening.

ON : avionic compartment lighting is on.

LATERAL WINDOW

Ident.: DSC-33-10-30-00001339.0002001 / 05 FEB 14
Applicable to: ALL



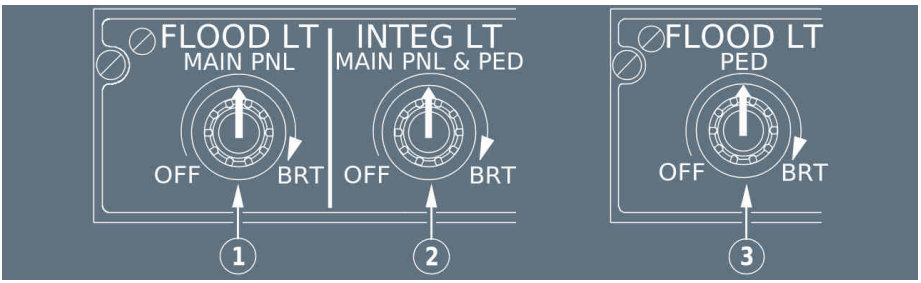
(1) Map light sw (Captain and F/O)

(2) Brightness adjustment knob

(3) Light

PEDESTAL

Ident.: DSC-33-10-30-00017619.0001001 / 21 MAR 16
Applicable to: ALL



(1) FLOOD LT MAIN PNL knob
Turns on or off, and adjusts the brightness of the main instrument panel.

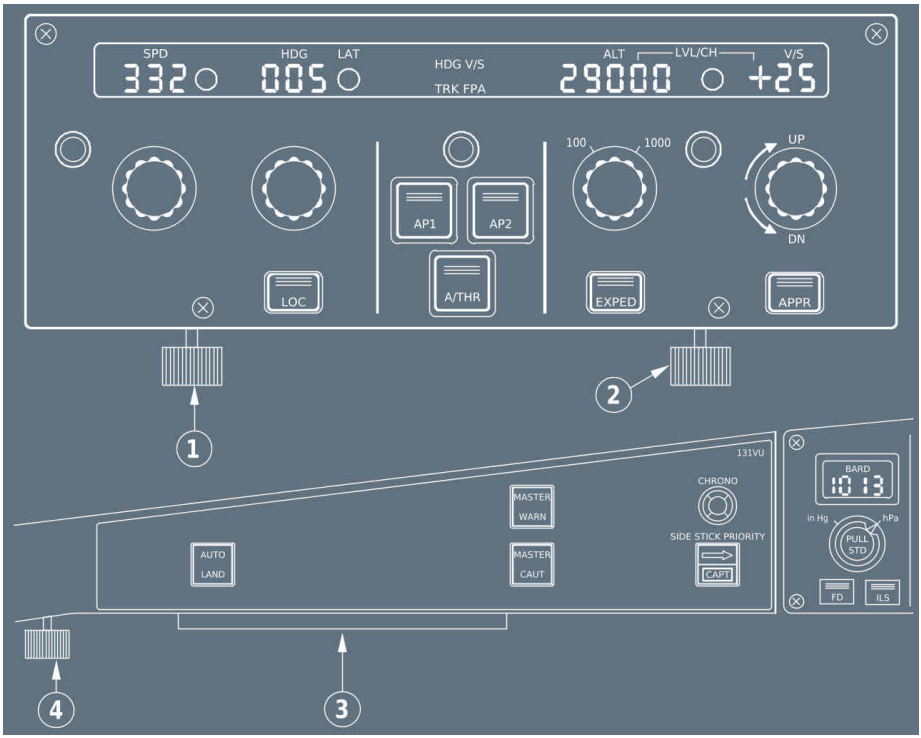
(2) INTEG LT MAIN PNL & PED knob
Turns on or off, and adjusts the brightness of the integral lights of:

- The main instrument panel
- The center pedestal.

(3) FLOOD LT PED knob
Turns on or off, and adjusts the brightness of the pedestal lights.

GLARESHIELD

Ident.: DSC-33-10-30-00001341.0002001 / 21 JAN 14
Applicable to: ALL



(1) This knob adjusts the brightness of the integral lighting on the glareshield.

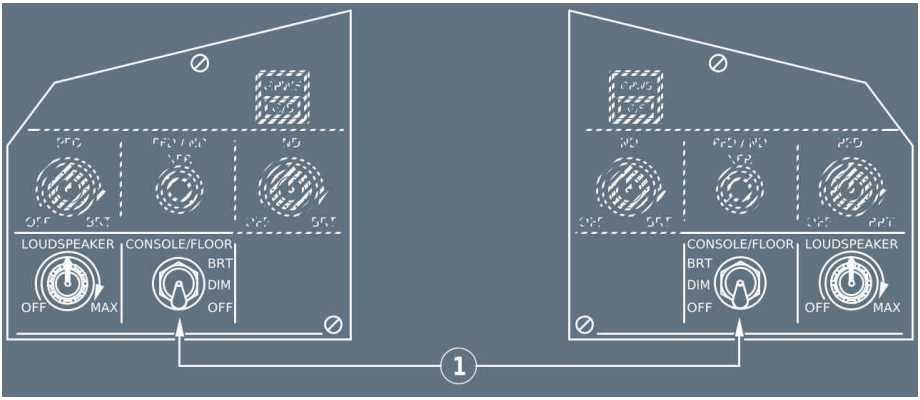
(2) This knob adjusts the brightness of the FCU displays.

(3) This lighting ◁ illuminates the sliding table and map holder.

(4) This knob ◁ adjusts the brightness of the sliding table and map holder lighting.

MAIN INST PANEL

Ident.: DSC-33-10-30-00017620.0001001 / 21 MAR 16
Applicable to: ALL



(1) CONSOLE/FLOOR sw
Each switch controls the lights of the side console and of the briefcase on each side of the cockpit. In addition, each switch controls the lighting of the floor around each flight crew member's seat. The lights can either be bright, dim, or off.

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GENERAL

Ident.: DSC-33-20-10-00017621.0001001 / 21 MAR 16
Applicable to: ALL

Exterior lighting includes the following lights:

- The navigation lights
- The landing lights
- The runway turn off lights
- The TO and TAXI lights
- The logo lights
- The anticollision lights
- The wing and engine scan lights.

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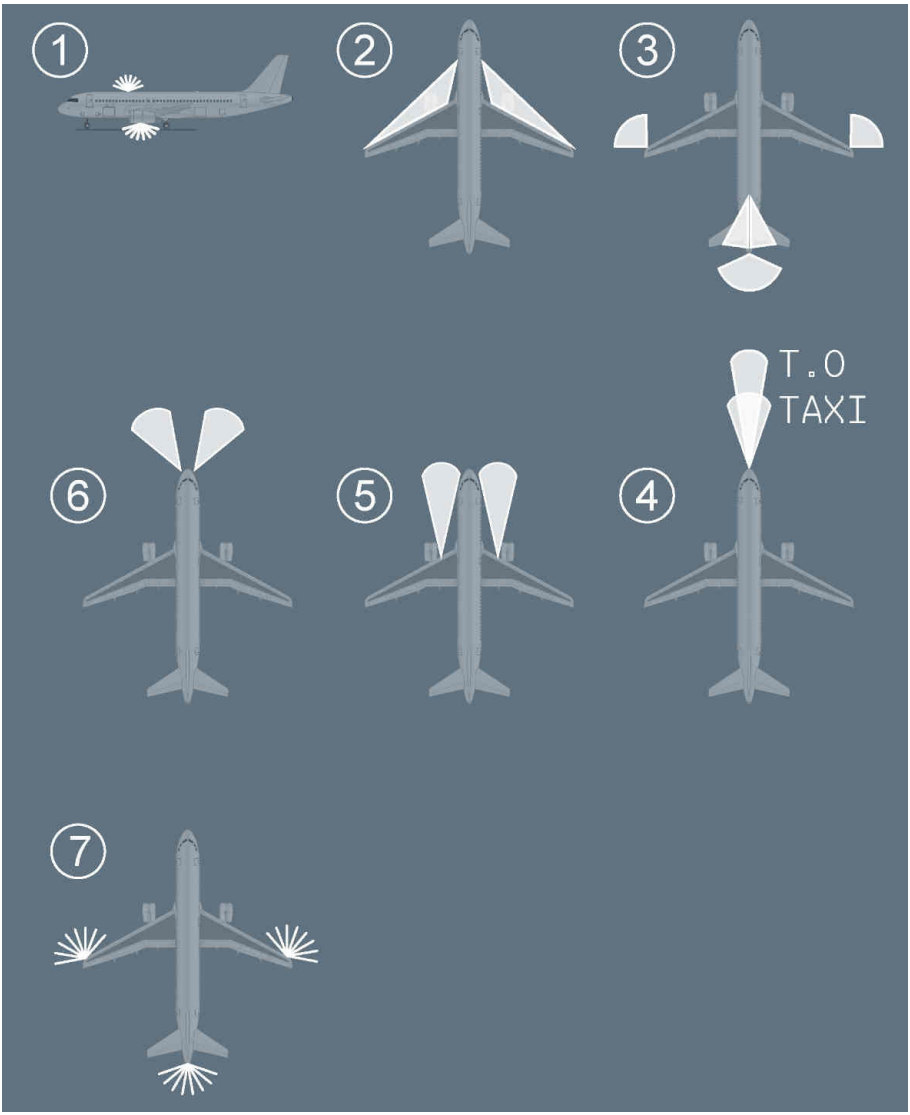
SCHEMATIC

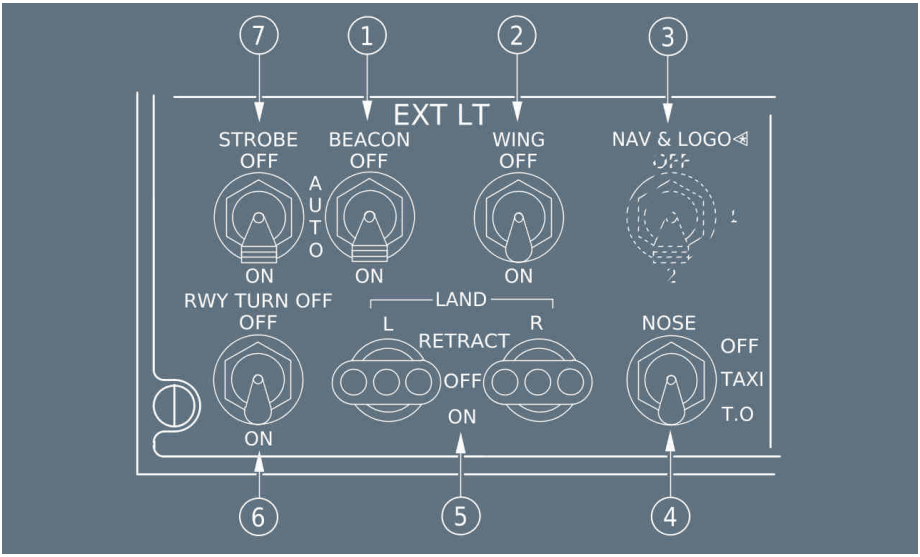
Ident.: DSC-33-20-20-00017622.0001001 / 21 MAR 16

Applicable to: ALL



OVERHEAD PANEL

Ident.: DSC-33-20-20-00017623.0004001 / 21 MAR 16
Applicable to: MSN 02275-02334



(1) BEACON sw
This switch turns on and off the two flashing red lights, one on top and one on the bottom of the fuselage.

(2) WING sw
This switch turns on and off two beam lights on each side of the fuselage. These lights provide lighting on the wing leading edge and on the engine air intake to detect ice accretion.

(3) NAV & LOGO ◁ sw
There are single navigation light, or dual navigation lights ◁ on each wing and in the APU tail cone.
A blue light ◁ below each navigation light allows to monitor the navigation light wear (LED technology). When the NAV & LOGO ◁ sw is ON, this light ◁ flashes in blue if the navigation light replacement should be planned.
There are logo lights ◁ in the upper surface of each horizontal stabilizer. These light provide lighting for the company logo on the vertical stabilizer provided the main landing gears are compressed, or depending on the aircraft configuration, when flaps are extended (at least 15 ° on some aircraft) or slats are extended.

The NAV & LOGO ◁ sw can have one of the following configuration:

ON : Turns on the NAV and the LOGO lights ◁ .
OFF : The NAV and the LOGO lights ◁ are off.

or

2 : Turns on NAV 2 and the LOGO lights ◁ .
1 : Turns on NAV 1 and the LOGO lights ◁ .
OFF : The NAV and the LOGO lights ◁ are off.

(4) NOSE sw
This switch turns the taxi and takeoff lights on and off.

TO : Turns on both taxi and takeoff lights.
TAXI : Turns on only taxi light.
OFF : Taxi and takeoff lights off.

Note: These two lights, attached to the nose gear strut, go off automatically when landing gear is retracted.

(5) L and R LAND sel
These selectors control the landing lights.

ON : Extends the (left or right) landing lights which come on automatically when fully extended.
OFF : Shuts off the landing lights which remain extended.
RETRACT : Shuts off and retracts the landing lights.

(6) RWY TURN OFF sw
This switch turns the runway turn-off lights on and off.

Note: These lights go off automatically when landing gear is retracted.

(7) STROBE sw
This switch turns on and off the three synchronized strobe lights, one on each wing and one below the tail cone.

A blue light ◁ below each strobe light allows to monitor the strobe light wear (LED technology). When STROBE sw is OFF or BEACON sw is ON, this light ◁ flashes in blue if the strobe light replacement should be planned.

ON : The strobe lights flash white.

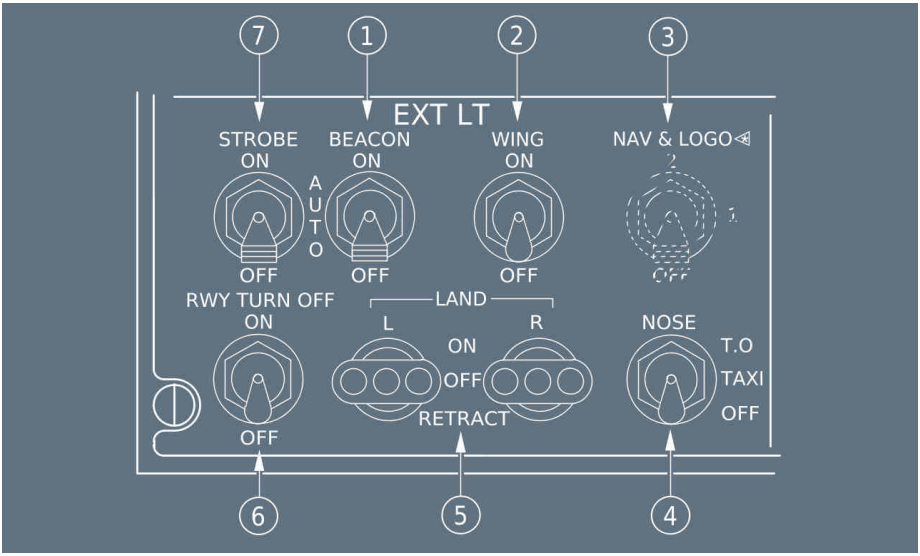
AUTO : The strobe lights come on automatically when the main landing gear is not compressed.

OFF : The strobe lights are off.

OVERHEAD PANEL

Ident.: DSC-33-20-20-00017623.0001001 / 21 MAR 16

1 **Applicable to: MSN 01767-02204, 02359-09063**



(1) BEACON sw

This switch turns on and off the two flashing red lights, one on top and one on the bottom of the fuselage.

(2) WING sw

This switch turns on and off two beam lights on each side of the fuselage. These lights provide lighting on the wing leading edge and on the engine air intake to detect ice accretion.

(3) NAV & LOGO sw

There are single navigation light, or dual navigation lights on each wing and in the APU tail cone.

A blue light below each navigation light allows to monitor the navigation light wear (LED technology). When NAV & LOGO sw is ON, this light flashes in blue if the navigation light replacement should be planned.

There are logo lights in the upper surface of each horizontal stabilizer. These lights provide lighting for the company logo on the vertical stabilizer provided the main landing gear is compressed, or depending on the aircraft configuration, when flaps are extended (at least 15 ° on some aircraft) or slats are extended.

The NAV & LOGO sw can have one of the following configuration:

ON : Turns on the NAV and the LOGO lights .
OFF : The NAV and the LOGO lights are off.

or

2 : Turns on NAV 2 and the LOGO lights .
1 : Turns on NAV 1 and the LOGO lights .
OFF : The NAV and the LOGO lights are off.

(4) NOSE sw

This switch turns the taxi and takeoff lights on and off.

TO : Turns on both taxi and takeoff lights.

TAXI : Turns on only taxi light.

OFF : Taxi and takeoff lights off.

Note: These two lights, attached to the nose gear strut, go off automatically when landing gear is retracted.

(5) L and R LAND sel

These selectors control the landing lights.

ON : Extends the (left or right) landing lights which come on automatically when fully extended.

OFF : Shuts off the landing lights which remain extended.

RETRACT : Shuts off and retracts the landing lights.

(6) RWY TURN OFF sw

This switch turns the runway turn-off lights on and off.

Note: These lights go off automatically when landing gear is retracted.

(7) STROBE sw

This switch turns on and off the three synchronized strobe lights, one on each wing and one below the tail cone.

A blue light ◁ below each strobe light allows to monitor the strobe light wear (LED technology). When STROBE sw is OFF or BEACON sw is ON, this light ◁ flashes in blue if the strobe light replacement should be planned.

ON : The strobe lights flash white.

AUTO : The strobe lights come on automatically when the main landing gear is not compressed.

OFF : The strobe lights are off.

MEMO DISPLAY

Applicable to: ALL

Ident.: DSC-33-20-20-M-00016785.0001001 / 21 MAR 16

LDG LT : The message is displayed in green, if one landing light is extended.

Ident.: DSC-33-20-20-M-00016784.0001001 / 21 MAR 16

STROBE LT OFF : The message is displayed in green, if the STROBE sw is OFF in flight.

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GENERAL

Ident.: DSC-33-30-10-00017632.0001001 / 27 FEB 18
Applicable to: ALL

The emergency lighting system consists of the following:

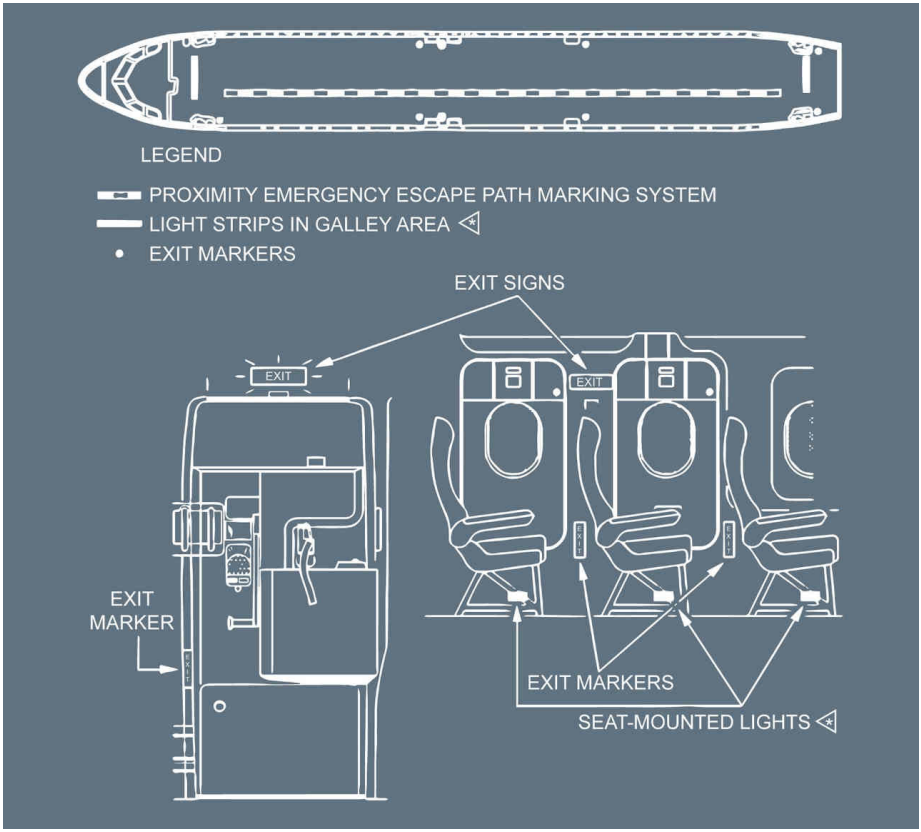
- Proximity emergency escape path marking systems (escape path and exit markers)
- Overhead emergency lights
- EXIT signs
- Lavatory auxiliary lights
- Overwing escape route ◁ lighting
- Escape slide lighting.

For aircraft equipped with electrical escape paths or electrical exit markers, internal batteries supply electrical power for at least 12 min.
Lavatory auxiliary lights are always on.
The escape slides have an integral lighting system. The escape slide lights and overwing escape route ◁ lights come on automatically when the slide is armed and the door or emergency exit is open. They are supplied by internal batteries.

PROXIMITY EMERGENCY ESCAPE PATH MARKING SYSTEM/EXIT SIGNS

Ident.: DSC-33-30-10-00017646.0015001 / 09 MAR 18

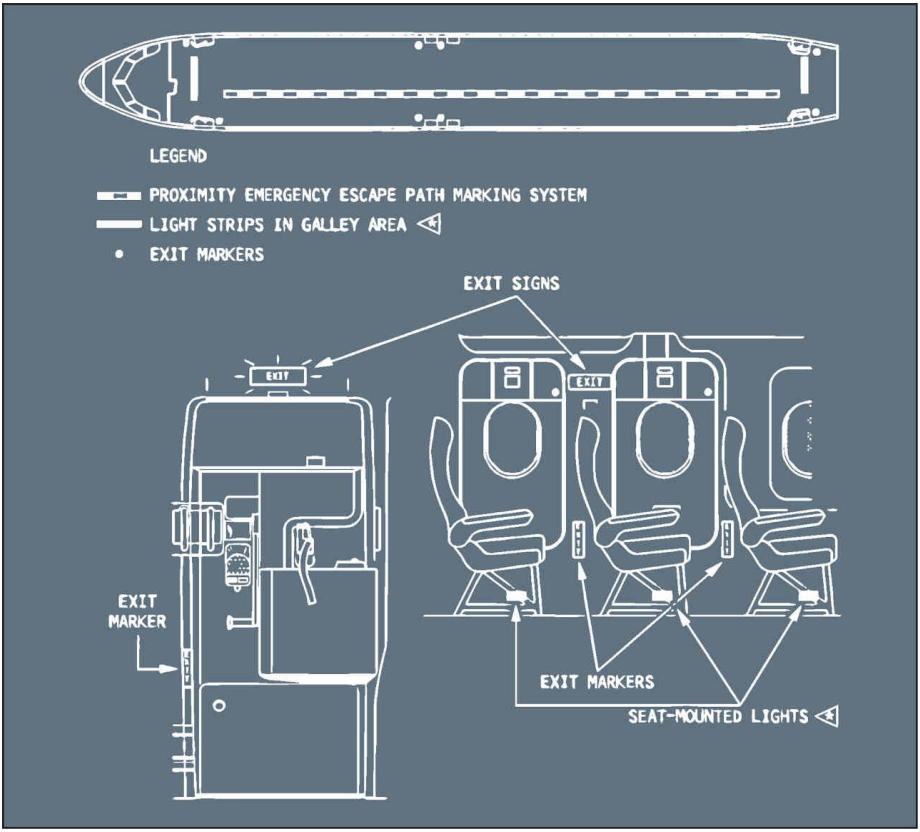
1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



PROXIMITY EMERGENCY ESCAPE PATH MARKING SYSTEM/EXIT SIGNS

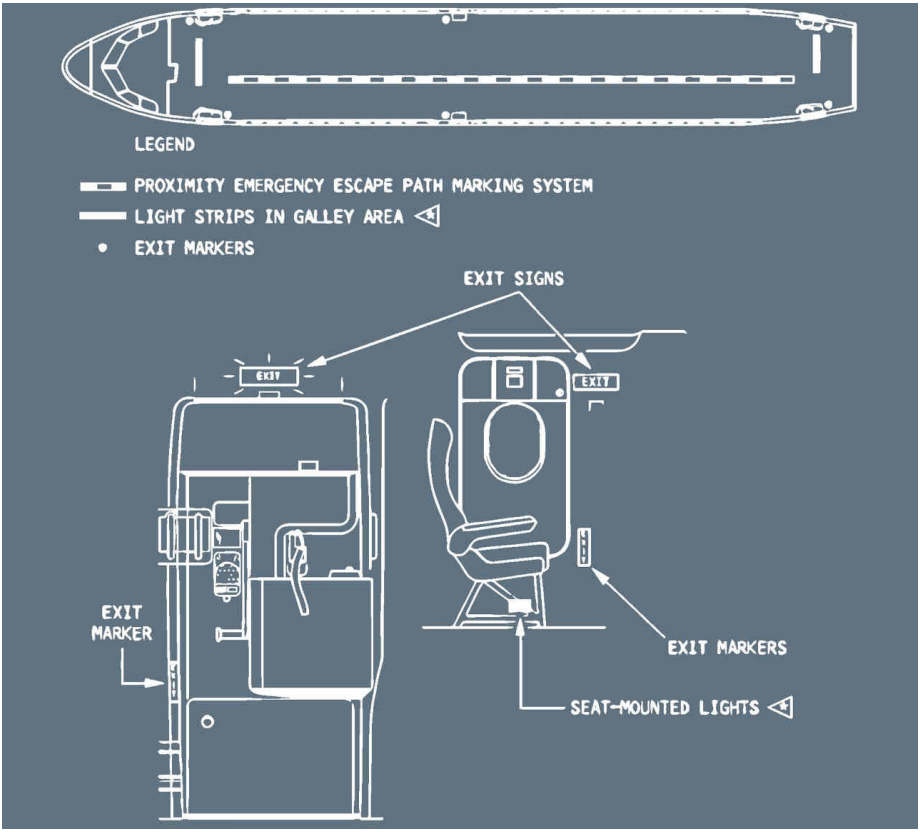
Ident.: DSC-33-30-10-00017646.0013001 / 21 MAR 16

[2] **Applicable to: MSN 01767-04384, 04399-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



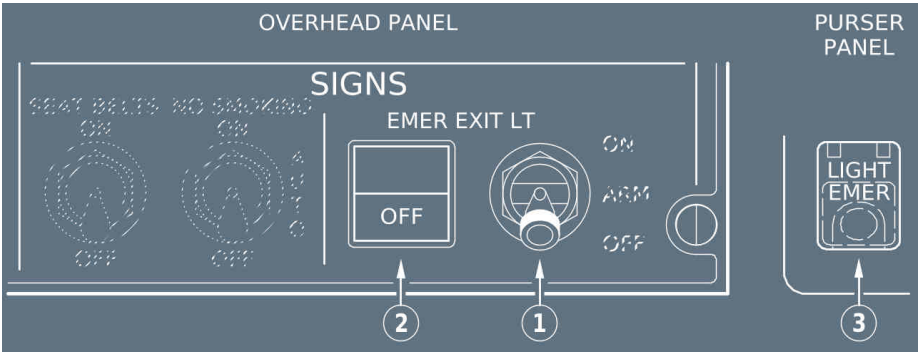
PROXIMITY EMERGENCY ESCAPE PATH MARKING SYSTEM/EXIT SIGNS

Ident.: DSC-33-30-10-00017646.0012001 / 21 MAR 16
Applicable to: MSN 04393-04397



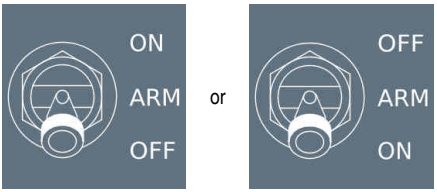
CONTROLS AND INDICATORS

Ident.: DSC-33-30-20-00017708.0003001 / 21 MAR 16
Applicable to: MSN 01957-02097, 02121-02204, 02737-02804, 03071



(1) EMER EXIT LT sw

The EMER EXIT LT sw can have one of the following configuration:



ON : Overhead emergency lights, EXIT signs and proximity marking system come on.

OFF : Above lights are off.

ARM : - The proximity emergency escape path marking system comes on when the normal aircraft electrical power or DC SHED ESS BUS is lost
- The overhead emergency lights come on if:
  - Normal aircraft electrical power system fails or
  - DC SHED ESS BUS fails or
  - AC BUS 1 fails.
- Exit signs come on if:
  - Normal aircraft electrical power system fails or
  - DC SHED ESS BUS fails or

Note: The LIGHT EMER pb on the Purser's panel can turn on the emergency lighting regardless of the position of the EMER EXIT LT sw.

(2) EMER EXIT LT-OFF lt

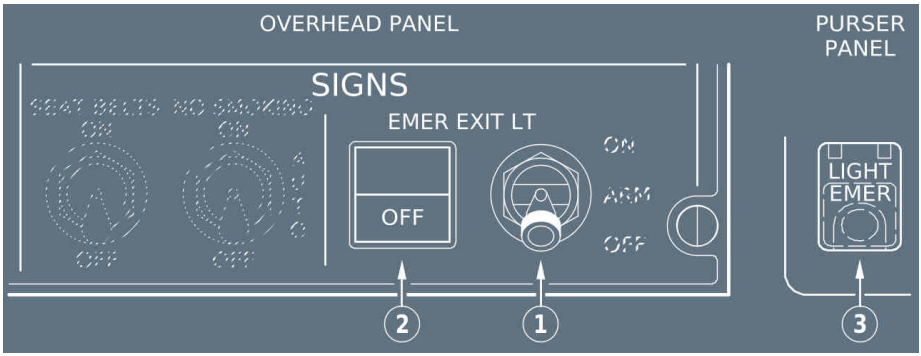
OFF : The amber EMER EXIT LT-OFF lt comes on when the EMER EXIT LT sw is set to OFF.

(3) LIGHT EMER pb

When pressed, this button performs the same function as the EMER EXIT LT sw when it is set to ON.

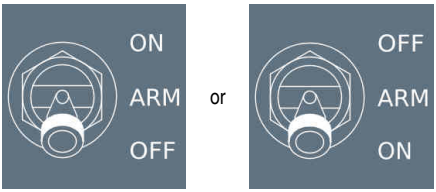
CONTROLS AND INDICATORS

Ident.: DSC-33-30-20-00017708.0026001 / 21 MAR 16
Applicable to: MSN 02359, 02405, 02482



(1) EMER EXIT LT sw

The EMER EXIT LT sw can have one of the following configuration:



ON : Overhead emergency lights, EXIT signs and proximity marking system come on.

OFF : Above lights are off.

ARM :
- The proximity emergency escape path marking system comes on when the normal aircraft electrical power or DC SHED ESS BUS is lost
- The overhead emergency lights come on if:
  - Normal aircraft electrical power system fails or
  - DC SHED ESS BUS fails or
  - AC BUS 1 fails.
- Exit signs come on if:
  - Normal aircraft electrical power system fails or
  - DC SHED ESS BUS fails or

Note:
- *With EMER EXIT LT sw set to ON or ARM, the Passenger Address system is supplied by the HOT BUS*
- *The LIGHT EMER pb on the Purser's panel can turn on the emergency lighting regardless of the position of the EMER EXIT LT sw.*

(2) EMER EXIT LT-OFF lt

OFF : The amber EMER EXIT LT-OFF lt comes on when the EMER EXIT LT sw is set to OFF.

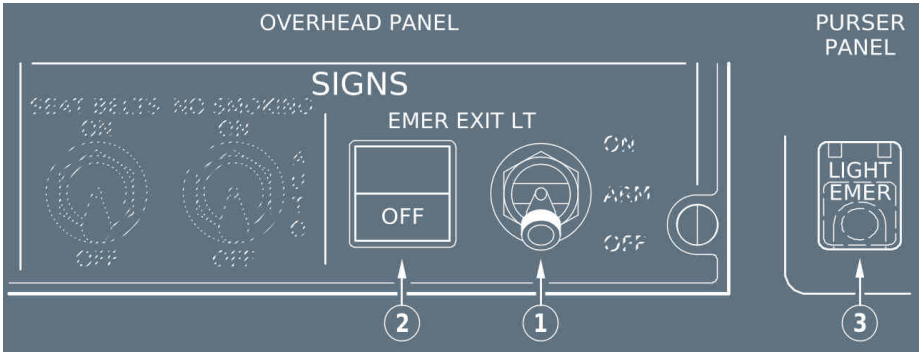
(3) LIGHT EMER pb

When pressed, this button performs the same function as the EMER EXIT LT sw when it is set to ON.

CONTROLS AND INDICATORS

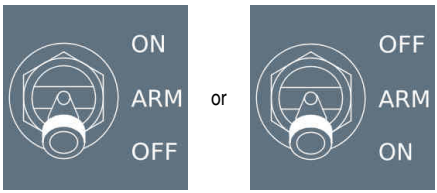
Ident.: DSC-33-30-20-00017708.0027001 / 21 MAR 16

1 **Applicable to: MSN 01920, 02108, 02275-02334, 02388, 02443-02457, 02584, 02649-02712, 02908-02914, 03138-09063**



(1) EMER EXIT LT sw

The EMER EXIT LT sw can have one of the following configuration:



ON : Overhead emergency lights, EXIT signs and proximity marking system come on.

OFF : Above lights are off.

ARM : - Exit markers come on when the normal aircraft electrical power or DC SHED ESS BUS is lost.
- The overhead emergency lights come on if:
  - Normal aircraft electrical power system fails or
  - DC SHED ESS BUS fails or
  - AC BUS 1 fails.
- Exit signs come on if:
  - Normal aircraft electrical power system fails or
  - DC SHED ESS BUS fails or

Note: The LIGHT EMER pb on the Purser's panel can turn on the emergency lighting regardless of the position of the EMER EXIT LT sw.

(2) EMER EXIT LT-OFF lt

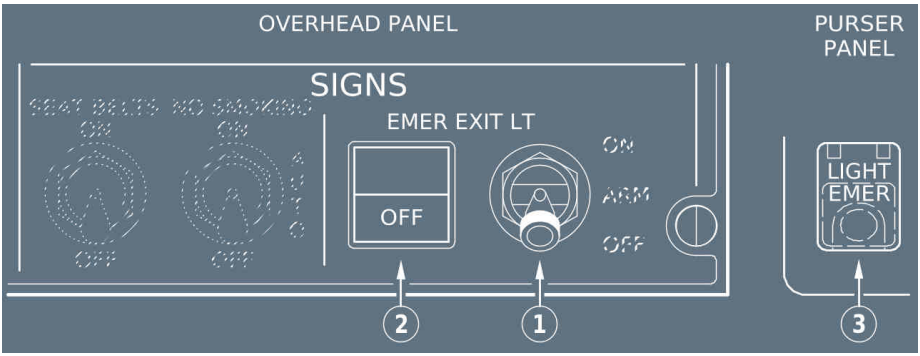
OFF : The amber EMER EXIT LT-OFF lt comes on when the EMER EXIT LT sw is set to OFF.

(3) LIGHT EMER pb

When pressed, this button performs the same function as the EMER EXIT LT sw when it is set to ON.

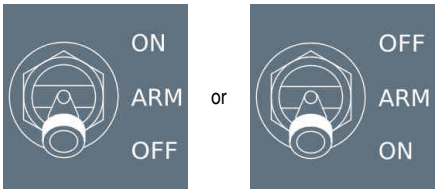
CONTROLS AND INDICATORS

Ident.: DSC-33-30-20-00017708.0063001 / 21 MAR 16
Applicable to: MSN 01767, 02609-02626



(1) EMER EXIT LT sw

The EMER EXIT LT sw can have one of the following configuration:



ON : Overhead emergency lights, EXIT signs and proximity marking system come on.

OFF : Above lights are off.

ARM :
- Exit markers come on when the normal aircraft electrical power or DC SHED ESS BUS is lost
- The overhead emergency lights come on if:
  - Normal aircraft electrical power system fails or
  - DC SHED ESS BUS fails or
  - AC BUS 1 fails.
- Exit signs come on if:
  - Normal aircraft electrical power system fails or
  - DC SHED ESS BUS fails or

Note:
- *With EMER EXIT LT sw set to ON or ARM, the Passenger Address system is supplied by the HOT BUS*
- *The LIGHT EMER pb on the Purser's panel can turn on the emergency lighting regardless of the position of the EMER EXIT LT sw.*

(2) EMER EXIT LT-OFF lt

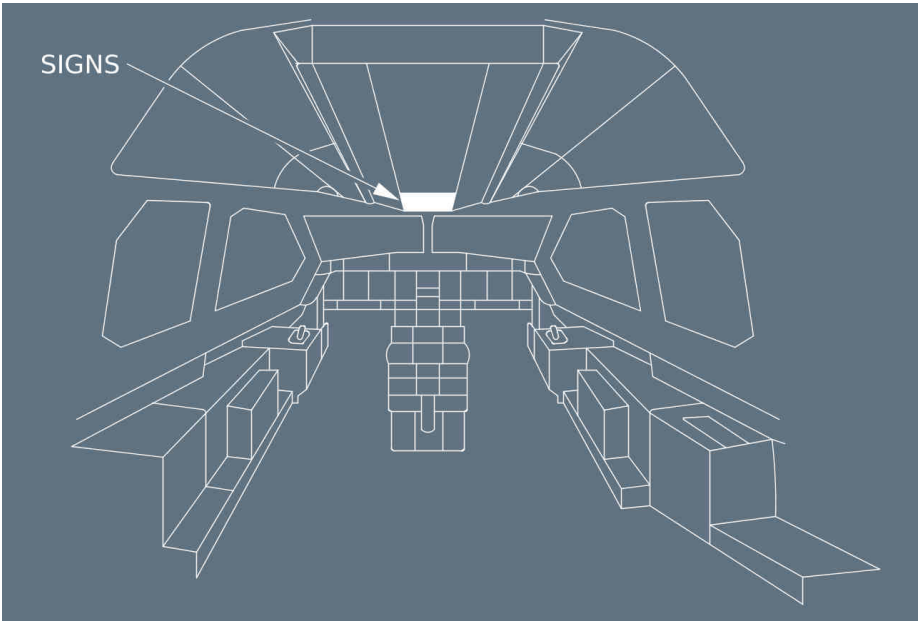
OFF : The amber EMER EXIT LT-OFF lt comes on when the EMER EXIT LT sw is set to OFF.

(3) LIGHT EMER pb

When pressed, this button performs the same function as the EMER EXIT LT sw when it is set to ON.

OVERHEAD PANEL

Ident.: DSC-33-40-10-00017709.0001001 / 21 MAR 16
Applicable to: ALL



The switches described below are installed on the SIGNS panel on the overhead panel.

The cabin signs consist of the following:

- A SEAT BELTS sw, and
- A NO SMOKING sw ◁✻ , or
- An EXIT sw ◁✻ , or
- A NO PORTABLE ELEC DEVICE sw ◁✻ .

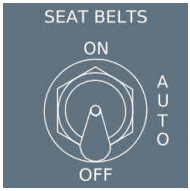
The SEAT BELTS sw activates the FASTEN SEAT BELT and RETURN TO YOUR SEAT signs.
The NO SMOKING sw ◁✻ or EXIT sw ◁✻ activate the EXIT and NO SMOKING signs.
The NO PORTABLE ELEC DEVICE sw ◁✻ activates the EXIT and NO MOBILE signs.
A low tone chime sounds (depending on CIDS/CAM programming) each time a sign goes on or off.
Each switch has 3 positions:

ON : Signs are on in the cabin

AUTO : ◁✻ Signs are on in the cabin when either landing gear is extended or flaps/slats are extended (position 1, 2, 3, or FULL)

OFF : Signs are off in the cabin

Example of switches layout:



Note: *1. If the cabin altitude goes above 11 300 ft (± 350 ft), the cabin lights (depending on CIDS/CAM programming) and all the cabin signs, except the NO PORTABLE ELEC DEVICE signs come on regardless of switches position.*

2. For NON SMOKER , the NO SMOKING signs are always on.

MEMO DISPLAY

Ident.: DSC-33-40-10-00016783.0001001 / 21 MAR 16

Applicable to: ALL

When the corresponding signs are on, the ECAM displays in green the SEAT BELTS message, the NO SMOKING message or the NO PED, depending on aircraft customization.

AIRCRAFT SYSTEMS

NAVIGATION

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DSC-34-NAV-10 ADIRS

DSC-34-NAV-10-10 Description

General....A
Probes Location....B
Probes Schematic....C
ADIRS Schematic....D

DSC-34-NAV-10-20 Controls and Indicators

Overhead Panel....A
Pedestal....B
Memo Display....C
Maximum Differences Between Speed/Mach Indications....D
ADIRS Operations - Status Messages....E

DSC-34-NAV-15 GPS

DSC-34-NAV-15-10 Description

Description....A

DSC-34-NAV-20 Standby Instruments

Compass....A
Description of the ISIS....B
Attitude....C
Airspeed....D
Altimeter....E
Landing System Function....F
Bugs Function....G
Flags....H

DSC-34-NAV-30 Radio Nav

DSC-34-NAV-30-10 Tuning

General....A
Architecture....B

DSC-34-NAV-30-20 Navaids

VOR....A
ILS/GLS ◁ /MLS ◁ ....B
ADF ◁ C
DME....D
Marker Beacon....E

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Continued from the previous page

DSC-34-NAV-30-30 Controls and Indicators

Digital Distance and Radio Magnetic Indicator (DDRMI)....A
Radio Management Panel (RMP)....B

DSC-34-NAV-40 Radio Altimeter

DSC-34-NAV-40-10 Description

General....A
Automatic Callout....B

Localization Title	Toc Index	ID	Reason
DSC-34-NAV-10-20 Overhead Panel	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-NAV-10-20 IR IN ATT ALIGN	C	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-NAV-10-20 IRS IN ALIGN X MN	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-NAV-20 Description of the ISIS	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-NAV-20 Attitude	C	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-NAV-20 Airspeed	D	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-NAV-20 Altimeter	E	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-NAV-20 Landing System Function	F	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-NAV-20 Bugs Function	G	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-NAV-20 Flags	H	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-NAV-30-20 ADF	C	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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GENERAL

Ident.: DSC-34-NAV-10-10-00018524.0001001 / 21 MAR 16
Applicable to: ALL

The Air Data and Inertial Reference System (ADIRS) supplies temperature, anemometric, barometric and inertial parameters to the EFIS system (PFD and ND) and to other user systems (FMGC, FADEC, ELAC, SEC, FAC, FWC, SFCC, ATC, GPWS, CFDIU, CPC).

The system includes:

- Three identical ADIRUs (Air Data and Inertial Reference Units).

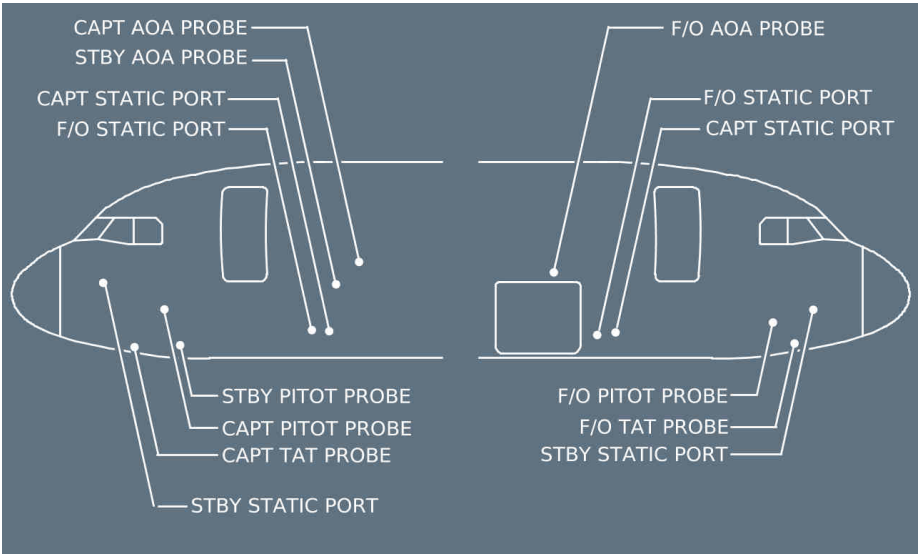
  Each ADIRU is divided in two parts, either of which can work separately in case of failure in the other:
  - The ADR part (Air Data Reference) which supplies barometric altitude, airspeed, Mach, angle of attack, temperature and overspeed warnings.
  - The IR part (Inertial Reference) which supplies attitude, flight path vector, track, heading, accelerations, angular rates, ground speed and aircraft position.

- One ADIRS control panel on the overhead panel for selection of modes (NAV, ATT, OFF) and indications of failures.
- Four types of sensors:
  - Pitot probes (3)
  - Static pressure probes (STAT) (6)
  - Angle of attack sensors (AOA) (3)
  - Total air temperature probes (TAT) (2)

  These sensors are electrically heated to prevent from icing up.
- Eight ADMs (Air Data Modules) which convert pneumatic data from PITOT and STAT probes into numerical data for the ADIRUs.
- A switching facility for selecting ADR3 or IR3 for instrument displays in case of ADIRU1 or 2 failure.

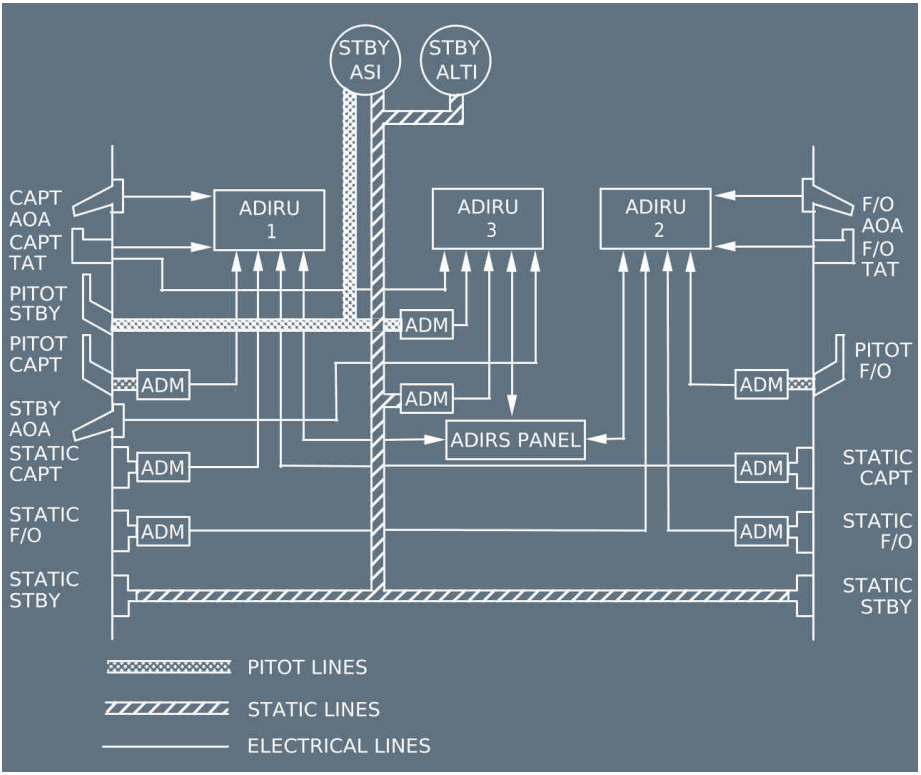
PROBES LOCATION

Ident.: DSC-34-NAV-10-10-00018525.0001001 / 21 MAR 16
Applicable to: ALL



PROBES SCHEMATIC

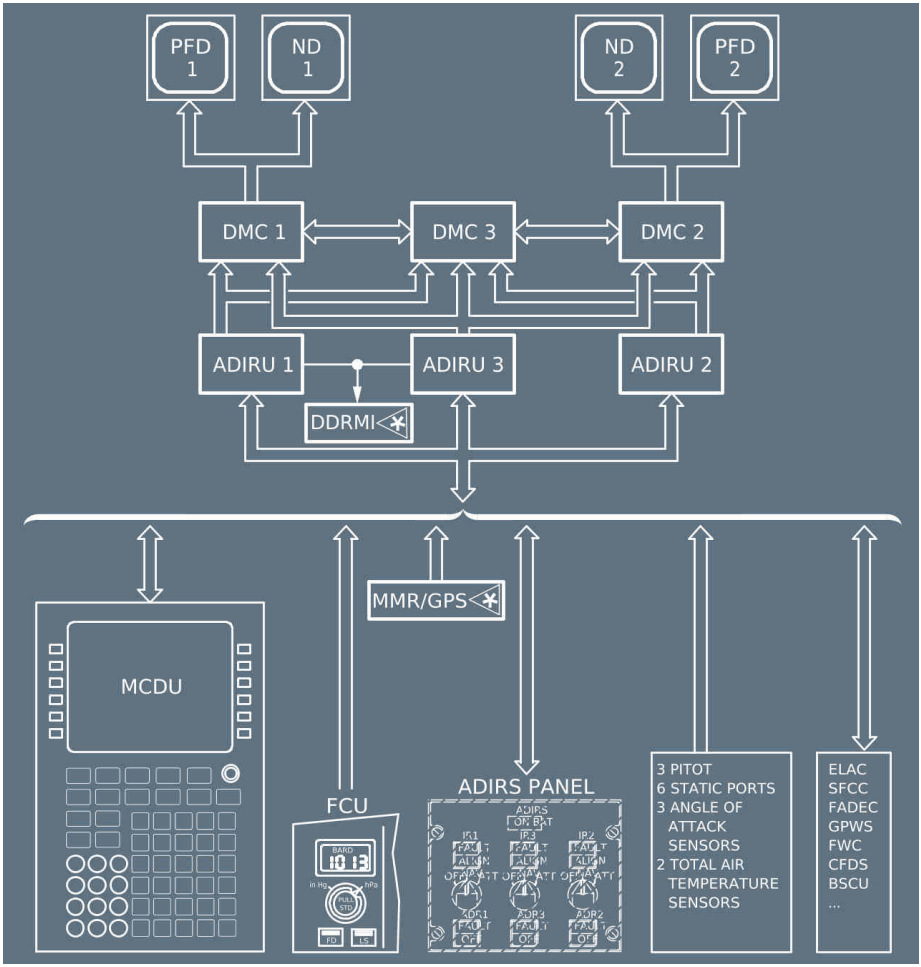
Ident.: DSC-34-NAV-10-10-00018526.0001001 / 21 MAR 16
Applicable to: ALL



Note: *ADIRU (1) is supplied by CAPT probes,*
ADIRU (2) is supplied by F/O probes,
ADIRU (3) is supplied by STBY probes and CAPT TAT.

ADIRS SCHEMATIC

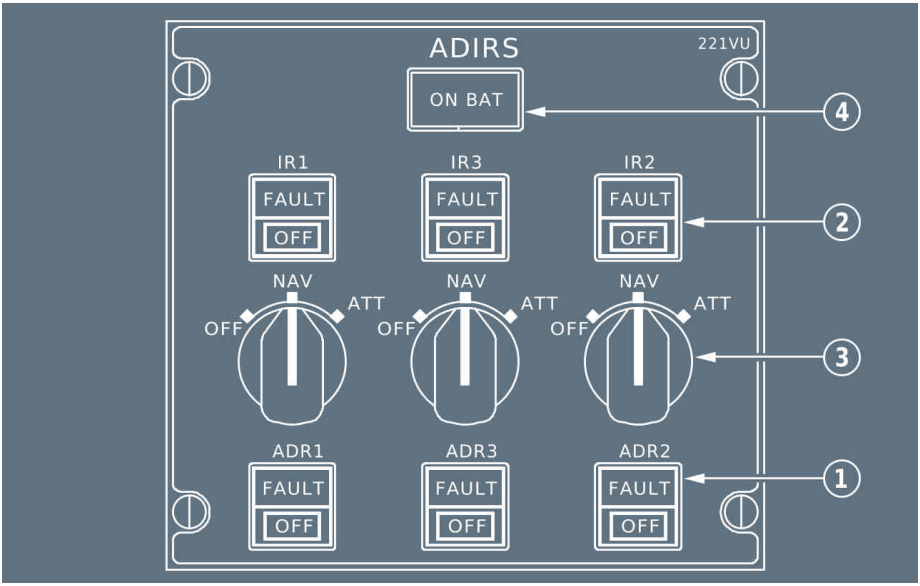
Ident.: DSC-34-NAV-10-10-00018527.0001001 / 21 MAR 16
Applicable to: ALL



OVERHEAD PANEL

Ident.: DSC-34-NAV-10-20-00018528.0002001 / 21 MAR 16

[1] **Applicable to: MSN 03618-09063**



(1) ADR 1(2)(3) pb sw

OFF light : Air data output disconnected.

FAULT light : This amber light comes on with an ECAM caution if a fault is detected in the air data reference part.

(2) IR 1(2)(3) pb sw

OFF light : Inertial data output disconnected.

FAULT light : This amber light comes on with an ECAM caution when a fault affects the respective IR.

- Steady : the respective IR is lost.
- Flashing : the attitude and heading information may be recovered in ATT mode.

(3) IR 1(2)(3) mode rotary sel

OFF : The ADIRU is not energized.
ADR and IR data are not available.

NAV : Normal mode of operation.
Supplies full inertial data to aircraft systems.

ATT : IR mode supplying only attitude and heading information if the system loses its ability to navigate.
The heading must be entered through the MCDU and has to be reset frequently (about every 10 min).

(4) ON BAT light
The ON BAT light comes on in amber when the aircraft battery supplies at least one IRS. The ON BAT light also comes on for a few seconds at the beginning of a complete IRS alignment. The light does not come on in the case of a fast alignment.

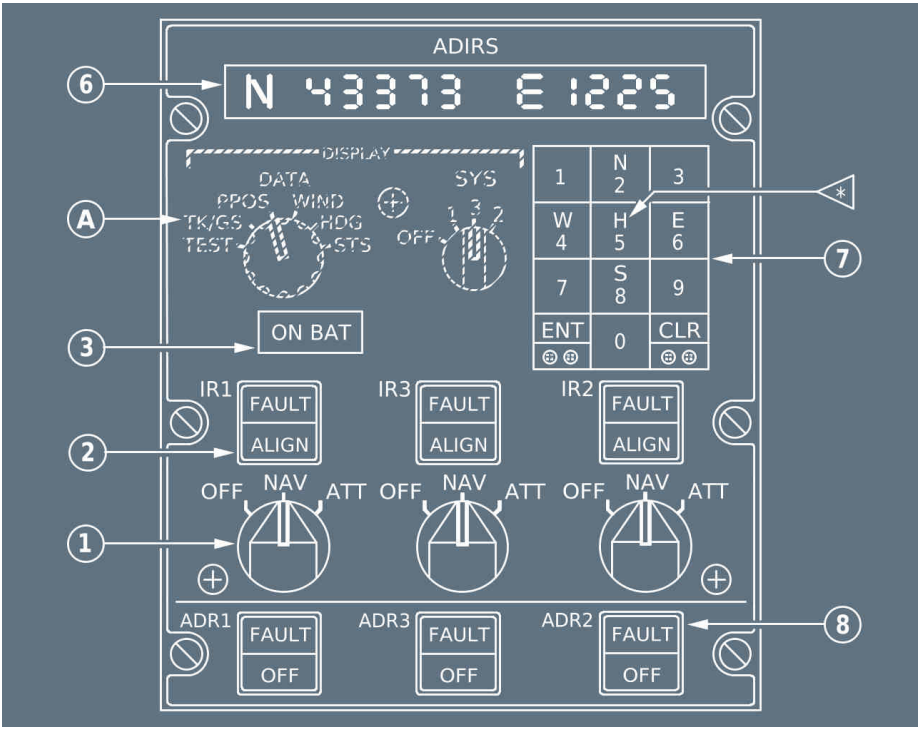
Note: *When the aircraft is on ground and if at least one ADIRU is supplied by aircraft batteries:*
- *An external horn sounds*
- *The ADIRU and AVNCS light comes on amber on the EXTERNAL POWER panel.*

OVERHEAD PANEL

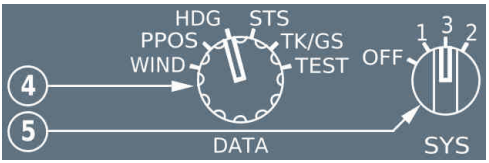
Ident.: DSC-34-NAV-10-20-00018528.0001001 / 21 MAR 16
Applicable to: MSN 01767-03541

The ADIRS CDU on the overhead panel provides the controls and indicators to permit:
- Selection of power supplies to the ADR and IRS systems
- Selection and display of navigation data
- Status and fault indication of IRS or ADRs.
- Manual initialization of IRS

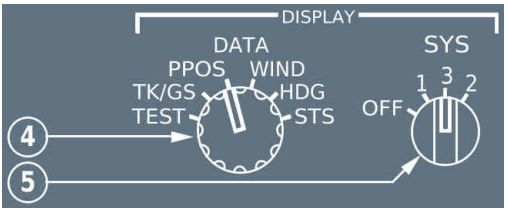
Note: *IRS are normally initialized with the FMGC, but IRS may be initialized with the ADIRS CDU as a backup.*



(A) Depending of aircraft configuration,



or



(1) IR 1(2)(3) Mode rotary sel

OFF : The ADIRU is not energized.
ADR and IR data are not available.

NAV : Normal mode of operation.
Supplies full inertial data to aircraft systems.

ATT : IR mode supplying only attitude and heading information, if the system loses its ability to navigate.

The heading must be entered using:
- The CDU keyboard, or
- The MCDU (if the entry field is available).

The heading has to be reset frequently (about every 10 min).

(2) IR 1(2)(3) lt

FAULT light : This amber light comes on with an ECAM caution when a fault affects the respective IR.
- Steady : The respective IR is lost.
- Flashing : The attitude and heading information may be recovered in ATT mode.

ALIGN light :
- Steady : The respective IR is operating normally in align mode.
- Flashing : IR alignment fault, or no present position entry after 10 min, or difference between position at shutdown and entered position exceeds 1 ° of latitude or longitude.
- Extinguished: Alignment has been completed.

(3) ON BAT lt

The ON BAT light comes on in amber when the aircraft battery supplies at least one IRS. The ON BAT light also comes on for a few seconds at the beginning of a complete IRS alignment.

Note: When the aircraft is on ground and if at least one ADIRU is supplied by aircraft batteries:
- *An external horn sounds*
- *The ADIRU and AVNCS light comes on amber on the EXTERNAL POWER panel.*

(4) DATA selector knob

This knob selects the information to be displayed in the ADIRS display window.

TEST The ENT and CLR buttons on the keyboard come on, and the display shows all 8's.

TK/GS The display shows true track and ground speed.

PPOS The display shows present latitude and longitude

WIND The display shows true wind direction and speed.

HDG The display shows true heading and the minutes remaining until alignment is completed.

STS The display shows an action code.

(5) SYS selector knob

OFF : The CDU display is not energized. ADIRS are still energized if the associated IR mode rotary selectors are not at OFF.

1.2.3 : System selected for data display.

(6) Display

The display presents the data selected by the DATA selector.
A keyboard entry overrides the selected display.

(7) Keyboard

The flight crew can use the keyboard to enter the present position, or the heading in ATT mode, into the selected system.

Letter keys : Used to enter N, S, E, or W for position, or entering H ◁ for heading (ATT mode).

Number keys : Used to enter the present position (or the present magnetic heading in ATT mode).

CLR key : The integral cue light comes on after an entry operation, if the data has an unreasonable value.
Pressing this key clears the data display, that has been keyed in but not yet entered.

ENT Key : The integral cue light comes on when a crew member has keyed in a number for N, S, W, E or H ◁ .
Pressing the key enters data into the ADIRS.

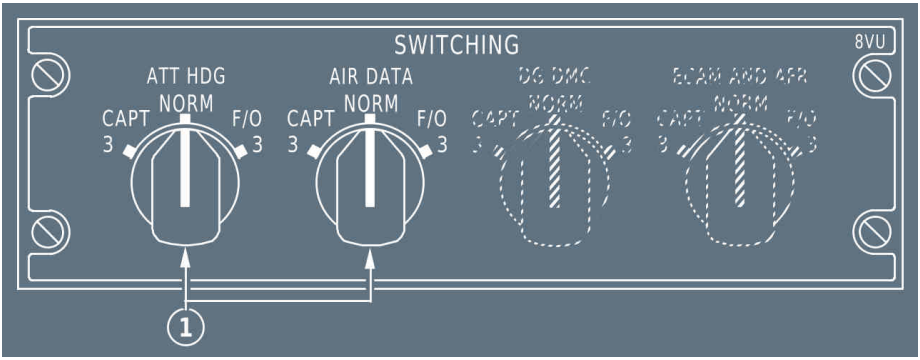
(8) ADR 1(2)(3) pb (momentary action)

OFF light Air data output disconnected.

FAULT light This amber light comes on with an ECAM caution, if a fault is detected in the air data reference part.

PEDESTAL

Ident.: DSC-34-NAV-10-20-00018529.0001001 / 21 MAR 16
Applicable to: ALL



(1) ATT HDG and AIR DATA sel

NORM : ADIRU1 supplies data to PFD1, ND1, DDRMI and VOR/DME.
ADIRU 2 supplies data to PFD 2, and ND2.

CAPT 3 : ADR3 or IR3 replaces ADR1 or IR1.

F/O 3 : ADR 3 or IR3 replaces ADR 2 or IR2.

MEMO DISPLAY

Ident.: DSC-34-NAV-10-20-A-00017043.0002001 / 21 MAR 16
2 **Applicable to: MSN 03618-09063**

IR IN ATT ALIGN : This memo appears in green during the IR alignment in Attitude mode.

Ident.: DSC-34-NAV-10-20-A-00017042.0001001 / 21 MAR 16
Applicable to: MSN 01767-03541

IRS IN ALIGN : This memo appears in green if one of the 3 IRS is still in alignment and both engines are stopped.

IRS IN ALIGN : This memo appears in amber if one of the 3 IRS is still in alignment and one engine is running.

Ident.: DSC-34-NAV-10-20-A-00017041.0001001 / 21 MAR 16
Applicable to: MSN 01767-03541

IRS IN ALIGN X MN : This memo appears in green, if both engines are stopped. The memo "IRS IN ALIGN X MN" appears during flight phase 1 or 2, if:

- At least one active IRS is in ALIGN submode
- The remaining time until NAV mode is obtained in X minutes (1 < X < 10).

IRS IN ALIGN X MN : This memo appears in amber, if one engine is running. The memo "IRS IN ALIGN X MN" appears during flight phase 1 or 2, if:

- At least one active IRS is in ALIGN submode
- The remaining time until NAV mode is obtained in X minutes (1 < X<10).

Ident.: DSC-34-NAV-10-20-A-00017041.0002001 / 21 MAR 16
[3] **Applicable to: MSN 03618-09063**

The memo "IRS IN ALIGN X MN" appears during IRS alignment in flight phase 1 or 2. X MN indicates the number of remaining minutes (1 < X < 10), until NAV mode is reached.
Before any engine is started:

IRS IN ALIGN X MN : This memo appears in green when at least one active IRS is being aligned.

IRS IN ALIGN X MN : This memo pulses in green, if the alignment of one IRS is faulty.

When one engine is started:

IRS IN ALIGN X MN : This memo appears in amber during IRS alignment. If the alignment of one IRS is faulty, this memo is replaced by the “IR NOT ALIGNED” ECAM caution.

MAXIMUM DIFFERENCES BETWEEN SPEED/MACH INDICATIONS

Ident.: DSC-34-NAV-10-20-00021130.0002001 / 17 MAR 17
Applicable to: ALL

FL	SPEED	SPEED/MACH COMPARISON BETWEEN					
		ADR1 and ADR2 (on PFD)		ADR3 and ADR1, or ADR3 and ADR2		Standby Airspeed Indicator and any ADR 1, or 2, or 3	
		kt	Mach	kt	Mach	kt	Mach on ISIS (1)
GND CHECK	-	6 kt	M 0.008	6 kt	M 0.008	6 kt	-
FL 50	250 kt	4 kt	M 0.005	4 kt	M 0.007	7 kt	-
FL 100	250 kt	4 kt	M 0.005	5 kt	M 0.008	8 kt	M 0.032

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FL	SPEED	SPEED/MACH COMPARISON BETWEEN					
		ADR1 and ADR2 (on PFD)		ADR3 and ADR1, or ADR3 and ADR2		Standby Airspeed Indicator and any ADR 1, or 2, or 3	
		kt	Mach	kt	Mach	kt	Mach on ISIS ◁ (1)
FL 200	300 kt	3 kt	M 0.007	5 kt	M 0.011	9 kt	M 0.033
FL 300	M 0.78	3 kt	M 0.010	5 kt	M 0.014	9 kt	M 0.025
FL 390	M 0.78	3 kt	M 0.010	4 kt	M 0.014	8 kt	M 0.025

(1) *Mach values lower than M 0.50 in climb, and M 0.45 in descent, are not displayed on ISIS ◁.*

ADIRS OPERATIONS - STATUS MESSAGES

Ident.: DSC-34-NAV-10-20-00021988.0001001 / 09 NOV 17
Applicable to: MSN 01767-03541

STATUS MESSAGES

Status messages appear, when the DISPLAY DATA switch is set to STS. If there is more than one condition calling for a message, the display scrolls to the next message every 2 s.

MESSAGE	DESCRIPTION
STS IR FAULT	Hard failure. Select ATT (if corresponding message is displayed) or refer to MMEL or remove ADIRU for maintenance.
STS-DELAY MAINT	Failure not affecting IR functioning. Service ADIRU when convenient.
STS-ENTER PPOS	Enter present position or check entered position is correct. *Note: The confirmation of an erroneous longitude at the present position entry will create a wrong position of the aircraft symbol on the NDs.*
STS-SELECT ATT	Hard IRU failure, select ATT mode.
STS-EXCESS MOTION	Excess motion detected during alignment. ADIRU will automatically restart alignment. Ensure aircraft is not moving.
STS-SWITCH ADR	ADR invalid.
STS-CHECK CK/BK	Check circuit breakers(1)
STS-CDU FAULT	Remove CDU for maintenance.
STS-ENT MAG HDG	Enter magnetic heading.

(1) *If a corresponding FAULT light comes on, check BAT 1 load.*

- If the prompt REALIGN IRS is displayed on the MCDU INIT page:
  Check and confirm the position initialization coordinates on the MCDU, then validate the REALIGN IRS prompt.

  Note: *The IRS records the last known position from the last time it was in NAV mode. The IRS is also able to estimate the present latitude during a complete alignment. The IRS uses both information sources to detect any significant position initialization error.*

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DESCRIPTION

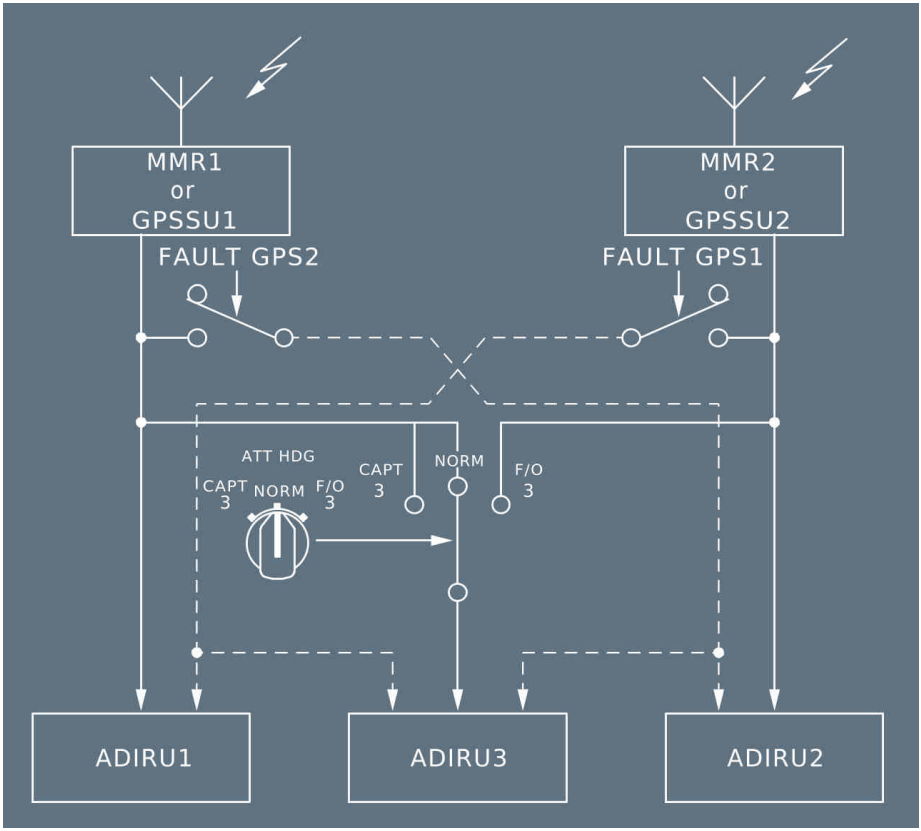
Ident.: DSC-34-NAV-15-10-00018530.0001001 / 21 MAR 16
Applicable to: ALL

The Global Positioning System (GPS) is a satellite-based radio navigation aid.
Worldwide, 24 satellites broadcast accurate navigation data that the aircraft use for precise determination of its position.

The aircraft has two independent GPS receivers. Depending of the aircraft configuration, each receiver consists:

- Of a GPS Sensor Unit (GPSSU), or
- Is integrated in the Multi Mode Receiver (MMR). The GPS1 receiver in MMR1, and the GPS2 receiver in MMR2.

The GPSSU or the MMR processes the received data, and transfers them to the ADIRUs. Then each ADIRU performs the GP-IRS hybrid position calculation. FMGCs use this hybrid position.


MMR1
or
GPSSU1
MMR2
or
GPSSU2
FAULT GPS2
FAULT GPS1
ATT HDG
CAPT
3
NORM
F/O
3
CAPT
3
NORM
F/O
3
ADIRU1
ADIRU3
ADIRU2

OPERATIONS

GPS information are available on the FMS – GPS Monitor Page. *Refer to DSC-22_20-50-10 Pages descriptions*.

- During normal operations
  The GPS receiver 1 supplies the ADIRU 1 and the ADIRU 3, and the GPS receiver 2 supplies the ADIRU 2.
- In case of failure of one GPS receiver
  All ADIRUs use the operative GPS receiver.
- In case of failure of ADIRUs
  - If the ADIRU 1 fails, ADIRU 3 is supplied by the GPS receiver 1, and ADIRU 2 is supplied by the GPS receiver 2.
  - If the ADIRU 2 fails, the ATT HDG selector has to be set to F/O 3 in order to maintain Side 1 and Side 2 segregation. In this case, the ADIRU 3 will be supplied with GPS receiver 2.
  - If two ADIRUs fail, the remaining ADIRU is supplied by its own side GPS receiver.

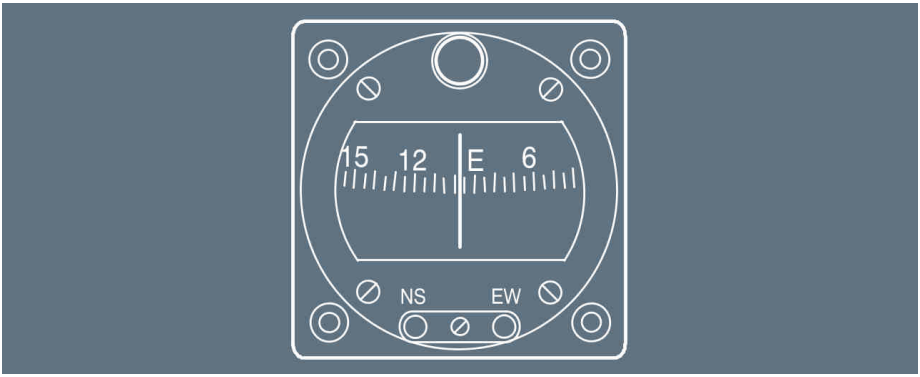
Intentionally left blank

COMPASS

Ident.: DSC-34-NAV-20-00001367.0001001 / 19 DEC 12
Applicable to: ALL

There is a compass located on top of the windshield center post.
The deviation card is located above the compass.

Note: *Because of the location of the APU power on contactor in the cockpit, the APU start sequence may disturb the compass reading.*

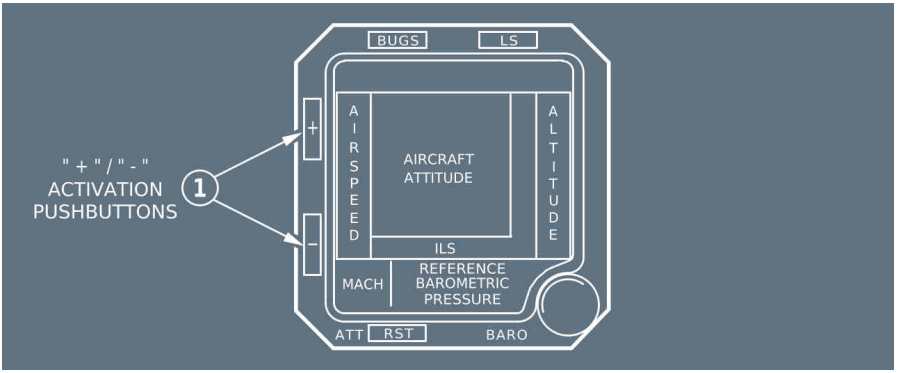


DESCRIPTION OF THE ISIS

Ident.: DSC-34-NAV-20-00018543.0002001 / 21 MAR 16
[1] **Applicable to: MSN 01957-02097, 02121, 02138, 02204-02334, 02443-02457, 02584, 02649-03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 04965-09063**

GENERAL

The ISIS system displays the following information:
- Attitude
- Airspeed and mach
- Altitude
- Barometric pressure
- LS function
- Bugs

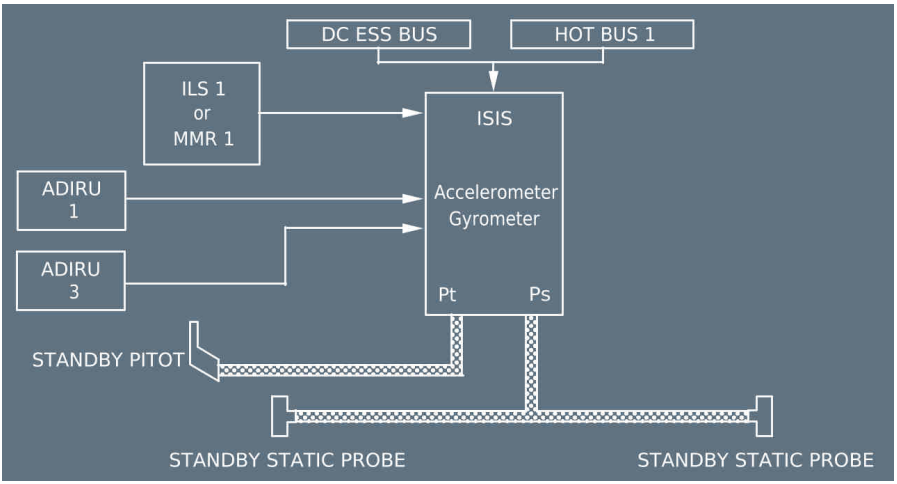


(1) "+"/ "-" activation pushbuttons

Two pushbuttons labelled "+" and "–" are used to adjust the level of brightness.
The brightness of the screen automatically adjusts after power-up tests.
This is because of the photosensitive cell located on the surface of the ISIS system display.
The "+" and "–" pushbuttons then allow this initial brightness to be manually adjusted and changed.

Note: *The system must be reset after 350 h of continuous electrical supply using the « ATT RST » pushbutton.*

ARCHITECTURE

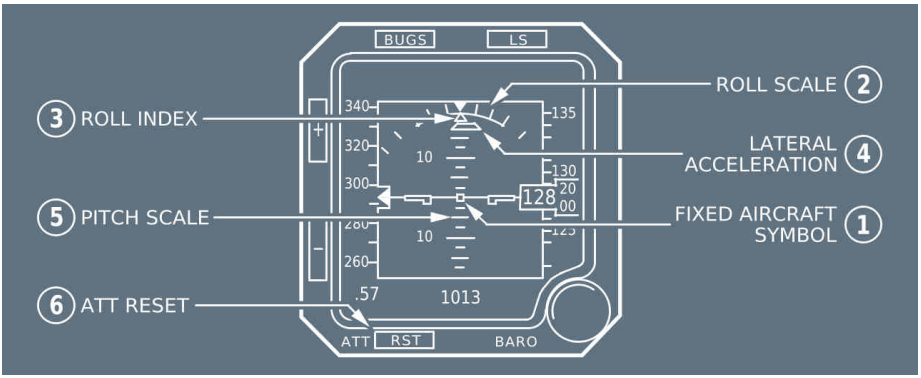


ATTITUDE

Ident.: DSC-34-NAV-20-00018575.0002001 / 21 MAR 16

[2] **Applicable to: MSN 01957-02097, 02121, 02138, 02204-02334, 02443-02457, 02584, 02649-03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 04965-09063**

Note: When leveling the wings after performing a small turn of a small bank angle, the displayed roll attitude may temporarily be incorrect by a few degrees.



(1) Fixed aircraft symbol
The fixed aircraft symbol is in black, and outlined in yellow.
Depending of the aircraft configuration, the center of the fixed aircraft symbol is a point (like on the illustration above) or “V-bars”.

(2) Roll scale
The roll scale is in white.
The markers are at 0 (small yellow triangle), 10, 20, 30, 45, 60 ° of bank.

(3) Roll index
The roll index is in black, and outlined in white. It indicates the bank angle.

(4) Lateral acceleration index
The trapezoidal index moves beneath the roll index. It represents the aircraft’s lateral acceleration.

(5) Pitch scale
The pitch scale is in white. The scale shows markers every 2.5 ° between 30 ° nose up and 30 ° nose down. Beyond 30 °, large red arrowheads (V-shaped) indicate that the attitude has become excessive, and show the direction to follow in order to reduce it. The minimum pitch scale displayed is -17.5 ° +15 ° at 0 ° pitch.

(6) ATT RST

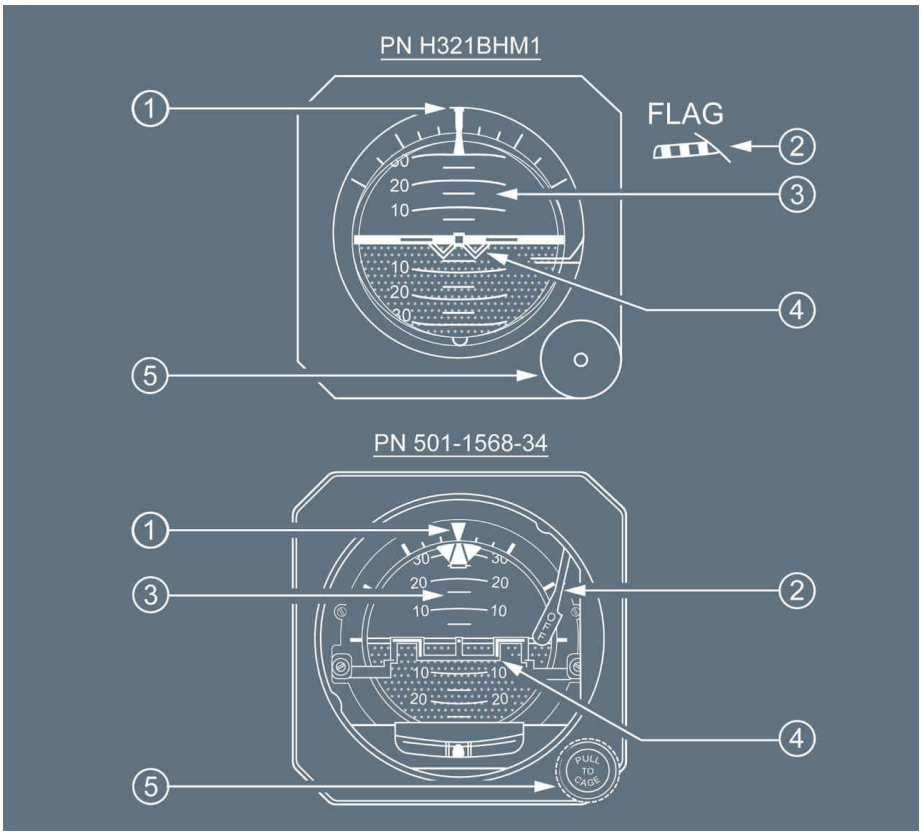
The attitude indication can be reset by pressing this pushbutton for at least 2 s. The aircraft must be level during this procedure. During the reset time (approximately 10 s), the “ATT 10 s” message is displayed on the screen. This pushbutton is also used to realign the system, if excessive aircraft movement is detected during the alignment phase.

ATTITUDE

Ident.: DSC-34-NAV-20-00018575.0001001 / 19 SEP 17

Applicable to: MSN 01767-01920, 02108, 02135, 02139-02195, 02359-02405, 02482, 02609-02626, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04954

Note: When leveling the wings, after performing a small turn of a small bank angle, the displayed roll attitude may temporarily be incorrect by a few degrees.



(1) Roll scale
The roll scale indicates the bank angle. It has bank angle graduations up to 60 °. There is no rotation limit.

(2) Flag
The flag appears if the instrument fails or if power supply fails.

(3) Pitch scale
The pitch scale indicates the pitch attitude. The Standby Horizon PN H321BHM1 can show pitch angle up to ± 85 °. The Standby Horizon PN 501-1568-34 can show pitch angle up to ± 90 °.

(4) Aircraft reference
Fixed symbol.

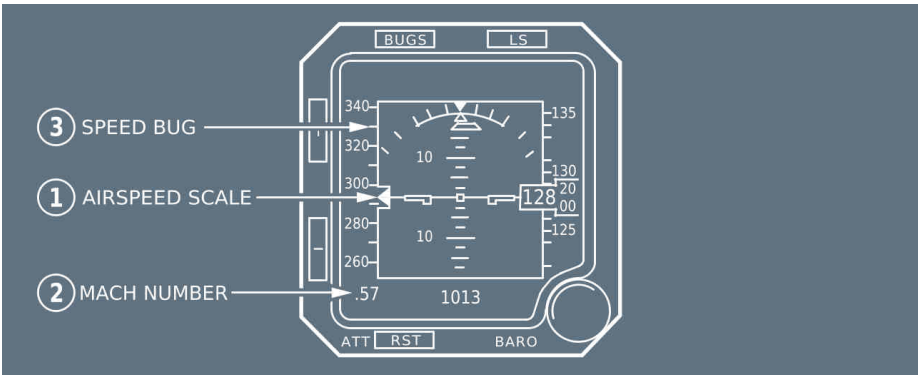
(5) Caging knob
The flight crew pulls it out to reinitialize the gyro, and to level and center the horizon. (The airplane should be level during this procedure).

Note: After low-rate turns, the standby horizon may not give accurate indications. To correct this behavior, use the caging knob when the aircraft is level.

AIRSPEED

Ident.: DSC-34-NAV-20-00018576.0002001 / 21 MAR 16

3 **Applicable to: MSN 01957-02097, 02121, 02138, 02204-02334, 02443-02457, 02584, 02649-03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 04965-09063**



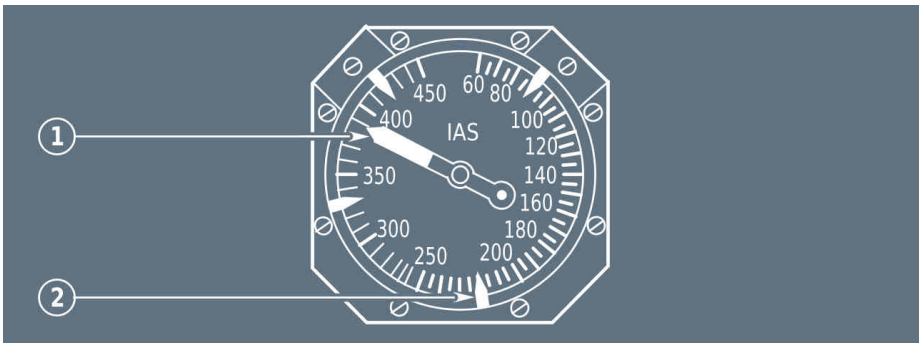
(1) Airspeed scale
A white scale moves in front of a yellow triangle indicating the airspeed. The scale ranges from 5 to 250 kt, with a mark every 5 kt, and from 250 to 520 kt, with a mark every 10 kt.

(2) Mach Number
The Mach number is displayed in green it goes greater than 0.5. And it disappears only when it goes below 0.45.

(3) Speed bug
When a speed bug is entered via the BUGS function, the corresponding speed mark is indicated by a cyan dash.

AIRSPEED

Ident.: DSC-34-NAV-20-00018576.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02135, 02139-02195, 02359-02405, 02482, 02609-02626, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04954



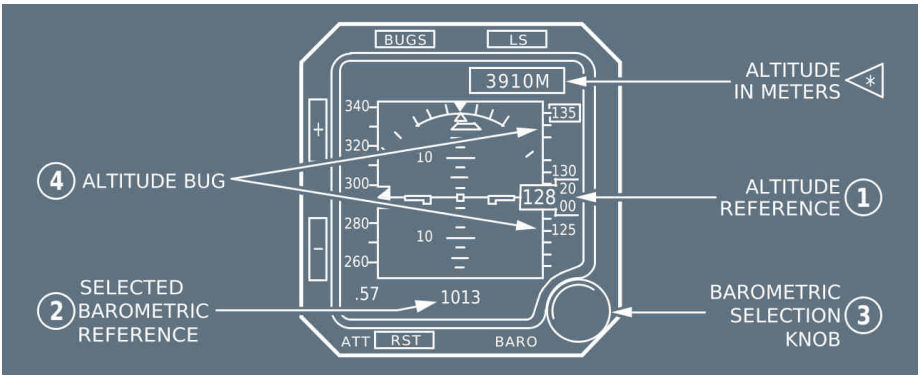
(1) Airspeed pointer

(2) Airspeed bugs (4)
For marking airspeed references.

ALTIMETER

Ident.: DSC-34-NAV-20-00018577.0002001 / 21 MAR 16

[4] **Applicable to: MSN 01957-02097, 02121, 02138, 02204-02334, 02443-02457, 02584, 02649-03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 04965-09063**



(1) Altitude indication

The altitude indication is given as a white moving scale, and a green digital readout on a gray background.

The altitude scale ranges from -2 000 to 50 000 ft every 100 ft, with altitude digital indications every 500 ft.

For negative altitudes, "NEG" appears in the window in white.

The altitude box changes to cyan, when it also corresponds to a bug value.

Depending of the aircraft configuration, the altitude in meters is displayed above the altitude scale.

(2) Barometric reference

The barometric reference pressure is displayed in cyan.

The displayed barometric reference is:

- The standard barometric reference "STD", or
- Depending of the aircraft configuration, the barometric pressure is "hPa" or "hPa/ inHg".

(3) Barometric selection knob

This knob enables the selection of a barometric pressure, setting a variation of 10 hPa per knob rotation.

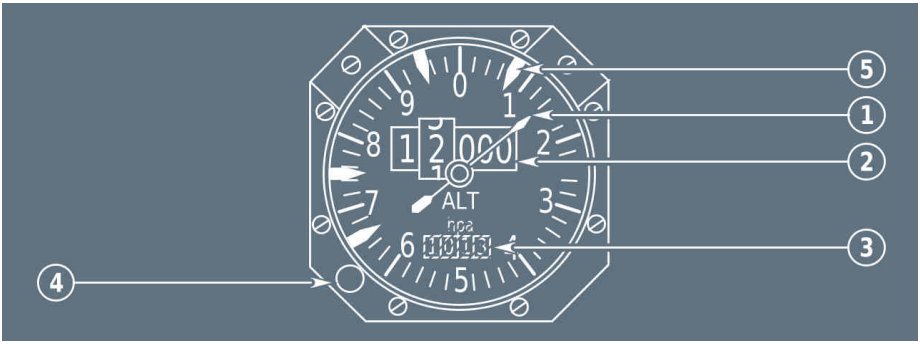
The standard barometric pressure can be selected by pressing the barometric knob. “STD” is then displayed, in place of the pressure value.

Pressing the knob again will display the selected barometric pressure.

(4) Altitude bug
When an altitude bug is entered through the bugs function, the corresponding altitude mark is indicated by a cyan dash, or by a cyan box when the dash covers the digital indication on the scale.

ALTIMETER

Ident.: DSC-34-NAV-20-00018577.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02135, 02139-02195, 02359-02405, 02482, 02609-02626, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04954



(1) Altitude pointer

(2) Altitude counter
Depending of the aircraft configuration, the unit is "feet" or "meter".

(3) Altimeter setting
Depending of the aircraft configuration, the unit is "hPa" or "inHg".

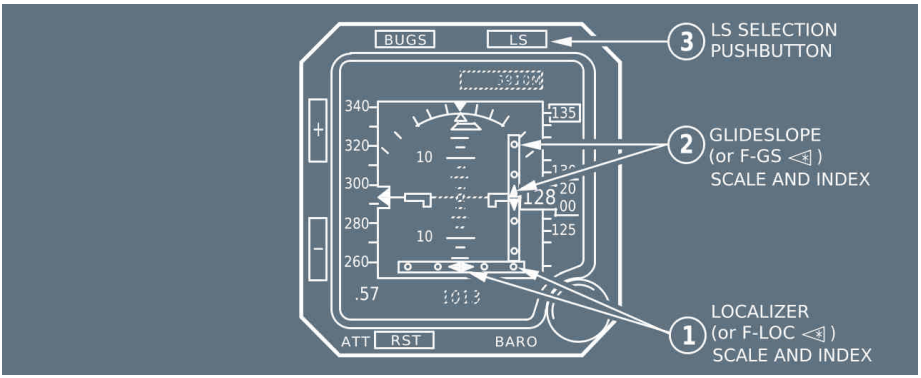
(4) Altimeter setting knob

(5) Altitude bugs (4)
For marking of altitude references.

LANDING SYSTEM FUNCTION

Ident.: DSC-34-NAV-20-00001377.0005001 / 22 JUL 14

[5] **Applicable to: MSN 01957-02097, 02121, 02138, 02204-02334, 02443-02457, 02584, 02649-03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 04965-09063**



(1) Localizer / scale and index

(2) Glideslope / scale and index

When the LS pb is pressed, the deviation scales are displayed.
When deviation scales are displayed and the LS deviations are valid, the indexes appear.

The LS deviations that are displayed correspond to the LS approach:
- Selected on the MCDU, or
- Tuned on the RMP.

Note: The LS approach corresponds to either ILS approach, or MLS ◁ approach, or GLS ◁ approach, or non precision approach using FLS ◁ .

(3) LS selection pushbutton

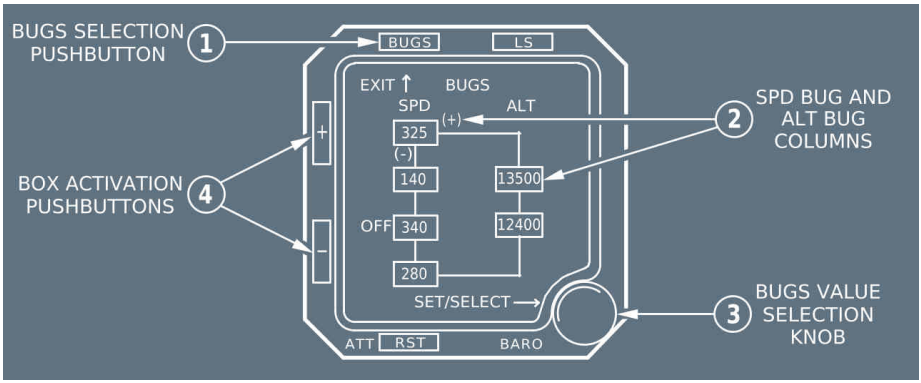
Pressing the LS pb will display the LS scales. Pressing the LS pb again will remove the LS scales.

CAUTION	Do not use the ISIS LS for takeoff using the localizer of the opposite runway, or for a back-course localizer approach. The LOC deviations are given in the wrong sense.

BUGS FUNCTION

Ident.: DSC-34-NAV-20-00018578.0001001 / 21 MAR 16

[6] **Applicable to: MSN 01957-02097, 02121, 02138, 02204-02334, 02443-02457, 02584, 02649-03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 04965-09063**



(1) BUGS function selection pushbutton
Pressing the BUGS pushbutton will activate the BUGS function and display the bug values to be selected.

(2) SPD BUG and ALT BUG columns
The SPD BUG column gives four speed values (in knots) that can be selected by the crew.
The ALT BUG column gives two altitude values (feet) to be selected by the crew.

(3) BUGS value selection knob
It allows the bug value to be set by rotating the BARO knob. This value cannot be lower than 30 kt for a speed bug, or a negative value for an altitude bug.
Pressing the BARO setting knob, once a bug value box is activated, will deselect the bug value. The “OFF” label comes on close to the activated box.
The entered values are memorized by the system, when exiting the screen, by pressing the BUGS pushbutton (1), or after 15 s without any pilot action.

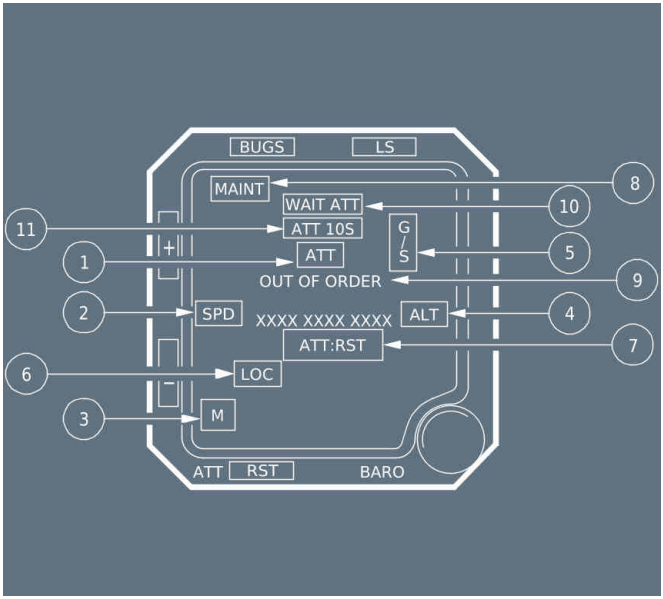
(4) “+”/”-” box activation buttons
Access from one box to another is obtained by pressing the “+” or “–” pushbutton.
When a bug value is entered, access to the next box is obtained by pressing the “–” pushbutton. The box becomes active and flashes.
The “+” pushbutton can be used to return to a previous box.

Note: *Use of the ISIS bugs function is not recommended because, in the event that both PFDs are lost in flight, when the ISIS bugs were previously set for takeoff, then for the approach, the bugs would remain at the takeoff characteristic speed settings.*

FLAGS

Ident.: DSC-34-NAV-20-00018580.0002001 / 21 MAR 16

7 **Applicable to: MSN 01957-02097, 02121, 02138, 02204-02334, 02443-02457, 02584, 02649-03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 04965-09063**



(1) ATT flag (red)
When attitude data is lost, the red ATT flag appears.

(2) SPD flag (red)
When airspeed data is lost, the red SPD flag appears.

(3) M flag (red)
When mach number is lost, the red M flag appears.

(4) ALT flag (red)
When altitude data is lost, the red ALT flag appears.

(5) G/S flag (red)
When glideslope information is lost, the red G/S flag appears.

(6) LOC flag (red)
When localizer data is lost, the red LOC flag appears.

(7) ATT: RST (yellow)

The “ATT: RST” flag appears:
- When excessive aircraft movement is detected during the alignment phase, or
- After 350 h of continuous electrical supply, or
- When the “WAIT ATT” flag is displayed during more than 10 s.

In both cases, press the ATT RST pb to reset/realign and recover the attitude indication.

(8) MAINT flag (white)
Maintenance required. This “MAINT flag” does not affect ISIS operation.
Displayed only on ground phase (speed < 60 kt).

(9) OUT OF ORDER (white)
When an internal failure of the ISIS indicator occurs, the “OUT OF ORDER” message appears, accompanied by a fault code.

(10) WAIT ATT flag (yellow)

If the ISIS looses attitude data, its entire sphere is cleared to display the: “WAIT ATT” flag.
- If the “WAIT ATT” flag is displayed during less than 10 s, a normal operation is recovered.
- If attitude data are lost for more than 10 s, the “WAIT ATT” flag is then replaced by the “ATT: RST” flag.

(11) ATT 10 s flag (yellow)
This count down flag appears, when the flight crew press the ATT RST pb, in order to indicate that the attitude reset function is in progress.

GENERAL

Ident.: DSC-34-NAV-30-10-00018581.0001001 / 21 MAR 16
Applicable to: ALL

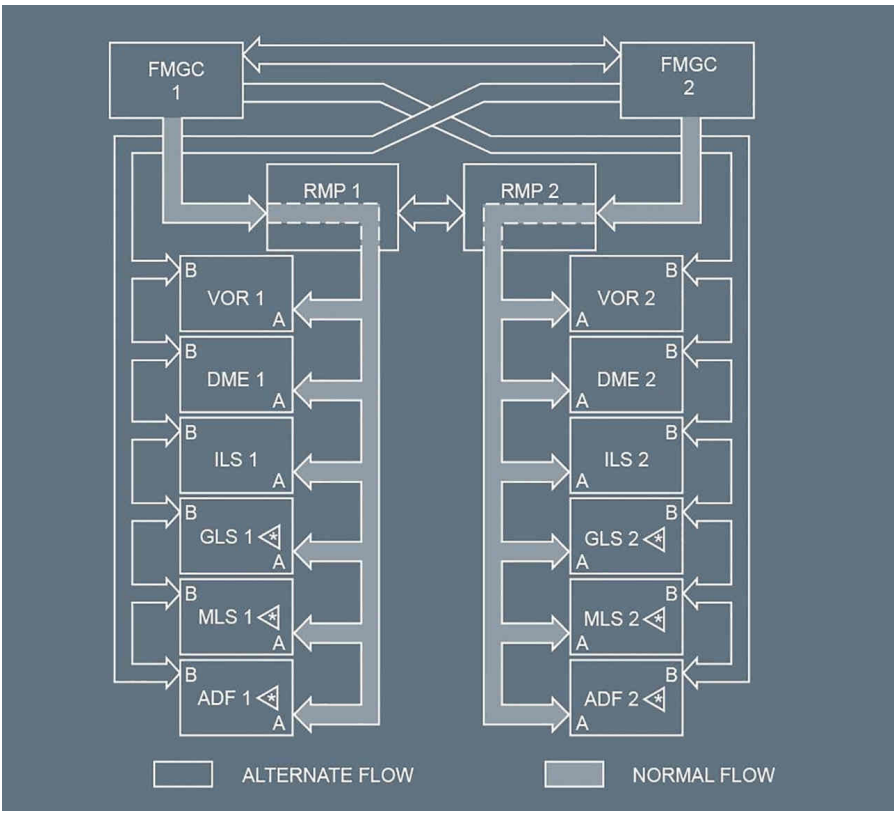
Three modes of tuning are available.

1. **Automatic Tuning**
   This is the basic means for tuning navaids.
   In normal operation, the FMGC tunes navaids automatically, with each FMGC controlling its own receivers.
   If one FMGC fails, the remaining FMGC controls both sides receivers.
2. **Manual Tuning**
   The flight crew can use the MCDU to override the automatic tuning of navaids by FMGC in order to select a specific navaid for visual display.
   This does not affect the automatic function of the FMGC.
   Any entry on one MCDU is sent to both FMGC in dual mode, or the remaining FMGC in single mode.
3. **Back Up Tuning**
   If both FMGCs fail, the flight crew can use the RMPs (Radio Management Panels 1 and 2) on the pedestal for back up tuning.
   The CAPT RMP controls VOR1 and ADF 1 ◁.
   The F/O RMP controls VOR2 and ADF 2 ◁.
   Either RMP controls ILS/GLS ◁ / MLS ◁, provided “STBY NAV” is selected on RMP1 and RMP2. RMP3 ◁ is not used for navaids tuning.

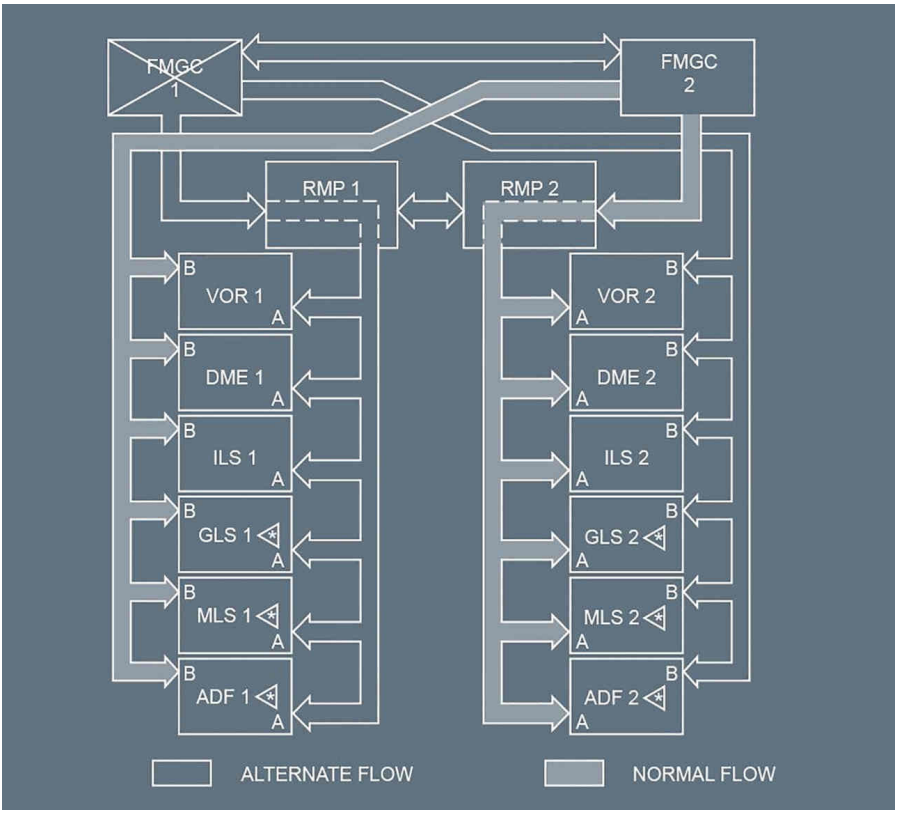
ARCHITECTURE

Ident.: DSC-34-NAV-30-10-00018582.0001001 / 21 MAR 16
Applicable to: ALL

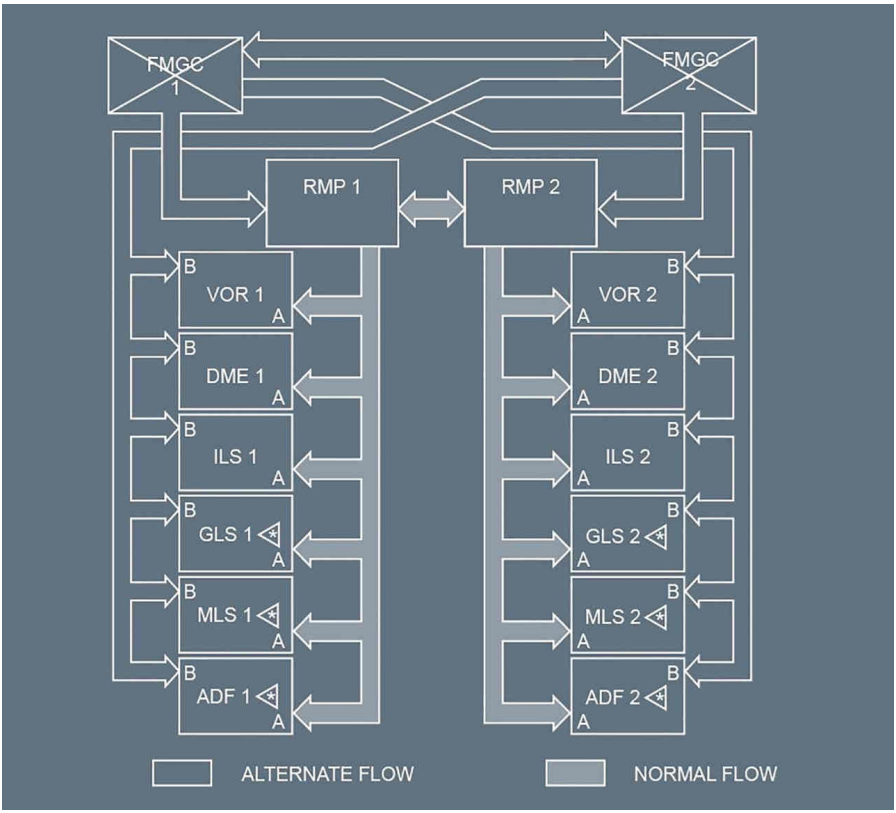
NORMAL OPERATION



FMGC 1 FAILURE



BACK UP TUNING



VOR

Ident.: DSC-34-NAV-30-20-00018657.0001001 / 21 MAR 16
Applicable to: ALL

The aircraft has two VOR receivers.

- The Navigation Displays (NDs) display VOR1 and VOR2 information, in accordance with the position of the ADF ◁ /VOR selectors on the EFIS control panel (*Refer to DSC-31-45 ROSE Modes*).
- The DDRMI ◁ also displays VOR1 and VOR2 bearings, if the heading signal is valid.

ILS/GLS ◁ /MLS ◁

Ident.: DSC-34-NAV-30-20-00018658.0001001 / 21 MAR 16
Applicable to: ALL

The aircraft has two ILS/GLS ◁ /MLS ◁ receivers.

Note: When the aircraft is equipped with MMRs, ILS and GLS ◁ and MLS ◁ receivers are in the MMRs (ILS1/GLS1 ◁ /MLS1 ◁ in the MMR1 and the ILS2/GLS2 ◁ /MLS2 ◁ in the MMR2)

- PFD1 and ND2 display ILS1/GLS1 ◁ /MLS1 ◁ information.
- PFD2 and ND1 display ILS2/GLS2 ◁ /MLS2 ◁ information.
- The PFD display the ILS/GLS ◁ /MLS ◁ information if the flight crew press the LS pb or ILS pb (depending of the aircraft configuration) on the EFIS control panel (*Refer to DSC-31-50 EFIS Control Panel*).
- The NDs display the ILS/GLS ◁ /MLS ◁ information if the flight crew selects the ROSE LS mode or the ROSE ILS mode (depending of the aircraft configuration) on the EFIS control panel (*Refer to DSC-31-50 EFIS Control Panel*).

ADF ◁

Ident.: DSC-34-NAV-30-20-00018659.0002001 / 21 MAR 16
Applicable to: MSN 02443, 02670

The aircraft may be fitted with 1 ADF ◁ or 2 ADF ◁ .
The NDs display ADF ◁ information, depending on the position of the ADF/VOR selectors on the EFIS control panel (*Refer to DSC-31-45 ROSE Modes*).
The DDRMI ◁ also displays ADF 1 ◁ and ADF 2 ◁ bearings, depending on the position of the ADF/VOR selector on the DDRMI ◁ .
ADF 2 ◁ is deactivated if SAT TV modification has been incorporated.

ADF

Ident.: DSC-34-NAV-30-20-00018659.0001001 / 21 MAR 16

1 **Applicable to: MSN 01767-02405, 02457-02649, 02712-09063**

The aircraft may be fitted with 1 ADF or 2 ADF .

The NDs display ADF information, depending on the position of the ADF/VOR selectors on the EFIS control panel (*Refer to DSC-31-45 ROSE Modes*).

The DDRMI also displays ADF 1 and ADF 2 bearings, depending on the position of the ADF/VOR selector on the DDRMI .

DME

Ident.: DSC-34-NAV-30-20-00018660.0001001 / 21 MAR 16

Applicable to: ALL

The aircraft has two DMEs.

The frequency that is automatically set on the DME corresponds to the frequency/channel that is set on the VOR, or ILS, or GLS , or MLS .

The NDs and the DDRMI can display DME information associated with VOR.

The PFDs can display DME information associated with ILS/GLS /MLS (*Refer to DSC-31-40 Trajectory Deviation - ILS Approach*).

MARKER BEACON

Ident.: DSC-34-NAV-30-20-00001389.0001001 / 21 MAR 16

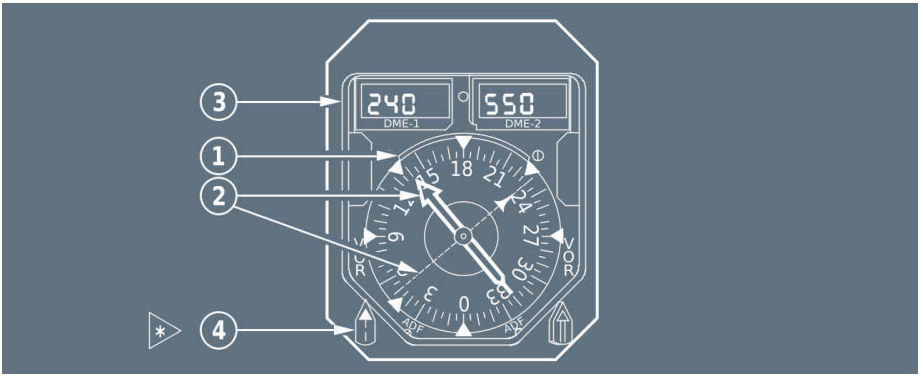
Applicable to: ALL

One marker beacon system is included in VOR receiver 1.

The PFD displays the outer, middle, and inner marker signals (*Refer to DSC-31-40 Trajectory Deviation - ILS Approach*).

DIGITAL DISTANCE AND RADIO MAGNETIC INDICATOR ◁ (DDRMI)

Ident.: DSC-34-NAV-30-30-00018583.0001001 / 21 MAR 16
Applicable to: ALL



(1) Compass card
ADIRU1 normally supplies the signal that positions the compass card.
ADIRU3 supplies this signal when selected by the ATT HDG SWITCHING selector.

(2) Bearings pointers
Indicate the magnetic bearing to the station received by VOR1 or ADF 1 ◁ (dashed pointer) and VOR2 or ADF 2 ◁ (double pointer).

Note: *Depending on the quality of the VOR beacon's signal, and mainly at distances greater than 25 NM from the station, the processing of the signal, on aircraft equipped with COLLINS or BENDIX VOR may lead to bearing pointer oscillations.*

(3) DME1(2) counters
Indicates distance in nautical miles to/from DME station.

The counters indicate distances:
- in NM when the station is at more than 20 NM
- 1/10th of NM when the station is at less than 20 NM.

When the station is at less than 1 NM, 0 is shown.
The DME1 and DME2 display are blanked or dashed when a fault is detected or data invalid.

(4) VOR/ADF selector ◁

- VOR1 or ADF 1 ◁ on the dashed pointer.
- VOR2 or ADF 2 ◁ on the double pointer (if ADF2 is not installed, then ADF1 may be selected).

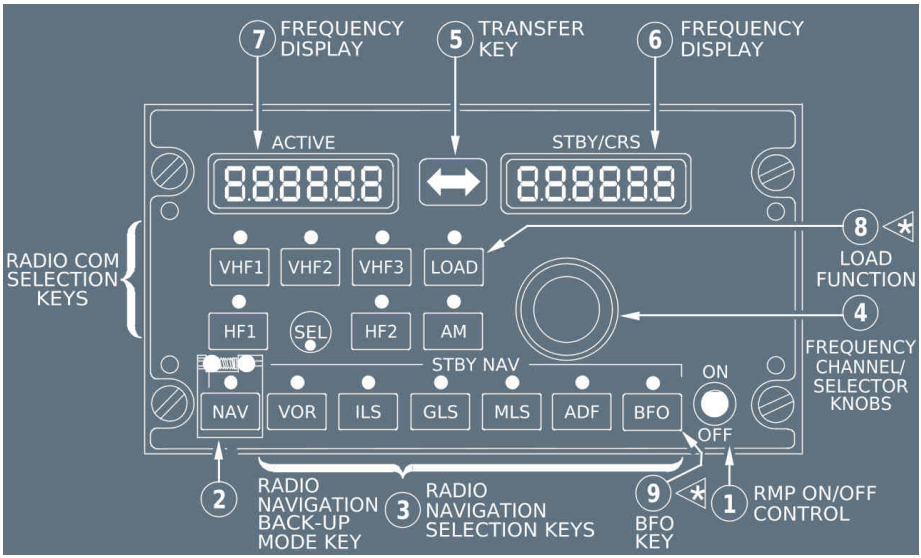
The DDRMI ◁ has also VOR/ADF flags and HDG flags when the associated information is not available.

The indicators display these flags if:
- The VOR or ADF receiver fails (associated to the VOR/ADF flag only)
- The DDRMI ◁ has an internal failure
- The heading signal from ADIRS is not valid
- The power supply fails.

As long as the VOR/ADF flag is shown, and depending of the aircraft configuration, the associated bearing pointer remains:
- At the last valid position, or
- Into the horizontal line.

RADIO MANAGEMENT PANEL (RMP)

Ident.: DSC-34-NAV-30-30-00018584.0001001 / 21 MAR 16
Applicable to: ALL



(1) ON/OFF sw
This switch controls the power supply to the panel.

(2) NAV key (transparent switchguard)

- Pressing this key engages the radio navigation backup mode. It takes control of the VOR, ILS, GLS ◁ , MLS ◁ and ADF ◁ receivers away from the FMGC and gives it to the RMP.
- The green monitor light comes on.
- Pressing the NAV key a second time returns control of the navigation radios to the FMGC.

Note:
- *The flight crew must select this backup tuning mode on both RMP1 and RMP2 if both FMGCs or both MCDUs fail. In the emergency electrical configuration, only RMP1 receives power*
- *Pressing the NAV key on RMP3 ◁ has no effect*
- *In the NAV backup mode, the flight crew can select radio communication systems as it would in the normal mode.*
  Setting one RMP to NAV backup mode removes navaids tuning from both FMGCs.
- *When the flight crew uses an RMP to tune an ILS/DME or GLS ◁ /DME or MLS ◁ /DME, the PFDs do not display the DME distance.*

(3) STBY NAV keys
When the NAV key is on and the flight crew presses one of these STBY NAV keys, the ACTIVE window displays the frequency/channel to which that receiver is tuned. The green monitor light on the selected key comes on, and the one on the previously selected STBY NAV or COM key goes out.

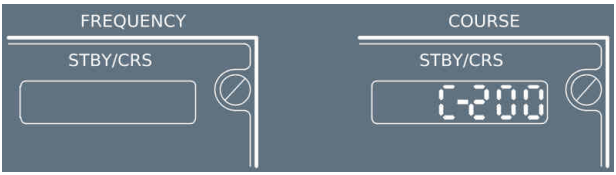
(4) Frequency/channel selector knob
Two concentric knobs allow the flight crew to preselect frequencies/channels for communication radios and stand-by navigation systems and select courses for VOR, ILS, GLS ◁ and MLS ◁ .
The desired frequency, channel or course is set in the STBY/CRS window.
The outer and the inner knobs set a frequency/channel: the outer knob controls the most significant digits, the inner knob controls the least significant digits. A rate multiplier speeds up the tuning when the knob is rotated quickly.
The inner knob only sets a course.

(5) Transfer key
The flight crew presses this key to interchange ACTIVE and STBY frequencies/channels. This action tunes the selected receiver to the new ACTIVE frequency/channel.

(6) STBY/CRS window

The flight crew can make the displayed frequency /channel by rotating the tuning knob.
The frequency/channel displayed in the window becomes the active frequency/channel when the flight crew presses the Transfer Key.
If this window displays a course, then the ACTIVE window displays the associated frequency/channel.

Note: If the STBY/CRS window is displaying a course, then pressing the transfer key displays the active frequency/channel in both windows.



(7) ACTIVE window

This window displays the frequency/channel of the selected navaid, which is identified by a green monitor light on the selection key.

(8) LOAD FUNCTION

The flight crew can load the VHF frequency from the CPDLC CONTACT/MONITOR messages to the STBY/CRS window.

(9) BFO key

If the ADF is selected, rressing this key activates the BFO (Beat Frequency Oscillator).
For most ADF, with BFO activated, the audio identification is heard. However there are some ADF where the BFO must be deactivated in order to hear the audio identification.

GENERAL

Ident.: DSC-34-NAV-40-10-00018585.0001001 / 21 MAR 16
Applicable to: ALL

The aircraft has two radio altimeters (RA).
CAPT PFD displays the RA1 height, and the F/Os PFD displays the RA2 height.
If one RA fails, both PFDs display the height from the remaining RA.
For indication on the PFD, *Refer to DSC-31-40 Altitude (CONT'D)*.

AUTOMATIC CALLOUT

Ident.: DSC-34-NAV-40-10-00018656.0001001 / 21 MAR 16
Applicable to: ALL

GENERAL

The FWC generates a synthetic voice for radio height announcement below 2 500 ft. These announcements come through the cockpit loudspeakers, even if the speakers are turned off.

PREDETERMINED CALL OUT

The altitude call out uses the following predetermined threshold:

Height (feet)	Call out
2 500	TWO THOUSAND FIVE HUNDRED OR TWENTY FIVE HUNDRED
2 000	TWO THOUSAND
1 000	ONE THOUSAND
500	FIVE HUNDRED
400	FOUR HUNDRED
300	THREE HUNDRED
200	TWO HUNDRED
115	STANDBY (1)
100	ONE HUNDRED
90	STANDBY (1)
65	FLARE (1)
50	FIFTY
40	FORTY
30	THIRTY
20	TWENTY
10	TEN
5	FIVE
DH (or MDA/MDH) + 100	HUNDRED ABOVE
DH (or MDA/MDH)	MINIMUM

(1) *These callouts are triggered only if the Steep Approach and Landing function is active. In this case, the "ONE HUNDRED" callout is inhibited.*

Note: The reference altitude for callouts is the radio height for precision approaches (DH), and baro altitude (MDA/MDH) for non precision approaches.

Pin programming enables Operators to select the required callouts. If the aircraft remains at a height that is in the detection zone for a height callout, the corresponding message is repeated at regular intervals.

INTERMEDIATE CALL OUT

If time between two consecutive predetermined call outs exceeds a certain threshold, the present height is repeated at regular intervals.

The threshold is:
- 11 s above 50 ft
- 4 s below 50 ft

The repeating interval is 4 s.

RETARD ANNOUNCEMENT

The loudspeaker announces RETARD at:

- 20 ft, or
- at 10 ft if autothrust is active and one autopilot is in LAND mode.

AIRCRAFT SYSTEMS

SURVEILLANCE

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DSC-34-SURV-10 ATC

DSC-34-SURV-10-10 Description

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ADS-B OUT....B

DSC-34-SURV-10-20 Controls and Indicators

Control Panels....A

DSC-34-SURV-10-30 Remote ATC Box

Remote ATC Box....A

DSC-34-SURV-30 Weather Radar

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Description....A

DSC-34-SURV-30-15 On Path Envelope Boundaries Definition

On Path Envelope Boundaries Definition....A

DSC-34-SURV-30-20 Predictive Windshear System

General....A
Windshear Alerts During Takeoff Roll, Up to 100 knots....B
Windshear Alerts Above 50 feet....C
Windshear Alerts Inhibition....D

DSC-34-SURV-30-30 Controls and Indicators

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Weather Hazard Prediction Function Indication on ND....E
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DSC-34-SURV-40 GPWS

DSC-34-SURV-40-10 Description

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Mode 2 : Excessive Terrain Closure Rate..... B
Mode 3 : Altitude Loss After Takeoff..... C
Mode 4 : Unsafe Terrain Clearance when Not in Landing Configuration..... D
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DSC-34-SURV-40-35 Predictive GPWS Functions

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DSC-34-SURV-60 TCAS

DSC-34-SURV-60-10 Description

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DSC-34-SURV-60-20 Controls and Indicators

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Localization Title	Toc Index	ID	Reason
DSC-34-SURV-10-10 Principle	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-34-SURV-10-10 Principle	A	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-34-SURV-10-10 ADS-B OUT	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-10-20 Control Panels	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-30-10 Description	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-34-SURV-30-10 Description	A	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-34-SURV-30-15 On Path Envelope Boundaries Definition	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-34-SURV-30-20 General	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-34-SURV-30-20 General	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-34-SURV-30-20 Windshear Alerts During Takeoff Roll, Up to 100 knots	B	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-34-SURV-30-20 Windshear Alerts During Takeoff Roll, Up to 100 knots	B	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-34-SURV-30-20 Windshear Alerts Above 50 feet	C	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-34-SURV-30-20 Windshear Alerts Above 50 feet	C	6	Effectivity update: The information no longer applies to MSN 05449.
DSC-34-SURV-30-20 Windshear Alerts Inhibition	D	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-30-30 Control Panel	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-34-SURV-30-30 Control Panel	A	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-34-SURV-30-30 Weather Radar indication on ND	C	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-34-SURV-30-30 Weather Radar indication on ND	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
DSC-34-SURV-30-30 PWS ≪ indication on PFD and ND	D	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-30-30 Weather Hazard Prediction Function Indication on ND	E	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-34-SURV-30-30 Memo Display	F	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-40-20 Mode 1 : Excessive Rate of Descent	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-40-20 Mode 2 : Excessive Terrain Closure Rate	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-40-20 Mode 3 : Altitude Loss After Takeoff	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-40-20 Mode 4 : Unsafe Terrain Clearance when Not in Landing Configuration	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-40-20 Mode 5 : Descent Below Glideslope	E	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-40-35 Terrain Awareness and Display	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-40-35 Terrain Caution and Warning Envelope	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-40-35 Terrain Clearance Floor	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-40-35 Runway Field Clearance Floor	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-40-40 Instrument Panels	B	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-34-SURV-40-40 Instrument Panels	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
DSC-34-SURV-40-40 GPWS FLAP 3	C	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-34-SURV-40-40 TERR STBY	C	4	Effectivity update: The information no longer applies to MSN 05449.
DSC-34-SURV-40-40 TERR STBY	C	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-34-SURV-60-10 Traffic Advisory Only (TA ONLY) Mode	E	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-60-10 AP/FD TCAS	F	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-34-SURV-60-20 ATC/TCAS Panel	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-60-20 PFD Indications	D	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-60-20 Aural Messages	E	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-34-SURV-60-20 Memo Display	F	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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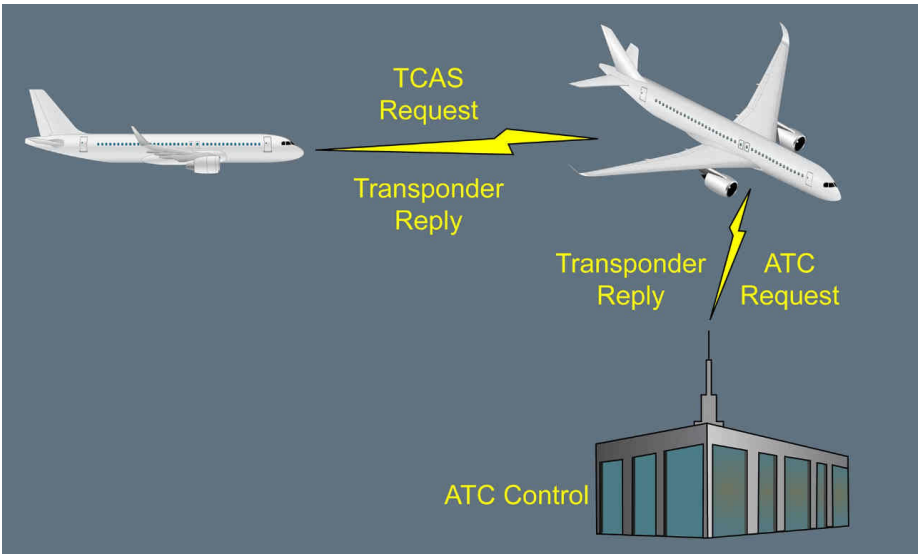
PRINCIPLE

Ident.: DSC-34-SURV-10-10-00020602.0001001 / 17 MAR 17

[1] **Applicable to: MSN 02204, 02405, 02482, 02649, 02737, 02914, 03138, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-09063**

The aircraft has two ATC transponders (XPDR) which are controlled by a control panel (ATC/TCAS) on the center pedestal.
Only the selected XPDR operates.

The XPDR automatically responds to requests:
- From the ATC, to ensure effective air traffic surveillance
- From other aircraft that have a TCAS, to ensure that traffic alerts are triggered.



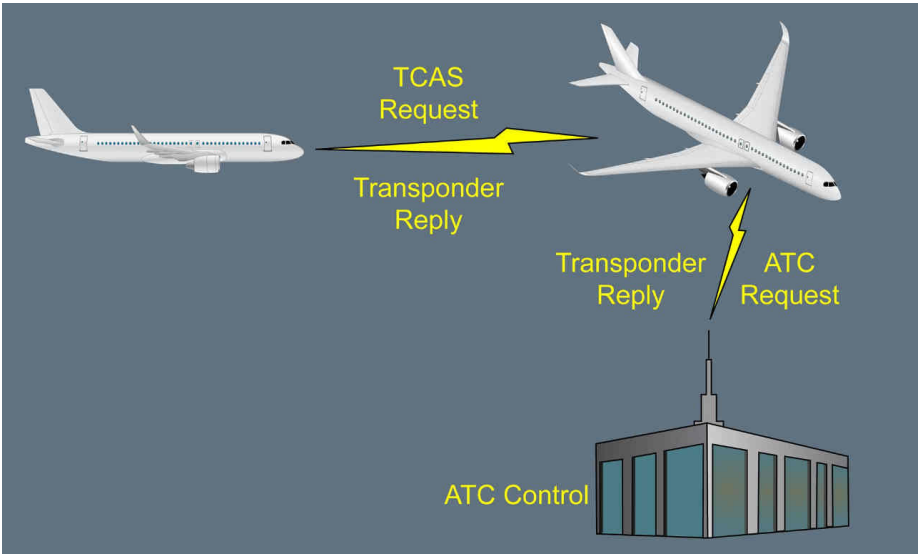
PRINCIPLE

Ident.: DSC-34-SURV-10-10-00020602.0002001 / 17 MAR 17

[2] **Applicable to: MSN 01767-02195, 02275-02388, 02443-02457, 02584-02626, 02670-02712, 02804-02908, 03071, 03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 05120, 05218**

The aircraft has two ATC transponders (XPDR) which are controlled by a control panel (ATC/TCAS) on the center pedestal.
Only the selected XPDR operates.

The XPDR automatically responds to requests:
- From the ATC, to ensure effective air traffic surveillance
- From other aircraft that have a TCAS, to ensure that traffic alerts are triggered.



The XPDR is capable of elementary surveillance (ELS) and enhanced surveillance (EHS). It transmits the following data to the ATC center:
- The aircraft 24 bit address, the aircraft altitude, the flight number, the RA report
- The indicated airspeed, the Mach number, and the barometric vertical speed that are all supplied by the ADRs
- The magnetic heading, the roll angle, the ground speed, the track angle, the track angle rate, and the inertial vertical speed, that are all supplied by the IRs
- The selected altitude and barometric reference settings supplied by the FCUs.

ADS-B OUT

Ident.: DSC-34-SURV-10-10-00020606.0002001 / 17 MAR 17

[3] **Applicable to: MSN 01920, 02135, 02139-02195, 02457, 02584-02626, 02670-02712, 02908-03071, 03357-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-09063**

With the ADS-B OUT capability, the Mode S transponders automatically and continuously transmit surveillance data, without preliminary interrogation, to:

- The ATC ground station
- Aircraft capable of ADS-B IN function.

The ADS-B OUT surveillance data that are automatically and continuously transmitted, include the following:

- The latitude and longitude, the Horizontal Integrity Limit (HIL), the difference between barometric altitude and geometric altitude, the ground speed, all supplied by GPS
- The barometric altitude supplied by ADIRS
- The track, the vertical speed, all supplied by the IRs
- The flight number (registered on the ATC flight plan and entered in the FMS during cockpit preparation) supplied by the FMS
- The emergency situation indicator
- The selected altitude and heading, the barometric pressure setting (QNH/QFE) from FCU.

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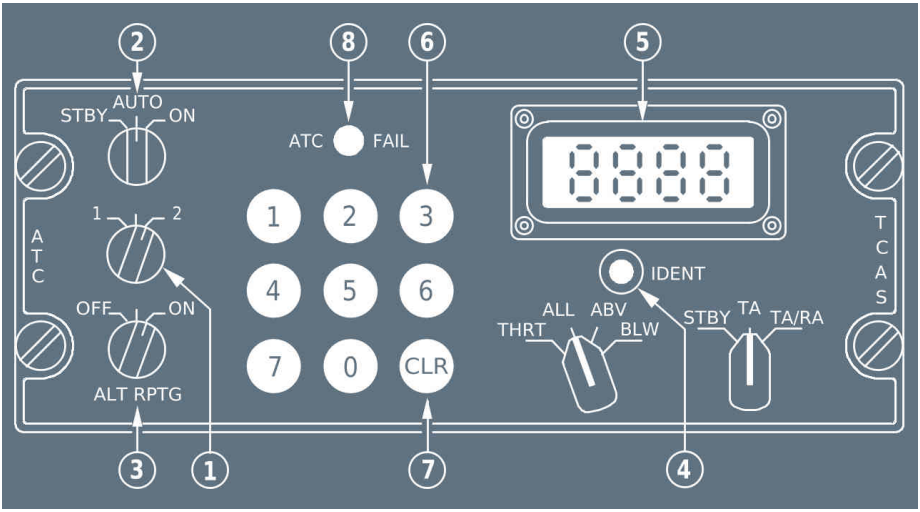
CONTROL PANELS

Ident.: DSC-34-SURV-10-20-00020607.0009001 / 17 MAR 17

[1] **Applicable to: MSN 01767-02204, 02388, 02443, 02649-04312, 04328-04384, 04399-09063**



(1) XPDR Selector
This switch selects XPDR 1 or 2.

(2) Mode Selector

STBY	:	Both XPDR are electrically supplied but do not operate.
ON	:	Selected XPDR operates.
AUTO	:	In flight : Selected XPDR operates.
AUTO	:	On ground : Selected XPDR only operates in mode S (Selective aircraft interrogation mode).

(3) ALT RPTG Switch

ON	:	The XPDR sends barometric standard altitude data.
OFF	:	No altitude data transmission. If the TCAS is installed, the upper ECAM displays "TCAS STBY" in green.

(4) IDNT Switch
The flight crew presses this button to send the aircraft identification signal.

(5) Code Display
The window displays the selected code.

(6) Keypad
The flight crew uses the keypad to set the code assigned by ATC.

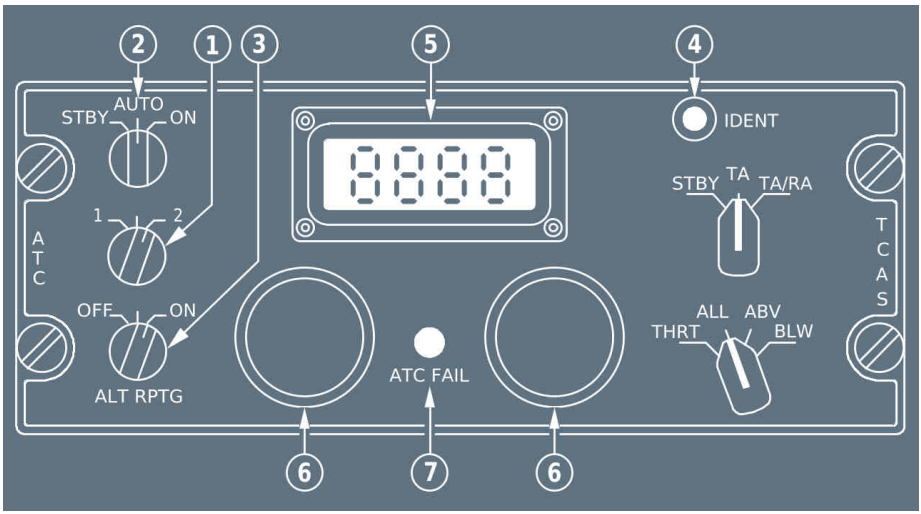
(7) CLR Key
The flight crew uses this key to clear the code display.

Note: As long as the four figures of the new code are not entirely written, the previous code remains.

(8) ATC FAIL Light
This light comes on if the selected XPDR fails.

CONTROL PANELS

Ident.: DSC-34-SURV-10-20-00020607.0037001 / 17 MAR 17
Applicable to: MSN 02584, 04314, 04393-04397



(1) XPDR Selector
This switch Selects XPDR 1 or 2.

(2) Mode Selector

STBY	:	Both XPDR are electrically supplied but do not operate.
ON	:	Selected XPDR operates.

AUTO : In flight : Selected XPDR operates.

AUTO : On ground : Selected XPDR only operates in mode S (Selective aircraft interrogation mode).

(3) ALT RPTG Switch

ON : The XPDR sends barometric standard altitude data.

OFF : No altitude data transmission. If the TCAS is installed, the upper ECAM displays "TCAS STBY" in green.

(4) IDENT Switch
The flight crew presses this button to send the aircraft identification signal.

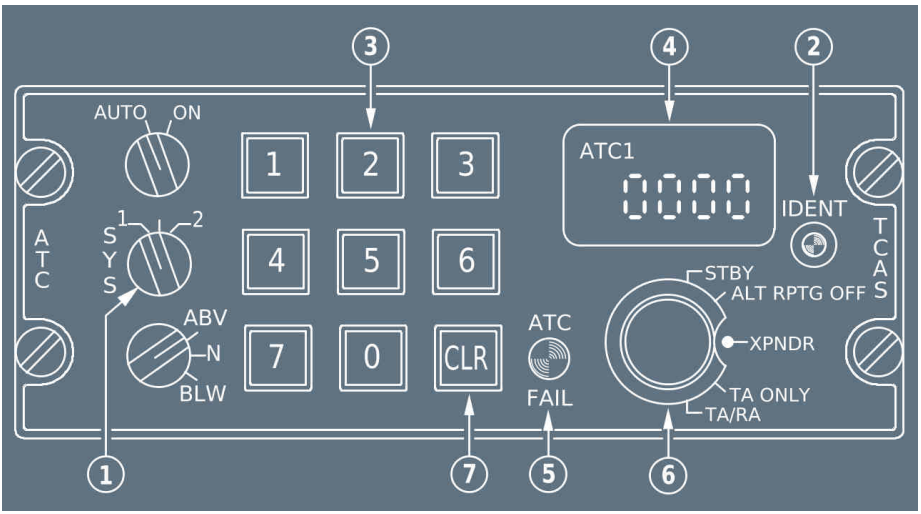
(5) Code Display
The window displays the code selected.

(6) Knobs
The flight crew uses these knobs to set the code assigned by ATC.

(7) ATC FAIL Light
This light comes on if the selected XPDR fails.

CONTROL PANELS

Ident.: DSC-34-SURV-10-20-00020607.0012001 / 17 MAR 17
Applicable to: MSN 02275-02359, 02405, 02457-02482, 02609-02626



(1) XPDR Selector
Selects XPDR 1 or 2.

(2) IDENT Switch
The flight crew presses this button to send the aircraft identification signal.

(3) Keypad
The flight crew uses these key to set the code assigned by ATC.

(4) Code Display
The window displays the selected code.

(5) ATC FAIL Light
This light comes on if the selected XPDR fails.

(6) Mode Selector

STBY	:	Both XPDR and TCAS are electrically-supplied, but are on standby.
ALT RPTG OFF	:	No altitude data is transmitted.
XPNDR	:	In flight : Selected XPDR operates in all modes. Baro altitude data is transmitted. ATC 1 uses ADR 1 or ADR 3. ATC 2 uses ADR 2 or ADR 3. The TCAS is on standby.
XPNDR	:	On ground : Selected XPDR only operates in mode S (Selective aircraft interrogation mode).
TA-RA/TA	:	*Refer to DSC-34-SURV-60-20 ATC/TCAS Panel*.

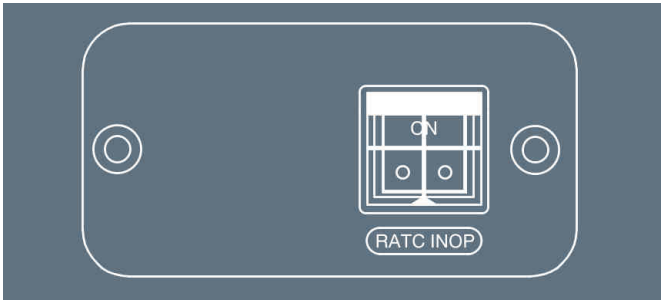
(7) CLR Key
The flight crew uses this key to clear the code display.

Note: As long as the four figures of the new code are not entirely written, the previous code remains.

REMOTE ATC BOX

Ident.: DSC-34-SURV-10-30-00006182.0003001 / 14 MAY 12
Applicable to: MSN 02097, 02121, 02138

This control panel enabled the crew to easily and rapidly inform the ATC of a hijacking situation.
When one of the two pushbuttons was pressed, Transponder 1 emitted the Hijacking code (7500) via the remote ATC box that was powered by a secured power source.
This function is now deactivated.



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DESCRIPTION

Ident.: DSC-34-SURV-30-10-00014867.0001001 / 21 MAR 17
Applicable to: MSN 01767-01920, 02108, 02135, 02139-02275, 02359-02482, 02670-02712, 02804-02914, 04314, 04393, 04491

The aircraft is fitted with one (or two ◁) weather radar system(s) with a Predictive WindShear (PWS ◁) function.
If two weather radar systems are installed, only one system is active at a time. The flight crew can display weather data on the CAPT and/or F/O NDs in either ARC or ROSE mode.
The flight crew can adjust the brightness of the weather image on the ND thanks the outer knob of the ND Brightness Control knob (*Refer to DSC-31-50 Other EFIS Controls*).

Note: *A low brightness setting of the weather display may reduce the visibility of weather data, and therefore reduce crew awareness of the weather situation.*

The flight crew can adjust manually the antenna tilt settings, and can adjust gain either automatically or manually using knobs located on the radar control panel.

DESCRIPTION

Ident.: DSC-34-SURV-30-10-00014867.0002001 / 22 MAR 17
[1] **Applicable to: MSN 01957-02097, 02121, 02138, 02334, 02584, 02649, 02737, 03071, 03264-04312, 04328-04384, 04399-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063**

The aircraft is fitted with one or two ◁ Multiscan weather radar systems with a Predictive WindShear (PWS ◁) function and a weather hazard prediction function ◁ .
The flight crew can display weather data on the CAPT and/or F/O NDs in either ARC or ROSE mode.
The flight crew can adjust the brightness of the weather image on the ND thanks the outer knob of the ND Brightness Control knob (*Refer to DSC-31-50 Other EFIS Controls*).

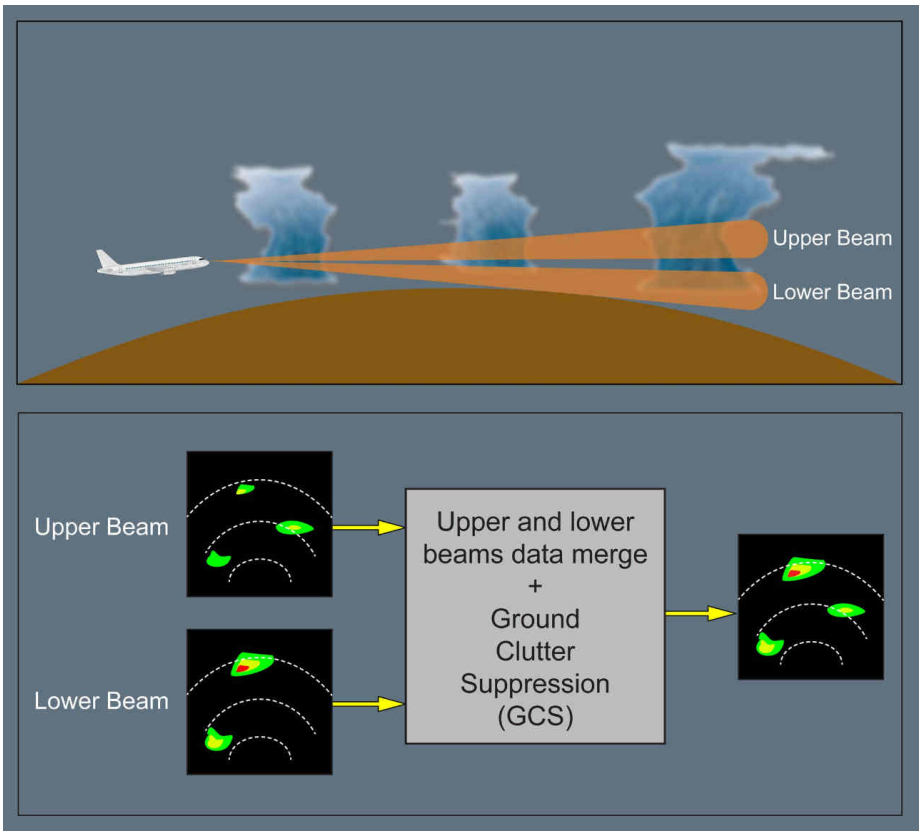
Note: *A low brightness setting of the weather display may reduce the visibility of weather data, and therefore reduce crew awareness of the weather situation.*

The flight crew can use the radar in the following modes:
- Multiscan Automatic mode: MULTISCAN sw set to AUTO (recommended), or
- Manual mode: MULTISCAN sw set to MAN.

When in Multiscan Automatic mode:
- The radar alternatively scans at two antenna tilt settings. The weather radar image that is displayed is the result of the stored and combined information from each beam.
- When the gain selector is set to the Calibrated position (CAL), the radar automatically adjusts the gain based on various parameters (aircraft altitude, geographical area, season, time of the day) to obtain the best weather display.

- To prevent unnecessary clutter display, the “Quiet and Dark cockpit” philosophy removes the weather that:
  - is not on the aircraft flight path
  - is not a threat to the aircraft (post convective cell).
- The Ground Clutter Suppression (GCS) function removes the ground returns from the ND.

Multiscan Principle



When in Manual mode:

- The flight crew can adjust manually the antenna tilt settings, and can adjust gain either automatically or manually using knobs located on the radar control panel
- The GCS function is not available
- When the gain selector is set to CAL, there is no automatic gain adjustment based on altitude, geographical area, season and time of the day.

As a consequence, when the flight crew switches from the Multiscan Automatic mode with CAL gain to the Manual mode with CAL gain, the weather displayed on the ND may be significantly different.

DESCRIPTION

Ident.: DSC-34-SURV-30-10-00014867.0003001 / 21 MAR 17
Applicable to: MSN 02609-02626, 03138, 05158

The aircraft is fitted with one (or two ◁) Autotilt weather radar system(s) with a Predictive WindShear (PWS ◁) function.
The flight crew can adjust the brightness of the weather image on the ND thanks the outer knob of the ND Brightness Control knob (*Refer to DSC-31-50 Other EFIS Controls*).

Note: A low brightness setting of the weather display may reduce the visibility of weather data, and therefore reduce crew awareness of the weather situation.

The flight crew can use the radar in either Multiscan (automatic) mode (recommended setting) or in manual mode.
When in Autotilt mode:

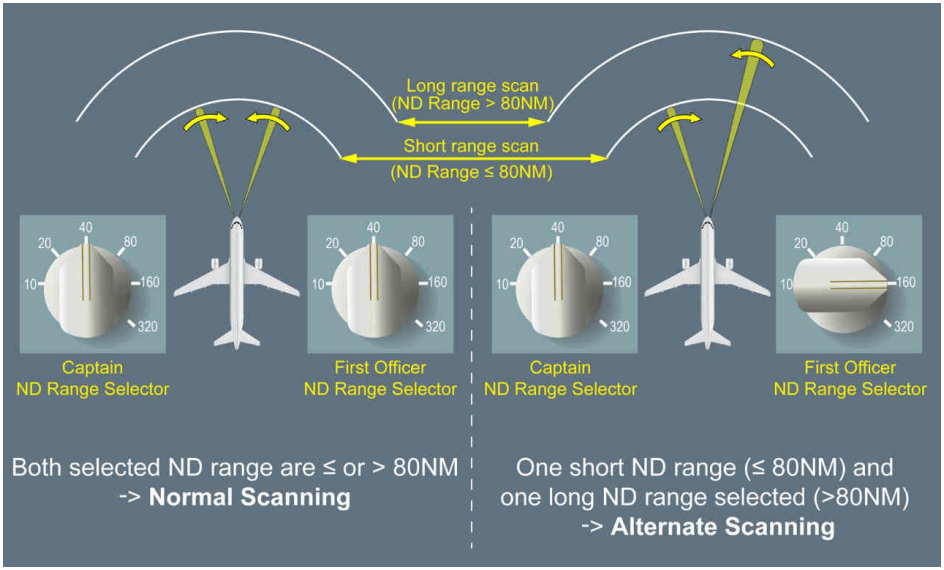
- Using the EGPWS terrain database, the radar automatically adjusts the antenna tilt based on aircraft position, altitude, and the selected ND range
- Autotilt optimizes detection and display of weather based on aircraft flight phase, and reduces ground clutter
- Depending on the selected ND range and aircraft altitude, Autotilt optimizes the tilt for either short range or long range detection:

Selected ND range	10 NM	20 NM	40 NM	80 NM	160 NM	320 NM
Above 2 300 ft AGL	Tilt adjustment for short range detection				Tilt adjustment for long range detection	
Below 2 300 ft AGL	Tilt adjustment for short range detection + PWS scanning					

- When two different ranges are selected on CAPT and F/O ND, the radar scans alternatively at two different tilt settings. Each of these tilt setting is optimized for the selected range. This alternate scanning reduces the refresh rate of each ND image.

Note: *Below 2 300 ft, PWS (if installed) scanning is active, alternate scanning is disabled.*

Alternate scanning of the Autotilt according to ND range selection (above 2 300 ft)



- On the ground, Autotilt adjusts the tilt to provide optimum detection of weather at 10 000 ft above ground level
- The flight crew can use either automatic gain (recommended default position) or manual gain for weather analysis.

When in Manual mode:

- The flight crew adjusts the antenna tilt settings manually
- The flight crew adjusts the gain either automatically or manually.

DESCRIPTION

Ident.: DSC-34-SURV-30-10-00014867.0005001 / 17 SEP 15

2 **Applicable to: MSN 04394-04397, 04532, 04645, 05120, 05218**

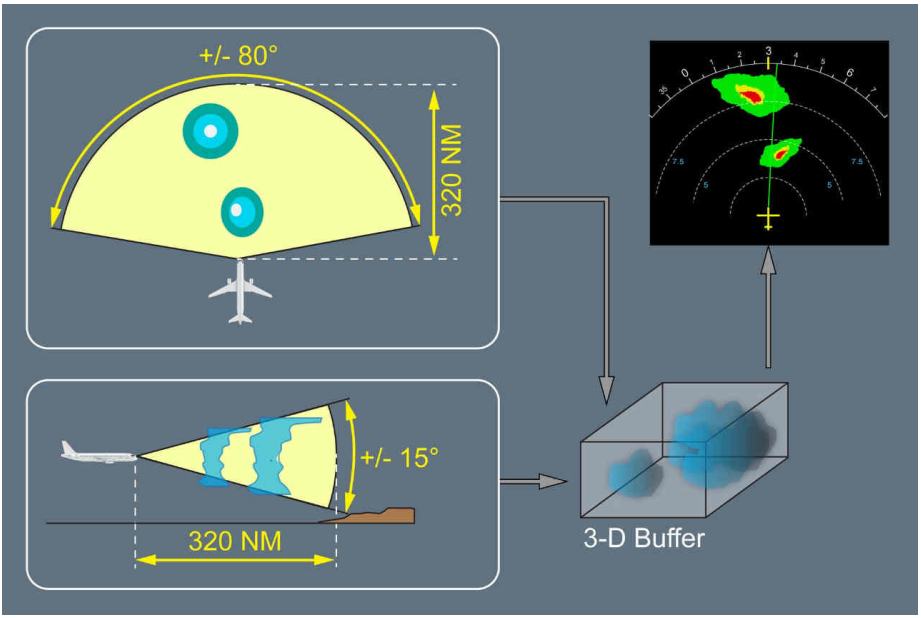
The aircraft is fitted with one or two ◁ RDR-4000 weather radar system(s) with a Predictive WindShear (PWS) function and weather hazard prediction function ◁ .

The flight crew can display weather data on the CAPT and/or F/O NDs in either ARC or ROSE mode. The flight crew can adjust the brightness of the weather image on the ND thanks the outer knob of the ND Brightness Control knob (*Refer to DSC-31-50 Other EFIS Controls*).

Note: *A low brightness setting of the weather display may reduce the visibility of weather data, and therefore reduce crew awareness of the weather situation.*

When activated, the radar scans the weather located ahead of the aircraft. It stores and updates a 3D image of the weather in its memory, and displays the weather image according to the display mode selected on the radar control panel.

3D Buffer Principle



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ON PATH ENVELOPE BOUNDARIES DEFINITION

Ident.: DSC-34-SURV-30-15-00013760.0001001 / 01 OCT 12

[1] **Applicable to: MSN 04394-04397, 04532, 04645, 05120, 05218**

The radar takes into account a vertical envelope along the vertical flight path of the aircraft. It defines if the weather echo is on the aircraft flight path or not.

ON PATH envelope limits

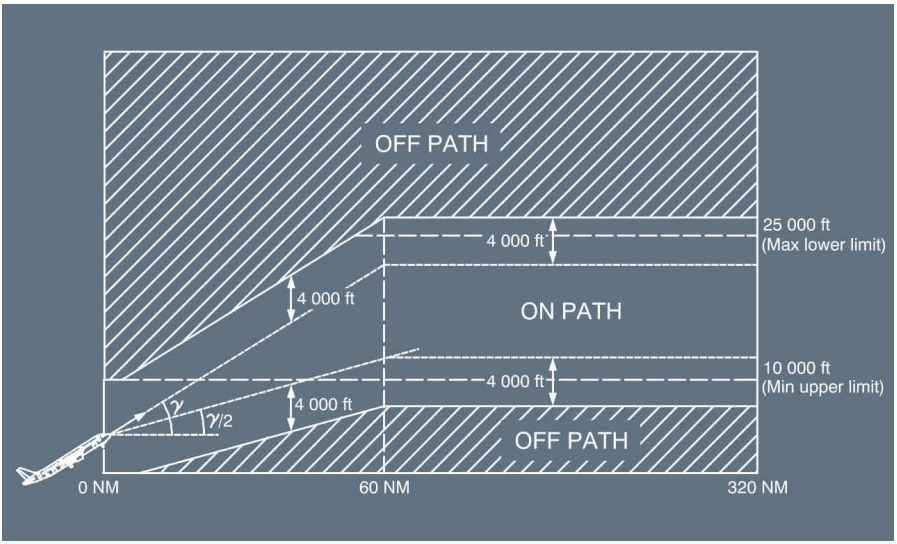
Aircraft Altitude (feet MSL)	Lower Envelope Boundary (feet MSL)	Upper Envelope Boundary (feet MSL)
> 29,000	25,000	Flight Altitude plus 4,000 (max: 60,000)
6,000 to 29,000	Flight Altitude minus 4,000 (min: Gnd Elev)	
< 6,000		10,000

The basis ON PATH envelope is bounded at plus and minus 4 000 ft of the reference flight path. The lower envelope boundary is fixed at 25 000 ft when the aircraft is above 29 000 ft. The upper envelope boundary is set at 10 000 ft when the aircraft is below 6 000 ft.
The ON PATH envelope is based on a reference flight path defined as follows : The current speed vector is extrapolated to 60 NM ahead of the aircraft based on the ratio between vertical speed and ground speed . Beyond 60 NM, the ON PATH envelope is based to a levelled reference flight path. As a result, the ON PATH envelope is defined as follows :

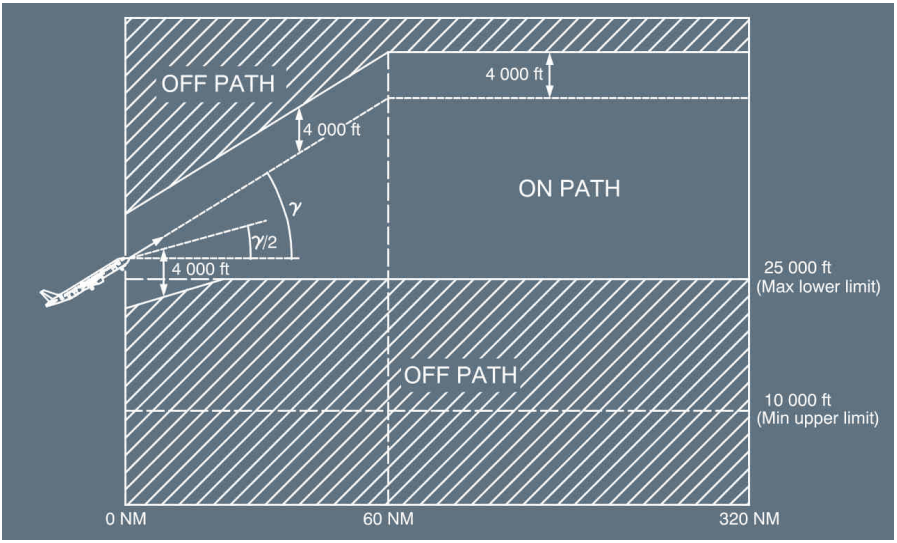
CLIMB PATH

During climb, the top of the ON PATH envelope is 4 000 ft above the expected flight path. The lower boundary is located 4 000 ft below the half of the expected flight path angle (γ) .

Climb from low altitude



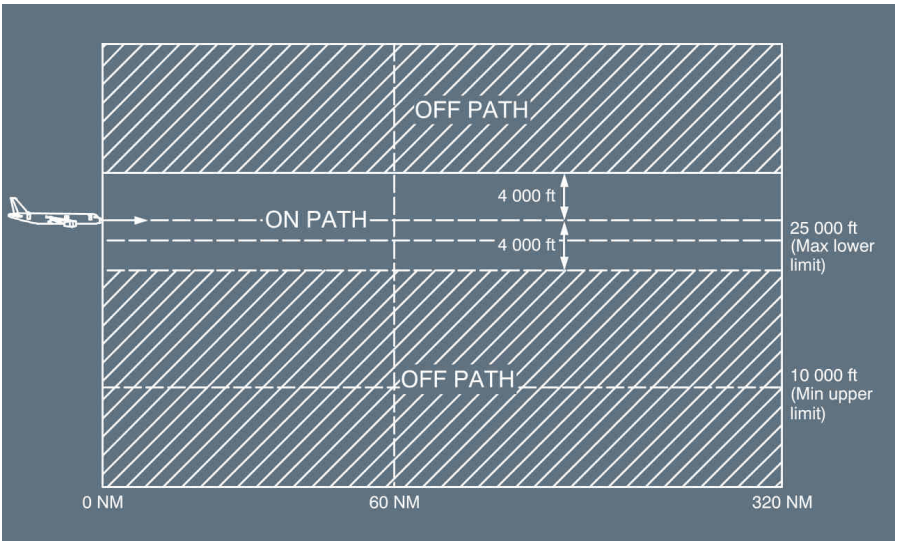
Climb for high altitude



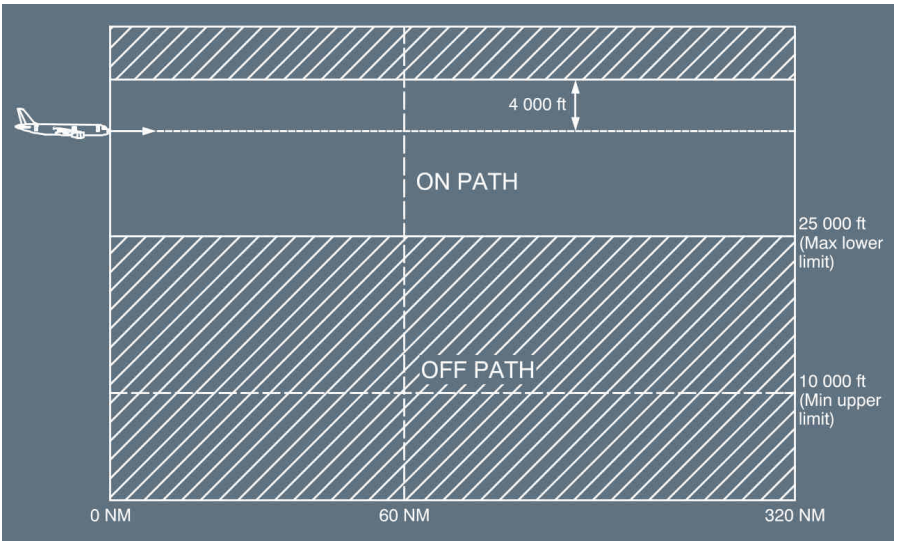
LEVEL FLIGHT

During level flight the ON PATH envelope extends from 4 000 ft above to 4 000 ft below the aircraft's altitude. However, the lower boundary cannot go higher than 25 000 ft and the upper boundary cannot go lower than 10 000 ft.

Level flight below 29 000 FT



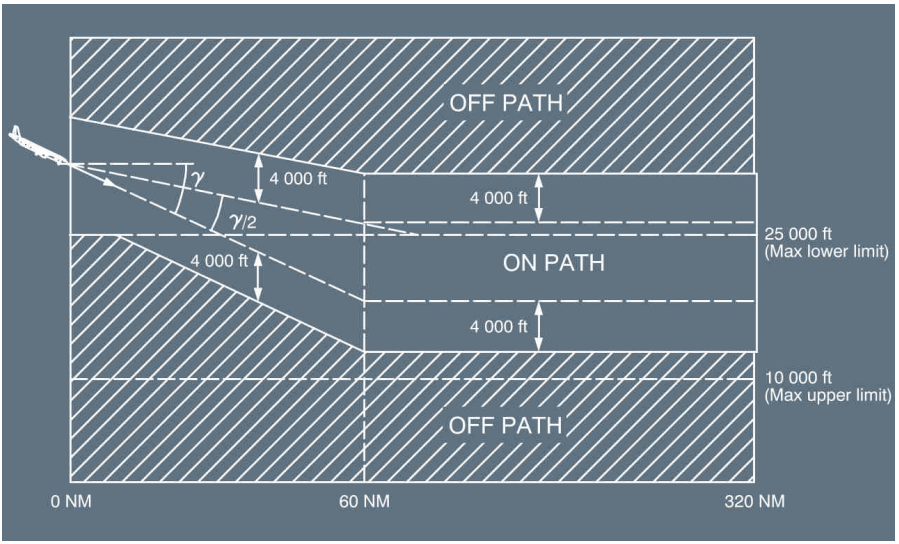
Level flight above 29 000 FT



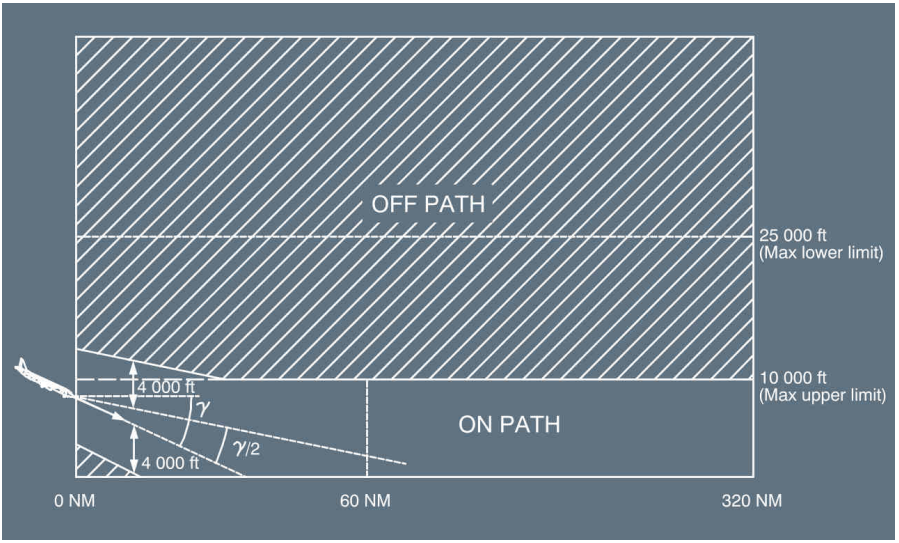
DESCENT PATH

When the aircraft descends, the lower boundary of the ON PATH envelope is 4 000 ft below the expected flight path, while the upper boundary is 4 000 ft above the half of the expected flight path angle (γ) .

Descent from high altitude



Descent from low altitude



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GENERAL

Ident.: DSC-34-SURV-30-20-00020942.0003001 / 17 MAR 17

[1] **Applicable to: MSN 04394-04397, 04532, 04645, 05120, 05218**

The weather radar has a Predictive WindShear system (PWS) that operates when WXR/PWS sw is in position 1 or 2 and the aircraft radio-height is below 1 800 ft, and

- CAPT or F/O display mode is different from OFF, or
- CAPT and F/O display modes are OFF, and
  - At least one engine is running, and
  - Aircraft ground speed is greater than 30 kt, or
  - Aircraft longitudinal acceleration is above a given threshold during at least 0.5 s.

Note: *If two weather radars are installed, when the selected weather radar fails, the flight crew can recover the PWS function by selecting the operative system on the WXR/PWS sw of the radar control panel.*

The system scans the airspace for windshear within a range of 5 NM ahead of the aircraft. When the system detects windshear, a windshear symbol appears on the ND (*Refer to DSC-34-SURV-30-30 PWS (if installed) indication on PFD and ND*).
Predictive windshear warnings and cautions are associated to an aural alert and to a red (warning) or amber (caution) "W/S AHEAD" message on the PFD, whereas windshear advisories are only displayed on the ND (*Refer to DSC-34-SURV-30-30 PWS (if installed) indication on PFD and ND*) without message on the PFD.

Alert Level	Aural Warning	PFD	ND (*Refer to DSC-34-SURV-30-30 PWS (if installed) indication on PFD and ND*)
Warning (Approach)	«GO AROUND WINDSHEAR AHEAD»	W/S AHEAD (red)	Windshear icon
Warning (Takeoff)	«WINDSHEAR AHEAD» (twice)	W/S AHEAD (red)	Windshear icon
Caution	«MONITOR RADAR DISPLAY»	W/S AHEAD (amber)	Windshear icon
Advisory	Nil	Nil	Windshear icon

GENERAL

Ident.: DSC-34-SURV-30-20-00020942.0004001 / 17 MAR 17

[2] **Applicable to: MSN 01957-02097, 02121, 02138, 02334, 02584, 02649, 02737, 03071, 03264-04312, 04328-04384, 04399-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063**

The weather radar has a Predictive WindShear system (PWS) that operates when the PWS switch is in the AUTO position , and the aircraft radio height is below 2 300 ft, and

- Weather radar is ON (Radar sw on position 1 or 2), or
- Weather radar is OFF, and
  - At least one engine is running, and
  - Aircraft ground speed is greater than 30 kt, or
  - Aircraft longitudinal acceleration is above a given threshold during at least 0.5 s.

Note: *If two weather radars are installed, when the selected weather radar fails, the flight crew can recover the PWS function by selecting the operative system on the Radar sw of the radar control panel.*

The system scans the airspace for windshear within a range of 5 NM ahead of the aircraft. When the system detects windshear, a windshear symbol appears on the ND (*Refer to DSC-34-SURV-30-30 PWS (if installed) indication on PFD and ND*).
Predictive windshear warnings and cautions are associated to an aural alert and to a red (warning) or amber (caution) "W/S AHEAD" message on the PFD, whereas windshear advisories are only displayed on the ND (*Refer to DSC-34-SURV-30-30 PWS (if installed) indication on PFD and ND*) without message on the PFD.

Alert Level	Aural Warning	PFD	ND (*Refer to DSC-34-SURV-30-30 PWS (if installed) indication on PFD and ND*)
Warning (Approach)	«GO AROUND WINDSHEAR AHEAD»	W/S AHEAD (red)	Windshear icon
Warning (Takeoff)	«WINDSHEAR AHEAD» (twice)	W/S AHEAD (red)	Windshear icon
Caution	«MONITOR RADAR DISPLAY»	W/S AHEAD (amber)	Windshear icon
Advisory	Nil	Nil	Windshear icon

GENERAL

Ident.: DSC-34-SURV-30-20-00020942.0001001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02108, 02135, 02139-02275, 02388, 02443-02457, 02609-02626, 02670-02712, 02804-02914, 03138, 04314, 04393, 04491, 05158

The weather radars have a Predictive Windshear System (PWS) that operates when:
- The PWS switch is in the AUTO position (Even if the weather radar is OFF), and
- The aircraft is below 2 300 ft AGL, and
- The ATC is switched to the ON, or AUTO, or XPDR, or XPNDR, position (depending on the ATC panel), and
- Either engine is running.

Note: When two weather radars are installed, if the selected weather radar fails, the PWS function is recovered by selecting the non-failed weather radar on the control panel.

The system scans the airspace, within a range of 5 NM ahead of the aircraft, for windshears. When the system detects windshear, depending on the range selected on the ND, a warning, caution, or advisory message appears on the ND. Predictive windshear warnings and cautions are associated with an aural warning.
Predictive windshear warnings and cautions are associated to an aural alert and to a red (warning) or amber (caution) "W/S AHEAD" message on the PFD, whereas windshear advisories are only displayed on the ND (*Refer to DSC-34-SURV-30-30 PWS (if installed) indication on PFD and ND*) without message on the PFD.

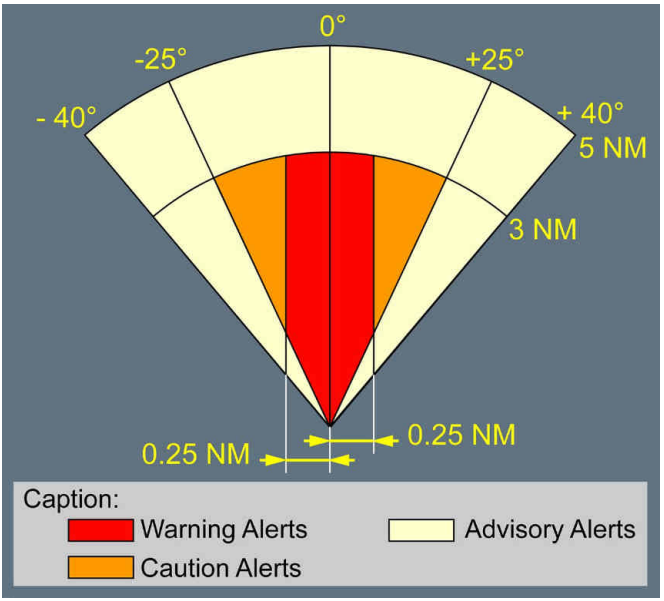
Alert Level	Aural Warning	PFD	ND (*Refer to DSC-34-SURV-30-30 PWS (if installed) indication on PFD and ND*)
Warning (Approach)	«GO AROUND WINDSHEAR AHEAD»	W/S AHEAD (red)	Windshear icon
Warning (Takeoff)	«WINDSHEAR AHEAD» (twice)	W/S AHEAD (red)	Windshear icon
Caution	«MONITOR RADAR DISPLAY»	W/S AHEAD (amber)	Windshear icon
Advisory	Nil	Nil	Windshear icon

WINDSHEAR ALERTS DURING TAKEOFF ROLL, UP TO 100 KNOTS

Ident.: DSC-34-SURV-30-20-00020944.0003001 / 17 MAR 17

[3] **Applicable to: MSN 01767-02121, 02138, 02195-02204, 02388, 02443-02457, 02609-02626, 02670, 02804-02914, 03138, 04314, 04393-04397, 04491, 04532, 04645, 05120, 05158, 05218**

WINDSHEAR ALERTS during takeoff roll, up to 100 knots



During the takeoff roll, up to 100 kt, both warnings and cautions are available within a range of 3 NM.

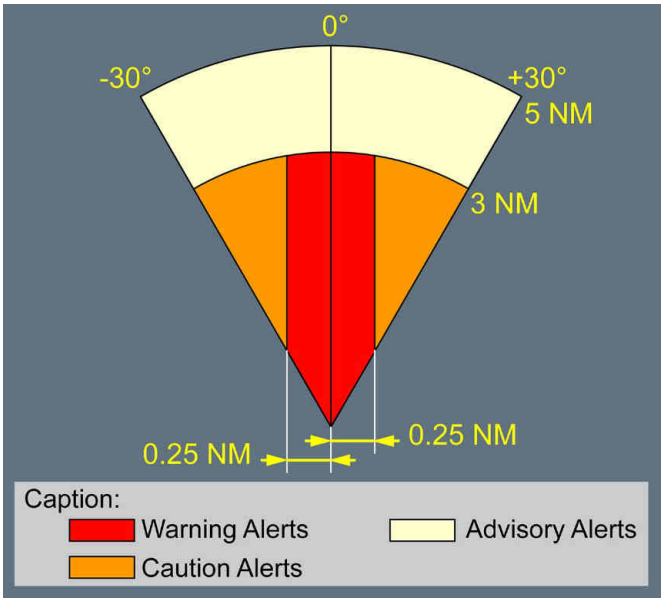
Note: This is also applicable during taxi when CAPT or F/O display mode is different from OFF.

WINDSHEAR ALERTS DURING TAKEOFF ROLL, UP TO 100 KNOTS

Ident.: DSC-34-SURV-30-20-00020944.0001001 / 17 MAR 17

4 **Applicable to: MSN 02135, 02139, 02275-02334, 02584, 02649, 02712-02737, 03071, 03264-04312, 04328-04384, 04399-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063**

Windshear Alerts During Takeoff Roll, Up to 100 knots



During the takeoff roll, up to 100 kt, both warnings and cautions are available within a range of 3 NM.

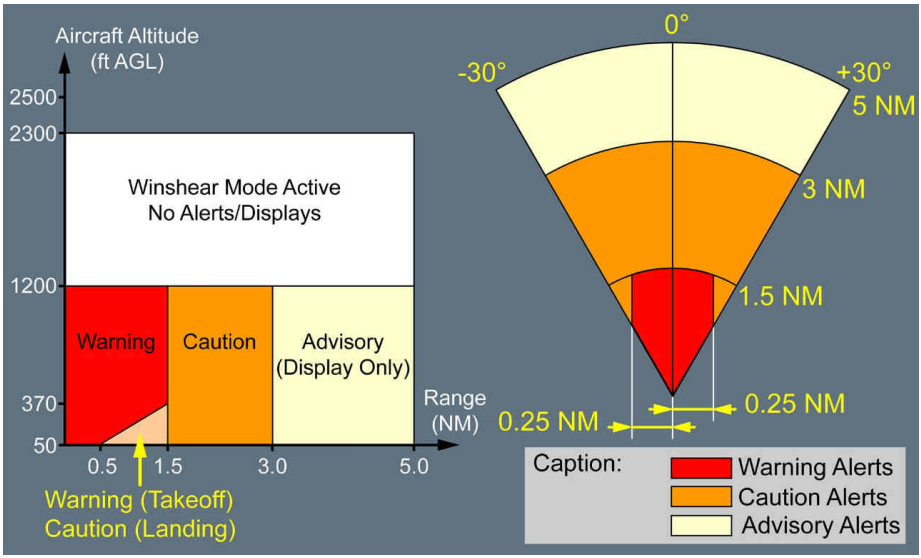
Note: *This is also applicable during taxi when weather radar is set to ON.*

WINDSHEAR ALERTS ABOVE 50 FEET

Ident.: DSC-34-SURV-30-20-00006422.0001001 / 12 APR 16

5 **Applicable to: MSN 02135, 02139, 02275-02334, 02584, 02649, 02712-02737, 03071, 03264-04312, 04328-04384, 04399-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063**

Windshear Alerts Above 50 feet

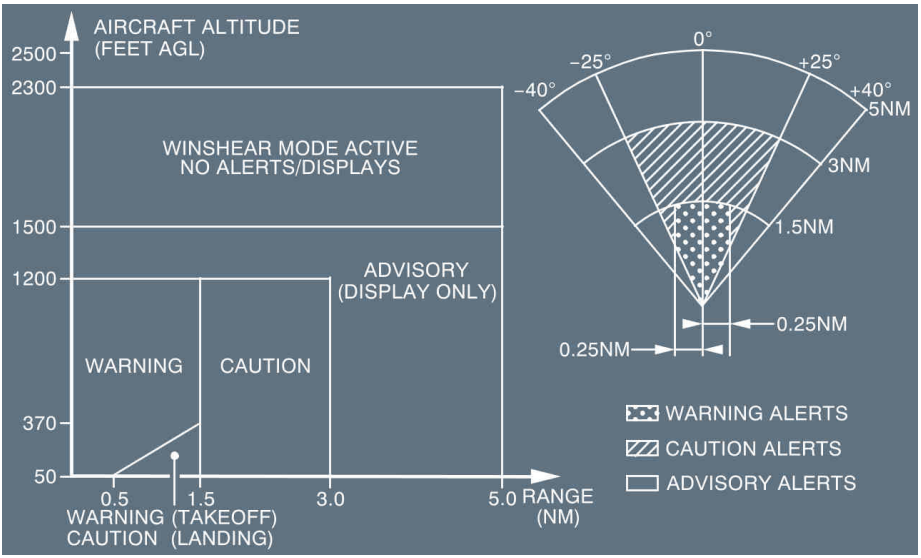


During final approach, the visual and aural warning alerts are downgraded to caution alerts between 370 ft AGL and 50 ft AGL, and range between 1.5 NM and 0.5 NM.

WINDSHEAR ALERTS ABOVE 50 FEET

Ident.: DSC-34-SURV-30-20-00006422.0003001 / 14 MAY 12

Applicable to: MSN 01767-02121, 02138, 02195-02204, 02388, 02443-02457, 02609-02626, 02670, 02804-02914, 03138, 04314, 04393, 04491, 05158



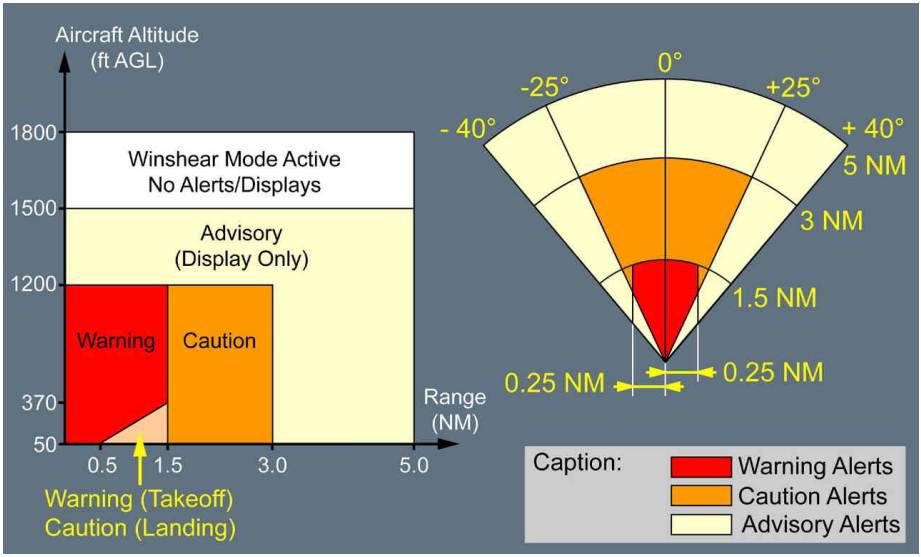
During final approach, the visual and aural warning alerts are downgraded to caution alerts between 370 ft AGL and 50 ft AGL, and range between 1.5 NM and 0.5 NM.

WINDSHEAR ALERTS ABOVE 50 FEET

Ident.: DSC-34-SURV-30-20-00006422.0004001 / 12 APR 16

6 **Applicable to: MSN 04394-04397, 04532, 04645, 05120, 05218**

Windshear Alerts above 50 feet



During final approach, the visual and aural warning alerts are downgraded to caution alerts between 370 ft AGL and 50 ft AGL, and range between 1.5 NM and 0.5 NM.

WINDSHEAR ALERTS INHIBITION

Ident.: DSC-34-SURV-30-20-00006426.0002001 / 20 JUL 15

7 **Applicable to: MSN 01767-02334, 02388, 02443-02457, 02584-09063**

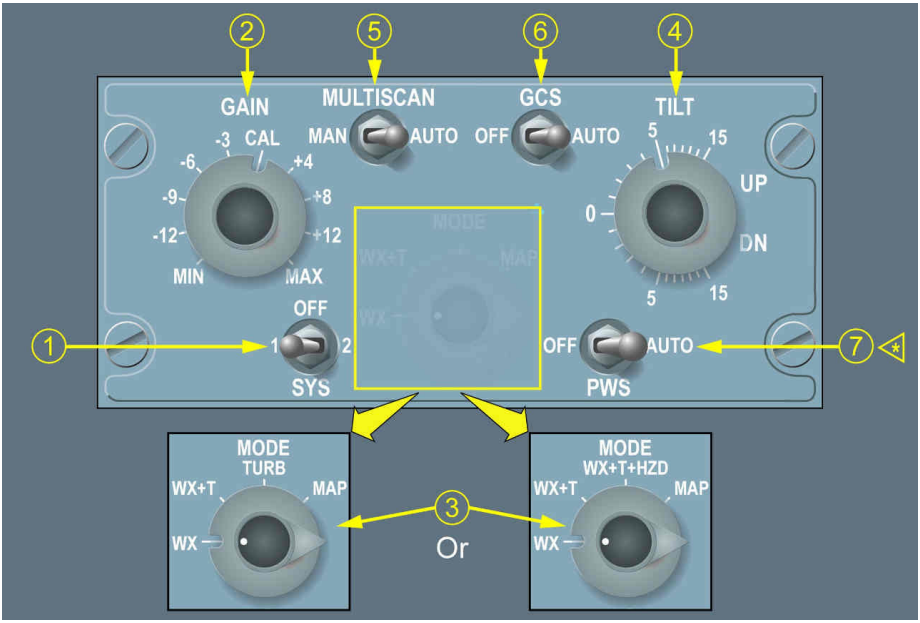
At takeoff, alerts are inhibited above 100 kt and up to 50 ft.
During landing, alerts are inhibited below 50 ft.

The aural alerts of the Predictive WindShear system (PWS):
- Have priority over TCAS, GPWS, and other FWC aural warnings
- Are inhibited by reactive windshear detection and aural messages of stall warnings.

CONTROL PANEL

Ident.: DSC-34-SURV-30-30-00014841.0012001 / 28 NOV 17

[1] **Applicable to: MSN 04965-05094, 05155, 05190, 05230-09063**



(1) Radar sw

This switch sets one radar to ON or turns both radars to OFF.

Note: *If only one radar is installed on the aircraft, either:*
- *a "INOP" or "DEACT" sticker replaces the "2", or*
- *a "ON/OFF" Radar sw replaces the "1/OFF/2" Radar sw.*

Note: *If only one radar is installed on the aircraft, no weather image is displayed on the Navigation Display (ND) when the "1/OFF/2" SYS sw is set to "2".*

(2) GAIN knob

This knob adjusts the sensitivity of the radar.

CAL is the normal position of the knob :

- When in Multiscan Automatic mode and gain set to CAL, the radar automatically adjusts the gain according to various parameters (aircraft altitude, geographical area, season, time of the day) to obtain the best weather display
- When in Manual mode and gain set to CAL, the radar adjusts the gain to a calibrated setting.

(3) Display mode selector

WX : Weather mode :
Colors indicate the intensity of precipitation (black for the lowest intensity, green, amber and red indicate progressively higher intensity).

WX+T : Weather and Turbulence mode :
The ND indicates precipitation and turbulence areas. Turbulence areas are displayed in magenta (within 40 NM).

TURB : Turbulence mode :
The ND only displays turbulence areas in magenta (within 40 NM).

WX+T+HZD: Weather, Turbulence and Hazard mode (recommended position) :
The ND indicates precipitation, turbulence areas in magenta (within 40 NM) and hazard prediction risk areas.
Hazard prediction function is only available when the MULTISCAN sw is set to AUTO.

Note: When MULTISCAN sw is set to MAN, WX+T+HZD mode is equivalent to WX+T mode.

MAP : Map mode :
The radar operates in ground mapping mode: black indicates water, green indicates the ground, and amber indicates cities and mountains.

(4) TILT knob
This knob adjusts the antenna tilt when MULTISCAN sw is set to MAN.
Zero indicates the horizon reference provided by the IRS.

(5) MULTISCAN sw

AUTO : Activates Multiscan mode
Multiscan controls the tilt automatically and combines two scans done at different tilt angles to optimize weather detection and minimize ground clutter.

MAN : When set to MAN, the crew can manually adjust the tilt by using the TILT knob.

(6) GCS sw
The Ground Clutter Suppression (GCS) switch is spring-loaded to the AUTO position.

AUTO : - If MULTISCAN sw is set to AUTO, the radar is in normal use. Ground clutter is not displayed on the screen
- If MUTLISCAN sw is set to MAN, the GCS sw has no utility. Ground clutter is displayed on the screen.

OFF : Ground clutter is displayed on the screen.

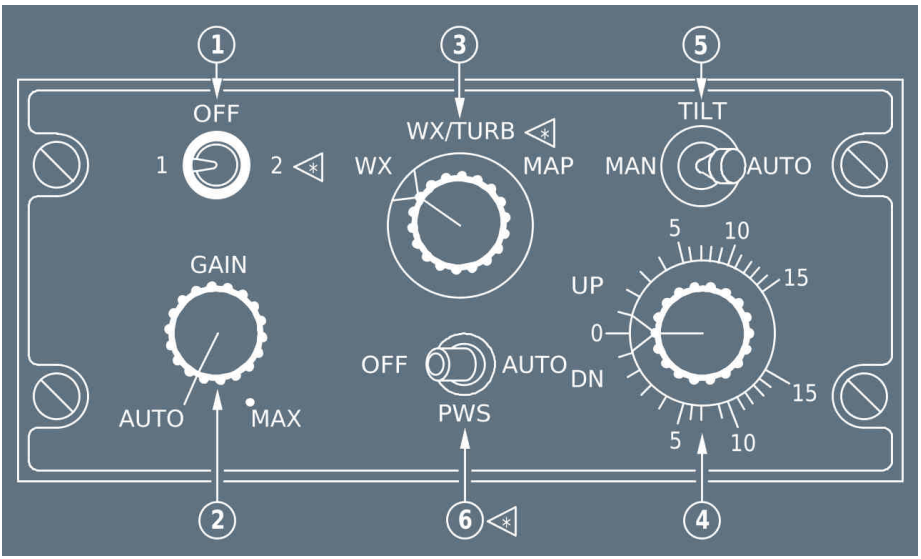
(7) PWS sw

AUTO : Activates the Predictive WindShear function in accordance with activation conditions (*Refer to DSC-34-SURV-30-20 Windshear Alerts Above 50 feet*).

OFF : The Predictive WindShear function is off.

CONTROL PANEL

Ident.: DSC-34-SURV-30-30-00014841.0015001 / 21 MAR 17
Applicable to: MSN 05158



(1) Radar sw

Note: *If only one radar is installed on the aircraft, either:*
- *a "INOP" or "DEACT" sticker replaces the "2", or*
- *a "ON/OFF" Radar sw replaces the "1/OFF/2" Radar sw.*

This switch sets:
- the radar to ON or OFF (if only one radar is installed on the aircraft), or
- one radar to ON or turns off both radars (if two radars are installed on the aircraft).

Note: If only one radar is installed on the aircraft, no weather image is displayed on the Navigation Dislplay (ND) when the "1/OFF/2" Radar sw is set to "2".

(2) GAIN knob
This knob adjusts the sensitivity of the radar.

AUTO : The radar automatically adjusts the gain to the optimum setting.

(3) Display Mode selector

WX : Weather mode :
Colors indicate the intensity of precipitation (black for the lowest intensity, green, amber and red indicate progressively higher intensity).

WX/TURB ⋘ : Weather and Turbulence mode :
The ND indicates precipitation and turbulence areas. Turbulence areas are displayed in magenta (within 40 NM).

MAP : Map mode :
The radar operates in ground mapping mode: black indicates water, green indicates the ground, and amber indicates cities and mountains.

(4) TILT knob
This knob adjusts antenna tilt above and below the horizon.
Zero indicates the horizon reference, as provided by the ADIRS.

(5) TILT mode sw

AUTO : Automatically adjusts tilt to optimize weather detection and minimize ground clutter.

MAN : When set to MAN, the crew can then manually adjust the tilt by using the TILT knob.

(6) PWS sw ⋘

AUTO : Activates the Predictive WindShear function in accordance with activation conditions (*Refer to DSC-34-SURV-30-20 Windshear Alerts Above 50 feet*).

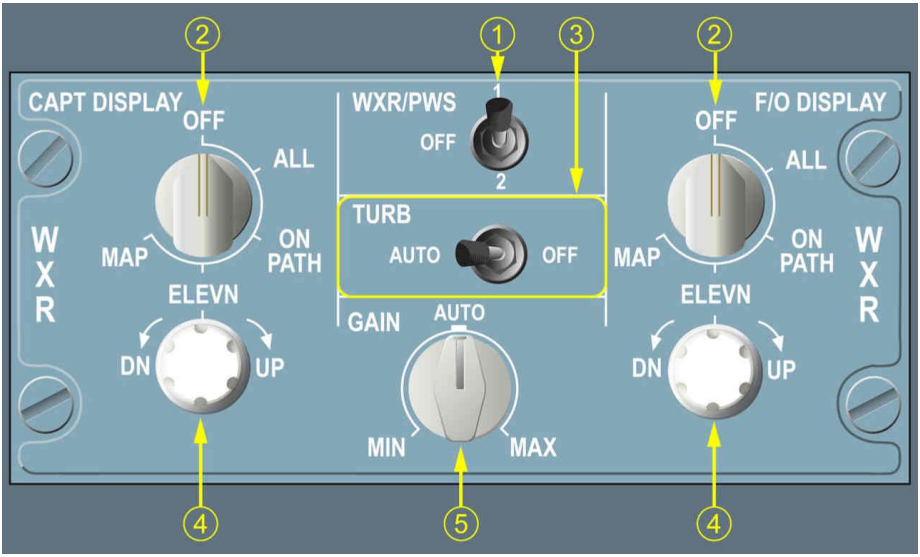
OFF : Turns off the predictive windshear function.

CONTROL PANEL

Ident.: DSC-34-SURV-30-30-00014841.0016001 / 22 MAR 17

[2] **Applicable to: MSN 05120, 05218**

Control Panel



(1) WXR/PWS sw

This switch sets one radar to ON or turns off both radars.

Note:
- *If only one radar is installed, a DEACT sticker placed next to the "2" label indicates that the system 2 is deactivated.*
- *When the flight crew sets a radar to ON, a delay of 30 seconds is necessary to display the weather data. This is the time required to scan the entire volume ahead of the aircraft for the first time.*
- *The Predictive WindShear detection is available as soon as a radar is selected ON and activation conditions are satisfied.Refer to DSC-34-SURV-30-20 Windshear Alerts Above 50 feet*

(2) CAPT DISPLAY mode selector and F/O DISPLAY mode selector

OFF : No weather data is displayed on the corresponding Navigation Display (ND). If the WXR/PWS sw is not set OFF, Predictive WindShear (PWS) function is active during takeoff and landing.

ALL : The ND displays ON PATH and OFF PATH weather.
PWS and turbulence display are available.

ON PATH : The ND displays ON PATH weather only.
PWS and turbulence display are available.

ELEVN : The ND displays the weather data at a selected altitude only (use of ELEVN knob).
PWS display is available. Turbulence display is not available.

MAP : The ND only displays ground echoes.
PWS display is available. Turbulence display is not available.

Note: *On the ground, the radar is scanning when :*
- *The flight crew sets one radar to ON (WXR/PWS sw set to 1 or 2) and selects a display mode on the DISPLAY mode selector different from OFF on at least one side, or*
- *The PWS activation conditions are satisfied (Refer to DSC-34-SURV-30-20 Windshear Alerts Above 50 feet).*

When the aircraft is airborne, the selected radar is scanning continuously. If the DISPLAY mode selector are set to OFF, the radar stores the scanned weather in its memory but the weather data is not displayed on the NDs.

(3) TURB sw
In normal operation, the TURB sw is in AUTO position. The flight crew can remove the turbulence display from the ND (for de-cluttering purpose) by setting the TURB sw to the OFF position.
Turbulence areas are displayed in magenta (within 40 NM)

(4) ELEVN knob
When the flight crew sets the DISPLAY mode selector to ELEVN, the flight crew can turn the ELEVN knob to select the altitude (or FL depending on barometric setting) of the weather return to be displayed on the ND.

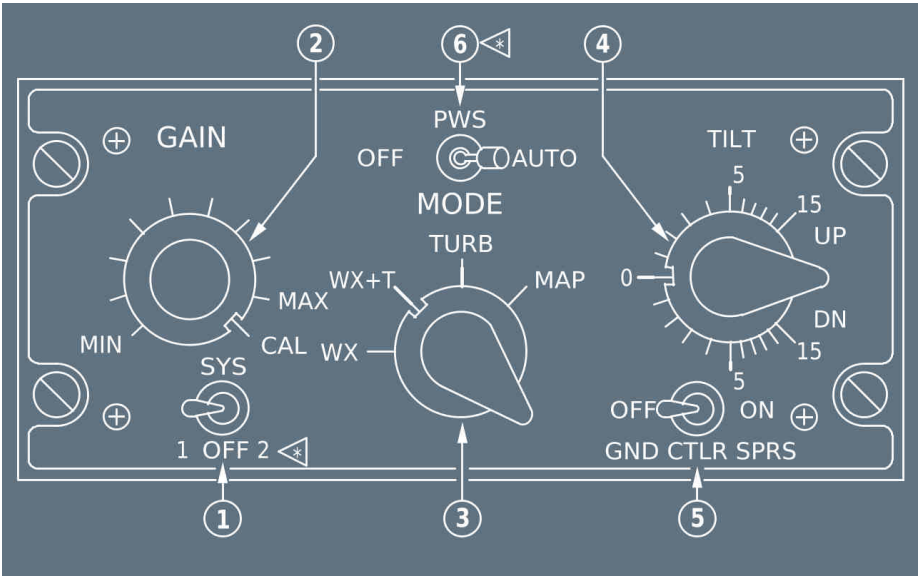
Note: *After weather analysis, the flight crew must return to ALL display mode.*

(5) GAIN knob
The GAIN knob adjusts the sensitivity of the radar, around a calibrated position (AUTO).
The flight crew can manually adjust the gain of the weather radar display using the GAIN knob.

Note: *In normal operation, the GAIN knob should be set to the AUTO position.*

CONTROL PANEL

Ident.: DSC-34-SURV-30-30-00001402.0010001 / 01 MAR 18
Applicable to: MSN 02135, 02139, 02275, 02359, 02405, 02482, 02712



(1) Radar sw

Note: *If only one radar is installed on the aircraft, either:*
- *a "INOP" or "DEACT" sticker replaces the "2", or*
- *a "ON/OFF" Radar sw replaces the "1/OFF/2" Radar sw.*

This switch sets:
- the radar to ON or OFF (if only one radar is installed on the aircraft), or
- one radar to ON or turns off both radars (if two radars are installed on the aircraft).

Note: *If only one radar is installed on the aircraft, no weather image is displayed on the Navigation Dislplay (ND) when the "1/OFF/2" Radar sw is set to "2".*

(2) GAIN knob

This knob adjusts the sensitivity of the radar.
"CAL" is the normal position; it adjusts the gain to a calibrated setting.

(3) Display mode selector

WX : Weather mode :
Colors indicate the intensity of precipitation (black for the lowest intensity, green, amber and red indicate progressively higher intensity).

WX+T : Weather and Turbulence mode :
The ND indicates precipitation and turbulence areas. Turbulence areas are displayed in magenta (within 40 NM).

TURB : Turbulence mode :
The ND only displays turbulence areas in magenta (within 40 NM).

MAP : Map mode :
The radar operates in ground mapping mode: black indicates water, green indicates the ground, and amber indicates cities and mountains.

(4) TILT knob

This knob adjusts antenna tilt above and below the horizon.
Zero indicates the horizon reference, as provided by the ADIRS.

(5) GND CLTR SPRS sw

ON : Suppresses the ground echo on the screen.

OFF : Normal use of the radar.

(6) PWS sw

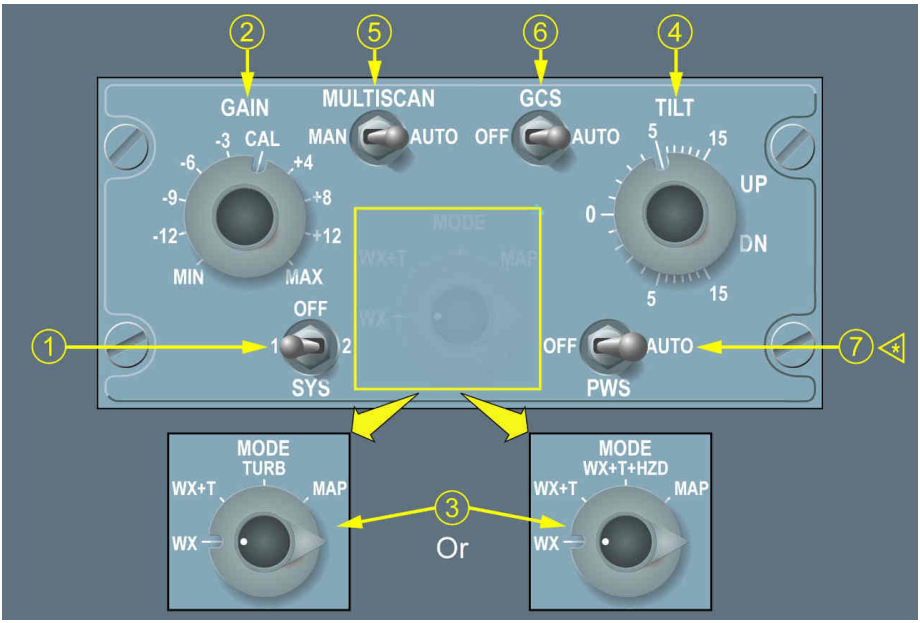
Note: If the PWS function is not installed on the aircraft, a "INOP" sticker can replace the PWS sw.

AUTO : Activates the Predictive WindShear function in accordance with activation conditions.

OFF : Turns off the predictive windshear function.

CONTROL PANEL

Ident.: DSC-34-SURV-30-30-00001402.0002001 / 28 NOV 17
Applicable to: MSN 02334, 02584, 02649, 02737, 03071, 03264-04312, 04328-04384, 04399-04488, 04506-04518, 04535-04637, 04752-04954



(1) Radar sw

This switch sets one radar to ON or turns both radars to OFF.

Note: *If only one radar is installed on the aircraft, either:*
- *a "INOP" or "DEACT" sticker replaces the "2", or*
- *a "ON/OFF" Radar sw replaces the "1/OFF/2" Radar sw.*

Note: *If only one radar is installed on the aircraft, no weather image is displayed on the Navigation Display (ND) when the "1/OFF/2" SYS sw is set to "2".*

(2) GAIN knob

This knob adjusts the sensitivity of the radar.

CAL is the normal position of the knob :

- When in Multiscan Automatic mode and gain set to CAL, the radar automatically adjusts the gain according to various parameters (aircraft altitude, geographical area, season, time of the day) to obtain the best weather display
- When in Manual mode and gain set to CAL, the radar adjusts the gain to a calibrated setting.

(3) Display mode selector

WX : Weather mode :
Colors indicate the intensity of precipitation (black for the lowest intensity, green, amber and red indicate progressively higher intensity).

WX+T : Weather and Turbulence mode :
The ND indicates precipitation and turbulence areas. Turbulence areas are displayed in magenta (within 40 NM).

TURB : Turbulence mode :
The ND only displays turbulence areas in magenta (within 40 NM).

WX+T+HZD: Weather, Turbulence and Hazard mode (recommended position) :
The ND indicates precipitation, turbulence areas in magenta (within 40 NM) and hazard prediction risk areas.
Hazard prediction function is only available when the MULTISCAN sw is set to AUTO.

Note: When MULTISCAN sw is set to MAN, WX+T+HZD mode is equivalent to WX+T mode.

MAP : Map mode :
The radar operates in ground mapping mode: black indicates water, green indicates the ground, and amber indicates cities and mountains.

(4) TILT knob
This knob adjusts the antenna tilt when MULTISCAN sw is set to MAN.
Zero indicates the horizon reference provided by the IRS.

(5) MULTISCAN sw

AUTO : Activates Multiscan mode
Multiscan controls the tilt automatically and combines two scans done at different tilt angles to optimize weather detection and minimize ground clutter.

MAN : When set to MAN, the crew can manually adjust the tilt by using the TILT knob.

(6) GCS sw
The Ground Clutter Suppression (GCS) switch is spring-loaded to the AUTO position.

AUTO : - If MULTISCAN sw is set to AUTO, the radar is in normal use. Ground clutter is not displayed on the screen
- If MUTLISCAN sw is set to MAN, the GCS sw has no utility. Ground clutter is displayed on the screen.

OFF : Ground clutter is displayed on the screen.

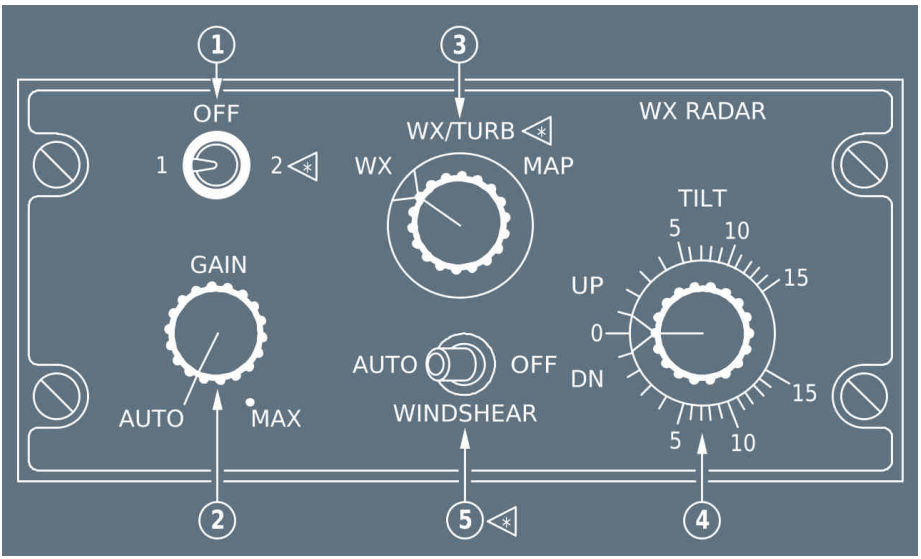
(7) PWS sw

AUTO : Activates the Predictive WindShear function in accordance with activation conditions (*Refer to DSC-34-SURV-30-20 Windshear Alerts Above 50 feet*).

OFF : The Predictive WindShear function is off.

CONTROL PANEL

Ident.: DSC-34-SURV-30-30-00001402.0096001 / 01 MAR 18
Applicable to: MSN 01767-01920, 02108, 02195-02204, 02388, 02443-02457, 02670, 02804-02914, 04314, 04393, 04491



(1) Radar sw

Note: *If only one radar is installed on the aircraft, either:*
- *a "INOP" or "DEACT" sticker replaces the "2", or*
- *a "ON/OFF" Radar sw replaces the "1/OFF/2" Radar sw.*

This switch sets:
- the radar to ON or OFF (if only one radar is installed on the aircraft), or
- one radar to ON or turns off both radars (if two radars are installed on the aircraft).

Note: If only one radar is installed on the aircraft, no weather image is displayed on the Navigation Dislplay (ND) when the "1/OFF/2" Radar sw is set to "2".

(2) GAIN knob
This knob adjusts the sensitivity of the radar.

AUTO : The radar automatically adjusts the gain to the optimum setting.

(3) Display Mode selector

WX : Weather mode :
Colors indicate the intensity of precipitation (black for the lowest intensity, green, amber and red indicate progressively higher intensity).

WX/TURB ⋖ : Weather and Turbulence mode :
The ND indicates precipitation and turbulence areas. Turbulence areas are displayed in magenta (within 40 NM).

MAP : Map mode :
The radar operates in ground mapping mode: black indicates water, green indicates the ground, and amber indicates cities and mountains.

(4) TILT knob
This knob adjusts antenna tilt above and below the horizon.
Zero indicates the horizon reference, as provided by the ADIRS.

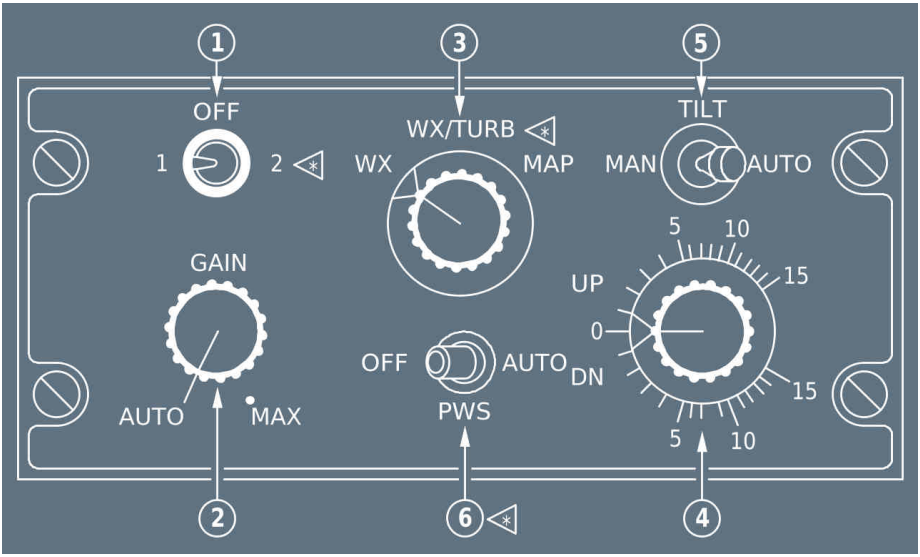
(5) WINDSHEAR sw ⋖

AUTO : Activates the Predictive WindShear function in accordance with activation conditions.

OFF : Turns off the predictive windshear function.

CONTROL PANEL

Ident.: DSC-34-SURV-30-30-00001402.0009001 / 21 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138, 02609-02626, 03138



(1) Radar sw

Note: *If only one radar is installed on the aircraft, either:*
- *a "INOP" or "DEACT" sticker replaces the "2", or*
- *a "ON/OFF" Radar sw replaces the "1/OFF/2" Radar sw.*

This switch sets:
- the radar to ON or OFF (if only one radar is installed on the aircraft), or
- one radar to ON or turns off both radars (if two radars are installed on the aircraft).

Note: *If only one radar is installed on the aircraft, no weather image is displayed on the Navigation Dislplay (ND) when the "1/OFF/2" Radar sw is set to "2".*

(2) GAIN knob

This knob adjusts the sensitivity of the radar.

AUTO : The radar automatically adjusts the gain to the optimum setting.

(3) Display Mode selector

WX : Weather mode :
Colors indicate the intensity of precipitation (black for the lowest intensity, green, amber and red indicate progressively higher intensity).

WX/TURB ◁✻ : Weather and Turbulence mode :
The ND indicates precipitation and turbulence areas. Turbulence areas are displayed in magenta (within 40 NM).

MAP : Map mode :
The radar operates in ground mapping mode: black indicates water, green indicates the ground, and amber indicates cities and mountains.

(4) TILT knob

This knob adjusts antenna tilt above and below the horizon.
Zero indicates the horizon reference, as provided by the ADIRS.

(5) TILT mode sw

AUTO : Automatically adjusts tilt to optimize weather detection and minimize ground clutter.

MAN : When set to MAN, the crew can then manually adjust the tilt by using the TILT knob.

(6) PWS sw ◁✻

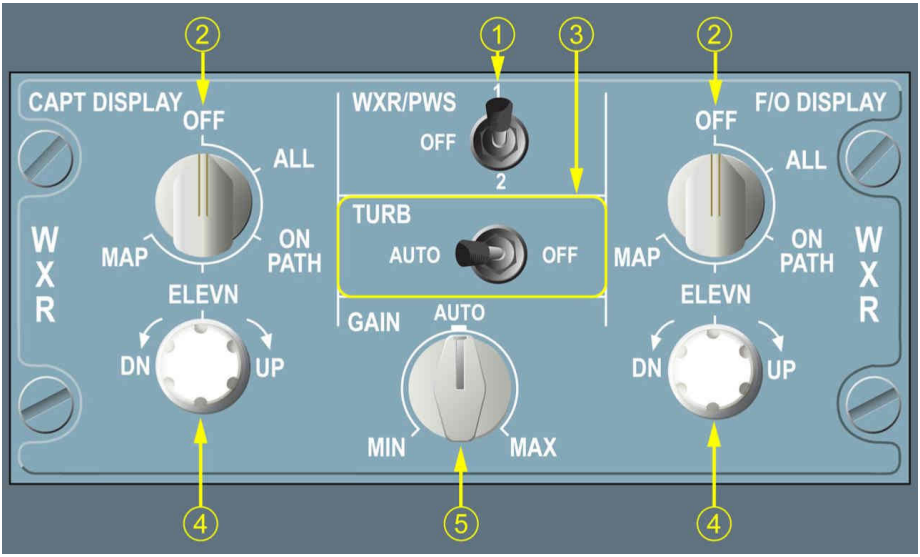
AUTO : Activates the Predictive WindShear function in accordance with activation conditions (*Refer to DSC-34-SURV-30-20 Windshear Alerts Above 50 feet*).

OFF : Turns off the predictive windshear function.

CONTROL PANEL

Ident.: DSC-34-SURV-30-30-00001402.0100001 / 22 MAR 17
Applicable to: MSN 04394-04397, 04532, 04645

Control Panel



(1) WXR/PWS sw

This switch sets one radar to ON or turns off both radars.

Note:
- *If only one radar is installed, a DEACT sticker placed next to the "2" label indicates that the system 2 is deactivated.*
- *When the flight crew sets a radar to ON, a delay of 30 seconds is necessary to display the weather data. This is the time required to scan the entire volume ahead of the aircraft for the first time.*
- *The Predictive WindShear detection is available as soon as a radar is selected ON and activation conditions are satisfied.Refer to DSC-34-SURV-30-20 Windshear Alerts Above 50 feet*

(2) CAPT DISPLAY mode selector and F/O DISPLAY mode selector

OFF : No weather data is displayed on the corresponding Navigation Display (ND). If the WXR/PWS sw is not set OFF, Predictive WindShear (PWS) function is active during takeoff and landing.

ALL : The ND displays ON PATH and OFF PATH weather.
PWS and turbulence display are available.

ON PATH : The ND displays ON PATH weather only.
PWS and turbulence display are available.

ELEVN : The ND displays the weather data at a selected altitude only (use of ELEVN knob).
PWS display is available. Turbulence display is not available.

MAP : The ND only displays ground echoes.
PWS display is available. Turbulence display is not available.

Note: *On the ground, the radar is scanning when :*
- *The flight crew sets one radar to ON (WXR/PWS sw set to 1 or 2) and selects a display mode on the DISPLAY mode selector different from OFF on at least one side, or*
- *The PWS activation conditions are satisfied (Refer to DSC-34-SURV-30-20 Windshear Alerts Above 50 feet).*

When the aircraft is airborne, the selected radar is scanning continuously. If the DISPLAY mode selector are set to OFF, the radar stores the scanned weather in its memory but the weather data is not displayed on the NDs.

(3) TURB sw
In normal operation, the TURB sw is in AUTO position. The flight crew can remove the turbulence display from the ND (for de-cluttering purpose) by setting the TURB sw to the OFF position.
Turbulence areas are displayed in magenta (within 40 NM)

(4) ELEVN knob
When the flight crew sets the DISPLAY mode selector to ELEVN, the flight crew can turn the ELEVN knob to select the altitude (or FL depending on barometric setting) of the weather return to be displayed on the ND.

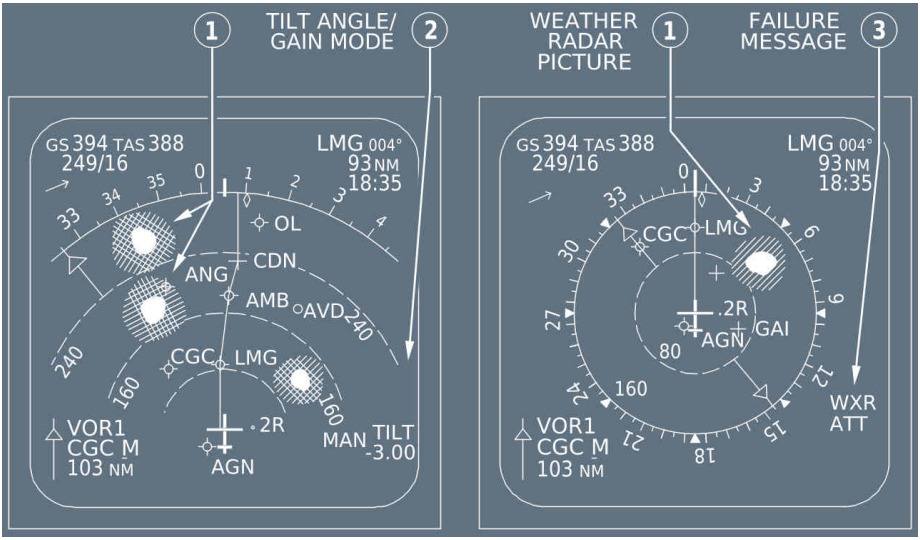
Note: *After weather analysis, the flight crew must return to ALL display mode.*

(5) GAIN knob
The GAIN knob adjusts the sensitivity of the radar, around a calibrated position (AUTO).
The flight crew can manually adjust the gain of the weather radar display using the GAIN knob.

Note: *In normal operation, the GAIN knob should be set to the AUTO position.*

WEATHER RADAR INDICATION ON ND

Ident.: DSC-34-SURV-30-30-00001255.0001001 / 28 FEB 14
Applicable to: MSN 01767-01920, 02108, 02195-02275, 02359, 02405, 02482



(1) Weather Radar Picture

- When the radar is operating, and when the ND is not in PLAN mode, the ND displays the weather radar picture.
- The echoes appear in different colors, depending on the precipitation rates (black, green, yellow, red or magenta).
- The selected ND range will determine how often the image is refreshed.

(2) Tilt Angle and Gain Mode

- The value of the tilt angle is in degrees, and quarters of a degree. It appears in blue in the lower right-hand corner of the screen. This angle is the angle between the horizon and the radar beam axis.
- ”MAN” appears in white, when the manual gain mode is selected.

(3) Failure Messages

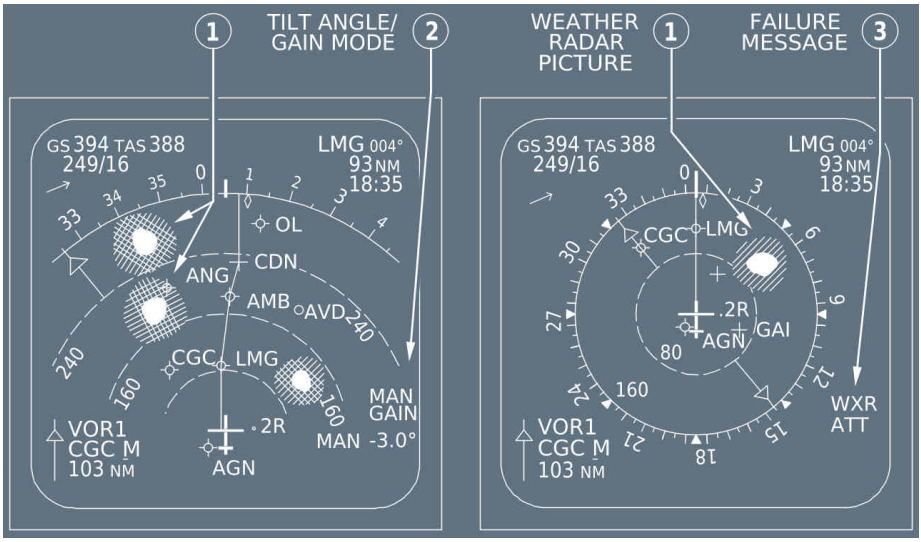
The ND lists the detected failures.
If the message is in “red”, the ND does not display a radar image.
If the message is in “amber”, the image is not affected.

WXR RT (red) : Radar transceiver failure.

WXR ANT (red)	:	Radar antenna failure.
WXR CTL (red)	:	Radar control unit failure.
WXR RNG (red)	:	Range error.
WXR WEAK (amber)	:	Calibration failure.
WXR ATT (amber)	:	Attitude control failure.
WXR STAB (amber)	:	Antenna stabilization failure.

WEATHER RADAR INDICATION ON ND

Ident.: DSC-34-SURV-30-30-00001255.0002001 / 28 FEB 14
Applicable to: MSN 01957, 02135, 02139, 02388, 02443-02457, 02670-02712, 02804-02914, 03138, 04314, 04393, 04491



(1) Weather Radar Picture

- When the radar is operating, and when the ND is not in PLAN mode, the ND displays the weather radar picture.
- The echoes appear in different colors, depending on the precipitation rates (black, green, yellow, red or magenta).
- The selected ND range will determine how often the image is refreshed.

(2) Tilt Angle and Gain Mode

- The value of the tilt angle is in degrees, and quarters of a degree. It appears in blue in the lower right-hand corner of the screen along with MAN indication. This angle is the angle between the horizon and the radar beam axis.
- "MAN GAIN" appears in white, when the manual gain mode is selected.

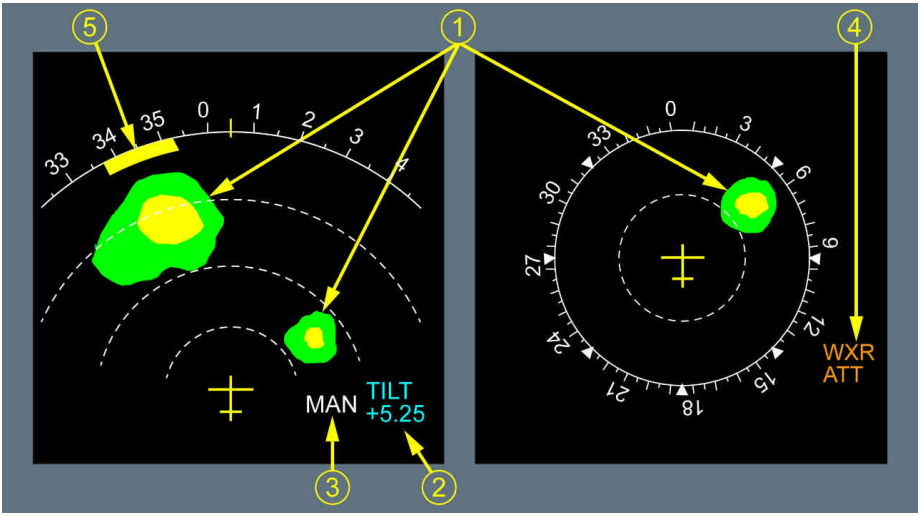
(3) Failure Messages

The ND lists the detected failures.
If the message is in "red", the ND does not display a radar image.
If the message is in "amber", the image is not affected.

WXR RT (red)	:	Radar transceiver failure.
WXR ANT (red)	:	Radar antenna failure.
WXR CTL (red)	:	Radar control unit failure.
WXR RNG (red)	:	Range error.
WXR WEAK (amber)	:	Calibration failure.
WXR ATT (amber)	:	Attitude control failure.
WXR STAB (amber)	:	Antenna stabilization failure.

WEATHER RADAR INDICATION ON ND

Ident.: DSC-34-SURV-30-30-00001255.0006001 / 21 MAR 16
Applicable to: MSN 02334



(1) Weather Radar Picture

- When the radar is operating, and when the ND is not in PLAN mode, the ND displays the weather radar picture.
- The weather echoes appear in different colors, depending on the precipitation rates (black, green, yellow, red or magenta for turbulence).
- The selected ND range will determine how often the image is refreshed.

(2) Tilt Angle

- The multiscan function of the weather radar alternatively scans at low and high beam, and automatically sets the tilt of these beams to optimize the weather radar detection. The displayed weather radar picture is the result of the storing and merging of the information from each beam.
- The value of the tilt angle is in degrees, and quarters of a degree. It appears in blue in the lower right corner of the screen, below the blue “TILT” indication. It represents the average of the lower and the upper beam tilts, when the flight crew sets MULTISCAN sw to AUTO. The tilt angle is the angle between the horizon and the radar beam axis.

(3) Gain Mode

- ”MAN” appears in white, when the flight crew selects the manual gain mode.

(4) Failure Messages

The ND lists the detected failures.
If the message is in “red”, the ND does not display a radar image.
If the message is in “amber”, the image is not affected.

WXR RT (red)	:	Radar transceiver failure.
WXR ANT (red)	:	Radar antenna failure.
WXR CTL (red)	:	Radar control unit failure.
WXR RNG (red)	:	Range error.
WXR WEAK (amber)	:	Calibration failure.
WXR ATT (amber)	:	Attitude control failure.
WXR STAB (amber)	:	Antenna stabilization failure.
PRED W/S (amber)	:	PWS ⋘ function failure.
WXR TEST (amber)	:	Radar System test.

(5) PAC alert

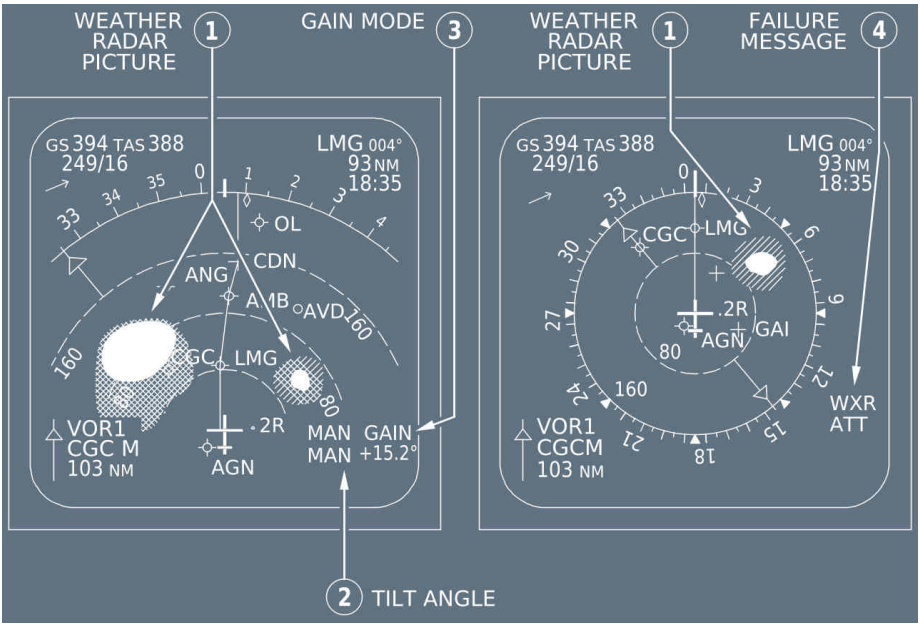
When the flight crew sets the display mode selector to WX or WX+T and sets the gain to CAL, and when the aircraft is within 80 NM of a storm cell, the Path Attenuation Compensation (PAC) alert is available.

The PAC alert displays a yellow arc on the outermost scale of the ND, when an intervening rainfall creates an attenuated area behind a storm cell (also called a radar shadow or attenuation effect).

Note: *The PAC alert is only available when the MULTISCAN sw is in the AUTO position.*

WEATHER RADAR INDICATION ON ND

Ident.: DSC-34-SURV-30-30-00001255.0004001 / 28 FEB 14
Applicable to: MSN 02609-02626, 05158



(1) Weather Radar Picture

- When the radar is operating, and when the ND is not in PLAN mode, the ND displays the weather radar picture.
- The echoes appear in different colors, depending on the precipitation rates (black, green, yellow, red or magenta).
- The selected ND range will determine how often the image is refreshed.

(2) Tilt Angle

- The auto-tilt function of the weather radar automatically sets the tilt angle to optimize Weather Radar detection.
- The value of the tilt angle is in degrees, and quarters of a degree. It appears in the lower corner of the screen:
  - In green, when the flight crew sets the TILT sw to AUTO
  - In blue, next to the blue "MAN" indication, when the flight crew sets the TILT sw to MAN. The tilt angle is the angle between the horizon and the radar beam axis.
- When the auto-tilt function is lost, the tilt value is dashed, and the "NO AUTO TILT" message appears in amber on the ND, until the flight crew sets the TILT sw to MAN.

(3) Gain Mode

- "MAN GAIN" appears in white, when the manual gain mode is selected.

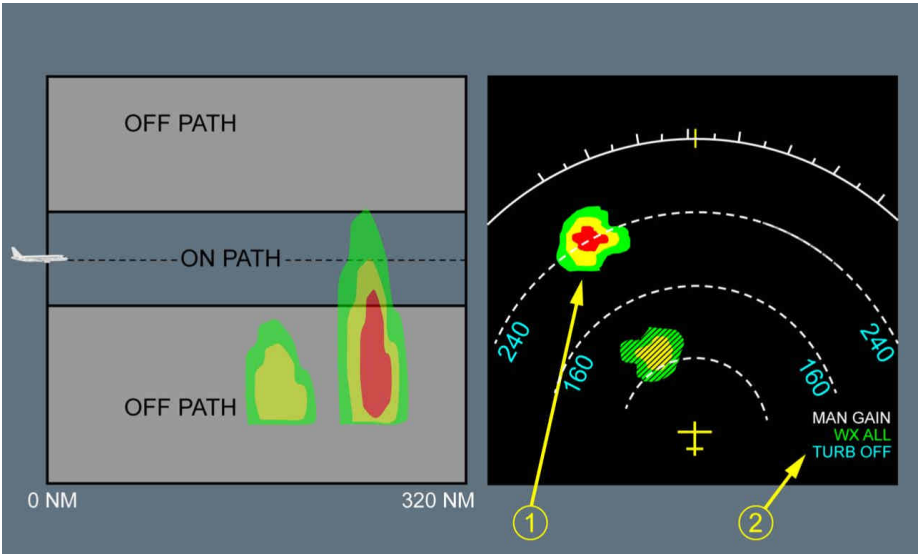
(4) Failure Messages

The ND lists the detected failures.
If the message is in “red”, the ND does not display a radar image.
If the message is in “amber”, the image is not affected.

WXR RT (red)	:	Radar transceiver failure.
WXR ANT (red)	:	Radar antenna failure.
WXR CTL (red)	:	Radar control unit failure.
WXR RNG (red)	:	Range error.
WXR WEAK (amber)	:	Calibration failure.
WXR ATT (amber)	:	Attitude control failure.
WXR STAB (amber)	:	Antenna stabilization failure.

WEATHER RADAR INDICATION ON ND

Ident.: DSC-34-SURV-30-30-00001255.0008001 / 17 MAR 17
Applicable to: MSN 04394-04397, 04532, 05218



(1) Weather Radar Picture

The flight crew can display the weather radar on the NDs when:
- The ND is in ARC or ROSE mode
- One radar system is ON
- The corresponding DISPLAY mode selector is different from OFF.

The weather echoes (or ground echoes in MAP mode) appear in different colors, depending on the precipitation rates (or ground reflectivity): black, green, yellow or red or in magenta for turbulence.
In the ALL (ALL WX) display mode, the ND displays ON PATH weather in plain color and OFF PATH weather in hash marks.
Refer to FCTM/AS-WXR Analysis of weather radar data

(2) Weather Radar Information

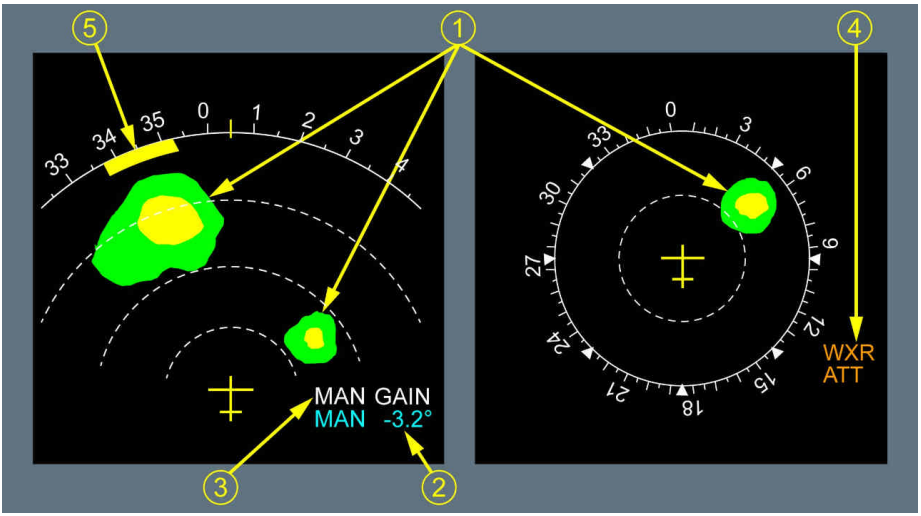
Four rows located at the bottom right corner of the ND display weather radar information:

- 1st row: MAN GAIN appears in white when a manual gain is selected
- 2nd row: dedicated to display modes:
  - PWS SCAN appears in green if the DISPLAY mode selector is set to OFF during takeoff and approach
  - WX ALL or PATH WX appears in green when ALL (ALL WX) or ON PATH (PATH WX) display mode is selected
  - MAP appears in blue if the MAP display mode is selected.
  - ELEVN appears in blue if the ELEVN display mode is selected
- 3rd row: dedicated to turbulence or elevation information:
  - TURB OFF appears in blue if the TURB sw (TURB pb) is set to OFF
  - The selected altitude (or FL) appears in blue if the ELEVN display mode is selected.
- 4th row: dedicated to weather radar failure messages, displayed in red or amber:
  - NO WXR (red): Radar Display failure
  - WXR R/T (red): Radar Processor or Transmitter/Receiver failure
  - WXR ANT (red): Radar antenna failure
  - WXR CTL (red): Radar control panel failure
  - WXR RNG (red): Range error (FCU input failure)
  - PRED WS (amber): PWS function failure
  - WXR TEST (amber): Radar System test.

WEATHER RADAR INDICATION ON ND

Ident.: DSC-34-SURV-30-30-00001255.0007001 / 21 MAR 16

Applicable to: MSN 02097, 02121, 02138, 02584, 02737, 03308, 04156, 04294, 04433, 04510, 04535, 04762-04868, 04954, 05094, 05262, 05365-05411, 05473, 05577-05641, 05712, 05744-05807, 05992, 06247, 06289-06336



(1) Weather Radar Picture

- When the radar is operating, and when the ND is not in PLAN mode, the ND displays the weather radar picture.
- The weather echoes appear in different colors, depending on the precipitation rates (black, green, yellow, red or magenta for turbulence).
- The selected ND range will determine how often the image is refreshed.

(2) Tilt Angle

- The multiscan function of the weather radar alternatively scans at low and high beam, and automatically sets the tilt of these beams to optimize the weather radar detection. The displayed weather radar picture is the result of the storing and merging of the information from each beam.
- The tilt angle is the angle between the horizon and the radar beam axis. The value of the tilt angle is in degrees, and quarters of a degree. It appears in the lower right corner of the screen:
  - In green, when the MULTISCAN sw is set to AUTO. This value represents the average of the lower and the upper beam tilts.
  - In blue, next to the blue “MAN” indication, when the flight crew sets the MULTISCAN sw to MAN.
  - When the multiscan function is lost, the tilt value is dashed and the “NO AUTO TILT” message appears in amber on the ND, until the flight crew sets the MULTISCAN sw to MAN.

(3) Gain Mode

- ”MAN GAIN” appears in white, when the flight crew selects the manual gain mode.

(4) Failure Messages

The ND lists the detected failures.
If the message is in “red”, the ND does not display a radar image.
If the message is in “amber”, the image is not affected.

NO WXR (red)	:	Radar System failure.
WXR RT (red)	:	Radar transceiver failure.
WXR ANT (red)	:	Radar antenna failure.
WXR CTL (red)	:	Radar control unit failure.
WXR RNG (red)	:	Range error.
WXR WEAK (amber)	:	Calibration failure.
WXR ATT (amber)	:	Attitude control failure.
WXR STAB (amber)	:	Antenna stabilization failure.
PRED W/S (amber)	:	PWS ⋘ function failure.
NO AUTO TILT (amber)	:	Automatic tilt adjustment failure.
WXR TEST (amber)	:	Radar System test.

(5) PAC alert

When the flight crew sets the display mode selector to WX or WX+T, or WX+T+HZD and sets the gain to CAL, and when the aircraft is within 80 NM of a storm cell, the Path Attenuation Compensation (PAC) alert is available.

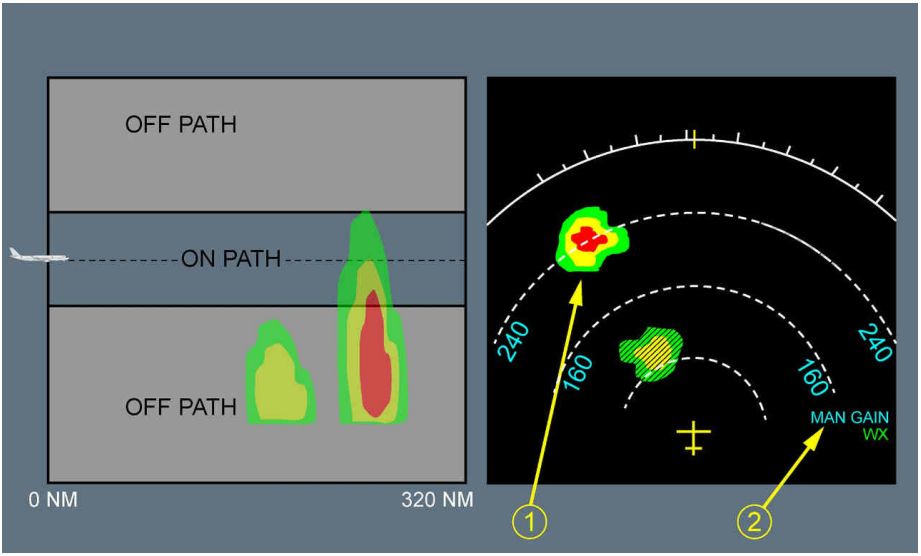
The PAC alert displays a yellow arc on the outermost scale of the ND, when an intervening rainfall creates an attenuated area behind a storm cell (also called a radar shadow or attenuation effect).

Note: The PAC alert is only available when the MULTISCAN sw is in the AUTO position.

WEATHER RADAR INDICATION ON ND

Ident.: DSC-34-SURV-30-30-00001255.0012001 / 17 MAR 17

3 **Applicable to: MSN 04645, 05120**



(1) Weather Radar Picture

The flight crew can display the weather radar on the NDs when:

- The ND is in ARC or ROSE mode
- One radar system is ON
- The corresponding DISPLAY mode selector is not set to OFF.

The weather echoes (or ground echoes in MAP mode) appear in different colors, depending on the precipitation rates (or ground reflectivity): black, green, yellow or red or in magenta for turbulence.
In the ALL (ALL WX) display mode, the ND displays ON PATH weather in plain color and OFF PATH weather in hash marks.
Refer to FCTM/AS-WXR Analysis of weather radar data

(2) Weather Radar Information
Four rows located at the bottom right corner of the ND display weather radar information:

- 1st row: MAN GAIN appears in cyan when a manual gain is selected
- 2nd row: dedicated to active display modes
  - WX, WX+T, WX+H, WX+T+H:
    Depending on the selection of HZD and TURB switches, the following indications are displayed on the ND:

HZD switch OFF or HZD function not installed		HZD switch ON	
TURB switch OFF	TURB switch ON	TURB switch OFF	TURB switch ON
WX	WX+T	WX+H	WX+T+H

Note: The indications described in the table above are displayed:

- *In green when PATH WX (ON PATH) or ALL WX (ALL) display mode is selected*
- *In cyan when ELEVN display mode is selected.*

- PWS SCAN: appears in green when the WXR/PWS switch is set to OFF during takeoff and approach
- WXR OFF: appears in white when the weather radar and the GPWS are not active
- MAP appears in cyan when the MAP display mode is selected

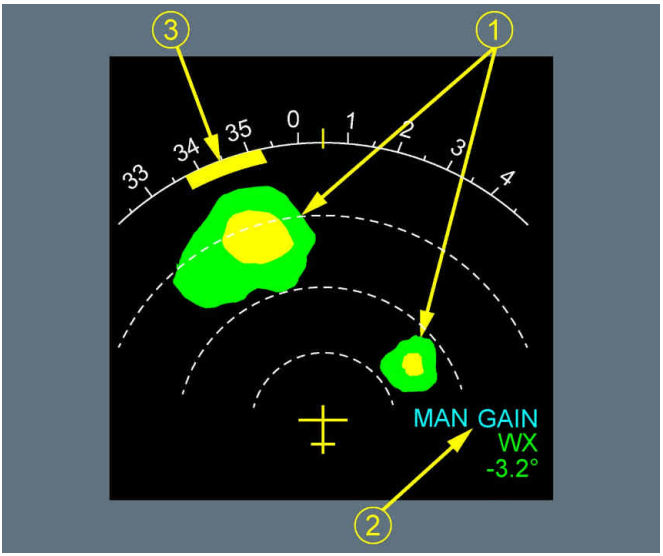
- 3rd row:
  - PATH appears in green when PATH WX (ON PATH) display mode is selected
  - The selected altitude (or FL) appears in cyan when the ELEVN display mode is selected
- 4th row: dedicated to weather radar failure messages, displayed in red or amber:

NO WXR (red)	:	Radar display failure
WXR R/T (red)	:	Radar transceiver failure
WXR ANT (red)	:	Radar antenna failure
WXR CTL (red)	:	Radar control unit failure
WXR RNG (red)	:	Range error
WXR WEAK (amber)	:	Calibration failure
WXR ATT (amber)	:	Attitude control failure
WXR STAB (amber)	:	Antenna stabilization failure
PRED W/S (amber)	:	PWS ⋘ function failure
NO AUTO TILT (amber)	:	Automatic tilt adjustment failure
WXR TEST (amber)	:	Radar system test

WEATHER RADAR INDICATION ON ND

Ident.: DSC-34-SURV-30-30-00001255.0014001 / 21 MAR 17

[4] **Applicable to: MSN 02649, 03071, 03264, 03330-04113, 04216, 04312, 04328-04384, 04399, 04438-04488, 04506, 04518, 04552-04637, 04752-04757, 04888-04947, 04965-05092, 05155, 05190, 05230-05259, 05291-05313, 05437-05460, 05476-05537, 05676-05683, 05727, 05829-05952, 06010-06208, 06275-06287, 06720-09063**



(1) Weather Radar Picture

- When the radar is operating, and when the ND is not in PLAN mode, the ND displays the weather radar picture.
- The weather echoes appear in different colors, depending on the precipitation rates (black, green, yellow, red or magenta for turbulence).
- The selected ND range will determine how often the image is refreshed.

(2) Weather Radar Indication

- 1st row: Gain Mode
  MAN GAIN appears in cyan when the flight crew selects the manual gain mode.
- 2nd row: Active Detection Mode
  - WX
  - WX+T
  - TURB
  - MAP
  - WX+T+H
  - PWS SCAN (only in green when the PWS function is active)
  - WXR OFF (only in white)

  Note: Except for PWS SCAN and WXR OFF, the active detection modes are displayed:

  - *In cyan if the manual mode is selected*
  - *In green if the automatic mode is selected*

- 3rd row: Tilt Angle
  The multiscan function of the weather radar alternatively scans at low and high beam, and automatically sets the tilt of these beams to optimize the weather radar detection. The displayed weather radar picture is the result of the storing and merging of the information from each beam.

  The tilt angle is the angle between the horizon and the radar beam axis. The value of the tilt angle is in degrees, and quarters of a degree. It is displayed:
  - In green, when the MULTISCAN sw is set to AUTO. This value represents the average of the lower and the upper beam tilts.
  - In cyan, next to the "MAN" indication, when the flight crew sets the MULTISCAN sw to MAN.

  When the multiscan function is lost, the tilt value is dashed and the “NO AUTO TILT” message appears in amber on the ND, until the flight crew sets the MULTISCAN sw to MAN.
- 4th row: Failure Messages
  The ND lists the detected failures.
  If the message is in "red", the ND does not display any radar image.
  If the message is in “amber”, the image is not affected.

NO WXR (red)	:	Radar display failure.
WXR RT (red)	:	Radar transceiver failure.
WXR ANT (red)	:	Radar antenna failure.
WXR CTL (red)	:	Radar control unit failure.
WXR RNG (red)	:	Range error.
WXR DU (red)	:	Overheating of the display unit
WXR WEAK (amber)	:	Calibration failure.
WXR ATT (amber)	:	Attitude control failure.
WXR STAB (amber)	:	Antenna stabilization failure.
PRED W/S (amber)	:	PWS ⋘ function failure.
NO AUTO TILT (amber)	:	Automatic tilt adjustment failure.
WXR TEST (amber)	:	Radar system test.

(3) Path Attenuation Compensation (PAC) Alert

When the flight crew sets the display mode selector to WX or WX+T, or WX+T+HZD ⋘ and sets the gain to CAL, and when the aircraft is within 80 NM of a storm cell, the PAC alert is available.

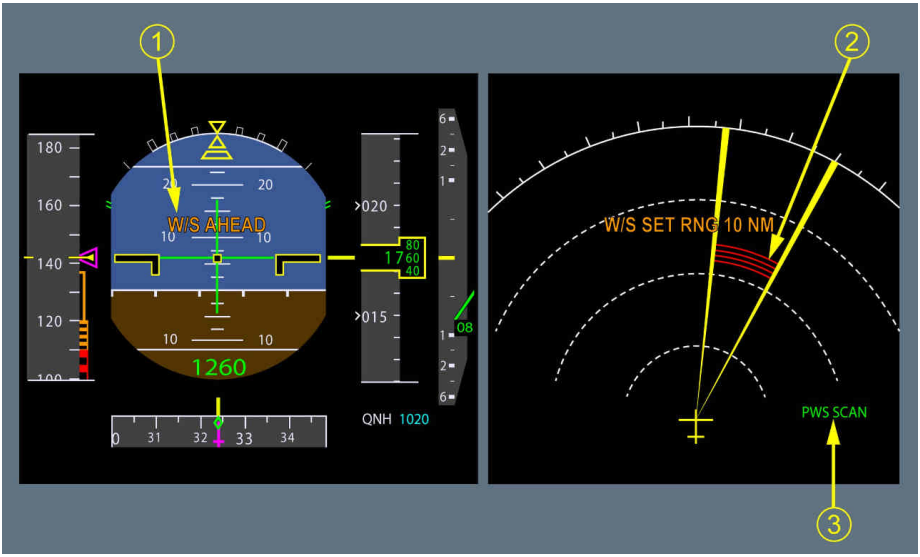
The PAC alert displays a yellow arc on the outermost scale of the ND, when an intervening rainfall creates an attenuated area behind a storm cell (also called a radar shadow or attenuation effect).

Note: The PAC alert is only available when the MULTISCAN sw is in the AUTO position.

PWS INDICATION ON PFD AND ND

Ident.: DSC-34-SURV-30-30-00020941.0002001 / 01 MAR 18

[5] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



(1) W/S AHEAD message on the PFD

This message is displayed, when the Predictive WindShear system detects windshear ahead of the aircraft.

The message is in amber or red, depending on the level of the alert.

(2) Predictive WindShear area indication

A red and black symbol and two yellow radial lines indicate the predicted windshear area. Windshear indication is available in ARC and ROSE ND modes.

When the radar detects a windshear event and the ND range is set above 10 NM, a W/S SET RNG 10 NM (Windshear, set range to 10 NM) message appears. This message requests the flight crew to adjust the range on the corresponding ND.

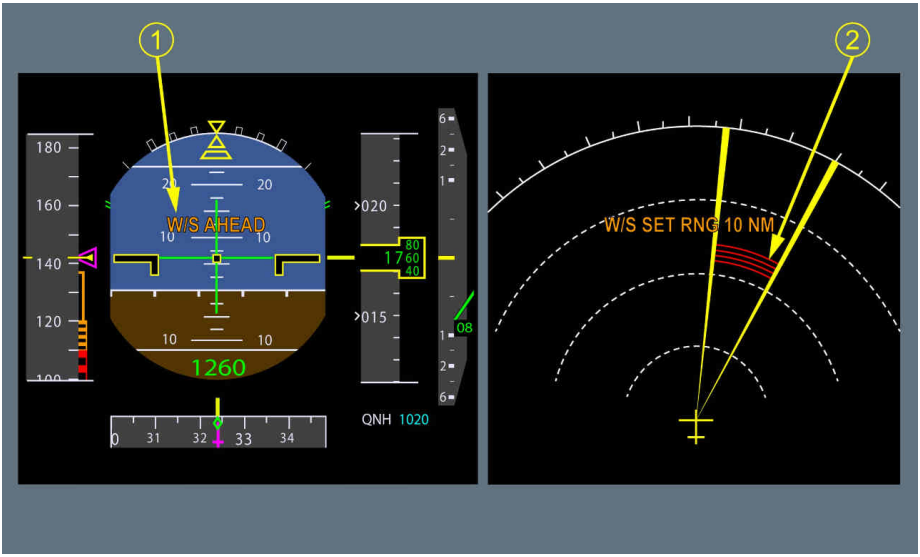
Depending on the windshear alert level, ND indication may be associated with an aural message and a PFD message.

(3) PWS SCAN message on the ND

If only the PWS detection is active, the ND displays a PWS SCAN message when the PWS is active. In this mode, when the radar detects a windshear event, a windshear symbol and the weather returns appear automatically on the ND.

PWS ⋘ INDICATION ON PFD AND ND

Ident.: DSC-34-SURV-30-30-00020941.0001001 / 01 MAR 18
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) W/S AHEAD message on the PFD

This message is displayed, when the Predictive WindShear system detects windshear ahead of the aircraft.
The message is in amber or red, depending on the level of the alert.

(2) Predictive WindShear area indication

A red and black symbol and two yellow radial lines indicate the predicted windshear area.
Windshear indication is available in ARC and ROSE ND modes.
When the radar detects a windshear event and the ND range is set above 10 NM, a W/S SET RNG 10 NM (Windshear, set range to 10 NM) message appears. This message requests the flight crew to adjust the range on the corresponding ND.

Depending on the windshear alert level, ND indication may be associated with an aural message and a PFD message.

WEATHER HAZARD PREDICTION FUNCTION INDICATION ON ND

Ident.: DSC-34-SURV-30-30-00016149.0001001 / 20 JUL 15

6 **Applicable to: MSN 02121, 02138, 06720-09063**

The Weather, Turbulence and Hazard mode (WX+T+HZD) enables the flight crew to have the following information displayed on the ND:

- The weather returns that appear in different colors, depending on the precipitation rates (black, green, yellow or red)
- The turbulence areas in magenta (within 40 NM)
- The weather hazard predictions computed by the weather radar.

For the weather hazard predictions:

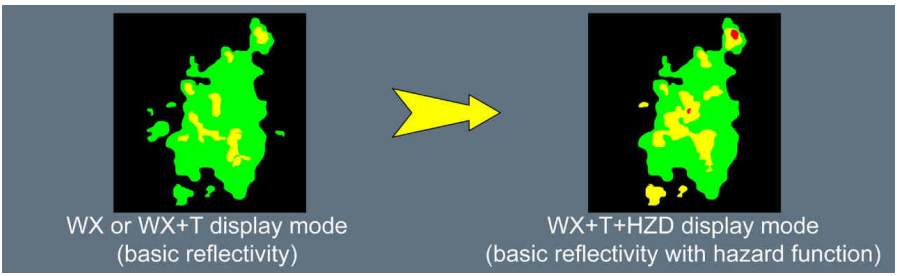
- The weather radar computes an automatic threat assessment of the lightning, hail and convective activity in a storm cell and in the area near the storm cell (Core Threat Assessment and Associated Threat Assessment)
- The weather radar is also able to alert the flight crew of storm cells that may rapidly build below the aircraft flight path (Predictive Overflight).

Note: The hazard predictions are only available when the Multiscan mode is in AUTO.

CORE THREAT ASSESSMENT

The Core Threat Assessment function operates until 320 NM. In case the weather radar determines that lightning, hail or turbulence may occur in a given cell. Native reflectivity color of the weather is increased in order to better reflect the threat associated with a cell core.
The adjustment can go up to a color level (green cells may become yellow, yellow cells may become red).

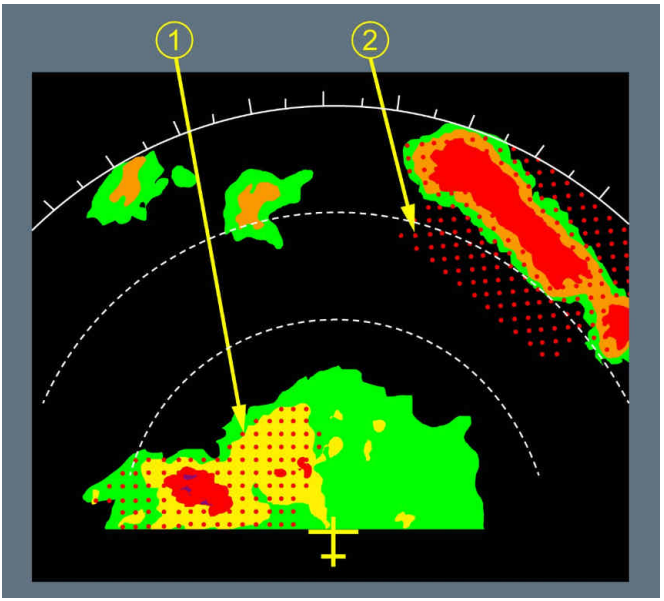
Core Threat Assessment



ASSOCIATED THREAT ASSESSMENT

Associated threat assessment enables to indicate an area of possible hail, lightning, and convection on the ND. This permits to identify potential threats even if there is no reflective activity in the area.

Associated Threat Assessment



Associated threats are represented by red dots on the ND and can be within the cell boundary or outside. Two types of indications can be displayed:

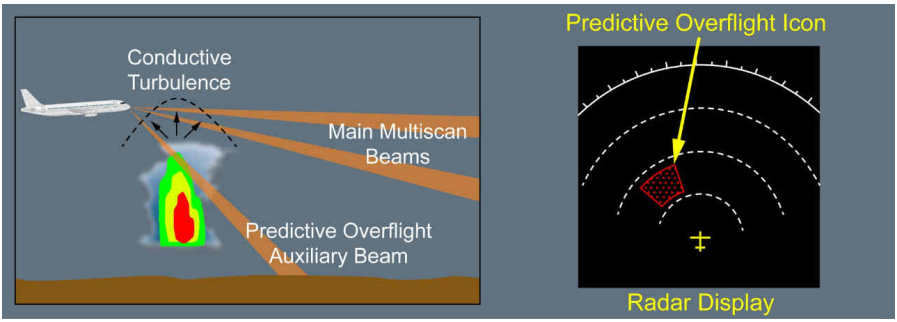
(1) The first type of indication is represented by red dots in the area of potential lightning and icing found in precipitation around the freezing level. This information is available only when the aircraft is below the freezing level or up to 6 000 ft above the freezing level.

(2) The second type of indication is represented by red dots in a rectangular shape on top of a storm cell displayed on the ND. The doted rectangle above a storm cell indicates a potential of icing, hail and/or lightning. This information is available at all altitudes. The rectangle may extend beyond the storm cell to indicate potential threats that can not be seen by the basic reflectivity function of the weather radar.

PREDICTIVE OVERFLIGHT FUNCTION

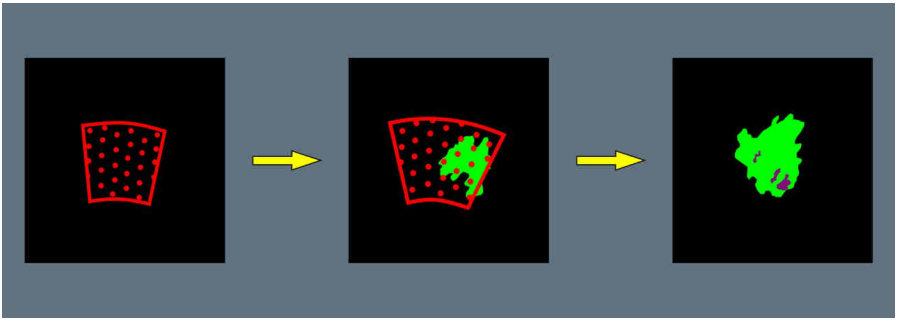
The predictive overflight function is active above 25 000 ft and operates up to 40 NM. Its aim is to indicate risk constituted by cells growing rapidly underneath main radar beams. For this purpose, an auxiliary beam with very low tilt searches for growing cells. When a conflict between a fast growing cell and the aircraft flight path is detected, a Predictive Overflight icon is displayed.
The Predictive Overflight icon is represented by an area of red dots with red boundaries.
As it is based on actual convection measurement, the flight crew should avoid predictive overflight areas.

Predictive Overflight Function



First, the icon is displayed “alone” over black when the concerned cell can not be displayed (the cell is much lower than aircraft flight level). Then, when cell reach aircraft flight level, the icon and the reflectivity are displayed together. Finally, the icon is removed 1 min after cell ceases to be considered as a threat by the weather radar or when the relevant depiction (i.e. at least red core) for the cell is displayed on ND.

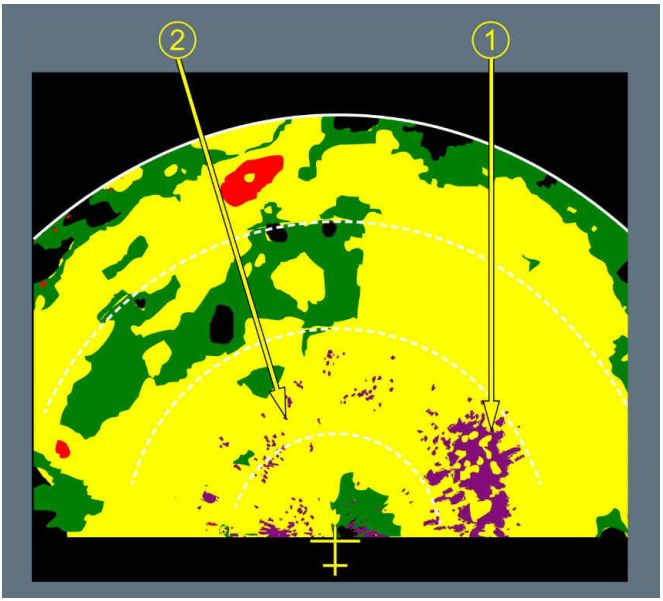
Predictive Overflight Icon Evolution



Note: *Avoidance of the detected weather always has priority over avoidance of the predicted hazards. The flight crew must apply standard storm avoidance recommendations in priority, and hazard areas should be avoided as much as possible.*

SEVERE AND MODERATE TURBULENCE DISPLAY

Example of Severe and Moderate Turbulence Display



The weather hazard prediction function provides two levels of turbulence:

(1) Basic plain magenta:
It indicates potential severe turbulences (available in WX+T or WX+T+HZD display mode).

(2) Speckle magenta:
It indicates potential moderate turbulences that could decrease passenger comfort (available only in WX+T+HZD display mode).

MEMO DISPLAY

Ident.: DSC-34-SURV-30-30-00017051.0001001 / 21 MAR 16

7 **Applicable to: MSN 01767-02334, 02388, 02443-02457, 02584-09063**

The "PRED W/S OFF" message appears when windshear is set to OFF on the weather radar panel.

PRED W/S OFF : This memo appears in green during flight phases 2 and 6.

PRED W/S OFF : This memo appears in amber when:

- The aircraft is in flight phases 3, 4, 5, 7, 8, and 9.
- The T.O. CONFIG pb is pressed during flight phase 2.

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OVERVIEW

Ident.: DSC-34-SURV-40-10-00021292.0001001 / 17 MAR 17
Applicable to: ALL

The purpose of the Ground Proximity Warning System (GPWS) is to warn the flight crew of potentially hazardous situations, such as a collision with terrain. It detects terrain collision threats and triggers applicable aural and visual indications.

The GPWS includes:

- Five basic modes active up to radio height of 2 500 ft.
  - Excessive rate of descent (Mode 1)
  - Excessive terrain closure rate (Mode 2)
  - Altitude loss after takeoff or go-around (Mode 3)
  - Terrain clearance not sufficient, if not in landing configuration (Mode 4)
  - Excessive descent below the glide slope (Mode 5).
- A predictive GPWS function, based on a GPWS database, to display terrain information. It can be provided:
  - By Honeywell through Enhanced GPWS (EGPWS)
  - By ACSS as Ground Collision Avoidance System (GCAS), through T2CAS or T3CAS.

  The predictive GPWS is composed of:
  - Mandatory functions such as the Forward Looking Terrain Alerting function
  - Optional functions such as the obstacle database.

Note: The terrain data are displayed on the ND and the brightness is controlled via the weather radar brightness control knob. If the weather radar brightness was set to low (due to bad weather) and a terrain alert occurs, then the brightness of the terrain display will also be low.

PRINCIPLE

Ident.: DSC-34-SURV-40-10-00021293.0001001 / 17 MAR 17
Applicable to: ALL

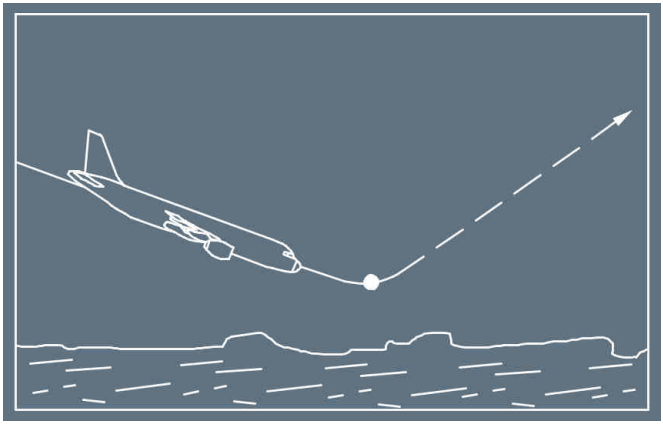
The GPWS computes the geometric altitude of the aircraft by using:

- Pressure altitude
- Radio altitude
- Temperature
- Barometric references

- GPS altitude for predictive GPWS ◁
- Data from the GPWS database for predictive GPWS ◁ .

MODE 1 : EXCESSIVE RATE OF DESCENT

Ident.: DSC-34-SURV-40-20-00015115.0001001 / 13 JAN 14
Applicable to: MSN 01767, 02359, 02405, 02482



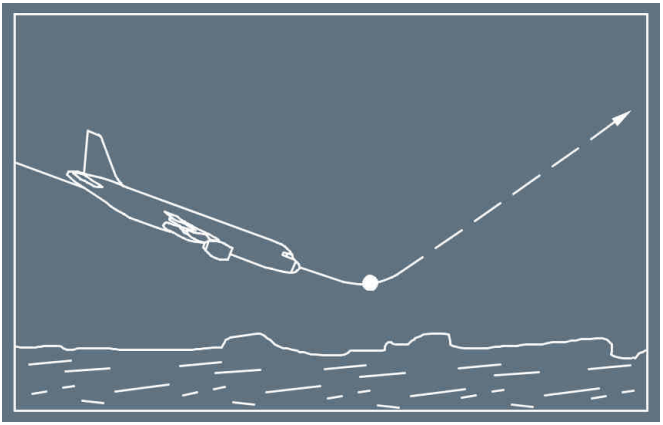
Mode 1 triggers aural and visual alerts about excessive rates of descent, based on the radio height, and the rate of descent of the aircraft.
Mode 1 is active for all phases of the flight.

	CAUTION	WARNING
AURAL ALERT	"SINK RATE, SINK RATE"	"PULL UP" (repeated as long as MODE 1 is triggered)
VISUAL ALERT	GPWS The GPWS red lights come on	GPWS The GPWS red lights come on

MODE 1 : EXCESSIVE RATE OF DESCENT

Ident.: DSC-34-SURV-40-20-00015115.0004001 / 13 JAN 14

1 **Applicable to: MSN 01920-02334, 02388, 02443-02457, 02584-09063**

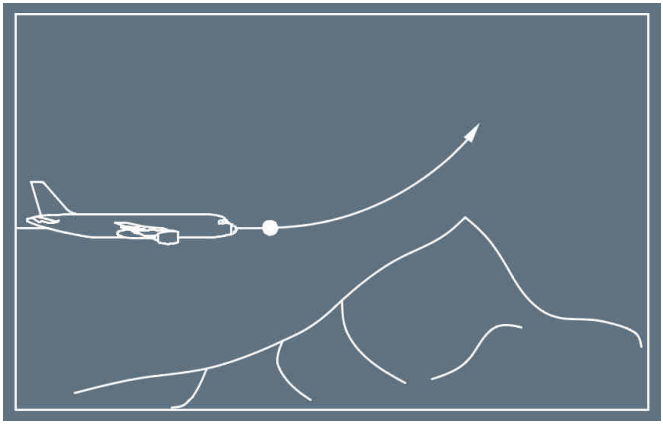


Mode 1 triggers aural and visual alerts about excessive rates of descent, based on the radio height, and the rate of descent of the aircraft.
Mode 1 is active for all phases of the flight.

	CAUTION	WARNING
AURAL ALERT	"SINK RATE, SINK RATE"	"PULL UP" (repeated as long as MODE 1 is triggered)
VISUAL ALERT	The GPWS amber lights come on	The PULL UP red lights come on

MODE 2 : EXCESSIVE TERRAIN CLOSURE RATE

Ident.: DSC-34-SURV-40-20-00015116.0001001 / 23 JUN 15
Applicable to: MSN 01767, 02359, 02405, 02482



Mode 2 triggers two types of aural and visual alerts, based on the landing gear/flaps configuration of the aircraft, the radio height, and the RA rate of change.
There are two types of Mode 2 alerts, Mode 2A (active during climb, cruise, and initial approach), and Mode 2B (active during approach and 60 s after takeoff).

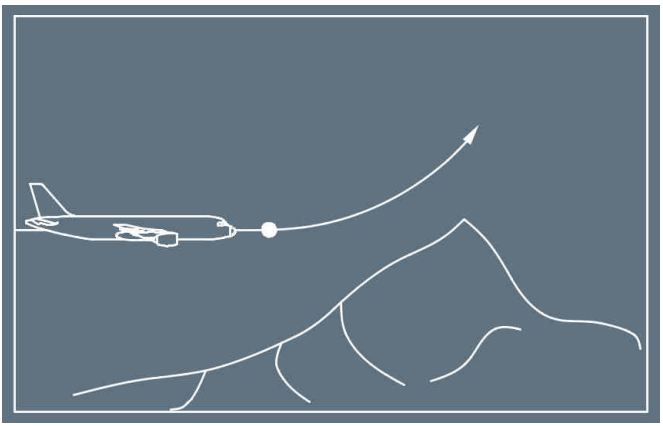
CONFIGURATION	Flaps not in Landing Position + Landing Gear Up (Mode 2A) Flaps Down + Landing Gear Up (Mode 2B)		
	CAUTION	WARNING	
AURAL ALERT	"TERRAIN, TERRAIN"	"PULL UP" (repeated as long as MODE 2 is triggered in the warning conditions)	"TERRAIN" (repeated as long as MODE 2 is triggered after leaving the warning conditions)
VISUAL ALERT	GPWS The GPWS red lights come on	GPWS The GPWS red lights come on	GPWS The GPWS red lights come on

CONFIGURATION	Flaps Down + Landing Gear Down (Mode 2B)
AURAL ALERT	CAUTION "TERRAIN" (repeated as long as MODE 2 is triggered)
VISUAL ALERT	GPWS The GPWS red lights come on

MODE 2 : EXCESSIVE TERRAIN CLOSURE RATE

Ident.: DSC-34-SURV-40-20-00015116.0004001 / 03 AUG 17

2 **Applicable to: MSN 01920-02334, 02388, 02443-02457, 02584-09063**



Mode 2 triggers aural and visual alerts, based on the landing gear/flaps configuration of the aircraft, the radio height, and the RA rate of change.
There are two types of Mode 2 alerts, Mode 2A (active during climb, cruise, and initial approach), and Mode 2B (active during approach and 60 s after takeoff).

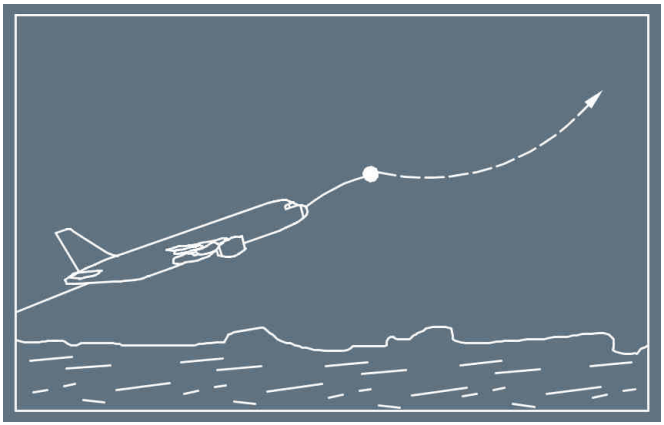
CONFIGURATION	Flaps not in Landing Position + Landing Gear Up (Mode 2A) Flaps in landing position + Landing Gear Up (Mode 2B)		
	CAUTION	WARNING	
AURAL ALERT	"TERRAIN, TERRAIN"	"PULL UP" (repeated as long as MODE 2 is triggered in the warning conditions)	"TERRAIN" (repeated as long as MODE 2 is triggered after leaving the warning conditions)
VISUAL ALERT	The GPWS amber lights come on	The PULL UP red lights come on	The PULL UP red lights stay on

CONFIGURATION	Flaps in landing position + Landing Gear Down (Mode 2B)
	CAUTION
AURAL ALERT	"TERRAIN" (repeated as long as MODE 2 is triggered)
VISUAL ALERT	The GPWS amber lights come on

MODE 3 : ALTITUDE LOSS AFTER TAKEOFF

Ident.: DSC-34-SURV-40-20-00015117.0004001 / 19 SEP 13

3 **Applicable to: MSN 01920-02334, 02388, 02443-02457, 02584-09063**

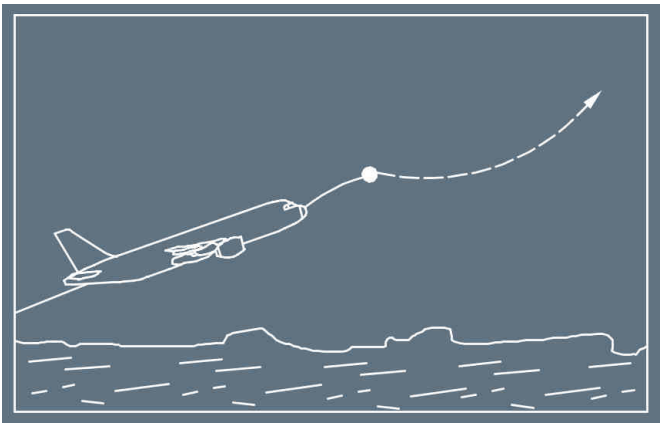


Mode 3 triggers aural and visual alerts when the altitude significantly decreases after takeoff, and go-arounds with landing gear or flaps not in landing configuration.

	CAUTION
AURAL ALERT	"DON'T SINK, DON'T SINK" (repeated as long as MODE 3 is triggered)
VISUAL ALERT	GPWS — The GPWS amber lights come on

MODE 3 : ALTITUDE LOSS AFTER TAKEOFF

Ident.: DSC-34-SURV-40-20-00015117.0001001 / 19 SEP 13
Applicable to: MSN 01767, 02359, 02405, 02482

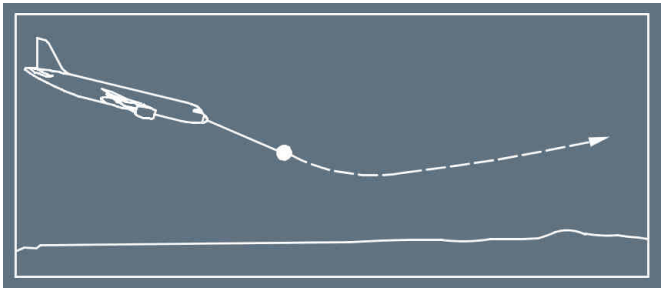


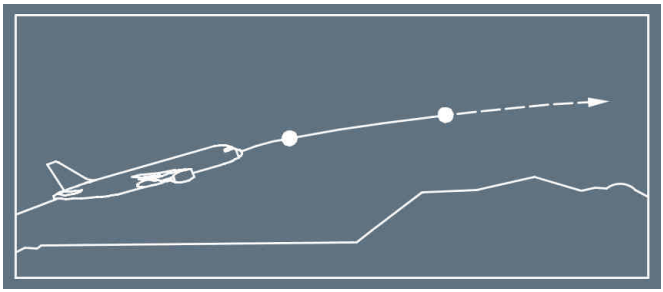
Mode 3 triggers aural and visual alerts when the altitude significantly decreases after takeoff, and go-arounds with landing gear or flaps not in landing configuration.

	CAUTION
AURAL ALERT	"DON'T SINK, DON'T SINK" (repeated as long as MODE 3 is triggered)
VISUAL ALERT	GPWS — The GPWS red lights come on

MODE 4 : UNSAFE TERRAIN CLEARANCE WHEN NOT IN LANDING CONFIGURATION

Ident.: DSC-34-SURV-40-20-00015118.0003001 / 13 JAN 14
Applicable to: MSN 01767





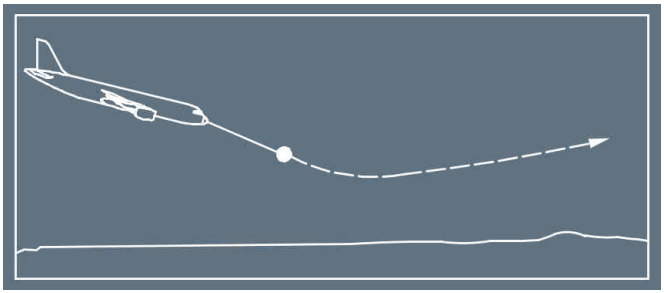
There are three types of Mode 4 alerts, Mode 4A and Mode 4B (both active during cruise and approach), and Mode 4C (active during takeoff).
Mode 4A and Mode 4B trigger aural and visual alerts when terrain clearance is not sufficient based on the phase of flight, the configuration of the landing gear and the flaps, and the speed. Mode 4C triggers aural and visual alerts based on the minimum terrain clearance and the radio height of the aircraft.

CONFIGURATION	Landing gear Up (Mode 4A)		Flaps not in landing position + Landing gear down (Mode 4B)		Flaps not in landing position OR Landing Gear Up (Mode 4C)
AURAL ALERT	CAUTION				
	"TOO LOW TERRAIN"	"TOO LOW GEAR"	"TOO LOW TERRAIN"	"TOO LOW FLAPS"	"TOO LOW TERRAIN"
VISUAL ALERT	GPWS	The GPWS red lights come on			

MODE 4 : UNSAFE TERRAIN CLEARANCE WHEN NOT IN LANDING CONFIGURATION

Ident.: DSC-34-SURV-40-20-00015118.0004001 / 19 SEP 13

Applicable to: MSN 01957-02097, 02121, 02138, 03071-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336



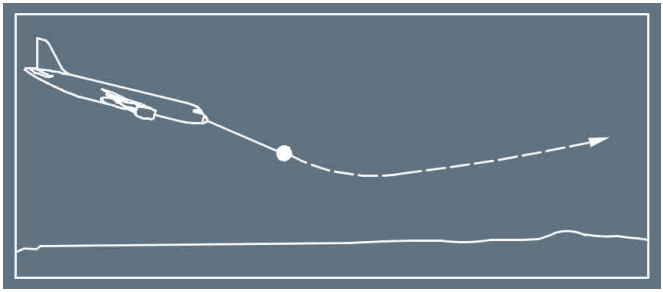
There are two types of Mode 4 alerts, Mode 4A and Mode 4B (both active during cruise and approach).
Mode 4A and Mode 4B trigger aural and visual alerts when terrain clearance is not sufficient based on the phase of flight, the configuration of the landing gear and the flaps, and the speed.

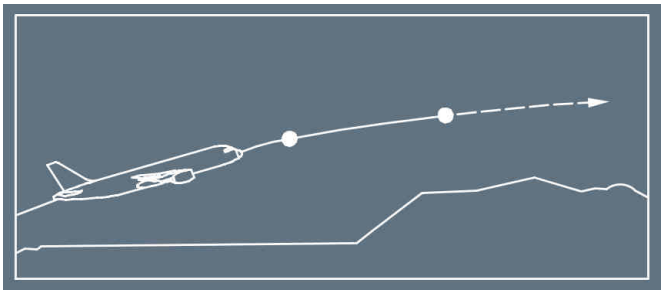
CONFIGURATION	Landing gear Up (Mode 4A)		Flaps not in landing position + Landing gear down (Mode 4B)	
AURAL ALERT	CAUTION			
	"TOO LOW TERRAIN"	"TOO LOW GEAR"	"TOO LOW TERRAIN"	"TOO LOW FLAPS"
VISUAL ALERT	GPWS	The GPWS amber lights come on		

MODE 4 : UNSAFE TERRAIN CLEARANCE WHEN NOT IN LANDING CONFIGURATION

Ident.: DSC-34-SURV-40-20-00015118.0005001 / 13 JAN 14

4 **Applicable to: MSN 01920, 02108, 02135, 02139-02914, 03750, 04491, 04532, 04645, 05120, 05158, 05218, 06720-09063**





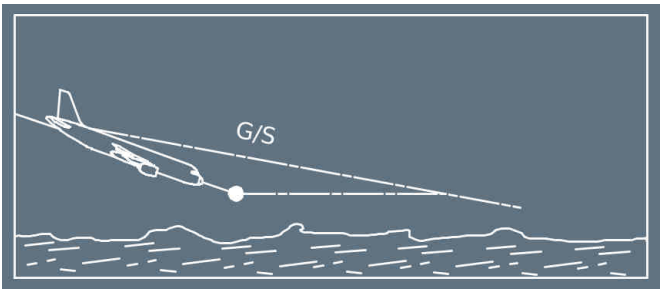
There are three types of Mode 4 alerts, Mode 4A and Mode 4B (both active during cruise and approach), and Mode 4C (active during takeoff*).
Mode 4A and Mode 4B trigger aural and visual alerts when terrain clearance is not sufficient based on the phase of flight, the configuration of the landing gear and the flaps, and the speed. Mode 4C triggers aural and visual alerts based on the minimum terrain clearance and the radio height of the aircraft. *(Only EGPWS not T2CAS)

CONFIGURATION	Landing gear Up (Mode 4A)		Flaps not in landing position + Landing gear down (Mode 4B)		Flaps not in landing position OR Landing Gear Up (Mode 4C)
AURAL ALERT	CAUTION				
	"TOO LOW TERRAIN"	"TOO LOW GEAR"	"TOO LOW TERRAIN"	"TOO LOW FLAPS"	"TOO LOW TERRAIN"
VISUAL ALERT	GPWS	The GPWS amber lights come on			

MODE 5 : DESCENT BELOW GLIDESLOPE

Ident.: DSC-34-SURV-40-20-00015119.0004001 / 19 SEP 13

5 **Applicable to: MSN 01920-02334, 02388, 02443-02457, 02584-09063**

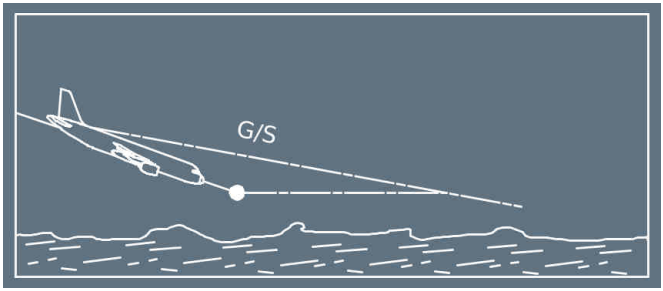


Mode 5 triggers aural and visual alerts, when the aircraft descends below the glide slope.

	CAUTION
AURAL ALERT	"GLIDESLOPE" (repeated as long as MODE 5 is triggered)
VISUAL ALERT	GPWS The GPWS amber lights come on

MODE 5 : DESCENT BELOW GLIDESLOPE

Ident.: DSC-34-SURV-40-20-00015119.0001001 / 19 SEP 13
Applicable to: MSN 01767, 02359, 02405, 02482



Mode 5 triggers aural and visual alerts, when the aircraft descends below the glide slope.

	CAUTION
AURAL ALERT	"GLIDESLOPE"" (repeated as long as MODE 5 is triggered)
VISUAL ALERT	The G/S amber lights come on

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TERRAIN AWARENESS AND DISPLAY

Ident.: DSC-34-SURV-40-35-00001417.0002001 / 17 MAR 11
Applicable to: MSN 01767

The Terrain Awareness and Display (TAD) function computes a caution and a warning envelope in front of the aircraft, which varies according to aircraft altitude, nearest runway altitude, distance to the nearest runway threshold, ground speed, and turn rate. When the boundary of these envelopes conflicts with the terrain, memorized in the database, the system generates the relevant alert:

Alert Level	Aural Warning	ND (*Refer to DSC-31-45 Flags and Messages Displayed on ND*)	Local Warning
Warning	**TERRAIN AHEAD, PULL UP**	- Automatic terrain display See * - Solid red areas - TERR AHEAD (red)	The pb light comes on, on each pilot's instrument panel.
Caution	**TERRAIN AHEAD**	- Automatic terrain display pop up See * - Solid yellow areas - TERR AHEAD (amber)	

* When the TERR pb-sw ON, ND is selected ON, and ARC or ROSE mode is selected, the terrain is displayed on the ND. The terrain is displayed in various densities of green, yellow, red, or magenta, depending on the threat. (*Refer to DSC-31-45 Flags and Messages Displayed on ND*). If an alert is generated (caution or warning) when TERR pb-sw ON ND is not selected, the terrain will be automatically displayed and the ON light of the TERR pb-sw ON ND will come on.

Note:
1. *When TERR pb-sw ON ND is selected, the weather radar image is not displayed*
2. *The relative height of the aircraft is computed using the Captain's BARO setting. Thus, the Terrain Awareness Display (TAD) does not protect against BARO setting errors.*
3. *The TAD and Terrain Clearance Floor (TCF) functions operate using the FMS 1 position. Thus, the system does not protect against FMS 1 position error.*

If the crew identifies that navigation accuracy is low, it must set the enhanced modes to off, via the TERR pb-sw. The 5 GPWS modes remain active.

TERRAIN AWARENESS AND DISPLAY

Ident.: DSC-34-SURV-40-35-00001417.0108001 / 23 JUL 12
Applicable to: MSN 02405

The Terrain Awareness and Display (TAD) function computes a caution and a warning envelope in front of the aircraft, which varies according to aircraft altitude, nearest runway altitude, distance to

the nearest runway threshold, ground speed, and turn rate. When the boundary of these envelopes conflicts with the terrain, memorized in the database, the system generates the relevant alert:

Alert Level	Aural Warning	ND *Refer to DSC-31-45 Flags and Messages Displayed on ND*	Local Warning
Warning	**TERRAIN TERRAIN, PULL UP**	- Automatic terrain display See * - Solid red areas - TERRAIN (red)	The pb light comes on, on each pilot's instrument panel.
Caution	**CAUTION TERRAIN**	- Automatic terrain display *See - Solid yellow areas - TERRAIN (amber)	

* When the TERR pb-sw ON, ND is selected ON, and ARC or ROSE mode is selected, the terrain is displayed on the ND. The terrain is displayed in various densities of green, yellow, red, or magenta, depending on the threat. (*Refer to DSC-31-45 Flags and Messages Displayed on ND*). If an alert is generated (caution or warning) when TERR pb-sw ON ND is not selected, the terrain will be automatically displayed and the ON light of the TERR pb-sw ON ND will come on.

Note:
1. *When TERR pb-sw ON ND is selected, the weather radar image is not displayed.*
2. *The Terrain Awareness Display (TAD) function computes the aircraft's relative altitude by using the Captain's BARO setting information. Therefore, if the BARO setting information is incorrect, the TAD function will also provide erroneous information and/or warnings*
3. *The TAD and Terrain Clearance Floor (TCF) functions use FMS 1 position information to perform their calculations. Therefore, in case of an FMS1 position error, the TAD and TCF will also provide erroneous information and/or warnings*

If the crew identifies that navigation accuracy is low, it must set the enhanced modes to off, via the TERR pb-sw. The 5 GPWS modes remain active.

TERRAIN AWARENESS AND DISPLAY

Ident.: DSC-34-SURV-40-35-00001417.0109001 / 17 MAR 11
Applicable to: MSN 02737

The Terrain Awareness and Display (TAD) function computes a caution and a warning envelope in front of the aircraft, which varies according to aircraft altitude, nearest runway altitude, distance to the nearest runway threshold, ground speed, and turn rate. When the boundary of these envelopes conflicts with the terrain, memorized in the database, the system generates the relevant alert:

Alert Level	Aural Warning	ND (*Refer to DSC-31-45 Flags and Messages Displayed on ND*)	Local Warning
Warning	**TERRAIN AHEAD, PULL UP**	- Automatic terrain display See * - Solid red areas - TERR AHEAD (red)	The pb light comes on, on each pilot's instrument panel.
Caution	**TERRAIN AHEAD**	- Automatic terrain display pop up See * - Solid yellow areas - TERR AHEAD (amber)	

* When the TERR pb-sw ON, ND is selected ON, and ARC or ROSE mode is selected, the terrain is displayed on the ND. The terrain is displayed in various densities of green, yellow, red, or magenta, depending on the threat. (*Refer to DSC-31-45 Flags and Messages Displayed on ND*). If an alert is generated (caution or warning) when TERR pb-sw ON ND is not selected, the terrain will be automatically displayed and the ON light of the TERR pb-sw ON ND will come on.

Note: *1. When TERR pb-sw ON ND is selected, the weather radar image is not displayed.*
2. The Geometric Altitude function can protect against certain BARO setting errors, provided the components used to compute the Geometric Altitude are sufficiently valid and accurate.
3. The TAD and Terrain Clearance Floor (TCF) functions use FMS 1 position information to perform their calculations. Therefore, in case of an FMS 1 position error, the TAD and TCF will also provide erroneous information and/or warnings.

If the crew identifies that navigation accuracy is low, it must set the enhanced modes to off, via the TERR pb-sw. The 5 GPWS modes remain active.

TERRAIN AWARENESS AND DISPLAY

Ident.: DSC-34-SURV-40-35-00001417.0204001 / 17 MAR 11
Applicable to: MSN 02482

The Terrain Awareness and Display (TAD) function computes a caution and a warning envelope in front of the aircraft, which varies according to aircraft altitude, nearest runway altitude, distance to the nearest runway threshold, ground speed, and turn rate. When the boundary of these envelopes conflicts with the terrain, memorized in the database, the system generates the relevant alert:

Alert Level	Aural Warning	ND (*Refer to DSC-31-45 Flags and Messages Displayed on ND*)	Local Warning
Warning	TERRAIN TERRAIN PULL UP	- Automatic terrain display See * - Solid red areas - TERRAIN (red)	On each pilot's instrument panel, The pushbutton light comes on.
	OBSTACLE OBSTACLE, PULL UP	- Automatic terrain display See * - Solid red areas - OBST (red)	
Caution	CAUTION TERRAIN	- Automatic terrain displaySee * - Solid yellow areas - TERRAIN (amber)	
	CAUTION OBSTACLE	- Automatic terrain display See * - Solid yellow areas - OBST (amber)	

* When the TERR pb-sw ON ND is set to ON, and ARC or ROSE mode is selected, the ND displays the terrain and the obstacles memorized in the database, depending on the aircraft's position. The terrain is displayed in various densities of green, yellow, red, or magenta, depending on the threat (*Refer to DSC-31-45 Flags and Messages Displayed on ND*). If an alert is generated (caution or warning), and TERR pb-sw ON ND is not selected, the terrain and the obstacles are automatically displayed, and the ON light of the TERR pb-sw ON ND comes on.

Note:
1. *When TERR pb-sw ON ND is selected, the weather radar image is not displayed.*
2. *The Terrain Awareness Display (TAD) function computes the aircraft's relative altitude by using the Captain's BARO setting information. Therefore, if the BARO setting information is incorrect, the TAD function will also provide erroneous information and/or warnings.*
3. *The TAD and Terrain Clearance Floor (TCF) functions use FMS 1 position information to perform their calculations. Therefore, in case of an FMS1 position error, the TAD and TCF will also provide erroneous information and/or warnings.*

If the crew identifies that navigation accuracy is low, it must set the enhanced modes to off, via the TERR pb-sw. The 5 GPWS modes remain active.

TERRAIN AWARENESS AND DISPLAY

Ident.: DSC-34-SURV-40-35-00001417.0250001 / 25 FEB 14
Applicable to: MSN 02204

The Terrain Awareness and Display (TAD) function computes a caution and a warning envelope in front of the aircraft, which varies according to aircraft altitude, nearest runway altitude, distance to the nearest runway threshold, ground speed, and turn rate. When the boundary of these envelopes conflicts with the terrain, memorized in the database, the system generates the relevant alert:

Alert Level	Aural Warning	ND (*Refer to DSC-31-45 Flags and Messages Displayed on ND*)	Local Warning
Warning	**TERRAIN AHEAD, PULL UP**	- Automatic terrain display See * - Solid red areas - TERR AHEAD (red)	On each pilot's instrument panel, The pushbutton light comes on.
	OBSTACLE AHEAD, PULL UP	- Automatic terrain display See * - Solid red areas - OBST AHEAD (red)	
Caution	**TERRAIN AHEAD**	- Automatic terrain display See * - Solid yellow areas - TERR AHEAD (amber)	
	OBSTACLE AHEAD	- Automatic terrain display See * - Solid yellow areas - OBST AHEAD (amber)	

* When the TERR pb-sw ON ND is set to ON, and ARC or ROSE mode is selected, the ND displays the terrain and the obstacles memorized in the database, depending on the aircraft's position. The terrain is displayed in various densities of green, yellow, red, or magenta, depending on the threat (*Refer to DSC-31-45 Flags and Messages Displayed on ND*). If an alert is generated (caution or warning), and TERR pb-sw ON ND is not selected, the terrain and the obstacles are automatically displayed, and the ON light of the TERR pb-sw ON ND comes on.

Note: *1. When TERR ON ND is selected, the weather radar image is not displayed.*
2. The Geometric Altitude function can protect against certain BARO setting errors, provided the components used to compute the Geometric Altitude are valid and accurate.
3. The TAD and Terrain Clearance Floor (TCF) functions use FMS1 position information to perform their calculations. Therefore, in case of an FMS1 position error, the TAD and TCF will also provide erroneous information and/or warnings.

If the FMGS detects low navigation accuracy, then the enhanced modes of the EGPWS are automatically deactivated. The 5 GPWS modes remain active.

TERRAIN AWARENESS AND DISPLAY

Ident.: DSC-34-SURV-40-35-00001417.0111001 / 17 MAR 11
Applicable to: MSN 01920, 02108, 02195, 02275-02334, 02804

The Terrain Awareness and Display (TAD) function computes a caution and a warning envelope in front of the aircraft, depending on the aircraft altitude, the nearest runway altitude, the distance to the nearest runway threshold, the ground speed, and the turn rate. When the boundary of these envelopes conflicts with the terrain, or with an obstacle memorized in the database, the system generates the relevant alert:

Alert Level	Aural Warning	ND (*Refer to DSC-31-45 Flags and Messages Displayed on ND*)	Local Warning
Warning	**TERRAIN AHEAD, PULL UP**	- Automatic terrain display See * - Solid red areas - TERR AHEAD (red)	On each pilot's instrument panel, The pushbutton light comes on.
	OBSTACLE AHEAD, PULL UP	- Automatic terrain display See * - Solid red areas - OBST AHEAD (red)	
Caution	**TERRAIN AHEAD**	- Automatic terrain display See * - Solid yellow areas - TERR AHEAD (amber)	
	OBSTACLE AHEAD	- Automatic terrain display See * - Solid yellow areas - OBST AHEAD (amber)	

* When the TERR pb-sw ON ND is set to ON, and ARC or ROSE mode is selected, the ND displays the terrain and the obstacles memorized in the database, depending on the aircraft's position. The terrain is displayed in various densities of green, yellow, red, or magenta, depending on the threat (*Refer to DSC-31-45 Flags and Messages Displayed on ND*). If an alert is generated (caution or warning), and TERR pb-sw ON ND is not selected, the terrain and the obstacles are automatically displayed, and the ON light of the TERR pb-sw ON ND comes on.

Note:
1. *When TERR pb-sw ON ND is selected, the weather radar image is not displayed.*
2. *The Geometric Altitude function can protect against certain BARO setting errors, provided the components used to compute the Geometric Altitude are valid and accurate.*
3. *The TAD and Terrain Clearance Floor (TCF) functions use FMS1 position information to perform their calculations. Therefore, in case of an FMS1 position error, the TAD and TCF will also provide erroneous information and/or warnings.*

If the crew identifies that navigation accuracy is low, it must set the enhanced modes to off, via the TERR pb-sw. The 5 GPWS modes remain active.

TERRAIN AWARENESS AND DISPLAY

Ident.: DSC-34-SURV-40-35-00001417.0112001 / 17 MAR 11
Applicable to: MSN 02359

The Terrain Awareness and Display (TAD) function computes a caution and a warning envelope in front of the aircraft, depending on the aircraft altitude, the nearest runway altitude, the distance to the nearest runway threshold, the ground speed, and the turn rate. When the boundary of these envelopes conflicts with the terrain, or with an obstacle memorized in the database, the system generates the relevant alert:

Alert Level	Aural Warning	ND (*Refer to DSC-31-45 Flags and Messages Displayed on ND*)	Local Warning
Warning	**TERRAIN TERRAIN PULL UP**	- Automatic terrain display See * - Solid red areas - TERRAIN (red)	On each pilot's instrument panel, The pushbutton light comes on.
	OBSTACLE OBSTACLE, PULL UP	- Automatic terrain display See * - Solid red areas - OBST (red)	
Caution	**CAUTION TERRAIN**	- Automatic terrain displaySee * - Solid yellow areas - TERRAIN (amber)	
	CAUTION OBSTACLE	- Automatic terrain display See * - Solid yellow areas - OBST (amber)	

* When the TERR pb-sw ON ND is set to ON, and ARC or ROSE mode is selected, the ND displays the terrain and the obstacles memorized in the database, depending on the aircraft's position. The terrain is displayed in various densities of green, yellow, red, or magenta, depending on the threat (*Refer to DSC-31-45 Flags and Messages Displayed on ND*). If an alert is generated (caution or warning), and TERR pb-sw ON ND is not selected, the terrain and the obstacles are automatically displayed, and the ON light of the TERR pb-sw ON ND comes on.

Note:
1. *When TERR pb-sw ON ND is selected, the weather radar image is not displayed.*
2. *The Geometric Altitude function can protect against certain BARO setting errors, provided the components used to compute the Geometric Altitude are valid and accurate.*
3. *The TAD and Terrain Clearance Floor (TCF) functions use FMS1 position information to perform their calculations. Therefore, in case of an FMS1 position error, the TAD and TCF will also provide erroneous information and/or warnings.*

If the crew identifies that navigation accuracy is low, it must set the enhanced modes to off, via the TERR pb-sw. The 5 GPWS modes remain active.

TERRAIN AWARENESS AND DISPLAY

Ident.: DSC-34-SURV-40-35-00001417.0113001 / 29 JUN 16

[1] **Applicable to: MSN 02135, 02139, 02388, 02443-02457, 02584-02712, 02908-02914, 03750, 04491, 04532, 04645, 05120, 05158, 05218, 06720-09063**

The Terrain Awareness and Display (TAD) function computes a caution and a warning envelope in front of the aircraft, depending on the aircraft altitude, the nearest runway altitude, the distance to the nearest runway threshold, the ground speed, and the turn rate. When the boundary of these envelopes conflicts with the terrain, or with an obstacle memorized in the database, the system generates the relevant alert:

Alert Level	Aural Warning	ND (*Refer to DSC-31-45 Flags and Messages Displayed on ND*)	Local Warning
Warning	TERRAIN AHEAD, PULL UP	- Automatic terrain display See * - Solid red areas - TERR AHEAD (red)	On each pilot's instrument panel, The pushbutton light comes on.
	OBSTACLE AHEAD, PULL UP	- Automatic terrain display See * - Solid red areas - OBST AHEAD (red)	
Caution	TERRAIN AHEAD	- Automatic terrain display See * - Solid yellow areas - TERR AHEAD (amber)	
	OBSTACLE AHEAD	- Automatic terrain display See * - Solid yellow areas - OBST AHEAD (amber)	

* When the TERR pb-sw ON ND is set to ON, and ARC or ROSE mode is selected, the ND displays the terrain and the obstacles memorized in the database, depending on the aircraft's position. The terrain is displayed in various densities of green, yellow, red, or magenta, depending on the threat (*Refer to DSC-31-45 Flags and Messages Displayed on ND*). If an alert is generated (caution or warning), and TERR pb-sw ON ND is not selected, the terrain and the obstacles are automatically displayed, and the ON light of the TERR pb-sw ON ND comes on.

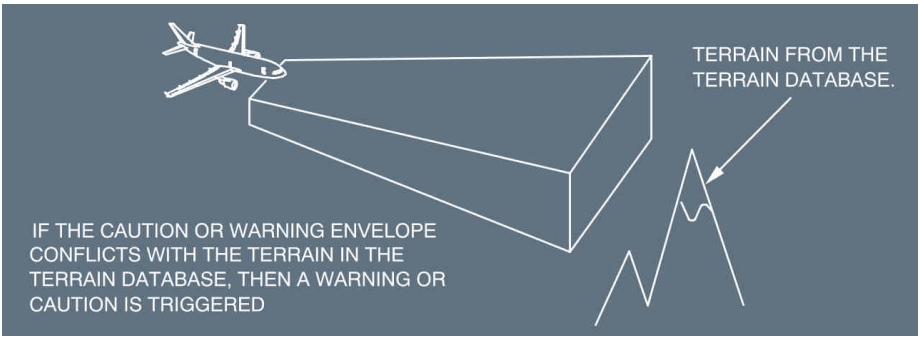
Note: *1. When TERR pb-sw ON ND is selected, the weather radar image is not displayed.*
2. The Geometric Altitude function can protect against certain BARO setting errors, provided the components used to compute the Geometric Altitude are valid and accurate enough.
3. The TAD and Terrain Clearance Floor (TCF) functions operate using the pure lateral GPS position and, the FMS1 position as backup.

If the crew identifies that navigation accuracy is low, it must set the enhanced modes to off, via the TERR pb-sw. The 5 GPWS modes remain active.

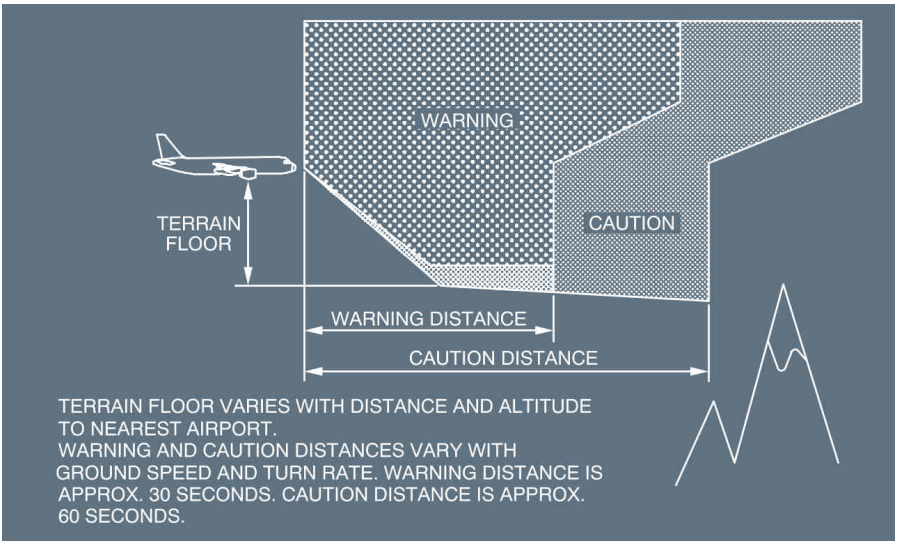
TERRAIN CAUTION AND WARNING ENVELOPE

Ident.: DSC-34-SURV-40-35-00006161.0002001 / 19 DEC 12

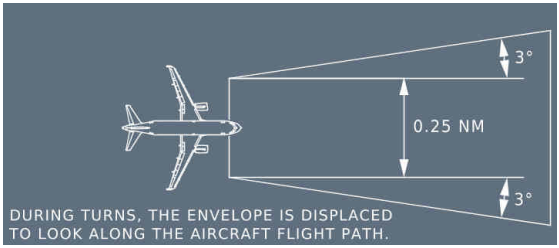
2 **Applicable to: MSN 01767-01920, 02108, 02135, 02139-02914, 03750, 04491, 04532, 04645, 05120, 05158, 05218, 06720-09063**



VERTICAL ENVELOPE



HORIZONTAL ENVELOPE

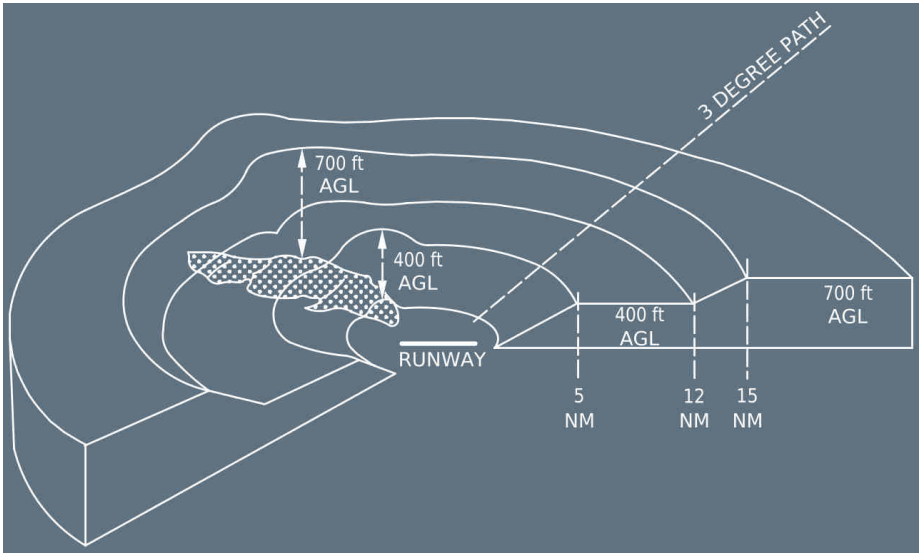


TERRAIN CLEARANCE FLOOR

Ident.: DSC-34-SURV-40-35-00006162.0002001 / 03 JUN 14

3 **Applicable to: MSN 01767-01920, 02108, 02135, 02139-02914, 03750, 04491, 04532, 04645, 05120, 05158, 05218, 06720-09063**

A terrain clearance floor envelope is stored in the database for each runway for which terrain data exist. The Terrain Clearance Floor (TCF) function warns of a premature descent below this floor, regardless of aircraft configuration.



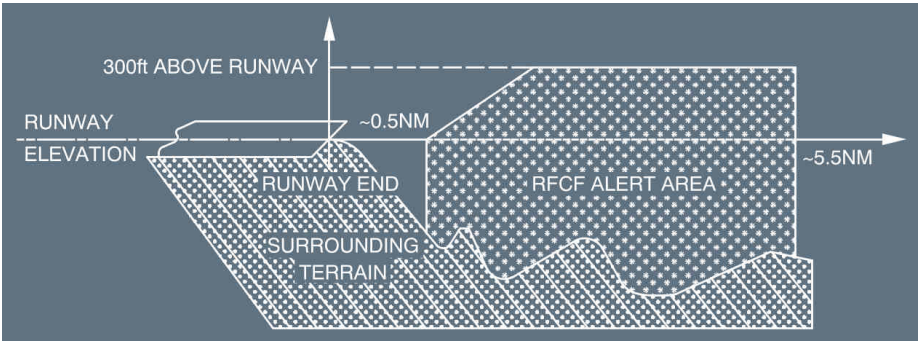
If the airplane descends below this floor, a TOO LOW TERRAIN aural warning is announciated, and the pushbutton light comes on, on the glareshield.

RUNWAY FIELD CLEARANCE FLOOR

Ident.: DSC-34-SURV-40-35-00006163.0002001 / 19 DEC 12

4 **Applicable to: MSN 01920, 02108, 02135, 02139-02334, 02388, 02443-02457, 02584-02914, 03138, 03750, 04491, 04532, 04645, 05120, 05158, 05218, 06720-09063**

The Runway Field Clearance Floor (RFCF) provides an additional envelope protection, for runways that are significantly higher than the surrounding terrain. It is contained in a circle within the 5.5 NM of the runway threshold and it is based on the geometric altitude and the runway elevation.



GENERAL

Ident.: DSC-34-SURV-40-35-00006159.0002001 / 23 JUN 15
Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03264-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336

The GPWS system :
- Correlates the current aircraft position to terrain and airport database.
- Computes a caution and a warning envelope ahead of the aircraft. This includes the determination of the climb prediction envelope for terrain avoidance, using the modelized climb capability of the aircraft.
- Displays the terrain hazards along the projected flight path ahead of the aircraft.
- Generates alerts described below.

While the predictive GPWS functions are operative, the basic GPWS Mode 2 is inhibited.
If the predictive GPWS functions fail or if there is significant difference between the radio height and the altitude computed by the T2CAS, the basic GPWS Mode 2 is reactivated.

GENERAL

Ident.: DSC-34-SURV-40-35-00006159.0003001 / 13 JAN 14
Applicable to: MSN 03138

The GPWS system :
- Correlates the current aircraft position to terrain (and obstacle ◁) and airport database.
- Computes a caution and a warning envelope ahead of the aircraft. This includes the determination of the climb prediction envelope for terrain (and obstacle ◁) avoidance, using the modelized climb capability of the aircraft.
- Displays the terrain (and obstacle ◁) hazards along the projected flight path ahead of the aircraft.
- Generates alerts described below.

While the predictive GPWS functions are operative, the basic GPWS Mode 2 is inhibited.
If the predictive GPWS functions fail or if there is significant difference between the radio height and the altitude computed by the T3CAS, the basic GPWS Mode 2 is reactivated.

ALERTS

Ident.: DSC-34-SURV-40-35-00006160.0014001 / 25 JUL 16
Applicable to: MSN 03138

THE FOLLOWING TABLE PROVIDES THE RELEVANT WARNING AND CAUTION ALERTS

Alert Level	Aural alert	ND (*Refer to DSC-31-45 GPWS (EGPWS)*)	Local alert
Warning	**TERRAIN AHEAD, PULL UP**	- Automatic terrain display (1) - Solid red areas - TERR AHEAD (red)	The GPWS/PULL UP pb light comes on, on each pilot's instrument panel.
	OBSTACLE AHEAD, PULL UP ◁	- Automatic obstacle display (1) - Solid red areas - OBST AHEAD (red) ◁	
	AVOID TERRAIN	- Automatic terrain display (1) - Red/black crosshatched areas - TERR AHEAD (red)	
	AVOID OBSTACLE ◁	- Automatic obstacle display (1) - Red/black crosshatched areas - OBST AHEAD (red) ◁	

Continued on the following page

Continued from the previous page

Alert Level	Aural alert	ND (*Refer to DSC-31-45 GPWS (EGPWS)*)	Local alert
Caution	**TERRAIN AHEAD**	- Automatic terrain display (1) - Solid yellow areas - TERR AHEAD (Amber)	The GPWS light of the GPWS/PULL UP pb comes on, on each pilot's instrument panel.
	OBSTACLE AHEAD ◁	- Automatic obstacle display (1) - Solid yellow areas - OBST AHEAD (Amber) ◁	
	TOO LOW TERRAIN	NIL	

(1) *When the TERR ON ND pb is set to ON, and ARC or ROSE mode is selected, the ND displays the terrain (and obstacle ◁) memorized in the database, depending on the aircraft's position. The terrain (and obstacle ◁) are displayed in various densities of green, yellow, red, or magenta, depending on the threat (Refer to DSC-31-45 Flags and Messages Displayed on ND). If an alert is generated (caution or warning), and TERR ON ND is not selected, the terrain (and obstacle ◁) are automatically displayed, and the ON light of the TERR ON ND pb comes on.*

In case of low accuracy of the aircraft position computed by the FMGC, the predictive functions of the GPWS are automatically deactivated. The 5 GPWS basic modes remain active.

ALERTS

Ident.: DSC-34-SURV-40-35-00006160.0008001 / 25 JUL 16
Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03264-03618, 03782-04312, 04328-04384, 04433, 04481-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336

THE FOLLOWING TABLE PROVIDES THE RELEVANT WARNING AND CAUTION ALERTS

Alert Level	Aural alert	ND (*Refer to DSC-31-45 GPWS (EGPWS)*)	Local alert
Warning	**TERRAIN AHEAD, PULL UP**	- Automatic terrain display. *(1)* - Solid red areas. - TERR AHEAD (red)	The GPWS/PULL UP pushbutton light comes on, on each pilot's instrument panel.
	AVOID TERRAIN	- Automatic terrain display. *(1)* - Red/black crosshatched areas. - TERR AHEAD (red)	
Caution	**TERRAIN AHEAD**	- Automatic terrain display. *(1)* - Solid yellow areas - TERR AHEAD (Amber)	The GPWS light of the GPWS/PULL UP pushbutton comes on, on each pilot's instrument panel.
	TOO LOW TERRAIN	NIL	

(1) When the TERR pb-sw ON ND is set to ON, and ARC or ROSE mode is selected, the ND displays the terrain memorized in the database, depending on the aircraft's position. The terrain is displayed in various densities of green, yellow, red, or magenta, depending on the threat (Refer to DSC-31-45 Flags and Messages Displayed on ND). If an alert is generated (caution or warning), and TERR pb ON ND is not selected, the terrain is automatically displayed, and the ON light of the TERR pb-sw ON ND comes on.

In case of low accuracy of the aircraft position computed by the FMGC, the predictive functions of the GPWS are automatically deactivated. The 5 GPWS modes remain active.

ALERTS

Ident.: DSC-34-SURV-40-35-00006160.0010001 / 25 JUL 16
Applicable to: MSN 04314, 04393-04399, 04438

THE FOLLOWING TABLE PROVIDES THE RELEVANT WARNING AND CAUTION ALERTS

Alert Level	Aural alert	ND (*Refer to DSC-31-45 GPWS (EGPWS)*)	Local alert
Warning	**TERRAIN** **TERRAIN, PULL UP**	- Automatic terrain display. *(1)* - Solid red areas. - TERRAIN (red)	The GPWS/PULL UP pushbutton light comes on, on each pilot's instrument panel.
	AVOID TERRAIN	- Automatic terrain display. *(1)* - Red/black crosshatched areas. - TERRAIN (red)	
Caution	**CAUTION TERRAIN**	- Automatic terrain display. *(1)* - Solid yellow areas - TERRAIN (Amber)	The GPWS light of the GPWS/PULL UP pushbutton comes on, on each pilot's instrument panel.
	TOO LOW TERRAIN	NIL	

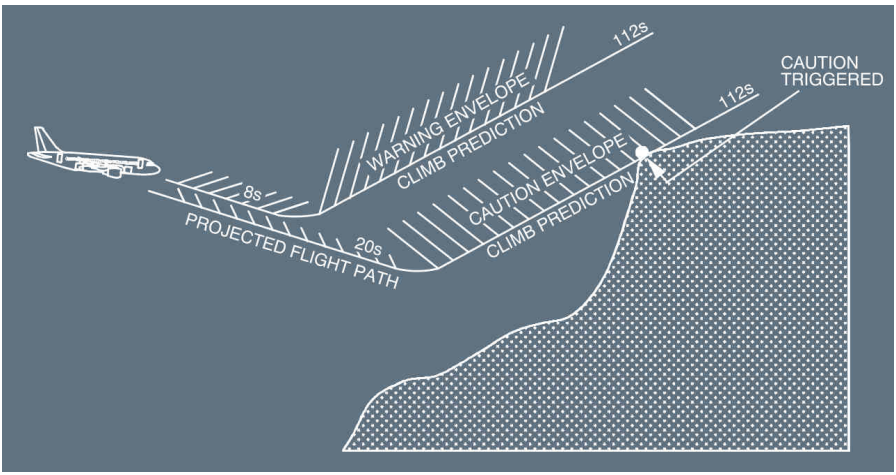
(1) When the TERR pb-sw ON ND is set to ON, and ARC or ROSE mode is selected, the ND displays the terrain memorized in the database, depending on the aircraft's position. The terrain is displayed in various densities of green, yellow, red, or magenta, depending on the threat (Refer to DSC-31-45 Flags and Messages Displayed on ND). If an alert is generated (caution or warning), and TERR pb-sw ON ND is not selected, the terrain is automatically displayed, and the ON light of the TERR pb-sw ON ND comes on.

In case of low accuracy of the aircraft position computed by the FMGC, the predictive functions of the GPWS are automatically deactivated. The 5 GPWS modes remain active.

ALERTS ENVELOPES

Ident.: DSC-34-SURV-40-35-00006166.0007001 / 14 MAY 12
Applicable to: MSN 03138

VERTICAL ENVELOPE



CAUTION ENVELOPE

The caution envelope extends along the flight path, from a distance of 20 s in front of the aircraft, to a constructed climb path, at a distance of 132 s in front of the aircraft.

If there is a conflict between the terrain caution envelope and the terrain data stored in the database, one of the following cautions is triggered:

- A “TERRAIN AHEAD” caution, if the terrain conflict is ahead of the aircraft.
- A “TOO LOW TERRAIN” caution, if the terrain conflict is below the aircraft, instead of ahead of the aircraft.

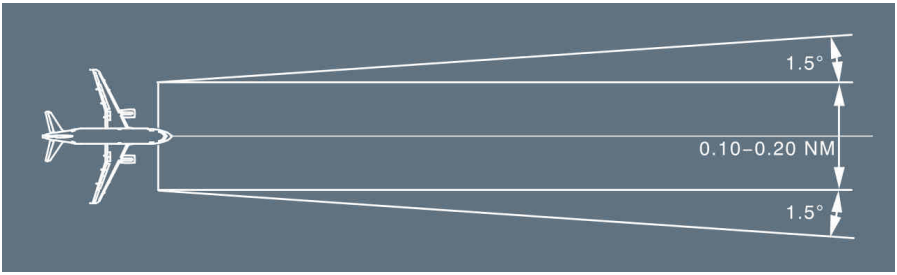
WARNING ENVELOPE

The warning envelope extends along the flight path, from a distance of 8 s in front of the aircraft, to a constructed climb path, at a distance of 120 s in front of the aircraft.
In a Mountainous Approach Area (MAA: Existence of terrain more than 2 000 ft above the runway and within 6 NM of this runway), this distance is linearly reduced to 30 s, to prevent nuisance alerts during low altitude maneuvers.

If there is a conflict between the terrain warning envelope ahead of the aircraft, and the terrain data stored in the database, one of the following warnings is triggered:

- A “TERRAIN AHEAD-PULL UP” warning, if the aircraft can climb over the terrain.
- An “AVOID TERRAIN” warning, if the aircraft cannot climb over the terrain with sufficient safety margin.

HORIZONTAL ENVELOPE



During turns, the sensor opens up into turns to determine if there are possible terrain conflicts (up to 90 °).

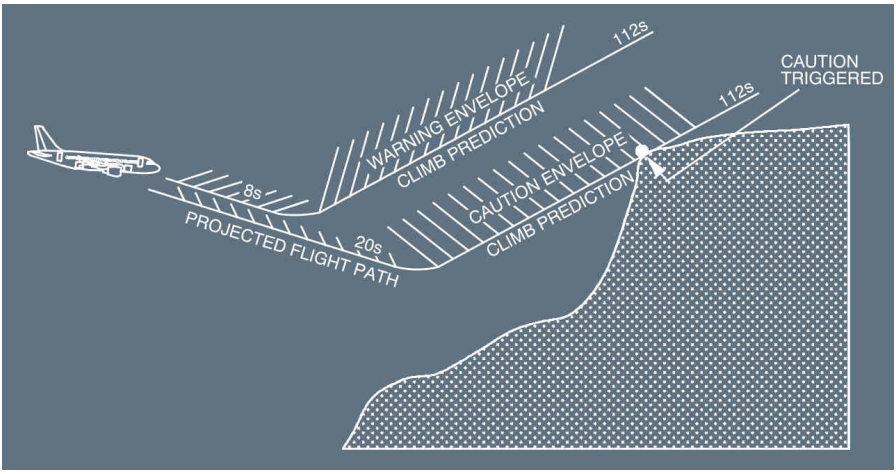
RUNWAY CONVERGENCE CRITERIA

When the aircraft enters the approach sector (approximately 2.7 NM or 5 km from the runway threshold), the system computes runway convergence criteria in order to inhibit the Terrain Awareness and Warning System (TAWS) predictive alerts. For more information on the inhibition logic of the T3CAS. *Refer to DSC-34-SURV-40-35 Inhibition Logic of the GPWS Predictive Functions in Approach*

ALERTS ENVELOPES

Ident.: DSC-34-SURV-40-35-00006166.0003001 / 14 MAY 12
Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03264-03618, 03782-04312, 04328-04384, 04433, 04481-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336

VERTICAL ENVELOPE



CAUTION ENVELOPE

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If there is a conflict between the terrain caution envelope and the terrain data stored in the database, one of the following cautions is triggered:

- A “TERRAIN AHEAD” caution, if the terrain conflict is ahead of the aircraft.
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If there is a conflict between the terrain warning envelope ahead of the aircraft, and the terrain data stored in the database, one of the following warnings is triggered:

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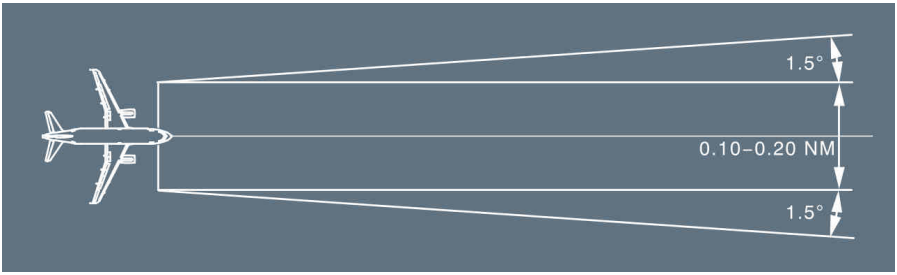


During turns, the sensor opens up into turns to determine if there are possible terrain conflicts (up to 90 °).

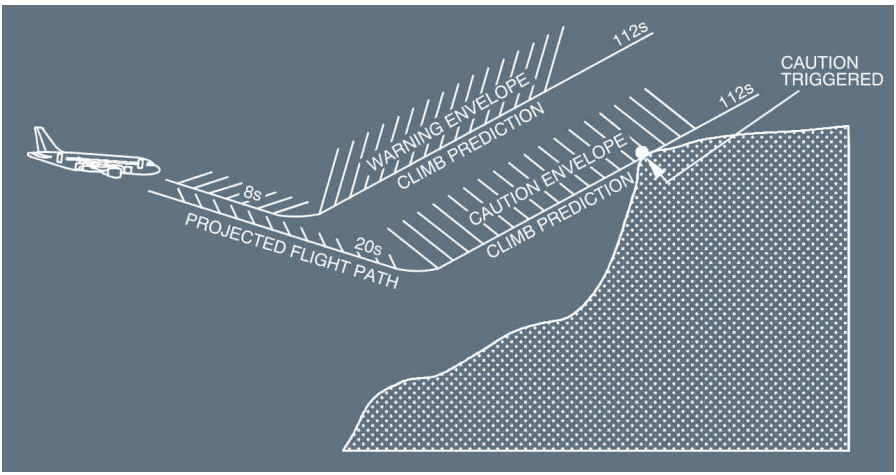
CONVERGENCE ENVELOPE

When the aircraft enters the approach sector (approximately 2.7 NM or 5 km from the runway threshold), the system computes runway convergence criteria in order to inhibit the Terrain Awareness and Warning System (TAWS) predictive alerts. For more information on the inhibition logic of the T2CAS. *Refer to DSC-34-SURV-40-35 Inhibition Logic of the GPWS Predictive Functions in Approach*

ALERTS ENVELOPES

Ident.: DSC-34-SURV-40-35-00006166.0006001 / 23 JUL 12
Applicable to: MSN 04314, 04393-04399, 04438

VERTICAL ENVELOPE



CAUTION ENVELOPE

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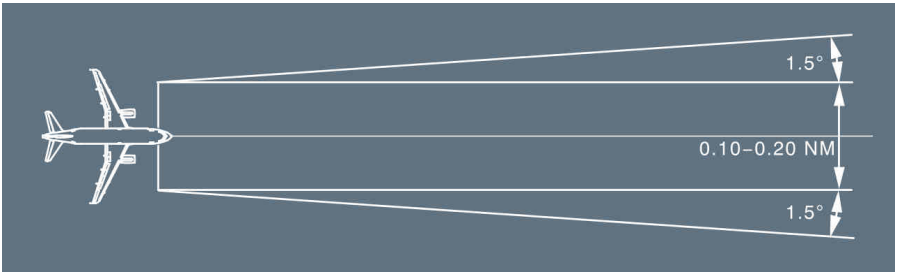
In a Mountainous Approach Area (MAA: Existence of terrain more than 2 000 ft above the runway and within 6 NM of this runway), this distance is linearly reduced to 30 s, to prevent nuisance alerts during low altitude maneuvers.

If there is a conflict between the terrain warning envelope ahead of the aircraft, and the terrain data stored in the database, one of the following warnings is triggered:

- A “TERRAIN TERRAIN PULL-UP” warning, if the aircraft can climb over the terrain.
- An “AVOID TERRAIN” warning, if the aircraft cannot climb over the terrain with sufficient safety margin.

HORIZONTAL ENVELOPE



During turns, the sensor opens up into turns to determine if there are possible terrain conflicts (up to 90 °).

CONVERGENCE ENVELOPE

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INHIBITION LOGIC OF THE GPWS PREDICTIVE FUNCTIONS IN APPROACH

Ident.: DSC-34-SURV-40-35-00013669.0002001 / 17 MAR 17
Applicable to: MSN 03138

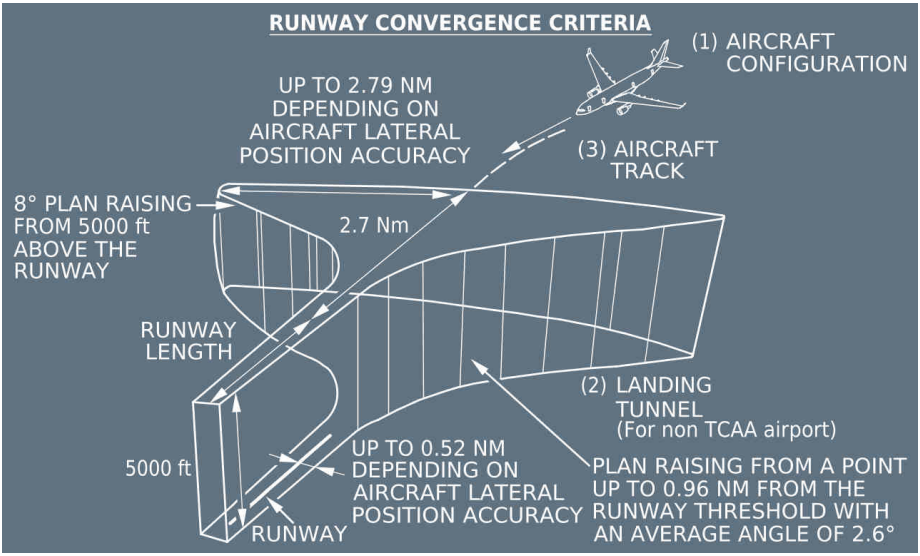
In approach, as the aircraft is flying towards the ground, the runway convergence criteria will inhibit the Ground Proximity Warning System (GPWS) predictive functions. Therefore, depending on the convergence criterion, GPWS alert may not be triggered in the landing tunnel described below, even close to terrain.

The main runway convergence criteria are the following:

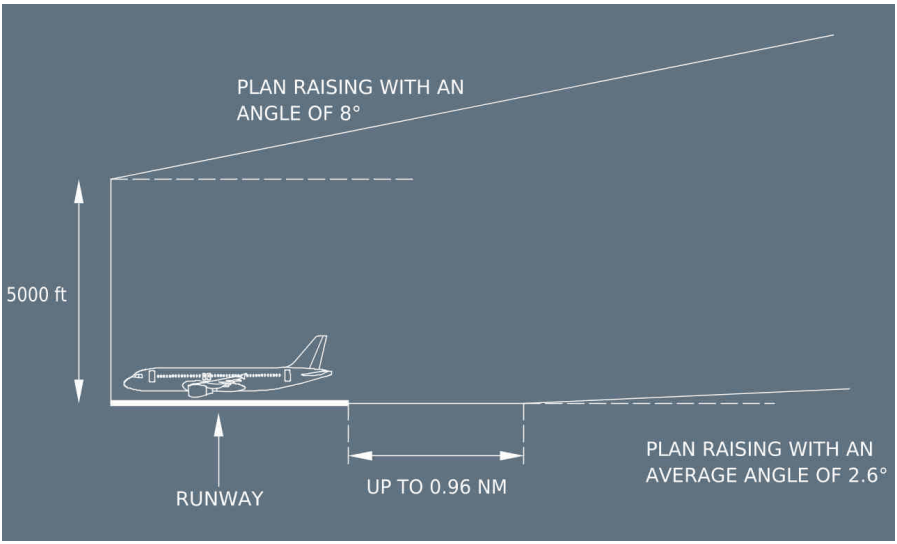
- (1) Aircraft flaps/landing gear configuration,
- (2) Aircraft horizontal and vertical position from the runway threshold (landing tunnel criterion),
- (3) Aircraft track (convergence criterion).

The airports stored in the terrain database are split into two categories:
- Airport flagged as Terrain Challenging Airport Area (TCAA),
- Airport not TCAA flagged.

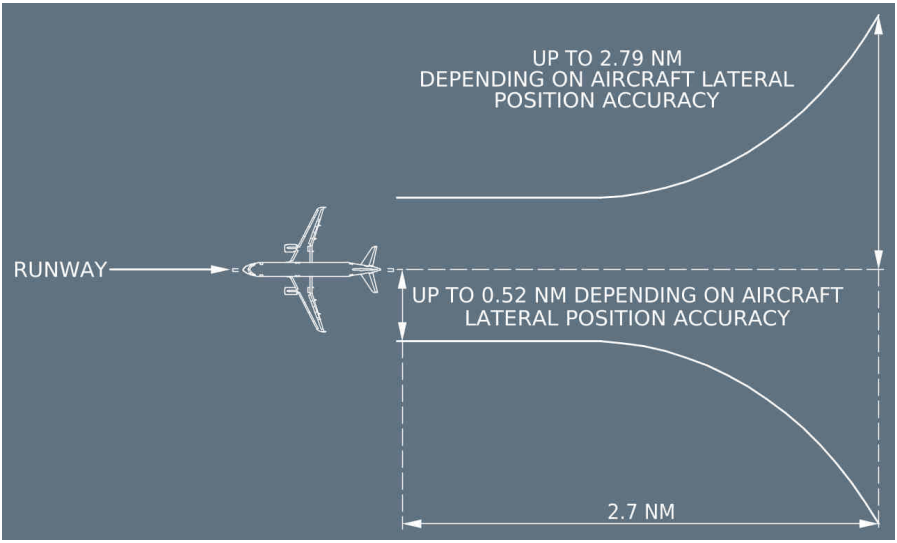
For TCAA flagged airports, the shape and dimensions of the landing tunnel are tailored to each TCAA airport while for non TCAA airports the landing tunnel shape and dimensions are described below.



LANDING TUNNEL - LATERAL VIEW (FOR NON TCAA AIRPORT)



LANDING TUNNEL - VIEW FROM ABOVE (FOR NON TCAA AIRPORT)



INHIBITION LOGIC OF THE GPWS PREDICTIVE FUNCTIONS IN APPROACH

Ident.: DSC-34-SURV-40-35-00013669.0003001 / 17 MAR 17

Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03264-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336

In approach, as the aircraft is flying towards the ground, the runway convergence criteria will inhibit the Ground Proximity Warning System (GPWS) predictive functions. Therefore, depending on the convergence criterion, GPWS alert may not be triggered in the landing tunnel described below, even close to terrain.

The main runway convergence criteria are the following:

- (1) Aircraft flaps/landing gear configuration,
- (2) Aircraft horizontal and vertical position from the runway threshold (landing tunnel criterion),
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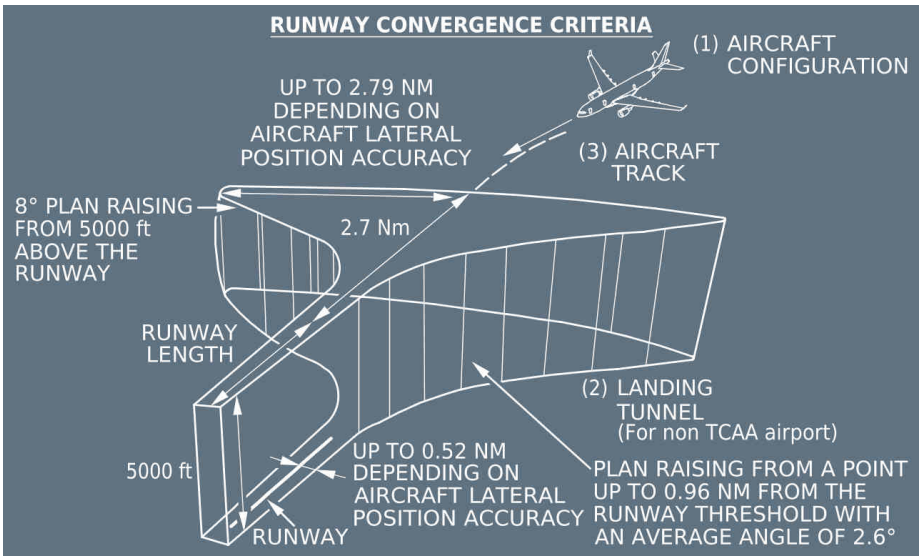
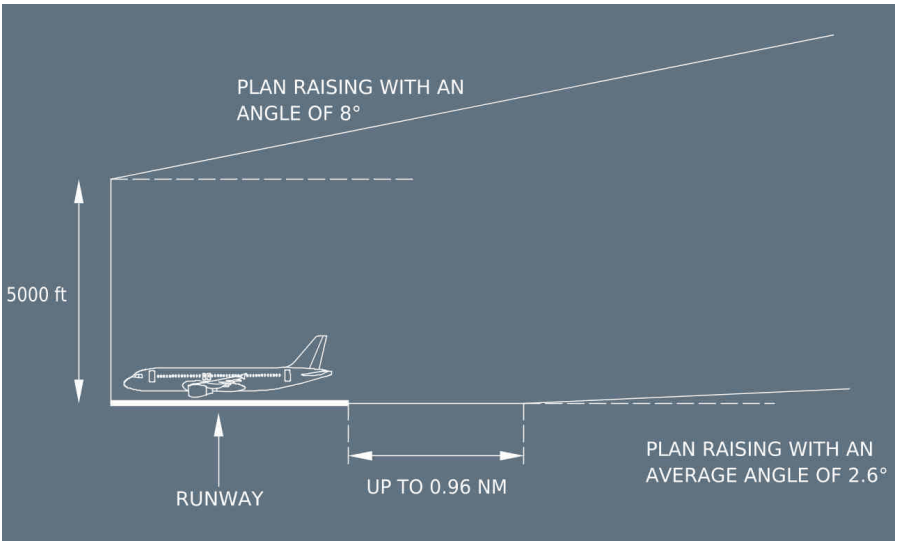
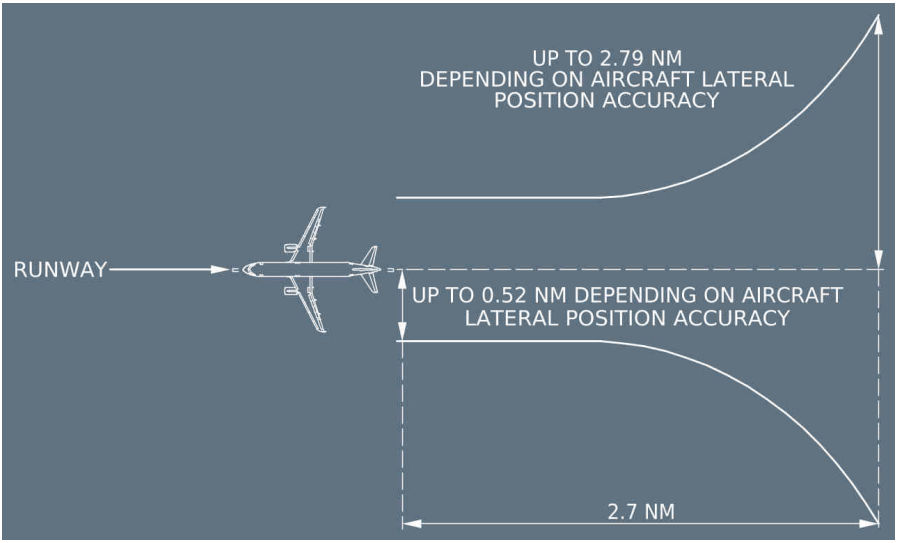


LANDING TUNNEL (LATERAL VIEW)



LANDING TUNNEL (VIEW FROM ABOVE)



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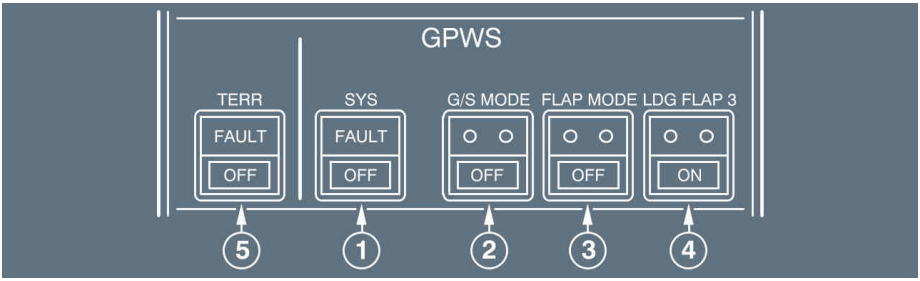
OVERHEAD PANEL

Ident.: DSC-34-SURV-40-40-00001418.0002001 / 21 MAR 17
Applicable to: ALL



(1) SYS pushbutton

OFF : All basic GPWS alerts (Mode 1 to 5) are inhibited.

FAULT light : This amber light comes on, along with an ECAM caution, if the basic GPWS mode 1 to 5 malfunction.

Note: If ILS 1 fails, only mode 5 is inhibited. Consequently, the FAULT light does not come on and the GPWS FAULT warning is not triggered.

(2) G / S MODE pushbutton

OFF : Glideslope mode (mode 5) is inhibited.

(3) FLAP MODE pusbutton

OFF : Flap mode (“TOO LOW FLAPS” mode 4) is inhibited.
(To avoid nuisance warning in case of landing with flaps setting reduced).

(4) LDG FLAP 3 pushbutton

ON : Flap mode is inhibited when FLAPS CONF 3 is selected (to avoid nuisance warning in case of landing in CONF 3).
In this case, LDG MEMO displays "FLAPS ... 3" instead of “CONF ... FULL”.

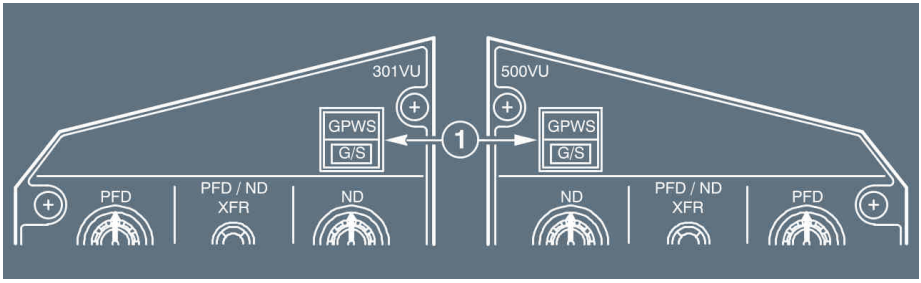
(5) TERR pushbutton

OFF : Inhibits the Terrain Awareness Display (TAD) and Terrain Clearance Floor (TCF) modes, and does not affect the basic GPWS mode 1 to 5. If OFF is selected the ECAM caution NAV GPWS TERR DET FAULT is displayed.

FAULT light : This amber light comes on, along with an ECAM caution, if the TAD or TCF mode fails. The terrain is not shown on the ND. The basic GPWS mode 1 to mode 5 are still operative if the SYS pushbutton OFF or FAULT lights are not illuminated.

INSTRUMENT PANELS

Ident.: DSC-34-SURV-40-00001419.0003001 / 19 DEC 12
Applicable to: MSN 01767, 02359, 02405, 02482



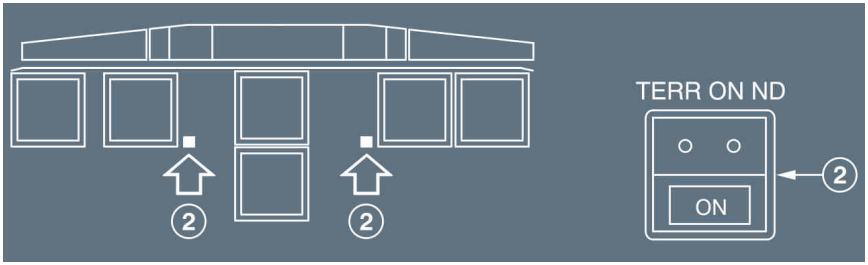
(1) GPWS – G/S pushbutton

GPWS : This red light comes on when any mode from 1 to 4, or any TAD or TCF alert is activated. A specific voice alert accompanies it.

G/S : Comes on amber when Mode 5 is activated. It is accompanied by the aural "GLIDE SLOPE" warning.

Note: *1. If the flight crew presses this button briefly when a glide slope warning is on, the G/S light goes out and the "GLIDE SLOPE" aural warning (soft or loud) stops.*

2. On ground, the GPWS can be tested by pressing this pushbutton. If the pushbutton is pressed briefly, some of the aural warnings sound and pushbutton captions, related to the GPWS, come on. If the pushbutton is pressed continuously, then all the aural warnings sound.



(2) TERR ON ND pushbutton

These pushbuttons are located on either side of the ECAM. Each pushbutton controls the onside terrain display.

ON : The terrain is displayed on the ND if the:
- TERR pb-sw is selected ON, and
- TERR FAULT light is not on.

The ON light comes on.

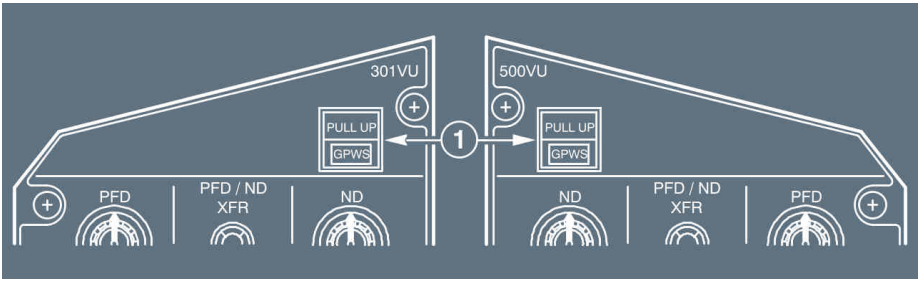
OFF : The terrain data is not displayed on the ND.

Note:
- *If the Terrain Awareness Display (TAD) mode generates a caution or a warning, while the TERR ON ND is not switched ON, the terrain is automatically displayed on the NDs (see EGPWS specific caution and warning due to TAD mode) and the ON light of the TERR ON ND pushbutton come on.*
- *To differenciate between the terrain and the weather display, the terrain display sweeps from the center outward to both sides of the ND.*

INSTRUMENT PANELS

Ident.: DSC-34-SURV-40-40-00001419.0009001 / 19 DEC 12

[1] **Applicable to: MSN 01920, 02108, 02135, 02139-02334, 02388, 02443-02457, 02584-02914, 03750, 04491, 04532, 04645, 05120, 05158, 05218**



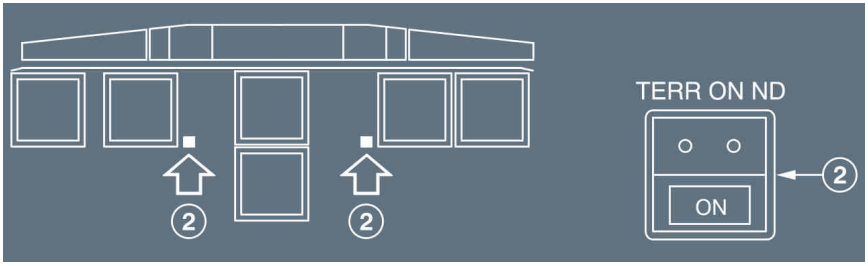
(1) PULL UP – GPWS pb

PULL UP : Comes on to give a visual indication, when a PULL UP warning is triggered in Modes 1, 2, and TAD. The corresponding aural warning sounds.

GPWS : Comes on amber, when any other mode is activated.
The corresponding aural warning sounds.

Note: *1. If the flight crew briefly presses this button when one of these modes is activated, the GPWS light goes out and the voice warning stops.*

2. On ground, the GPWS can be tested by pressing this pushbutton. If the pushbutton is pressed briefly, some of the aural warnings sound and pushbutton captions, related to the GPWS, come on. If the pushbutton is pressed continuously, then all the aural warnings sound.



(2) TERR ON ND pb

These pushbutton are located on either side of the ECAM. Each pushbutton controls the onside terrain display.

ON : The terrain is displayed on the ND if the:
- TERR pb-sw is selected ON, and
- TERR FAULT light is not on.

The ON light comes on.

OFF : The terrain data is not displayed on the ND.

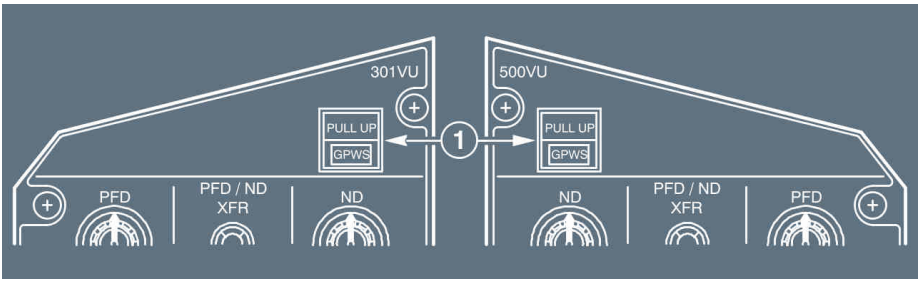
Note: *- If the Terrain Awareness Display (TAD) mode generates a caution, or a warning while the TERR ON ND is not switched ON, the terrain data is automatically displayed on the NDs (see EGPWS specific caution and warning due to TAD mode) and the ON light of the, TERR ON ND pushbutton comes on.*

- To differenciate between the terrain and the weather display, the terrain display sweeps from the center outward to both sides of the ND.

INSTRUMENT PANELS

Ident.: DSC-34-SURV-40-40-00001419.0029001 / 19 DEC 12

[2] **Applicable to: MSN 01957-02097, 02121, 02138, 03071-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063**

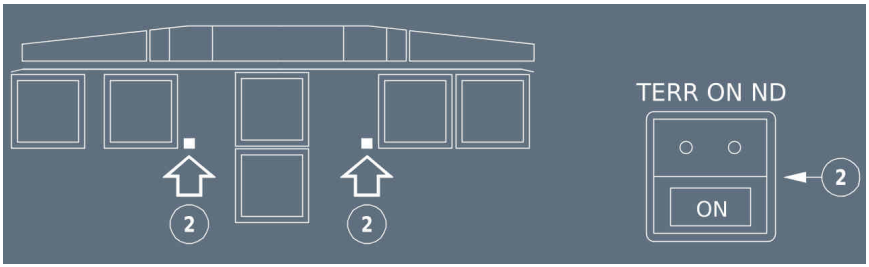


(1) PULL UP – GPWS pushbutton

PULL UP : Comes on when the second boundary of mode 1 is penetrated or when the mode 2 is activated.
A “PULL UP” or “TERRAIN - TERRAIN PULL UP” voice warning accompagnies it.

GPWS : Comes on in amber when any other mode is activated. It is accompanied by a corresponding aural alert.

Note: *1. If the flight crew briefly presses this button, when mode 5 alert is heard, the GPWS light goes out and the aural alert stops.*
2. The GPWS can be tested by pressing this pushbutton (on ground only).



(2) TERR ON ND pushbutton

These pushbutton are located on either side of the ECAM. Each pushbutton controls the onside terrain display.

ON : The terrain is displayed on the ND if the:
- TERR pb-sw is selected ON, and
- TERR FAULT light is not on.
- TERR STBY ECAM memo is not displayed.
- The FMGS navigation accuracy is high.

The ON light comes on.

OFF : The terrain data is not displayed on the ND.

Note:
- *If the predictive functions of the GPWS generate a caution or a warning, while the TERR ON ND is not switched ON, the terrain is automatically displayed on the NDs and the ON light of the TERR ON ND pushbutton comes on.*
- *To differenciate between the terrain and the weather display, the TERR indication comes on, instead of the TILT indication, in the lower right corner of the ND.*

MEMO DISPLAY

Ident.: DSC-34-SURV-40-40-A-00017057.0001001 / 21 MAR 16
3 **Applicable to: MSN 01767-01920, 02108, 02135, 02139-02914, 03750, 04491, 04532, 04645, 05120, 05158, 05218**

GPWS FLAP 3 : This memo appears in green when GPWS LDG FLAP 3 pb-sw is ON.

Ident.: DSC-34-SURV-40-40-A-00017058.0001001 / 21 MAR 16
Applicable to: ALL

GPWS FLAP MODE OFF : This memo appears in green when GPWS FLAP MODE pb-sw is OFF.

Ident.: DSC-34-SURV-40-40-A-00017060.0004001 / 21 MAR 16
Applicable to: ALL

The TERR OFF memo appears when the TERR pb-sw is OFF.

TERR OFF : This memo appears in green when:
- The aircraft is in flight phase 2, before the Take Off Configuration test is launched.
- The aircraft is in flight phase 6.

TERR OFF : This memo appears in amber when:
- The aircraft is in flight phase 2, after the Take Off Configuration test.
- The aircraft is in flight phases 3, 4, 5, 7, 8 and 9.

Ident.: DSC-34-SURV-40-40-A-00017059.0007001 / 21 MAR 16

[4] **Applicable to: MSN 02135, 02139, 02204, 02388, 02443-02457, 02584-02712, 02908-02914, 03750, 04491, 04532, 04645, 05120, 05158, 05218**

TERR STBY : Airborne TERR STBY memo appears in green when the aircraft position accuracy (computed by the EGPWS) is not sufficient to allow the enhanced TCF and TAD modes to operate. These modes are not available until the TERR STBY memo disappears. If selected, the terrain data display on ND is automatically deselected when the TERR STBY memo is triggered.

Ident.: DSC-34-SURV-40-40-A-00017059.0004001 / 21 MAR 16

[5] **Applicable to: MSN 01957-02097, 02121, 02138, 03071-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063**

TERR STBY : This memo appears in green when any required predictive function input is missing or considered invalid. The predictive functions are not available, until the TERR STBY memo disappears. If selected, the terrain data display on the ND is automatically deselected when the TERR STBY memo is triggered.

Ident.: DSC-34-SURV-40-40-A-00017059.0003001 / 21 MAR 16

Applicable to: MSN 01767-01920, 02108, 02195, 02275-02359, 02405, 02482, 02737-02804

TERR STBY : Airborne TERR STBY memo appears in green when the aircraft position accuracy (provided by the FMS) is not sufficient to allow the enhanced TCF and TAD modes to operate. These modes are not available until the TERR STBY memo disappears. If selected, the terrain data display on ND is automatically deselected when the TERR STBY memo is triggered.

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OVERVIEW

Ident.: DSC-34-SURV-60-10-00020407.0001001 / 21 MAR 17
Applicable to: ALL

The Traffic alert and Collision Avoidance System (TCAS):

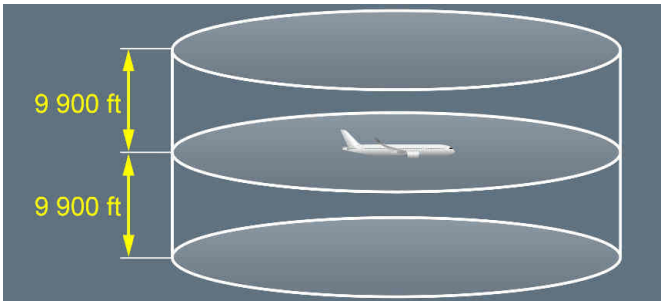
- Detects and displays surrounding aircraft that have a transponder
- Calculates and display possible collision threats
- Triggers vertical speed orders, in order to avoid collisions.

PRINCIPLE

Ident.: DSC-34-SURV-60-10-00020408.0001001 / 05 JUN 18
Applicable to: ALL

The TCAS detection capability is limited to intruders flying within a maximum range of 30 NM on either sides and approximately 30 NM to 80 NM longitudinally (depending on aircraft configuration and external conditions), and within a maximum altitude range of 9 900 ft above and below the aircraft.

TCAS Range



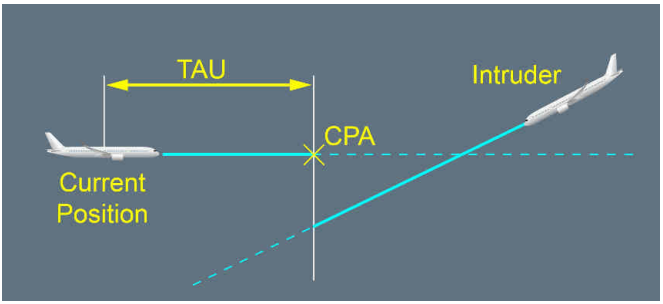
The TCAS obtains data transmitted by the transponders of nearby aircraft, and uses this data to evaluate possible collision threats.

The TCAS determines:

- The bearing of intruders, in relation to the bearing of the aircraft.
- The distance between the aircraft and intruders, and the rate of separation or closure.
- The relative altitude of intruders, if intruders report their altitude via a Mode-C or Mode-S transponder.

The TCAS then calculates the intruder trajectory, the Closest Point of Approach (CPA), and the estimated time (TAU) before reaching the CPA.
The TAU is the ratio between the distance that separates both aircraft, and the sum of their speed.

TAU Definition



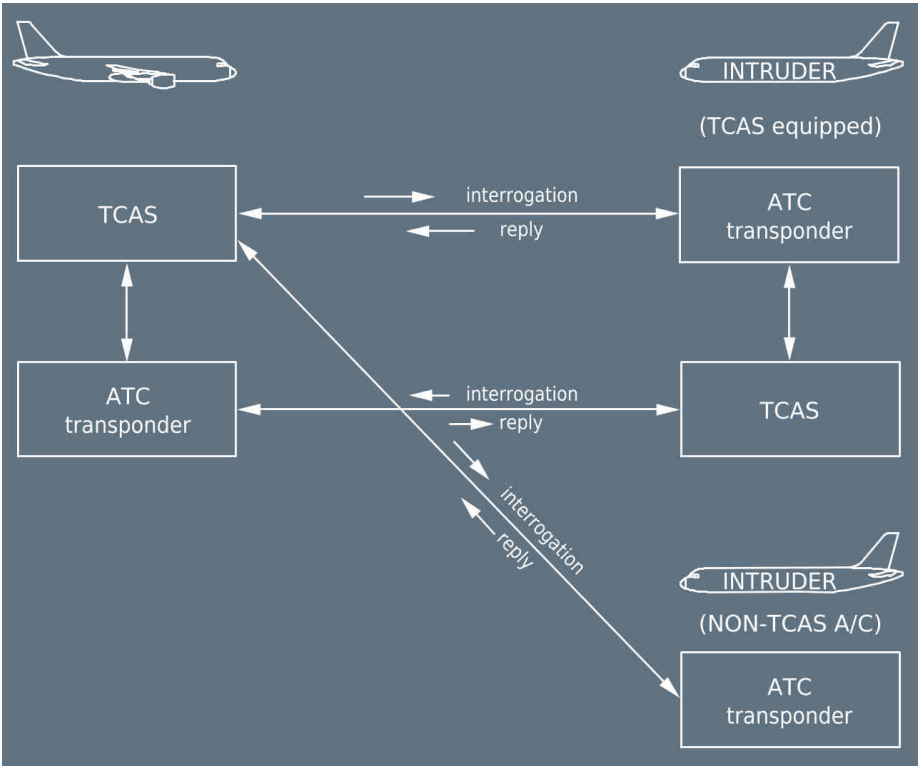
If the TCAS detects that the trajectory of an intruder may be a collision threat, it triggers:
- Audio and visual indicators
- Vertical speed orders, to ensure a sufficient trajectory separation and a minimal vertical speed variation considering all intruders.

MAIN COMPONENTS

Ident.: DSC-34-SURV-60-10-00020409.0001001 / 21 MAR 17
Applicable to: ALL

The system includes:
- A single channel TCAS computer
- Two TCAS antennas
- Two mode S ATC transponders, one active the other in standby

  These transponders allow:
  - Interface between the ATC/TCAS control panel and the TCAS computer
  - Communication between the aircraft and intruders equipped with a TCAS system.
- An ATC/TCAS control panel.



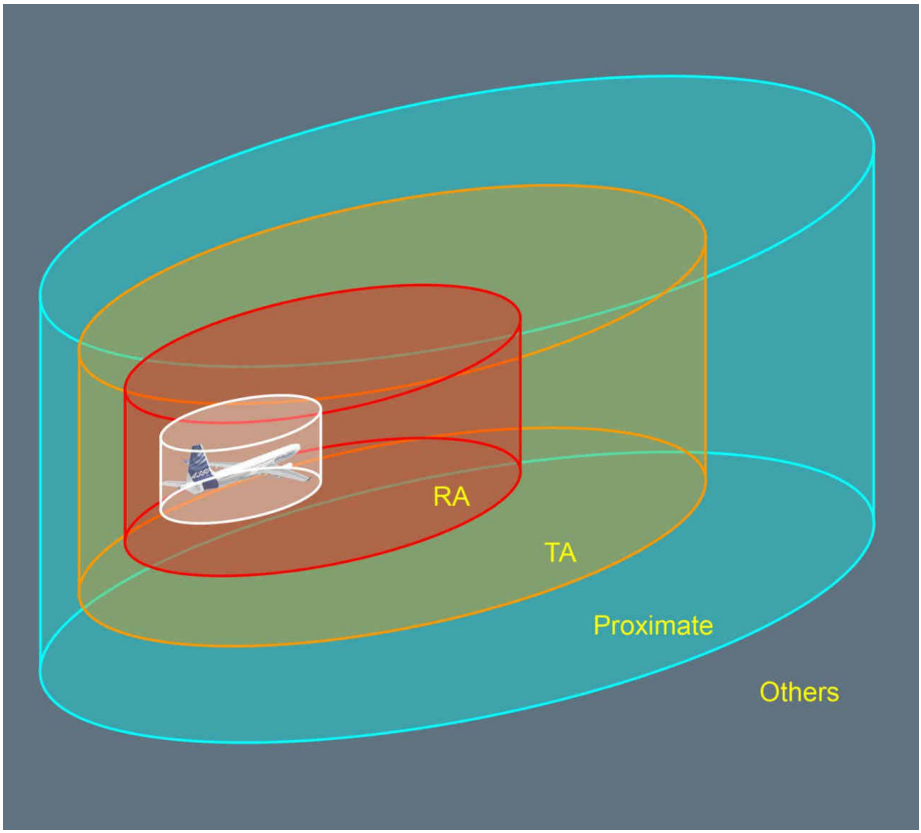
INTRUDER DETECTION CATEGORIES

Ident.: DSC-34-SURV-60-10-00020410.0001001 / 21 MAR 17
Applicable to: ALL

The TCAS divides the space surrounding the aircraft into the following four zones, in order to evaluate and categorize possible collision threats:

- Resolution Advisory (RA)
- Traffic Advisory (TA)
- Proximate intruders
- Other intruders.

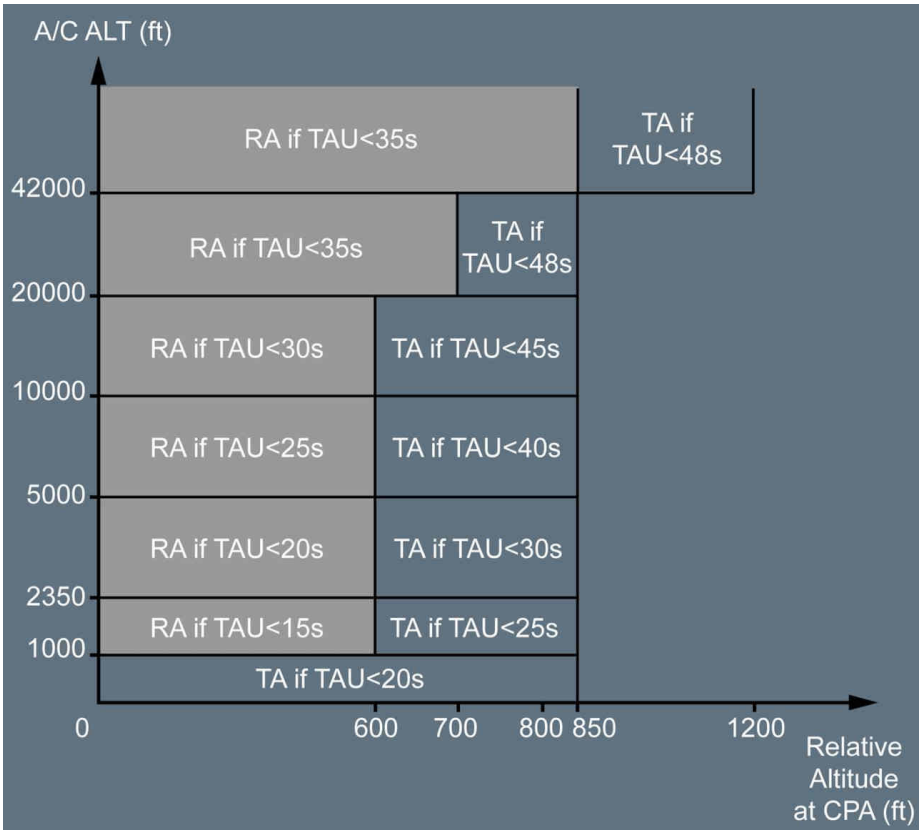
TCAS Envelopes



Depending on the level of the collision threat, the TCAS triggers audio and visual indicators::

LEVEL	INTRUDER POSITION	DISPLAYED INFORMATION AND MESSAGE	
Other intruders	- No collision threat - Any non proximate, TA, RA within the surveillance envelope (lateral range: Closer than 30 NM)	- ND: Intruder position	
Proximate	- No collision threat - Intruder in the vicinity of the A/C (closer than 6 NM laterally and ±1200 ft vertically)	- ND: Intruder position	
Traffic Advisory (TA)	- Potential collision threat - TAU is about 40 s	- ND: Intruder position - Aural messages	
Resolution Advisory (RA)	- Real collision threat - TAU is about 25 s	- ND: Intruder position - Aural messages - PFD: Vertical orders • Maintain actual V/S (Preventive Advisory) or • Modify V/S (Corrective Advisory)	

TA/RA thresholds



TCAS MODES

Ident.: DSC-34-SURV-60-10-10-00020411.0001001 / 21 MAR 17
Applicable to: ALL

TCAS MODES

The TCAS has three different modes of operations that can be selected on the ATC / TCAS control panel:

- The Traffic Advisory/Resolution Advisory (TA/RA) mode
- The Traffic Advisory Only (TA ONLY) mode
- The standby (STBY) mode.

Ident.: DSC-34-SURV-60-10-10-00020412.0001001 / 21 MAR 17
Applicable to: ALL

TRAFFIC ADVISORY/RESOLUTION ADVISORY (TA/RA) MODE

The TA/RA mode is the normal TCAS operating mode that enables:

- The ND to display all intruders
- The PFD to display the vertical speed orders that indicate the vertical direction that the aircraft should take, in order to avoid a collision.

Ident.: DSC-34-SURV-60-10-10-00020413.0001001 / 21 MAR 17
1 **Applicable to: MSN 01767-01957, 02108, 02135, 02139-09063**

TRAFFIC ADVISORY ONLY (TA ONLY) MODE

The TA ONLY mode can be selected:

- Manually in case of aircraft degraded performance (engine failure, landing gear extended), or in specific airports, and for specific procedures (identified by operators) that may provide RA that are neither wanted nor appropriate (e.g. closely-spaced parallel or converging runways)
- Automatically, if TA/RA mode is previously selected and:
  - The windshear alert is triggered
  - The stall warning is triggered
  - GPWS alerts are triggered
  - Aircraft is below 1 000 ft AGL.

When the TCAS is operating in TA ONLY mode:

- All RAs are inhibited and converted into TAs
- TA threshold is set to TAU ≤20 s, irrespective of the aircraft altitude
- No vertical speed advisories are indicated on the PFDs
- “TA ONLY” is displayed on the NDs

Ident.: DSC-34-SURV-60-10-10-00020413.0002001 / 21 MAR 17
Applicable to: MSN 02097, 02121, 02138

TRAFFIC ADVISORY ONLY (TA ONLY) MODE

The TA ONLY mode can be selected:

- Manually in case of aircraft degraded performance (engine failure, landing gear extended), or in specific airports, and for specific procedures (identified by Operators) that may provide RA that are neither wanted nor appropriate (e.g. closely-spaced parallel or converging runways)
- Automatically:
  - If TA/RA mode is previously selected and:
    - The windshear alert is triggered
    - The stall warning is triggered
    - GPWS alerts are triggered
    - Aircraft is below 1 000 ft AGL.
  - When a hijacking alert has been initiated from the cockpit, via the remote ATC box.

When the TCAS is operating in TA ONLY mode:

- All RAs are inhibited and converted into TAs
- TA threshold is set to TAU ≤20 s, irrespective of the aircraft altitude
- No vertical speed advisories are indicated on the PFDs
- “TA ONLY” is displayed on the NDs.

Ident.: DSC-34-SURV-60-10-10-00020414.0001001 / 21 MAR 17
Applicable to: ALL

STANDBY MODE

In the standby mode, the advisory generation and surveillance functions are not active. The TCAS does not trigger any alert. No TCAS information can be displayed on the PFDs and NDs.

AP/FD TCAS

Ident.: DSC-34-SURV-60-10-00020415.0002001 / 17 MAR 17
2 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

MODE

The AP/FD TCAS mode is a vertical guidance mode of the AP/FD. In the case the TCAS generates a Resolution Advisory (RA) alert, this mode automatically engages to assist the flight crew to follow the RA orders, and to revert toward initial trajectory:

- Automatically if the AP is engaged, or
- Manually with the guidance of the Flight Director (FD), if the AP is not engaged.

The AP/FD TCAS mode optimizes the vertical speed for a rapid and appropriate response to an RA, and minimizes the deviations from the latest ATC clearance.
When the TCAS is operating in TA ONLY mode, the AP/FD TCAS mode is inhibited.

INTRUDER DETECTION

Based on the received information from the intruders, the TCAS may generate the following sequence of alerts:

- **If the TCAS considers the intruder to be a possible collision threat**
  - It generates a visual and aural Traffic Advisory (TA).
  - In that case, the AP/FD TCAS mode automatically arms: TCAS appears on the FMA to inform the flight crew that the AP/FD TCAS mode will be available in the case a Resolution Advisory (RA) is subsequently triggered.
- **If the TCAS considers the intruder to be a real collision threat:**
  - It generates a visual and aural Resolution Advisory (RA).
  - The AP/FD TCAS mode automatically engages: TCAS appears on the FMA. The flight crew has vertical guidance to fly the RA orders, automatically with the AP/FD, or manually with the FDs only (if AP was not engaged).
  - If the A/THR is disconnected, it automatically becomes armed or active, depending on the thrust lever position. When active, the speed/Mach mode engages, and the speed/Mach control becomes selected. For more information, *Refer to DSC-22_30-70-85 Engagement Conditions (When a Resolution Advisory is triggered) - Auto Thrust Behavior*.
  - The vertical speed scale on the PFD indicates the vertical speed range within which the aircraft should fly.
- **When the TCAS considers that there is no more collision threat:**
  - It triggers the "CLEAR OF CONFLICT" aural alert.
  - In most of the cases, the AP/FD TCAS mode automatically reverts to V/S mode: The vertical speed target leads the aircraft toward the FCU selected altitude.
    If the altitude capture conditions are met at the clear of conflict, the AP/FD TCAS mode can revert to an altitude acquire, or an altitude hold mode. *Refer to DSC-22_30-70-85 Engagement Conditions (When a Resolution Advisory is triggered) - Vertical Mode*.

ADVISORY INHIBITION

Ident.: DSC-34-SURV-60-10-00020416.0007001 / 17 MAR 17
Applicable to: ALL

Some advisories are inhibited depending on the aircraft altitude:
- All intruders flying below 380 ft AGL when the own aircraft altitude is below 1 700 ft AGL
- All RA below 1 100 ft in climb and 900 ft in descent. In this case, the RAs are converted into TAs

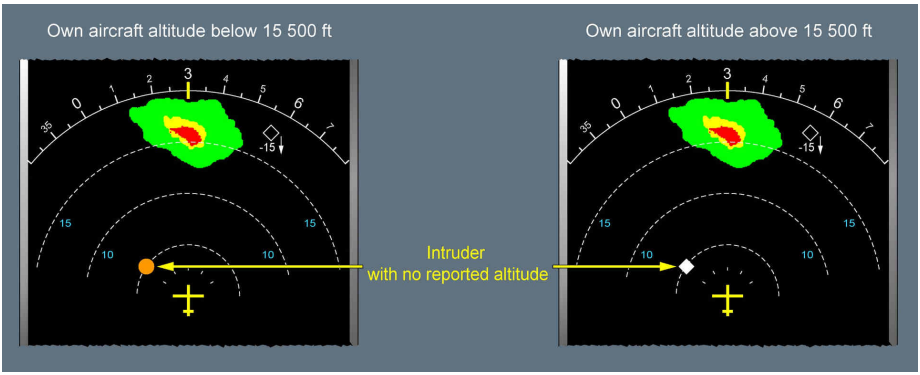
- "Descend" RA below 1 100 ft AGL
- "Increase Descent" RA below 1 550 ft AGL
- All TA aural messages below 600 ft AGL in climb and below 400 ft AGL in descent
- The AP/FD TCAS ◁ flight guidance mode is inhibited below 900 ft.

TCAS INTRUDER WITH NO REPORTED ALTITUDE

Ident.: DSC-34-SURV-60-10-00022303.0001001 / 05 JUN 18
Applicable to: ALL

For intruders that do not report their altitude:

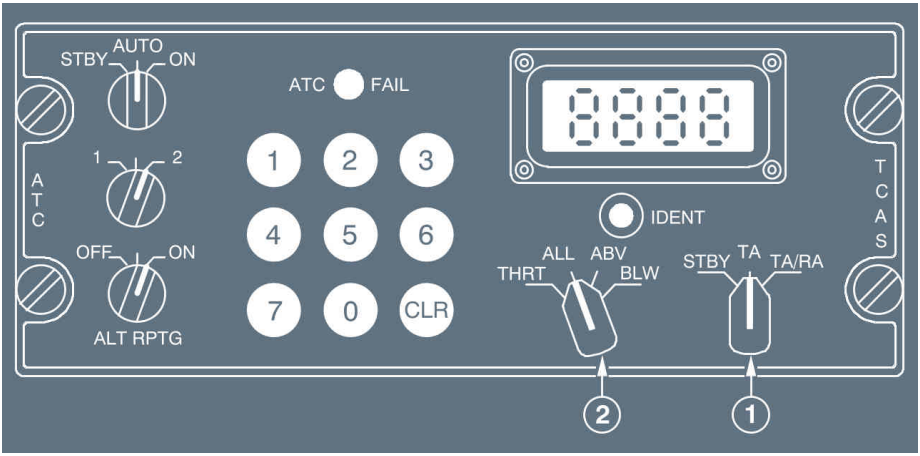
- The relative altitude does not appear on ND
- The TCAS never triggers any RA
- The TCAS inhibits the TA when own aircraft altitude is above 15500 ft.



ATC/TCAS PANEL

Ident.: DSC-34-SURV-60-20-00001429.0004001 / 01 OCT 12

[1] **Applicable to: MSN 01767-02204, 02388, 02443, 02649-04312, 04328-04384, 04399-09063**



(1) Mode sel

TA/RA : Normal position.
The RAs, TAs and proximate intruders are displayed if the ALT RPTG switch is ON and the transponder is not on STBY.

TA : The TCAS does not generate any vertical orders. This mode should be used, in case of degraded aircraft performance (engine failure, landing gear extended, or approach on parallel runways).
All RAs are converted into TAs. TAs, proximate and intruders are displayed if the ALT RPTG switch is ON and the transponder is not on STBY
The "TA ONLY" white memo is displayed on the NDs.

STBY : The TCAS is on standby.

(2) TRAFFIC sel

THRT : Proximate and other intruders are displayed only if a TA or RA is present, and they are within 2 700 ft above and 2 700 ft below the aircraft.

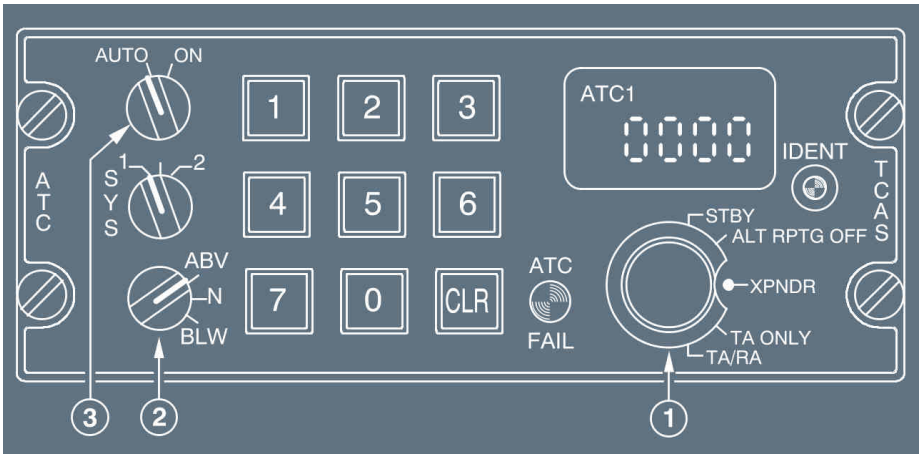
ALL : Proximate and other intruders are displayed even if no TA or RA is present (full time function). The altitude range is –2700 ft to +2 700 ft.

ABV : The same as ALL, except that the other intruders are displayed if within 9 900 ft above the aircraft and 2 700 ft below.

BLW : The same as ALL, except that the other intruders are displayed if within 9 900 ft below the aircraft and 2 700 ft above.

ATC/TCAS PANEL

Ident.: DSC-34-SURV-60-20-00001429.0064001 / 01 OCT 12
Applicable to: MSN 02275-02359, 02405, 02457-02482, 02609-02626



(1) Mode selector

TA/RA : Normal position.
TAs, RAs, proximate and other intruders are displayed.

TA ONLY : This mode should be used, in case of degraded aircraft performance (engine failure, landing gear extended, or approach on parallel runways).
All RAs are converted into TAs. TAs, proximate and other intruders are displayed.

STBY : The TCAS and ATC are on standby.

XPNDR :
- The TCAS is on standby
- On ground : The selected ATC Transponder only operates in the selective aircraft interrogation mode of Mode S
- In flight : The selected ATC Transponder operates.

(2) TRAFFIC selector

ABV : The altitude range is set to +7 000 ft above the aircraft, and -2 700 ft below the aircraft.

N : The altitude range is set to -2 700 ft below the aircraft, and +2 700 ft above the aircraft.

BLW : The altitude range is set to -7 000 ft below the aircraft, and +2 700 ft above the aircraft.

(3) AUTO/ON selector or THRT/ALL selector

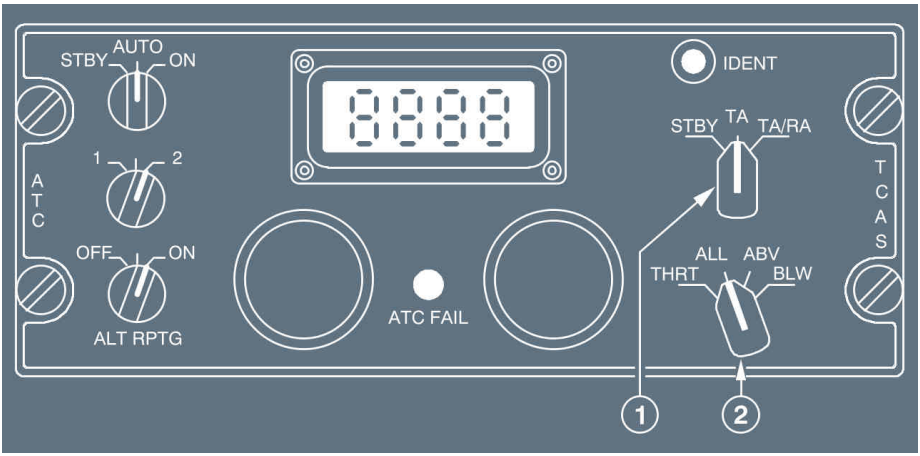
ON (or ALL) : All intruders are displayed.

AUTO (or THRT) : Proximate and other intruders are only displayed, if a TA or RA is already presented.

Note: Some TCAS control panels are equipped with a THRT/ALL selector, instead of the AUTO/ON selector. The associated functions remain unchanged.

ATC/TCAS PANEL

Ident.: DSC-34-SURV-60-20-00001429.0063001 / 01 OCT 12
Applicable to: MSN 02584, 04314, 04393-04397



(1) TCAS mode selector

TA/RA : Normal position.
The RAs, TAs and proximate intruders are displayed if the ALT RPTG switch is ON and the transponder is not on STBY.

TA : The TCAS does not generate any vertical orders. This mode should be used, in case of degraded aircraft performance (engine failure, landing gear extended, or approach on parallel runways).
All RAs are converted into TAs. TAs, proximate and intruders are displayed if the ALT RPTG switch is ON and the transponder is not on STBY
The "TA ONLY" white memo is displayed on the NDs.

STBY : The TCAS is in standby.

(2) TRAFFIC sel

THRT : Proximate and other intruders are displayed only if a TA or a RA is present at the same time.

ALL : The other and proximate intruders are displayed even if no TA or RA is present at the same time (full time function)

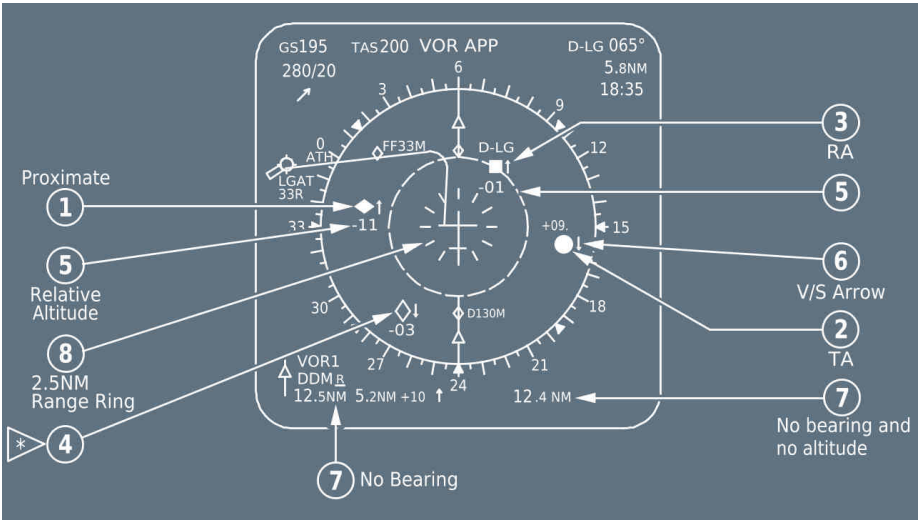
ABV : The other intruders are displayed within 9 900 ft above the aircraft and 2 700 ft below

BLW : The other intruders are displayed within 9 900 ft below the aircraft and 2 700 ft above

ND INDICATIONS

Ident.: DSC-34-SURV-60-20-00020418.0002001 / 05 JUN 18
Applicable to: ALL

The traffic is displayed in all ROSE modes and ARC mode when 10, 20 or 40 NM range is selected. Only the 8 most threatening intruders are displayed.



(1) Proximate intruder
Indicated by a white filled diamond.

(2) TA intruder
Indicated by an amber circle.
Associated with the TRAFFIC-TRAFFIC aural message.

(3) RA intruder
Indicated by a red square.
Associated with vertical orders displayed on the PFD and aural messages.

(4) Other intruders
Indicated by a white empty diamond.

Note: *If the range of an intruder is not available, the intruder is not displayed. An intruder may be partially displayed when its range is out of scale.*

(5) Relative altitude
Indicated in hundred of feet above or below the symbol depending on the intruder position.

(6) Vertical speed arrow
Displayed only if the intruder V/S > 500 ft/min.
The relative altitude and vertical speed arrow are displayed in the same color as the associated intruder symbol.

When an intruder does not report its altitude, the relative altitude and the vertical movement are not displayed.

(7) No bearing intruder

If the bearing of TA or RA intruder is not available the following data is presented in digital form at the bottom of the ND:

- range
- relative altitude and vertical speed arrow if available.

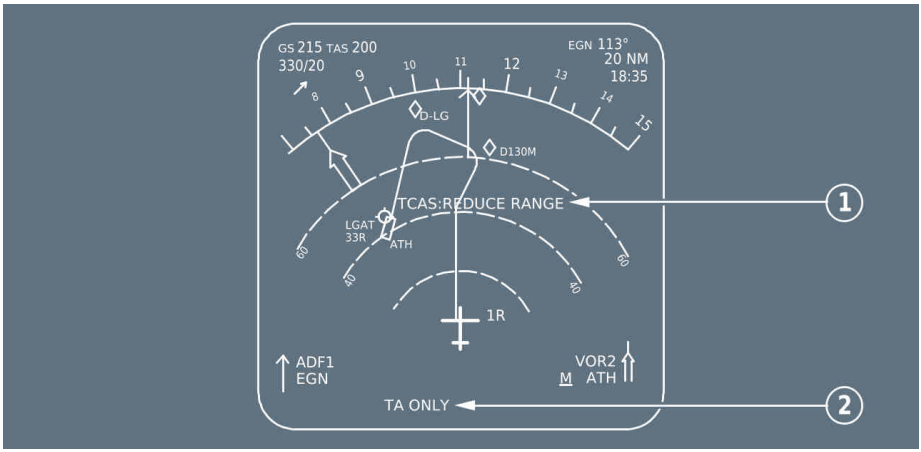
Displayed amber or red according to threat level.

(8) Range ring

A 2.5 NM white range ring is displayed when a 10 NM or 20 NM range is selected.

TCAS MESSAGES

Ident.: DSC-34-SURV-60-20-00020419.0001001 / 17 MAR 17
Applicable to: ALL



(1) Mode and range messages

Following messages can be displayed to draw pilot's attention:

TCAS : REDUCE RANGE	:	Displayed when a TA or RA is detected and ND range above 40 NM.
TCAS : CHANGE MODE	:	Displayed when a TA or RA is detected and ND mode is PLAN.

Displayed amber or red depending on the advisory level (TA or RA).

(2) TCAS operation messages

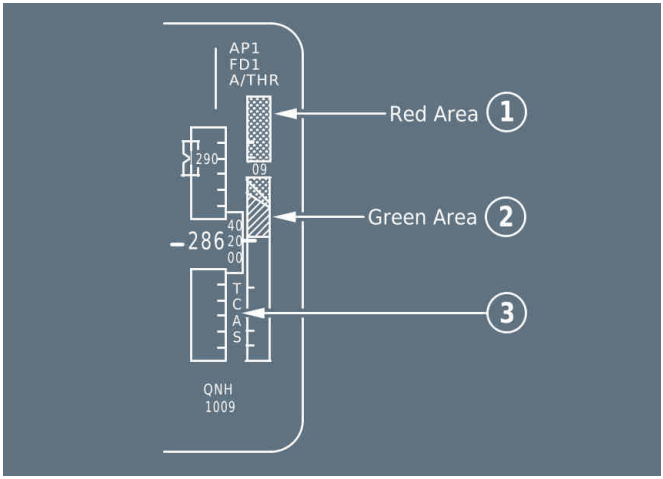
TCAS : Displayed in case of TCAS internal failure.

TA ONLY : Displayed white when the TA mode is selected automatically, or manually by the flight crew.

PFD INDICATIONS

Ident.: DSC-34-SURV-60-20-00020420.0003001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

In case of RA detection, the PFD presents vertical orders on the vertical speed scale. The vertical speed scale background is normally grey, but may be partially replaced by green and/or red areas.



(1) Red area
Indicates the vertical speed range, when there is a high risk of conflict.

(2) Green area
Indicates the recommended vertical speed range. It is wider than the red area.

Note:
- *The aircraft can also fly in the grey vertical speed range, without the risk of conflict (preventive RA).*
- *The color of the digits corresponds to the appropriate area.*
- *In case of RA detection, the vertical speed needle that is normally green, becomes white.*

(3) TCAS message

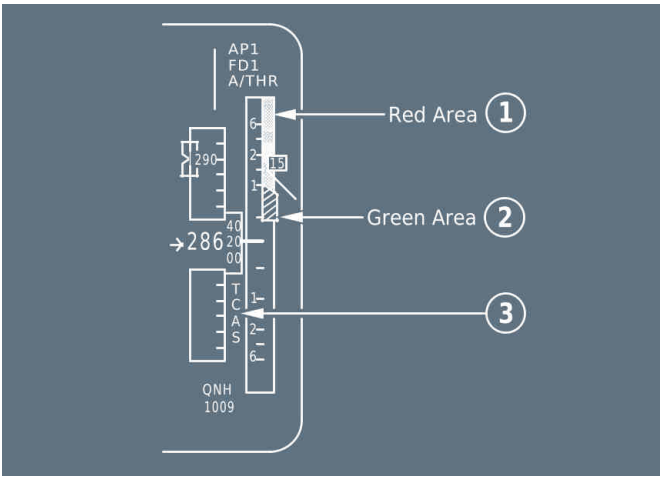
It is displayed when the TCAS cannot deliver RA data, or in case of an internal TCAS failure, provided that the TCAS is not in standby.

PFD INDICATIONS

Ident.: DSC-34-SURV-60-20-00020420.0005001 / 17 MAR 17

[2] **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

In case of RA detection, the vertical speed scale becomes rectangular and the PFD presents vertical orders on the vertical speed scale. The vertical speed scale background is normally grey, but may be partially replaced by green and/or red areas.



(1) Red area

Indicates the vertical speed range, when there is a high risk of conflict.

(2) Green area

Indicates the recommended vertical speed range. It is wider than the red area.

Note:
- *The aircraft can also fly in the grey vertical speed range, without the risk of conflict (preventive RA).*
- *The color of the digits corresponds to the appropriate area.*
- *In case of RA detection, the vertical speed needle that is normally green, becomes white.*

(3) TCAS message

Appears in amber provided that the TCAS is not in standby, when the TCAS cannot deliver RA data, or in case of an internal TCAS failure.

AURAL MESSAGES

Ident.: DSC-34-SURV-60-20-00001433.0018001 / 08 FEB 13

[3] **Applicable to: MSN 01767-02204, 02359, 02457, 02584-02712, 02804, 02914-03541, 03750, 03943-04113, 04294-04328, 04393-04552, 04609-04630, 04645-04947, 04965-05036, 05080-05092, 05120-09063**

TA/RA detection is associated with the following messages:

"TRAFFIC TRAFFIC"	:	Only in case of TA detection.
"CLIMB CLIMB"	:	Climb at the vertical speed indicated by the green area on the PFD.
"CLIMB, CROSSING CLIMB" (twice)	:	Same as above. Indicates that you will cross through the intruder altitude.
"INCREASE CLIMB" (twice)	:	Triggered after the CLIMB message, if vertical speed is insufficient to achieve safe vertical separation.
"DESCEND DESCEND"	:	Descend at the vertical speed indicated by the green area on the PFD.
"DESCEND, CROSSING DESCEND" (twice)	:	Same as above. Indicates that you will cross through the intruder altitude.
"INCREASE DESCEND" (twice)	:	Triggered after the DESCEND message, if the vertical speed is insufficient to achieve safe vertical separation.
"LEVEL OFF, LEVEL OFF"	:	Set the Vertical Speed to 0.
"CLIMB CLIMB NOW" (twice)	:	Triggered after the DESCEND message, if the intruder trajectory has changed.
"DESCEND DESCEND NOW" (twice)	:	Triggered after the CLIMB message, if the intruder trajectory has changed.
"MONITOR VERTICAL SPEED"	:	Ensure that the vertical speed remains outside the red area. Triggered only once, in case of preventive RA.
"MAINTAIN VERTICAL SPEED, MAINTAIN"	:	Maintain the vertical speed indicated on the green area of the PFD.
"MAINTAIN VERTICAL SPEED, CROSSING MAINTAIN"	:	Maintain the vertical speed indicated on the green area of the PFD. Indicates that you will cross through the intruder altitude.
"CLEAR OF CONFLICT"	:	The range increases and separation is adequate. Return to assigned clearance.

AURAL MESSAGES

Ident.: DSC-34-SURV-60-20-00001433.0002001 / 15 FEB 11
Applicable to: MSN 02275-02334, 02388-02443, 02482, 02737, 02908, 03618, 03782-03863, 04156-04216, 04384, 04603, 04637, 04954, 05076, 05094

TA/RA detection is associated with the following messages:

"TRAFFIC TRAFFIC"	:	Only in case of TA detection.
"CLIMB CLIMB"	:	Climb at the vertical speed indicated by the green area on the PFD.
"CLIMB, CROSSING CLIMB" (twice)	:	Same as above. Indicates that you will cross through the intruder altitude.
"INCREASE CLIMB" (twice)	:	Triggered after the CLIMB message, if vertical speed is insufficient to achieve safe vertical separation.
"DESCEND DESCEND"	:	Descend at the vertical speed indicated by the green area on the PFD.
"DESCEND, CROSSING DESCEND" (twice)	:	Same as above. Indicates that you will cross through the intruder altitude.
"INCREASE DESCEND" (twice)	:	Triggered after the DESCEND message, if the vertical speed is insufficient to achieve safe vertical separation.
"ADJUST VERTICAL SPEED, ADJUST":		Adjust the vertical speed to that indicated on the green area of the PFD, reducing climb vertical speed or descent vertical speed, as appropriate.
"CLIMB CLIMB NOW" (twice)	:	Triggered after the DESCEND message, if the intruder trajectory has changed.
"DESCEND DESCEND NOW" (twice)	:	Triggered after the CLIMB message, if the intruder trajectory has changed.
"MONITOR VERTICAL SPEED"	:	Ensure that the vertical speed remains outside the red area. Triggered only once, in case of preventive RA.
"MAINTAIN VERTICAL SPEED, MAINTAIN"	:	Maintain the vertical speed indicated on the green area of the PFD.
"MAINTAIN VERTICAL SPEED, CROSSING MAINTAIN"	:	Maintain the vertical speed indicated on the green area of the PFD. Indicates that you will cross through the intruder altitude.
"CLEAR OF CONFLICT"	:	The range increases and separation is adequate. Return to assigned clearance.

MEMO DISPLAY

Ident.: DSC-34-SURV-60-20-00020422.0002001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02108, 02135, 02139-02649, 02712-02737, 02908-02914, 03264-03330, 03750, 04294, 04399-04438

TCAS STBY : This memo appears in green when:

- ATC STBY is selected by the crew, or
- TCAS STBY is selected by the crew during flight phases other than 6, or
- ALT RPTG sw is OFF, or
- both ATCs or both RAs are failed.

TCAS STBY : This memo appears in amber when the flight crew sets the TCAS on STBY in flight phase 6.

MEMO DISPLAY

Ident.: DSC-34-SURV-60-20-00020422.0003001 / 17 MAR 17
4 **Applicable to: MSN 01957-02097, 02121, 02138, 02670, 02804, 03071-03138, 03357-03618, 03782-04216, 04312-04397, 04481-09063**

TCAS STBY : This memo appears in green when:

- ATC STBY is selected by the crew, or
- TCAS STBY is selected by the crew during flight phases other than 6, or
- ALT RPTG sw is OFF, or
- both ATCs or both RAs are failed, or
- In the case of a triple ADR failure.

TCAS STBY : This memo appears in amber when the flight crew sets the TCAS on STBY in flight phase 6.

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AIRCRAFT SYSTEMS

OXYGEN

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DSC-35-10 General

Description ..... A

DSC-35-20 Fixed Oxygen System for Cockpit

DSC-35-20-10 Description

General ..... A
Operation ..... B
Schematic C
Mask Setting ..... D
Mask Stowage ..... E

DSC-35-20-20 Controls and Indicators

Overhead Panel ..... A
Stowage Box ..... B
Crew Oxygen Mask C
Pressure Regulator ..... D
ECAM DOOR/OXY Page ..... E

DSC-35-30 Fixed Oxygen System for Cabin

DSC-35-30-10 Description

General ..... A
Operation ..... B
Schematic C

DSC-35-30-20 Controls and Indicators

Overhead Panel ..... A
Overhead Maintenance Panel ..... B
Memo Display C

DSC-35-40 Portable Oxygen System

DSC-35-40-10 Description

Flight Crews Portable Oxygen System ..... A
Using the Hood ..... B

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Localization Title	Toc Index	ID	Reason
DSC-35-20-10 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-35-20-10 General	A	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-35-20-10 Schematic	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-35-20-10 Schematic	C	4	Effectivity update: The information no longer applies to MSN 05449.
DSC-35-20-20 ECAM DOOR/OXY Page	E	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-35-20-20 ECAM DOOR/OXY Page	E	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-35-30-20 OXY PAX ON	C	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-35-40-10 Flight Crews Portable Oxygen System	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-35-40-10 Flight Crews Portable Oxygen System	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-35-40-10 Using the Hood	B	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-35-40-10 Using the Hood	B	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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DESCRIPTION

Ident.: DSC-35-10-00001448.0001001 / 20 DEC 10
Applicable to: ALL

The oxygen system consists of:

- A cockpit-fixed oxygen system, which supplies adequate breathing oxygen to the cockpit occupants in case of depressurization, or emission of smoke and noxious gases.
- A cabin-fixed oxygen system, which supplies oxygen for cabin occupants (passengers and cabin crew) in case of depressurization.
- A portable oxygen system, which is provided in both the cockpit and cabin and is to be used:
  - As PROTECTION for the crew during on board emergencies.
  - For FIRST AID purposes.

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GENERAL

Ident.: DSC-35-20-10-00017801.0002001 / 21 MAR 16

[1] **Applicable to: MSN 06720-09063**

The cockpit's fixed oxygen system is separated into two sub-systems:
- One sub-system supplies oxygen to the Captain and the 3rd Occupant,
- One sub-system supplies oxygen to the First Officer and the 4th Occupant ◁ .

The cockpit's fixed oxygen system consists of:
- Two high-pressure cylinders.
- Two pressure regulators, connected directly to the cylinders that deliver oxygen, at a pressure suitable for users.
- Four overpressure safety systems to vent oxygen overboard, through an overboard discharge indicator, if the pressure becomes too high.
- Two supply solenoid valves that allow the crew to shut off the distribution system.
- Three (or four ◁) full-face quick-donning masks, stowed in readily-accessible boxes adjacent to the crewmembers' seats (one at each seat).

GENERAL

Ident.: DSC-35-20-10-00017801.0001001 / 21 MAR 16

[2] **Applicable to: MSN 01767-06336**

The cockpit's fixed oxygen system consists of :
- A high-pressure cylinder, located in the left-hand lower fuselage.
- A pressure regulator, connected directly to the cylinder that delivers oxygen, at a pressure suitable for users.
- Two overpressure safety systems to vent oxygen overboard, through a safety port, if the pressure becomes too high.
- A supply solenoid valve that allows the crew to shut off the distribution system.
- Three (or four ◁) full-face quick-donning masks, stowed in readily-accessible boxes adjacent to the crewmembers' seats (one at each seat).

OPERATION

Ident.: DSC-35-20-10-00001450.0001001 / 21 MAR 16

Applicable to: ALL

The crewmember squeezes the red grips to pull the mask out of its box, and this action causes the mask harness to inflate.
A mask-mounted regulator supplies a mixture of air and oxygen or pure oxygen, or performs emergency pressure control. With the regulator set to NORMAL, the user breathes a mixture of cabin air and oxygen up to the cabin altitude at which the regulator supplies 100 % oxygen. The user can select 100 %, in which case the regulator supplies pure oxygen at all cabin altitudes.

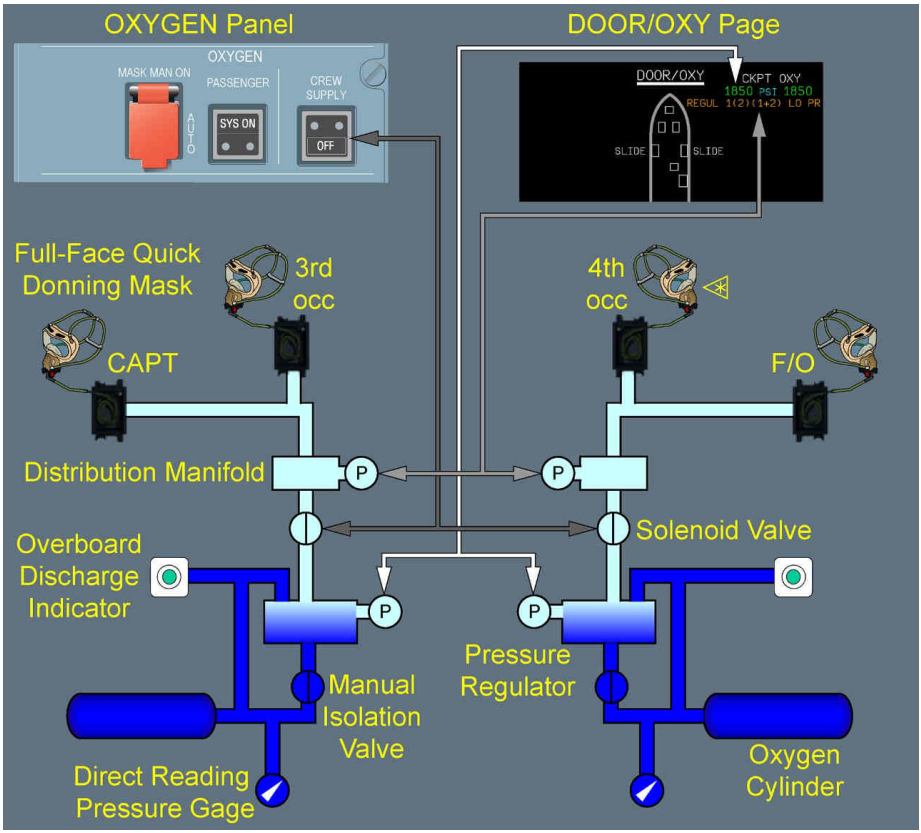
If the situation calls for it, the user can use the emergency overpressure rotating knob and receive pure oxygen at positive pressure.
The storage box contains a microphone lead, with a quick-disconnect, for connection to the appropriate mask microphone cable.

Note: *Each mask may have a removable film that protects the visor against scratches. This strip is optional and may be removed from the mask at any time.*

SCHEMATIC

Ident.: DSC-35-20-10-00017802.0002001 / 21 MAR 16

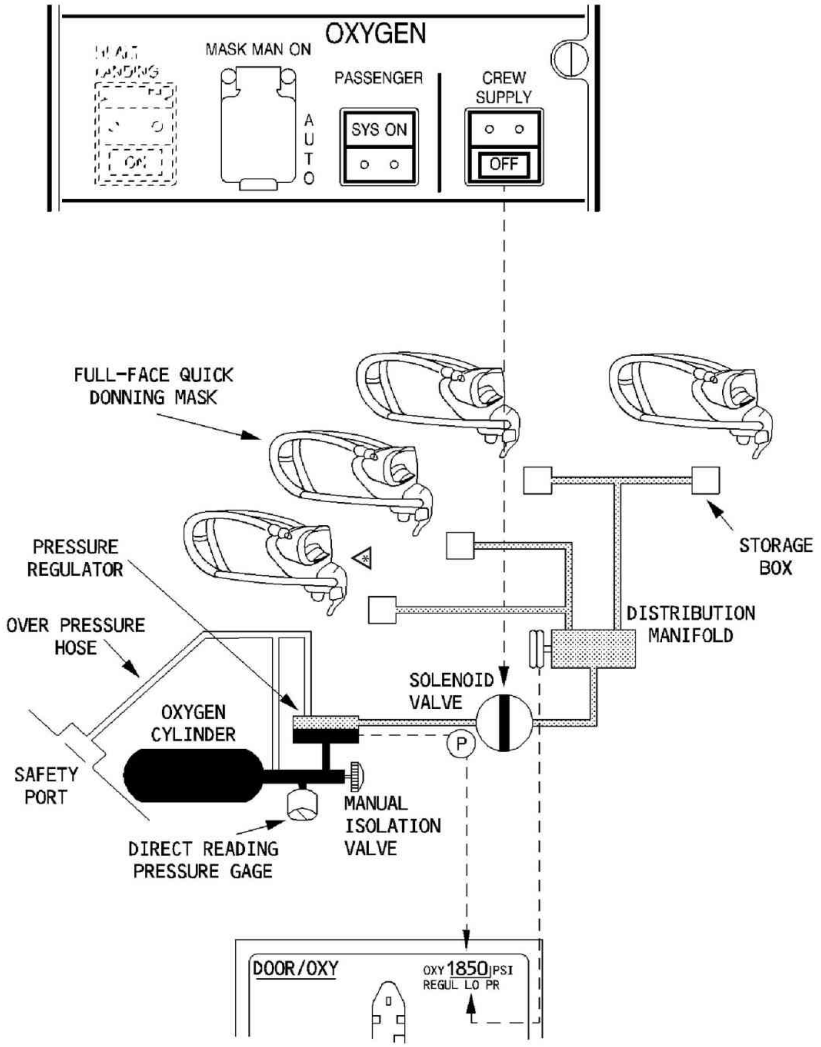
3 **Applicable to: MSN 06720-09063**



SCHEMATIC

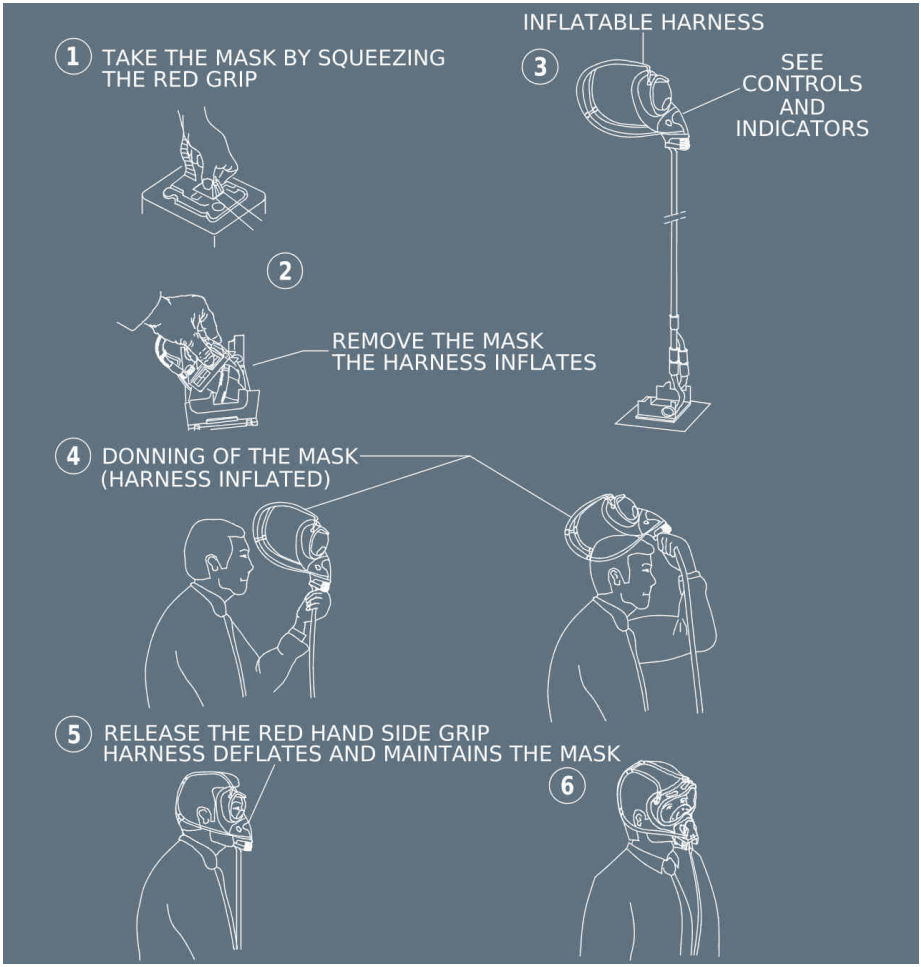
Ident.: DSC-35-20-10-00017802.0001001 / 21 MAR 16

4 **Applicable to: MSN 01767-06336**



MASK SETTING

Ident.: DSC-35-20-10-00016919.0001001 / 21 MAR 16
Applicable to: ALL



Note: *The captain (first officer) must exercise caution and turn the head to the right (left) in the direction of the first officer (captain) in order to ensure fast donning of the mask when the HUD ◁ on the captain (first officer) side is deployed.*

MASK STOWAGE

Ident.: DSC-35-20-10-00001453.0001001 / 21 MAR 16
Applicable to: ALL

1 - COIL THE HOSE, AND PLACE IT IN THE BOTTOM OF THE STOWAGE BOX.

2 - POSITION THE REMAINING HOSE IN THE MIDDLE OF THE MASK.
- FOLD THE TWO HARNESS PORTIONS TOGETHER.

3 - PLACE THE MASK IN THE STOWAGE BOX.
- MAKE SURE THE MASK REGULATOR IS FULLY SEATED AGAINST THE STOP IN THE STOWAGE BOX.

4 - CLOSE THE DOORS, THEN FULLY PRESS THE "RESET TEST" BUTTON.
- ONCE THE "RESET TEST" BUTTON IS RELEASED, CHECK THAT THE "OXY ON" FLAG COMPLETELY DISAPPEARS.
- PRESS THE EMERGENCY PRESSURE SELECTOR, AND CHECK THAT THE BLINKER REMAINS BLACK.
- THEN, RETURN THE N/100% SELECTOR AT THE 100% POSITION.

CAUTION: Maintaining the pressure selector in the "EMERGENCY" position can deplete the crew oxygen cylinder.

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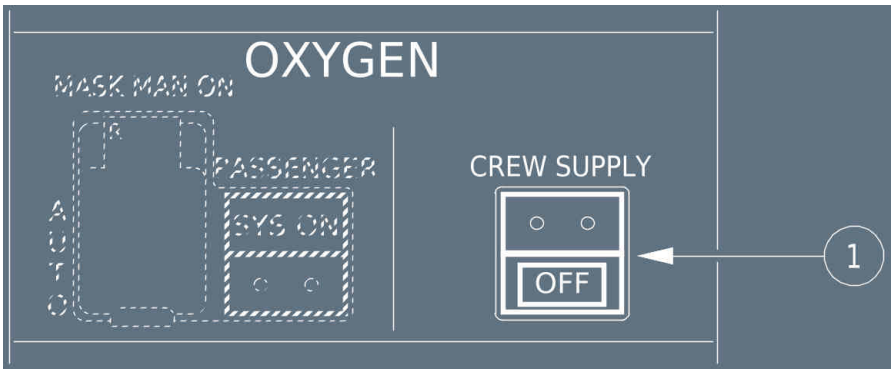
OVERHEAD PANEL

Ident.: DSC-35-20-20-00017803.0001001 / 21 MAR 16
Applicable to: ALL



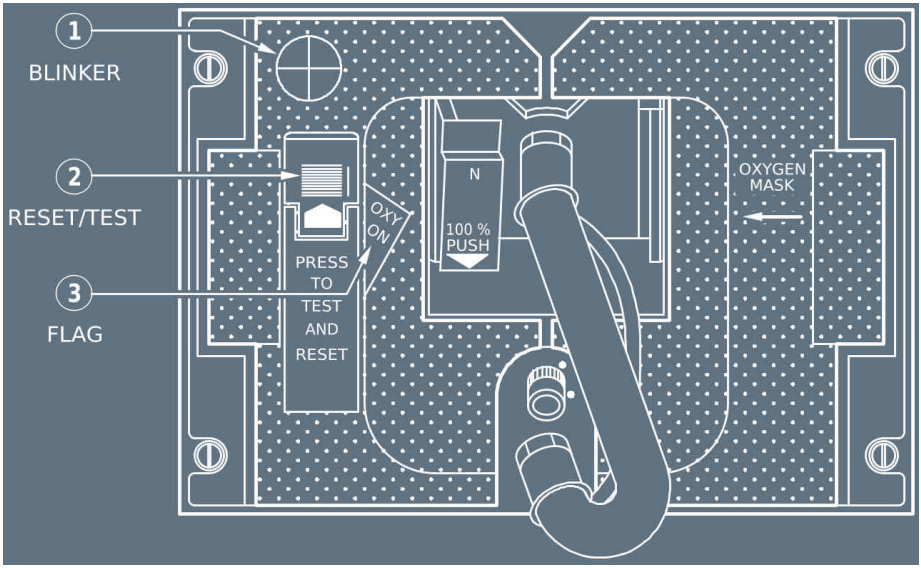
(1) CREW SUPPLY pb
This pushbutton controls the solenoid valve.

On : The valve is open, and supplies low pressure oxygen to the masks (normal position in flight).

OFF: The valve is closed, and the white light comes on.

STOWAGE BOX

Ident.: DSC-35-20-20-00001455.0001001 / 22 MAY 12
Applicable to: ALL



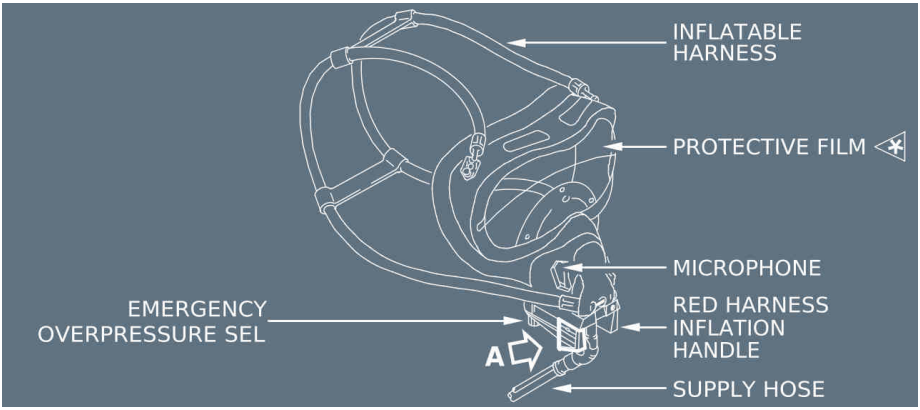
(1) Blinker flowmeter (yellow)
This indicator flashes when oxygen is flowing.

(2) RESET/TEST control slide
The crewmember presses the slide, and pushes it in the direction of the arrow to test: the operation of the blinker; the regulator supply; system sealing downstream of the valve; and the regulator sealing and system operation. Pressing the RESET control slide, after the oxygen mask has been used, cuts off the oxygen, and the mask microphone.

(3) OXY ON flag
As soon as the left flap door opens, the mask is supplied with oxygen and, once it closes (mask still supplied with oxygen), the “OXY ON” flag appears.

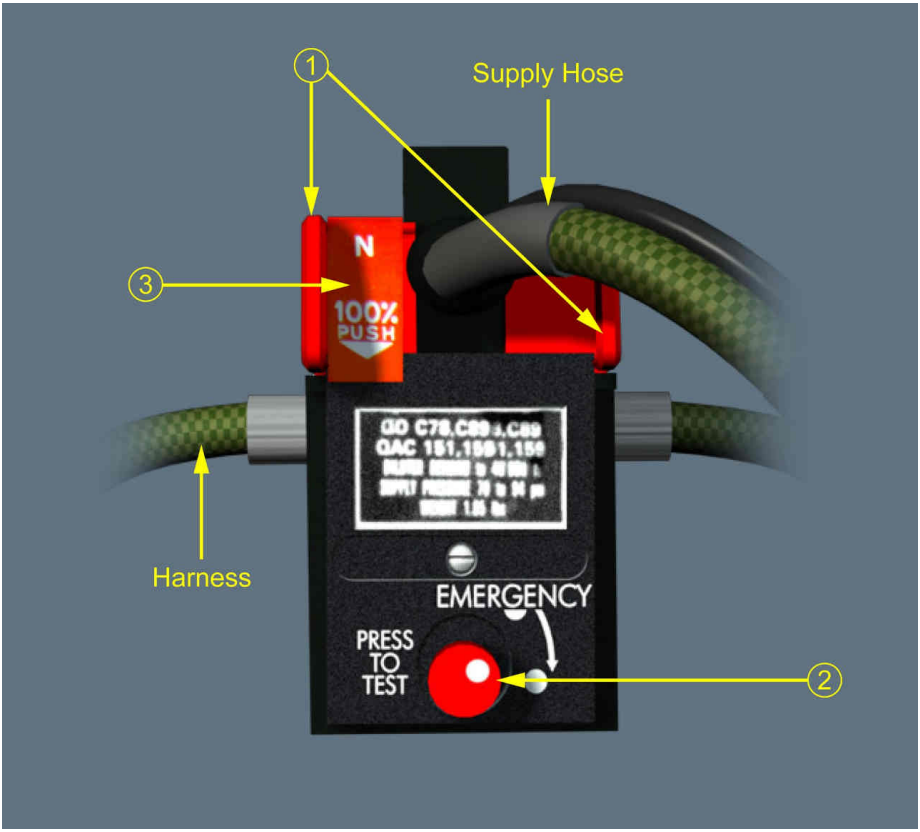
CREW OXYGEN MASK

Ident.: DSC-35-20-20-00001456.0001001 / 21 MAR 16
Applicable to: ALL



PRESSURE REGULATOR

Ident.: DSC-35-20-20-00001457.0001001 / 24 NOV 15
Applicable to: ALL



(1) Red grips
Squeezing the right-hand side grip unlocks the two-flap door, and permits the harness to inflate.

(2) EMERGENCY pressure selector

Use of this selector creates on overpressure which eliminates condensation or fogging of the mask, and prevents smoke, smell or ashes from entering the mask.

- Pressing this knob generates an overpressure for a few seconds.
- Turning the knob, in the direction of the arrow, generates a permanent overpressure.

Note: *1. Overpressure supply is automatically started, when cabin altitude exceeds 30 000 ft.*

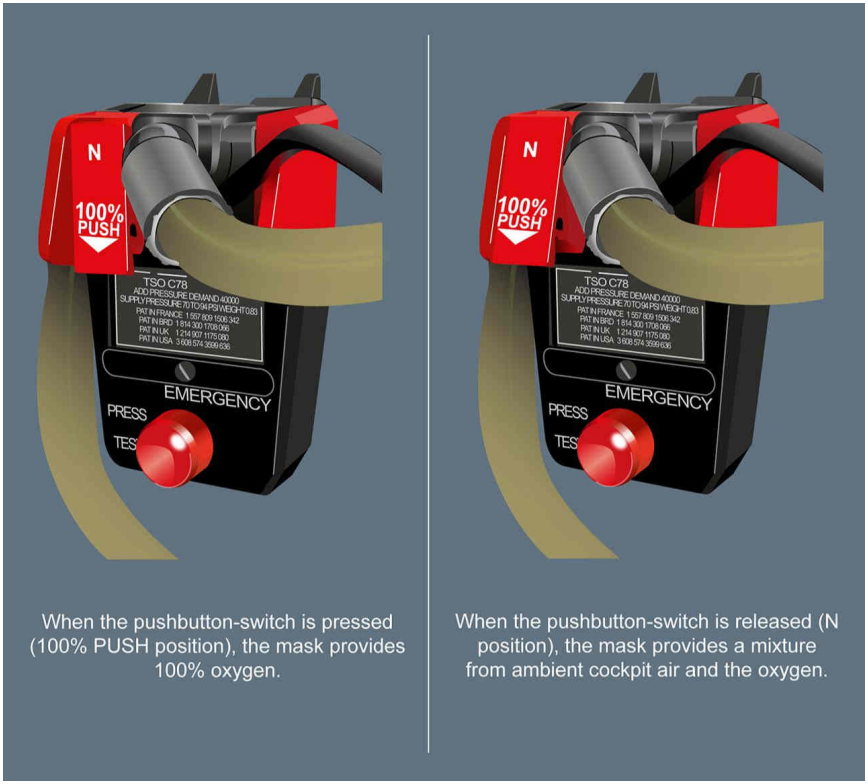
2. Overpressure supply is available only when the N/100% selector is set on the on the 100 % position.

(3) N/100 % selector

This two-position button is locked down (100% position) when the crewmember pulls the mask out of the stowage.Pushing the button up from underneath releases it, and it pops up to the N (normal) position. Pressing it again returns it to 100 %.

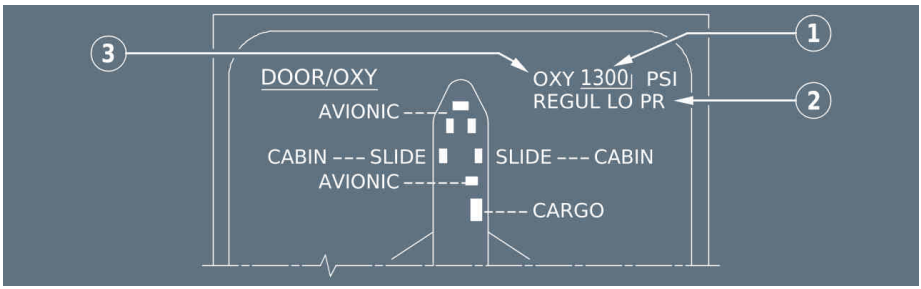
100 % : The mask delivers 100 % oxygen.

N : The mask provides the flight crew with a mixture of air and oxygen. This mixture changes with cabin altitude. The higher the cabin altitude, the more oxygen the mask provides, until the mask supplies 100 % oxygen.



ECAM DOOR/OXY PAGE

Ident.: DSC-35-20-20-00001458.0001001 / 21 MAR 17
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



(1) OXY pressure indication
It is in green, when the pressure is ≥ 400 PSI.
It is in amber, when the pressure is < 400 PSI.
On ground, an amber half frame appears when oxygen pressure is < 1 500 PSI.
In this case, the flight crew must check that the remaining quantity is not below the minimum (*Refer to LIM-OXY Minimum Flight Crew Oxygen Pressure*).

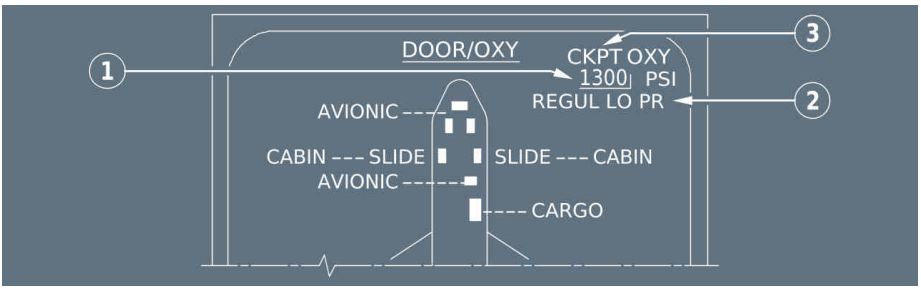
(2) REGUL LO PR indication
It is in amber, if oxygen pressure on the low-pressure circuit is low (50 PSI).

(3) OXY indication
It is normally in green.

It becomes amber, when:
- Pressure goes below 400 PSI
- Low oxygen pressure is detected
- The OXYGEN CREW SUPPLY pushbutton switch on the overhead panel is OFF.

ECAM DOOR/OXY PAGE

Ident.: DSC-35-20-20-00001458.0004001 / 21 MAR 17
Applicable to: MSN 02388, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336



(1) OXY pressure indication
It is in green, when the pressure is ≥ 800 PSI.
It pulses in green, when the pressure is < 800 PSI (the DOOR/OXY SD page is automatically displayed).
It is in amber, when the pressure is < 400 PSI.
On ground, an amber half frame appears when oxygen pressure is < 1 500 PSI.
In this case, the flight crew must check that the remaining quantity is not below the minimum (*Refer to LIM-OXY Minimum Flight Crew Oxygen Pressure*).

(2) REGUL LO PR indication
It is in amber, if oxygen pressure on the low-pressure circuit is low (50 PSI).

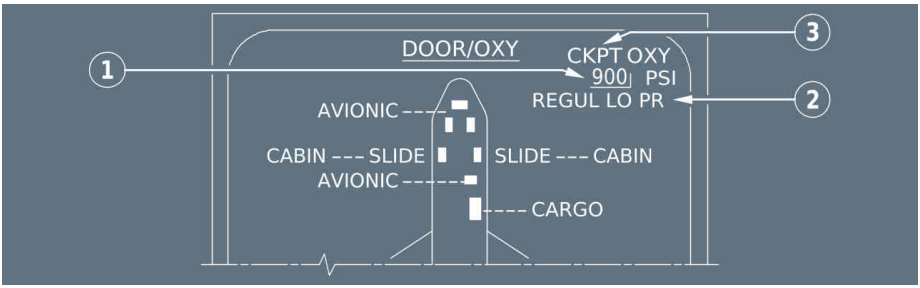
(3) CKPT OXY indication
It is normally in white.

It becomes amber, when:
- Pressure goes below 400 PSI
- Low oxygen pressure is detected
- The overhead panel's OXYGEN CREW SUPPLY pb is OFF.

ECAM DOOR/OXY PAGE

Ident.: DSC-35-20-20-00001458.0005001 / 21 MAR 17

[1] **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02584-03264, 03330, 03750, 04294, 04314, 04393-04397, 04433, 04491, 04510, 04532, 04645, 05120, 05218**



(1) OXY pressure indication
It is in green, when the pressure is ≥ 600 PSI.
It pulses in green, when the pressure is < 600 PSI (the DOOR/OXY SD page is automatically displayed).
It is in amber, when the pressure is < 300 PSI.
On ground, an amber half frame appears when oxygen pressure is < 1 000 PSI.
In this case, the flight crew must check that the remaining quantity is not below the minimum (*Refer to LIM-OXY Minimum Flight Crew Oxygen Pressure*).

(2) REGUL LO PR indication
It is in amber, if oxygen pressure on the low-pressure circuit is low (50 PSI).

(3) CKPT OXY indication
It is normally in white.

It becomes amber, when:
- Pressure goes below 300 PSI
- Low oxygen pressure is detected
- The OXYGEN CREW SUPPLY pb on the overhead panel is OFF.

ECAM DOOR/OXY PAGE

Ident.: DSC-35-20-20-00001458.0006001 / 21 MAR 17

[2] **Applicable to: MSN 06720-09063**

(1) OXY pressure indication
CAPT OXY pressure indication appears on the left side and F/O OXY pressure indication on the right side.
It is in green, when the pressure is ≥ 500 PSI.
It pulses in green, when the pressure is < 500 PSI (the DOOR/OXY SD page is automatically displayed).
It is in amber, when the pressure is < 200 PSI.
On ground, an amber half frame appears when oxygen pressure is < 800 PSI.
In this case, the flight crew must check that the remaining quantity is not below the minimum (*Refer to LIM-OXY Minimum Flight Crew Oxygen Pressure*).

(2) REGUL 1(2)(1+2) LO PR indication
It is in amber, if oxygen pressure on the low-pressure circuit is low (50 PSI).

(3) CKPT OXY indication
It is normally in white.

It becomes amber, when:
- At least one of the bottle pressure is below 200 PSI
- Low oxygen pressure is detected on at least on of the bottle
- On the OXYGEN overhead panel, the CREW SUPPLY pb is set to OFF.

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GENERAL

Ident.: DSC-35-30-10-00017804.0001001 / 13 MAY 16
Applicable to: ALL

In the case of depressurization, the fixed oxygen system in the cabin supplies oxygen to the cabin occupants.
Chemical generators produce the oxygen. Each generator feeds a group of 2, 3, or 4 masks.
Oxygen masks are located in containers above the passenger seats, in the lavatories, in each galley ◁ , and at each cabin crew station.

Note: *Gaseous generators ◁ replace chemical generators in the lavatories.*

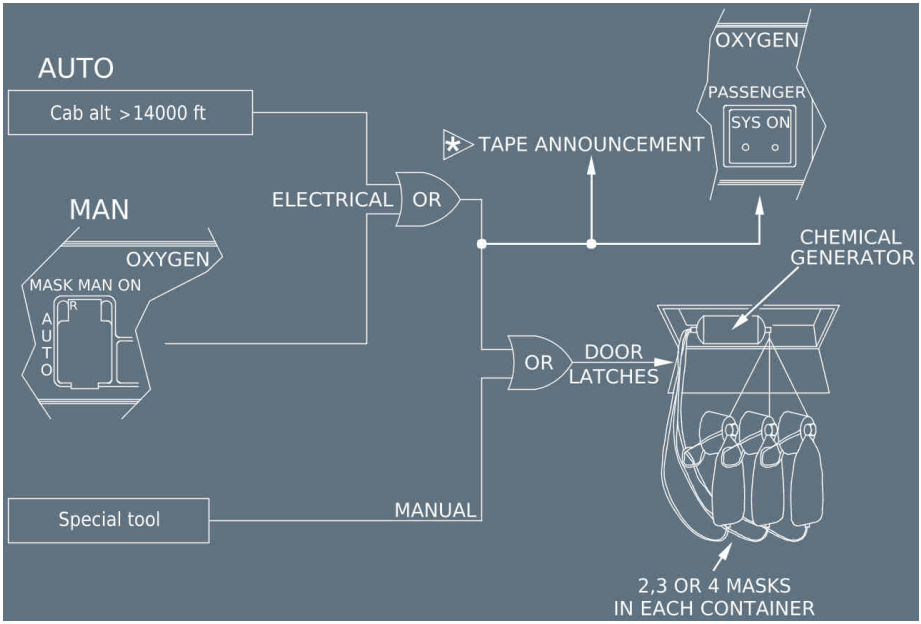
OPERATION

Ident.: DSC-35-30-10-00016920.0001001 / 21 MAR 16
Applicable to: ALL

Each container has an electrical latching mechanism that opens automatically to allow the masks to drop, if the cabin pressure altitude exceeds 14 000 ft (+250, -750 ft), or 16 000 ft (+250, -750 ft) for the operation on high altitude airfields ◁ .
Members of the flight crew can override the automatic control.
When the masks are released, the passenger address system automatically broadcasts prerecorded instructions ◁ .
The generation of oxygen begins when the passenger pulls the mask towards the passenger seat. The chemical reaction used for oxygen generation creates heat. Therefore, the smell of burning, smokes and cabin temperature increase may be associated with the normal operation of the oxygen generators. The mask receives pure oxygen under positive pressure for about 13 min ◁ , 15 min ◁ , or up to 22 min ◁ , until the generator is exhausted.
A reset is available for the rearming of the system after the masks are restowed. A manual release tool allows crew members to open the doors manually in case of electrical failure.

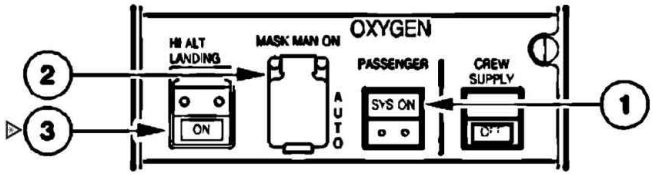
SCHEMATIC

Ident.: DSC-35-30-10-00001461.0001001 / 16 MAY 12
Applicable to: ALL



OVERHEAD PANEL

Ident.: DSC-35-30-20-00017805.0001001 / 21 MAR 16
Applicable to: ALL



(1) PASSENGER SYS ON light
This light comes on in white, when the control for the oxygen mask doors is activated, and it remains on until the TMR RESET pb is pressed (*Refer to DSC-35-30-20 Overhead Maintenance Panel*).

(2) MASK MAN ON pb
The guard keeps this button in the AUTO position.

AUTO : The mask doors open automatically, when the cabin altitude exceeds 14 000 ft, or 16 000 ft if the HI ALT LANDING pb-sw is set to ON.

Pressed : The mask doors open.

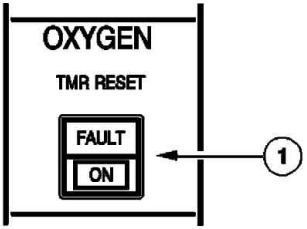
(3) HI ALT LANDING pb-sw
This pushbutton-switch changes the altitude threshold for the deployment of the passenger oxygen masks.

OFF: The masks drop, if the cabin pressure exceeds 14 000 ft (+250, -750 ft).

ON : The masks drop, if the cabin pressure exceeds 16 000 ft (+250, -750 ft).

OVERHEAD MAINTENANCE PANEL

Ident.: DSC-35-30-20-00001463.0001001 / 11 FEB 11
Applicable to: ALL



(1) TMR RESET pushbutton
The maintenance crew uses this pushbutton to reset the control circuit, after the system has operated.

ON : The PASSENGER SYS ON light goes off.

FAULT : This light comes on in white, when the door latch solenoids are energized for more than 30 s.

MEMO DISPLAY

Ident.: DSC-35-30-20-A-00016865.0001001 / 21 MAR 16
Applicable to: MSN 03750

HI ALT SET : This memo appears in green if the crew sets the HI ALT LANDING pb-sw to ON. In this case, the passenger mask release altitude is 16 000 ft (+250 ft, -750 ft).

Ident.: DSC-35-30-20-A-00016866.0006001 / 21 MAR 16
1 **Applicable to: MSN 05992-09063**

The OXY PAX ON memo displays as soon as cabin oxygen masks fall down in the cabin, either automatically, or manually.

OXY PAX ON : This memo appears in green when both CPC detect excessive cabin altitude.

OXY PAX ON : This memo appears in amber when one CPC or both CPC do not detect excessive cabin altitude.

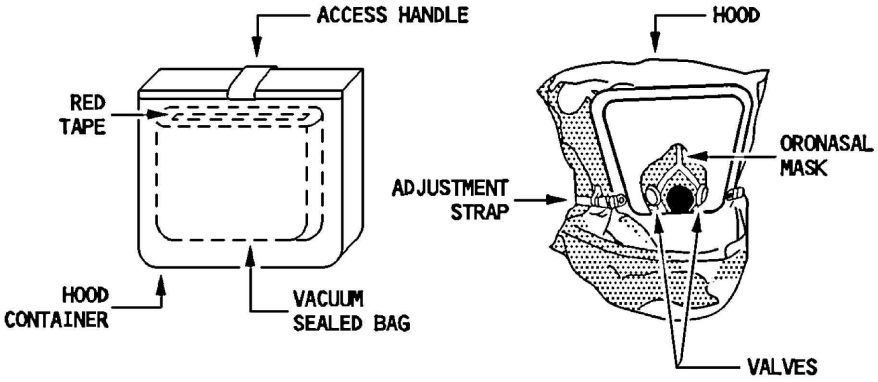
FLIGHT CREWS PORTABLE OXYGEN SYSTEM

Ident.: DSC-35-40-10-00001465.0003001 / 17 MAR 11

Applicable to: MSN 02359, 02405-02482, 02670-02737, 03264, 03330, 03750, 04314, 04393-04397

The flight crew smoke hood located on the right back side of the cockpit, ensures the eyes and respiratory system protection of one flight crew member when fighting a fire and in case of smoke or noxious gas emissions or cabin depressurization.

The smoke hood is based on a chemical air regeneration system, located at the back of the hood. An oronasal mask allows the inhalation of regenerated air via the inhalation valves and returns the exhaled breath to the regenerator system.



The effective time of use is between 15 and 30 min, depending on the workrate.

FLIGHT CREWS PORTABLE OXYGEN SYSTEM

Ident.: DSC-35-40-10-00001465.0005001 / 20 DEC 16

[1] **Applicable to: MSN 01767-01920, 02135, 02139, 02204, 02388, 02804, 03138, 04294, 04399-04438, 04491, 04510, 04532, 04645, 05120, 05158, 05218**

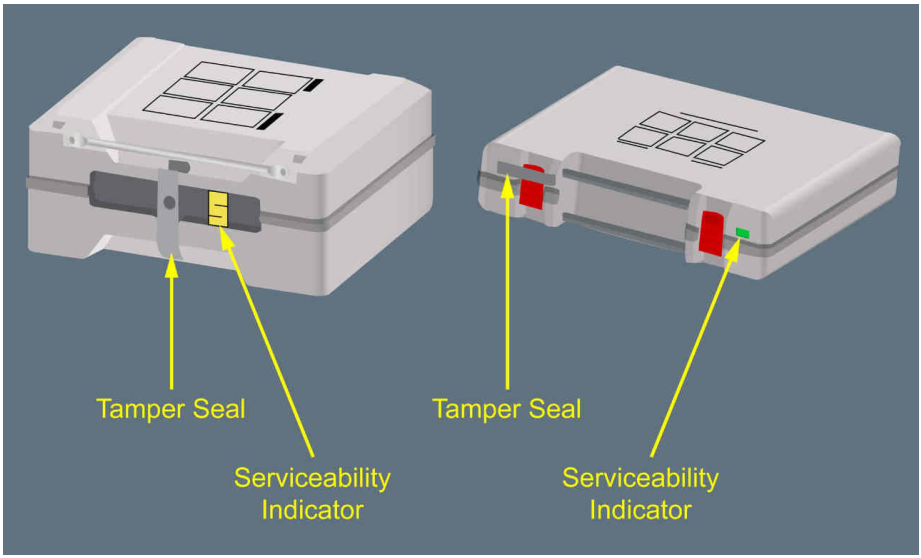
There is one Portable Breathing Equipment (PBE) in the cockpit. The PBE is a hood, located in a container. The PBE is stored on the right aft side of the cockpit. It ensures the eyes and respiratory system protection of one flight crew member when fighting a fire and in case of smoke or noxious gas emissions or cabin depressurization.

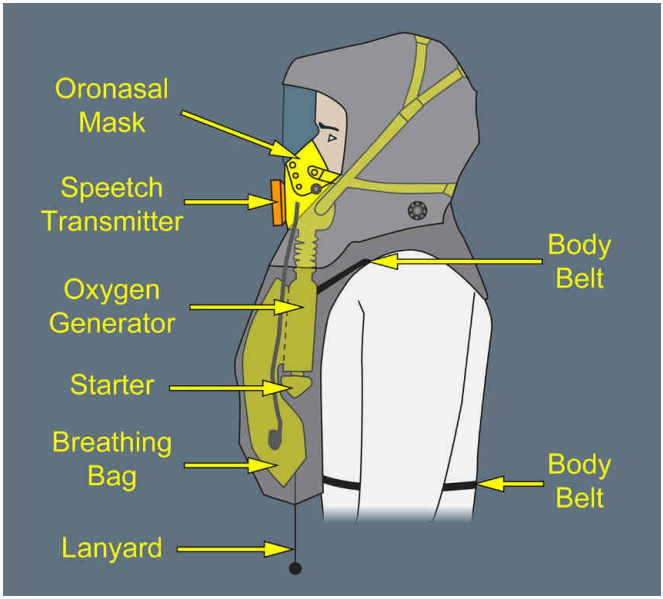
The PBE uses a chemical air regeneration system, which is in the breathing key. An oronasal mask allows the user to inhale regenerated air, and it returns the exhaled breath to the regeneration system.

If the container is equipped with a yellow serviceability indicator:
- When the indicator is cracked, the breathing protection can be insufficient and therefore the PBE cannot be used.

If the container is equipped with a red/green serviceability indicator:
- When the indicator is green, the hood can be used.
- When the indicator is red, the breathing protection can be insufficient and therefore the PBE cannot be used.

The hood operates for at least 15 min.





FLIGHT CREWS PORTABLE OXYGEN SYSTEM

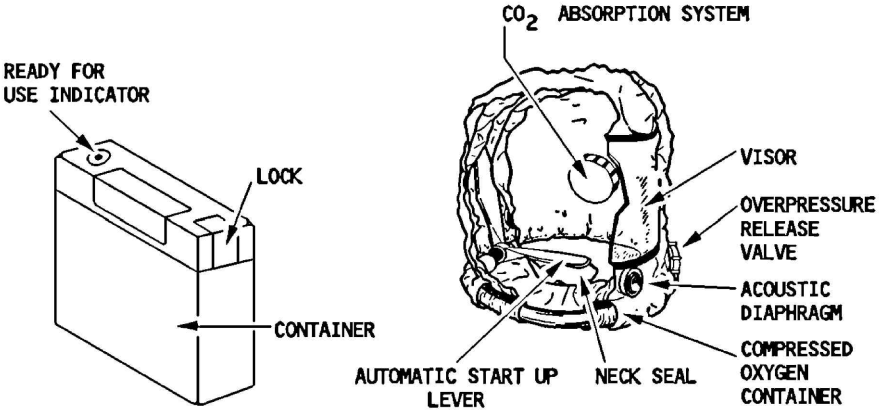
Ident.: DSC-35-40-10-00001465.0007001 / 17 MAR 11

2 **Applicable to: MSN 02584, 02649, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063**

The flight crew smoke hood located on the right back side of the cockpit, ensures the eyes and respiratory system protection of one flight crew member when fighting a fire and in case of smoke or noxious gas emissions or cabin depressurization.

The smoke hood is equipped with one oxygen cylinder and one CO2 absorption system which furnish an effective time of use of 15 min.

A « ready for use » status of the hood is ensured by checking that the indicator mounted on the hood container is not red.

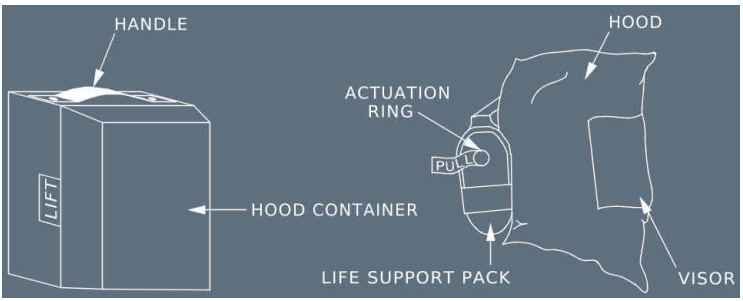


FLIGHT CREWS PORTABLE OXYGEN SYSTEM

Ident.: DSC-35-40-10-00001465.0004001 / 17 MAR 11
Applicable to: MSN 01957-02121, 02138, 02195, 02275-02334, 02609-02626, 02908-03071

The flight crew smoke hood located on the right back side of the cockpit, ensures the eyes and respiratory system protection of one flight crew member when fighting a fire and in case of smoke or noxious gas emissions or cabin depressurization.

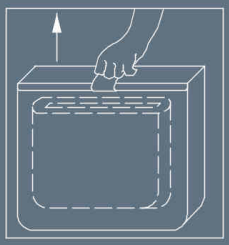
The smoke hood is equipped with one solid state oxygen supply source and one CO2 absorption system, contained in a life support pack which furnish an effective time of use of 15 min.



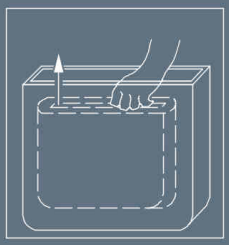
USING THE HOOD

Ident.: DSC-35-40-10-00006226.0003001 / 22 MAY 12
Applicable to: MSN 02359, 02405-02482, 02670-02737, 03264, 03330, 03750, 04314, 04393-04397

1 GRASP THE ACCESS HANDLE AND PULL STRONGLY TO DISENGAGE THE COVER



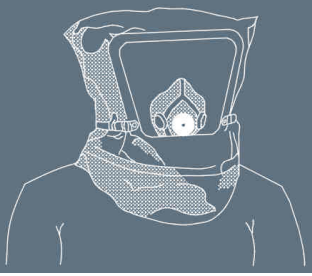
2 PULL SHARPLY THE RED TAPE TO TEAR OPEN THE VACUUM SEALED BAG THEN FIRMLY GRASP THE HOOD AND PULL IT OUT OF THE BAG



3 OPEN THE NECK SEAL AS FAR AS POSSIBLE, WITH YOUR PALMS FACING EACH OTHER

4 PUT THE HOOD OVER YOUR HEAD, ASSUMING THAT ALL HAIR IS INSIDE THE HOOD, TO AVOID LOSS OF OXYGEN

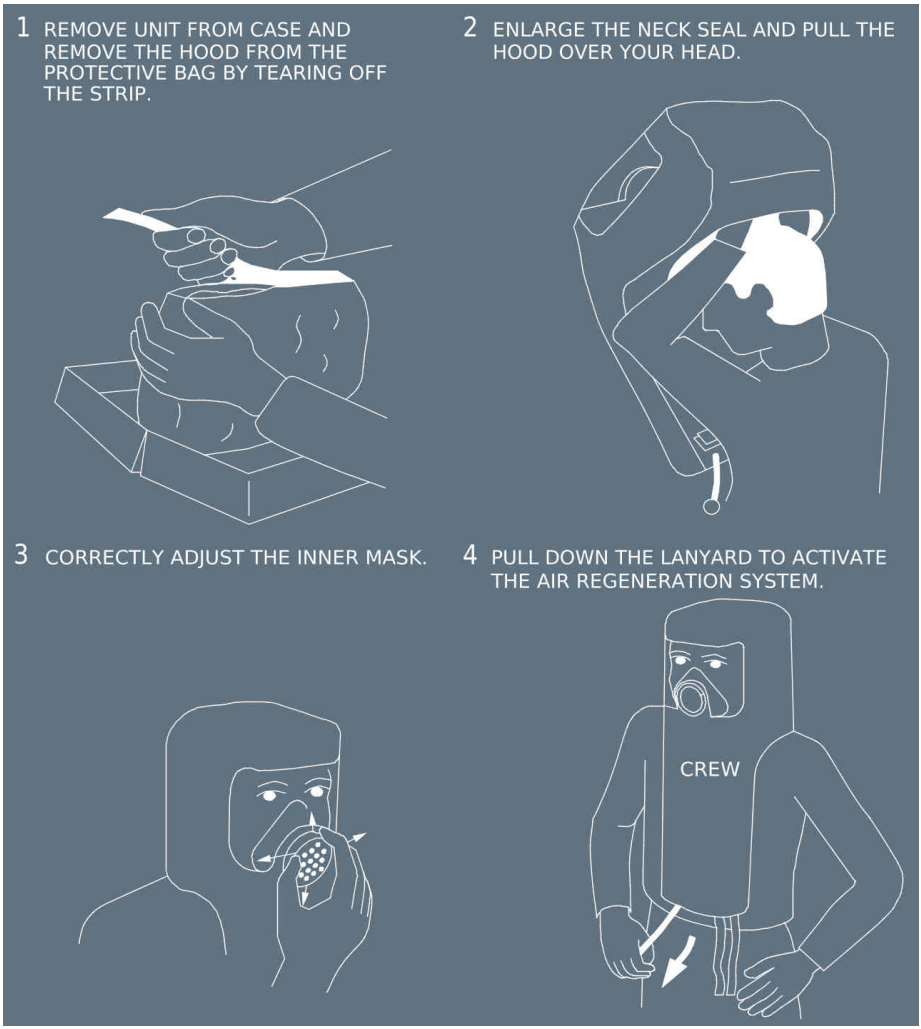
5 ADJUST THE HOOD WITH THE STRAPS
THIS ACTIVATES THE AIR REGENERATION SYSTEM



USING THE HOOD

Ident.: DSC-35-40-10-00006226.0005001 / 03 MAR 17

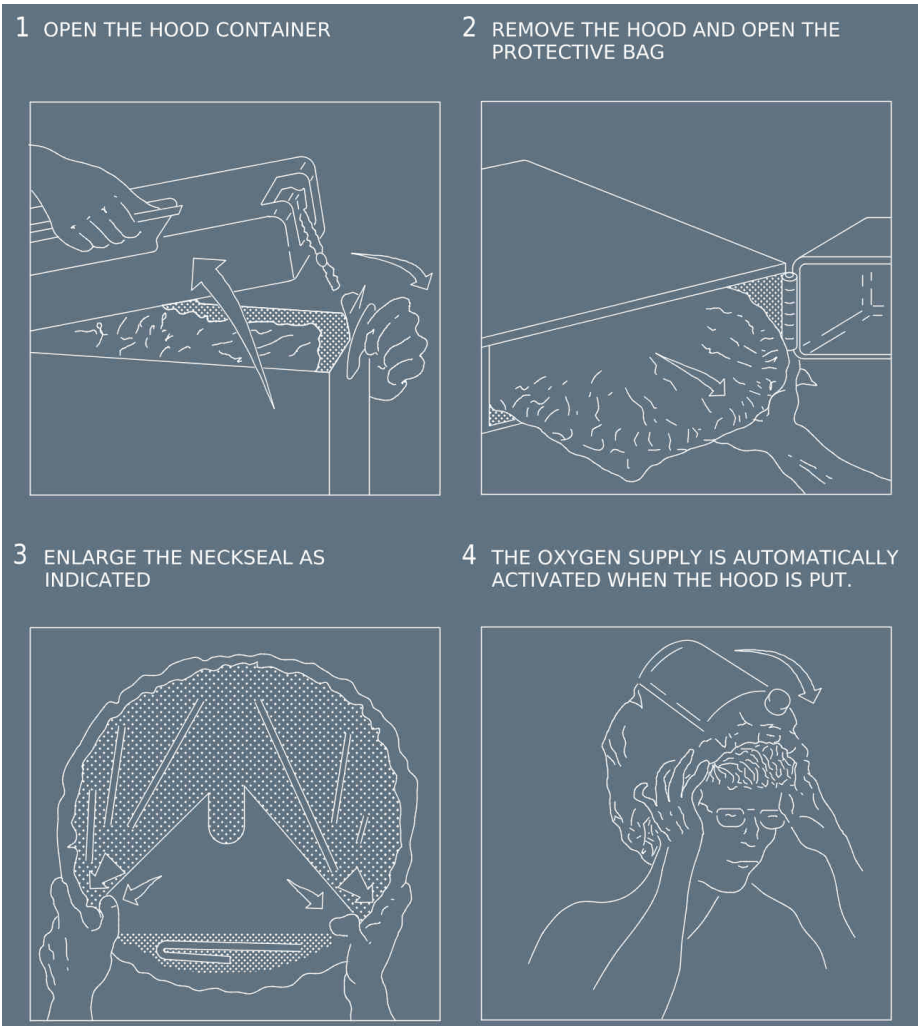
[3] **Applicable to: MSN 01767-01920, 02135, 02139, 02204, 02388, 02804, 03138, 04294, 04399-04438, 04491, 04510, 04532, 04645, 05120, 05158, 05218**



USING THE HOOD

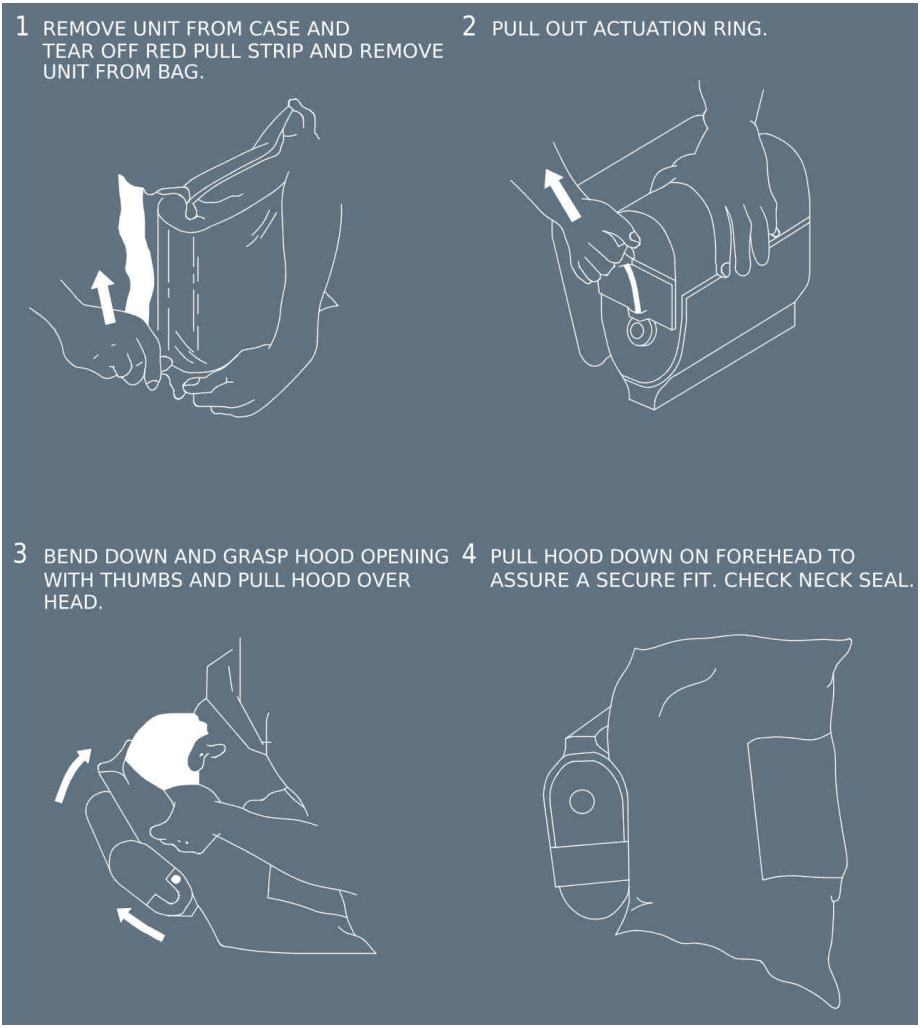
Ident.: DSC-35-40-10-00006226.0012001 / 22 MAY 12

4 **Applicable to: MSN 02584, 02649, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063**



USING THE HOOD

Ident.: DSC-35-40-10-00006226.0004001 / 22 MAY 12
Applicable to: MSN 01957-02121, 02138, 02195, 02275-02334, 02609-02626, 02908-03071



AIRCRAFT SYSTEMS

PNEUMATIC

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DSC-36-10 Description

DSC-36-10-10 General

General....A

DSC-36-10-20 Engine Bleed System

General....A
Architecture....B
Air Bleed Selection....C
Pressure Regulation and Limitation....D
Temperature Regulation and Limitation....E

DSC-36-10-30 APU Bleed Air Supply

General....A

DSC-36-10-40 Crossbleed

General....A
ECAM Indication....B

DSC-36-10-50 Leak Detection

Leak Detection....A

DSC-36-10-60 Operation Following Failures

BMC Failure....A

DSC-36-20 Controls and Indicators

Overhead Panel....A
ECAM Bleed Page....B
Memo Display....C

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Localization Title	Toc Index	ID	Reason
DSC-36-10-20 Architecture	B	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-36-10-20 Architecture	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-36-10-20 Air Bleed Selection	C	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-36-10-20 Air Bleed Selection	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-36-10-20 Pressure Regulation and Limitation	D	5	Effectivity update: The information no longer applies to MSN 05449.
DSC-36-10-20 Pressure Regulation and Limitation	D	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-36-10-20 Temperature Regulation and Limitation	E	7	Effectivity update: The information no longer applies to MSN 05449.
DSC-36-10-20 Temperature Regulation and Limitation	E	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-36-10-40 ECAM Indication	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-36-10-50 Leak Detection	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-36-10-50 Leak Detection	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-36-10-60 BMC Failure	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-36-10-60 BMC Failure	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-36-20 Overhead Panel	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-36-20 Overhead Panel	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-36-20 ECAM Bleed Page	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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GENERAL

Ident.: DSC-36-10-10-00020804.0001001 / 17 MAR 17
Applicable to: ALL

The pneumatic system supplies high-pressure air for :
- Air conditioning
- Engine starting
- Wing anti-icing
- Water pressurization
- Hydraulic reservoir pressurization
- FWD cargo heating ◁❄
- AFT cargo heating ◁❄
- Fuel Tank Inerting System (FTIS) ◁❄ .

High-pressure air has three sources :
- Engine bleed systems
- APU load compressor
- HP ground connection

Note: *An external HP source may be used for air conditioning.*

A crossbleed duct interconnects the engine bleed systems and receives air from the APU and ground sources when appropriate.
A valve mounted on the crossbleed duct allows the left side (engine 1) and right side (engine 2) to be interconnected.
Two Bleed Monitoring Computers (BMC1 and BMC2), the overhead control panel, and the ECAM control and monitor the operation of the pneumatic system.
A leak detection system detects any overheating in the vicinity of hot air ducts.

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GENERAL

Ident.: DSC-36-10-20-00001469.0001001 / 21 MAR 16
Applicable to: ALL

The aircraft has two similar engine bleed air systems.

Each system is designed to :
- select the compressor stage to use as a source of air
- regulate the bleed air temperature
- regulate the bleed air pressure.

A Bleed Monitoring Computer (BMC) controls and monitors each system.
Each BMC receives information about bleed pressure and temperature and valve position.

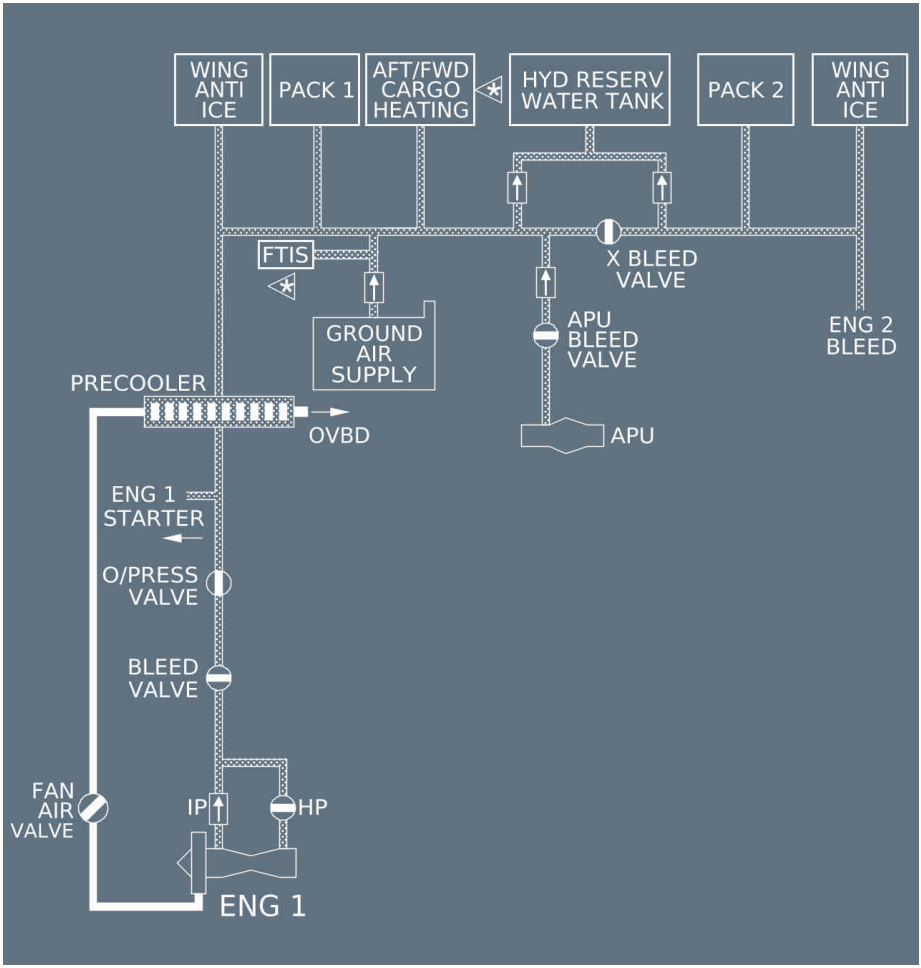
Each is connected with :
- other systems using air or information from the bleed system
- the other BMC.

Each supplies indications and warnings to the ECAM and CFDS.
If one BMC fails, the other one takes over most of the monitoring functions.
Each bleed valve is pneumatically operated and controlled electrically by its associated BMC.

ARCHITECTURE

Ident.: DSC-36-10-20-00001470.0005001 / 15 MAR 17

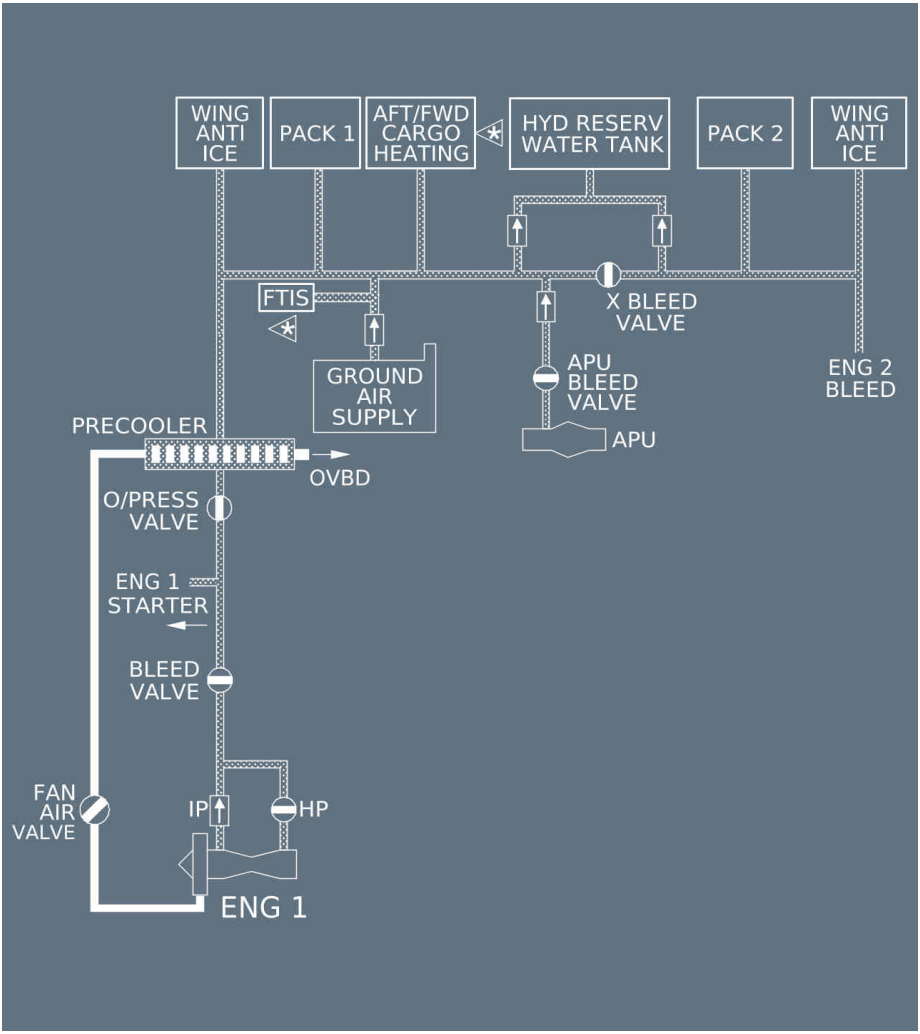
1 **Applicable to: MSN 01767-06336**



ARCHITECTURE

Ident.: DSC-36-10-20-00001470.0006001 / 15 MAR 17

[2] **Applicable to: MSN 06720-09063**



AIR BLEED SELECTION

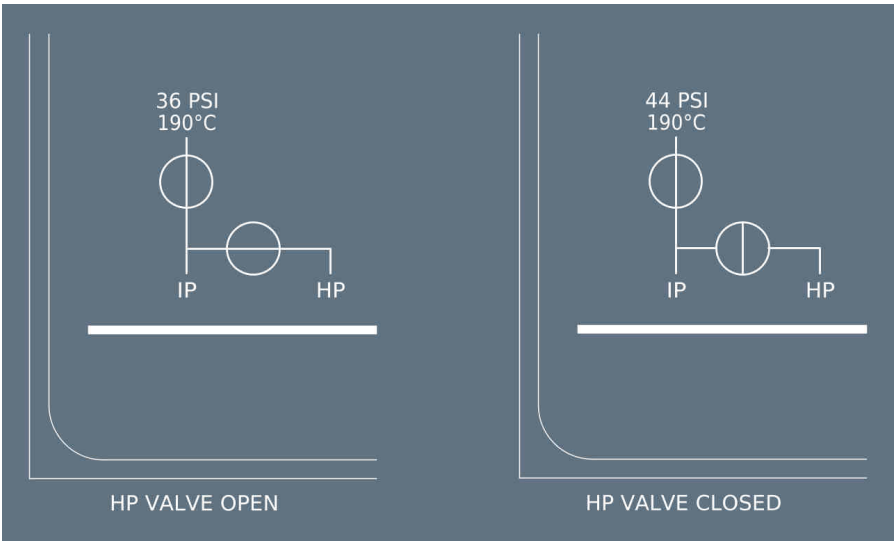
Ident.: DSC-36-10-20-00001471.0001001 / 09 OCT 12
Applicable to: MSN 01767-01920

Air is normally bled from the intermediate pressure stage (IP) of engine's high-pressure (HP) compressor to minimize fuel penalty.
At low engine speed, when the pressure and temperature of the IP air are too low, the system bleeds air from the HP stage and maintains it at 36 ± 4 PSI.
An intermediate pressure check valve downstream of the IP port closes to prevent air from the HP stage from being circulated to the IP stage.

L3 The HP valve closes automatically:

- Pneumatically
  - In case of low upstream pressure
  - In case of excessive upstream pressure
- Electrically when the bleed valve is closed electrically.

ECAM INDICATION



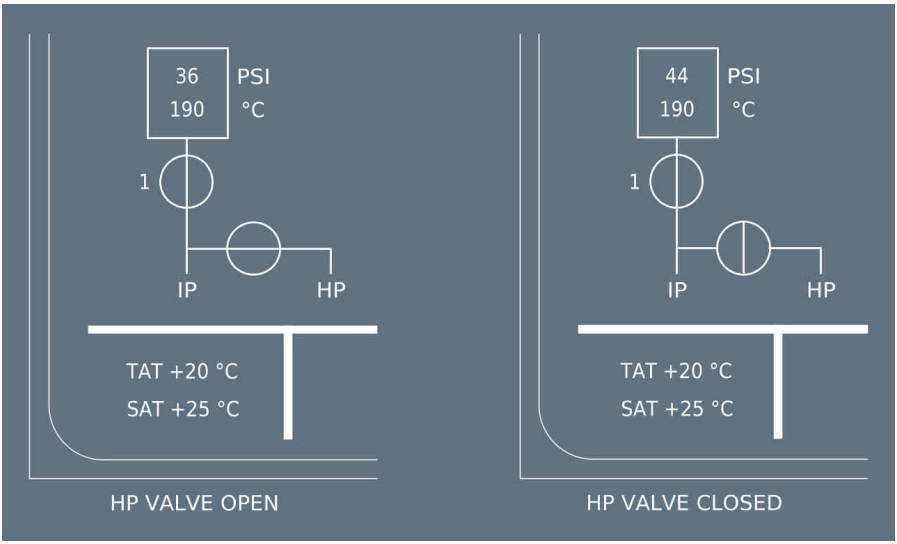
AIR BLEED SELECTION

Ident.: DSC-36-10-20-00001471.0003001 / 09 OCT 12
Applicable to: MSN 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Air is normally bled from the intermediate pressure stage (IP) of engine's high-pressure (HP) compressor to minimize fuel penalty.
At low engine speed, when the pressure and temperature of the IP air are too low, the system bleeds air from the HP stage and maintains it at 36 ± 4 PSI.
An intermediate pressure check valve downstream of the IP port closes to prevent air from the HP stage from being circulated to the IP stage.

L3 The HP valve closes automatically
- • In case of low upstream pressure
  • in case of excessive upstream pressure
- electrically when the bleed valve is closed electrically.

ECAM INDICATION



AIR BLEED SELECTION

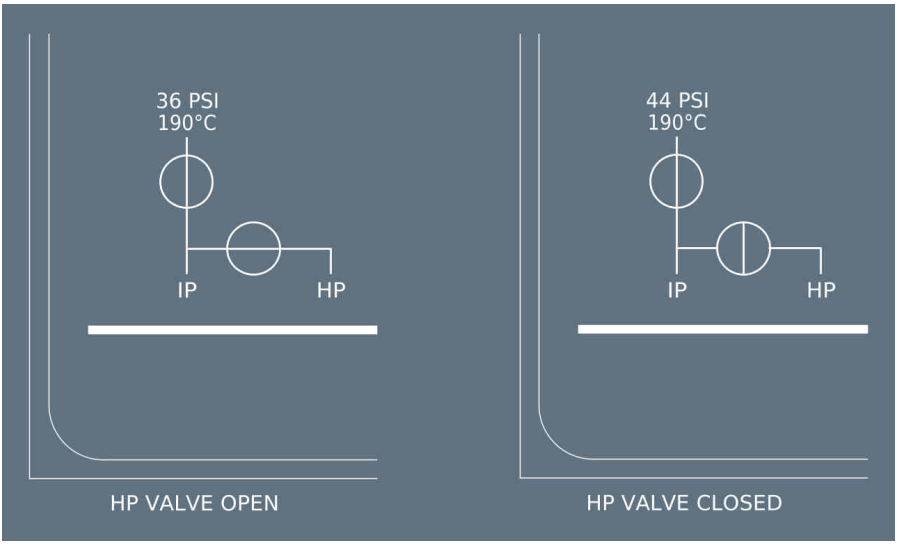
Ident.: DSC-36-10-20-00001471.0002001 / 09 OCT 12
Applicable to: MSN 02108, 02195-02359, 02405, 02482

Air is normally bled from the intermediate pressure stage (IP) of engine's high-pressure (HP) compressor to minimize fuel penalty.
At low engine speed, when the pressure and temperature of the IP air are too low, the system bleeds air from the HP stage and maintains it at 36 ± 4 PSI.
An intermediate pressure check valve downstream of the IP port closes to prevent air from the HP stage from being circulated to the IP stage.

L3 The HP valve closes automatically:

- Pneumatically:
  - In case of low upstream pressure
  - in case of excessive upstream pressure
- Electrically:
  - When the bleed valve is closed electrically
  - In case of overpressure upstream of the HP valve with wing anti-ice off, two packs on and aircraft altitude above 15 000 ft.

ECAM INDICATION



AIR BLEED SELECTION

Ident.: DSC-36-10-20-00001471.0004001 / 09 OCT 12

3 **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

Air is normally bled from the intermediate pressure stage (IP) of engine's high-pressure (HP) compressor to minimize fuel penalty.

At low engine speed, when the pressure and temperature of the IP air are too low, the system bleeds air from the HP stage and maintains it at 36 ± 4 PSI.

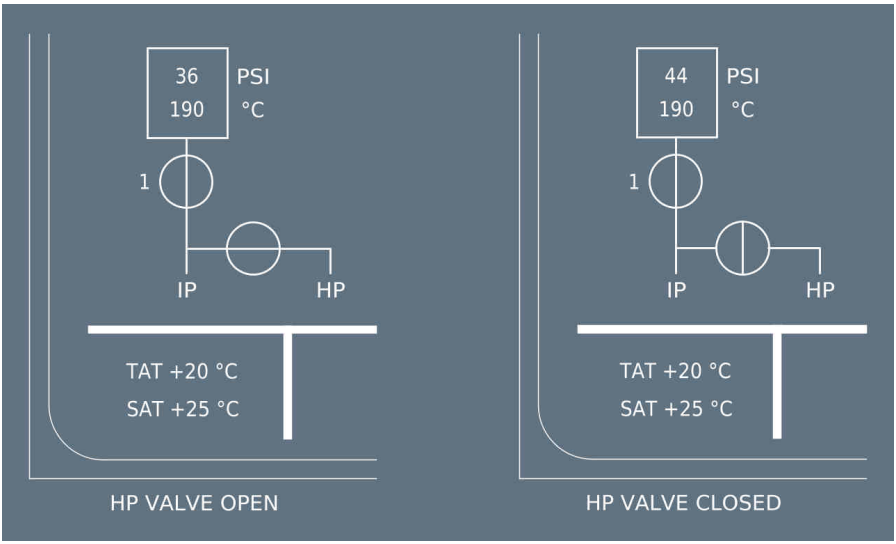
An intermediate pressure check valve downstream of the IP port closes to prevent air from the HP stage from being circulated to the IP stage.

L3 The HP valve closes automatically

- In case of low upstream pressure
- in case of excessive upstream pressure

- electrically :
  - when the bleed valve is closed electrically
  - in case of overpressure upstream of the HP valve with wing anti-ice off, two packs on and aircraft altitude above 15 000 ft.

ECAM INDICATION



AIR BLEED SELECTION

Ident.: DSC-36-10-20-00001471.0010001 / 25 JUL 16
Applicable to: MSN 06720-06772, 06819-06829, 06860-06868, 06914-06946, 06967-07033, 07083-07192, 07329, 07391-07914, 07961

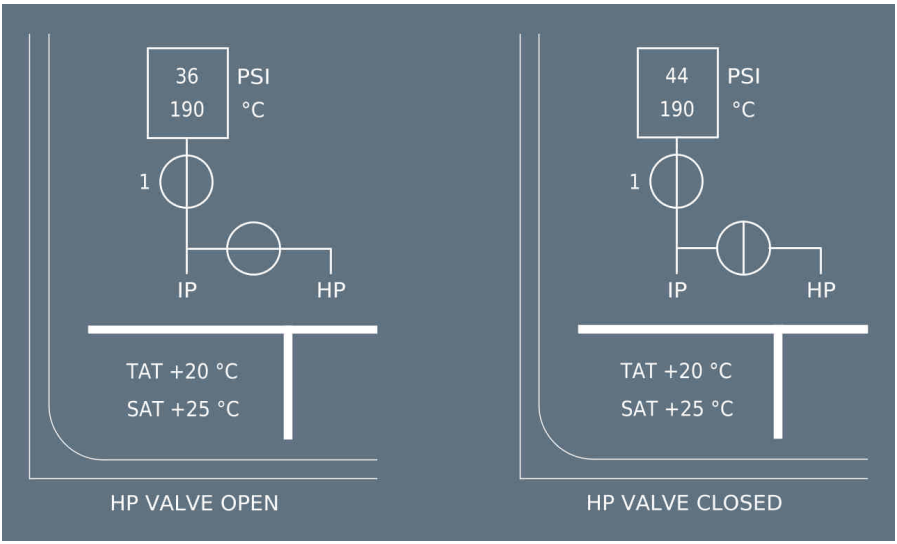
Air is normally bled from the intermediate pressure stage (IP) of engine's high-pressure (HP) compressor to minimize fuel penalty.
At low engine speed, when the pressure and temperature of the IP air are too low, the system bleeds air from the HP stage and maintains it at 65 ± 15 PSI.
An intermediate pressure check valve downstream of the IP port closes to prevent air from the HP stage from being circulated to the IP stage.

L3 The HP valve closes automatically

- • In case of low upstream pressure
  • in case of excessive upstream pressure
- electrically when the bleed valve is closed electrically.

Note: *If the bleed valves are closed due to APU bleed set to ON, the HP valves close 60 s after the closure of the bleed valves.*

ECAM INDICATION



AIR BLEED SELECTION

Ident.: DSC-36-10-20-00001471.0011001 / 08 DEC 17

[4] **Applicable to: MSN 06799, 06849, 06904, 06952, 07053, 07252, 07331, 07931, 08077-09063**

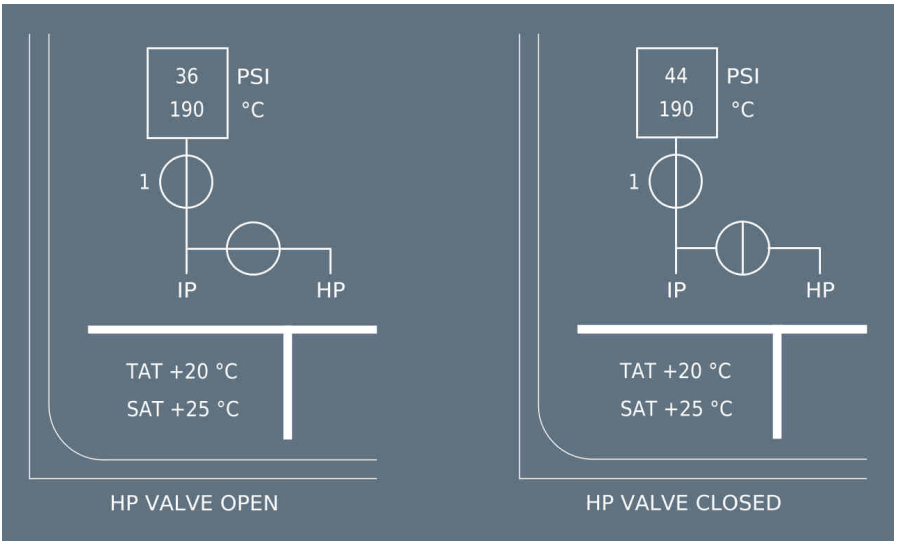
Air is normally bled from the intermediate pressure stage (IP) of engine's high-pressure (HP) compressor to minimize fuel penalty.
At low engine speed, when the pressure and temperature of the IP air are too low, the system bleeds air from the HP stage and maintains it at 65 ± 15 PSI.
An intermediate pressure check valve downstream of the IP port closes to prevent air from the HP stage from being circulated to the IP stage.

L3 The HP valve closes automatically

- • In case of low upstream pressure
  • in case of excessive upstream pressure
- electrically when the bleed valve is closed electrically.

Note: *If the bleed valves are closed due to APU bleed set to ON, the HP valves close 30 s after the closure of the bleed valves.*

ECAM INDICATION



PRESSURE REGULATION AND LIMITATION

Ident.: DSC-36-10-20-00001472.0001001 / 09 NOV 17
Applicable to: MSN 01767-02121, 02138, 02204, 02359-02443, 02482-02670, 02737-02914, 03138

The bleed valve, which is downstream of the junction of HP and IP ducting, acts as a shut-off and pressure regulating valve.
It maintains delivery pressure at 45 ± 5 PSI.

Note: *Bleed pressure may fluctuate between 38 and 56 PSI (with a maximum peak to peak pressure of 16 PSI) particularly at high engine power (takeoff or climb) up to FL 100.*

The bleed valve is fully closed:
- Pneumatically:
  - If upstream pressure goes below 8 PSI
  - If there is return flow
- Electrically by means of:
  - The BLEED pushbutton switch (switched OFF)
  - The ENG FIRE pushbutton (pushed)
  - The Bleed air Monitoring Computer (BMC) in the following cases:
    - Overtemperature
    - Overpressure
    - Leak
    - Open starter valve
    - APU bleed being ON.

If pressure regulation fails, the overpressure valve closes when the pressure goes over 75 PSI.

Note: *If APU Bleed is ON and the crossbleed valve is SHUT, the Engine bleed valve 2, remains open.*

PRESSURE REGULATION AND LIMITATION

Ident.: DSC-36-10-20-00001472.0004001 / 09 NOV 17

5 **Applicable to: MSN 02135, 02139-02195, 02275-02334, 02457, 02712, 03071, 03264-06336**

The bleed valve, which is downstream of the junction of HP and IP ducting, acts as a shut-off and pressure regulating valve.
It maintains delivery pressure at 45 ± 5 PSI.

Note: *Bleed pressure may fluctuate between 38 and 56 PSI (with a maximum peak to peak pressure of 16 PSI) particularly at high engine power (takeoff or climb) up to FL 100.*

The bleed valve is fully closed:

- Pneumatically:
  - If upstream pressure goes below 8 PSI
  - If there is return flow
- Electrically by means of:
  - The BLEED pushbutton switch (switched OFF)
  - The ENG FIRE pushbutton (pushed)
  - The Bleed air Monitoring Computer (BMC) in the following cases:
    - Overtemperature
    - Overpressure
    - Leak
    - Open starter valve
    - Engine shutdown
    - APU bleed being ON.

If pressure regulation fails, the overpressure valve closes when the pressure goes over 75 PSI.

Note: *If APU Bleed is ON and the crossbleed valve is SHUT, the Engine bleed valve 2, remains open.*

PRESSURE REGULATION AND LIMITATION

Ident.: DSC-36-10-20-00001472.0003001 / 15 MAR 17

6 **Applicable to: MSN 06720-09063**

The bleed valve, which is downstream of the junction of HP and IP ducting, acts as a shut-off and pressure regulating valve.
It maintains delivery pressure at 51 ± 9 PSI.

The bleed valve is fully closed:
- Pneumatically:
  - If upstream pressure goes below 15 PSI
  - If there is return flow
- Electrically by means of:
  - The BLEED pushbutton switch (switched OFF)
  - The ENG FIRE pushbutton (pushed)
  - The Bleed air Monitoring Computer (BMC) in the following cases:
    - Overtemperature
    - Overpressure
    - Leak
    - Open starter valve
    - Engine shutdown
    - APU bleed being ON
    - No bleed consumers
    - HPV failed open
    - Bleed temperature lost

If pressure regulation fails, the overpressure valve closes when the pressure goes over 75 PSI.

Note: *If APU Bleed is ON and the crossbleed valve is SHUT, the Engine bleed valve 2, remains open.*

TEMPERATURE REGULATION AND LIMITATION

Ident.: DSC-36-10-20-00001473.0001001 / 21 MAR 16

7 **Applicable to: MSN 01767-06336**

A precooler downstream of the bleed valve regulates the temperature of the bleed air.
The precooler is an air-to-air heat exchanger that uses cooling air bleed from the engine fan to regulate the temperature to approximately 200 °C.
The fan air valve controls fan air flow.
A spring keeps the fan air valve closed in the absence of pressure.

TEMPERATURE REGULATION AND LIMITATION

Ident.: DSC-36-10-20-00001473.0002001 / 28 NOV 17

8 **Applicable to: MSN 06720-09063**

A precooler downstream of the bleed valve regulates the temperature of the bleed air.

The precooler is an air-to-air heat exchanger that uses cooling air bleed from the engine fan to regulate the temperature to approximately 200 °C (or 160 °C during climb or hold with the two engine bleeds but without the wing anti-ice).
The fan air valve controls fan air flow.
A spring keeps the fan air valve closed in the absence of pressure.

GENERAL

Ident.: DSC-36-10-30-00001474.0001001 / 09 NOV 17
Applicable to: ALL

Air from the APU load compressor is available on ground and in flight.
The APU bleed valve operates as a shut-off valve to control APU bleed air.
The APU BLEED pb-sw, on the AIR COND panel, controls the APU bleed valve. When the flight crew selects ON with the pushbutton, APU bleed air supplies the pneumatic system, if the APU speed is above 95 %. This opens the crossbleed valve and closes the engine bleed automatically.
If the APU bleed valve is opened, it automatically closes in the case of APU leak, left wing leak, or pylon 1 leak (except during engine start). *Refer to DSC-36-10-50 Leak Detection*.
A check valve near the crossbleed duct protects the APU, when bleed air comes from another source.

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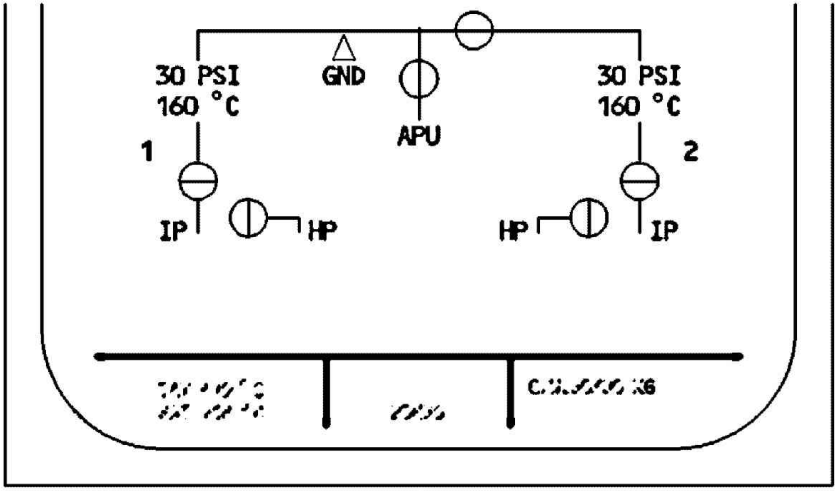
GENERAL

Ident.: DSC-36-10-40-00001476.0001001 / 21 MAR 16
Applicable to: ALL

A crossbleed valve on the crossbleed duct allows the air supply systems of the two engines to be isolated or interconnected.
On the AIR COND panel, a rotary selector controls the crossbleed valve electrically.
Two electric motors, one for automatic mode and one for manual mode, control the valve.
In automatic mode, the crossbleed valve opens when the system uses APU bleed air. It closes, if the system detects an air leak (except during engine start).

ECAM INDICATION

Ident.: DSC-36-10-40-00001478.0001001 / 17 MAR 11
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

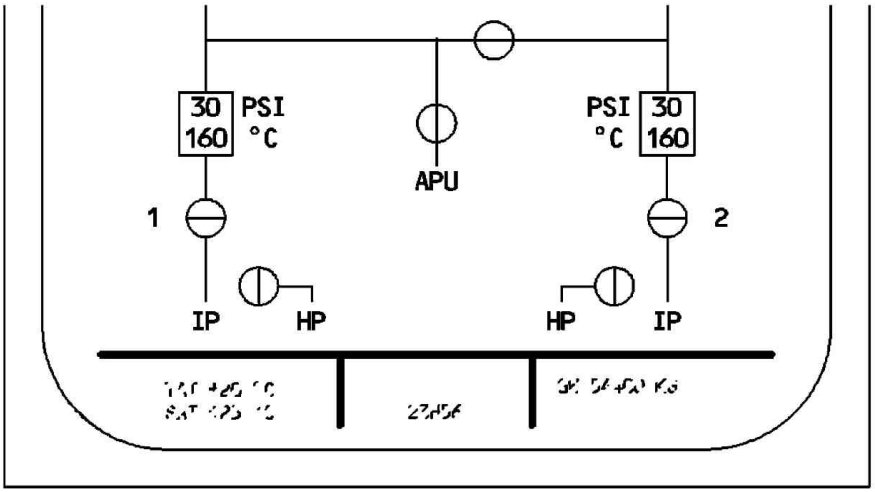


X-BLEED VALVE OPEN-AIR SUPPLIED FROM APU

ECAM INDICATION

Ident.: DSC-36-10-40-00001478.0002001 / 21 MAR 16

1 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**



X-BLEED VALVE OPEN.AIR SUPPLIED FROM APU

LEAK DETECTION

Ident.: DSC-36-10-50-00001479.0001001 / 15 MAR 17

[1] **Applicable to: MSN 01767-06336**

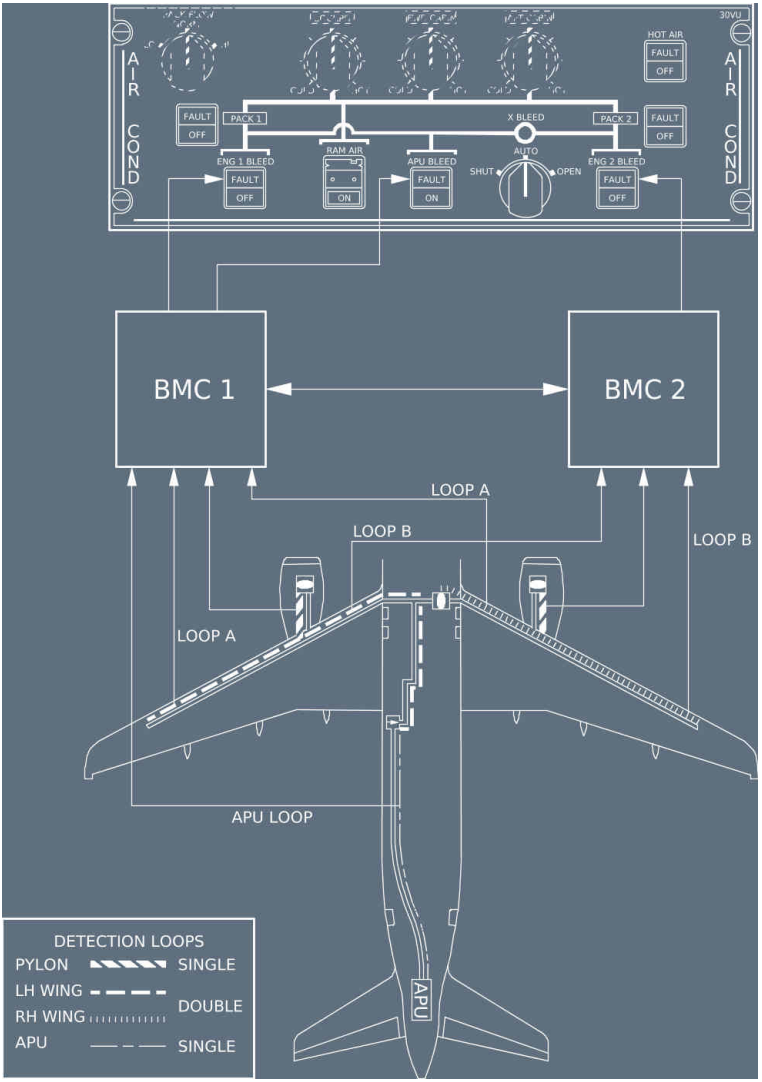
Leak detection loops detect any overheating near the hot air ducts in the fuselage, pylons, and wings.

For the pylon and APU, the sensing elements are tied to form a single loop and for the wing, a double loop.

When the two wing loops detect a leak, or when one loop detects the leak and the other one is inoperative, they activate a wing leak signal.

BMC1 and BMC2 each contain identical control logic for the system.

- A wing leak signal causes :
  - the bleed valve on the related side to close automatically
  - the associated FAULT light on the AIR COND panel to come on
  - the x-bleed valve to close automatically (except during an engine start)
  - the APU bleed valve to close automatically if the APU bleed valve is open and if the leak concerns the left wing (except during engine start).
- A pylon leak signal causes :
  - the bleed valve on the related side to close automatically
  - the FAULT light for the related engine on the AIR COND panel to come on
  - the x-bleed valve to close automatically (except during an engine start).
  - the APU bleed valve to close automatically if the APU bleed valve is open and if the leak concerns the pylon 1 (except during engine start).
- An APU leak signal causes :
  - the APU bleed valve to close automatically (except during engine start).
  - the FAULT light the APU BLEED pushbutton switch on the AIR COND panel to come on
  - the x-bleed valve to close automatically (except during an engine start).


AIR COND
FAULT
OFF
PACK 1
X BLEED
PACK 2
HOT AIR
ENG 1 BLEED
RAM AIR
APU BLEED
AUTO
SHUT
OPEN
ENG 2 BLEED
ON
BMC 1
BMC 2
LOOP A
LOOP B
APU LOOP
APU
DETECTION LOOPS
PYLON
SINGLE
LH WING
RH WING
DOUBLE
APU
SINGLE

LEAK DETECTION

Ident.: DSC-36-10-50-00001479.0002001 / 15 MAR 17

[2] **Applicable to: MSN 06720-09063**

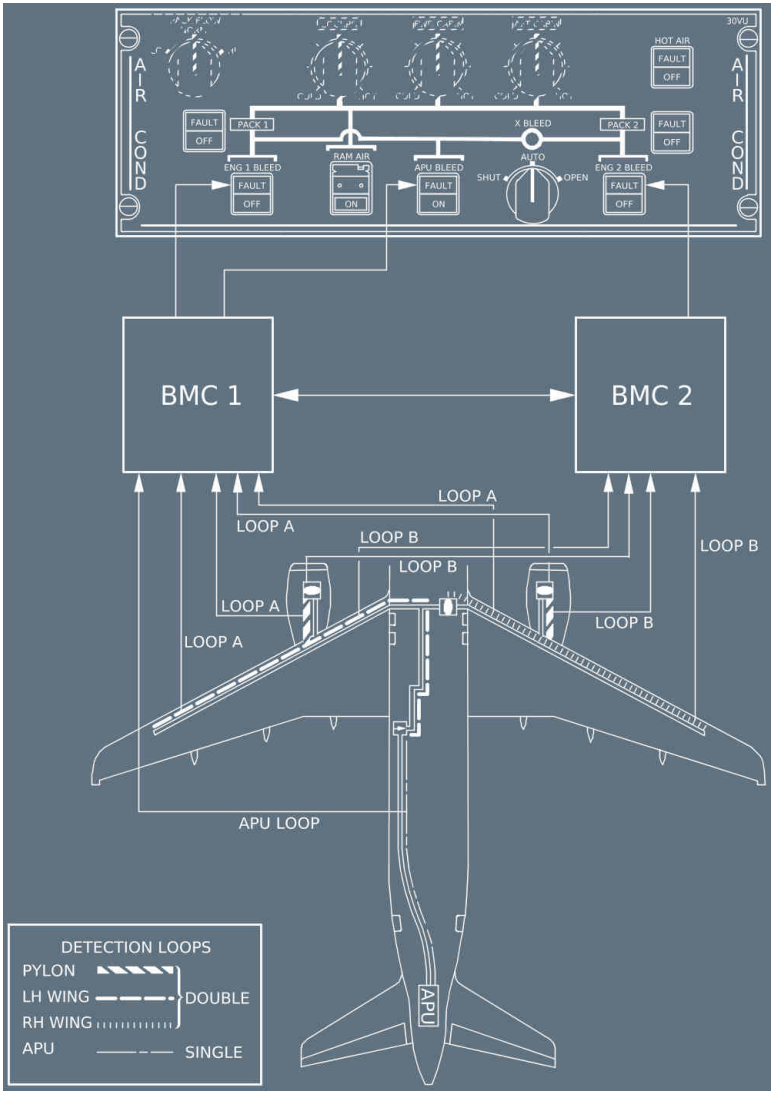
Leak detection loops detect any overheating near the hot air ducts in the fuselage, pylons, and wings.

For the pylon and the wing, the sensing elements are tied to form a double loop and for the APU, a single loop.

When the two wing/pylon loops detect a leak, or when one loop detects the leak and the other one is inoperative, they activate a wing/pylon leak signal.

BMC1 and BMC2 each contain identical control logic for the system.

- A wing leak signal causes :
  - the bleed valve on the related side to close automatically
  - the associated FAULT light on the AIR COND panel to come on
  - the x-bleed valve to close automatically (except during an engine start)
  - the APU bleed valve to close automatically if the APU bleed valve is open and if the leak concerns the left wing (except during engine start).
- A pylon leak signal causes :
  - the bleed valve on the related side to close automatically
  - the FAULT light for the related engine on the AIR COND panel to come on
  - the x-bleed valve to close automatically (except during an engine start).
  - the APU bleed valve to close automatically if the APU bleed valve is open and if the leak concerns the pylon 1 (except during engine start).
- An APU leak signal causes :
  - the APU bleed valve to close automatically (except during engine start).
  - the FAULT light the APU BLEED pushbutton switch on the AIR COND panel to come on
  - the x-bleed valve to close automatically (except during an engine start).


AIR COND
HOT AIR
FAULT
OFF
PACK 1
X BLEED
PACK 2
ENG 1 BLEED
RAM AIR
APU BLEED
AUTO
SHUT
OPEN
ENG 2 BLEED
ON
BMC 1
BMC 2
LOOP A
LOOP B
APU LOOP
APU
DETECTION LOOPS
PYLON
LH WING
RH WING
APU
DOUBLE
SINGLE

BMC FAILURE

Ident.: DSC-36-10-60-00001480.0001001 / 21 MAR 16

1 **Applicable to: MSN 01767-06336**

If one BMC fails, the adjacent BMC takes over the monitoring of the bleed system to issue the following ECAM warnings if necessary :

- overpressure
- overtemperature
- wing leak.

Nevertheless, the associated FAULT light on the AIR COND panel is lost, and the associated bleed valve does not close automatically.
ENG BLEED LEAK warning is lost for the associated engine, as is also the APU BLEED LEAK warning if BMC1 has failed.

BMC FAILURE

Ident.: DSC-36-10-60-00001480.0002001 / 21 MAR 16

2 **Applicable to: MSN 06720-09063**

If one BMC fails, the adjacent BMC takes over the control and the monitoring of the bleed system to issue the following ECAM warnings if necessary :

- overpressure
- wing leak.

Nevertheless, the associated overtemperature protection is lost, and the associated bleed valve does not close automatically.
The APU BLEED LEAK warning is also lost if BMC1 has failed.

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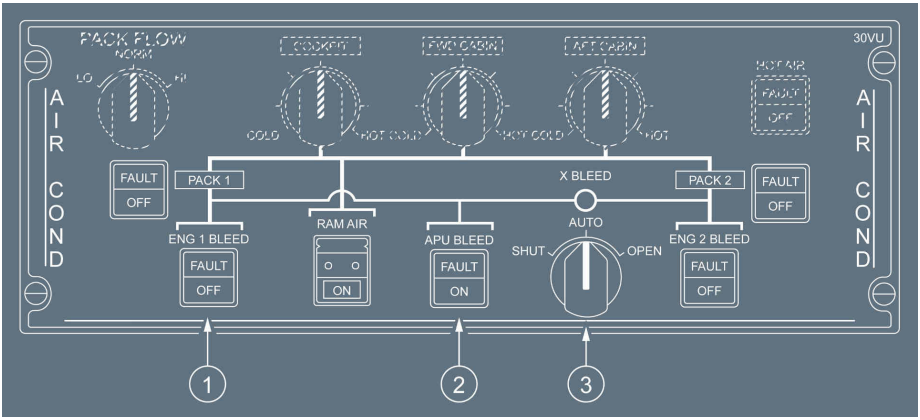
OVERHEAD PANEL

Ident.: DSC-36-20-00001481.0001001 / 09 NOV 17

[1] **Applicable to: MSN 01767-06336**



(1) ENG 1 and ENG 2 BLEED pb sw

On : Bleed valve opens if :
- Upstream pressure is above 8 PSI.
- APU BLEED pushbutton switch is off or APU bleed valve is closed.
- There is no onside wing or pylon leak, and no overpressure or overtemperature has been detected.
- The ENG FIRE pushbutton has not been popped out.
- The engine start valve is closed.

FAULT lt : This amber light comes on, and an ECAM caution appears, if :
- There is an overpressure downstream of the bleed valve.
- There is a bleed air overheat.
- There is a wing or pylon leak on the related side.
- The bleed valve is not closed during engine start.
- The bleed valve is not closed with APU bleed ON.

It goes out when the ENG BLEED pushbutton switch is OFF if the fault has disappeared.

OFF : The bleed valve and HP valve close. The white OFF light comes on.

(2) APU BLEED pb sw

ON : The APU valve opens if N > 95 % and there is no leak in the APU or in the left side bleed. (If there is a leak on the right side, the x-bleed valve closes.) The blue ON light comes on.

Off : The APU valve closes.

FAULT light : This amber light comes on, and an ECAM caution appears, when the system detects an APU leak.

(3) X-BLEED selector sw

AUTO : The crossbleed valve is open if the APU bleed valve is open. The crossbleed valve is closed if the APU bleed valve is closed or, in case of a wing, pylon, or APU leak (except during engine start).

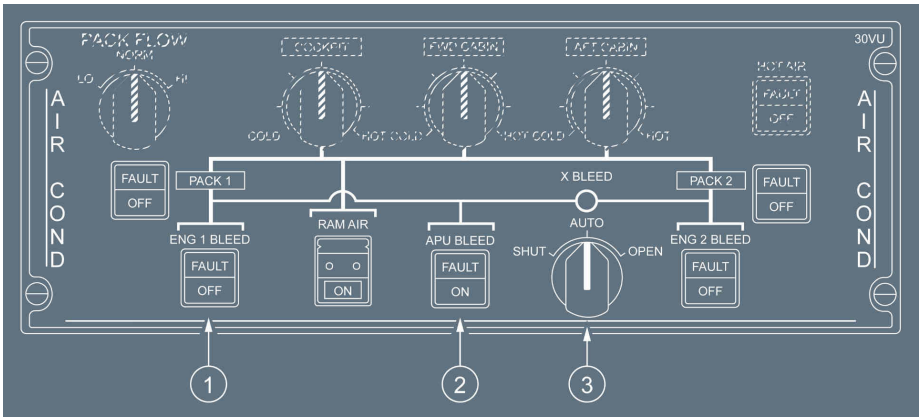
OPEN : The crossbleed valve is open.

SHUT : The crossbleed valve is closed.

OVERHEAD PANEL

Ident.: DSC-36-20-00001481.0002001 / 09 NOV 17

2 **Applicable to: MSN 06720-09063**



(1) ENG 1 and ENG 2 BLEED pb sw

On : Bleed valve opens if :
- Upstream pressure is above 15 PSI.
- APU BLEED pb-sw is off or APU bleed valve is closed.
- There is no onside wing or pylon leak, and no overpressure or overtemperature has been detected.
- The ENG FIRE pb has not been popped out.
- The engine start valve is closed.
- At least one bleed consumer (Pack or WAI) is ON on the same side or at least one bleed consumer is ON on the opposite side with the crossbleed valve is open.

FAULT lt : This amber light comes on, and an ECAM caution appears, if :
- There is an overpressure downstream of the bleed valve.
- There is a bleed air overheat.
- There is a wing or pylon leak on the related side.
- The bleed valve is not closed during engine start.
- The bleed valve is not closed with APU bleed ON.
- HP valve failed open on ground.
- Single BTS failure on ground or BTS disagree on ground.
- Dual BTS failure in flight or on ground.
- Fan Duct burst detected by the FADEC (LEAP-1A engines only).

It goes out when the ENG BLEED pb-sw is OFF if the fault has disappeared.

OFF : The bleed valve, fan air valve and HP valve close. The white OFF light comes on.

(2) APU BLEED pb sw

ON : The APU valve opens if N > 95 % and there is no leak in the APU or in the left side bleed. (If there is a leak on the right side, the x-bleed valve closes.)
The blue ON light comes on.

Off : The APU valve closes.

FAULT light : This amber light comes on, and an ECAM caution appears, when the system detects an APU leak.

(3) X-BLEED selector sw

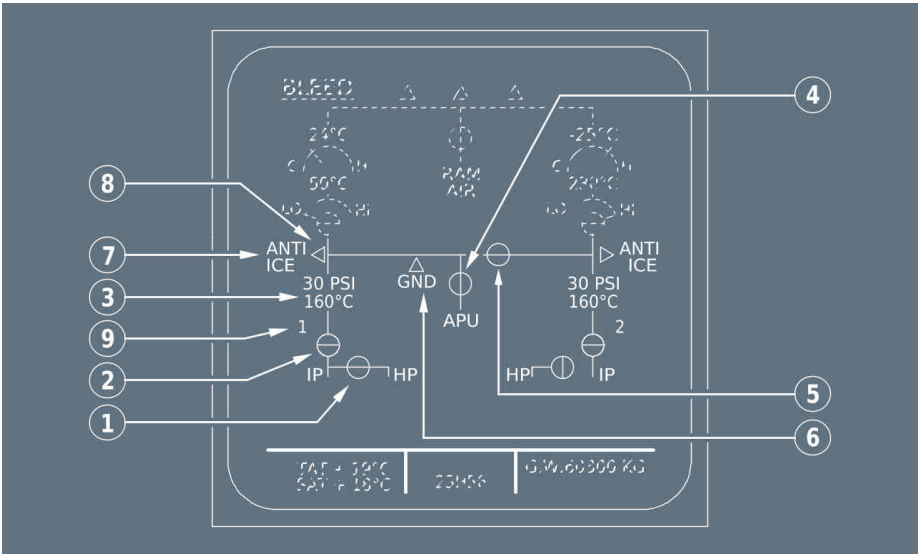
AUTO : The crossbleed valve is open if the APU bleed valve is open.
The crossbleed valve is closed if the APU bleed valve is closed or, in case of a wing, pylon, or APU leak (except during engine start).

OPEN : The crossbleed valve is open.

SHUT : The crossbleed valve is closed.

ECAM BLEED PAGE

Ident.: DSC-36-20-00001482.0003001 / 09 OCT 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482



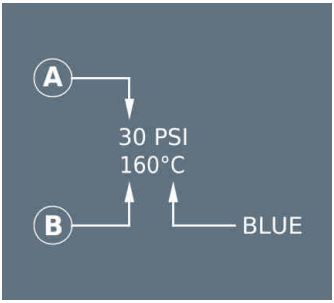
(1) HP VALVES

Crossline - Green : HP valve normally fully closed
In line - Green : HP valve not fully closed
Crossline - Amber : HP valve not in commanded (closed) position

(2) ENGINE BLEED VALVES

In line - Green : BLEED valve normally open
Crossline - Green : BLEED valve normally fully closed
In line - Amber : BLEED valve not in commanded (open) position
Crossline - Amber : BLEED valve not in commanded (closed) position

(3) ENGINE BLEED INDICATIONS



(A) Precooler inlet pressure
It is normally in green.
It becomes amber, if under 4 PSI, or if overpressure is detected by the BMC (threshold between 57 and 60 PSI).

(B) Precooler outlet temperature
It is normally in green.
It becomes amber, if the BMC detects an overheat or low temperature.

Overheat: Temperature exceeds:
- 290 °C for more than 5 s, or
- 270 °C for more than 15 s, or
- 257 °C for more than 55 s

Low temperature is detected, if the temperature is lower than 150 °C.

Note: When the engines are at idle, and depending on the ambient temperature, the precooler outlet temperature may be below 150 °C (displayed amber).

(4) APU BLEED VALVE

Crossline - Green	:	The APU valve is not fully open, and the APU master switch is ON.
In line - Green	:	The APU valve is fully open, and the APU master switch is ON.
Crossline - Amber	:	The APU valve is fully closed, the APU master switch is ON, and the APU bleed switch is ON for more than 10 s.

(5) CROSSBLEED VALVE

Crossline - Green	:	The crossbleed valve is normally closed.
In line - Green	:	The crossbleed valve is normally open.
Crossline - Amber	:	The crossbleed valve is not in the commanded (closed) position.

In line - Amber : The crossbleed valve is not in the commanded (open) position.

Transit - Amber : The crossbleed valve is in transit.

(6) GND HP ground connection indication

: On ground, it is displayed in green.

(7) ANTI ICE indication

It is displayed in white, when the WING pushbutton on the ANTI-ICE panel is ON.

(8) Arrow

: - It is normally not displayed, when the corresponding valve is closed.
- It is normally displayed in green, when the corresponding valve is open.
- It becomes amber, when the
  - Valve is open and air pressure is low or high, or
  - Valve is open on ground for more than 10 s.

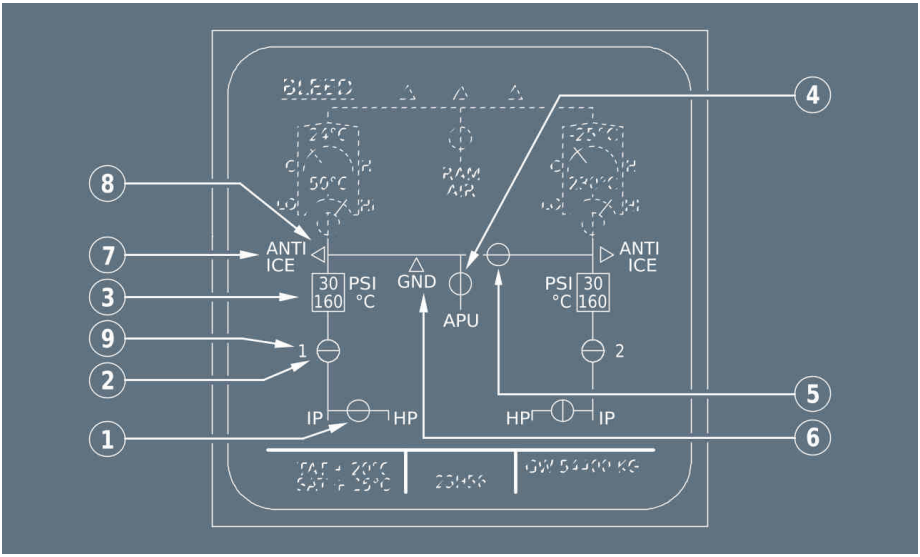
(9) Engine identification (1-2)

It is normally in white.

It becomes amber, when engine N2 is below idle.

ECAM BLEED PAGE

Ident.: DSC-36-20-00001482.0002001 / 09 OCT 12
Applicable to: MSN 02388, 02584-02626, 02804, 03308, 04294, 04314, 04393, 04433, 04510



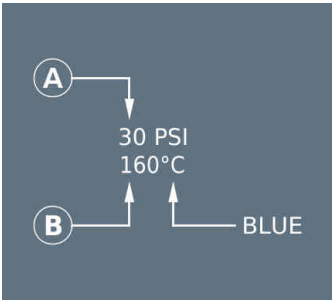
(1) HP VALVES

Crossline - Green	:	HP valve normally fully closed
In line - Green	:	HP valve not fully closed
Crossline - Amber	:	HP valve not in commanded (closed) position

(2) ENGINE BLEED VALVES

In line - Green	:	BLEED valve normally open
Crossline - Green	:	BLEED valve normally fully closed
In line - Amber	:	BLEED valve not in commanded (open) position
Crossline - Amber	:	BLEED valve not in commanded (closed) position

(3) ENGINE BLEED INDICATIONS



(A) Precooler inlet pressure
It is normally in green.
It becomes amber, if under 4 PSI, or if overpressure is detected by the BMC (threshold between 57 and 60 PSI).

(B) Precooler outlet temperature
It is normally in green.
It becomes amber, if the BMC detects an overheat or low temperature.

Overheat: Temperature exceeds:
- 290 °C for more than 5 s, or
- 270 °C for more than 15 s, or
- 257 °C for more than 55 s

Low temperature is detected, if the temperature is lower than 150 °C.

Note: When the engines are at idle, and depending on the ambient temperature, the precooler outlet temperature may be below 150 °C (displayed amber).

(4) APU BLEED VALVE

Crossline - Green	:	The APU valve is not fully open, and the APU master switch is ON.
In line - Green	:	The APU valve is fully open, and the APU master switch is ON.
Crossline - Amber	:	The APU valve is fully closed, the APU master switch is ON, and the APU bleed switch is ON for more than 10 s.

(5) CROSSBLEED VALVE

Crossline - Green	:	The crossbleed valve is normally closed.
In line - Green	:	The crossbleed valve is normally open.
Crossline - Amber	:	The crossbleed valve is not in the commanded (closed) position.

In line - Amber : The crossbleed valve is not in the commanded (open) position.

Transit - Amber : The crossbleed valve is in transit.

(6) GND HP ground connection indication

: Displayed in white when the aircraft is on ground.

(7) ANTI ICE indication

It is displayed in white, when the WING pushbutton on the ANTI-ICE panel is ON.

(8) Arrow

: - It is normally not displayed, when the corresponding valve is closed.
- It is normally displayed in green, when the corresponding valve is open.
- It becomes amber, when the
  - Valve is open and air pressure is low or high, or
  - Valve is open on ground for more than 10 s.

(9) Engine identification (1-2)

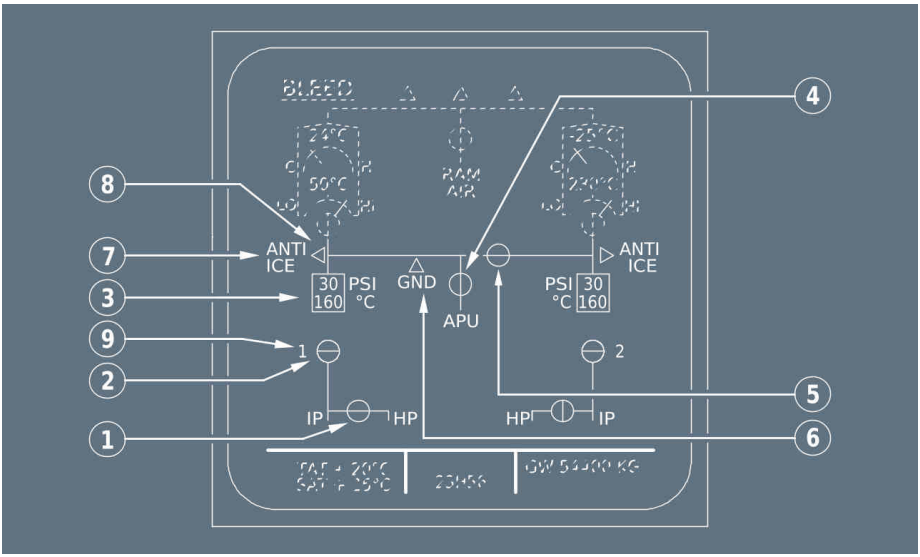
It is normally in white.

It becomes amber, when engine N2 is below idle.

ECAM BLEED PAGE

Ident.: DSC-36-20-00001482.0004001 / 03 APR 13

[3] **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02649-02737, 02908-03264, 03330-04216, 04312, 04328-04384, 04394-04399, 04438-04506, 04518-09063**



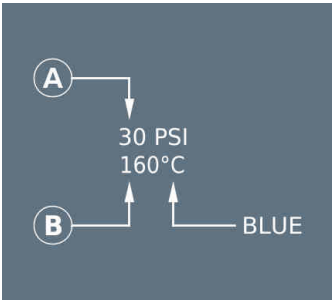
(1) HP VALVES

Crossline - Green	:	HP valve normally fully closed
In line - Green	:	HP valve not fully closed
Crossline - Amber	:	HP valve not in commanded (closed) position

(2) ENGINE BLEED VALVES

In line - Green	:	BLEED valve normally open
Crossline - Green	:	BLEED valve normally fully closed
In line - Amber	:	BLEED valve not in commanded (open) position
Crossline - Amber	:	BLEED valve not in commanded (closed) position

(3) ENGINE BLEED INDICATIONS



(A) Precooler inlet pressure
It is normally in green.
It becomes amber, if under 4 PSI, or if overpressure is detected by the BMC (threshold between 57 and 60 PSI).

(B) Precooler outlet temperature
It is normally in green.
It becomes amber, if the BMC detects an overheat or low temperature.

Overheat: Temperature exceeds:
- 290 °C for more than 5 s, or
- 270 °C for more than 15 s, or
- 257 °C for more than 55 s

Low temperature is detected, if the temperature is lower than 150 °C.

Note: When the engines are at idle, and depending on the ambient temperature, the precooler outlet temperature may be below 150 °C (displayed amber).

(4) APU BLEED VALVE

Crossline - Green	:	The APU valve is not fully open, and the APU master switch is ON.
In line - Green	:	The APU valve is fully open, and the APU master switch is ON.
Crossline - Amber	:	The APU valve is fully closed, the APU master switch is ON, and the APU bleed switch is ON for more than 10 s.

(5) CROSSBLEED VALVE

Crossline - Green	:	The crossbleed valve is normally closed.
In line - Green	:	The crossbleed valve is normally open.
Crossline - Amber	:	The crossbleed valve is not in the commanded (closed) position.

In line - Amber : The crossbleed valve is not in the commanded (open) position.

Transit - Amber : The crossbleed valve is in transit.

(6) GND HP ground connection indication

: Displayed in white when the aircraft is on ground.

(7) ANTI ICE indication

It is displayed in white, when the WING pushbutton on the ANTI-ICE panel is ON.

(8) Arrow

: - It is normally not displayed, when the corresponding valve is closed.
- It is normally displayed in green, when the corresponding valve is open.
- It becomes amber, when the
  - Valve is open and air pressure is low or high, or
  - Valve is open on ground for more than 10 s.

(9) Engine identification (1-2)

It is normally in white.

It becomes amber, when engine N2 is below idle.

MEMO DISPLAY

Ident.: DSC-36-20-00016746.0001001 / 21 MAR 16
Applicable to: ALL

APU BLEED : This memo appears in green, if the APU is available and the APU BLEED pb-sw is ON.

AIRCRAFT SYSTEMS

WATER / WASTE

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DSC-38-10 Description

General....A
Potable Water....B
Wastewater System....C
Toilet System....D

Intentionally left blank

Localization Title	Toc Index	ID	Reason
DSC-38-10 Potable Water	B	1	Effectivity update: The information now also applies to MSN 09063.
DSC-38-10 Potable Water	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

Intentionally left blank

GENERAL

Ident.: DSC-38-10-00017274.0001001 / 21 MAR 16
Applicable to: ALL

The water and waste systems :
- Distribute potable water to the toilets and the galleys
- Dispose waste water
- Store toilet wastes.

The systems are insulated to prevent water leaks and ice build up.
Controls of the water and waste systems are located on the Forward Attendant Panel (FAP).

POTABLE WATER

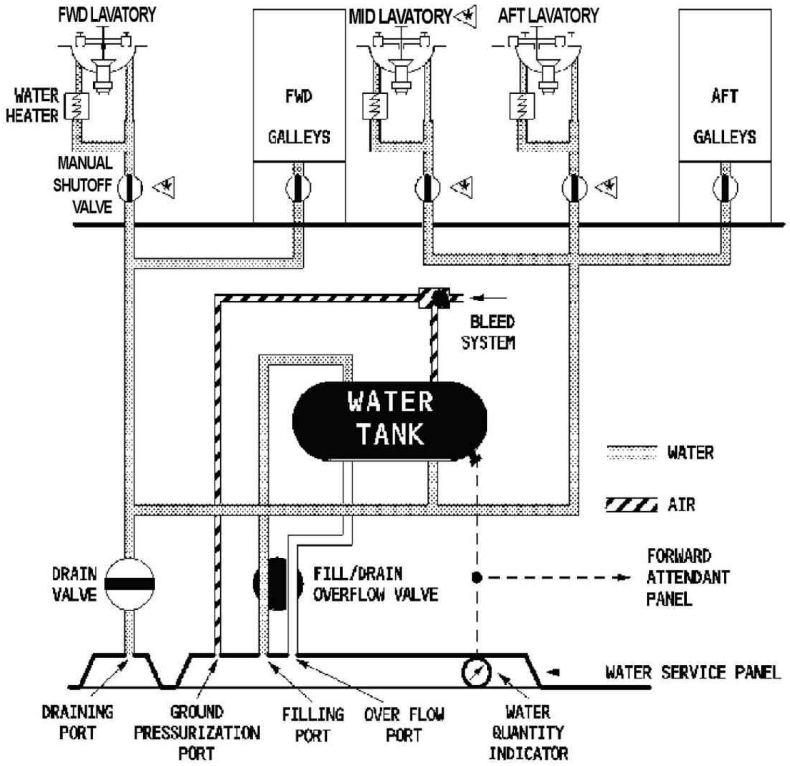
Ident.: DSC-38-10-A-00017286.0001001 / 21 MAR 16
1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Potable water is stored in a 200 l water tank (or 135 l water tank ◁) located in the AFT cargo compartment, in the wall on the left side.
On ground, the water system is pressurized by the air from the service panel pressure port. In flight, the water system is pressurized by the bleed air.
Potable water is piped to the galleys and lavatories. Manual shutoff valves ◁ isolate wet galleys, the FWD lavatory, the MID lavatory ◁ and the AFT lavatory from the water system. Manual shutoff valves are located under the washbasins or toilet bowls. The position of each valve is indicated by OPEN and SHUT legend.
The system can be filled or drained from the service panel at the bottom of the fuselage. The indication of the water quantity in the water tank is displayed on the FAP and the aft service panel.

Ident.: DSC-38-10-A-00017286.0002001 / 21 MAR 16
2 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Potable water is stored in a 200 l water tank located in front of the wing box, behind the FWD cargo compartment.
On ground, the water system is pressurized by the air from the service panel pressure port. In flight, the water system is pressurized by the bleed air.
Potable water is piped to the galleys and lavatories. Manual shutoff valves ◁ isolate wet galleys, the FWD lavatory, the MID lavatory ◁ and the AFT lavatory from the water system. Manual shutoff valves are located under the washbasins or toilet bowls. The position of each valve is indicated by OPEN and SHUT legend.
The system can be filled or drained from the service panel under the fuselage. The indication of the water quantity in the water tank is displayed on the FAP and the aft service panel.

Ident.: DSC-38-10-A-00017435.0001001 / 21 MAR 16
Applicable to: ALL

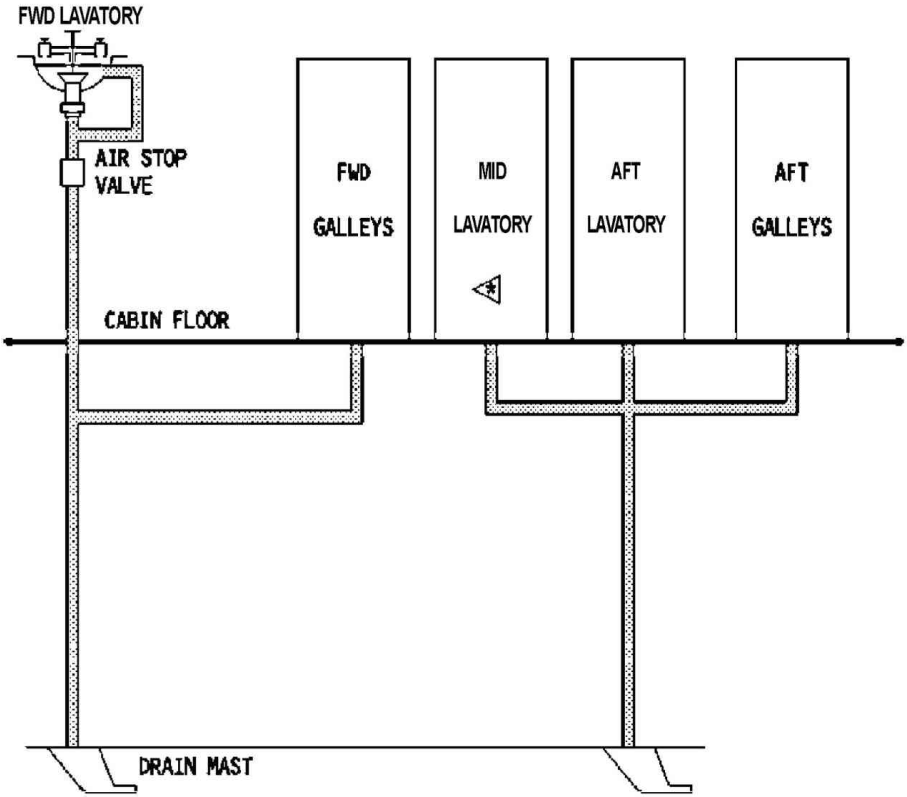


WASTEWATER SYSTEM

Ident.: DSC-38-10-00017287.0001001 / 21 MAR 16
Applicable to: ALL

The waste/water (from galleys and lavatories) drains overboard through two heated drain masts. The forward mast drains the waste/water from the forward cabin. The aft mast drains the waste/water from the aft cabin.

The waste and water are discharged by:
- Gravity, on ground
- Differential pressure, in flight.



TOILET SYSTEM

Ident.: DSC-38-10-00017288.0002001 / 21 MAR 16
Applicable to: ALL

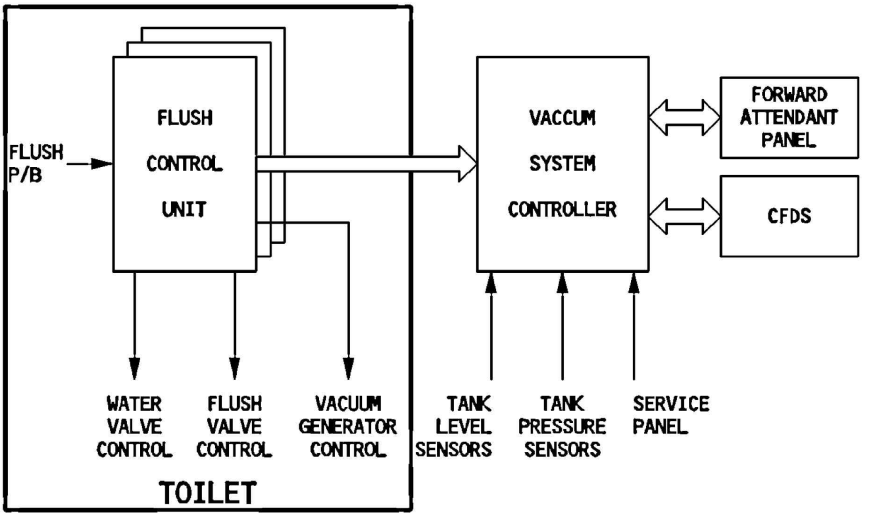
Differential pressure forces the waste from the toilet bowls into the waste tank. The waste tank has a usable capacity of 170 l. On ground, and in flight below 16 000 ft , the differential pressure is generated by the vacuum generator.
Clean water from the potable water system flushes toilets.

A flush control unit controls the flush sequence in each toilet.
The Vacuum System Controller (VSC) ensures system control, monitoring and fault reporting.

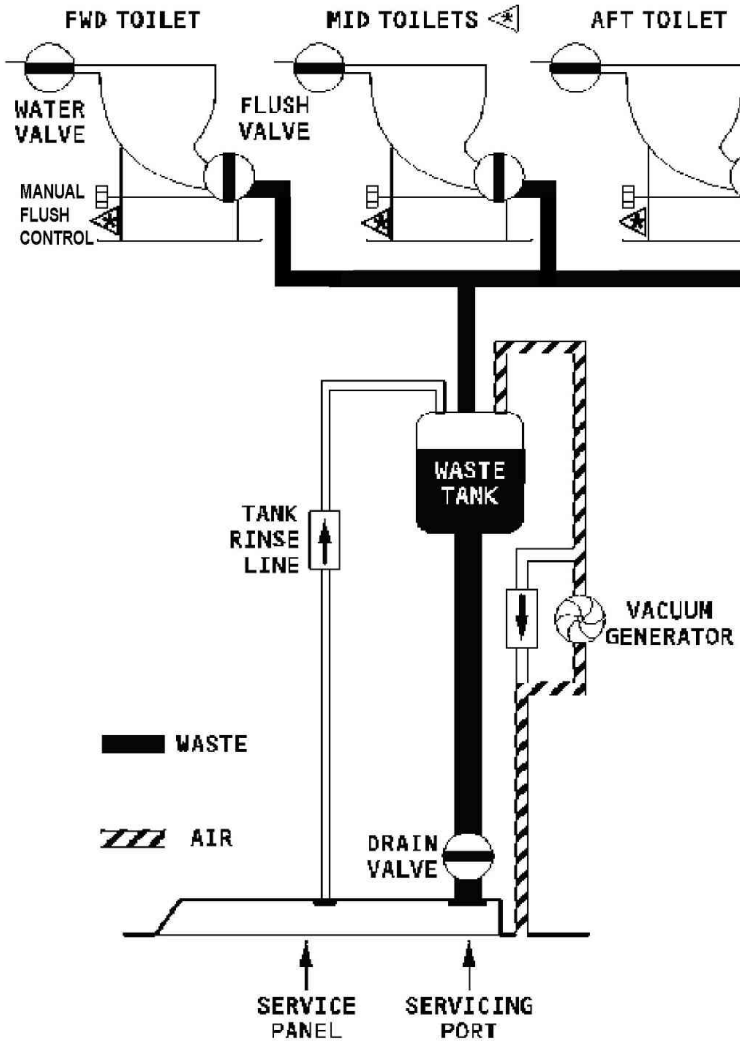
The VSC transmits information to:
- Flight attendant panel to indicate the waste tank levels and report system defects
- Centralized Fault Display System (CFDS) to signal the system defects to the maintenance.

Ground personnel services the waste tank via a service panel, located under the fuselage.
A manual shutoff valve isolates an inoperative toilet. In the case of an electrical failure of flush valve, the manual flush control ◁ can be used. The manual flush control is located under each toilet bowl.

ARCHITECTURE



SCHEMATIC


FWD TOILET
MID TOILETS
AFT TOILET
WATER VALVE
FLUSH VALVE
MANUAL FLUSH CONTROL
WASTE TANK
TANK RINSE LINE
VACUUM GENERATOR
WASTE
AIR
DRAIN VALVE
SERVICE PANEL
SERVICING PORT

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AIRCRAFT SYSTEMS

MAINTENANCE SYSTEM

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DSC-45-10 Description

General....A
Components....B
Modes of Operation....C
Architecture....D
Failure/Fault Classification....E
Functions of the Centralized Fault Display System (CFDS)....F
Cockpit/CFDS Interface....G

DSC-45-20 System Operation

Maintenance Menu....A
Last (or Current) Leg Report....B
Last (or Current) Leg ECAM Report....C
Previous Leg Report....D
Avionics Status....E
System Report/Test....F
GMT/Date Initialization....G
Backup Mode....H
ACARS Print Program....I

DSC-45-25 Data Loading

General....A
Data Loading Selector on the Overhead Panel....B

DSC-45-30 Printer

General....A
System Description....B

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GENERAL

Ident.: DSC-45-10-00001490.0001001 / 21 MAR 16
Applicable to: ALL

The purpose of the Centralized Fault Display System (CFDS) is to make the maintenance task easier by displaying fault messages in the cockpit and permitting the flight crew to make some specific tests.

There are two levels of maintenance :

at the line stop : removal and replacement of equipment
at the main base : troubleshooting

COMPONENTS

Ident.: DSC-45-10-00001491.0001001 / 21 MAR 16
Applicable to: ALL

The CFDS includes :

- the BITE (Built-In Test Equipment) for each electronic system
- a central computer, the Centralized Fault Display Interface Unit (CFDIU)
- two MCDUs (Multipurpose Control and Display Units), used also for FMGS (Flight Management and Guidance System), AIDS (Aircraft Integrated Data System), and ACARS (Aircraft Communication And Reporting System, if installed), which work with the CFDIU to display information or initiate tests
- one printer.

If a main channel of the CFDIU fails, the backup channel takes over.

MODES OF OPERATION

Ident.: DSC-45-10-00001492.0001001 / 22 MAR 16
Applicable to: ALL

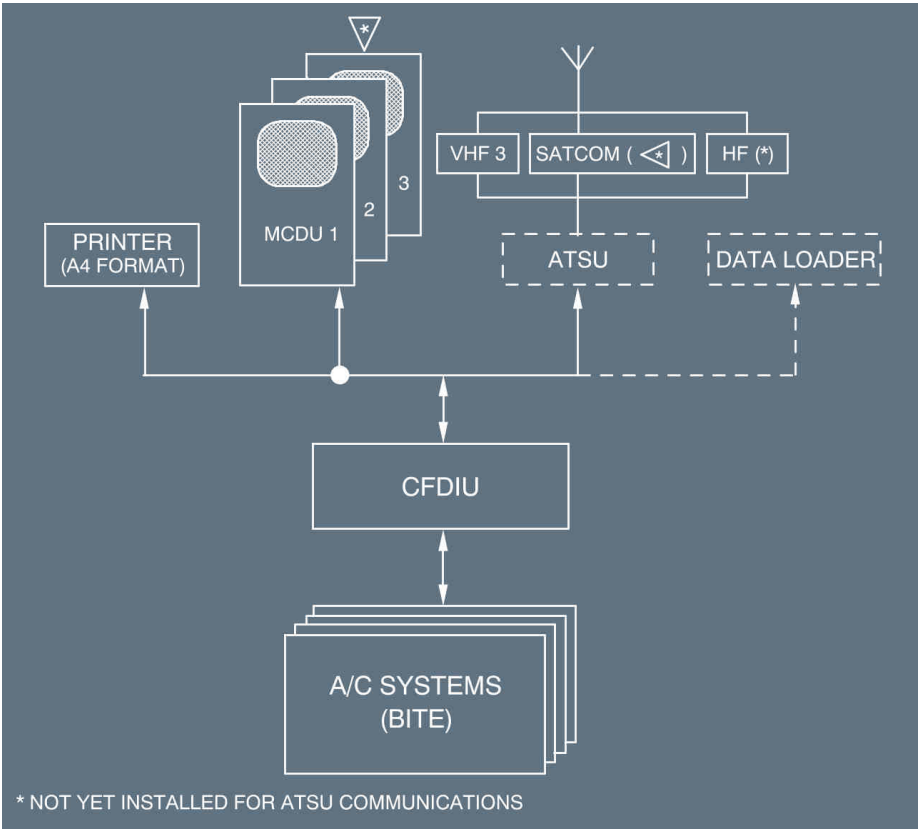
The CFDS operates in two main modes :

- the NORMAL mode or REPORTING mode (in flight)
- the INTERACTIVE mode or MENU mode (on ground).

In NORMAL mode, the CFDS records and displays the failure messages transmitted by each system BITE.
In INTERACTIVE mode, the CFDS allows any BITE to be connected with the MCDU in order to display the maintenance data stored and formatted by the BITE or to initiate a test.

ARCHITECTURE

Ident.: DSC-45-10-00001493.0002001 / 19 DEC 12
Applicable to: ALL



FAILURE/FAULT CLASSIFICATION

Ident.: DSC-45-10-00017082.0001001 / 21 MAR 16
Applicable to: ALL

The Centralized Fault Display System (CFDS) identifies the faulty system and puts any failures or faults into one of three classes :

Class 1 : Failures indicated to the flight crew by means of the ECAM, or other flight deck effect. They must be repaired or entered in the MEL (Minimum Equipment List) before the aircraft can depart.

Class 2 : Faults indicated to maintenance personnel by the CFDS and which trigger a MAINT status entry on the maintenance part of the ECAM status page. The aircraft can operate with these faults, but they must be rectified within the timescale defined in the Trouble Shooting Manual (TSM).

Class 3 : Faults indicated to maintenance personnel by the CFDS, but which do not trigger a MAINT status. The operator may have these faults corrected at his convenience.

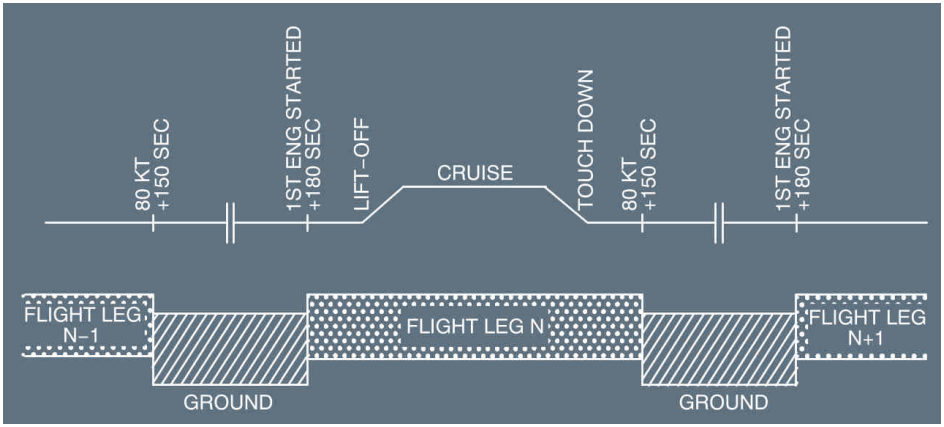
Failure/fault classes	Class 1	Class 2	Class 3
Operational consequences	YES	NO	NO
Indication to the flight crew	YES Automatically displayed - Warning or caution messages on Engine Warning Display - Flag or indication in the flight deck.	YES Available on ECAM status page.	NO
Dispatch consequences	Refer to MEL may be : "GO" "GO IF" "NO GO"	*Refer to MMEL/MI-00-08 ECAM and MAINTENANCE STATUS*	MEL not applicable
Indication to the maintenance team	YES Automatically print out at the end of each flight : Fault messages on the CFDS Post Flight Report.		YES Available on request through system report/Test

FUNCTIONS OF THE CENTRALIZED FAULT DISPLAY SYSTEM (CFDS)

Ident.: DSC-45-10-00001495.0002001 / 21 MAR 16
Applicable to: ALL

The main functions of the CFDS are :

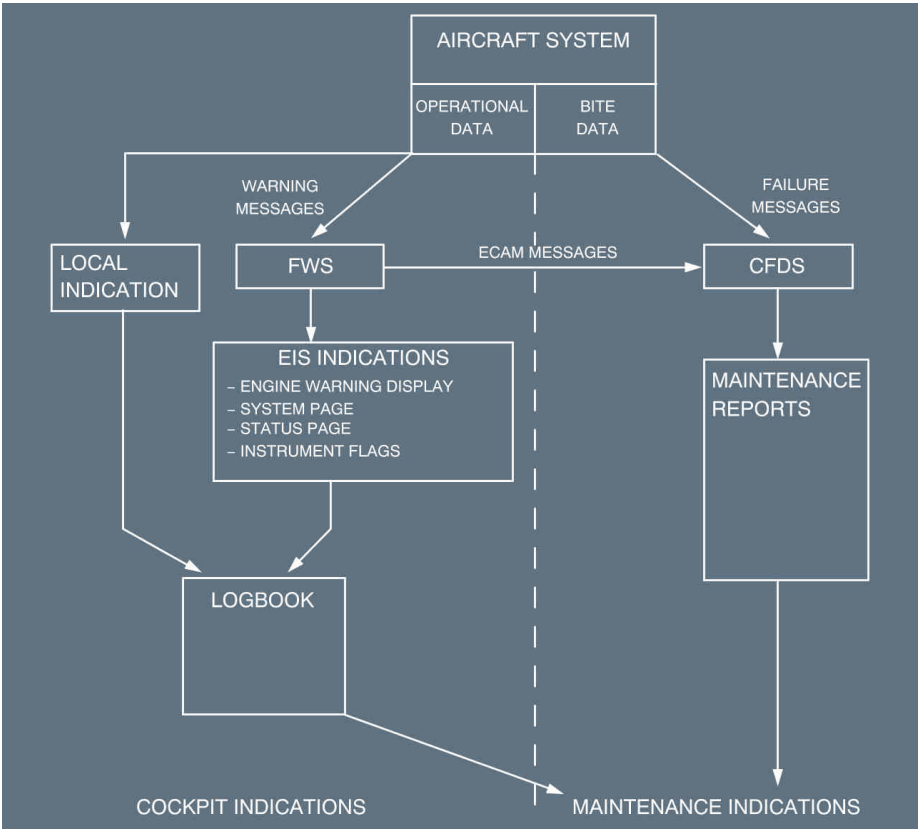
- obtaining and storing messages transmitted by the connected system BITEs, or by the Flight Warning Computer (Warning and Caution titles)
- Detailing the maintenance phases.



- Presenting maintenance reports :
  - Last leg report
  - Last leg ECAM report
  - Previous leg report
  - Avionics status
  - System report test
  - Post-flight report.

COCKPIT/CFDS INTERFACE

Ident.: DSC-45-10-00001496.0001001 / 22 MAR 16
Applicable to: ALL



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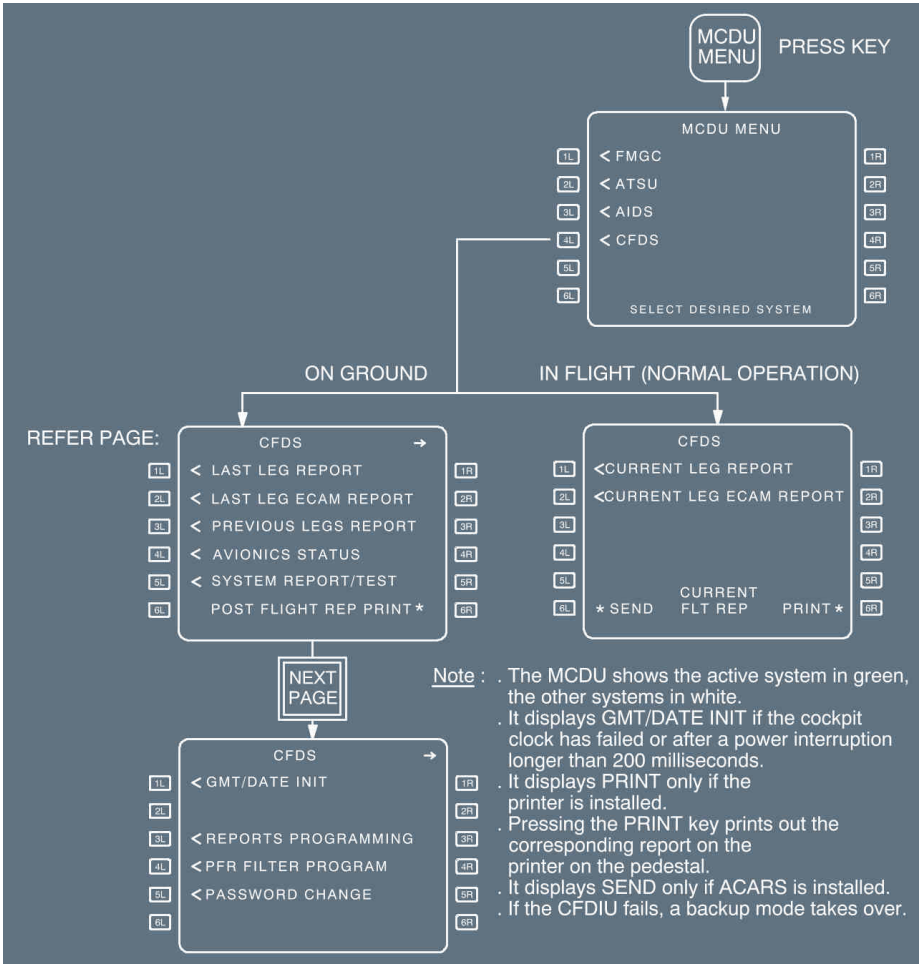
MAINTENANCE MENU

Ident.: DSC-45-20-00001497.0002001 / 14 MAY 12
Applicable to: ALL

The CFDS uses menus displayed on the MCDU. The operator selects functions or reports from these menus.

Pressing the MCDU MENU key and then selecting CFDS brings up the MAINTENANCE MENU page (different pages for the aircraft in flight and the aircraft on the ground).

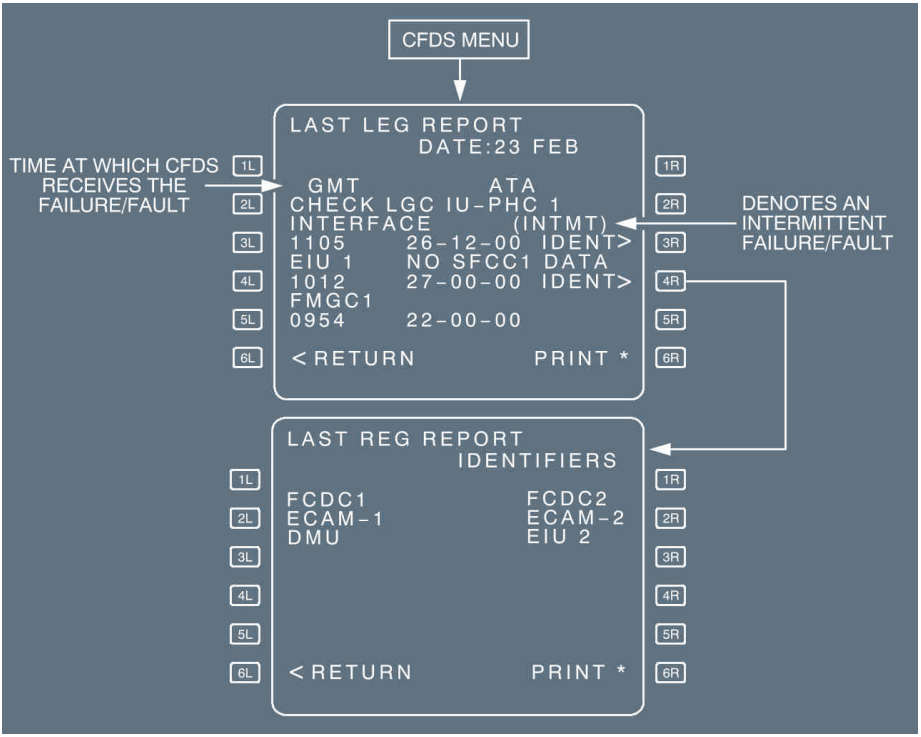


LAST (OR CURRENT) LEG REPORT

Ident.: DSC-45-20-00001498.0001001 / 21 MAR 16
Applicable to: ALL

The LAST LEG REPORT (on the ground) or the CURRENT LEG REPORT (in flight), list all class 1 failures and class 2 faults and all system failure and system fault messages received by the CFDS during the last flight leg or the current flight leg. Pressing the IDENT key displays a list of the systems

(called identifiers) affected by the failure or fault, which helps the pilot or maintenance person to identify the failure or fault.



LAST (OR CURRENT) LEG ECAM REPORT

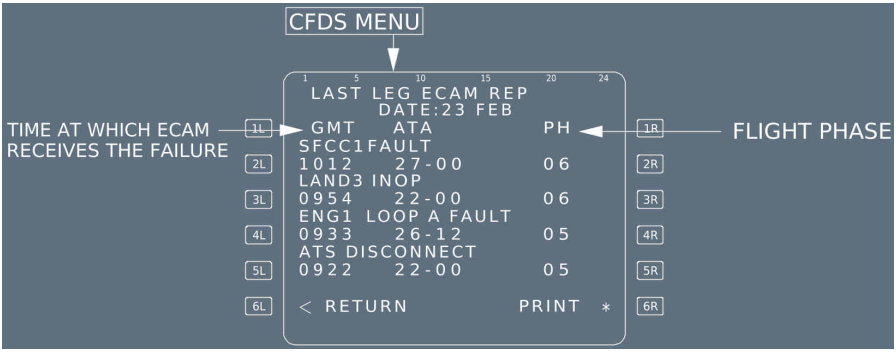
Applicable to: ALL

Ident.: DSC-45-20-A-00001499.0001001 / 21 MAR 16

GENERAL

In flight : The CURRENT LEG ECAM REPORT displays the primary and independent warning (class I) messages and MAINTENANCE STATUS (class II) messages of the current flight leg.

On the ground : The LAST LEG ECAM REPORT displays the primary and independent warning (class I) messages plus MAINTENANCE STATUS (class II) messages of the last flight leg.



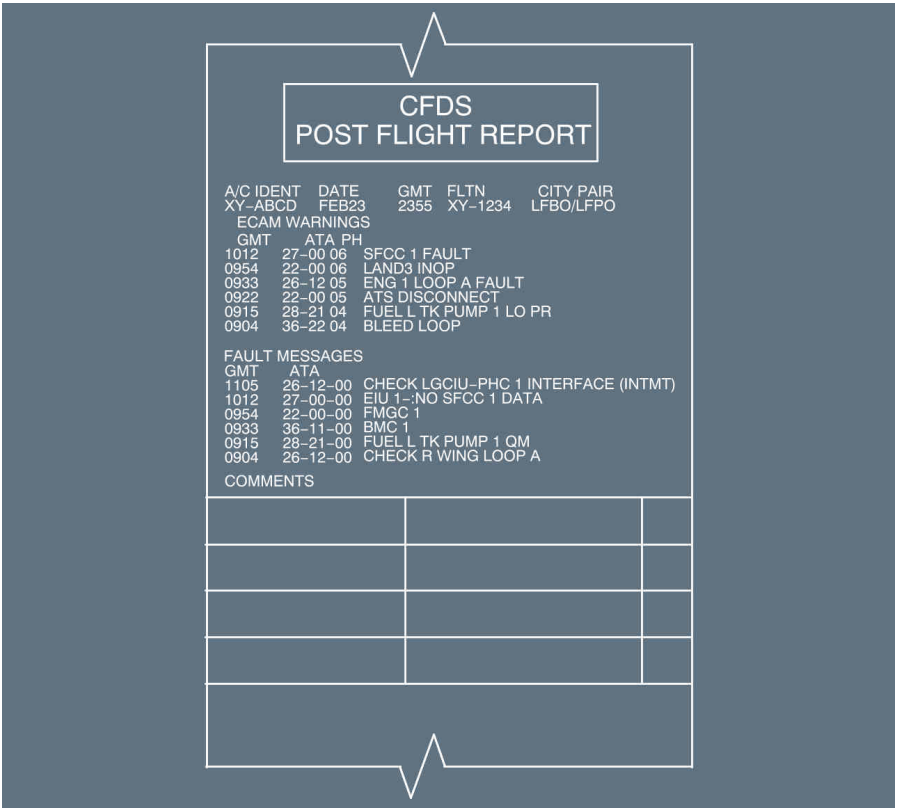
Note: *This screen displays PRINT only if the printer is installed.*

Ident.: DSC-45-20-A-00001500.0001001 / 14 MAY 12

POST FLIGHT REPORT PRINT

At the end of a flight, LAST LEG and LAST LEG ECAM REPORTS are printed out automatically after the last engine shutdown. The flight or ground crew can also print them out by selecting POST FLIGHT REP PRINT.

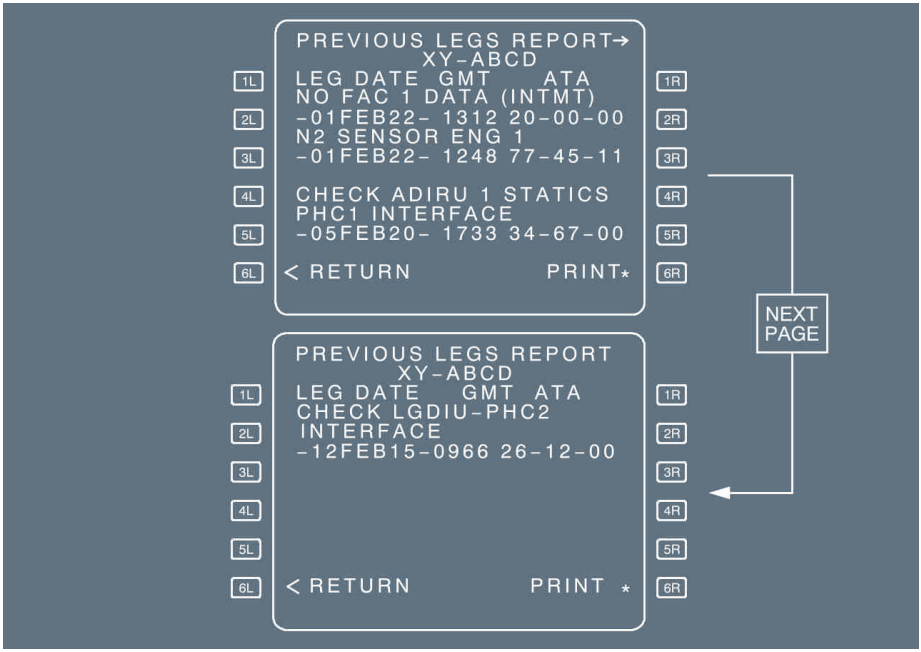
The report first lists the ECAM warnings, then the FAULT messages.



PREVIOUS LEG REPORT

Ident.: DSC-45-20-00001501.0001001 / 21 MAR 16
Applicable to: ALL

This report gives access to the POST FLIGHT REPORTS of the previous 63 flight legs.

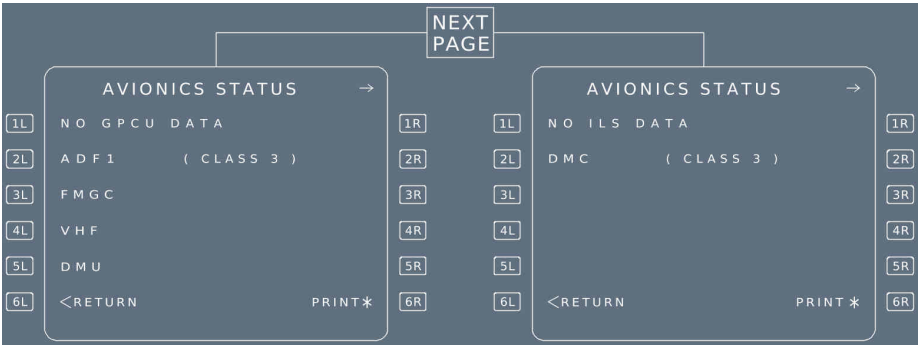


On ground, the Operator can print copies of the screen. If ACARS is installed, the Operator can send the flight report (*Refer to DSC-45-20 Last (or Current) Leg ECAM Report - Post Flight Report Print*).

AVIONICS STATUS

Ident.: DSC-45-20-00001502.0001001 / 21 MAR 16
Applicable to: ALL

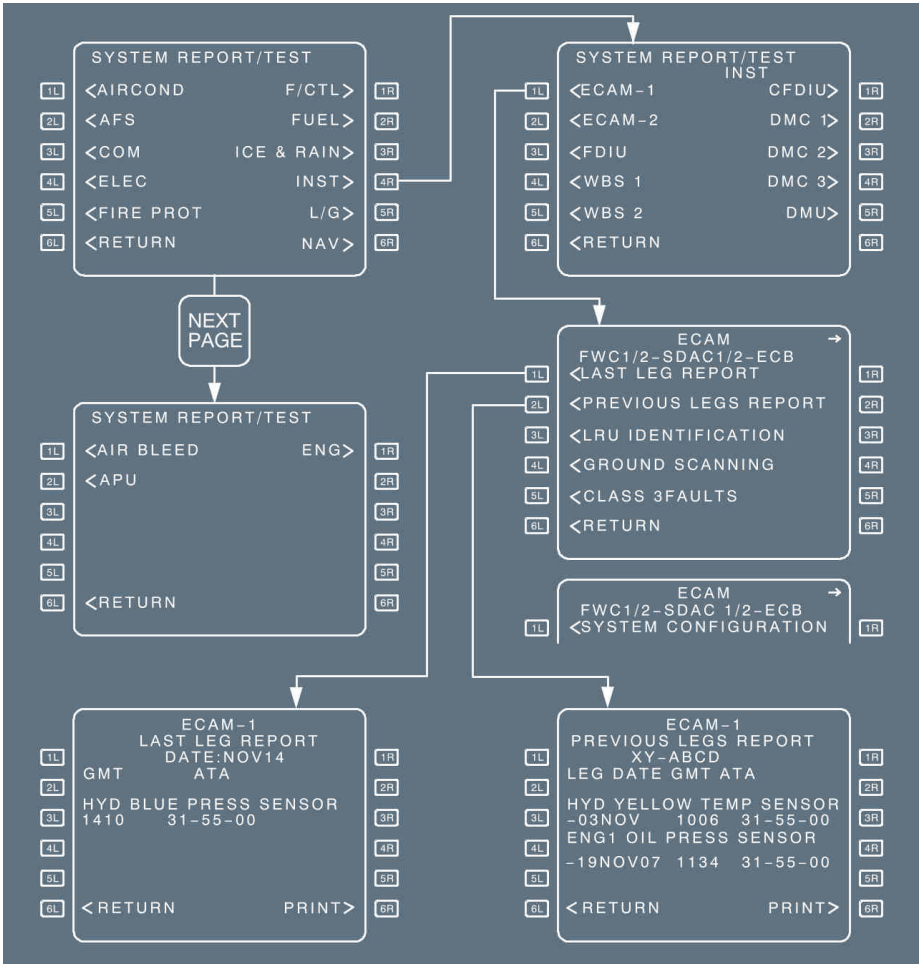
This screen displays the list of systems affected by a failure or fault. If a system is affected by at least a Class 3 fault, CLASS 3 appears beside it. The display is continuously updated.



SYSTEM REPORT/TEST

Ident.: DSC-45-20-00001503.0001001 / 21 MAR 16
Applicable to: ALL

This screen gives the operator access to all electronic systems. The CFDIU enters into interactive dialogue with the selected system.



In the above example, the operator has called up menus of the selected systems :

- LAST or PREVIOUS LEG REPORT presents the list of Line-Replaceable Units (LRUs) affected by a failure.
- LRU IDENTIFICATION contains the part numbers of all LRUs in the system.
- GND SCANNING runs the flight monitoring on the ground and indicates the faulty LRU.
- CLASS 3 FAULTS lists class 3 faults detected by the system during the last flight leg.
- SYSTEM CONFIGURATION presents the system configuration in a digital form.

Note: *These screens (except LAST or PREVIOUS LEG REPORT) are not shown above.*

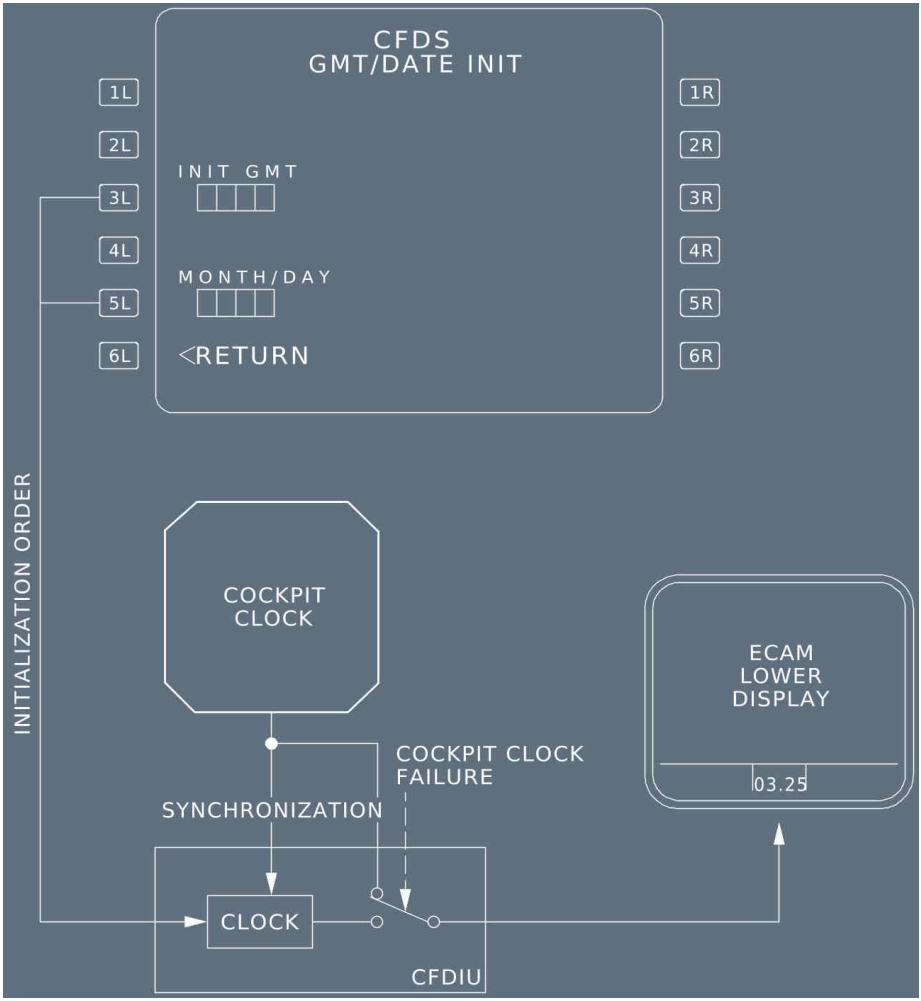
GMT/DATE INITIALIZATION

Ident.: DSC-45-20-00001504.0001001 / 21 MAR 16
Applicable to: ALL

A CFDIU clock is synchronized with the cockpit clock in order to keep GMT (UTC) displayed on the ECAM lower display (except in flight Phases 1 and 2, if the weight and balance system is installed). If the cockpit clock fails, the CFDIU clock continues to display GMT (UTC) on the ECAM lower display.

If electrical power is interrupted for more than 200 ms, the crew initializes GMT (UTC) and the DATE via the MCDU :

- Write GMT (UTC) in the scratchpad, then press the “INIT GMT” key.
- Do the same for the month and day.


CFDS
GMT/DATE INIT
1L
2L
3L
4L
5L
6L
1R
2R
3R
4R
5R
6R
INIT GMT
MONTH/DAY
<RETURN
INITIALIZATION ORDER
COCKPIT
CLOCK
ECAM
LOWER
DISPLAY
03.25
COCKPIT CLOCK
FAILURE
SYNCHRONIZATION
CLOCK
CFDIU

BACKUP MODE

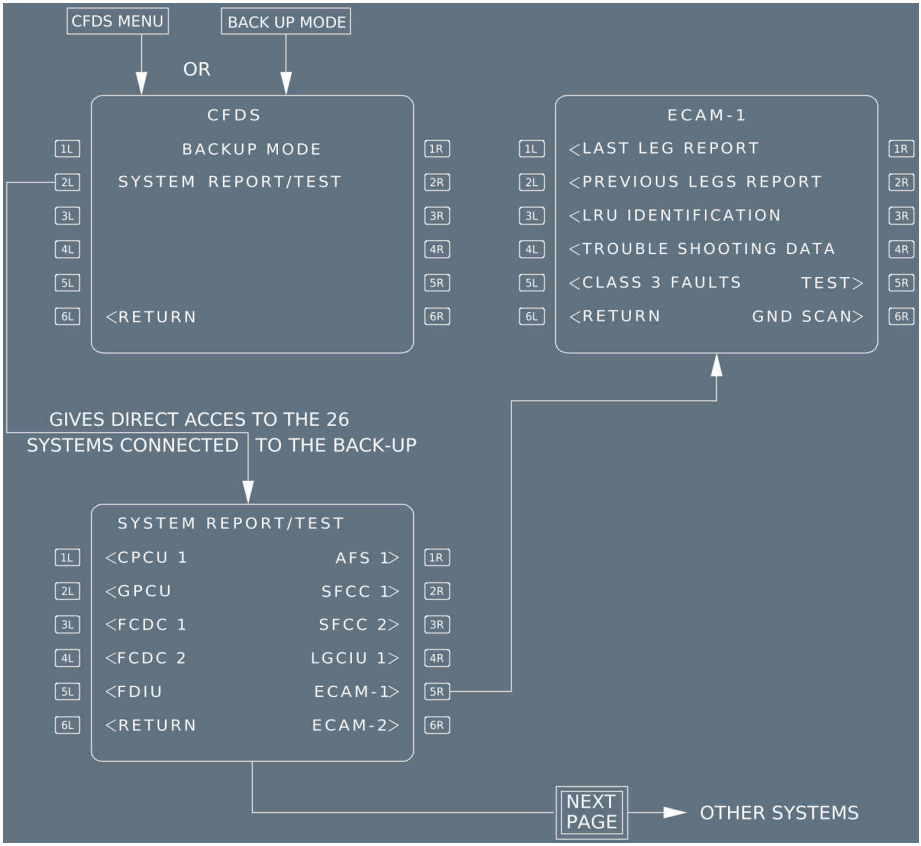
Ident.: DSC-45-20-00017066.0001001 / 21 MAR 16
Applicable to: ALL

If the main channel of the CFDIU fails, the backup channel allows the CFDS to operate in backup mode :

- On the ground only
- Through MCDU1 or MCDU3 ◁
- In one mode of operation only : SYSTEM REPORT/TEST
- Without the PRINTER or ACARS.

The system changes over from main channel to backup channel :

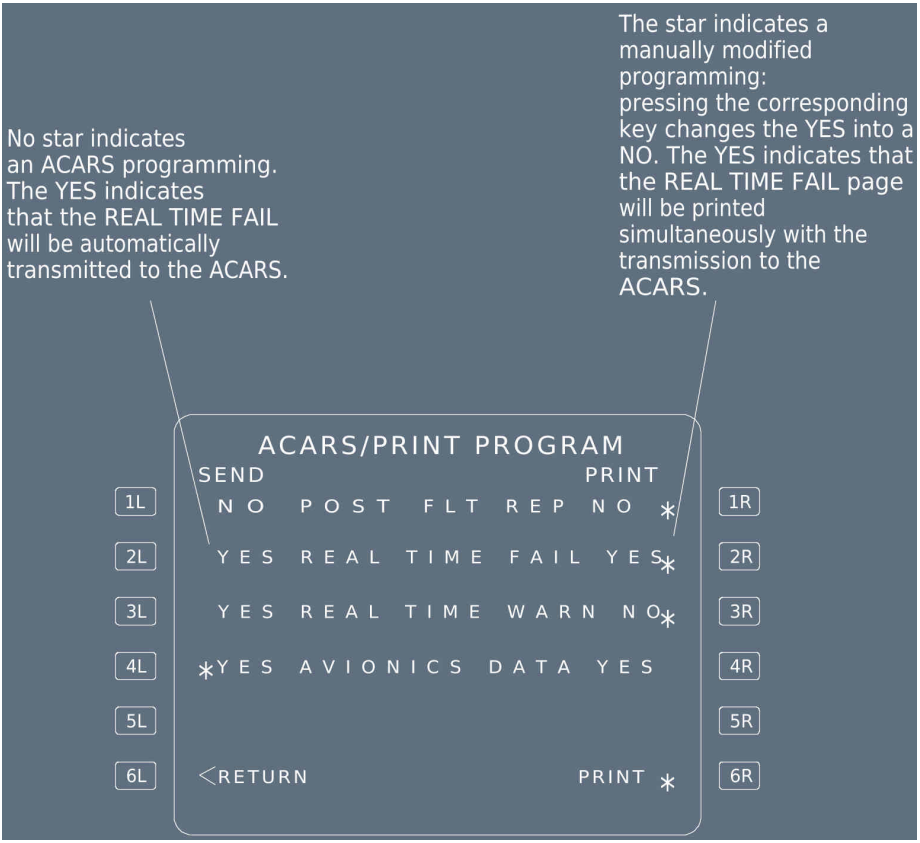
- Automatically in case of an important failure (power supply, for example). In this case, when the operator selects CFDS on the MCDU MENU, it displays the BACKUP MODE page.
- Manually if the operator selects BACKUP MODE on the CFDS menu after a minor failure.



ACARS PRINT PROGRAM

Ident.: DSC-45-20-00005361.0001001 / 14 FEB 11
Applicable to: ALL

This function gives access to reprogramming page.
The programming is provided by the ACARS or manually (on the ground or in flight) :



Note: *The CFDIU memorizes all manual programming so that at initialisation the last configuration will be retained.*

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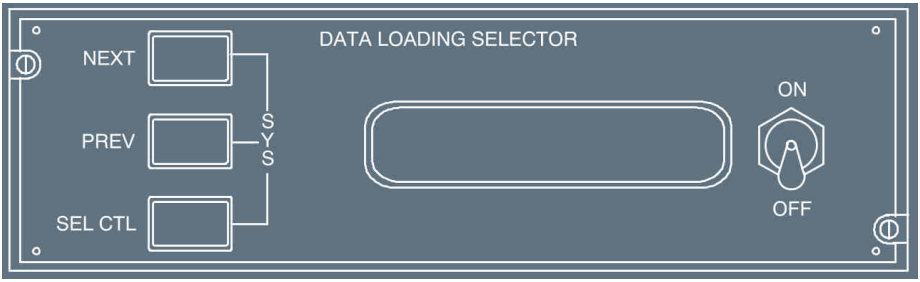
GENERAL

Ident.: DSC-45-25-00001506.0001001 / 10 JAN 11
Applicable to: ALL

With the data loading system, it is possible to upload databases and operational software, or to download system reports from various onboard computers.
The data transfer is performed via 3.5 in disks and a portable data loader, or the aircraft fixed Multipurpose Disk Drive Unit ◁ (MDDU).

DATA LOADING SELECTOR ON THE OVERHEAD PANEL

Ident.: DSC-45-25-00001507.0001001 / 19 DEC 12
Applicable to: ALL



When the data loading selector is ON, the 3 keys (NEXT, PREV, SEL CTRL) enable the display and selection of various applicable aircraft systems (FMGC, TCAS ◁ etc...).

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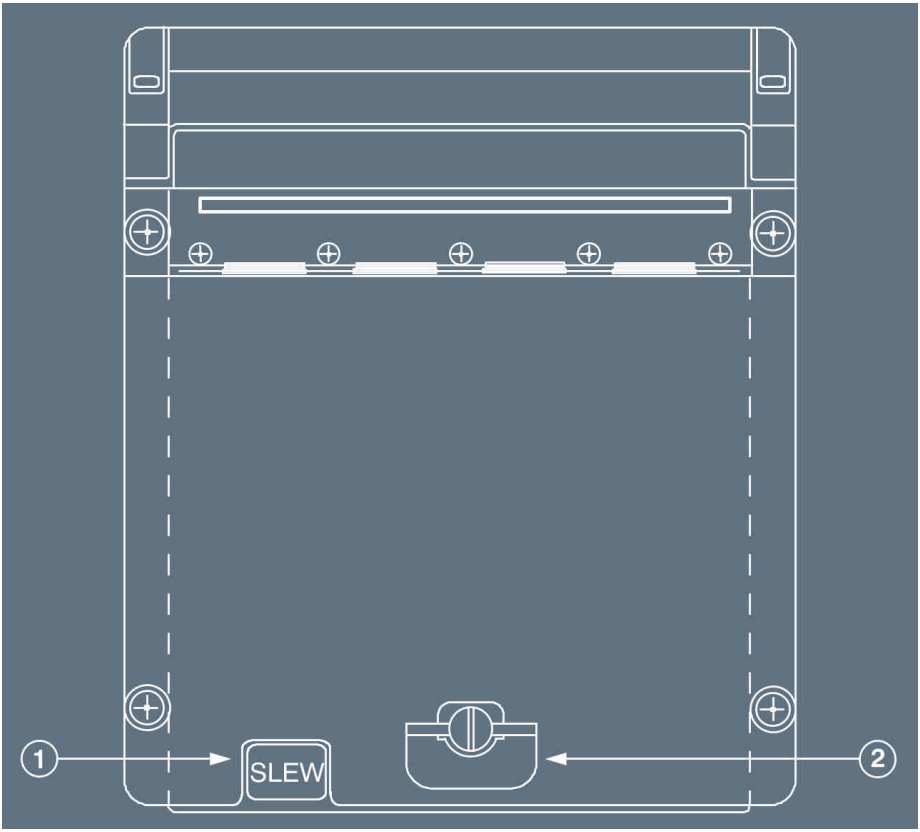
GENERAL

Ident.: DSC-45-30-00001508.0001001 / 21 MAR 16
Applicable to: ALL

The printer prints reports from the following systems (if installed) : ACARS, AIDS, FMGC, CFDIU and EVMU. It prints these on paper, and does so either on the ground or in flight.
The printer is installed at the rear of the pedestal on the right side.

SYSTEM DESCRIPTION

Ident.: DSC-45-30-00001509.0001001 / 21 MAR 16
Applicable to: ALL



(1) SLEW sw :
The SLEW switch is used to feed paper after having loaded a new roll.

(2) PRINTER DOOR LATCH :
The printer door latch locks the door used for loading paper.

AIRCRAFT SYSTEMS

INFORMATION SYSTEMS

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DSC-46-10 Datalink

DSC-46-10-10 General System Description
Overview ..... A
Architecture ..... B
Cockpit Interface C
Datalink Message ..... D

DSC-46-10-20 AOC Applications
DSC-46-10-20-10 General
General ..... A

DSC-46-10-30 ATC Applications
DSC-46-10-30-10 Notifications
Notification ..... A

DSC-46-10-30-20 Controller/Pilot Datalink Communication (CPDLC)
General ..... A
Connect ..... B
Request C
Edit ..... D
Message Timer ..... E

DSC-46-10-30-40 Departure Clearance (DCL)
Departure Clearance ..... A

DSC-46-10-30-50 Oceanic Clearance (OCL)
Oceanic Clearance ..... A

DSC-46-10-30-60 Digital - Automatic Terminal Information Service (D-ATIS)
Digital - ATIS ..... A

DSC-46-10-30-70 Message Record
Message Record ..... A

DSC-46-10-40 Controls and Indicators
DSC-46-10-40-10 ATC Message Pushbutton (ATC MSG PB)
ATC MSG Pb ..... A

DSC-46-10-40-20 Datalink Control and Display Unit (DCDU)
DCDU ..... A

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DSC-46-10-40-30 MCDU Datalink Pages

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ATC MENU....B
ATIS AUTO-UPDATE....C
ATIS MENU....D
ATIS REPORT....E
ATSU DATALINK....F
COMM CONFIG....G
COMM MENU....H
CONNECTION....I
CONNECTION STATUS....J
DATALINK STATUS....K
DEPART REQ....L
EDIT....M
FREQUENCY REPORTING....N
MSG RECORD....O
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VHF3 SCAN SELECT....U

DSC-46-10-40-40 MCDU Scratchpad Messages

MCDU Scratchpad Messages....A

DSC-46-10-40-50 MCDU Data Entry Format

MCDU Data Entry Format....A

DSC-46-10-40-60 ECAM

Memo Display....A

Continued on the following page

Continued from the previous page

DSC-46-10-50 How To

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How to Initialize....B
How to Notify....C
How to Connect....D
How to Send Request to ATC....E
How to Answer....F
How to Obtain DCL....G
How to Obtain OCL....H
How to Obtain D-ATIS....I
How to Modify FLT Plan....J

DSC-46-20 Electronic Flight Bag (EFB)

DSC-46-20-20 Applications

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General....B
Landing Application....C
Takeoff Application....D
Loadsheet Application....E
OPS Library Application....F
Manager Application....G

DSC-46-30 Electronic QRH (eQRH)

General....A

DSC-46-40 Pax Entertainment & Connectivity Systems (If Installed)

DSC-46-40-10 General

General....A

DSC-46-40-20 In Seat Power Supply System

IN SEAT POWER SUPPLY SYSTEM ◁✻ ....A

DSC-46-40-30 Controls and Indicators

MOBILE COM PB-SW ◁✻ ....A
DISC IN PROG Light ◁✻ ....B
CINS RESET PB ◁✻ C
PAX COM PB-SW ◁✻ ....D
PAX SYS PB-SW ◁✻ ....E
PAX PERSONAL ELEC SPLY PB-SW ◁✻ ....F
MEMO DISPLAY....G

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Localization Title	Toc Index	ID	Reason
DSC-46-10-10 Overview	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-46-10-10 VHF	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-46-10-40-30 ATSU DATALINK	F	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-46-10-40-30 COMM MENU	H	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-46-10-40-40 Scratchpad Messages	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-46-10-50 Introduction	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-46-10-50 How to Initialize	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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OVERVIEW

Ident.: DSC-46-10-10-00020333.0001001 / 28 NOV 17

[1] **Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02334, 02405-02584, 02670-02737, 02908-03071, 03264, 03330-04216, 04312-04399, 04438-04506, 04518-05155, 05190-09063**

The datalink has:
- AOC applications
L2 The flight crew uses the AOC applications to communicate with Airline Operational Center (AOC).
L1 - ATC applications
L2 The flight crew uses the ATC applications to communicate with Air Traffic Control (ATC) centers.

L1 The ATC datalink provides communication, navigation, and surveillance for Air Traffic Management (ATM) services.
The ATC datalink applications enable air traffic controllers to follow the aircraft navigation, and enhance the air traffic flow.

The datalink communication (messages exchange) between the aircraft and the ground is achieved:
- Automatically (without a flight crew action)
- Manually (with a flight crew action via the DCDU/MCDU and/or RMP).

The datalink messages are:
- Uplink (from a ground facilities to the flight crew), or
- Downlink (from the flight crew to an ground facilities).

COMMUNICATION AND NAVIGATION FOR AIR TRAFFIC MANAGEMENT

At the beginning of the flight, the flight crew sends a notification message to the ATC center, via the MCDU, notification application .
Then, an air traffic controller will establish a connection between the aircraft and the ATC center. As a result, the flight crew can exchange messages with the ATC center, via the DCDU (CPDLC application). The messages that the flight crew sends to the ATC center can be built with present frames and modified via the MCDU.

Depending on the type of datalink exchange, the datalink uses one of the following communication networks:
- ACARS for FANS A / FANS A+ applications
- ACARS Air Traffic Services (ATS 623) for optional applications
- Aeronautical Telecommunication Network (ATN) for FANS B / FANS B+ applications

L2 The ATN supports increasing volume of ATC and AOC communication.

L1 FUTURE AIR NAVIGATION SYSTEM (FANS)

The ATC datalink provides:

- FANS A ◁ applications, for operations in remote and in oceanic areas:
  - Notification
  - Controller-Pilot Data Link Communication (CPDLC)
  - Automatic Dependent Surveillance Contract (ADS-C).
- FANS B ◁ applications, for operations in high-density continental areas:
  - Notification
  - Controller-Pilot Data Link Communication (CPDLC).
- Optional applications ◁ (compatible only with FANS A+ or FANS B+):
  - Departure Clearance
  - Oceanic Clearance
  - Digital - Automatic Terminal Information Service (D-ATIS).

NAVIGATION AND SURVEILLANCE FOR AIR TRAFFIC MANAGEMENT

The Automatic Dependent Surveillance (ADS) system sends aircraft position and aircraft navigation data to ATC centers and other aircraft.

There are two different ADS applications:

- ADS-Contract (ADS-C) ◁
  The ADS-C automatically sends aircraft surveillance data to connected ATC centers via ATC Datalink ◁ in remote or oceanic areas.
- ADS-Broadcast (ADS-B) ◁
  The ADS-B automatically broadcasts the aircraft position and navigation data to other users (ATC centers or other aircraft) equipped with a Mode S transponder. The ATC Datalink ◁ does not host the ADS-B ◁ .

SERVICE PROVIDERS

The role of a communication service provider is to deliver a message from the A/C to a ground end system and vice versa.
A datalink service provider ensures routing of datalink messages between the aircraft and ATC center.

L2 For VHF communication, the two main providers are ARINC and SITA that operate worldwide networks.

L1 REVERSION TO VOICE COMMUNICATION

Voice communication is a primary means of communication on board.

The flight crew must revert from datalink communication to voice communication, if:
- There is an emergency situation (exchange of a critical or urgent message)
- There is a doubt about a datalink message, the voice should be used for clarification
- An operational timer of datalink message exchange times out
- A response to an ATC message was not correctly transmitted via datalink.

CLOCK ACCURACY

The required time precision for ATC datalink communications is +/-1 s UTC. If this constraint is not respected, a rejection of datalink message or acceptance of obsolete datalink message may occur.
Not respecting this constraint may lead to the rejection of messages or to the acceptance of obsolete messages.
For FANS operations, the flight crew should not manually set the clock during cockpit preparation.

OVERVIEW

Ident.: DSC-46-10-10-00020333.0004001 / 28 NOV 17
Applicable to: MSN 02649

The datalink has:
- AOC applications ◁

L2 The flight crew uses the AOC applications to communicate with Airline Operational Center (AOC).

L1 - ATC applications ◁

L2 The flight crew uses the ATC applications to communicate with Air Traffic Control (ATC) centers.

L1 The ATC datalink provides communication, navigation, and surveillance for Air Traffic Management (ATM) services.
The ATC datalink applications enable air traffic controllers to follow the aircraft navigation, and enhance the air traffic flow.

The datalink communication (messages exchange) between the aircraft and the ground is achieved:
- Automatically (without a flight crew action)
- Manually (with a flight crew action via the DCDU/MCDU and/or RMP).

The datalink messages are:
- Uplink (from a ground facilities to the flight crew), or
- Downlink (from the flight crew to an ground facilities).

COMMUNICATION AND NAVIGATION FOR AIR TRAFFIC MANAGEMENT

At the beginning of the flight, the flight crew sends a notification message to the ATC center, via the MCDU, notification application ◁ .
Then, an air traffic controller will establish a connection between the aircraft and the ATC center.
As a result, the flight crew can exchange messages with the ATC center, via the DCDU (CPDLC

application ◁). The messages that the flight crew sends to the ATC center can be built with present frames and modified via the MCDU.

Depending on the type of datalink exchange, the datalink uses one of the following communication networks:

- ACARS for FANS A ◁ / FANS A+ ◁ applications
- ACARS Air Traffic Services (ATS 623) for optional applications ◁
- Aeronautical Telecommunication Network (ATN) for FANS B ◁ / FANS B+ ◁ applications

L2 The ATN supports increasing volume of ATC and AOC communication.

L1 ATC DATALINK COMMUNICATION

The ATC datalink provides:

- FANS B applications (ATN B1 in ICAO designation) using ATN ground network, for operations in high-density continental areas:
  - Notification
  - Controller-Pilot Data Link Communication (CPDLC).

NAVIGATION AND SURVEILLANCE FOR AIR TRAFFIC MANAGEMENT

The Automatic Dependent Surveillance (ADS) system sends aircraft position and aircraft navigation data to ATC centers and other aircraft.

There are two different ADS applications:

- ADS-Contract (ADS-C) ◁
  The ADS-C automatically sends aircraft surveillance data to connected ATC centers via ATC Datalink ◁ in remote or oceanic areas.
- ADS-Broadcast (ADS-B) ◁
  The ADS-B automatically broadcasts the aircraft position and navigation data to other users (ATC centers or other aircraft) equipped with a Mode S transponder. The ATC Datalink ◁ does not host the ADS-B ◁ .

SERVICE PROVIDERS

The role of a communication service provider is to deliver a message from the A/C to a ground end system and vice versa.
A datalink service provider ensures routing of datalink messages between the aircraft and ATC center.

L2 For VHF communication, the two main providers are ARINC and SITA that operate worldwide networks.

L1 REVERSION TO VOICE COMMUNICATION

Voice communication is a primary means of communication on board.

The flight crew must revert from datalink communication to voice communication, if:
- There is an emergency situation (exchange of a critical or urgent message)
- There is a doubt about a datalink message, the voice should be used for clarification
- An operational timer of datalink message exchange times out
- A response to an ATC message was not correctly transmitted via datalink.

CLOCK ACCURACY

The required time precision for ATC datalink communications is +/-1 s UTC. If this constraint is not respected, a rejection of datalink message or acceptance of obsolete datalink message may occur.
Not respecting this constraint may lead to the rejection of messages or to the acceptance of obsolete messages.
For FANS operations, the flight crew should not manually set the clock during cockpit preparation.

OVERVIEW

Ident.: DSC-46-10-10-00020333.0002001 / 28 NOV 17
Applicable to: MSN 01767, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158

The datalink has:
- AOC applications ◁

L2 The flight crew uses the AOC applications to communicate with Airline Operational Center (AOC).

L1 - ATC applications ◁

L2 The flight crew uses the ATC applications to communicate with Air Traffic Control (ATC) centers.

L1 The ATC datalink provides communication, navigation, and surveillance for Air Traffic Management (ATM) services.
The ATC datalink applications enable air traffic controllers to follow the aircraft navigation, and enhance the air traffic flow.

The datalink communication (messages exchange) between the aircraft and the ground is achieved:
- Automatically (without a flight crew action)
- Manually (with a flight crew action via the DCDU/MCDU and/or RMP).

The datalink messages are:
- Uplink (from a ground facilities to the flight crew), or
- Downlink (from the flight crew to an ground facilities).

COMMUNICATION AND NAVIGATION FOR AIR TRAFFIC MANAGEMENT

At the beginning of the flight, the flight crew sends a notification message to the ATC center, via the MCDU, notification application ◁ .
Then, an air traffic controller will establish a connection between the aircraft and the ATC center.
As a result, the flight crew can exchange messages with the ATC center, via the DCDU (CPDLC

application ◁). The messages that the flight crew sends to the ATC center can be built with present frames and modified via the MCDU.

Depending on the type of datalink exchange, the datalink uses one of the following communication networks:

- ACARS for FANS A ◁ / FANS A+ ◁ applications
- ACARS Air Traffic Services (ATS 623) for optional applications ◁
- Aeronautical Telecommunication Network (ATN) for FANS B ◁ / FANS B+ ◁ applications

L2 The ATN supports increasing volume of ATC and AOC communication.

L1 ATC DATALINK COMMUNICATION

The ATC datalink provides:

- FANS B applications (ATN B1 in ICAO designation) using ATN ground network, for operations in high-density continental areas:
  - Notification
  - Controller-Pilot Data Link Communication (CPDLC).

NAVIGATION AND SURVEILLANCE FOR AIR TRAFFIC MANAGEMENT

The Automatic Dependent Surveillance (ADS) system sends aircraft position and aircraft navigation data to ATC centers and other aircraft.

There are two different ADS applications:

- ADS-Contract (ADS-C) ◁
  The ADS-C automatically sends aircraft surveillance data to connected ATC centers via ATC Datalink ◁ in remote or oceanic areas.
- ADS-Broadcast (ADS-B) ◁
  The ADS-B automatically broadcasts the aircraft position and navigation data to other users (ATC centers or other aircraft) equipped with a Mode S transponder. The ATC Datalink ◁ does not host the ADS-B ◁ .

SERVICE PROVIDERS

The role of a communication service provider is to deliver a message from the A/C to a ground end system and vice versa.
A datalink service provider ensures routing of datalink messages between the aircraft and ATC center.

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- There is an emergency situation (exchange of a critical or urgent message)
- There is a doubt about a datalink message, the voice should be used for clarification
- An operational timer of datalink message exchange times out
- A response to an ATC message was not correctly transmitted via datalink.

CLOCK ACCURACY

The required time precision for ATC datalink communications is +/-1 s UTC. If this constraint is not respected, a rejection of datalink message or acceptance of obsolete datalink message may occur.
Not respecting this constraint may lead to the rejection of messages or to the acceptance of obsolete messages.
For FANS operations, the flight crew should not manually set the clock during cockpit preparation.

OVERVIEW

Ident.: DSC-46-10-10-00020333.0009001 / 28 NOV 17
Applicable to: MSN 01957-02097, 02121, 02138

The datalink has:
- AOC applications ◁※

L2 The flight crew uses the AOC applications to communicate with Airline Operational Center (AOC).

L1 - ATC applications ◁※

L2 The flight crew uses the ATC applications to communicate with Air Traffic Control (ATC) centers.

L1 The ATC datalink provides communication, navigation, and surveillance for Air Traffic Management (ATM) services.
The ATC datalink applications enable air traffic controllers to follow the aircraft navigation, and enhance the air traffic flow.

The datalink communication (messages exchange) between the aircraft and the ground is achieved:
- Automatically (without a flight crew action)
- Manually (with a flight crew action via the DCDU/MCDU and/or RMP).

The datalink messages are:
- Uplink (from a ground facilities to the flight crew), or
- Downlink (from the flight crew to an ground facilities).

COMMUNICATION AND NAVIGATION FOR AIR TRAFFIC MANAGEMENT

At the beginning of the flight, the flight crew sends a notification message to the ATC center, via the MCDU, notification application ◁※ .
Then, an air traffic controller will establish a connection between the aircraft and the ATC center.
As a result, the flight crew can exchange messages with the ATC center, via the DCDU (CPDLC

application ◁). The messages that the flight crew sends to the ATC center can be built with present frames and modified via the MCDU.

Depending on the type of datalink exchange, the datalink uses one of the following communication networks:

- ACARS for FANS A ◁ / FANS A+ ◁ applications
- ACARS Air Traffic Services (ATS 623) for optional applications ◁
- Aeronautical Telecommunication Network (ATN) for FANS B ◁ / FANS B+ ◁ applications

L2 The ATN supports increasing volume of ATC and AOC communication.

L1 ATC DATALINK COMMUNICATION

The ATC datalink provides:

- FANS B applications (ATN B1 in ICAO designation) using ATN ground network, for operations in high-density continental areas:
  - Notification
  - Controller-Pilot Data Link Communication (CPDLC).
- ATS 623 applications (ACARS ATS in ICAO designation) using ACARS ground network:
  - Departure Clearance (DCL)
  - Oceanic Clearance (OCL)
  - Digital - Automatic Terminal Information Service (D-ATIS).

NAVIGATION AND SURVEILLANCE FOR AIR TRAFFIC MANAGEMENT

The Automatic Dependent Surveillance (ADS) system sends aircraft position and aircraft navigation data to ATC centers and other aircraft.

There are two different ADS applications:

- ADS-Contract (ADS-C) ◁
  The ADS-C automatically sends aircraft surveillance data to connected ATC centers via ATC Datalink ◁ in remote or oceanic areas.
- ADS-Broadcast (ADS-B) ◁
  The ADS-B automatically broadcasts the aircraft position and navigation data to other users (ATC centers or other aircraft) equipped with a Mode S transponder. The ATC Datalink ◁ does not host the ADS-B ◁ .

SERVICE PROVIDERS

The role of a communication service provider is to deliver a message from the A/C to a ground end system and vice versa.
A datalink service provider ensures routing of datalink messages between the aircraft and ATC center.

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- There is a doubt about a datalink message, the voice should be used for clarification
- An operational timer of datalink message exchange times out
- A response to an ATC message was not correctly transmitted via datalink.

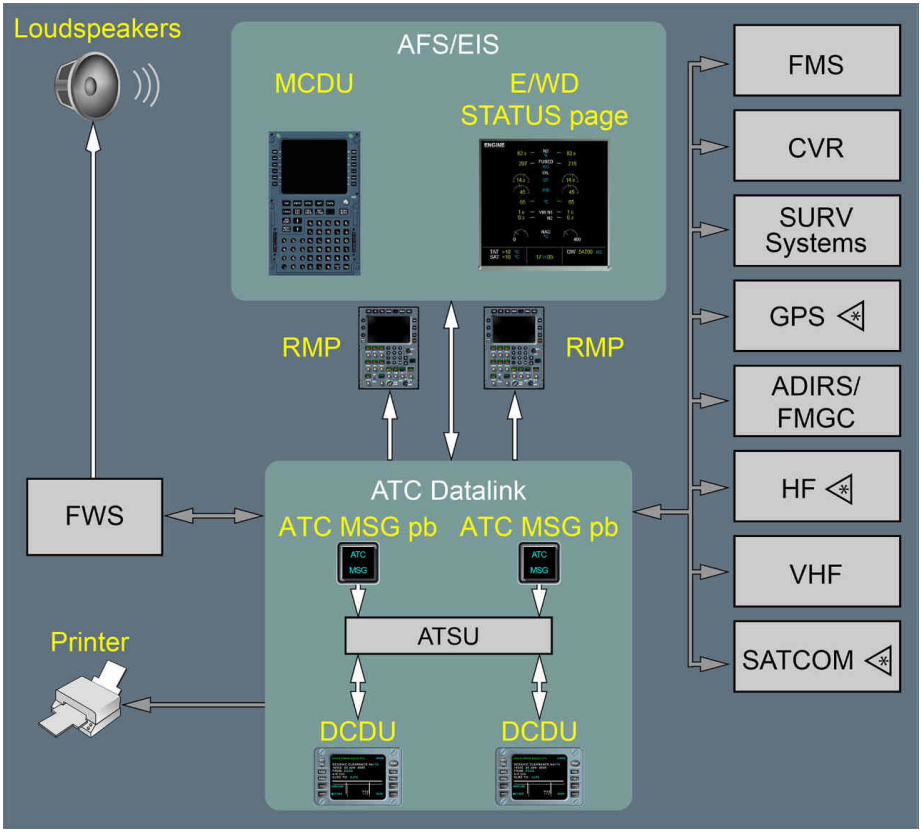
CLOCK ACCURACY

The required time precision for ATC datalink communications is +/-1 s UTC. If this constraint is not respected, a rejection of datalink message or acceptance of obsolete datalink message may occur.
Not respecting this constraint may lead to the rejection of messages or to the acceptance of obsolete messages.
For FANS operations, the flight crew should not manually set the clock during cockpit preparation.

ARCHITECTURE

Ident.: DSC-46-10-10-10-00020332.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

Architecture of the ATC Datalink



Ident.: DSC-46-10-10-10-00020323.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

AIR DATA/INERTIAL REFERENCE SYSTEM (ADIRS)

The ADIRS provide aircraft position data to the FMGC. The FMGC consolidates the position value from different sources and transmits it to the ATSU. This is the primary source for the aircraft position.

Ident.: DSC-46-10-10-10-00020329.0001001 / 17 MAR 17
Applicable to: ALL

AIR TRAFFIC SERVICE UNIT (ATSU)

The ATSU controls all datalink communication and automatically selects the best available communication media:

- VHF
- HF ◁
- SATCOM ◁ .

The ATSU hosts:

- AOC applications ◁
- ATC applications ◁
- Router services
  The ATSU routers automatically select VHF frequency, depending on the aircraft position, in accordance with an entered scan mask (airline policy).
  The scan mask means that a list of VHF datalink service providers, selected via the VHF3 SCAN SELECT page, is scanned, in accordance with their priority level. The VHF scan mask is compulsory for correct router operation. If there is no scan mask, the ECAM displays DATALINK ATSU FAULT – ATSU INIT FAULT.
  Refer to DSC-46-10-40-30 VHF3 SCAN SELECT for more information about the VHF3 SCAN SELECT page.

Ident.: DSC-46-10-10-10-00020325.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510

COCKPIT VOICE RECORDER (CVR)

In addition to its voice recording function, the CVR records the data that the flight crew and the air traffic controller exchange.

Ident.: DSC-46-10-10-10-00020330.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

DATALINK CONTROL AND DISPLAY UNIT (DCDU)

The DCDU enables the flight crew to:

- Read and answer datalink messages, received from the ground
- Display datalink messages, before sending.

Ident.: DSC-46-10-10-00020326.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

FLIGHT MANAGEMENT SYSTEM (FMS)

The ATC datalink interacts with Flight Management Computers (FMC).

The FMS:
- Processes datalink messages
- Prepares/generates an answer to datalink messages
- Monitors clearances
- Reminds the flight crew about a clearance, before reaching a clearance condition.
  When a monitored parameter reaches the assigned value, the FMS generates a reminder message via the DCDU.

Ident.: DSC-46-10-10-00020331.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

FLIGHT WARNING SYSTEM (FWS)

The FWS interacts with the ATSU and:

- Alerts, when a datalink message is received
- Alerts, in the case of detected failures
- Inhibits alerts, depending on the flight phase.

Ident.: DSC-46-10-10-00021433.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

GLOBAL POSITIONING SYSTEM (GPS)

The GPS provides the position information to the FMGC. The position information is consolidated with the ADIRS data and sent to the ATSU.
The GPS also enables time synchronization to the clock, in order to provide UTC date and time for datalink system. If the GPS fails, the clock continues to calculate the time by incrementing the last received pertinent information as the reference time.

Ident.: DSC-46-10-10-00020322.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

HIGH FREQUENCY (HF)

The HF communication system has:
- Data mode
- Voice mode.

HF communication system can be used in the data mode as an alternative to VHF 3 and SATCOM . In this case, the communication between the aircraft and HF ground stations is established on a HF frequency. A HF frequency of HF DataLink (HFDL) is tuned automatically.

DATALINK/VOICE SWITCHING

The HF can be used in the voice mode. The flight crew can switch datalink/voice and set a voice frequency via the RMP.
Green HF VOICE memo indicates that HF datalink communication is interrupted, when the HF transceiver operates in the voice mode.

Ident.: DSC-46-10-10-00020328.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

MULTI-PURPOSE CONTROL AND DISPLAY UNIT (MCDU)

The MCDU enables the fight crew to access functions to:

- Manage the ATC datalink connections
- Send notifications
- Edit datalink messages
- Consult reports
- Access Message Record application.

Ident.: DSC-46-10-10-00021339.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

PRINTER

The flight crew can print ATC messages, displayed on the DCDU, or the MCDU.

Note: Each time the flight crew prints a message, they must check that the printed message is identical to the message on the display unit.
The reference information is the information, that the display unit displays.

Ident.: DSC-46-10-10-10-00020327.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

RADIO MANAGEMENT PANEL (RMP)

The flight crew sets a radio frequency into the RMP, when a specific datalink message (e.g.: CONTACT, MONITOR, ...) is received, or when a voice contact is required.

Ident.: DSC-46-10-10-10-00021236.0002001 / 21 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158

Frequencies that some datalink messages contain, can be loaded into RMP via LOAD pb of the RMP.

Ident.: DSC-46-10-10-10-00020319.0001001 / 17 MAR 17
Applicable to: ALL

SATELLITE COMMUNICATIONS (SATCOM) ⋖

The SATCOM system ⋖ provides voice and data services. The voice/data are transmitted via satellite, from the aircraft to the ground earth stations, and then switched through international telecommunications networks (ARINC, SITA, etc.) to anywhere in the world (airline operational centers, ATC centers, etc).
The ATSU (router) manages switching to/from SATCOM ⋖ (ACARS environments only).

Ident.: DSC-46-10-10-10-00020324.0002001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

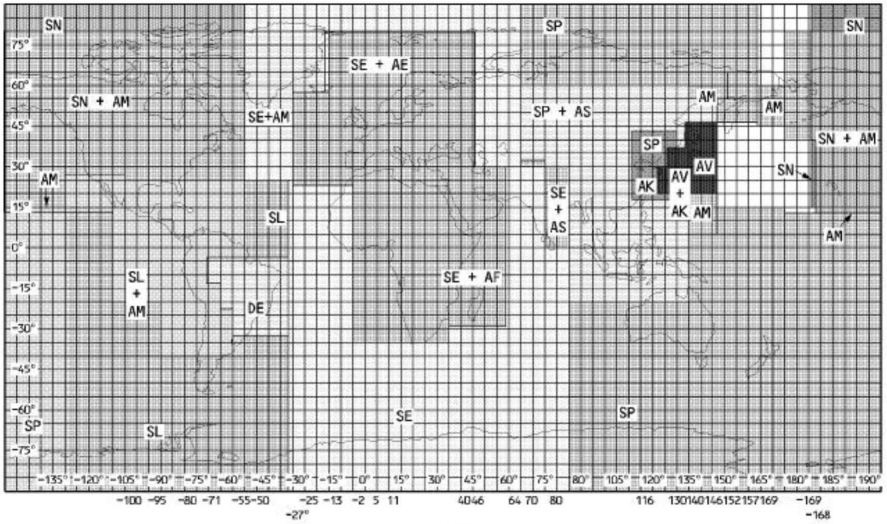
SURVEILLANCE SYSTEMS (SURV)

The ATC datalink system interacts with the surveillance system and enables the flight crew to:
- Provide the ATC center with a TCAS status, sent via the ADS application
- Provide the ATC center with the SQUAWK code as a response to CONFIRM SQUAWK uplink message.

Ident.: DSC-46-10-10-10-00020321.0001001 / 10 OCT 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

VERY HIGH FREQUENCY (VHF)

The communication between the aircraft and VHF ground stations is established on a VHF frequency. The datalink system primarily uses VHF 3 communication system. The ATSU router automatically selects a VHF frequency, depending on entered configuration, the scan mask for VHF DataLink (VDL), and the aircraft position.
VHF data link service providers are available in each geographical area.



SOUTH
ACARS WORLD MAP

The table below defines the world zone abbreviations, indicates their associated Service Provider, MCDU label, and ACARS frequency.

ABBREVIATION	SERVICE PROVIDER	MCDU LABEL	FREQUENCY	Family
SP	SITA PACIFIC	SIT-PAC	131.550 MHz	SITA
SN	SITA NORTH AMERICA	SIT-NAM	136.850 MHz	SITA
SL	SITA LATIN AMERICA	SIT-LAM	131.725 MHz	SITA
SE	SITA EUROPE	SIT-E/A	131.725 MHz	SITA
DE	DEPV BRAZIL	DEPV	131.550 MHz	SITA
AV	AVICOM	AVICOM	131.450 MHz	SITA
AM	ARINC AMERICA	ARI-AM	131.550 MHz	ARINC
AE	ARINC EUROPE	ARI-EUR	136.925 MHz	ARINC
AF	ARINC AFRICA	ARI-AFR	126.900 MHz	ARINC
AK	ARINC KOREA	ARI-KOR	131.725 MHz	ARINC
AS	ARINC ASIA	ARI-ASI	131.450 MHz	ARINC

The VHF3 communication system has:
- Data mode
- Voice mode.

DATALINK/VOICE SWITCHING

The VHF 3 can be used in the voice mode, in case of:

- VHF 1 failure
- VHF 2 failure
- Specific AOC functions (operator's customization)

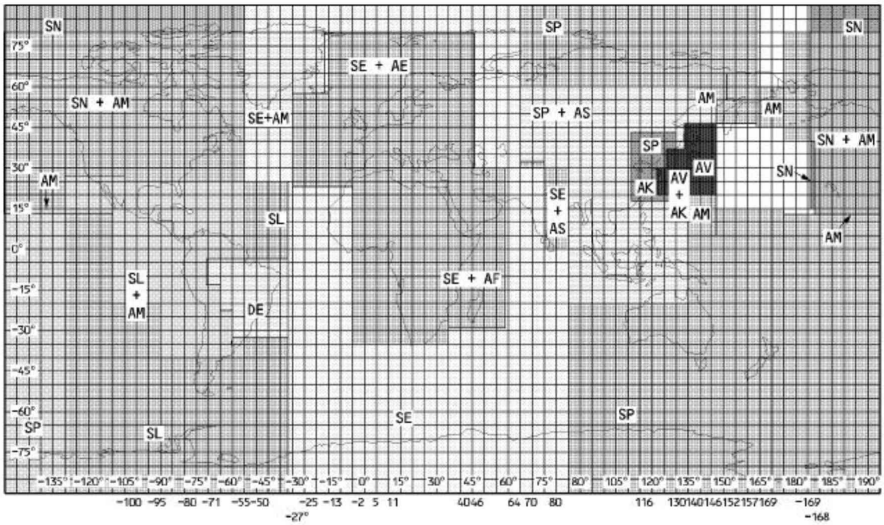
The flight crew can switch datalink/voice and set a voice frequency via the RMP.

Ident.: DSC-46-10-10-10-00020321.0002001 / 10 OCT 17

2 **Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02334, 02405-02584, 02670-02737, 02908-03071, 03264, 03330-04216, 04312-04399, 04438-04506, 04518-05155, 05190-09063**

VERY HIGH FREQUENCY (VHF)

The communication between the aircraft and VHF ground stations is established on a VHF frequency. The datalink system primarily uses the VHF 3 radio communication system. The ATSU router automatically selects a VHF frequency, depending on entered configuration, the scan mask for VHF DataLink (VDL), and the aircraft position.
VHF data link service providers are available in each geographical area.



SOUTH
ACARS WORLD MAP

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SL	SITA LATIN AMERICA	SIT-LAM	131.725 MHz	SITA
SE	SITA EUROPE	SIT-E/A	131.725 MHz	SITA
DE	DEPV BRAZIL	DEPV	131.550 MHz	SITA
AV	AVICOM	AVICOM	131.450 MHz	SITA
AM	ARINC AMERICA	ARI-AM	131.550 MHz	ARINC
AE	ARINC EUROPE	ARI-EUR	136.925 MHz	ARINC
AF	ARINC AFRICA	ARI-AFR	126.900 MHz	ARINC
AK	ARINC KOREA	ARI-KOR	131.725 MHz	ARINC
AS	ARINC ASIA	ARI-ASI	131.450 MHz	ARINC

The VHF3 radio communication system has:
- Data mode
- Voice mode.

DATALINK/VOICE SWITCHING

The VHF 3 can be used in the voice mode, in case of:
- VHF 1 failure
- VHF 2 failure
- Specific AOC functions (operator's customization).

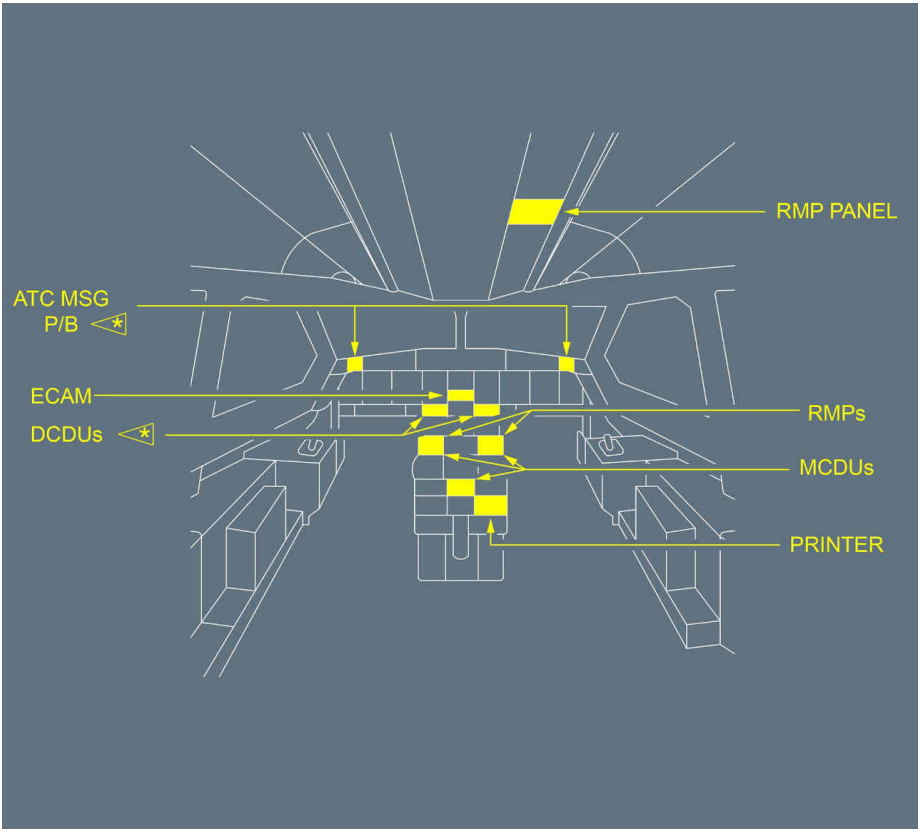
The flight crew can switch datalink/voice via the RMP, or via VHF3 VOICE DIRECTORY page of the MCDU.

The voice frequency can be tuned by:
- ATSU automatically
- Fight crew, via the RMP.

Green HF VOICE memo indicates that VHF 3 datalink communication is interrupted, when the VHF 3 transceiver operates in the voice mode.

COCKPIT INTERFACE

Ident.: DSC-46-10-10-00020373.0001001 / 17 MAR 17
Applicable to: ALL



The cockpit interface of the datalink system has:

- Datalink Control and Display Unit (DCDU) ◁ on the CAPT and F/O side
  The DCDU displays the uplink and downlink messages and enable the flight crew to control the datalink message exchange.
- ATC MSG pb-sw ◁ on the CAPT and F/O side of the glareshield
  The ATC MSG pb-sw alerts when an uplink message is received and enables the flight crew to cancel the alert.

- Multipurpose Control and Display Unit (MCDU)
  The MCDU enables to manage AOC and ATC functions and data transfer to the DCDU
- Printer
  Datalink messages can be printed, when displayed on the DCDU.
- RMP
  The RMP enables frequency tuning.
- ECAM
  The ECAM informs about the abnormal operation.

DATALINK MESSAGE

Ident.: DSC-46-10-10-30-00020966.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

UPLINK MESSAGE RECEPTION

When a datalink message is received, the flight crew reads, and manages the messages on the DCDU. The status of received message is OPEN, and changes during processing. Urgent messages or messages with higher priority are automatically displayed to the flight crew.
If a normal message is displayed on the DCDU, when receiving an urgent message, the DCDU will display the urgent message. The normal message stays in the file queue. The flight crew can retrieve the normal message by pressing MSG+/MSG- keys.

Ident.: DSC-46-10-10-30-00020374.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

UPLINK MESSAGE RECEPTION ALERT

The flight crew is alerted, when a datalink message is received. A dedicated aural alert activates and the ATC MSG pb-sw illuminates on CAPT side and on F/O side.

Note: *The ATC chime is triggered:*
- *Every 15 s, if a normal datalink message is received*
- *Every 5 s, if an urgent datalink message is received*

These cockpit alerts stop, if one of the ATC MSG pb-sw is pushed, or if the flight crew answers the datalink message via the DCDU.

Note: *ATC datalink alerts are inhibited during takeoff and landing phases.*

When a normal datalink message is received, this message will appear on the DCDU screen, if the screen is empty. If the DCDU screen is not empty, this message will not appear on the screen automatically, and the MSG (number) will flash in the information field of the DCDU.
When an urgent datalink message is received, this message will automatically appear on the DCDU screen.

Ident.: DSC-46-10-10-30-00020968.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

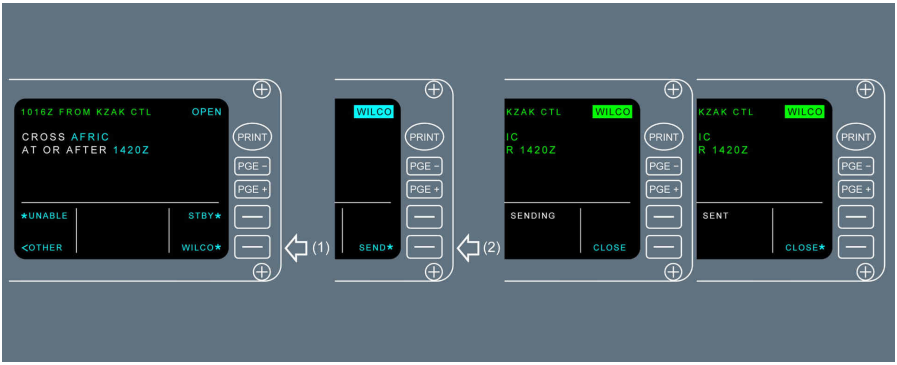
UPLINK MESSAGE RESPONSE

The flight crew can answer to an ATC datalink message:

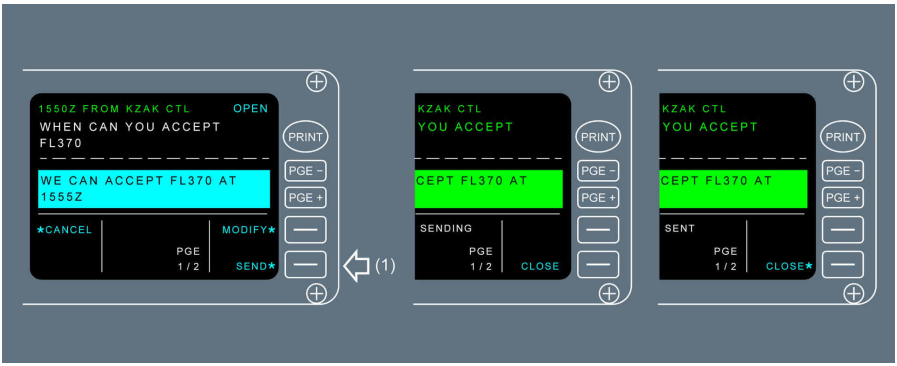
- Directly
  Several types of datalink messages enable the flight crew to answer directly, via the DCDU. The flight crew can launch preparation of a response message by pressing an appropriate function key (e.g.: WILCO, ROGER, AFFIRM, NEGATIVE, ...), on the DCDU. Consequently, the FMGS will generate a response message on the DCDU. The flight crew can send prepared response message to the ATC by pressing SEND function key of the DCDU.
- Indirectly
  Datalink messages that cannot be answered directly via the DCDU, are prepared on the MCDU. The flight crew selects the appropriate function key (EDIT or MODIFY), on the DCDU, in order to display desired MCDU page (EDIT or MESSAGE MODIFY page). The flight crew enters relevant values and information for the response via the page of the MCDU.
  When desired information is inserted, the flight crew must transfer the information from the MCDU to the DCDU, by pressing appropriate key on the MCDU. Consequently, prepared response message appears on the DCDU.

If the prepared downlink message has more than one page, the flight crew must display, and review all pages of the message on the DCDU, before the message is sent to the ATC. When the flight crew displays all pages of the message, an asterisk (*) appears next to SEND function key of the DCDU. The asterisk (*) indicates that the function key is active, and the function can be used.
If the flight crew cannot answer to an ATC uplink message immediately, a stand-by (STBY) message can be sent to the ATC. When a STBY response message is sent, the message status, displayed on the DCDU, changes to STBY. This message cannot be removed from the DCDU, until the flight crew sends a final response later on.
When a downlink message is successfully sent, the message information area will indicate SENT and the color code of the message will change.

EXAMPLE	Clearance message: The flight crew can answer positively, by selecting WILCO* See (1) and send the message to the ATC, by selecting SEND* See (2) on the DCDU. SENDING appears in the information area of the DCDU, when SEND* is selected. SENT appears in the information area of the DCDU, when the message is successfully sent.



EXAMPLE	Negotiation message: The flight crew can send the response message, automatically generated on the DCDU, to the ATC, by selecting SEND* See (1). SENDING appears in the information area of the DCDU, when SEND* is selected. SENT appears in the information area of the DCDU, when the message is successfully sent.



When a downlink message is not successfully sent, the message information area will indicate SEND FAILED or other, depending on a datalink connection error or failure. In these cases, the flight crew must close the message. A new request can be created, in order to send the message.

Ident.: DSC-46-10-10-30-00021222.0002001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

Note: *If the ATC center is equipped to support the Logical Acknowledgment (LACK) function. The LACK function informs the flight crew when the downlink message displays on the ATC screen. Consequently, RECEIVED BY ATC will appear in the information area of DCDU instead of SENT.*

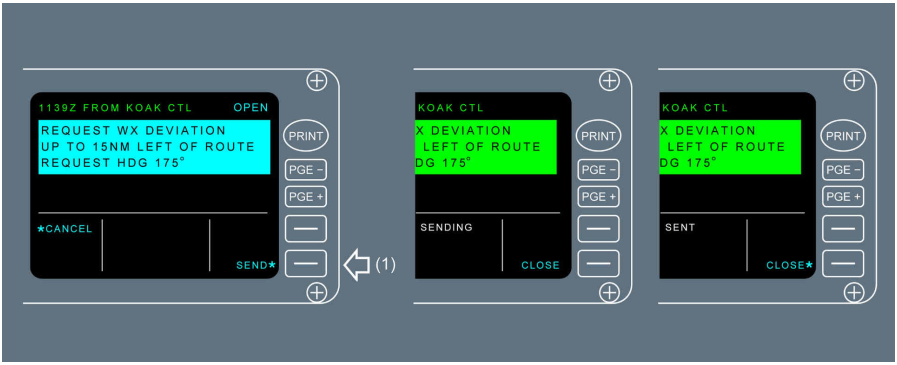
Ident.: DSC-46-10-10-30-00020970.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

DOWNLINK MESSAGE CREATION

The flight crew can also create and send a request to the ATC.

A request message created by the flight crew and sent to ATC has:
- Cyan (blue) background before sending
- Green background, after sending.

EXAMPLE	Request message: The flight crew can send prepared message to the ATC by selecting SEND* See (1) on the DCDU. SENDING appears in the information area of the DCDU, when SEND* is selected. SENT appears in the information area of the DCDU, when the message is successfully sent.



Note: *The flight crew should avoid:*
- *Sending multiple clearance requests in the same message.*
- *Re-sending a message, if the ATC does not answer immediately.*

Ident.: DSC-46-10-10-30-00021458.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

CLOSING AND REMOVAL OF THE MESSAGE FROM THE DCDU

When the flight crew sends the datalink message via the DCDU, The message should be closed, by pressing the CLOSE function key. Closing the message will clean the DCDU screen.

Ident.: DSC-46-10-10-30-00020972.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

The RECALL function key of the DCDU can be used to display the last closed message.
Other messages can be viewed on the MSG RECORD page of the MCDU .

Note: *Before each flight, the MSG RECORD file of previous flight should be erased.*

Ident.: DSC-46-10-10-30-00021192.0001001 / 21 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158

AUTO-CLOSING

The message closes and the system automatically removes the message from the DCDU, 5 s after the ATC center successfully receives the message.
Clearance messages and messages, related to loss of communication or datalink transmission error, do not close automatically, when sent or received by the ATC. The flight crew must close these messages by pressing the CLOSE key, on the DCDU. Closing the message will remove the message from the DCDU screen.

VOICE READ-BACK

Uplink datalink messages, related to a change of aircraft flight profile, require voice read-back. ATC Centers that support FANS B, provide a list of uplink messages that require voice read-back.

The flight crew must perform the following actions, when one of these uplink messages is received:

- Perform a voice read-back of the clearance, received by the ATC Center
- Send a WILCO response message to the ATC Center
- Perform the action related to the ATC clearance.

General

GENERAL

Ident.: DSC-46-10-20-10-00020385.0001001 / 17 MAR 17
Applicable to: ALL

The AOC applications ◁ are datalink applications. The AOC applications enable an exchange of specific messages between the flight crew and the Airline Operational Control (AOC).
The AOC applications are customized by each operator and depend on operator's choices and the datalink service provider.

Note: *Details about AOC applications cannot be provided due to the wide range of customization by the operator.*
Airbus does not supervise customization of AOC applications. It is recommended to insert AOC application description into this chapter in accordance with AOC applications installed on the aircraft.

The AOC applications can offer the following functions:

EXAMPLE

- Preflight Functions:
  - Flight log
  - Departure Delay Message
  - Takeoff Delay Message
  - Weather Request
  - NOTAM Request
  - Loadsheet Request
  - Others
- En-Route Functions:
  - Flight log
  - Diversion Message
  - En-route Delay
  - Estimated Time of Arrival (ETA) Message
  - Weather Request
  - NOTAM Request
  - Others
- Postflight Functions:
  - Flight log
  - Flight summary
  - Gate delay
  - Others

The flight crew uses the datalink cockpit interface for the AOC applications.

EXAMPLE	**Flight Plan Modification**
	This flight plan modification example is based on following assumptions: - The AOC sends a flight plan modification message to the flight crew. - The flight crew loads the fight plan modification in the FMGS, into the secondary F-PLN. - The crew obtains ATC clearance before activating the modified flight plan. - *Refer to DSC-46-10-50 How to Modify FLT Plan* for the flight plan modification based on an AOC request.

Notifications

NOTIFICATION

Ident.: DSC-46-10-30-10-00020375.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

The Notification application enables the flight crew to send a notification message to an ATC center, if the datalink system is correctly initialized.
Refer to DSC-46-10-50 How to Initialize for more information about datalink initialization.
The flight crew must notify the ATC center, from 15 min to 45 min, before entering the ATC area.
The flight crew notifies a desired ATC center via the NOTIFICATION page of the MCDU .
However, ATC centers initiate automatic notification, when the aircraft flies from one ATC area to another.

Note: *The ATC center initiates a CPDLC connection, when the flight crew sends the notification. The NOTIFICATION page of the MCDU will display "XXXX NOTIFIED HHMM Z"). Therefore, it is not necessary to repeat notifications to the ATC center.*

The notification procedure enables the ATC to correlate the aircraft with the ICAO flight number.

Note: *The FMGC provides the FLT number.*

Consequently, it is essential to enter, into the FMGC, via the INIT page of the MCDU, the same flight number as the flight number, indicated on the ICAO flight plan (with the same number of letters).
Optional datalink applications ◁ (departure clearance, oceanic clearance and D-ATIS) do not require previous notifications, or connection to an ATC center.

Optional datalink applications are based on voice exchanges:
1. Request - crew requests
2. Clearance - ground clears
3. Read-back - crew reads back
4. Confirmation - ground confirms.

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Controller/Pilot Datalink Communication (CPDLC)

GENERAL

Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

Ident.: DSC-46-10-30-20-10-00020376.0001001 / 17 MAR 17

The CPDLC application enables an exchange of specific ATC messages between the flight crew and air traffic controller.
The air traffic controller initiates the CPDLC connection with the aircraft, after the reception of a notification message from the flight crew.

Note: *When the aircraft flies from one air traffic control area to another, the CPDLC ensures an automatic transfer of ATC centers.*

The flight crew and air traffic controller use a set of predefined messages to build datalink messages. The flight crew and air traffic controller can also send freetext datalink messages. Freetext messages can only be used, when pre-formatted datalink messages do not allow to send the information.

Note: *The freetext message does not allow the datalink system to generate automatic pre-formatted answer.*
The freetext message must contain standard ATC phraseology and standard abbreviations.

The CPDLC application enables the flight crew to answer following uplink messages via the DCDU:
- Clearance
- Report request
- Negotiation message
- Information message.

Ident.: DSC-46-10-30-20-10-00021043.0002001 / 05 JUN 18

The CPDLC application supports the following functions:
- Connection (Refer to DSC-46-10-30-20 Connection)
- Request (Refer to DSC-46-10-30-20 Request)
- Edit (Refer to DSC-46-10-30-20 Edit)
- Message Timer (Refer to DSC-46-10-30-20 Message Timer).

CONNECT

Ident.: DSC-46-10-30-20-00020998.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

The notified ATC center can initiate a CPDLC connection with the aircraft. This ATC center is then considered as active. The active ATC center appears on the DCDU, and on the MCDU, in the active ATC field of the CONNECTION STATUS page.
Only one ATC center can be active at a time.
During flight, the aircraft may move from one ATC area to another ATC area. The next ATC may anticipate this change. The next ATC center may initiate a passive connection with the aircraft, when the aircraft is still connected to the active ATC. In this case, the next ATC center appears on the DCDU, and on the MCDU, in the next ATC field of the CONNECTION STATUS page. When the ATC area changes, the active ATC center ends the connection with the aircraft, and the next ATC center automatically becomes the active ATC center.
The CONNECTION STATUS page of the MCDU displays ICAO codes of both, the active and the next (if any) ATC centers. The flight crew can manually disconnect the ATC centers via the CONNECTION STATUS page.
Refer to DSC-46-10-40-30 CONNECTION STATUS for information about the CONNECTION STATUS page.

REQUEST

Ident.: DSC-46-10-30-20-00021000.0002001 / 01 MAR 18
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

In the REQUEST page of the MCDU, the flight crew can request:

- Direct to
- Altitude / Flight Level
- Speed / Mach

Note: *Requests of the departure clearance, oceanic clearance and ATIS are not part of the CPDLC application.*

EDIT

Ident.: DSC-46-10-30-20-00021013.0002001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

The EDIT function enables the flight crew to modify a downlink message before sending.
The flight crew can modify the message on the MCDU, before the message is sent to ATC center via the DCDU.

Note: *The EDIT page appears automatically on the MCDU, if the EDIT function key is pressed on the DCDU. Pressing EDIT also triggers MCDU FOR EDIT indication, in the message information area, on the DCDU.*

Refer to DSC-46-10-40-20 Message Information Area for information about MCDU FOR EDIT indication on the DCDU.
Refer to DSC-46-10-40-30 EDIT for more information about the EDIT page.

MESSAGE TIMER

Ident.: DSC-46-10-30-20-00021031.0003001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158

The message latency timer is a fixed time value. The message becomes invalid, after expiry of the message latency timer. The flight crew or air traffic controller cannot receive invalid datalink message.

DOWNLINK MESSAGE

The ATC center must receive the message in a limited time. The air traffic controller cannot see an invalid message. When an invalid message is not received by the air traffic controller, the DCDU displays an associated message (NO ATC REPLAY) to inform the flight crew.

UPLINK MESSAGE

The ATC center must transmit the message to the aircraft in a limited time. If the time difference between the time reference/timestamp in the message, and the reception of the message by the aircraft, exceeds the message latency time, the message is rejected. The DCDU will not display the message.
The flight crew must respond to an uplink message in a limited time. The flight crew may press STBY, in the case of an expected delay that exceeds the message timer.

Note: *The DCDU displays XXs FOR REPLAY, in the message information area, 30 s before the expiration of replay timer. This message informs the flight crew about the time that remains to the expiration of the message latency timer.*

When the uplink message timer expires (the flight crew did not respond within the limit), the DCDU displays REPLAY: TIME OUT, in the message information area. The message becomes invalid. An invalid uplink message can only be closed, and the flight crew reverts to voice communication, if a response to the message is required.

MESSAGE TIMER

Ident.: DSC-46-10-30-20-00021031.0002001 / 17 MAR 17
Applicable to: MSN 02649

The message latency timer is a fixed time value. The message becomes invalid, after expiry of the message latency timer. The flight crew or air traffic controller cannot receive invalid datalink message.

DOWNLINK MESSAGE

The ATC center must receive the message in a limited time. The air traffic controller cannot see an invalid message. When an invalid message is not received by the air traffic controller, the DCDU displays an associated message (e.g.: ATC TIME OUT - REPEAT REQUEST) to inform the flight crew.

UPLINK MESSAGE

The ATC center must transmit the message to the aircraft in a limited time. If the time difference between the time reference/timestamp in the message, and the reception of the message by the aircraft, exceeds the message latency time, the message is rejected. The DCDU will not display the message.
The flight crew must respond to an uplink message in a limited time. The flight crew may press STBY, in the case of an expected delay that exceeds the message timer.
When the uplink message timer expires (the flight crew did not respond within the limit), the DCDU displays REPLAY: TIME OUT, in the message information area. The message becomes invalid.
An invalid uplink message can only be closed, and the flight crew reverts to voice communication, if a response to the message is required.

Departure Clearance (DCL)

DEPARTURE CLEARANCE

Ident.: DSC-46-10-30-40-00021063.0001001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138

The Departure Clearance (DCL) application enables the flight crew to request and obtain departure information and clearance from the ATC center.

The DCL application is initiated by:
- The flight crew, when sending a DCL request
  Refer to DSC-46-10-50 Request for information about how to request DCL.
- The ATC center, when sending a DCL clearance to the aircraft without a request.

Consequently, the flight crew receives the clearance, reads back the clearance and receives the read-back confirmation from the ATC.

DEPARTURE CLEARANCE RECEPTION

A new message triggers visual (ATC MSG light) and aural alerts. The DCDU displays the new message in an open status, on a blue background.
Refer to DSC-46-10-50 Reception for information about how to receive DCL.

DEPARTURE CLEARANCE READ-BACK

The flight crew can acknowledge or refuse the departure clearance.
Refer to DSC-46-10-50 Read-Back for information about how to read-back DCL.

DEPARTURE CLEARANCE READ-BACK CONFIRMATION

A new read-back confirmation message triggers visual (ATC MSG light) and aural alerts.
Refer to DSC-46-10-50 Confirmation of DCL Read-Back for information about how to read-back DCL confirmation.

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Oceanic Clearance (OCL)

OCEANIC CLEARANCE

Ident.: DSC-46-10-30-50-00020379.0001001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138

The Oceanic Clearance (OCL) application enables the flight crew to request and obtain an oceanic clearance from the Oceanic ATC center, before entering an oceanic airspace.

The OCL application can be initiated by:
- The flight crew, when sending an OCL request via the MCDU
  Refer to DSC-46-10-50 Request for information about how to request OCL.
- The ATC center, when sending an OCL clearance to the aircraft without a request.

Consequently, the flight crew receives the clearance, reads back the clearance and receives the read-back confirmation from the ATC.

OCEANIC CLEARANCE RECEPTION

A new message triggers visual (ATC MSG light) and aural alerts. The DCDU displays the new message in an open status, on a blue background.
Refer to DSC-46-10-50 Reception for information about how to receive OCL.

OCEANIC CLEARANCE READ-BACK

The flight crew can acknowledge or refuse the oceanic clearance.
Refer to DSC-46-10-50 Read-Back for information about how to read-back OCL.

OCEANIC CLEARANCE READ-BACK CONFIRMATION

A new read-back confirmation message triggers visual (ATC MSG light) and aural alerts.
Refer to DSC-46-10-50 Confirmation of OCL Read-Back for information about how to read-back OCL confirmation.

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Digital - Automatic Terminal Information Service (D-ATIS)

DIGITAL - ATIS

Ident.: DSC-46-10-30-60-00020378.0001001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138

The Digital Automatic Terminal Information Service (D-ATIS) enables the flight crew to request and obtain information about airports.

Note: *The D-ATIS may not be available for all airports. Terminal charts usually indicate when the D-ATIS is available.*

The flight crew can request information for departure, destination, and alternate airports via the ATIS MENU page of the MCDU.
When initially accessing the ATIS MENU page, the application automatically fills in the airport names and type of the ATIS areas with departure, arrival and alternate airport names (if they are entered via the FMS). The departure type indicator (DEP) is automatically associated to the departure airport request. The arrival type indicator (ARR) is automatically associated to the destination and the alternate airport requests.
To make a request for another airport than the one automatically filled, enter the ICAO code of the airport in one of the areas.

The flight crew requests ATIS reports:
- Manually
  Refer to DSC-46-10-50 Manual Request for more information.
- Automatically
  Refer to DSC-46-10-50 Auto-Update Request for more information.

The AUTO-UPDATE function automatically provides ATIS reports of arrival airports only when a new version is available.
The AUTO-UPDATE CANCEL function enables to deactivate the AUTO-UPDATE function.

Note: *Once the auto-update function is cancelled, the REQ SEND function, related to the arrival airport, becomes available. The flight crew can still send an ATIS report request to the related arrival airport manually.*

The flight crew receives ATIS reports on:

- The MCDU,
  Refer to DSC-46-10-50 Reception for more information about a display of received ATIS.

  Note: *ATIS reports are received in the MCDU, contrary to other ATC datalink applications that receive messages in the DCDU.*

- The printer
  When the automatic print is selected on the ATIS MENU page, the ATIS information is sent directly to the printer.

Message Record

MESSAGE RECORD

Ident.: DSC-46-10-30-70-00020377.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

The Message Record application enables to store datalink messages. The flight crew can display the recorded messages at any time.
When the flight crew closes a message on the DCDU, the message is stored and disappears from the DCDU.
The messages are stored in chronological order and grouped by flight number. When the maximum number of stored messages is reached (up to 99 messages), any new message will be stored and the oldest message will be deleted.
The flight crew can access the stored message via the MSG RECORD page of the MCDU.

Note: *1. The flight crew can print recorded messages.*
2. The flight crew can erase all recorded messages.
3. The ADS-C ◁ reports are not stored.

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ATC Message Pushbutton (ATC MSG PB)

ATC MSG PB

Ident.: DSC-46-10-40-10-00021077.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

No datalink message from the ATC center was received.

Flashes when a datalink message from the ATC center is received, or a reminder message is received. When a message is received, the DCDU automatically displays the message on the screen.
Associated with audio alert.
When the flight crew presses one of the two ATC MSG pbs, the ATC MSG lights go off and the aural alert associated with the reception of the message is cancelled.

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Datalink Control and Display Unit (DCDU)

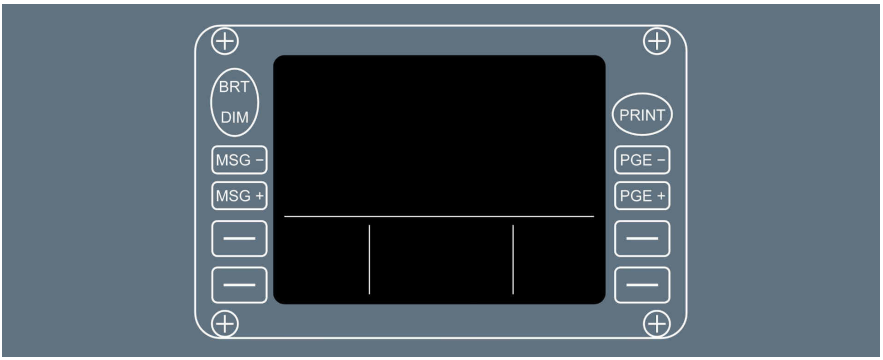
DCDU

Ident.: DSC-46-10-40-20-10-00021076.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

■ **If datalink connection is not established:**

By default, the DCDU displays no information. The DCDU screen is black without information.

DCDU Screen with No Datalink Connected



■ **If datalink connection is established:**

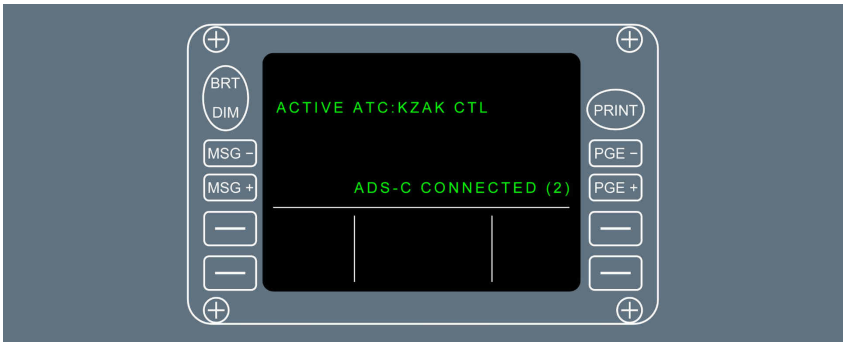
● **If no datalink message is displayed on the DCDU:**

By default, the DCDU displays:

- ACTIVE ATC and the active ATC ICAO code
- NEXT ATC and the next ATC ICAO code, if the active ATC initiated an automatic transfer to a next ATC
- ADS-C status, when the ADS-C is set to OFF
- ADS-C CONNECTED (X), if an ADS-Contract is established with ATC center(s)
  (X) : Displays the number of ADS-C active connections, when at least one ATC center is connected
- NO ATC DLK/ATC DISCONNECTED, when the datalink connection is lost.

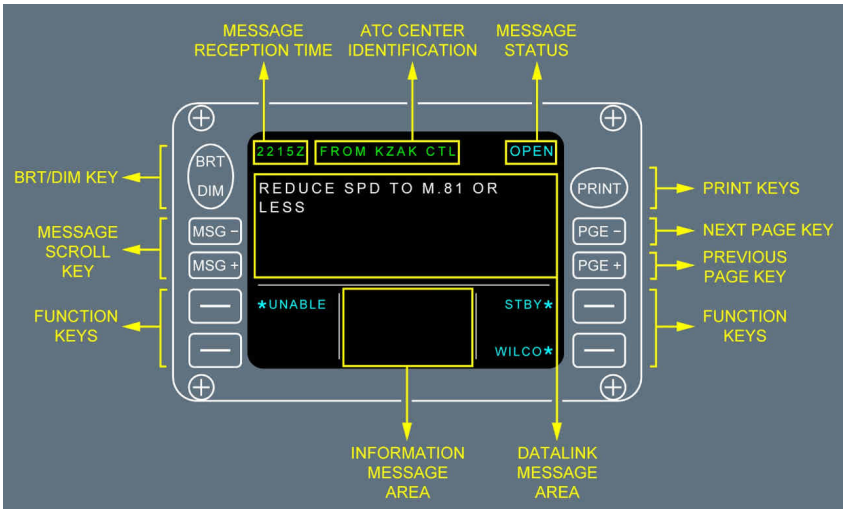
EXAMPLE	The DCDU default screen, when the datalink is connected and no message is displayed on the screen:

DCDU Screen with Datalink Connected and No Datalink Message Displayed



- **If a datalink message is displayed on the DCDU:**

DCDU Screen with Datalink Connected and Datalink Message Displayed



Ident.: DSC-46-10-40-20-10-00021243.0002001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

DATALINK MESSAGE AREA

Displays uplink and downlink messages.

Uplink messages are displayed on a black background, and:
- When received, the message appears in white and the main parameters in cyan.
- When answered, the message becomes green.

Downlink messages appear in black:
- On a cyan background before sending
- On a green background while and after sending.

Ident.: DSC-46-10-40-20-10-00021241.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

MESSAGE STATUS

Indicates the status of the message or the response of the flight crew to a message received from the active ATC center.

The status of the message changes to AFFIRM, when the flight crew selects a positive answer to the ATC uplink message on the DCDU.

The status of the message changes to AFFIRM, when the flight crew sends a positive answer to the ATC center.

The status of the message changes to NEGATV, when the flight crew selects a negative answer to the ATC uplink message on the DCDU.

The status of the message changes to NEGATV, when the flight crew sends a negative answer to the ATC center.

The status of the message changes to ROGER, when the flight crew selects ROGER, in order to inform the ATC center that they received and understood the uplink message.

The status of the message changes to ROGER, when the flight crew sends a ROGER answer to the ATC center.

The status of the message changes to STBY, when the flight crew selects STBY, in order to inform the ATC center that they need time to answer the uplink message.

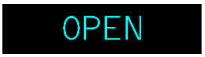
The status of the message changes to STBY, when the flight crew sends a STBY answer to the ATC center.

The status of the message changes to UNABLE, when the flight crew selects UNABLE, in order to inform the ATC center that they cannot comply with the request.

The status of the message changes to UNABLE, when the flight crew sends a UNABLE answer to the ATC center.

The status of the message changes to WILCO, when the flight crew selects WILCO, in order to inform the ATC center that they understood the request and that they will comply with it.

The status of the message changes to WILCO, when the flight crew sends a WILCO answer to the ATC center.



Indicates that the received uplink message requires a response. The status OPEN remains until the flight crew answers the uplink message.

Indicates that:
- The flight crew did not answer the uplink message in due time, or
- The flight crew sent a downlink or a response message, but no acknowledgment from the ground was received.

Indicates that a disconnection occurred during a pending uplink or downlink message.

Note: *The status field remains empty for:*
- *A downlink message sent to the active ATC center*
- *An uplink message for which no response is expected.*

Ident.: DSC-46-10-40-20-10-00021334.0001001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138

The status of the message changes to ACK, when the flight crew selects ACK, in order to acknowledge a departure/oceanic clearance.

The status of the message changes to ACK, when the flight crew sends a ACK answer to the ATC center.

The status of the message changes to REFUSE, when the flight crew selects REFUSE, in order to refuse a departure/oceanic clearance. The message CONTACT ATC BY VOICE - REFUSE NOT SUPPORTED - BY DATALINK appears in the datalink message area, in order to inform the flight crew that they must use voice radio communication to refuse the clearance.

Ident.: DSC-46-10-40-20-10-00021242.0003001 / 17 MAR 17
Applicable to: MSN 02649

FUNCTION KEYS

Depending on the nature of the message, the system automatically displays an appropriate function by each function key.

Possible unctions are detailed below.

AFFIRM	:	When selected, prepares an affirmative response to accept an ATC negotiation message (e.g. CAN YOU ACCEPT [altitude] AT [time]).. - Remove a prepared downlink message from the DCDU - Cancel a selected reply to an uplink message.
CANCEL	:	When selected, enables the flight crew to:
CANNOT	:	When selected, prepares a negative answer to an OPEN negotiation message from the ATC.
CLOSE	:	When selected, erases a message (from the DCDU screen) that was sent to the ATC, or erases a message from the ATC that was answered. This message is stored in the MSG RECORD. This is not applicable when the answer is on stand-by (STBY).
LOAD	:	When selected, loads a flight plan from the ATC, or a parameter time constraint, into the secondary flight plan.
EDIT	:	When selected, accesses the EDIT page, on the MCDU.
NEGATIV	:	When selected, prepares a negative response to an ATC message.
OTHER	:	When selected, displays the other functions that could be applicable to the current message, but are not currently displayed.
RECALL	:	When selected, recalls the last message that was removed from the screen, using the CLOSE function.
ROGER	:	When selected, confirms the reception, and understanding of ATC information or report request.
SEND	:	When selected, sends a message or an answer, that was prepared by using other function keys (Example: WILCO, ROGER, AFFIRMATIVE, STBY, ...).
STBY	:	When selected, informs the ATC that the flight crew needs to delay the answer.
UNABLE	:	When selected, rejects an ATC clearance.
WILCO	:	When selected, accepts an ATC clearance.
*	:	The function keys are operative, if an asterisk or a function is visible.

Ident.: DSC-46-10-40-20-10-00021242.0004001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158

FUNCTION KEYS

Depending on the nature of the message, the system automatically displays an appropriate function by each function key.

Possible unctions are detailed below.

AFFIRM : When selected, prepares an affirmative response to accept an ATC negotiation message (e.g. CAN YOU ACCEPT [altitude] AT [time])..

ANSWER : When selected, prepares a default response to an uplink message with two or more confirm/open negotiation message elements.

CANCEL : When selected, enables the flight crew to:
- Remove a prepared downlink message from the DCDU
- Cancel a selected reply to an uplink message.

CANNOT : When selected, prepares a negative answer to an OPEN negotiation message from the ATC.

CLOSE : When selected, erases a message (from the DCDU screen) that was sent to the ATC, or erases a message from the ATC that was answered. This message is stored in the MSG RECORD. This is not applicable when the answer is on stand-by (STBY).

EDIT : When selected, accesses the EDIT page, on the MCDU.

NEGATIV : When selected, prepares a negative response to an ATC message.

RECALL : When selected, recalls the most recently closed message if it was closed within the last 5 min. If the flight crew selects the RECALL more than 5 min after the last message was closed, the RECALL EMPTY CONSULT MSG RECORD message appears.

ROGER : When selected, confirms the reception, and understanding of ATC information or report request.

SEND : When selected, sends a message or an answer, that was prepared by using other function keys (Example: WILCO, ROGER, AFFIRMATIVE, STBY, ...).

STBY : When selected, informs the ATC that the flight crew needs to delay the answer.

UNABLE : When selected, rejects an ATC clearance.

WILCO : When selected, accepts an ATC clearance.

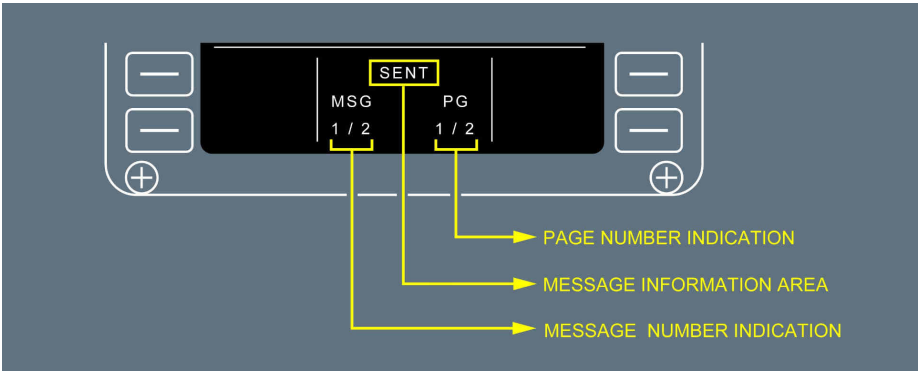
* : The function keys are operative, if an asterisk or a function is visible.

Ident.: DSC-46-10-40-20-10-00021336.0001001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138

ACK : When selected, prepares a response message to accept a departure/oceanic clearance message.

REFUSE : When selected, prepares a response message to send a negative answer to a departure/oceanic clearance message.

Message Information Area on the DCDU



MESSAGE NUMBER INDICATION

Indicates the rank of the message that is displayed on the DCDU.
If there is only one message on the DCDU, the message number information does not appear in the information field. In the case of a new message reception, the message number indication flashes.

PAGE NUMBER INDICATION

Indicates the page number of the message that is displayed on the DCDU.
If the message contains only one page, the page number information does not appear in the information field.

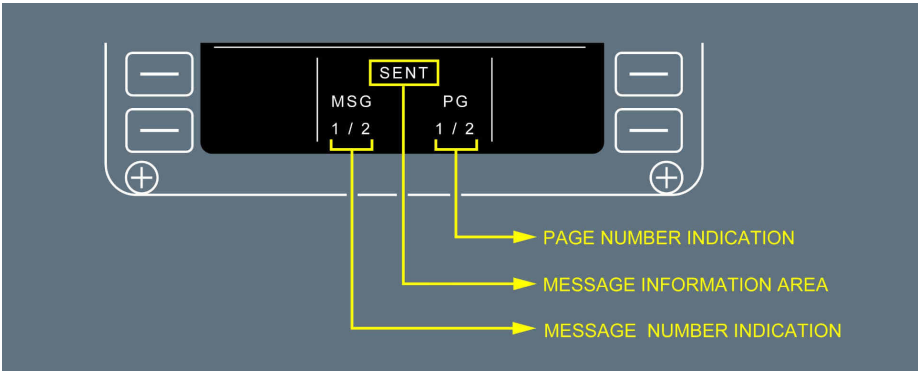
MESSAGE INFORMATION AREA

ANSWER MSG (amber)	:	Maximum number of pending uplink messages is reached.
COM NOT AVAIL (amber)	:	Communication means temporarily unavailable.
COM FAULT (amber)	:	ATC communication means faulty.
COM NOT INIT (amber)	:	Router not initialized.
FILE FULL (amber)	:	Maximum number of downlink messages, accessible on the DCDUs, is reached.
LINK LOST (amber)	:	Communication with the ATC is unavailable (displayed on any message pending when the loss occured).

MCDU FOR EDIT (white)	:	Follows pressing of the “EDIT” key.
NO ATC DLK (white)	:	ATC communication means temporarily unavailable.
NO ATC REPLY (amber)	:	No answer received within 270 s.
NO MORE MSG (white)	:	Follows pressing of the “MSG + “ or “MSG -” key, when no more messages are accessible.
NO MORE PGE (white)	:	Follows pressing of the “PGE +” or “PGE -” key, when no more pages are accessible.
OVERFLW CLOSED (amber)	:	Maximum number of non-pending messages is reached, and a new non-pending message is registered in the file.
PRINT FAILED (amber)	:	Printing was requested from the DCDUs and printing failed.
PRINTING (white)	:	Printing was requested from the DCDUs and printing is in progress.
PRINTING UNAVAIL (white)	:	Printing was requested from the DCDUs, but the printer is unavailable.
RECALL MODE (white)	:	Recalls the last stored message.
RECEIVD BY ATC (white)	:	The current message has been received by the controller.
REJ BY ATC (amber)	:	Message rejected by the ATC system, controller not aware of this message.
REPLY: TIME OUT (amber)	:	Crew answers have to be delivered within 100 s.
SEND FAILED (amber)	:	Transmission of a request or a reply to an uplink message are unsuccessful.
SENDING (white)	:	The current message is being sent.
SENT (white)	:	The current message was sent, but not necessarily received.

Ident.: DSC-46-10-40-20-10-00021240.0004001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158

Message Information Area on the DCDU



MESSAGE NUMBER INDICATION

Indicates the rank of the message that is displayed on the DCDU.
If there is only one message on the DCDU, the message number information does not appear in the information field. In the case of a new message reception, the message number indication flashes.

PAGE NUMBER INDICATION

Indicates the page number of the message that is displayed on the DCDU.
If the message contains only one page, the page number information does not appear in the information field.

MESSAGE INFORMATION AREA

ANSWER MSG (amber) : Maximum number of pending uplink messages is reached.

COM FAULT (amber) : ATC communication means faulty.

COM NOT AVAIL (amber) : Communication means temporarily unavailable.

COM NOT INIT (amber) : Router not initialized.

FILE FULL (amber) : Maximum number of downlink messages, accessible on the DCDUs, is reached.

LINK LOST (amber) : Communication with the ATC is unavailable (displayed on any message pending when the loss occured).

MCDU FOR EDIT (white)	:	Follows pressing of the “EDIT” key.
MCDU FOR TEXT (white)	:	Follows pressing the “UNABLE“ key.
NO ATC DLK (white)	:	ATC communication means temporarily unavailable.
NO ATC REPLY (amber)	:	No answer received within 270 s.
NO MORE MSG (white)	:	Follows pressing of the “MSG + “ or “MSG -” key, when no more messages are accessible.
NO MORE PGE (white)	:	Follows pressing of the “PGE +” or “PGE -” key, when no more pages are accessible.
OVERFLW CLOSED (amber)	:	Maximum number of non-pending messages is reached, and a new non-pending message is registered in the file.
PRINT FAILED (amber)	:	Printing was requested from the DCDUs and printing failed.
PRINTING (white)	:	Printing was requested from the DCDUs and printing is in progress.
PRINTING UNAVAIL (white)	:	Printing was requested from the DCDUs, but the printer is unavailable.
RECALL EMPTY CONSULT MSG RECORD (white)	:	If the flight crew has pressed the “RECALL“ key, and the last message was closed more than 5 minutes before.
RECALL MODE (white)	:	If the flight crew has pressed the “RECALL“ key and the last message was closed within the last 5 minutes.
RECEIVD BY ATC (white)	:	The current message has been received by the controller.
REJ BY ATC (amber)	:	Message rejected by the ATC system, controller not aware of this message.
REPLY: TIME OUT (amber)	:	Crew answers have to be delivered within 100 s.
SENDING (white)	:	The current message is being sent.
SEND FAILED (amber)	:	Transmission of a request or a reply to an uplink message are unsuccessful.
SENT (white)	:	The current message was sent, but not necessarily received.

Ident.: DSC-46-10-40-20-10-00021246.0001001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138

NON STD FORMAT (white)	:	The received uplink for OCL/DCL is partially valid.

NON STD SENDER (white) : The received uplink for OCL/DCL is partially valid because the identification of the ATC center is not possible.

Ident.: DSC-46-10-40-20-10-00021244.0003001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

TIME

Indicated time corresponds to the time of:
- *Uplink message*, when the ATC center sent the message.
- *Downlink message*, when the flight crew transferred the message from the MCDU.

Ident.: DSC-46-10-40-20-10-00021245.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

BRT/DIM KEY

Adjusts the brightness of the DCDU

DESTINATION/ORIGIN ATC CENTER

Indicates the active ATC center that sent or received the message.

MESSAGE SCROLL KEY (MSG- / MSG+)

When pressed, displays the previous/next message in the file.

NEXT/PREVIOUS PAGE KEYS (PGE- / PGE+)

When pressed, displays the previous/next page of the message, if the message cannot be displayed on one single page.

PRINT KEY

Prints the message that is currently displayed on the DCDU.

Intentionally left blank

MCDU Datalink Pages

INTRODUCTION

Ident.: DSC-46-10-40-30-10-00021078.0002001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

The MCDU MENU page enables access to datalink pages when the flight crew selects ATSU.

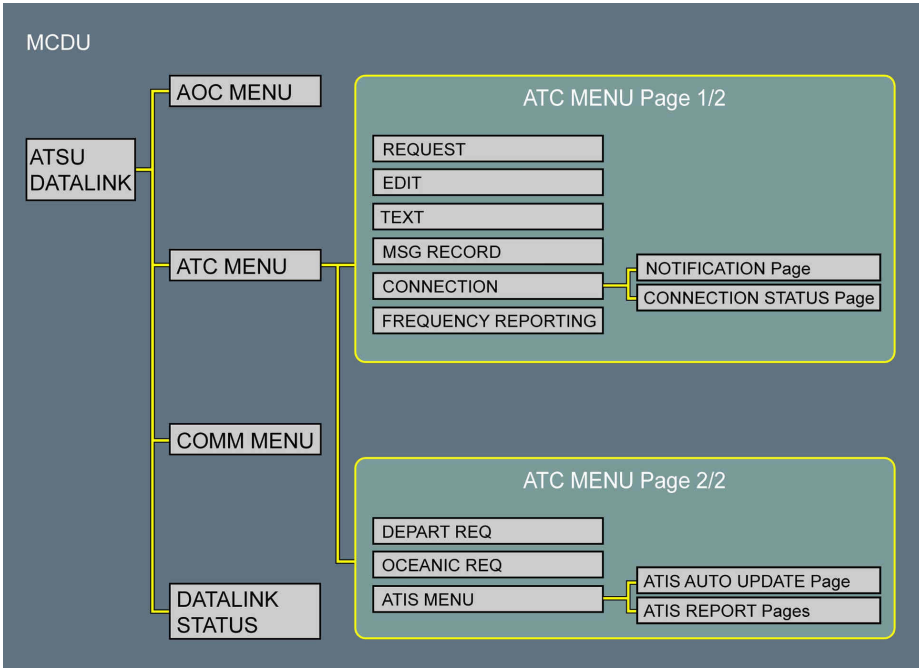
The ATSU of the MCDU MENU enables to access ATSU DATALINK page. The ATSU DATALINK page provides a subsequent access to:

- AOC MENU pages

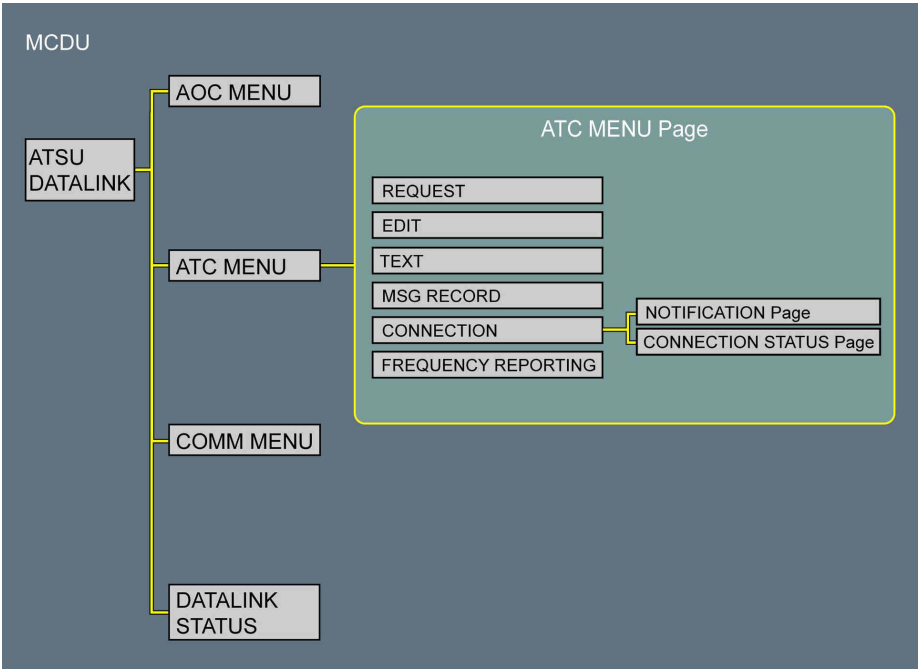
  Note: *Due to the customization of AOC applications by each operator that is not monitored by Airbus, this Controls and Indicators chapter does not contain a description of controls and indicators associated with AOC applications.*

- ATC MENU pages
- COMM MENU pages
- DATALINK STATUS page
  Refer to DSC-46-10-40-30 DATALINK STATUS

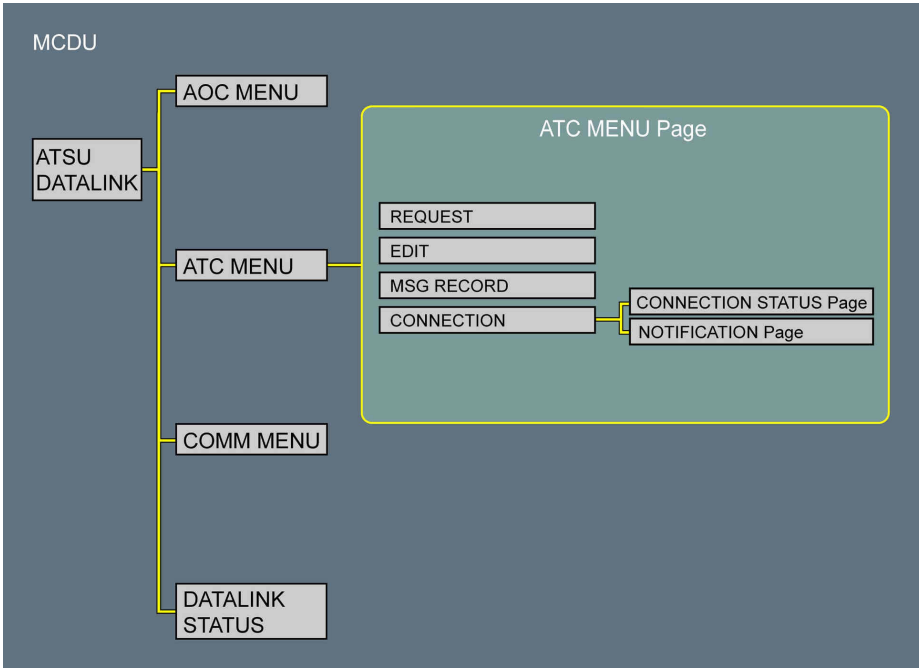
Ident.: DSC-46-10-40-30-10-00021195.0006001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138



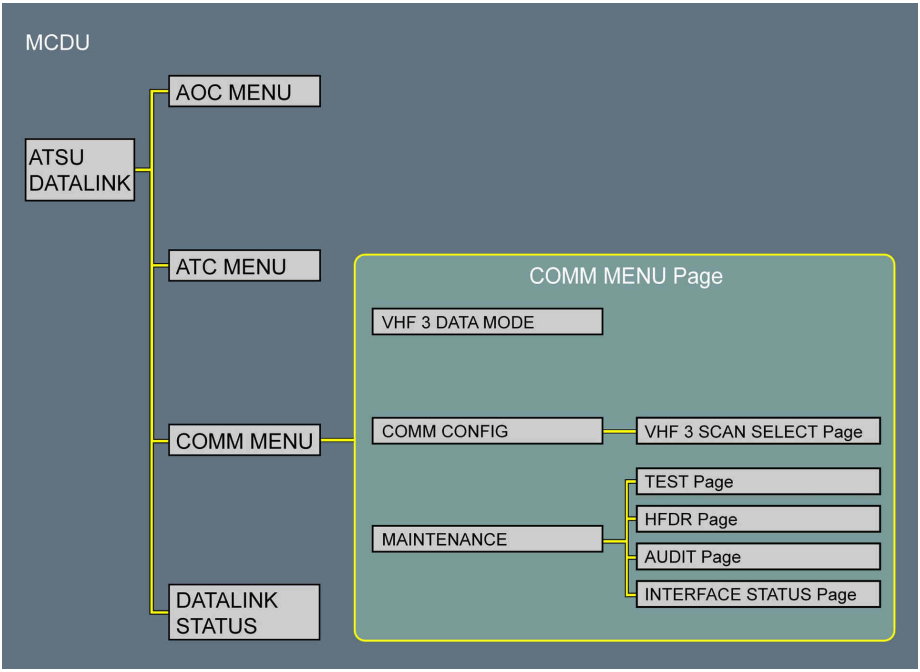
Ident.: DSC-46-10-40-30-10-00021195.0001001 / 17 MAR 17
Applicable to: MSN 01767, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158



Ident.: DSC-46-10-40-30-10-00021195.0004001 / 17 MAR 17
Applicable to: MSN 02649

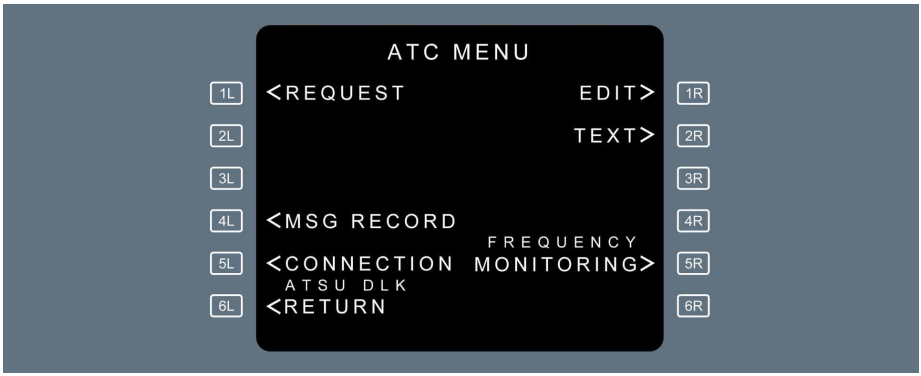


Ident.: DSC-46-10-40-30-10-00021463.0002001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158



ATC MENU

Ident.: DSC-46-10-40-30-20-00021079.0004001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158



[1L] REQUEST — When selected, the MCDU displays the REQUEST page.

[4L] MSG RECORD — When selected, the MCDU displays the MSG RECORD page.

[5L] CONNECTION — When selected, the MCDU displays the CONNECTION page.

[6L] ATSU DLK RETURN — When selected, the MCDU displays the ATSU DATALINK page.

[1R] EDIT — When selected, the MCDU displays the EDIT page.

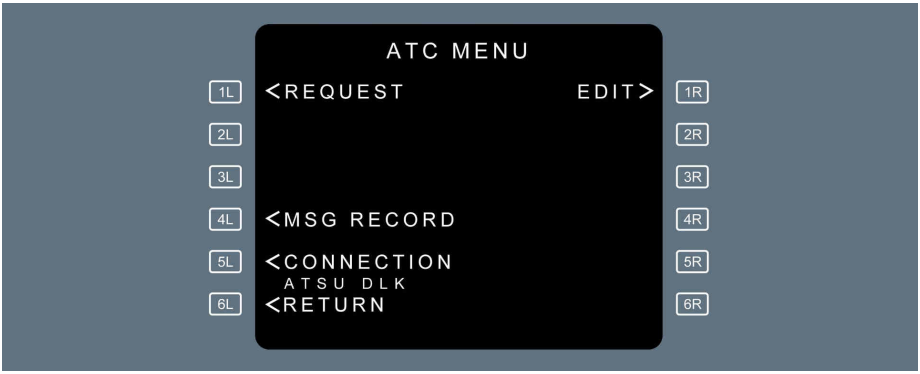
Note: EDIT appears on the ATC MENU page, when the flight crew presses EDIT on the DCDU, associated with a datalink message.

[2R] TEXT — When selected, the MCDU displays the TEXT page.

Note: TEXT appears on the ATC MENU page, when the flight crew selects a negative answer (e.g.: UNABLE) on a DCDU, associated with a datalink message.

[5R] FREQUENCY MONITORING — When selected, the MCDU displays the FREQUENCY MONITORING page.

Ident.: DSC-46-10-40-30-20-00021079.0003001 / 17 MAR 17
Applicable to: MSN 02649



[1L] REQUEST	When selected, the MCDU displays the REQUEST page.
[4L] MSG RECORD	When selected, the MCDU displays the MSG RECORD page.
[5L] CONNECTION	When selected, the MCDU displays the CONNECTION page.
[6L] ATSU DLK RETURN	When selected, the MCDU displays the ATSU DATALINK page.
[1R] EDIT	When selected, the MCDU displays the EDIT page.

Note: EDIT appears in the ATC MENU page, when the flight crew presses EDIT key on the DCDU, associated with a datalink message.

Ident.: DSC-46-10-40-30-20-00021183.0001001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138

ATC MENU PAGE 2/2

[1L] DEPART REQ	When selected, the MCDU displays the DEPART REQ page.
[2L] OCEANIC REQ	When selected, the MCDU displays the OCEANIC REQ page.
[6L] ATSU DLK RETURN	When selected, the MCDU displays the ATSU DATALINK page.
[1R] ATIS	When selected, the MCDU displays the ATIS page.

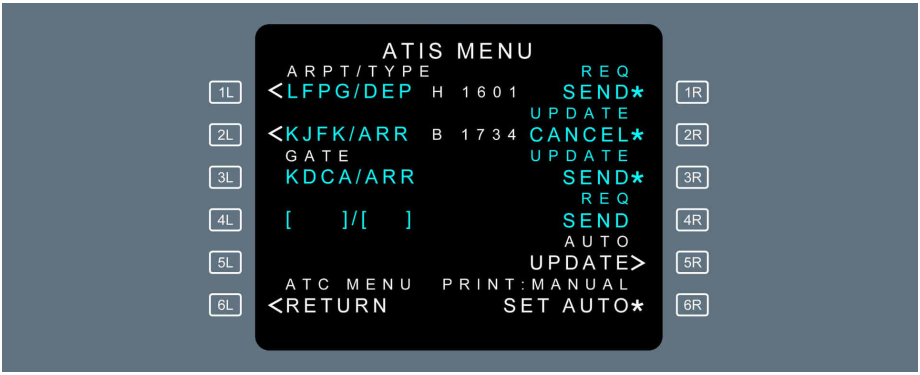
ATIS AUTO-UPDATE

Ident.: DSC-46-10-40-30-00021230.0001001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138

From [1L] to [4L]	Display the arrival airports (from the FMS flight plan), and the associated type of ATIS request by default. The auto update function may be armed, or activated (ON), or disarmed (OFF). The auto update function is OFF by default.
[6L] ATIS MENU RETURN	When selected, the DCDU displays the ATIS MENU page.
From [1R] to [4R]	SET ON : Arms the automatic update of new ATIS reports function. When the automatic update function is armed, the crew has to send a request for automatic update to the ground via the ATIS MENU page. SET OFF : Disarms the automatic update of new ATIS reports function.

ATIS MENU

Ident.: DSC-46-10-40-30-00021111.0002001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138

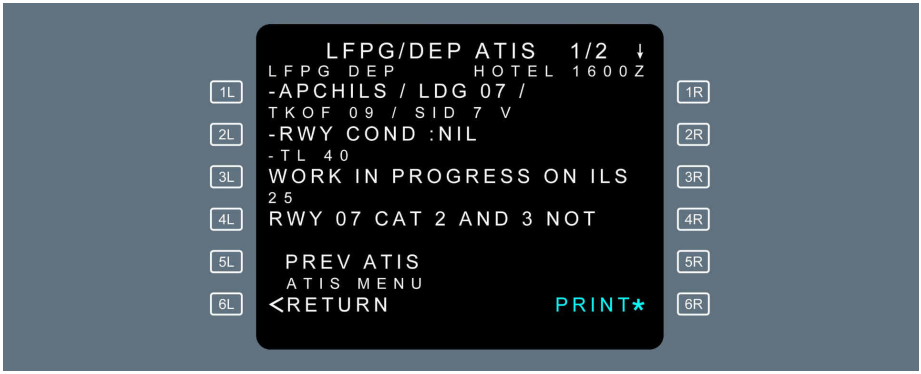


From [1L] to [3L]	Display the airports (from the FMS flight plan), and the associated type of ATIS requests by default. These fields may be modified. When an ATIS report is received, the ATIS code and time (when the ATIS report was created) are displayed next to the applicable ARPT/TYPE. This ATIS may be read by pressing its associated left key.
Line 4	Enables to insert an additional airport, and the associated ATIS request type.
[6L] ATC MENU RETURN	When selected, the MCDU displays the ATC MENU page.

From [1R] to [4R]	Displays options: - REQ SEND: REQ SEND is the function displayed by default. When selected, the flight crew sends manually an ATIS report request to the ground. - UPDATE SEND: When selected, the flight crew sends a request for automatic reception of new ATIS reports to the ground. The automatic update of new ATIS reports function is armed via the ATIS AUTO UPDATE page. - UPDATE CANCEL: When selected, the flight crew cancels the automatic reception of new ATIS reports.
[5R] AUTO UPDATE	When selected, the MCDU displays the AUTO UPDATE page. *Note:* *The flight crew sets the automatic update of new ATIS reports on the AUTO UPDATE page.*
[6R] PRINT : MANUAL SET AUTO	Sets the PRINT function to AUTO, to have all reports automatically printed upon reception. The PRINT function is set to MANUAL by default.

ATIS REPORT

Ident.: DSC-46-10-40-30-00021231.0001001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138



Line 1 - line 4	Displays the ATIS report text.
[5L] PREV ATIS	Displays the previous ATIS report for this airport.

[6L] ATIS MENU RETURN — When selected, the DCDU displays the ATIS MENU page.

[6R] PRINT — When selected, the printer prints the report that is currently displayed on the ATIS REPORT page.

ATSU DATALINK

Ident.: DSC-46-10-40-30-00021081.0003001 / 17 MAR 17

1 **Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02334, 02405-02584, 02670-02737, 02908-03071, 03264, 03330-04216, 04312-04399, 04438-04506, 04518-05155, 05190-09063**

[1R] AOC MENU — When selected, the MCDU displays the AOC MENU page.

[6R] COMM — When selected, the MCDU displays the COMM MENU page.

ATSU DATALINK

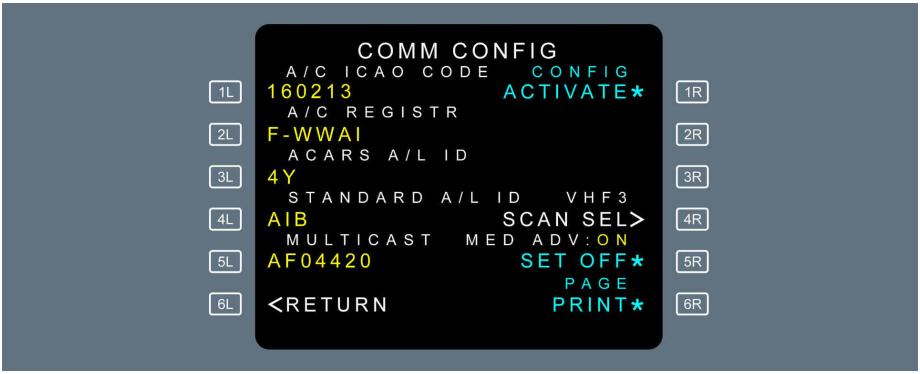
Ident.: DSC-46-10-40-30-00021081.0002001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

[1L] ATC MENU	When selected, the MCDU displays the ATC MENU page.
[1R] AOC MENU	When selected, the MCDU displays the AOC MENU page.
[5R] DATALINK STATUS	When selected, the MCDU displays the DATALINK STATUS page.
[6R] COMM MENU	When selected, the MCDU displays the COMM MENU page.

COMM CONFIG

Ident.: DSC-46-10-40-30-00021253.0002001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158

EXAMPLE	This is an example of the COMM CONFIG page. Information, that are displayed on the COMM CONFIG page, depend on datalink customization, selected by each operator. E.g.: If a router configuration file, integrated in the ATSU, contains a customized VHF scan mask, the access to the VHF 3 SCAN SELECT page will not display. The VHF 3 SCAN SELECT page will not accessible.

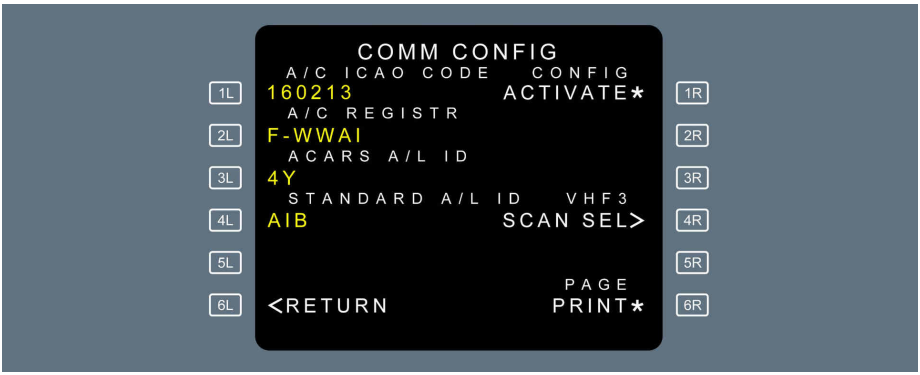

COMM CONFIG
A/C ICAO CODE
CONFIG
160213
ACTIVATE*
A/C REGISTR
F-WWAI
ACARS A/L ID
4Y
STANDARD A/L ID
VHF3
AIB
SCAN SEL>
MULTICAST
MED ADV:ON
AF04420
SET OFF*
PAGE
<RETURN
PRINT*
1L
2L
3L
4L
5L
6L
1R
2R
3R
4R
5R
6R

EXAMPLE	[1L] A/C ICAO CODE	Displays the aircraft ICAO code. Note: *If the FMGC does not enter the parameter automatically, the flight crew can enter the A/C ICAO CODE manually.*
	[2L] A/C REGISTR	Displays the aircraft registration. Note: *If the FMGC does not enter the parameter automatically, the flight crew can enter the A/C REGISTR manually.*
	[3L] ACARS A/L ID	Displays the ACARS airline identification. Note: *If the FMGC does not enter the parameter automatically, the flight crew can enter the ACARS A/L ID manually.*
	[4L] STANDARD A/L ID	Displays the standard airline identification. Note: *If the FMGC does not enter the parameter automatically, the flight crew can enter the STANDARD A/L ID manually.*
	[5L] MULTICAST	Displays the optional multicast ACARS address.
	[6L] RETURN	When selected, the MCDU displays the COMM MENU page.
	[1R] CONFIG ACTIVATE	When selected, the system activates parameters that were entered manually.
	[5R] VHF3 SCAN SEL	When selected, the DCDU displays the VHF3 SCAN SELECT page.
	[5R] MED ADV	Sets the transition status of labels on/off.
	[6R] PAGE PRINT	When selected, the printer prints information.

COMM CONFIG

Ident.: DSC-46-10-40-30-00021253.0001001 / 17 MAR 17
Applicable to: MSN 02649

EXAMPLE	This is an example of the COMM CONFIG page. Information, that are displayed on the COMM CONFIG page, depend on datalink customization, selected by each operator. E.g.: If a router configuration file, integrated in the ATSU, contains a customized VHF scan mask, the access to the VHF 3 SCAN SELECT page will not display. The VHF 3 SCAN SELECT page will not accessible.



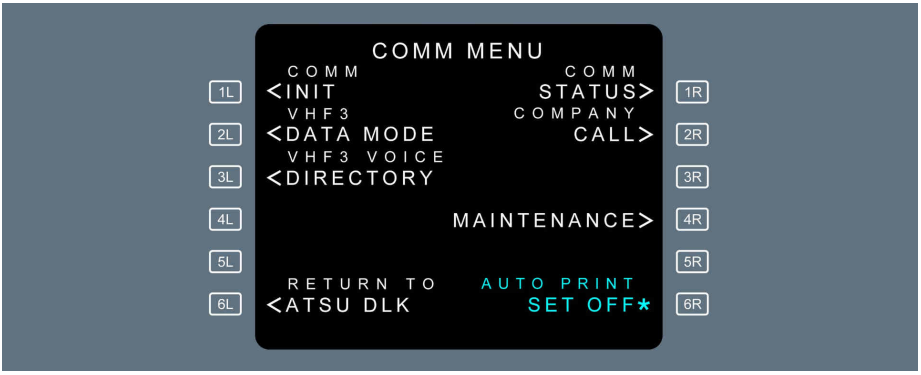
EXAMPLE	[1L] A/C ICAO CODE	Displays the aircraft ICAO code. *Note: If the FMGC does not enter the parameter automatically, the flight crew can enter the A/C ICAO CODE manually.*
	[2L] A/C REGISTR	Displays the aircraft registration. *Note: If the FMGC does not enter the parameter automatically, the flight crew can enter the A/C REGISTR manually.*
	[3L] ACARS A/L ID	Displays the ACARS airline identification. *Note: If the FMGC does not enter the parameter automatically, the flight crew can enter the ACARS A/L ID manually.*
	[4L] STANDARD A/L ID	Displays the standard airline identification. *Note: If the FMGC does not enter the parameter automatically, the flight crew can enter the STANDARD A/L ID manually.*
	[6L] RETURN	When selected, the MCDU displays the COMM MENU page.
	[1R] CONFIG ACTIVATE	When selected, the system activates parameters that were entered manually.
	[4R] VHF3 SCAN SEL	When selected, the DCDU displays the VHF3 SCAN SELECT page.
	[6R] PAGE PRINT	When selected, the printer prints information.

COMM MENU

Ident.: DSC-46-10-40-30-00021090.0003001 / 17 MAR 17

[2] **Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02334, 02405-02584, 02670-02737, 02908-03071, 03264, 03330-04216, 04312-04399, 04438-04506, 04518-05155, 05190-09063**

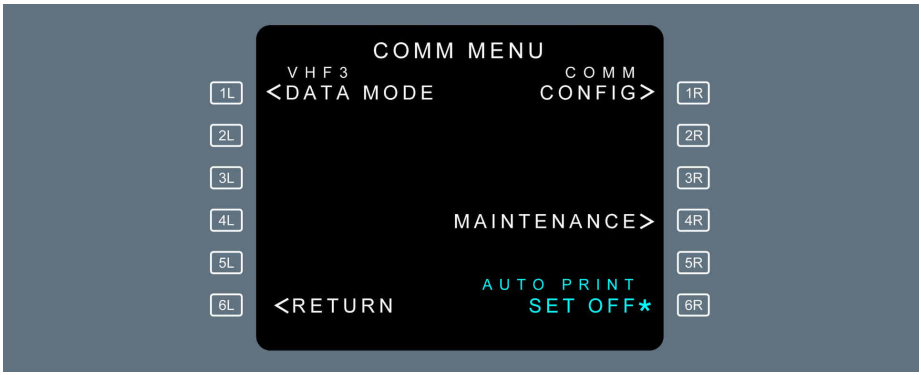
EXAMPLE	This is an example of the COMM MENU page. Information, that are displayed on the COMM MENU page and subsequent pages, accessible via the COMM MENU page, depend on datalink customization, selected by each operator for AOC applications.



EXAMPLE	[1L] COMM INIT	When selected, the DCDU displays the COMM INIT page.
	[2L] VHF3 DATA MODE	When selected, the DCDU displays the VHF3 DATA MODE page.
	[3L] VHF3 VOICE DIRECTORY	When selected, the DCDU displays the VHF3 VOICE DIRECTORY page.
	[6L] RETURN TO ATSU DLK	When selected, the MCDU displays the ATSU DATALINK page.
	[1R] COMM STATUS	When selected, the DCDU displays the COMM STATUS page.
	[2R] COMPANY CALL	When selected, the DCDU displays the COMM CONFIG page.
	[4R] MAINTENANCE	When selected, the MCDU displays the MAINTENANCE page.
	[6R] AUTO PRINT	Sets the auto-print on or off.

COMM MENU

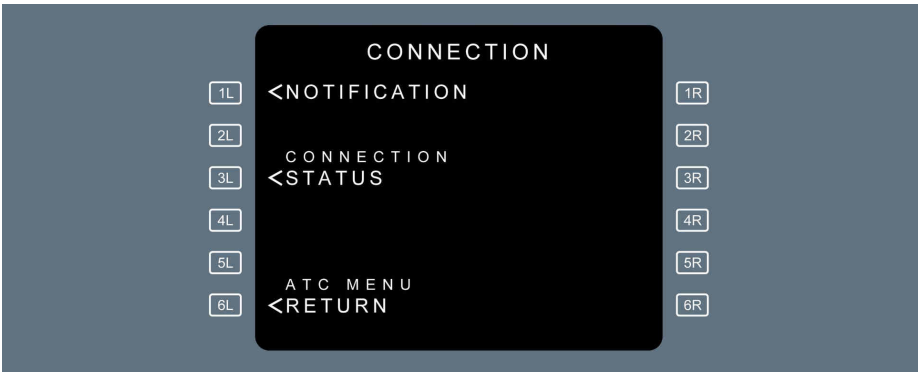
Ident.: DSC-46-10-40-30-00021090.0002001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158



[1L] VHF3 DATA MODE	When selected, the MCDU displays the VHF3 DATA MODE page.
[6L] RETURN	When selected, the MCDU displays the ATSU DATALINK page.
[1R] COMM CONFIG	When selected, the MCDU displays the COMM CONFIG page.
[4R] MAINTENANCE	When selected, the MCDU displays the MAINTENANCE page.
[6R] AUTO PRINT	Sets the auto-print on or off.

CONNECTION

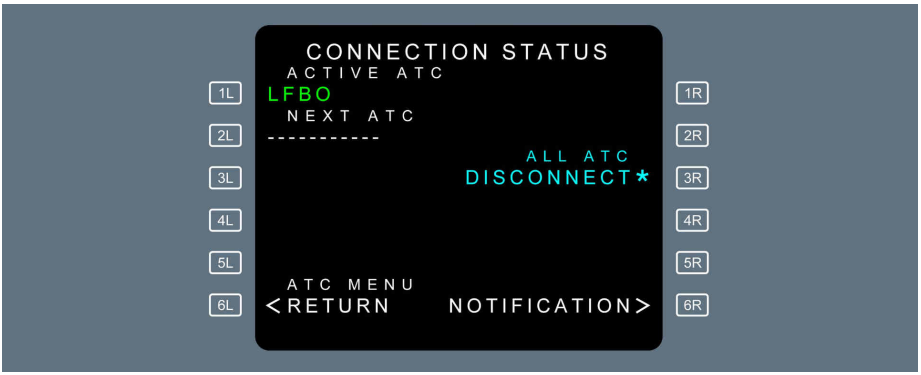
Ident.: DSC-46-10-40-30-00021104.0003001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158



[1L] NOTIFICATION	When selected, the MCDU displays the NOTIFICATION page.
[3L] CONNECTION STATUS	When selected, the MCDU displays the CONNECTION STATUS page.
[6L] ATC MENU RETURN	When selected, the MCDU displays the ATC MENU page.

CONNECTION STATUS

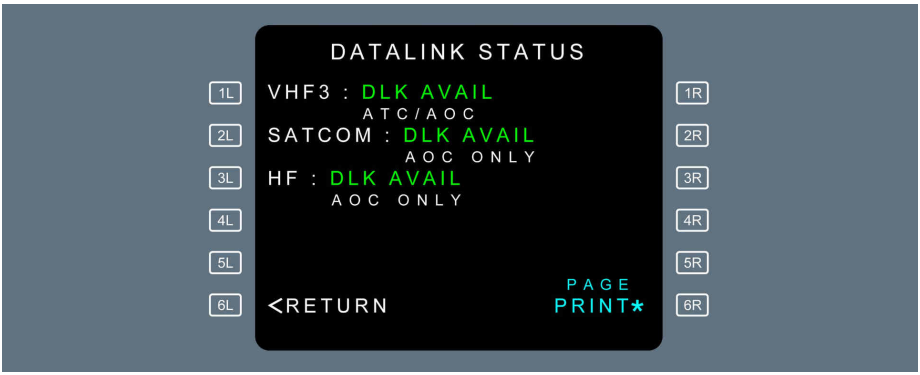
Ident.: DSC-46-10-40-30-00021101.0003001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158



[1L] ACTIVE ATC	Displays the currently active ATC for CPDLC connection.
[2L] NEXT ATC	Displays the next ATC for CPDLC connection.
[6L] ATC MENU RETURN	When selected, the MCDU displays the ATC MENU page.
[1R] ALL ATC DISCONNECT	Disconnects all established CPDLC connections.
[6R] NOTIFICATION	When selected, the MCDU displays the NOTIFICATION page.

DATALINK STATUS

Ident.: DSC-46-10-40-30-00021091.0002001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158



VHF 3 Line 1

Displays datalink status:

- DLK AVAIL
  The datalink communication is established and available.
- DLK NOT AVAIL
  The datalink communication is not established.
- INOP
  The VHF3 datalink is not operative.
- NO NETWORK
  The VHF3 datalink is inhibited.
- VOICE
  The VHF3 datalink operates in the voice mode.

VHF 3 Line 2

Displays availability of datalink applications:
- ATC / AOC
  Datalink communication via ATC and AOC applications is available.
- ATC ONLY
  Datalink communication via ATC applications is available.
- AOC ONLY
  Datalink communication via AOC applications is available.

SATCOM Line 1

Displays datalink status:
- DLK AVAIL
  The datalink communication is established and available.
- DLK NOT AVAIL
  The datalink communication is not established.
- INOP
  The VHF3 datalink is not operative.
- NOT INSTALLED
  The VHF3 datalink is not installed.

SATCOM Line 2

Displays availability of datalink applications:
- ATC / AOC
  Datalink communication via ATC and AOC applications is available.
- ATC ONLY
  Datalink communication via ATC applications is available.
- AOC ONLY
  Datalink communication via AOC applications is available.

HF Line 1

Displays datalink status:
- DLK AVAIL
  The datalink communication is established and available.
- DLK NOT AVAIL
  The datalink communication is not established.
- INOP
  The VHF3 datalink is not operative.
- VOICE
  The VHF3 datalink operates in the voice mode.
- NOT INSTALLED
  The VHF3 datalink is not installed.

HF Line 2

Displays availability of datalink applications:
- ATC / AOC
  Datalink communication via ATC and AOC applications is available.
- ATC ONLY
  Datalink communication via ATC applications is available.
- AOC ONLY
  Datalink communication via AOC applications is available.

[6L] RETURN

When selected, the MCDU displays the ATSU DATALINK page.

[6R] PAGE PRINT

When selected, the printer prints the information.

DEPART REQ

Ident.: DSC-46-10-40-30-00021109.0002001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138

[1L] ATC FLT NBR

The ATC flight number is automatically displayed by the system.
The ATC flight number may be modified on the FMS INIT page.

[2L] FROM/TO

The departure and arrival airports are automatically displayed by the system, and may be modified by the flight crew. The departure request will be sent only to the departure airport.

[3L] GATE

Enters the departure gate number or the airport stand position.

[4L] FREE TEXT

Enters a free text.

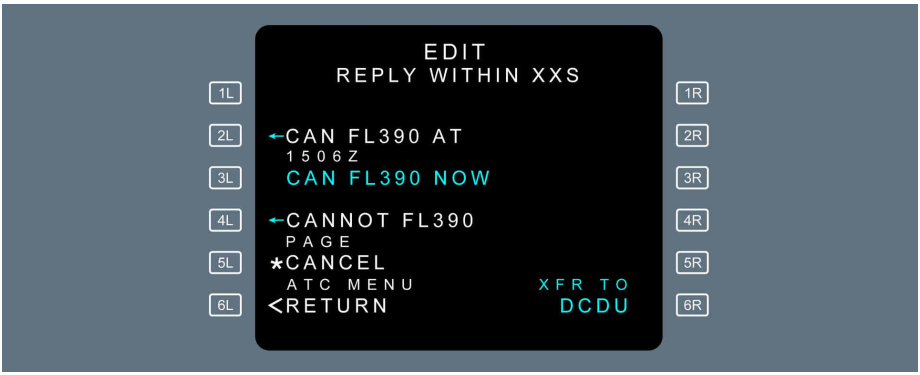
[6L] ATC MENU RETURN

When selected, the MCDU displays the ATC MENU page.

[1R] A/C TYPE	The aircraft type is automatically displayed by the system, and may be modified by the flight crew.
[3R] ATIS CODE	Enters the ATIS code. If the flight crew received an ATIS uplink message, the code of this message is displayed automatically .
[5R] MORE FREE TEXT	When selected, the MCDU displays the TEXT page, in order to add more free text in the message.
[6R] ATC DEPART REQ DISPLAY	When selected, the DCDU displays prepared departure request.

EDIT

Ident.: DSC-46-10-40-30-00021107.0003001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158



REPLAY WITHIN XXS	Appears for 5 s, when the remaining time to answer is less than 30 s. XX represents the number of remaining seconds, before the message timer expires.

[2L]:

PRESENT LEVEL	Inserts the present flight level in the message, in order to notify the ATC.
ASSIGNED LEVEL	Inserts the assigned flight level in the message, in order to read–back the assigned flight level.
CAN (AT)	Inserts CAN (AT), in order to accept the specified flight level (at the specified time).

CAN BLOCK LEVEL (AT)	Inserts CAN BLOCK LEVEL (AT), in order to accept the specified block flight level (at the specified time).
PREFERRED LEVEL	Inserts the preferred flight level, in order to notify the ATC.
TOP OF DESCENT	Inserts the preferred time to commence descent for approach, in order to notify the ATC.

[3L] CAN LEVEL NOW — Inserts CAN LEVEL NOW, in order to accept the specified flight level immediately.

[4L]:

CANNOT	Inserts CANNOT, in order to refuse the specified flight level.
CANNOT BLOCK LEVEL	Inserts CANNOT BLOCK LEVEL, in order to refuse the specified block flight level.

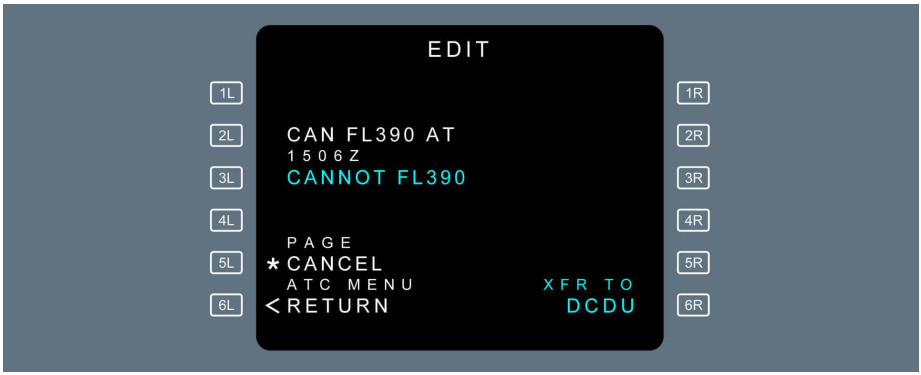
[5L] PAGE CANCEL — When selected, the MCDU displays the EDIT page.

[6L] ATC MENU RETURN — When selected, the MCDU displays the ATC MENU page.

[6R] XFR TO DCDU — When selected, the DCDU displays prepared message.

EDIT

Ident.: DSC-46-10-40-30-00021107.0002001 / 17 MAR 17
Applicable to: MSN 02649



[2L]:

PRESENT LEVEL	Inserts the present flight level in the message, in order to notify the ATC.
ASSIGNED LEVEL	Inserts the assigned flight level in the message, in order to read–back the assigned flight level .
CAN (AT)	Inserts CAN (AT), in order to accept the specified flight level (at the specified time).

CAN BLOCK LEVEL (AT)	Inserts CAN BLOCK LEVEL (AT), in order to accept the specified block flight level (at the specified time).
PREFERRED LEVEL	Inserts the preferred flight level, in order to notify the ATC.
TOP OF DESCENT	Inserts the preferred time to commence descent for approach, in order to notify the ATC.

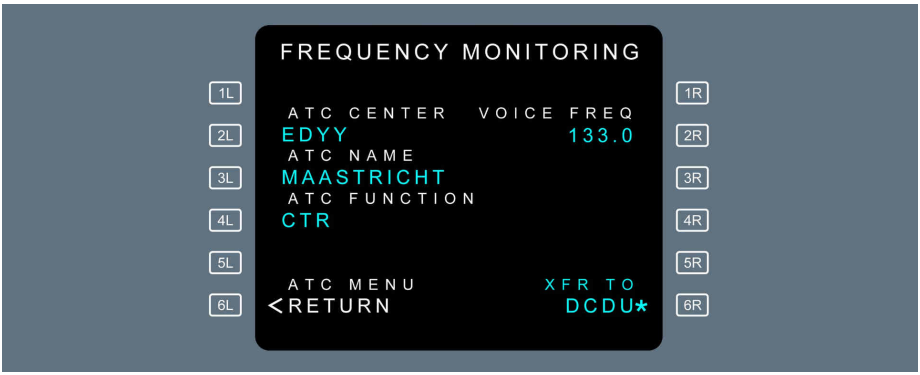
[3L]:

CANNOT	Inserts CANNOT, in order to refuse the specified flight level.
CANNOT BLOCK LEVEL	Inserts CANNOT BLOCK LEVEL, in order to refuse the specified block flight level.

[5L] PAGE CANCEL	When selected, the MCDU displays the EDIT page.
[6L] ATC MENU RETURN	When selected, the MCDU displays the ATC MENU page.
[6R] XFR TO DCDU	When selected, the DCDU displays prepared message.

FREQUENCY REPORTING

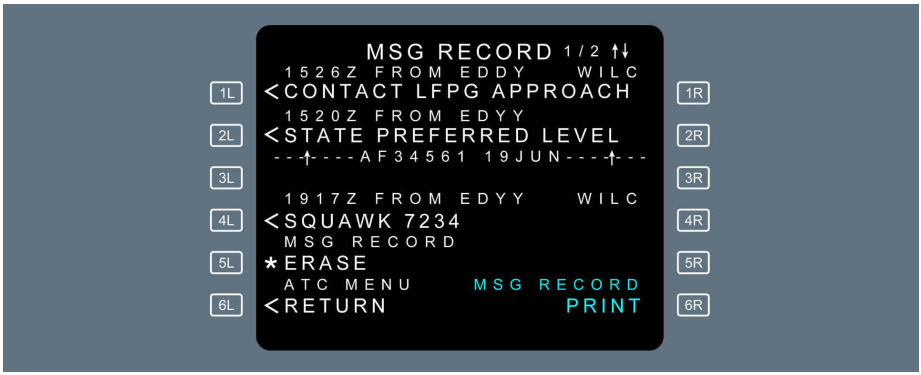
Ident.: DSC-46-10-40-30-00021099.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158



[2L]	Enters the ICAO code of the ATC center.
[3L]	Enters the ATC facility.
[4L]	Enters the ATC function name.
[6L]	When selected, the MCDU displays the ATC MENU page.
[2R]	Enters the voice frequency of the ATC center.
[6R]	When selected, the DCDU displays prepared message.

MSG RECORD

Ident.: DSC-46-10-40-30-00021098.0004001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158



Lines 1 to 4

Display a summary of each recorded message:
- Time
- ATC center
- Message status
- Beginning of the message

The latest recorded message is displayed at the top of the message record list.
Pressing the left key, adjacent to each message title, displays full content of recorded message.

Note: *Due to limitations of line length, the status of datalink messages is abbreviated:*
- *"WILC" for WILCO*
- *"UNBL" for UNABLE*
- *"ABRT" for ABORT*
- *"ROGR" for ROGER*
- *"AFRM" for AFFIRM*
- *"NEG" for NEGATIVE*
- *"STBY" for STANDBY*

[5L] MSG RECORD ERASE Clears all the recorded messages.
When pressing MSG RECORD ERASE, MSG RECORD ERASE is replaced by ERASE MSG RECORD CONFIRM, in order to prevent an inadvertent erase.

[6L] ATC MENU RETURN When selected, the MCDU displays the ATC MENU page.

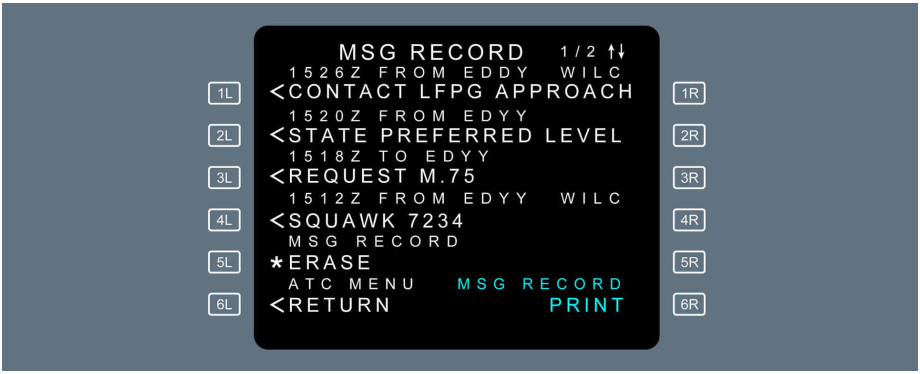
[6R] MSG RECORD PRINT When selected, the printer prints all recorded messages.

Note: *If sending a downlink message fails, the message appears in white on the MSG RECORD page.*

EXAMPLE	Indication of Flight Number Change When the flight number changes, a specific message with the new flight number value is stored in the message record. Line 3 : The specific message of the flight number change, indicating: - New flight number - Date of change.

MSG RECORD

Ident.: DSC-46-10-40-30-00021098.0003001 / 17 MAR 17
Applicable to: MSN 02649

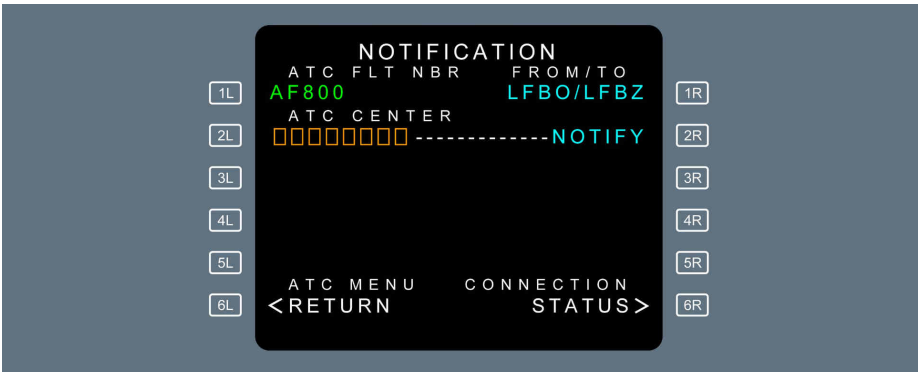


Lines 1 to 4	Display a summary of each recorded message: - Time - ATC center - Message status - Beginning of the message The latest recorded message is displayed at the top of the message record list. Pressing the left key, adjacent to each message title, displays full content of recorded message. *Note: Due to limitations of line length, the status of datalink messages is abbreviated:* *- "WILC" for WILCO* *- "UNBL" for UNABLE* *- "ABRT" for ABORT* *- "ROGR" for ROGER* *- "AFRM" for AFFIRM* *- "NEG" for NEGATIVE* *- "STBY" for STANDBY*
[5L] MSG RECORD ERASE	Clears all the recorded messages. When pressing MSG RECORD ERASE, MSG RECORD ERASE is replaced by ERASE MSG RECORD CONFIRM, in order to prevent an inadvertent erase.
[6L] ATC MENU RETURN	When selected, the MCDU displays the ATC MENU page.
[6R] MSG RECORD PRINT	When selected, the printer prints all recorded messages.

Note: If sending a downlink message fails, the message appears in white on the MSG RECORD page.

NOTIFICATION

Ident.: DSC-46-10-40-30-00021100.0002001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158



[1L] ATC FLT NBR — Displays the flight number, filled by the FMGS. The FLT NBR cannot be modified via this page.

Line 2 ATC CENTER — Displays the logon status in front of the ATC CENTER. The logon status can indicate:
- NOTIFYING indicates that the logon is in progress.
- NOTIF FAILED indicates that the logon has failed.

The logon status disappears, when the logon notification is completed.

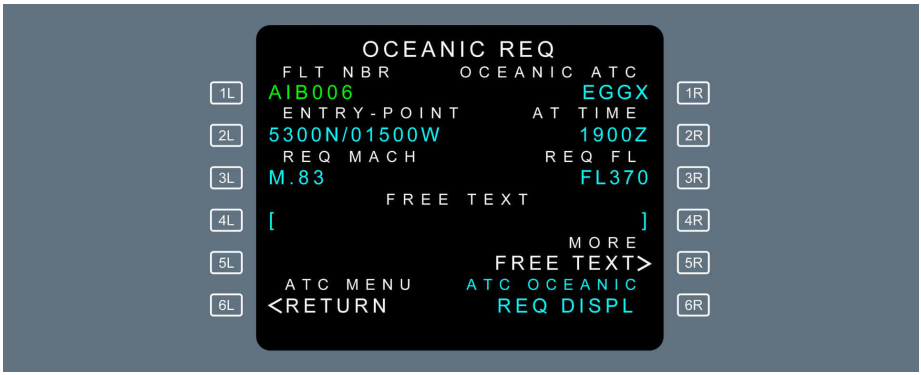
[2L] ATC CENTER — Enters the ATC ICAO code for notification. The ATC code, entered correctly, is displayed in large cyan font.
When the logon procedure is successfully completed, 8 amber boxes will be displayed.

Note: At initialization, a default code is displayed in small cyan font, and corresponds to one of following options:
- *Last manually-entered ATC code*
- *Last ATC code, associated to an established CPDLC connection, if no ATC code was manually entered*
- *8 amber boxes appear.*

Lines 3 to 5	Displays the last ATC centers, to which a manual and successful logon notification was performed. Once a CPDLC connection is established, the indication disappears. *Note:* *NOTIFICATION UNAVAILABLE is displayed in line 5, if the communication means, or the flight number are unavailable.*
[6L] ATC MENU RETURN	When selected, the MCDU displays the ATC MENU page.
[1R] FROM/TO	Displays the departure and destination airports.
[2R] NOTIFY	Sends a notification to the ATC. NOTIFY is not active, during a notification process, or if the communication means, ATC center, flight number, or departure/destination airport are unavailable.
[6R] CONNECTION STATUS	When selected, the MCDU displays the CONNECTION STATUS page.

OCEANIC REQ

Ident.: DSC-46-10-40-30-00021110.0002001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138

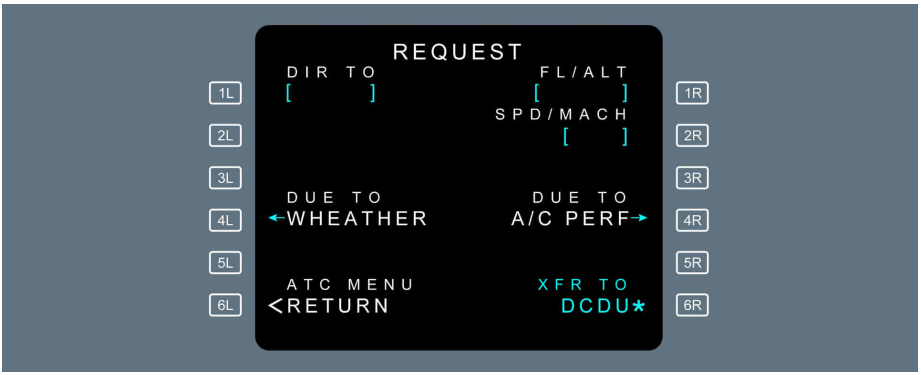


[1L] FLT NBR	The ATC flight number is automatically displayed by the system. The ATC flight number may be modified on the FMS INIT page.
[2L] ENTRY-POINT	Enters the entry-point (fixname or LAT/LONG coordinates) of the expected oceanic route.
[3L] REQ MACH	Enters the requested Mach number at entry-point.
[4L] FREE TEXT	Enters a free text.
[6L] ATC MENU RETURN	When selected, the MCDU displays the ATC MENU page.

[1R] OCEANIC ATC	Enters the ATC center to which the oceanic request will be sent.
[2R] AT TIME	Enters the required time of entry in the oceanic route.
[3R] REQ FL	Enters the requested altitude at entry-point.
[5R] MORE FREE TEXT	When selected, the MCDU displays the TEXT page, in order to add more free text in the message.
[6R] ATC OCEANIC REQ DISPL	When selected, the DCDU displays prepared oceanic request.

REQUEST

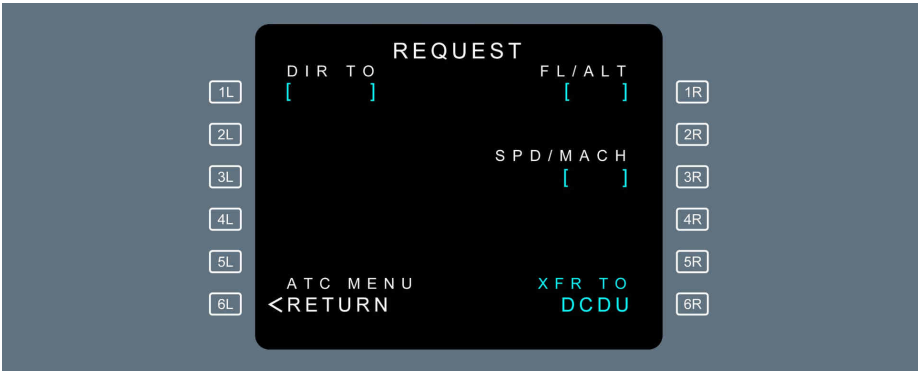
Ident.: DSC-46-10-40-30-00021113.0003001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158



[1L] DIR TO	Prepares a request, in order to proceed from the present position to a selected waypoint.
[4L] DUE TO WEATHER	When selected, DUE TO WEATHER conditions (justification) is inserted into the datalink message.
[6L] ATC MENU RETURN	When selected, the MCDU displays the ATC MENU page.
[1R] FL/ALT	Prepares a request of new altitude.
[2R] SPD/MACH	Prepares a request of new speed.
[4R] DUE TO A/C PERF	When selected, DUE TO A/C PERFORMANCE justification is inserted into the datalink message.
[6R] XFR TO DCDU	When selected, the DCDU displays prepared message.

REQUEST

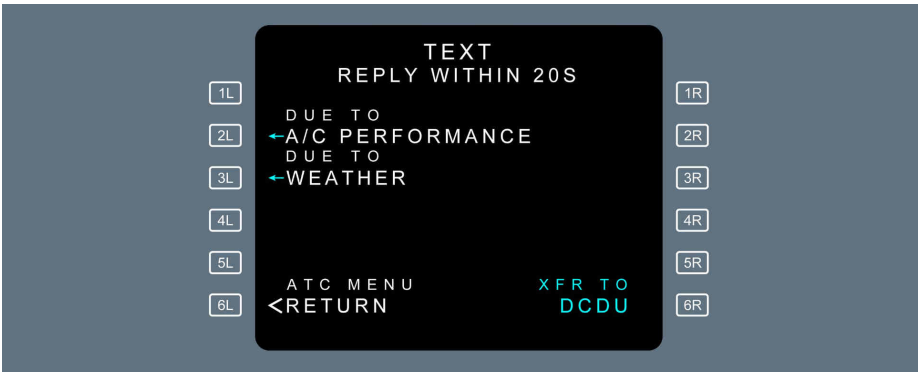
Ident.: DSC-46-10-40-30-00021113.0002001 / 17 MAR 17
Applicable to: MSN 02649



[1L] DIR TO	Prepares a request, in order to proceed from the present position to a selected waypoint.
[6L] ATC MENU RETURN	When selected, the MCDU displays the ATC MENU page.
[1R] FL/ALT	Prepares a request of new altitude.
[3R] SPD/MACH	Prepares a request of new speed.
[6R] XFRTO DCDU	When selected, the DCDU displays prepared message.

TEXT

Ident.: DSC-46-10-40-30-00021096.0003001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158

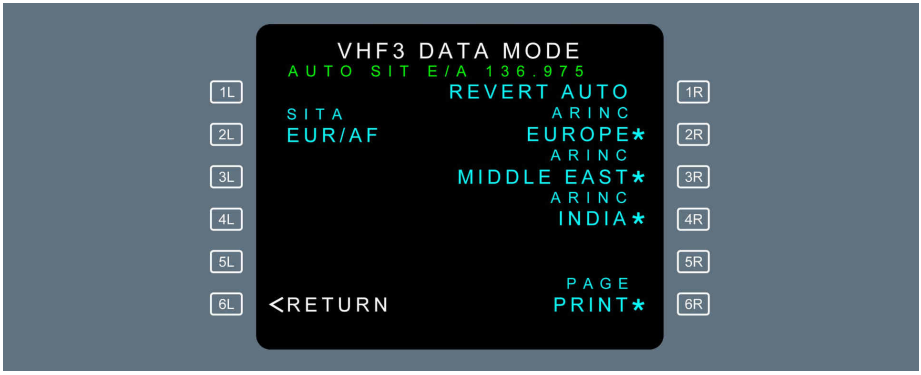


REPLAY WITHIN XXS	Appears for 5 s, when the remaining time to answer is less than 30 s. XX represents the number of remaining seconds, before the message timer expires. When selected, due to aircraft performance justification is inserted into the datalink message.
[2L] DUE TO A/C PERFORMANCE	When selected, due to aircraft performance (justification) is inserted into the datalink message.
[3L] DUE TO WEATHER	When selected, due to weather conditions (justification) is inserted into the datalink message.
[6L] ATC MENU RETURN	When selected, the MCDU displays the ATC MENU page.
[6R] XFR TO DCDU	When selected, the DCDU displays the prepared message.

VHF3 DATA MODE

Ident.: DSC-46-10-40-30-00021252.0002001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

EXAMPLE	This is an example of the VHF3 DATA MODE page. Information, that are displayed on the VHF3 DATA MODE page, depend on the service provider and datalink customization, selected by each operator. The VHF3 DATA MODE displays regions, and associated frequencies of datalink service providers that were selected.


VHF3 DATA MODE
AUTO SIT E/A 136.975
REVERT AUTO
SITA
EUR/AF
ARINC
EUROPE*
ARINC
MIDDLE EAST*
ARINC
INDIA*
PAGE
<RETURN
PRINT*
1L
2L
3L
4L
5L
6L
1R
2R
3R
4R
5R
6R

EXAMPLE	Line 1	Displays:
		- Mode of VHF provider selection:
		  - MANUAL
		  The VHF3 is tuned to a frequency manually selected by the flight crew via the VHF3 DATA MODE page.
		  - AUTO
		  The VHF3 is tuned to a frequency automatically selected by the ATSU.
		  - VOICE
		  The VHF3 is in the voice mode.
		  - SCAN
		  The VHF3 system scans for a data frequency.
		  - AUTO DATA INHIB
		  No datalink service provider is available in the area.
		- Datalink service provider identification
		- The frequency of the service provide that the system is tuned to

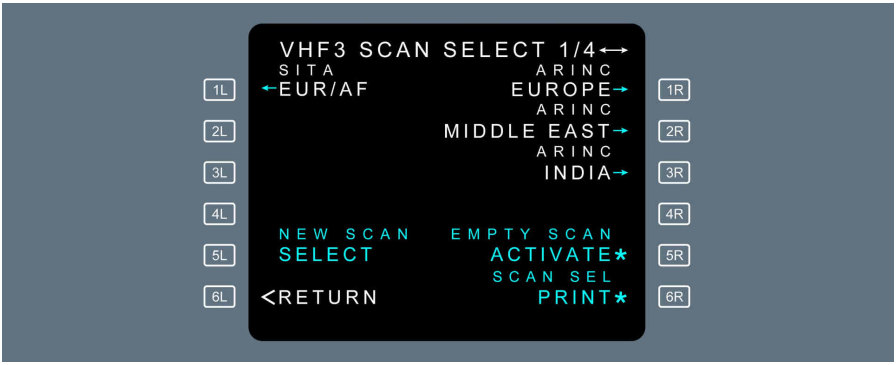
	[2L] SITA EUR/AF	Displays the service provider (SITA Europe/Africa). In this example, the ATSU is connected to the provider SITA Europe/Africa (136.975 MHz).
	[6L] RETURN	When selected, the MCDU displays the COMM MENU page.
	[1R] REVERT AUTO	Reverts to VHF3 auto-tuning.
	[2R] ARINC EUROPE	When selected, the VHF3 tunes to the frequency of the ARINC EUROPE provider. The mode of VHF provider selection changes to MANUAL.
	[3R] ARINC MIDDLE EAST	When selected, the VHF3 tunes to the frequency of the ARINC MIDDLE EAST provider. The mode of VHF provider selection changes to MANUAL.
	[4R] ARINC INDIA	When selected, the VHF3 tunes to the frequency of the ARINC INDIA provider. The mode of VHF provider selection changes to MANUAL.
	[6R] PAGE PRINT	When selected, the printer prints information from the VHF3 DATA MODE page.

VHF3 SCAN SELECT

Ident.: DSC-46-10-40-30-00021254.0001001 / 17 MAR 17
Applicable to: ALL

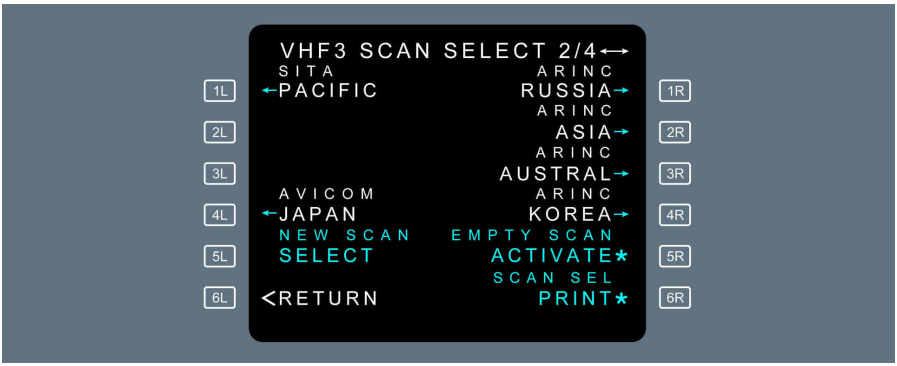
EXAMPLE	This is an example of VHF3 SCAN SELECT pages. Information, that are displayed on the VHF3 SCAN SELECT pages, depend on datalink customization, selected by each operator.

THE VHF 3 SCAN SELECT PAGE 1/4



EXAMPLE	[1L] SITA EUR/AF	Selects the SITA Europe/Africa (datalink service provider).
	[5L]: NEW SCAN SELECT : ACTIVE SEL DISPLAY :	 Selects the scan mask. Displays the scan mask used by ATSU.
	[6L] RETURN	When selected, the MCDU displays the COMM CONFIG page.
	[1R] ARINC EUROPE	Selects the ARINC Europe (datalink service provider).
	[2R] ARINC MIDDLE EAST	Selects the ARINC Eiddle East (datalink service provider).
	[3R] ARINC INDIA	Selects the ARINC India (datalink service provider).
	[5R] EMPTY SCAN ACTIVATE	Activates an emprty scan mask to inhibit VHF datalink communication.
	[6R] SCAN SEL PRINT	When selected, the printer prints information.

THE VHF 3 SCAN SELECT PAGE 2/4

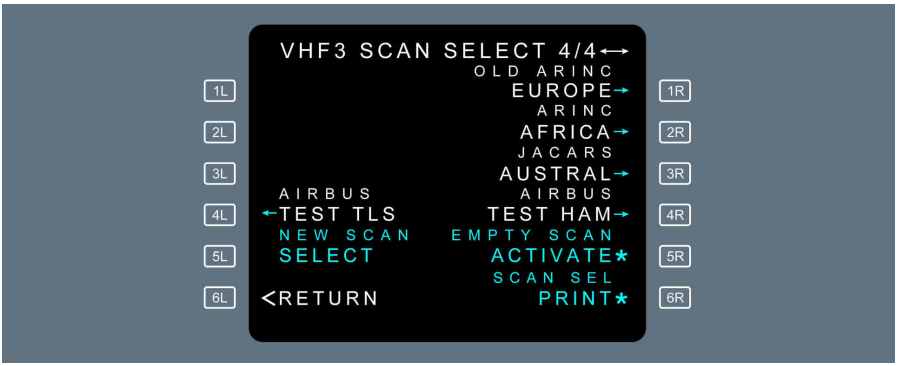


EXAMPLE	[1L] SITA PACIFIC	Selects the SITA Pacific (datalink service provider).
	[4L] AVICOM JAPAN	Selects the AVCOM Japan (datalink service provider).
	[5L]: NEW SCAN SELECT : ACTIVE SEL DISPLAY :	 Selects the scan mask. Displays the scan mask used by ATSU.
	[6L] RETURN	When selected, the MCDU displays the COMM CONFIG page.
	[1R] ARINC RUSSIA	Selects the ARINC Russia (datalink service provider).
	[2R] ARINC ASIA	Selects the ARINC Asia (datalink service provider).
	[3R] ARINC AUSTRAL	Selects the ARINC Australia (datalink service provider).
	[4R] ARINC KOREA	Selects the ARINC Korea (datalink service provider).
	[5R] EMPTY SCAN ACTIVATE	Activates an emprty scan mask, in order to inhibit VHF datalink communication.
	[6R] SCAN SEL PRINT	When selected, the printer prints information.

THE VHF 3 SCAN SELECT PAGE 3/4

EXAMPLE	[1L] SITA NORTH AM	Selects the SITA North America (datalink service provider).
	[2L] SITA SOUTH AM	Selects the SITA South America (datalink service provider).
	[3L] DEPV BRASIL	Selects the DEPV Brasil (datalink service provider).
	[5L]: NEW SCAN SELECT : ACTIVE SEL DISPLAY :	 Selects the scan mask. Displays the scan mask used by ATSU.
	[6L] RETURN	When selected, the MCDU displays the COMM CONFIG page.
	[1R] ARINC AMERICA	Selects the ARINC America (datalink service provider).
	[5R] EMPTY SCAN ACTIVATE	Activates an emprty scan mask, in order to inhibit VHF datalink communication.
	[6R] SCAN SEL PRINT	When selected, the printer prints information.

THE VHF 3 SCAN SELECT PAGE 4/4



EXAMPLE	[5L]: NEW SCAN SELECT : ACTIVE SEL DISPLAY :	 Selects the scan mask. Displays the scan mask used by ATSU.
	[6L] RETURN	When selected, the MCDU displays the COMM CONFIG page.
	[1R] OLD ARINC EUROPE	Selects the OLD ARINC Europe (datalink service provider).
	[2R] ARINC AFRICA	Selects the ARINC Africa (datalink service provider).
	[3R] JACARS AUSTRAL	Selects the JACARS Australia (datalink service provider).
	[5R] EMPTY SCAN ACTIVATE	Activates an emprty scan mask, in order to inhibit VHF datalink communication.
	[6R] SCAN SEL PRINT	When selected, the printer prints information.

Intentionally left blank

MCDU Scratchpad Messages

MCDU SCRATCHPAD MESSAGES

Ident.: DSC-46-10-40-40-10-00021084.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

MESSAGE	CONDITIONS
FORMAT: _ _ _	The acquisition format is not valid. An example of the required format is displayed (FORMAT: NNN, FORMAT : XXXX, etc), where: - N : Numerical data (0 to 9) - X : Alphanumerical data (0 to 9, or A to Z). To display the required format of specific data on the scratchpad message field, press on the corresponding empty field. This serves as a reference to the crew.
ENTRY OUT OF RANGE	The single value that was entered is out of range.
OUT OF RANGE	A single value of double data is out of range.
TWO ENTRIES OUT OF RANGE	The double value that was entered is out of range.
NON MODIFIABLE FIELD	A non-modifiable field was selected.
KEY NOT ACTIVE	It is not allowed to press this key.
ALREADY SELECTED	The selectable key has already been selected.
NOT ALLOWED	Data entry not allowed, or deselection of a selectable key not yet selected, or selection of a selectable key with any entry on the scratchpad other than CLR.
CLR NOT ALLOWED	An available key has been selected, but the function is not available due to CLR still displayed on the scratchpad field.
FLIGHT NBR UNAVAILABLE	Notification is not available, because the flight number is unavailable.
ENTER MANDATORY FIELDS	Selection of a command is not available, because mandatory fields are not filled in.
NO WHOLE MSG PREPARED	Selection of the ATC DISPL or ADD TEXT command is not available, because the message is not completely prepared.
COM UNAVAILABLE	The selected command is not available, because datalink comunications means are currently unavailable.
DCDU FILE FULL	The selected command is not available, because the DCDU file is full.

Continued on the following page

Continued from the previous page

MESSAGE	CONDITIONS
MSG ALREADY DISPLAYED	The XFR to DCDU command (FANS B / FANS B+), or the ATC DISPL command (FANS A+) is not available, because the message is already displayed on the DCDU.
NO MSG TO PRINT	The PRINT key was selected, but the function is currently unavailable because there is no message to be printed.
PRINTER UNAVAILABLE	The PRINT key was selected, but the printer is currently unavailable.
LAST MSG ELEMENT	Maximum number of message elements for a given downlink message is reached.
TOO MANY MSG ELEMENTS	Entry of a new parameter is not allowed, because the maximum number of message elements has been reached.
NO ACTIVE ATC	The XFR to DCDU key (FANS B / FANS B+) or ATC DISPL command (FANS A+) or MAX UPLINK DELAY command (FANS A+) was selected, but the function is currently unavailable because there is no active CPDLC connection.
LAT/LON DISPL ABREVIATED	The LAT/LONG display is abbreviated only on the MCDU display field, because there is lack of space.
MSG RECORD NOT RELIABLE	Due to a technical problem, the list of messages recorded is not reliable. All CPDLC messages are deleted and new messages should not be recorded.
MSG RECORD IS EMPTY	The MSG RECORD ERASE command is not available, because there are no messages recorded.
NOT IN DATABASE	Entry not in database.

Ident.: DSC-46-10-40-40-10-00021082.0001001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138

MESSAGE	CONDITIONS
NO PREVIOUS ATIS STORED	The PREV ATIS key is not available, because there is no previous ATIS report.
ENTER ARPT/TYPE FIELD	The SEND key has been selected, but the function is not available because the ARPT/TYPE field is empty.
WAITING: ATIS IN USE	The ARPT/TYPE left field cannot be modified because the ATIS report page is in use on the other MCDU.
ARPT/TYPE ALREADY USED	The same ARPT/TYPE has been introduced in at least two different fields of the ATIS MENU page.

Continued on the following page

Continued from the previous page

MESSAGE	CONDITIONS
CANCEL UPDATE BEFORE	The ARPT/TYPE left field cannot be modified because the automatic update function is still activated.
WAITING : IN PROGRESS	The SEND key has been selected, but the function is not available because it is in progress.
GO TO ATIS MENU TO SEND	The AUTO UPDATE function has been armed on the ATIS AUTO UPDATE page. This scratchpad message is displayed to remind the crew that the request for automatic update of new ATIS reports has to be sent to the ground via the ATIS MENU page.
NEW ATIS: READ AGAIN	A new ATIS report has been received. This ATIS report replaces the ATIS report that was displayed. Therefore, the crew has to read the new ATIS report.
NEW MSG: READ AGAIN	An FSM (Flight System Message) has been received. The flight crew has to read this FSM.
NO ATIS REPORT RECEIVED	The ARPT/TYPE left key has been selected, but the function is not available because there are currently no ATIS reports.
UPDATE IN PROGRESS	The ATIS AUTO UPDATE key associated to a specific ARPT/TYPE field has been selected, but the function is currently unavailable because updating is in progress.

Ident.: DSC-46-10-40-40-10-00021338.0002001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

SCRATCHPAD MESSAGES ON THE COMM MENU PAGE

MESSAGE	CONDITIONS
COMMAND NOT AVAIL	The command is not available.
DEFAULT VHF SP LIST (1)	The new SCAN MASK is not available. The system displays the default SCAN MASK instead.
ENTER A/C ICAO CODE	The aircraft ICAO code is not valid. To enter the A/C ICAO code, *Refer to DSC-46-10-50 How to Initialize*
ENTER A/C REGISTR or ENTER A/C REGISTER	The aircraft registration number is not valid. To enter this parameter, *Refer to DSC-46-10-50 How to Initialize*.
ENTER A/L ID or ENTER ACARS A/L ID or ENTER STANDARD A/L ID	The airline identification number is not valid. To enter this parameter, *Refer to DSC-46-10-50 How to Initialize*.

Continued on the following page

Continued from the previous page

MESSAGE	CONDITIONS
ENTER VHF 3 SCAN SELECT (1) or ENTER VHF 3 SCAN MASK (1)	No service provider has been selected.
FAILED COMMAND	The command, selected by the flight crew, cannot currently be performed.
FORMAT ERROR	The message was entered in an inappropriate format.
KEY NOT ACTIVE	The flight crew has pressed on MCDU a non allocated/non active key.
MULTICAST IGNORED	The multicast address is invalid (because equal to a/c ARN).
NOT ALLOWED	It is not permitted to press this key.
PRESS CONFIG ACTIVATE	Parameters of COMM MENU page have been modified. It is required to activate the new configuration.
PRINT FAILED	A print command is not successful.
PRT MSG PRINT FAIL	Automatic print of an AOC uplink message was not successful.
SYSTEM BUSY-TRY LATER	The system is busy. The command, selected by the flight crew, cannot currently be performed.
VHF 3 CAN BE SET IN VOICE	VHF 3 datalink communications are lost. However, VHF 3 can be used in voice mode.
VHF 3 SWITCH IMPOSSIBLE	It is not possible to switch from VHF 3 voice mode to VHF 3 data mode.

(1) *Depending on airline customization, access to the SCAN SELECT menu may not be possible. If it is not, the DEFAULT VHF SP LIST and ENTER VHF 3 SCAN SELECT/MASK scratchpad messages are not applicable.*

Ident.: DSC-46-10-40-40-10-00021338.0001001 / 17 MAR 17

1 **Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02334, 02405-02584, 02670-02737, 02908-03071, 03264, 03330-04216, 04312-04399, 04438-04506, 04518-05155, 05190-09063**

SCRATCHPAD MESSAGES ON THE COMM MENU PAGE

MESSAGE	CONDITIONS
COMMAND NOT AVAIL	The command is not available.
DEFAULT VHF SP LIST	The new SCAN MASK is not available. The system displays the default SCAN MASK instead.
ENTER A/C REGISTR	The aircraft registration number is not valid. To enter this parameter, *Refer to DSC-46-10-50 How to Initialize*.
ENTER A/L ID	The airline identification number is not valid. To enter this parameter, *Refer to DSC-46-10-50 How to Initialize*.
ENTER VHF 3 SCAN MASK	No service provider has been selected.

Continued on the following page

Continued from the previous page

MESSAGE	CONDITIONS
FAILED COMMAND	The command, selected by the flight crew, cannot currently be performed.
FORMAT ERROR	The message was entered in an inappropriate format.
NOT ALLOWED	It is not permitted to press this key.
PRINT FAILED	A print command is not successful.
PRT MSG PRINT FAIL	Automatic print of an AOC uplink message was not successful.
VHF 3 CAN BE SET IN VOICE	VHF 3 datalink communications are lost. However, VHF 3 can be used in voice mode.
VHF 3 SWITCH IMPOSSIBLE	It is not possible to switch from VHF 3 voice mode to VHF 3 data mode.

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MCDU Data Entry Format

MCDU DATA ENTRY FORMAT

Ident.: DSC-46-10-40-50-10-00021085.0003001 / 21 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158

This chapter lists the data that the flight crew can enter in the ATSU DATALINK pages of the MCDU.

For each type of data, the table displays:
- Acceptable format
- Units of entry
- Acceptable range
- Page(s) where the flight crew enters the data

The following characters are used to indicate the format:
A : Letters
N : Numeric (numbers)
X : Alphanumeric (letters and numbers).

DATA NAME	FORMAT	RANGE	UNIT	DISPLAY PAGE
A/C ICAO CODE	XXXXXXXX	8 characters		COMM CONFIG
A/C REGISTR	XXXXXXX	7 characters		COMM CONFIG
ACARS A/L ID	AA	2 letters		COMM CONFIG
ASSIGNED ALT	Same as ALT			EDIT
ATC CENTER	XXXXXXXX	4 to 8 characters		NOTIFICATION or FREQUENCY MONITORING
ATC NAME	AAAAAAAAAAAAAAAAA	3 to 18 letters		FREQUENCY MONITORING
ATC FUNCTION	CTR/APP/TWR/FNL/GND/ CLR/DEP/CTL/RAD	3 letters		FREQUENCY MONITORING
DIR TO	XXXXX (Fixname)	Min 1 alphanumeric Max 5 alphanumeric		REQUEST
	DDMM.MB/ EEEMM.MC (LAT/LONG)	DD: 0-89 B: N or S	Degrees	
	"DD" = LAT degrees "EEE" = LONG degrees	MM.M: 0-59,9	Minutes	
	"MM.M" = LAT and LONG minutes Leading zeros may be omitted	EEE: 0-179 C: E or W	Degrees	

Continued on the following page

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DATA NAME	FORMAT	RANGE	UNIT	DISPLAY PAGE
FL/ALT	FLNNN or NNN Leading zeros on NNN may be omitted	30-410	Hundreds of feet (MSL)	REQUEST
	NNNNNFT or NNNNN Between 0 and 410 feet, “FT” must be written. Leading zeros may be omitted.	-600-41 000	Feet	
	NNNNNM or -NNNNNM or +NNNNNM Leading zeros may be omitted	-30-12 500	Meters	
FROM/TO	AAAA			NOTIFICATION
PRESENT ALT	Same as ALT			EDIT
PREFERRED	Same as ALT			EDIT
SPD/MACH	NNN or NNNKT Leading zeros may be omitted	0-350	Kt	REQUEST
	M.NN or .NN The decimal point must be written, trailing zeros may be omitted	0.5-0.92	Mach	
STANDARD A/L ID	AAA			COMM CONFIG
TOD	HHMM ”HH” = NN or NNH ”MM” = NN or NNMIN ”MIN” = “MIN” or “MN” or “M” or “Z”	HH: 0-23 MM: 0-59	Hours Minutes	EDIT
VOICE FREQ	NNN.NNN	118.000 to 136.975	MHz	FREQUENCY MONITORING

Ident.: DSC-46-10-40-50-10-00021085.0002001 / 21 MAR 17
Applicable to: MSN 02649

This chapter lists the data that the flight crew can enter in the ATSU DATALINK pages of the MCDU.

For each type of data, the table displays:
- Acceptable format
- Units of entry
- Acceptable range
- Page(s) where the flight crew enters the data

The following characters are used to indicate the format:
A : Letters
N : Numeric (numbers)
X : Alphanumeric (letters and numbers).

DATA NAME	FORMAT	RANGE	UNIT	DISPLAY PAGE
A/C ICAO CODE	XXXXXXXX	8 characters		COMM CONFIG
A/C REGISTR	XXXXXXX	7 characters		COMM CONFIG

Continued on the following page

Continued from the previous page

DATA NAME	FORMAT	RANGE	UNIT	DISPLAY PAGE
ACARS A/L ID	AA	2 letters		COMM CONFIG
ASSIGNED ALT	Same as ALT			EDIT
ATC CENTER	AAAA	4 letters		NOTIFICATION
DIR TO	XXXXX (Fixname)	Min 1 alphanumeric Max 5 alphanumeric		REQUEST
	DDMM.MB/ EEEMM.MC (LAT/LONG)	DD: 0-89 B: N or S	Degrees	
	"DD" = LAT degrees "EEE" = LONG degrees	MM.M: 0-59,9	Minutes	
	"MM.M" = LAT and LONG minutes Leading zeros may be omitted	EEE: 0-179 C: E or W	Degrees	
DISTANCE	NNN.NNM or NNN.N Leading zeros may be omitted	0-999.9	NM	MESSAGE MODIFY
	NNNNKM "KM" must be written. Leading zeros may be omitted	0-2 000	KM	
FL/ALT	FLNNN or NNN Leading zeros on NNN may be omitted	30-410	Hundreds of feet (MSL)	REQUEST
	NNNNNFT or NNNNN Between 0 and 410 feet, "FT" must be written. Leading zeros may be omitted.	-600-41 000	Feet	
	NNNNNM or -NNNNNM or +NNNNNM Leading zeros may be omitted	-30-12 500	Meters	
FROM	Same as DIR TO			MESSAGE MODIFY
FROM/TO	AAAA			NOTIFICATION
PRESENT ALT	Same as ALT			EDIT
PREFERRED	Same as ALT			EDIT
SPD/MACH	NNN or NNNKT Leading zeros may be omitted	0-350	Kt	REQUEST
	M.NN or .NN The decimal point must be written, trailing zeros may be omitted	0.5-0.92	Mach	
STANDARD A/L ID	AAA			COMM CONFIG
TOD	HHMM "HH" = NN or NNH "MM" = NN or NNMIN "MIN" = "MIN" or "MN" or "M" or "Z"	HH: 0-23 MM: 0-59	Hours Minutes	EDIT

Ident.: DSC-46-10-40-50-10-00021087.0001001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138

DATA NAME	FORMAT	RANGE	UNIT	DISPLAY PAGE
A/C TYPE	XXXX	Min 2 alphanumeric Max 4 aphanumeric		DEPART REQ
ARPT/TYPE	XXXX/ARR "ARR" = "ARR", "AR", or "A". If left (right) field is filled in, right (left) field must also be filled in.		Arrival airport	ATIS MENU
	XXXX/DEP "DEP" = "DEP", "DDE" or "D". If left (right) field is filled in, right (left) field must also be filled in.		Departure airport	
AT TIME	HHMM "HH" = "NN or NNH. "MM" = NN or NNMIN. "MIN" = "M", "MN" or "Z"	HH 0-23 MM 0-59	HH Hours MM Minutes	OCEANIC REQ
ATIS	Same as ATIS CODE			MESSAGE MOFIDFY
ATIS CODE	A	1 letter		DEPART REQ
ENTRY-POINT	Same as DIR TO			OCEANIC REQ
FREE TEXT	Any character which belongs to: (A ... Z), (0 ... 9), ( ), (/), (+), (-), (.)	Max 96 characters		DEPART REQ OCEANIC REQ MORE FREE TEXT
FROM/TO	XXXX/XXXX Both fields may be entered independently	4 characters mandatory for each XXXX		DEPART REQ
GATE	XXXXX	Min 1 alphanumeric Max 5 aplhanumeric		DEPART REQ
REQ FL	NNN or FLNNN Leading zeros on NNN may be omitted	30-410	Hundreds of feet (MSL)	OCEANIC REQ
REQ MACH	M.NN or .NN The decimal point must be written, trailing zeros may be omitted.	0.61-0.92	Mach	OCEANIC REQ

ECAM

MEMO DISPLAY

Applicable to: ALL

Ident.: DSC-46-10-40-60-A-00016906.0001001 / 21 MAR 16

COMPANY ALERT : This memo appears in green when the aircraft receives an uplink alert message, or when an AOC special condition requires a pilot action on the MCDU (depends on AOC programming). This memo pulses green for 180 s, then remains steady. It is associated with a buzzer for 1 s.

Ident.: DSC-46-10-40-60-A-00016904.0001001 / 21 MAR 16

COMPANY CALL : This memo appears in green when the aircraft receives a message from the ground requesting voice communication on VHF.

Ident.: DSC-46-10-40-60-A-00016903.0001001 / 21 MAR 16

COMPANY DATALINK STBY : This memo appears in green when AOC datalink air-ground communication is temporarily unavailable, but not lost.

Ident.: DSC-46-10-40-60-A-00016905.0001001 / 21 MAR 16

COMPANY MSG : This memo appears in green when the aircraft receives a message from the ground.

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INTRODUCTION

Ident.: DSC-46-10-50-00021191.0002001 / 17 MAR 17

1 **Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02334, 02405-02584, 02670-02737, 02908-03071, 03264, 03330-04216, 04312-04399, 04438-04506, 04518-05155, 05190-09063**

How To chapter contains examples of:
- How to initialize the datalink
- How to modify the flight plan.

Illustrations in How To are generic and do not reflect differences depending on the datalink standard installed in the aircraft.

INTRODUCTION

Ident.: DSC-46-10-50-00021191.0001001 / 17 MAR 17

Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

How To chapter contains examples of:
- How to activate the datalink connection
- How to receive a datalink message
- How to create a datalink message
- How to send a datalink message.

Illustrations in How To are generic and do not reflect differences depending on the datalink standard installed in the aircraft.

HOW TO INITIALIZE

Ident.: DSC-46-10-50-00021142.0002001 / 17 MAR 17

2 **Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02334, 02405-02584, 02670-02737, 02908-03071, 03264, 03330-04216, 04312-04399, 04438-04506, 04518-05155, 05190-09063**

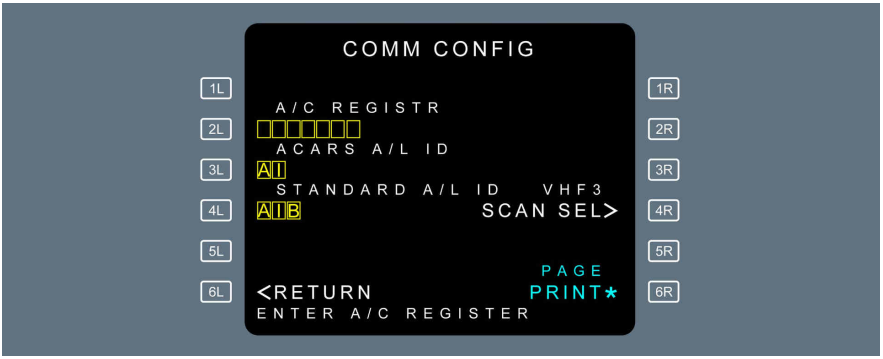
Datalink may be initialized:
- Automatically
  Datalink initializes automatically, provided that a list of service providers is scanned, and all required parameters are received, and validated by the ATSU.
- Manually
  Datalink may be initialized manually, when the system is not correctly initialized automatically.

The VHF3 SCAN SELECT page of the MCDU displays the list of service providers.
The COMM CONFIG / COMM INIT page, on the MCDU displays required parameters.

MANUAL INITIALIZATION

If one of required parameters is not valid, one or more manual entries may be required:

- **If ARN is not valid:**
  The MCDU scratchpad displays ENTER A/C REGISTER:



The flight crew clears the scratchpad, and inserts the A/C registration via the MCDU scratchpad.

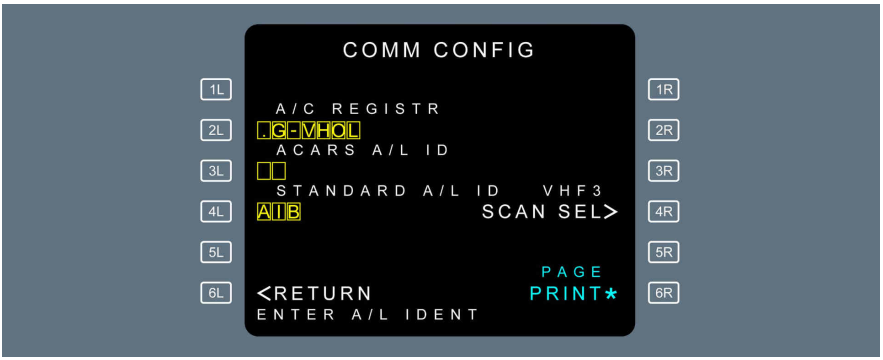
A/C REGISTR..... INSERT

The flight crew inserts A/C ICAO registration via the MCDU scratchpad to A/C REGISTR.

CONFIG ACTIVATE..... SELECT

The flight crew selects 1R/CONFIG ACTIVATE to activate manual entry of the A/C registration.

- **If the A/L ID is not valid:**
  The MCDU scratchpad displays ENTER A/L IDENT:



The flight crew clears the scratchpad, and inserts the two-letter A/L ID code via the MCDU scratchpad.

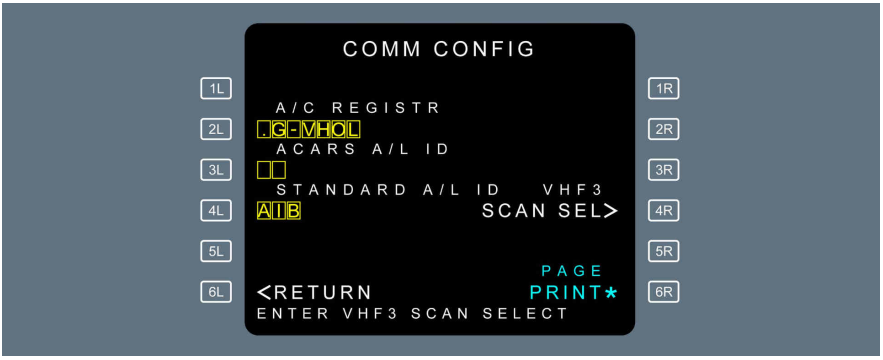
A/L ID..... INSERT

The flight crew inserts A/L ID code via the MCDU scratchpad to A/L ID.

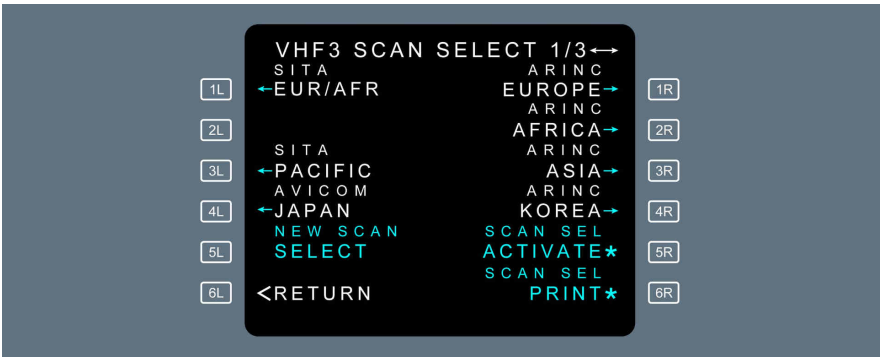
CONFIG ACTIVATE..... SELECT

The flight crew selects 1R/CONFIG ACTIVATE to activate manual entry of the A/C registration.

- **<u>If VHF service provider is not selected</u>**
  and
  <u>if the VHF3 SCAN/MASK SELECT menu can be accessed</u>:
  The MCDU scratchpad displays ENTER VHF3 SCAN SELECT:



On the VHF3 SCAN SELECT page, select service providers, in the airline priority order, and activate the VHF SCAN SELECT function.



EXAMPLE OF SELECTION OF DATALINK SERVICE PROVIDERS:

Selection of SITA 725 and ARINC service providers :

1. Press 5L key: The asterisk next to SELECT indication disappears, then reappears.
2. Press 1L key to select SITA 725: SELECT indication goes off, and the priority number of selection 1 appears.
3. Press 1R key to select ARINC: SELECT indication goes off, and the priority number of selection 2 appears.
4. Press 5R key to activate the VHF SCAN SELECT function: The star next to SCAN SELECT ACTIVATE indication disappears, then reappears.

Note: Modification of the SCAN SELECT setting may result in the loss of air-ground VHF datalink communication, and the increase of datalink service provider charges. Therefore, the SCAN SELECT setting should not be modified by the flight crew, unless the flight crew is instructed to do so.

HOW TO INITIALIZE

Ident.: DSC-46-10-50-00021142.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

Datalink may be initialized:

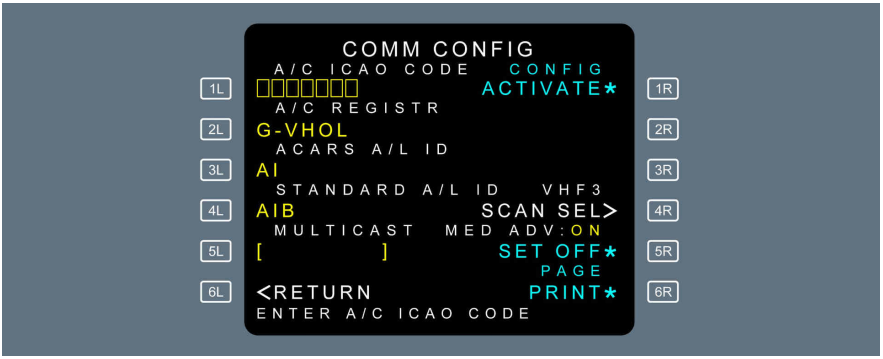
- Automatically
  Datalink initializes automatically, provided that a list of service providers is scanned, and all required parameters are received, and validated by the ATSU.
- Manually
  Datalink may be initialized manually, when the system is not correctly initialized automatically.

The VHF3 SCAN SELECT page of the MCDU displays the list of service providers.
The COMM COMFIG page, on the MCDU displays required parameters.

MANUAL INITIALIZATION

If one of required parameters is not valid, one or more manual entries may be required:

- **If the A/C ICAO CODE is not valid:**
  The MCDU scratchpad displays ENTER A/C ICAO CODE:



The flight crew clears the scratchpad, and inserts the A/C ICAO code (in hexal encoding) via the MCDU scratchpad.

A/C ICAO CODE.....INSERT

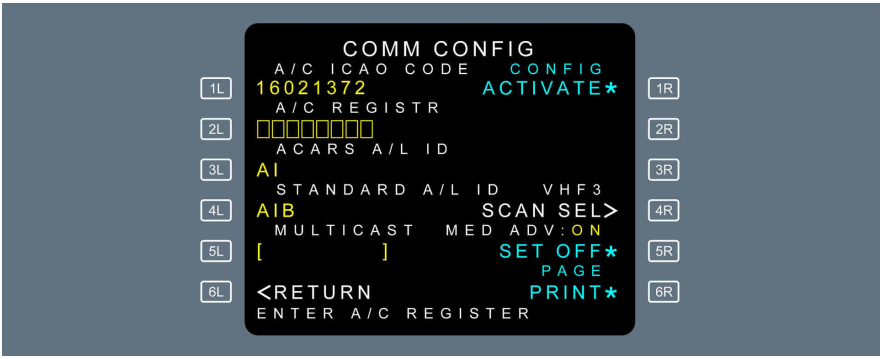
The flight crew inserts A/C ICAO code via the MCDU scratchpad into A/C ICAO CODE.

CONFIG ACTIVATE.....SELECT

The flight crew selects 1R/CONFIG ACTIVATE to activate manual entry of the A/C ICAO code.

- **<u>If ARN is not valid</u>:**

  The MCDU scratchpad displays ENTER A/C REGISTER:



The flight crew clears the scratchpad, and inserts the A/C registration via the MCDU scratchpad.

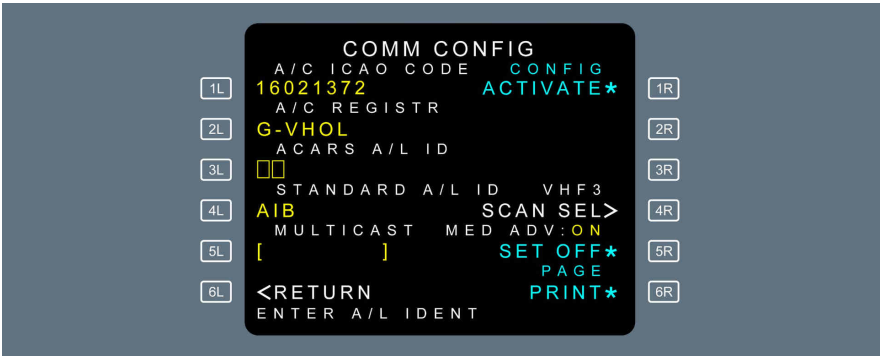
A/C REGISTR..... INSERT

The flight crew inserts A/C ICAO registration via the MCDU scratchpad to A/C REGISTR.

CONFIG ACTIVATE.....SELECT

The flight crew selects 1R/CONFIG ACTIVATE to activate manual entry of the A/C registration.

- **If the A/L ID is not valid:**
  The MCDU scratchpad displays ENTER A/L IDENT:



The flight crew clears the scratchpad, and inserts the two-letter A/L ID code via the MCDU scratchpad.

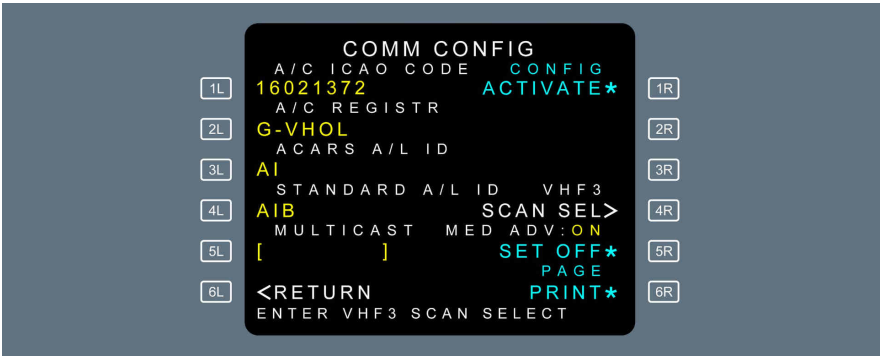
A/L ID..... INSERT

The flight crew inserts A/L ID code via the MCDU scratchpad to A/L ID.

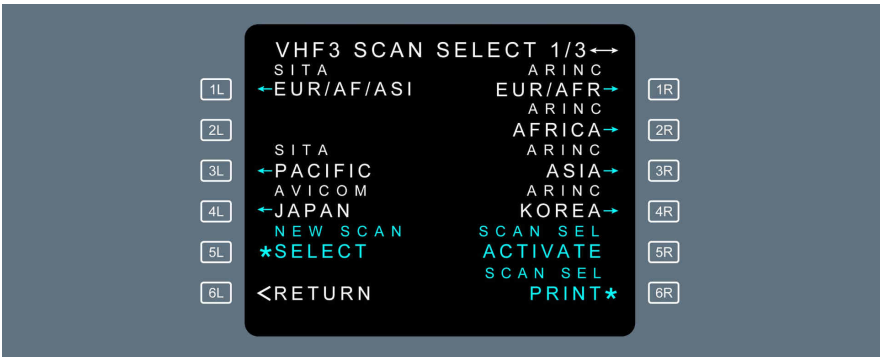
CONFIG ACTIVATE.....SELECT

The flight crew selects 1R/CONFIG ACTIVATE to activate manual entry of the A/C registration.

- **If VHF Service Provider is not selected**
  and
  if the VHF3 SCAN/MASK SELECT menu can be accessed:
  The MCDU scratchpad displays ENTER VHF3 SCAN SELECT:



On the VHF3 SCAN SELECT page, select service providers, in the airline priority order, and activate the VHF SCAN SELECT function.



EXAMPLE OF SELECTION OF DATALINK SERVICE PROVIDERS:

Selection of SITA 725 and ARINC service providers :

1. Press 5L key: The asterisk next to SELECT indication disappears, then reappears.
2. Press 1L key to select SITA 725: SELECT indication goes off, and the priority number of selection # 1 appears.
3. Press 1R key to select ARINC: SELECT indication goes off, and the priority number of selection # 2 appears.
4. Press 5R key to activate the VHF SCAN SELECT function: The asterisk next to SCAN SELECT ACTIVATE indication disappears, then reappears.

Note: Modification of the SCAN SELECT setting may result in the loss of air-ground VHF datalink communication, and the increase of datalink service provider charges. Therefore, the SCAN SELECT setting should not be modified by the flight crew, unless the flight crew is instructed to do so.

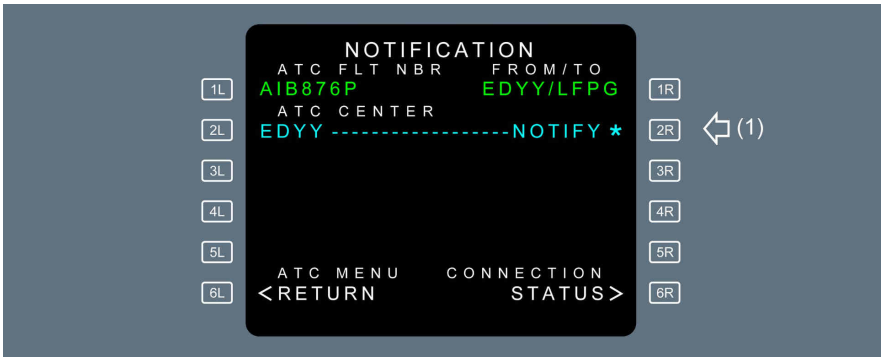
HOW TO NOTIFY

Ident.: DSC-46-10-50-00021143.0001001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

- **On the MCDU:**
  NOTIFICATION Page:

  NOTIFY..... SELECT See (1)

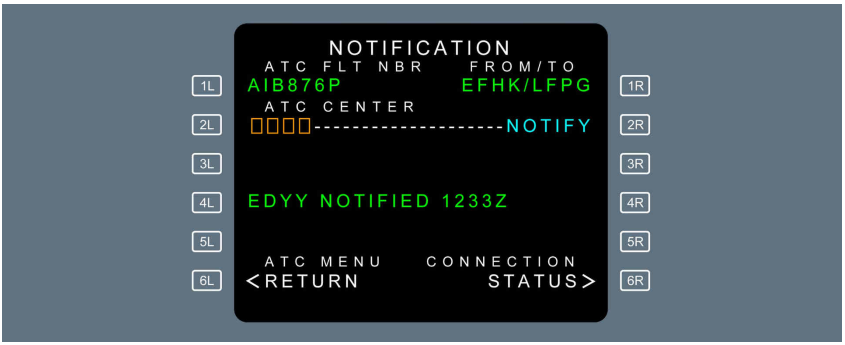
  The flight crew enters the ATC code via the MCDU scratchpad, if the FMS does not enter the ATC code automatically.



- **If the ATC center accepts the notification:**

  When ATC center accepts the notification, the MCDU displays the name of the notified ATC center:

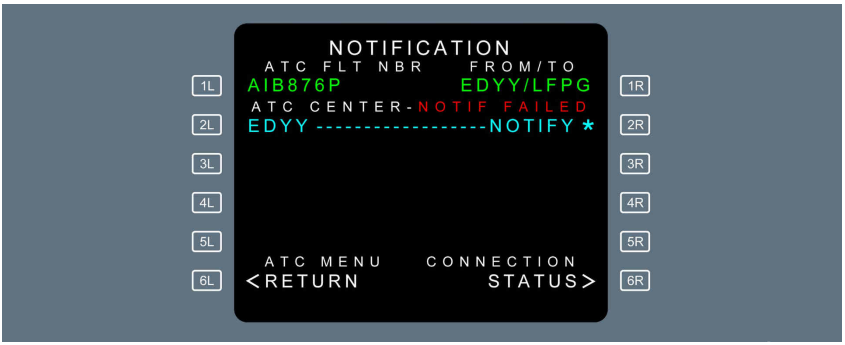
ATC NOTIFIED on the MCDU



■ **If the notification fails:**

If the notification fails, the MCDU displays NOTIF FAILED information:

NOTIF FAILED on the MCDU



Note:

1. *For ADS-C ◁ operations, check on the CONNECTION STATUS page, on the MCDU, that the ADS-C ◁ is set to ARMED before sending a notification.*
2. *The notified ATC center initiates the CPDLC and/or ADS-C ◁ connection. Therefore, re-notifications should be avoided.*
3. *An automatic transfer from one ATC center to the next ATC center can be expected, if:*
   - *The MCDU displays the next ATC code, on the CONNECTION STATUS Page*
   - *The DCDU displays NEXT ATC information with the desired ATC code, on the default screen, when no datalink message is displayed.*

HOW TO CONNECT

Ident.: DSC-46-10-50-10-00021239.0003001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02626, 02804, 03138, 03308, 04294, 04433, 04510, 05158

CPDLC CONNECTION

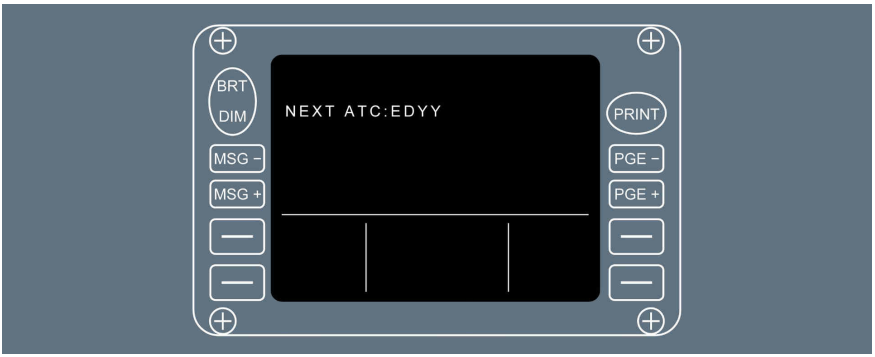
CONNECTION TO ACTIVE ATC

The ATC center initializes the CPDLC connection, when the ATC center receives a notification from the aircraft.
The DCDU displays the connected ATC (ACTIVE ATC), when the connection is established.
The MCDU displays the connected ATC (ACTIVE ATC) on the CONNECTION STATUS page.

NEXT ATC..... VERIFY

The flight crew should verify that the desired ATC center is connected.

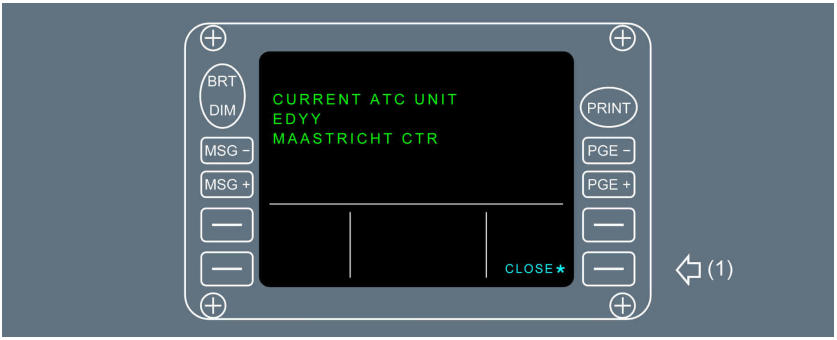
NEXT ATC on the DCDU



- **When the *CURRENT ATC* uplink message is received:**

CAUTION	The aircraft can be considered under the control of the active ATC center, when the flight crew receives a *CURRENT ATC* uplink message.

Note: *The transmission of the CURRENT ATC uplink message may take a few minutes.*



CLOSE..... SELECT See (1)

The flight crew must close the message.

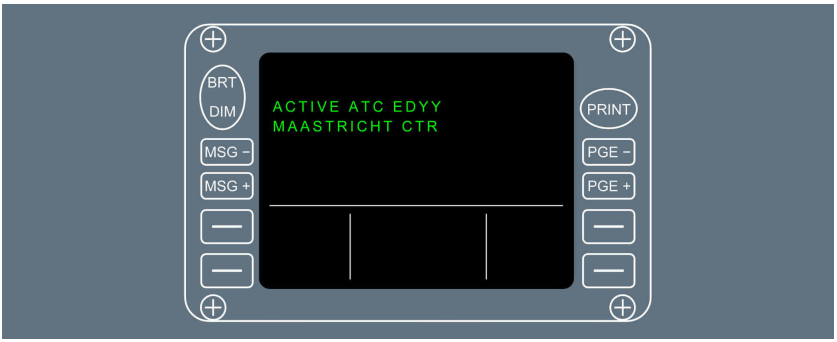
ACTIVE ATC.....VERIFY

The status of the connected ATC center, indicated as NEXT ATC (when the connection was initialized), changes to ACTIVE ATC.

The flight crew must verify that the desired ATC center is connected.

The aircraft is connected with the active ATC center (e.g. EDYY) and can exchange datalink messages.

ACTIVE ATC on the DCDU



CONNECTION TO NEXT ATC

The active ATC can transfer the datalink connection to a next ATC without requiring a flight crew action.

If the active ATC transfers the connection to the next ATC, the DCDU will automatically display the next ATC code in the NEXT ATC field, on the default screen, under the next ATC code in the NEXT ATC field.
When the flight crew receives a message of service termination from the active ATC, the next ATC becomes the active ATC.

Ident.: DSC-46-10-50-10-00021239.0002001 / 17 MAR 17
Applicable to: MSN 02649

CPDLC CONNECTION

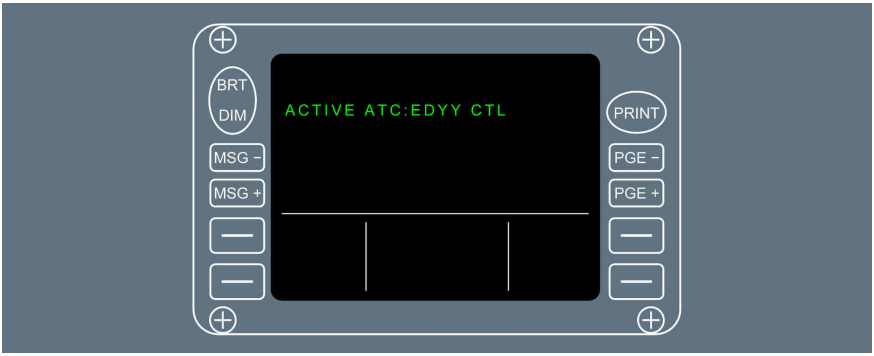
CONNECTION TO ACTIVE ATC

The ATC center initializes the CPDLC connection, when the ATC center receives a notification from the aircraft.
The DCDU displays the connected ATC (ACTIVE ATC), when the connection is established.
The MCDU displays the connected ATC (ACTIVE ATC) on the CONNECTION STATUS page.

ACTIVE ATC..... VERIFY

The flight crew must verify that the desired ATC center is connected.

ACTIVE ATC on the DCDU



- **When the *CURRENT ATC* uplink message is received:**

CAUTION	The aircraft can be considered under the control of the active ATC center, when the flight crew receives a *CURRENT ATC* uplink message.

Note: *The transmission of the CURRENT ATC uplink message may take a few minutes.*

CLOSE..... SELECT See (1)

The flight crew must close the message.

The aircraft is connected with the active ATC center (e.g. EDYY) and can exchange datalink messages.

CONNECTION TO NEXT ATC

The active ATC can transfer the datalink connection to a next ATC without requiring a flight crew action.
If the active ATC transfers the connection to the next ATC, the DCDU will automatically display the next ATC code in the NEXT ATC field, on the default screen, under the next ATC code in the NEXT ATC field.

When the flight crew receives a message of service termination from the active ATC, the next ATC becomes the active ATC.

HOW TO SEND REQUEST TO ATC

Ident.: DSC-46-10-50-00021188.0002001 / 17 MAR 17
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

AIRCRAFT REQUEST OF LATERAL FLIGHT PLAN DEVIATION

Example: DIRECT TO REQUEST

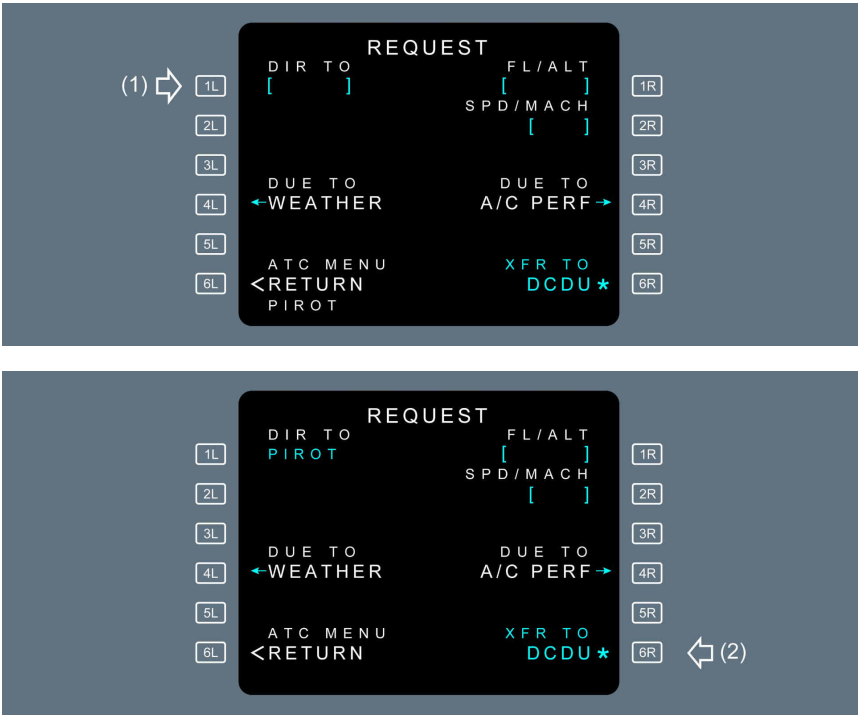
- **On the MCDU:**
  REQUEST Page:

  DIR TO.....INSERT See (1)

  Insert a desired waypoint via the MCDU scratchpad.

  XFR TO DCDU..... SELECT See (2)

  The DCDU displays prepared DIR TO request.

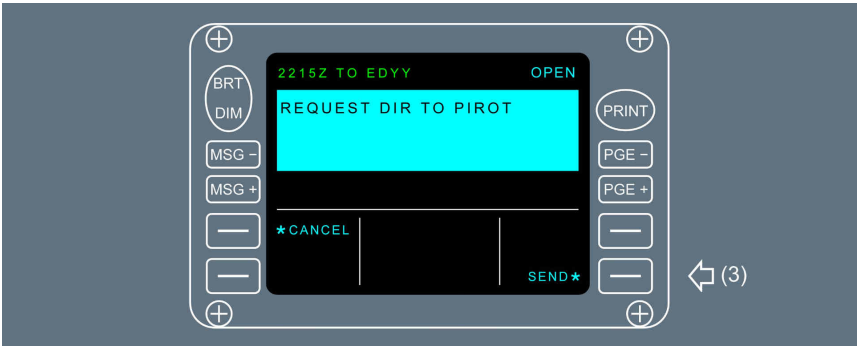


- **On the DCDU:**

  SEND..... SELECT See (3)

L2 *The OPEN status of the message disappears.*

L1 *The flight crew can close the message by selecting CLOSE, if the message is not closed automatically.*



HOW TO ANSWER

Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

Ident.: DSC-46-10-50-20-00021187.0002001 / 17 MAR 17

ATC IMMEDIATE CLEARANCE

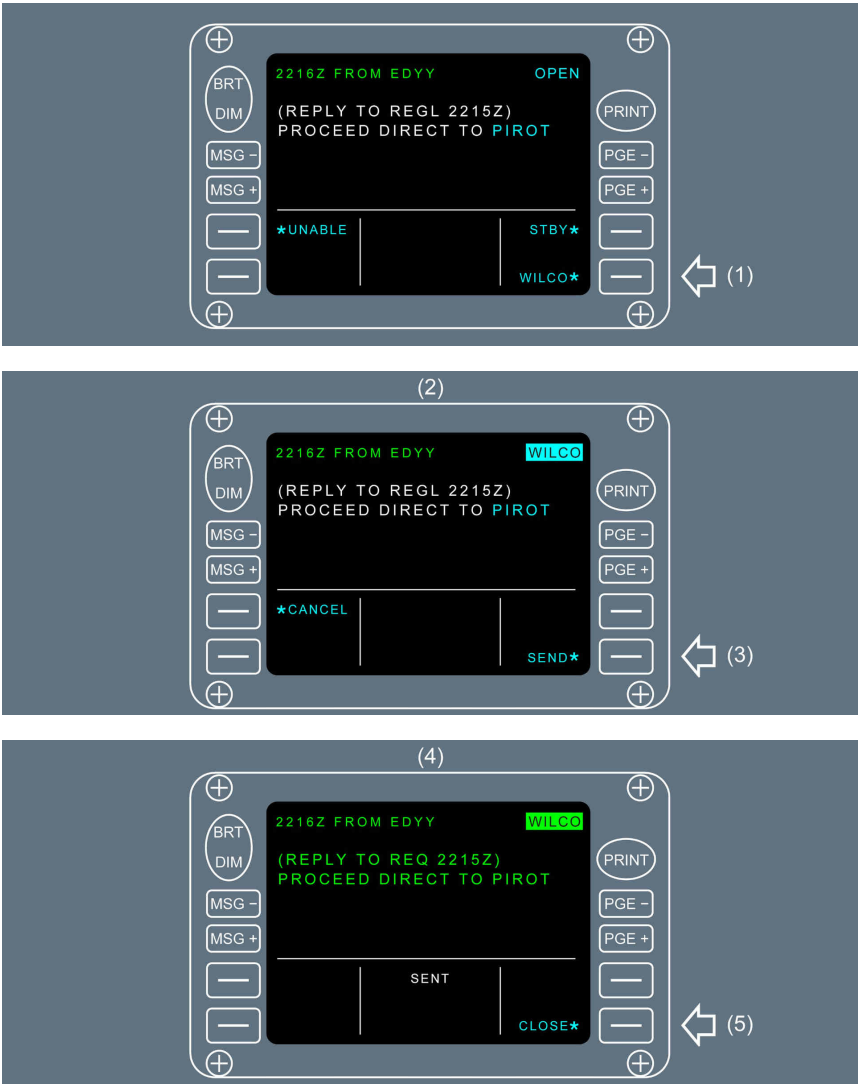
Example: DIRECT ROUTE Clearance:

- **On the glareshield:**
  ATC MSG pb.....PRESS
  The aural and visual alerts stop.

- **On the DCDU:**
  WILCO.....SELECT See (1)
  The message status changes to WILCO See (2).
  SEND..... SELECT See (3)

L2 *The DCDU displays the message and the message status in green See (4).*

L1 CLOSE..... SELECT See (5)
Closing the message clears the DCDU.
The flight crew must insert the direct to in the FMGS flight plan..



Ident.: DSC-46-10-50-20-00021221.0001001 / 22 MAR 17

ATC NEGOTIATION MESSAGE

Example: WHEN CAN YOU ACCEPT Negotiation

- **On the glareshield:**

  ATC MSG pb.....PRESS

  The aural and visual alerts stop.

- **On the DCDU:**

  The DCDU displays the ATC negotiation message:

Note: *A default answer is automatically generated on the DCDU and proposed to the flight crew.*

- **If the flight crew can comply with the proposed action immediately:**

  - **On the DCDU:**

    SEND.....SELECT See (1)

    The flight crew can close the message, if the message is not closed automatically.

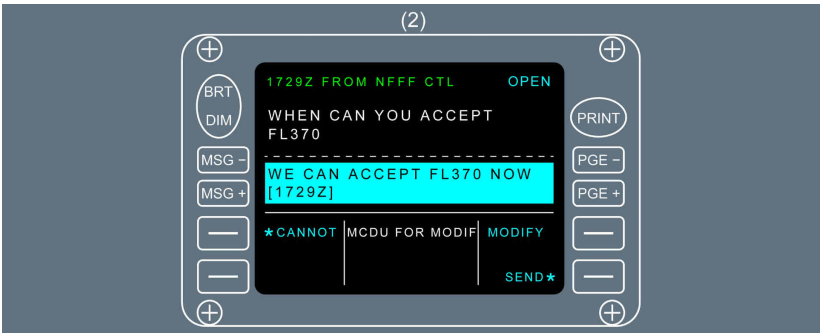
■ **If the flight crew can comply with the proposed action, but cannot perform the proposed action immediately:**

● **On the DCDU:**

MODIFY.....SELECT (1)

MCDU FOR MODIF/MCDU FOR EDIT appears on the DCDU, in the message information area See (2) .

The MCDU automatically displays the MODIFY page See (3).



● **On the MCDU:**

MESSAGE MODIFY Page

or

EDIT Page:

The flight crew specifies, when they can comply with the proposed action.

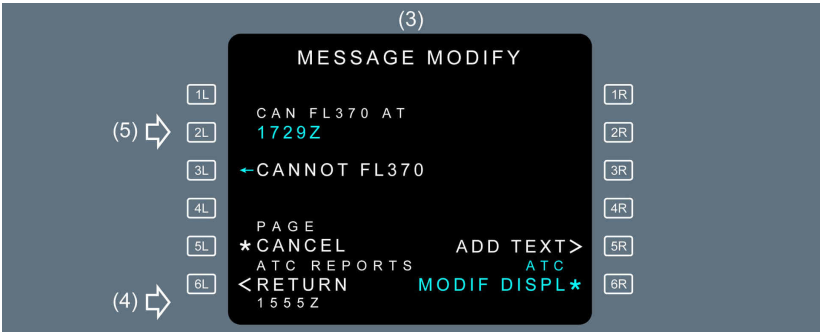
A default time value appears in the 2L field, on the MESSAGE MODIFY/EDIT page. The flight crew can modify the default time value via the MCDU scratchpad.

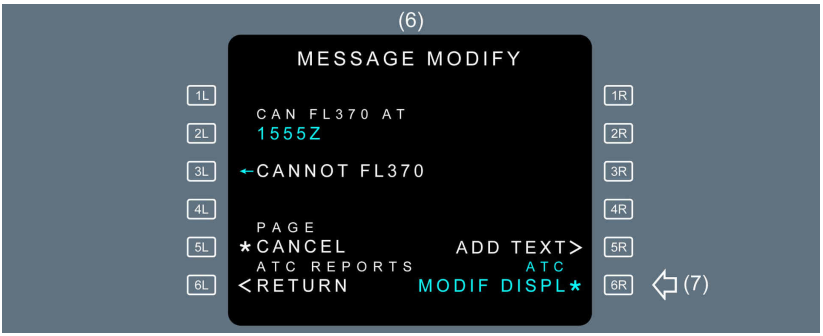
CAN FL370 AT.....SELECT See (5)

The flight crew can propose a new time value via the scratchpad See (4). The new time value will be inserted to the datalink message via the MESSAGE MODIFY/EDIT page See (6).

ATC MODIF DISPL.....SELECT See (7)

The message appears on the DCDU See (8).





- **On the DCDU:**

SEND.....SELECT See (9)

L2 *The OPEN status of the message disappears.*

L1 *The flight crew can close the message, if the message is not closed automatically.*

■ **If the flight crew cannot comply with the proposed action:**

● **On the DCDU:**

CANNOT.....SELECT See (1)

The generated message changes from the positive message (CAN) to a negative message (CANNOT).

L2 *The message status remains OPEN See (2).*

L1 SEND.....SELECT See (3)

The flight crew can close the message, if the message is not closed automatically.

L2 *The OPEN status of the message disappears.*

L1

Ident.: DSC-46-10-50-20-00021190.0002001 / 17 MAR 17

ATC CONFIRMATION REQUEST

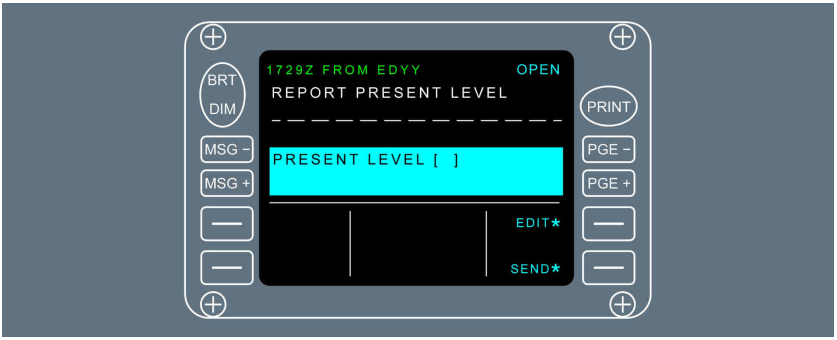
Example: CONFIRM PRESENT LEVEL Request

RECEPTION

- **On the glareshield:**
  ATC MSG pb.....PRESS
  The aural and visual alerts stop.

- **On the DCDU:**

  The DCDU displays the ATC confirmation request:

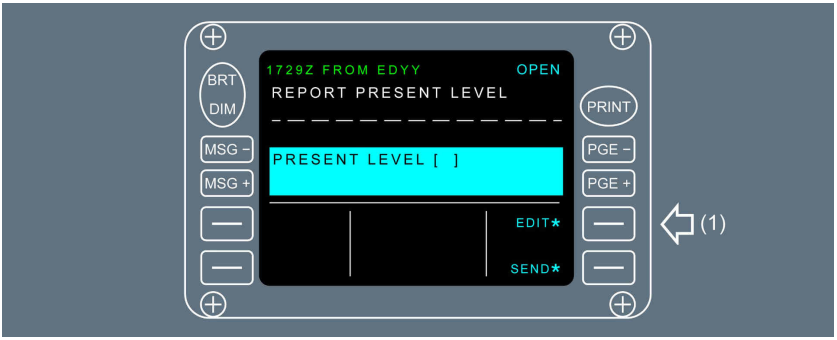


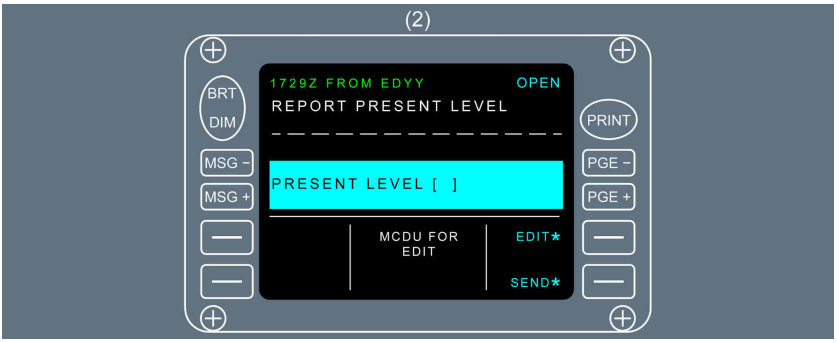
RESPONSE

- **On the DCDU:**

  EDIT..... SELECT See (1)

  MCDU FOR EDIT information appears on the DCDU, in the message information area See (2). The MCDU automatically displays the EDIT page See (3).





- **On the MCDU:**

  EDIT Page:

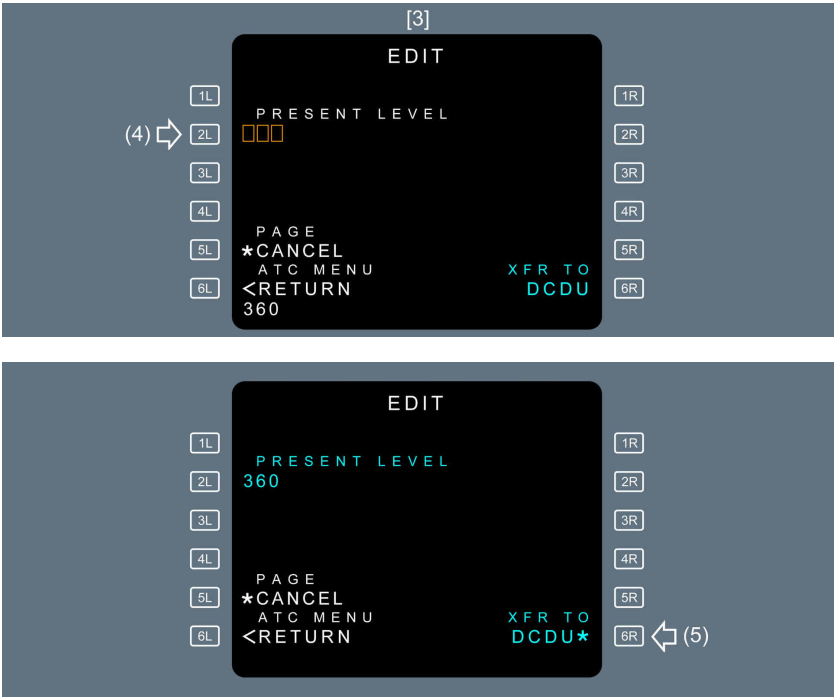
  PRESENT LEVEL..... INSERT See (4)

  Insert the value of the present flight level via the MCDU scratchpad.

L2 *A default value may appear in the 2L field of the MCDU EDIT page.*

L1 XFR TO DCDU..... SELECT See (5)

The DCDU displays the prepared message.

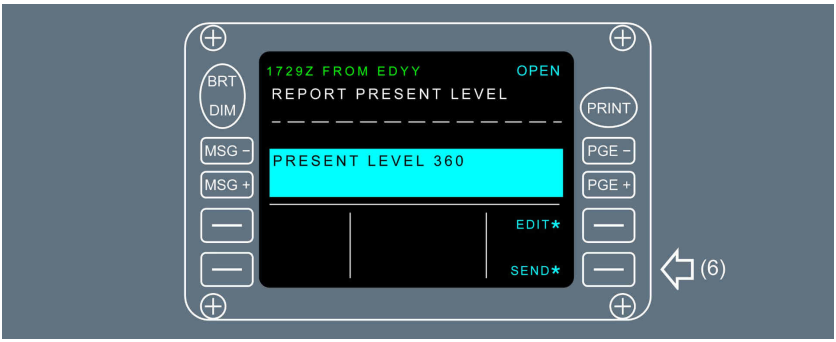


- **On the DCDU:**

  SEND.....SELECT See (6)

L2 *The OPEN status of the message disappears.*

L1 *The flight crew can close the message, if the message is not closed automatically.*



HOW TO OBTAIN DCL

Applicable to: MSN 01957-02097, 02121, 02138

Ident.: DSC-46-10-50-30-00021157.0001001 / 17 MAR 17

DEPARTURE CLEARANCE REQUEST

- **On the MCDU:**
  DEPART REQ Page

  FROM/TO.....INSERT See (1)

  Enter the departure and arrival airports, if the system does not automatically display the departure and arrivals airports.

  A/C TYPE.....INSERT See (2)

  Enter the aircraft type, if the system does not automatically display the aircraft type.

  ATIS CODE.....INSERT See (3)

  Enter the ATIS code, if the system does not automatically display the ATIS code.

  GATE..... INSERT See (4)

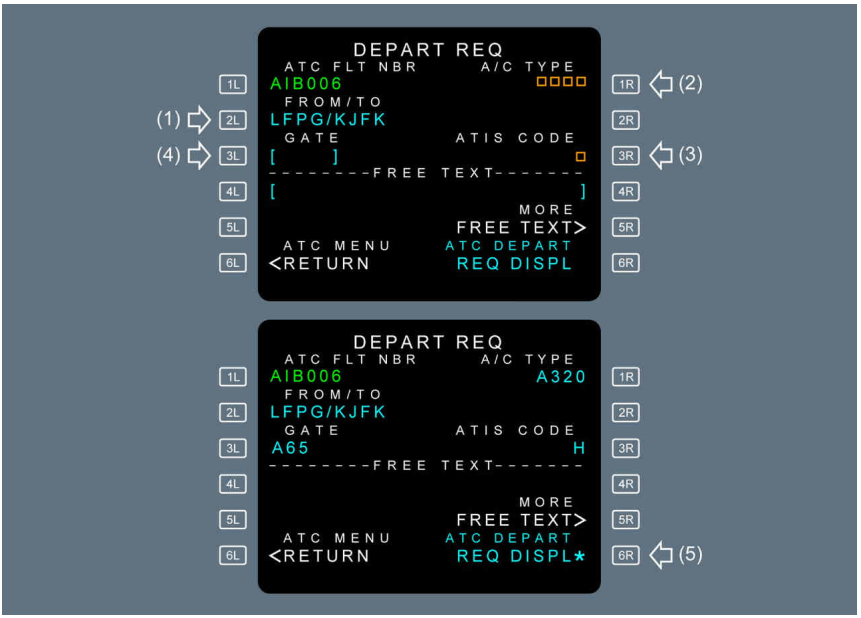
  Enter the gate or stand number, if the gate or stand number is known.

  REQ DISPL.....SELECT See (5)

  The request is ready to be sent via the DCDU.

L2 *The DCDU displays the request on a blue background.*

L1



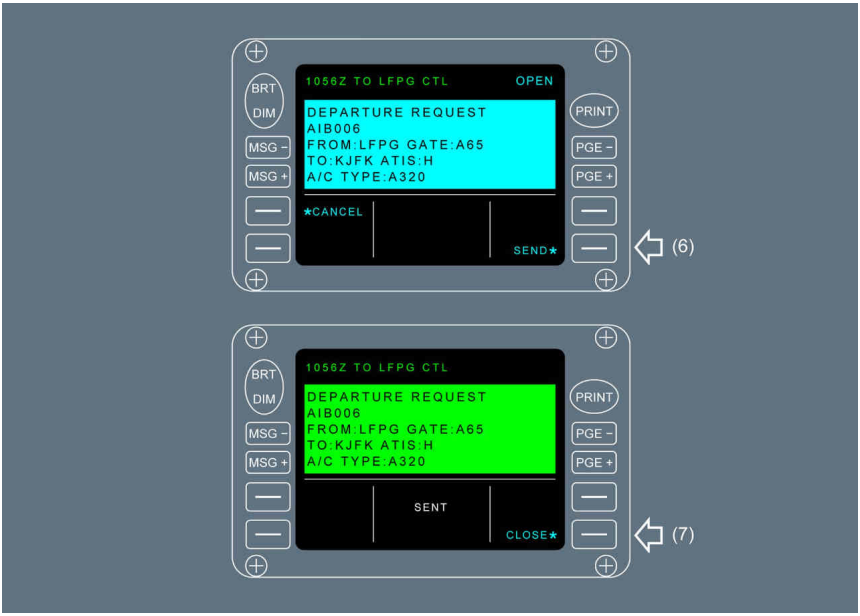
- **On the DCDU :**

SEND..... SELECT See (6)

L2 *The DCDU displays the message on a green background, and the OPEN status disappears.*

L1 CLOSE..... SELECT See (7)

Closing the message clears the screen.



Ident.: DSC-46-10-50-30-00021145.0001001 / 17 MAR 17

DEPARTURE CLEARANCE RECEPTION

- **On the glareshield:**
  ATC MSG pb ..... PRESS
  The aural and visual alerts stop.

- **On the DCDU:**

  The DCDU displays the oceanic clearance:

Ident.: DSC-46-10-50-30-00021146.0001001 / 17 MAR 17

DEPARTURE CLEARANCE READ-BACK

■ ACKNOWLEDGE:

● On the DCDU:

ACK.....SELECTSee (1)

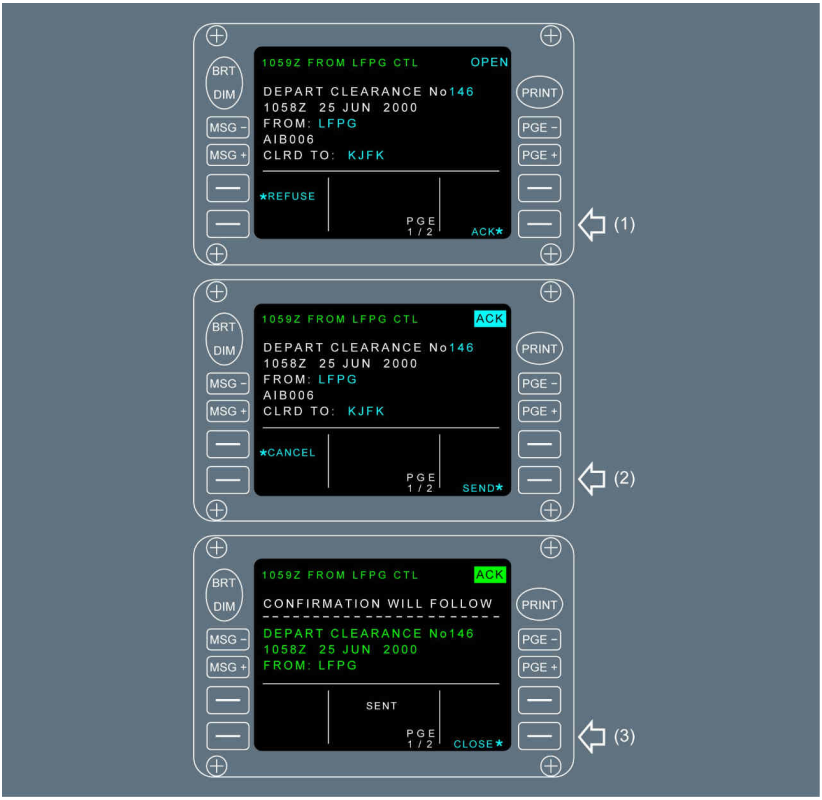
L2 *The message status changes to ACK, on a blue background.*

L1 SEND.....SELECT See (2)

The clearance must not be complied with, before a confirmation is received. CONFIRMATION WILL FOLLOW at the top of the acknowledgement message reminds the flight crew.

CLOSE.....SELECT See (3)

Closing the message clears the screen.



■ REFUSE:

● On the DCDU:

REFUSE..... SELECT See (1)

Datalink cannot send a refuse message. The flight crew must report the clearance refusal to the ATC by voice.

- **On the RMP:**

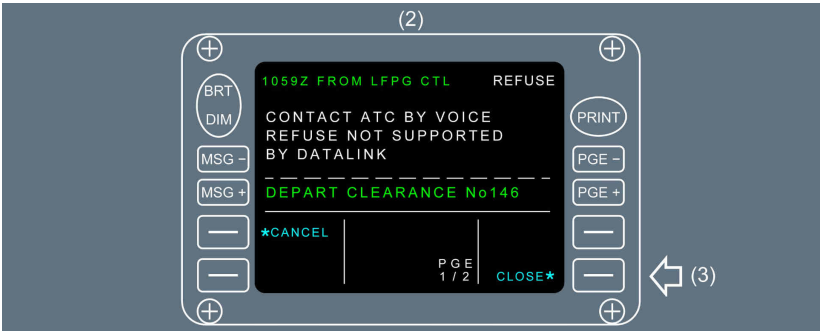
  The crew must contact the ATC by voice.

  The refusal of departure clearance cannot be sent via datalink. CONTACT ATC BY VOICE appears on the DCDU See (2).

- **On the DCDU:**

  CLOSE.....SELECT See (3)

  Closing the message clears the screen.



Ident.: DSC-46-10-50-30-00021147.0001001 / 21 MAR 17

DCL READ-BACK CONFIRMATION

- **On the glareshield:**

  ATC MSG pb ..... PRESS

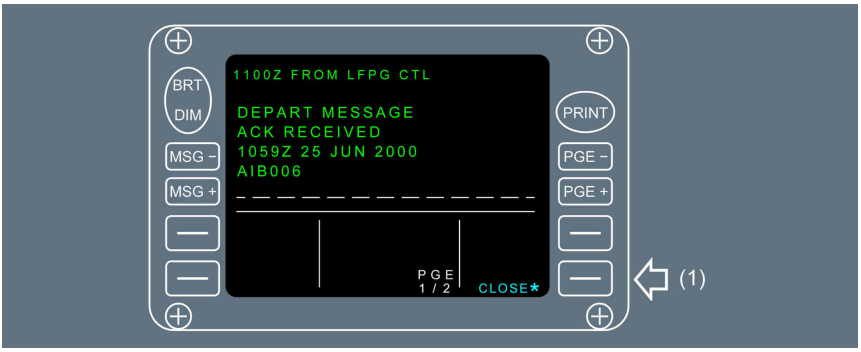
  The aural and visual alerts stop.

Note: *When a read-back confirmation is received, the flight crew can proceed, in accordance with the clearance displayed on the DCDU.*
The flight crew must update the flight plan if necessary.

- **On the DCDU:**

CLOSE..... SELECT See (1)

The message is automatically stored.



HOW TO OBTAIN OCL

Applicable to: MSN 01957-02097, 02121, 02138

Ident.: DSC-46-10-50-40-00021156.0001001 / 17 MAR 17

OCEANIC CLEARANCE REQUEST

- **On the MCDU:**

OCEANIC REQ Page

ENTRY-POINT..... INSERT See (1)

Enter a fix name or a latitude/longitude value.

REQ MACH..... INSERT See (2)

Enter the Mach number required.

OCEAN ATC..... INSERT See (3)

Enter the oceanic ATC center code.

AT TIME..... INSERT See (4)

Enter the time at the oceanic entry point.

REQ FL..... INSERT See (5)

Enter the requested flight level.

ATC OCEAN REQ DISPL..... INSERT See (6)

The request is ready to be sent via the DCDU.

L2 *The DCDU displays the request on a blue background.*

L1

- **On the DCDU:**

SEND..... SELECT See (1)

L2 *The DCDU displays the message on a green background, and the OPEN status disappears.*

L1 *The flight crew can close the message, if the message is not closed automatically.*

Ident.: DSC-46-10-50-40-00021144.0001001 / 17 MAR 17

OCEANIC CLEARANCE RECEPTION

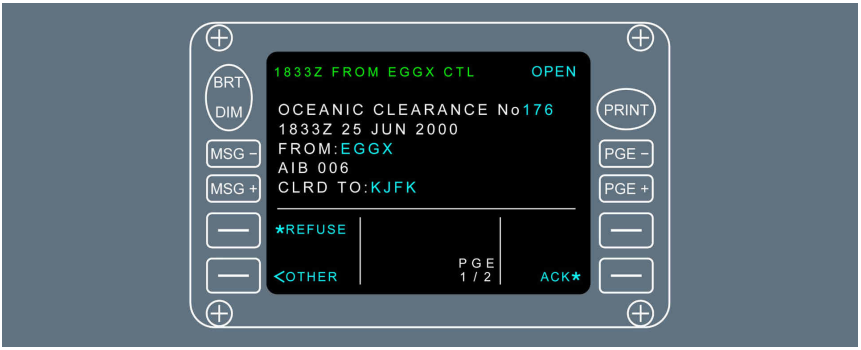
- **On the glareshield:**

ATC MSG pb ..... PRESS

The aural and visual alerts stop.

- **On the DCDU:**

  The DCDU displays the oceanic clearance:



Ident.: DSC-46-10-50-40-00021148.0001001 / 17 MAR 17

OCEANIC CLEARANCE READ-BACK

■ ACKNOWLEDGE

- **On the DCDU:**

  ACK.....SELECT See (1)

L2 *The message status changes to ACK, on a blue background.*

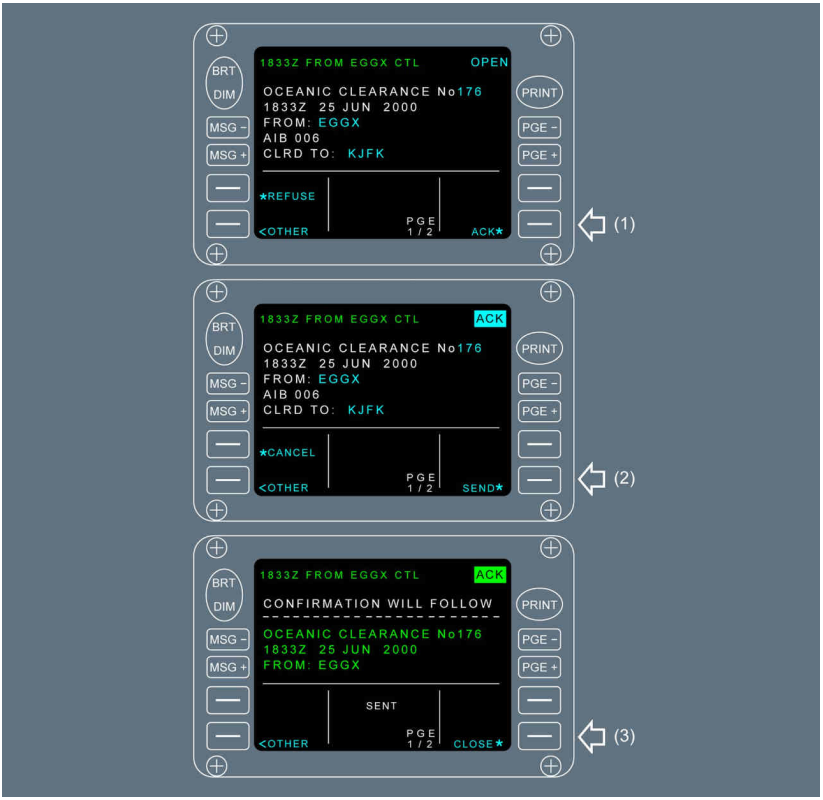
L1 SEND.....SELECT See (2)

The clearance must not be complied with, before a confirmation is received. CONFIRMATION WILL FOLLOW at the top of the acknowledgement message reminds the flight crew.

L2 *The message status changes to ACK, on a green background.*

L1 CLOSE.....SELECT See (3)

Closing the message clears the screen.

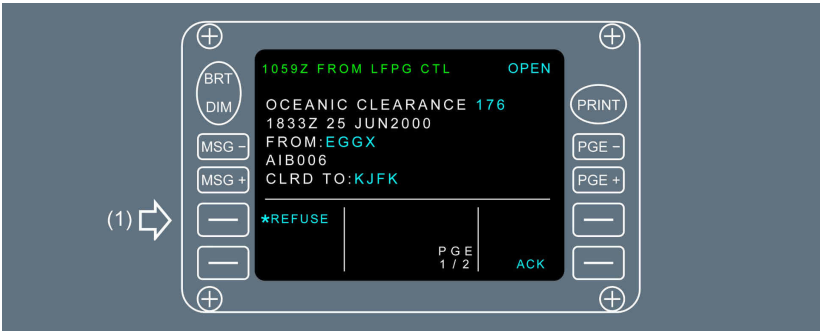


■ REFUSE

● On the DCDU:

REFUSE..... SELECT See (1)

Datalink cannot send a refuse message. The flight crew must report the clearance refusal to the ATC by voice.



- **On the RMP:**

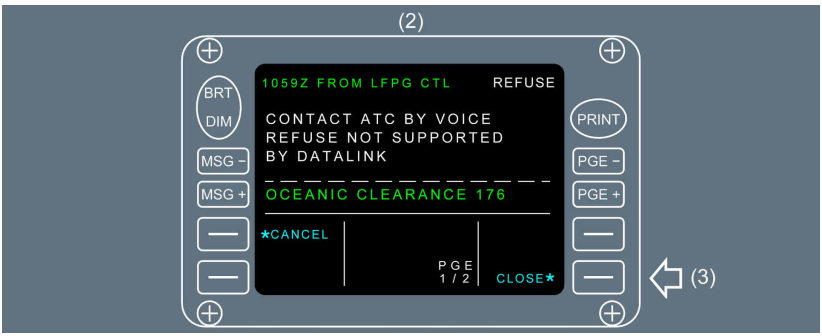
  The crew must contact the ATC by voice.

  The refusal of oceanic clearance cannot be sent via datalink. CONTACT ATC BY VOICE appears on the DCDU See (2) .

- **On the DCDU:**

  CLOSE.....SELECT See (3)

  Closing the message clears the screen.



Ident.: DSC-46-10-50-40-00021149.0001001 / 21 MAR 17

OCL READ-BACK CONFIRMATION

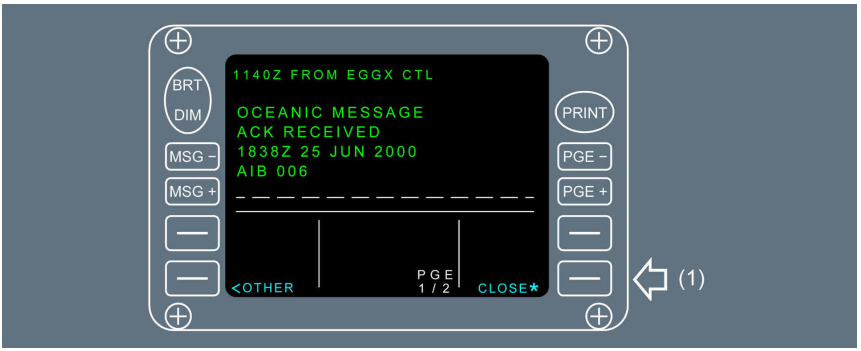
- **On the glareshield:**

  ATC MSG pb.....PRESS

  The aural and visual alerts stop.

Note: When a read-back confirmation is received, the flight crew can proceed, in accordance with the clearance displayed on the DCDU.
The flight crew must update the flight plan if necessary.

- **On the DCDU:**
  CLOSE..... SELECT See (1)
  The message is automatically stored.



HOW TO OBTAIN D-ATIS

Applicable to: MSN 01957-02097, 02121, 02138

Ident.: DSC-46-10-50-50-00021150.0001001 / 17 MAR 17

ATIS MANUAL REQUEST

- **On the MCDU:**
  ATIS MENU Page:
  REQ SEND..... SELECT See (1)
  The flight crew sends manually the ATIS request to the desired departure or arrival airport.

ATIS Request Sent

Ident.: DSC-46-10-50-50-00021151.0001001 / 21 MAR 17

ATIS AUTO-UPDATE REQUEST

- **On the MCDU:**

  ATIS MENU Page:

  AUTO UPDATE.....SELECT See (1)

  The ATIS AUTO UPDATE page displays a list of arrival airports. See (2).

  SET ON.....SELECT See (3)

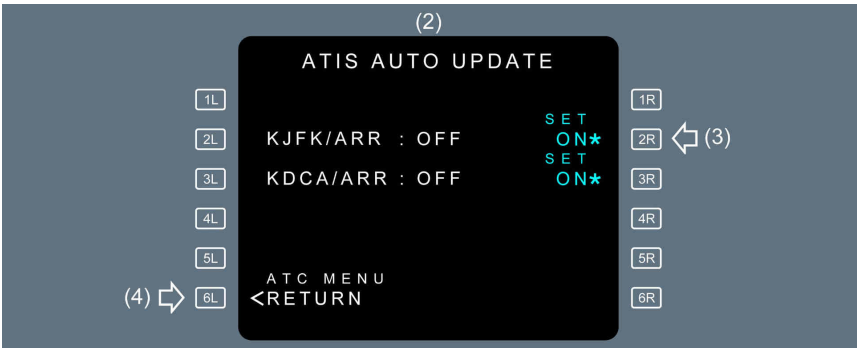
  The auto-update request must be sent to the ground via the ATIS MENU page.
  Each arrival airport may be set on individually.

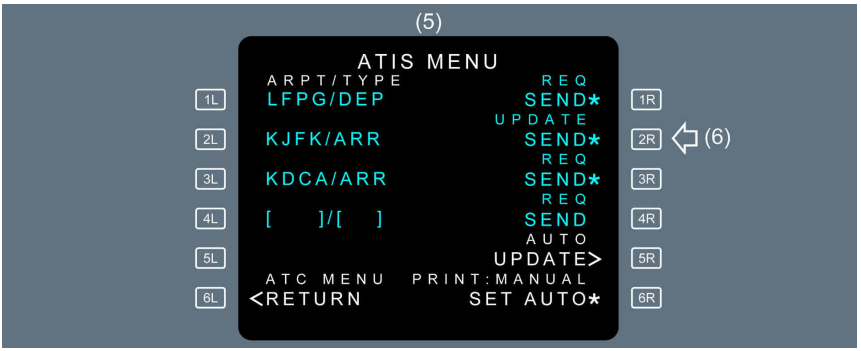
  ATIS MENU RETURN.....SELECT See (4)

  RETURN enables to display the ATIS MENU Page. See (5).

UPDATE SEND.....SELECT See (6)

The ATIS is automatically sent to the aircraft, when ATIS information is updated.





AUTO-UPDATE CANCEL

UPDATE CANCEL.....SELECT See (1)

Once the auto-update function is cancelled, REQ SEND function of the arrival airport becomes available again. The flight crew can send ATIS information requests manually.

Ident.: DSC-46-10-50-50-00021219.0001001 / 17 MAR 17

ATIS RECEPTION

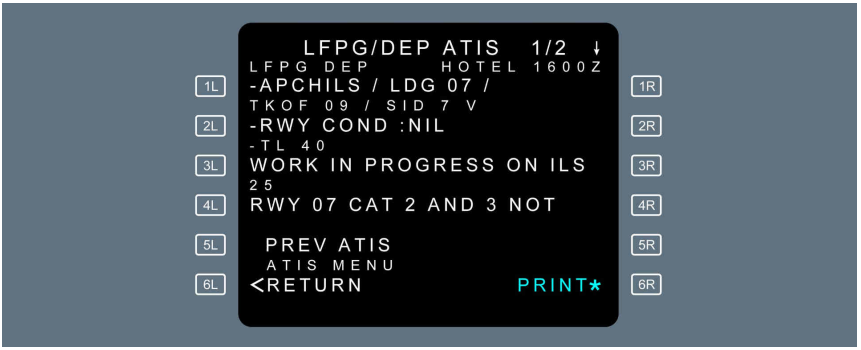
- **On the MCDU:**
  ATIS MENU Page:

  ARPT/TYPE.....SELECT See (1)

  The MCDU displays the text of the selected ATIS report.

Note: The ATIS code and time of reception appear next to the corresponding airport code.

Example of a content of the ATIS Report Page 1/2



HOW TO MODIFY FLT PLAN

Ident.: DSC-46-10-50-00021153.0001001 / 21 MAR 17
Applicable to: ALL

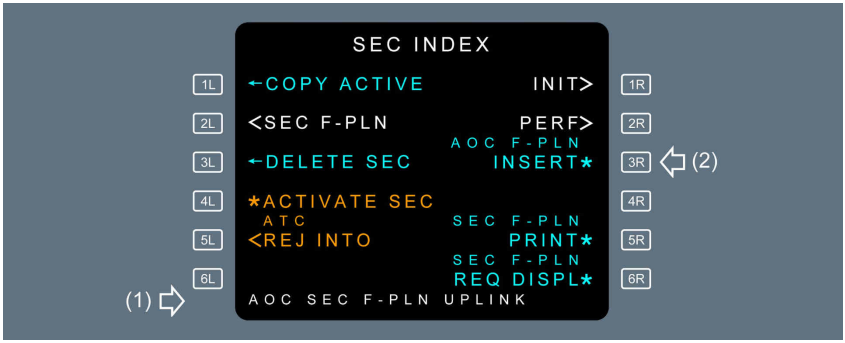
- **When the scratchpad (1) displays the AOC SEC F-PLN UPLINK message:**
  - **On the MCDU:**
    SEC INDEX Page:

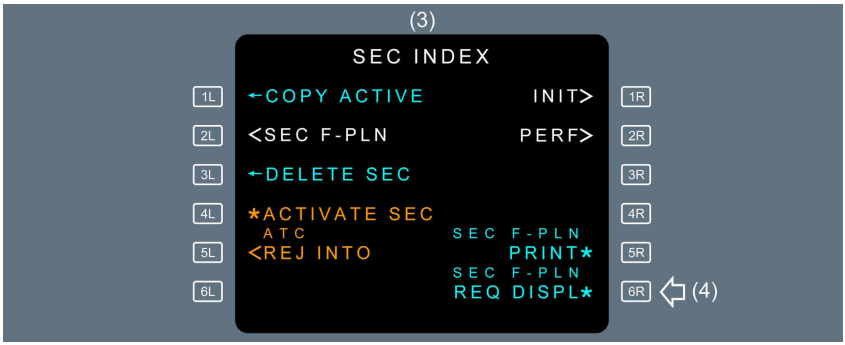
    AOC F-PLN INSERT..... SELECT See (2)

    The flight plan is inserted in the secondary F-PLN See (3).
    The flight can review and modify the flight plan.

    SEC F-PLN REQ DISPLAY.....SELECT See (4)

L2 *The DCDU automatically displays a datalink message See (5).*
L1 *The flight crew sends the message to the ATC from the DCDU.*





- **When ATC clearance is received:**
  - **On the glareshield:**

    ATC MSG pb..... PRESS

    The aural and visual alerts stop.

- **On the DCDU:**

STBY..... SELECT See (1)

L2 *The message status changes to STBY on a blue background See (2).*

L1 SEND.....SELECT See (3)

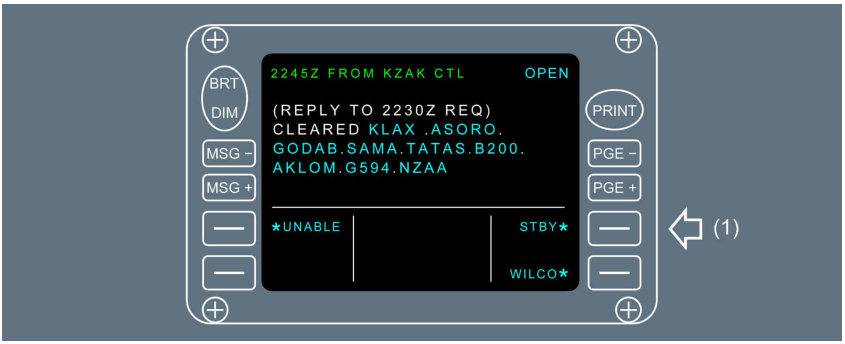
L2 *The background color of the STBY message status changes to green.*

L1 LOAD.....SELECT See (4)

LOAD must be selected. Other selection may prevent loading of the clearance.
The LOAD SEC OK displays in the information field of the DCDU, if loading is successful.

L2 *The flight crew can review the clearance on the MCDU, in SEC F-PLN pages.*

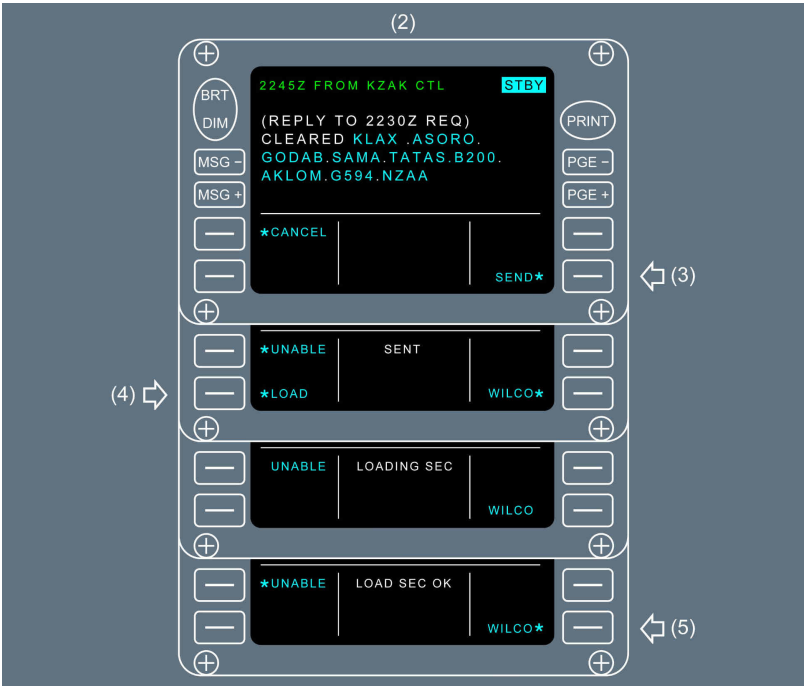
L1



- **If the flight crew accepts the clearance:**

WILCO.....SELECT See (5)

The flight crew can activate the secondary F-PLN.



■ **If the flight crew decides to modify the clearance:**

- The flight crew loads the clearance into the SEC F-PLN, on the MCDU and modifies it.
- The flight crew rejects the clearance by selecting UNABLE on the DCDU.
- The flight crew sends a new request (with the modified F-PLN) to the ATC.

INTRODUCTION

Ident.: DSC-46-20-20-00021223.0001001 / 25 JUL 17
Applicable to: ALL

The FlySmart with Airbus application suite is composed of:
- TAKEOFF application
- LANDING application
- LOADSHEET application
- IN–FLIGHT application (available on the latest FlySmart with Airbus applications for Windows version)
- Operational Documentation applications (OLB)
- Manager application (available for iPad version).

The FlySmart with Airbus application suite is designed to:
- Improve access to flight crew's operational information
- Reduce the quantity of paper documents in the cockpit by replacing them with electronic documents
- Enable reduced revision and distribution cycles to ensure better technical data accuracy
- Ease and improve the operational data updating process
- Provide an accurate and optimized computation of performance.

The FlySmart with Airbus application suite can be used by the flight crew on a Portable Electronic Device (PED). The flight crew can use the power outlets (110 VAC / 60 Hz) installed on each lateral console to plug their PED.

Note: *The power outlets (115 VAC / 400 Hz) located on the rear of the cockpit are for maintenance use only.*

GENERAL

Ident.: DSC-46-20-20-00021224.0001001 / 20 MAR 17
Applicable to: ALL

The My Flight page enables:
- To check that FlySmart with Airbus applications are up to date. The My Flight page provides the version of the installed applications and data (EFB version)
- To start the Manager application, that enables to update the operational data (performance, manuals)
- To initialize the applications with the applicable aircraft tail number, flight number and citypair. This avoids multiple entries of the same data in the different applications.

There is one My Flight page per application. All the inputs that the user has entered on one My Flight page are retrieved by the other applications.

Note: On the My Flight page of OLB application, the user can only enter the a/c type and a/c registration.

LANDING APPLICATION

Ident.: DSC-46-20-20-00021225.0001001 / 20 MAR 17
Applicable to: ALL

The Landing application aims at computing the landing performance data (maximum landing weight, approach speed) according to the aircraft configuration and external conditions (runway, surrounding obstacles, weather).
The Landing application allows straightforward computations and provides the optimized landing performance for the given conditions.

TAKEOFF APPLICATION

Ident.: DSC-46-20-20-00021226.0001001 / 20 MAR 17
Applicable to: ALL

The Takeoff application aims at computing the takeoff performance data (maximum takeoff weight, takeoff speeds, flexible temperature) according to the aircraft configuration and external conditions (runway, surrounding obstacles, weather).
The Takeoff application allows straightforward computations and provides the optimized takeoff performance for the given conditions.

LOADSHEET APPLICATION

Ident.: DSC-46-20-20-00021227.0001001 / 20 MAR 17
Applicable to: ALL

The Loadsheet application allows the flight crew users to prepare the aircraft loading and to check that all weights and CG remain within the loading operational envelope. This eases the computation of the ZFWCG, ZFW, TOW and TOCG, and enables last–minute changes to the passenger/cargo/fuel distribution.
Depending on airline's authority requirements, the Loadsheet application can also generate a load and trim sheet.

OPS LIBRARY APPLICATION

Ident.: DSC-46-20-20-00021228.0001001 / 20 MAR 17
Applicable to: ALL

The OLB application enables the onboard consultation of any flight operations document published in the relevant format (e.g. airline's manuals), including the ones delivered by Airbus (FCOM, MEL, AFM, CDL, FCTM).

MEL and CDL items (including missing items) selected on OLB application are automatically transferred to Takeoff and Landing applications.

MANAGER APPLICATION

Ident.: DSC-46-20-20-00021229.0001001 / 20 MAR 17
Applicable to: ALL

The Manager application aims at updating on the iPad the operational data used by FlySmart with Airbus applications for iPad: performance data and operational manuals.

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GENERAL

Ident.: DSC-46-30-00021515.0001001 / 17 MAR 17
Applicable to: ALL

The electronic QRH (eQRH) is an EFB application that enables the flight crew to:

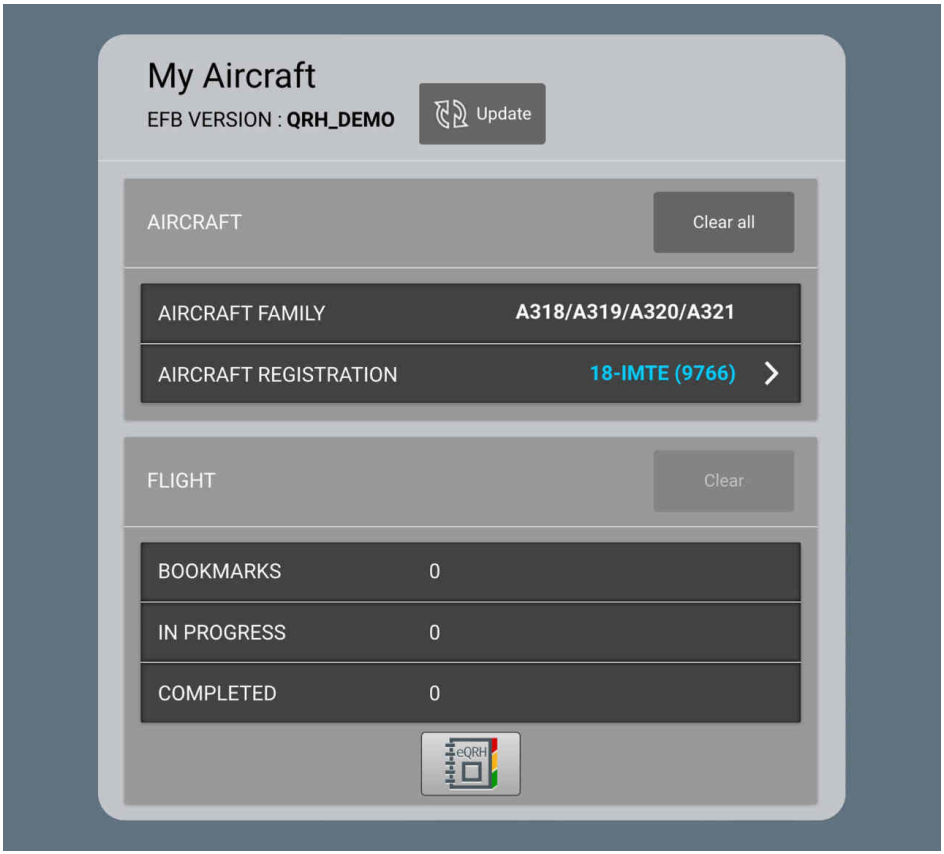
- Manage the Normal Checklists and some Abnormal Procedures
- Access to some important operational data (OEBs, system architectures, performance…)

The eQRH has several main interfaces:

- My Aircraft page:

  The My Aircraft page enables:

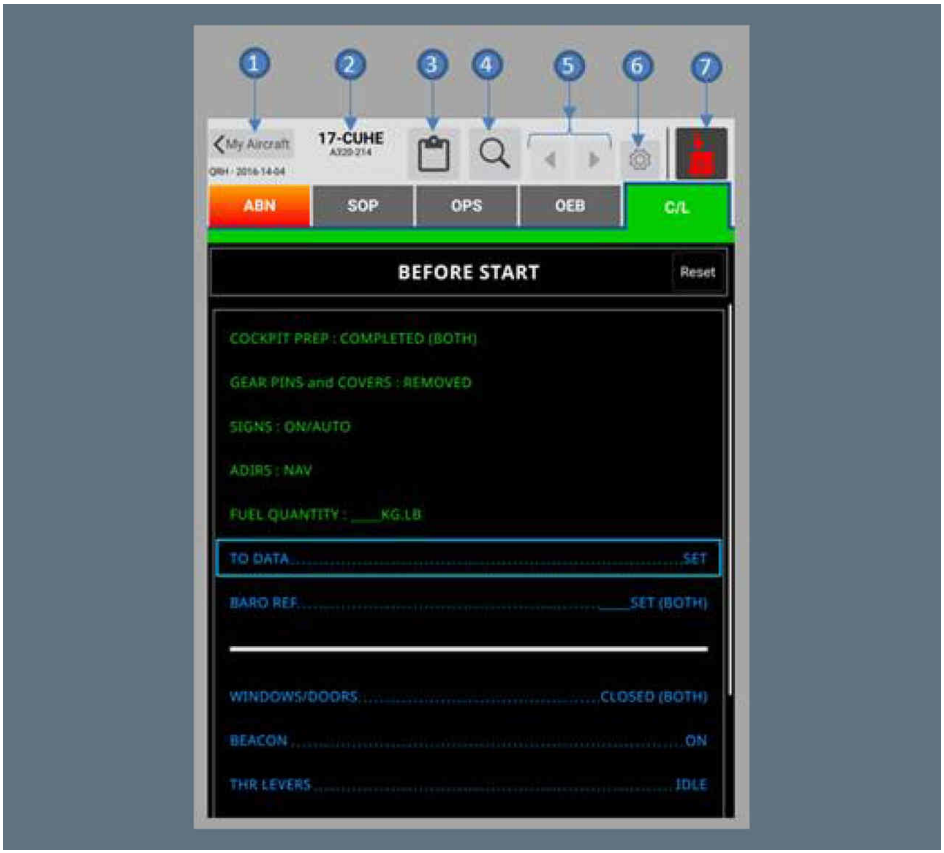
  - To check that the eQRH application is up to date. The My Aircraft page provides the version of the installed application and data (EFB version)
  - To initialize the eQRH application with the applicable aircraft tail number. The My Aircraft page retrieves automatically the aircraft tail number when defined in other FlySmart with Airbus applications



- EFB version:

If required, each flight crew member compares the EFB version with the valid version information that is given as reference by the airline. This ensures that the eQRH application and the data installed on their devices correspond to the latest updated version, provided by their airline's flight operations.

- eQRH application:
  The eQRH application enables the pilot to manage the normal checklists and non-sensed Abnormal Procedures. It also gives access to some important operational data that may be required during the flight.



(1) Access to My Aircraft page
(2) Aircraft tail number and type
(3) Working list

(4) Search
(5) Previous/Next Navigation
(6) eQRH options
(7) Rapid Access

GENERAL

Ident.: DSC-46-40-10-00017604.0001001 / 04 MAY 18
Applicable to: ALL

The aircraft is equipped with cabin connectivity systems which enable passengers to use:
- Mobile phones for voice and data services, and/or
- Internet wireless connection for access to the World Wide Web

The use of mobile phones is prohibited in cockpit and lavatories.
The following table provides the list of controls dedicated to Pax Entertainment & Connectivity Systems:

P/B ◁	EQUIPMENTS (FUNCTIONS)	DESCRIPTIONS
GALLEY	Mobile, Wifi, IFE, Seat actuators, PED	*Refer to DSC-24-20 Overhead Panel*
COMMERCIAL	Mobile, Wifi, IFE, Seat actuators, PED	*Refer to DSC-24-20 Overhead Panel*
NO PED	Signs	*Refer to DSC-33-40-10 Overhead Panel*
PAX SYS	Mobile, Wifi, IFE, Seat actuators, PED	*Refer to DSC-46-40-30 PAX SYS PB-SW*
PAX PERSONAL ELEC SPLY	PED	*Refer to DSC-46-40-30 PAX PERSONAL ELEC SPLY PB-SW*
MOBILE COM	Mobile, Wifi	*Refer to DSC-46-40-30 MOBILE COM PB-SW*
CINS reset	Mobile, Wifi	*Refer to DSC-46-40-30 CINS RESET PB*

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IN SEAT POWER SUPPLY SYSTEM

Ident.: DSC-46-40-20-00017606.0001001 / 04 MAY 18
Applicable to: ALL

The In-Seat Power Supply System (ISPSS) provides electrical power to the In-Seat Power Supply Unit (ISPSU) outlets, and enables passengers to use Portable Electronic Devices (PED).
In the case of rapid cabin decompression, the ISPSS is automatically disconnected.

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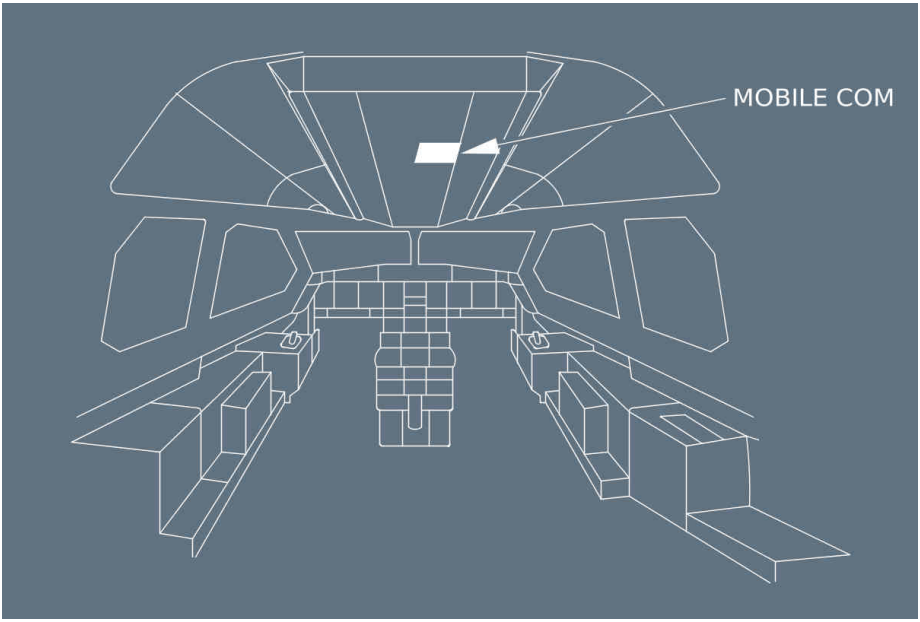
MOBILE COM PB-SW

Ident.: DSC-46-40-30-00017631.0001001 / 04 MAY 18
Applicable to: ALL



The pushbutton-switch described here below is installed on the 45 VU panel on the overhead panel.

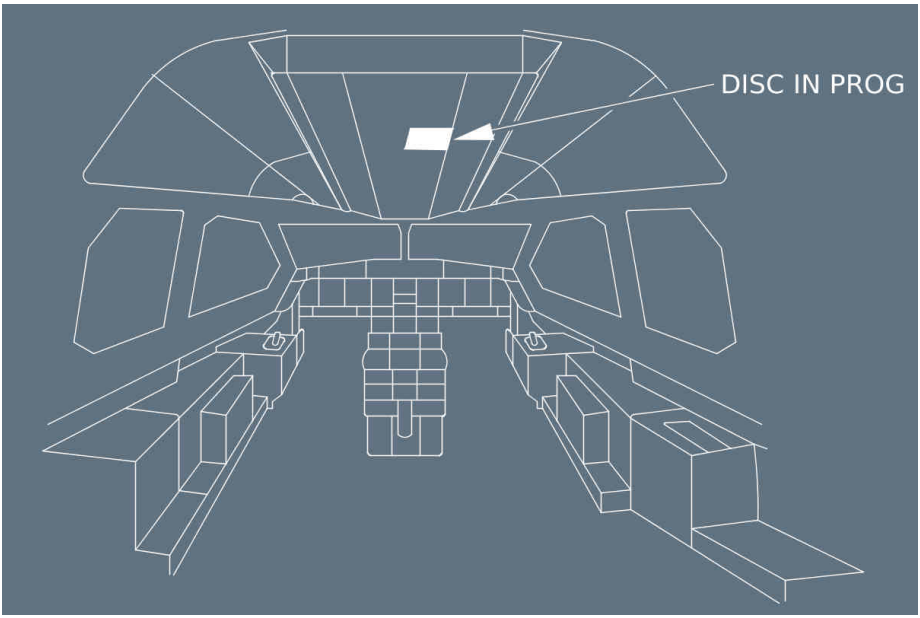
ON : The mobile phone system and the passenger Internet wireless connection are activated.

OFF : The mobile phone system and the passenger Internet wireless connection are deactivated.

Note: *When the pushbutton is released, the OFF light comes on in white however the mobile phone system takes approximately 4 min to disconnect. During this disconnection process, the passengers can use their mobile phones.*

DISC IN PROG LIGHT

Ident.: DSC-46-40-30-00019278.0001001 / 21 MAR 17
Applicable to: ALL

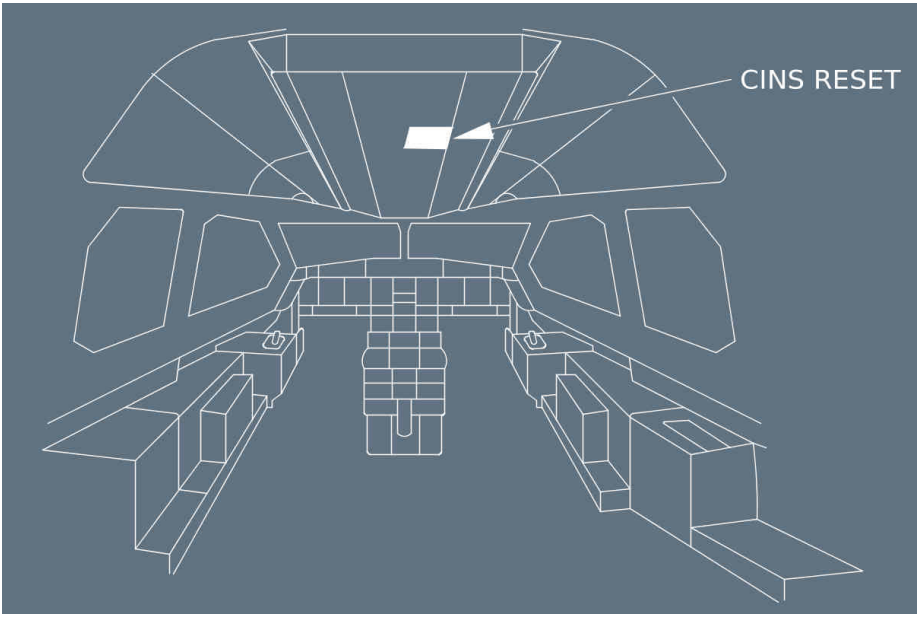


The pushbutton-switch described here below is installed on the 45 VU panel on the overhead panel.

Note: *After the release of Mobile Com pushbutton, the DISC IN PROG light comes in blue and remains on until the total disconnection of the system.*

CINS RESET PB

Ident.: DSC-46-40-30-00017630.0001001 / 10 NOV 15
Applicable to: ALL

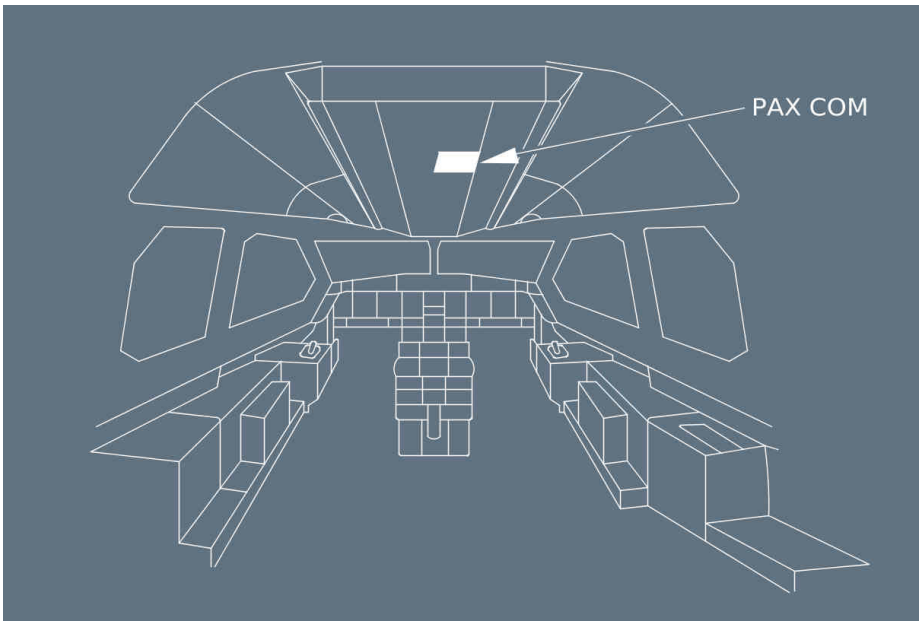


The pushbutton-switch described here below is installed on the 45 VU panel on the overhead panel.

When pressed, it resets all Cabin Connectivity systems.

PAX COM PB-SW ⋖

Ident.: DSC-46-40-30-00021654.0001001 / 05 JUN 18
Applicable to: ALL



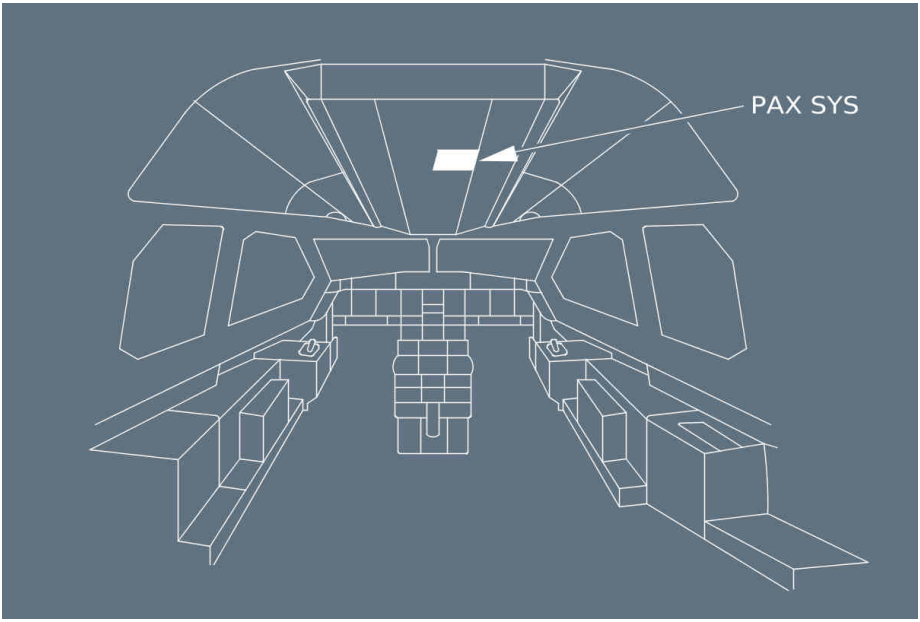
The pushbutton-switch described here below is installed on the overhead panel.

OFF : The Cabin Connectivity system is cut-off. When the pushbutton-switch is released, the OFF light comes on in white.

Note: *The location of the PAX COM PB-SW ⋖ on the overhead panel may differ (e.g. 45VU or 9020VU) depending on the aircraft configuration.*

PAX SYS PB-SW

Ident.: DSC-46-40-30-00017735.0001001 / 05 JUN 18
Applicable to: ALL



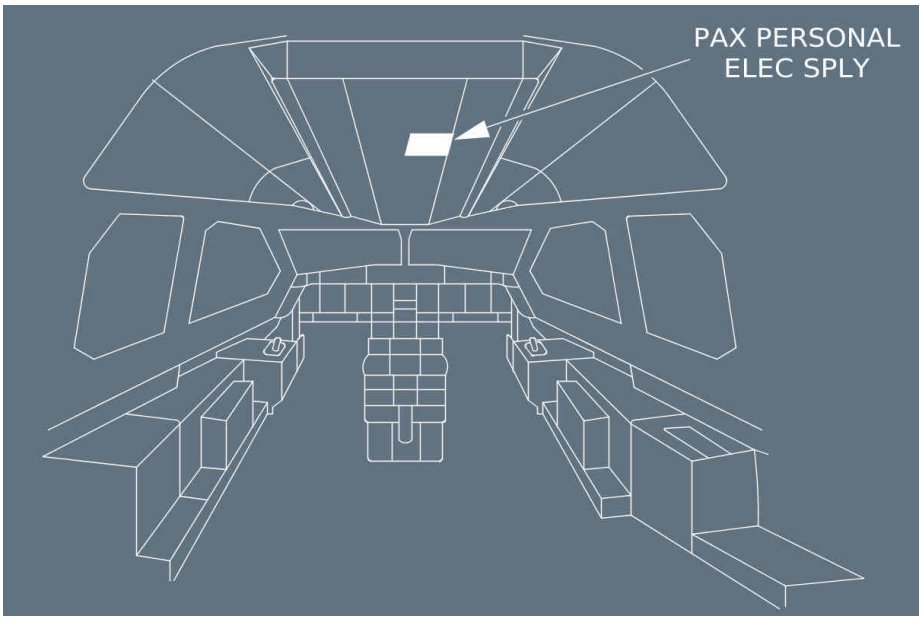
The pushbutton-switch described here below is installed on the overhead panel.

On or AUTO : All ISPSUs, In-Flight Entertainment (IFE) and Cabin Connectivity systems are powered.

OFF : Simultaneously turns off all ISPSUs, In-Flight Entertainment (IFE) and Cabin Connectivity systems.

PAX PERSONAL ELEC SPLY PB-SW

Ident.: DSC-46-40-30-00017629.0001001 / 04 MAY 18
Applicable to: ALL



The pushbutton-switch described here below is installed on the 56VU panel on the overhead panel.

AUTO : All ISPSUs are powered except in the following conditions:

- If the PED power switch located on the FAP is in the OFF position, or
- Takeoff, landing or decompression.

OFF : Turns off all ISPSUs.

INOP : This label indicates that the ISPSS has been deactivated and is inoperative.

MEMO DISPLAY

Ident.: DSC-46-40-30-00017628.0001001 / 10 NOV 15
Applicable to: ALL

"GSM DISC < 4 MN" : This memo appears in green, if the cockpit switch "Mobile Com" is pushed. It initiates a shutdown of the Cabin Connectivity systems within 4 minutes. The message disappears when the shutdown is completed.

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AIRCRAFT SYSTEMS

APU

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DSC-49-10 Description

DSC-49-10-10 General

General....A

DSC-49-10-20 Main Components

APU Engine....A
Electronic Control Box....B
Air Intake System....C
Starter....D
Fuel System....E
Oil System....F
Inlet Guide Vanes (IGV)....G
Air Bleed System....H
Controls....I
Ground Operation Safety Devices....J

DSC-49-20 Controls and Indicators

Overhead Panel....A
External Controls....B
ECAM APU Page....C
Memo Display....D

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Localization Title	Toc Index	ID	Reason
DSC-49-10-10 Architecture	A	1	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
DSC-49-10-10 Architecture	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-49-10-20 Air Bleed System	H	1	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
DSC-49-10-20 Air Bleed System	H	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-49-20 Overhead Panel - Master SW pb-sw	A	1	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
DSC-49-20 Overhead Panel - Master SW pb-sw	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-49-20 Overhead Panel - Start pb-sw	A	3	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
DSC-49-20 Overhead Panel - Start pb-sw	A	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-49-20 ECAM - AVAIL	C	5	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
DSC-49-20 ECAM - AVAIL	C	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-49-20 ECAM - FLAP OPEN	C	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-49-20 ECAM - APU EGT	C	8	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
DSC-49-20 ECAM - APU EGT	C	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.

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GENERAL

Ident.: DSC-49-10-10-A-00017436.0001001 / 21 MAR 17
Applicable to: ALL

The Auxiliary Power Unit (APU) is a self-contained unit that supplies the aircraft with pneumatic and electrical power.

On the ground

- It supplies bleed air for starting the engines and for the air conditioning system
- It supplies electrical power to the electrical system.

During takeoff

- It supplies bleed air for air conditioning (for example, when optimum aircraft performance is required).

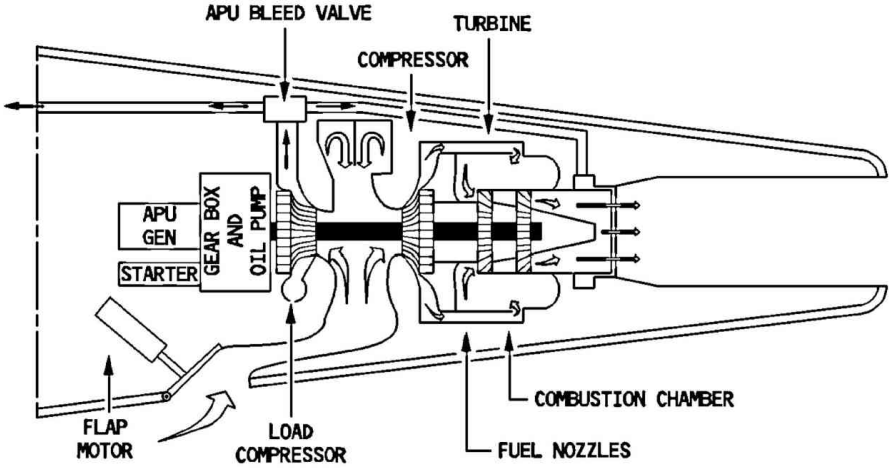
In flight

- It backs up the electrical system
- It backs up the air conditioning
- It can be used to start the engines.

The APU may obtain power for starting from the aircraft's batteries or normal electrical system, or from ground service.
APU starting is permitted throughout the normal flight envelope (*Refer to LIM-APU Operational Envelope*).

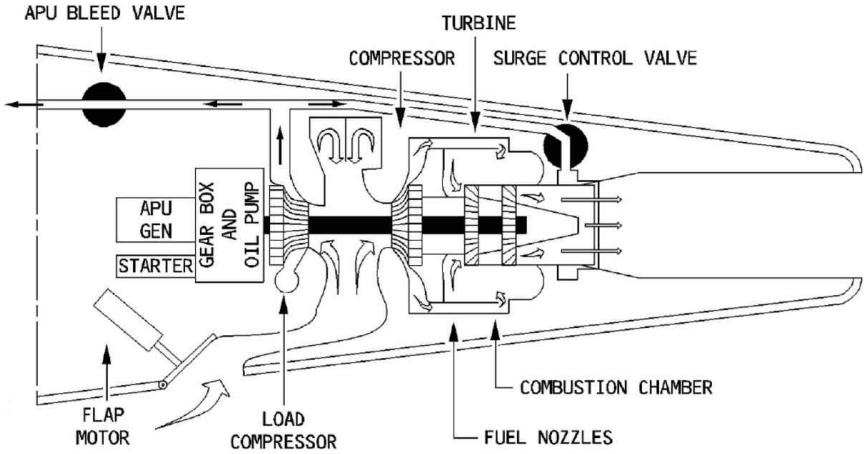
Ident.: DSC-49-10-10-A-00017437.0002001 / 21 MAR 16

[1] **Applicable to: MSN 01957-02097, 02121-02195, 02275, 02359, 02405, 02482, 02609-02626, 02712, 02914-03071, 03264-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-06336, 09063**



Ident.: DSC-49-10-10-A-00017437.0003001 / 21 MAR 16

2 **Applicable to: MSN 01767-01920, 02108, 02204, 02334, 02388, 02443-02457, 02584, 02649-02670, 02737-02908, 03138, 03750, 04294, 04399-04438, 04510, 05158, 06720-09045**



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APU ENGINE

Ident.: DSC-49-10-20-00001528.0001001 / 21 MAR 16
Applicable to: ALL

The basic element of the APU is a single-shaft gas turbine that delivers mechanical shaft power for driving the accessory gearbox (electrical generator, starter, etc.) and produces bleed air (engine starting and pneumatic supply).

ELECTRONIC CONTROL BOX

Ident.: DSC-49-10-20-00001529.0001001 / 21 MAR 16
Applicable to: ALL

The Electronic Control Box (ECB) is a full-authority digital electronic controller that performs the bulk of the APU system logic for all modes of engine operation, such as :

- Sequences the start and monitors it.
- Monitors speed and temperature.
- Monitors bleed air.
- Sequences the shutdown.
- Controls the automatic shutdown.

AIR INTAKE SYSTEM

Ident.: DSC-49-10-20-00001530.0001001 / 21 MAR 16
Applicable to: ALL

The air intake and an electrically operated flap allow external air to reach the compressor inlet.

STARTER

Ident.: DSC-49-10-20-00001531.0001001 / 21 MAR 16
Applicable to: ALL

The ECB controls the electric starter. The starter engages if the air intake is fully open and the MASTER SW and the START pushbutton are ON.

FUEL SYSTEM

Ident.: DSC-49-10-20-00001532.0001001 / 21 MAR 16
Applicable to: ALL

The left fuel feed line supplies the APU.
The required pressure is normally available from tank pumps.
If pressure is not available (batteries only or pumps off) the APU FUEL PUMP starts automatically.
The ECB controls the fuel flow.

OIL SYSTEM

Ident.: DSC-49-10-20-00001533.0001001 / 21 MAR 16
Applicable to: ALL

The APU has an integral independent lubrication system (for lubrication and cooling).

INLET GUIDE VANES (IGV)

Ident.: DSC-49-10-20-00001534.0001001 / 21 MAR 16
Applicable to: ALL

The IGVs control bleed air flow, and a fuel-pressure-powered actuator positions the IGVs.
The ECB controls the actuator in response to aircraft demand.

AIR BLEED SYSTEM

Ident.: DSC-49-10-20-00001535.0002001 / 03 FEB 11
1 **Applicable to: MSN 01957-02097, 02121-02195, 02275, 02359, 02405, 02482, 02609-02626, 02712, 02914-03071, 03264-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-06336, 09063**

The air bleed system is fully automatic.
The APU speed is always 100 % whatever the air bleed system demand and the ground/flight configuration are.

AIR BLEED SYSTEM

Ident.: DSC-49-10-20-00001535.0003001 / 03 FEB 11
2 **Applicable to: MSN 01767-01920, 02108, 02204, 02334, 02388, 02443-02457, 02584, 02649-02670, 02737-02908, 03138, 03750, 04294, 04399-04438, 04510, 05158, 06720-09045**

The air bleed system is fully automatic.
The ECB always sets the APU speed to 100 % except for air conditioning demand, if the ambient temperature is between -18 °C and 35 °C. In this case, the ECB sets the APU speed to 99 %. For all other ambient temperatures (less than -18 °C or more than 35 °C), the ECB sets the APU speed to 100 %.

CONTROLS

Ident.: DSC-49-10-20-00001536.0001001 / 21 MAR 16
Applicable to: ALL

The flight crew uses the controls on the APU panel for routine shutdown. For emergency shutdown :
- the flight crew can push the APU FIRE handle, or
- the ground crew can push the APU SHUT OFF pushbutton on the interphone panel under the nose fuselage.

GROUND OPERATION SAFETY DEVICES

Ident.: DSC-49-10-20-00001537.0001001 / 21 MAR 16
Applicable to: ALL

The APU may run without cockpit crew supervision when the aircraft is on the ground. In case of fire in the APU compartment :

- APU fire warnings operate in the cockpit.
- A horn in the nose gear bay sounds.
- The AVAIL light goes out.
- The FAULT light in the MASTER SW lights up.
- The APU shuts down.
- The APU fire extinguisher discharges.

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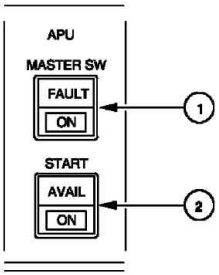
OVERHEAD PANEL

Ident.: DSC-49-20-A-00017438.0001001 / 21 MAR 16
Applicable to: ALL



Ident.: DSC-49-20-A-00017685.0003001 / 21 MAR 16

1 **Applicable to: MSN 01957-02097, 02121-02139, 02275, 02359, 02405, 02482, 02609-02626, 02712, 02914-03071, 03264-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-06336, 09063**

(1) MASTER SW pb-sw

This switch controls the electric power supply for the operation of the APU and its protective features. It also controls the starting and shutdown sequences.

ON : The blue ON light comes on.
Electric power goes to the APU system; the ECB performs a power-up test.
The APU air intake flap opens.
The APU fuel isolation valve opens.
If no fuel tank pump is running, the APU fuel pump operates.
If the aircraft has ground power or main generator power, the APU page appears on the ECAM display.

OFF : Manual shutdown sequence.

- The ON light on the MASTER SW pb-sw, and the AVAIL light on the START pb go out.
- If the aircraft was using APU bleed air, the APU keeps running for a cooling period of 60 to 120 s.
- At 7 % the air inlet flap closes.

FAULT lt : Depending on version of the ECB, this amber light comes on, and a caution appears on ECAM, when an automatic APU shutdown occurs, which can happen in case of:

Fire (on ground only)
Air inlet flap closed
Overspeed
No acceleration
Slow start
EGT overtemperature
No flame
Reverse flow
Low oil pressure
High oil temperature
DC power lost (BAT OFF when aircraft on batteries only)
Overcurrent
Sensor failure
IGV failure
ECB failure
No speed
Underspeed
Loss of overspeed protection
Oil system shutdown
Inlet overheat
Clogged oil filter
Loss of EGT thermocouples

Note: *In the case of an automatic, non-emergency shutdown, the air inlet flap closes 15 min after the APU speed is lower than 7%. If an automatic, non-emergency shutdown happens on ground, the 15 min countdown starts after liftoff.*

Ident.: DSC-49-20-A-00017685.0002001 / 21 MAR 16

2 **Applicable to: MSN 01767-01920, 02108, 02195-02204, 02334, 02388, 02443-02457, 02584, 02649-02670, 02737-02908, 03138, 03750, 04294, 04399-04438, 04510, 05158, 06720-09045**

(1) MASTER SW pb-sw

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Electric power goes to the APU system; the ECB performs a power-up test.
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Fire (on ground only)
Air inlet flap closed
Overspeed
No acceleration
Slow start
EGT overtemperature
No flame
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Low oil pressure
High oil temperature
DC power lost (BAT OFF when aircraft on batteries only)
Overcurrent
Sensor failure
IGV failure
ECB failure
No speed
Underspeed
Loss of overspeed protection
Oil system shutdown
Inlet overheat
Clogged oil filter
Loss of EGT thermocouples

Ident.: DSC-49-20-A-00017439.0002001 / 21 MAR 16

3 **Applicable to: MSN 01957-02097, 02121-02275, 02359, 02405, 02482, 02609-02626, 02712, 02914-03071, 03264-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-06336, 09063**

(2) START pb-sw

ON : Blue ON light comes on.

- When the flap is completely open, the APU starter is energized.
- 1.5 s after the starter is energized, the ignition is turned ON.
- When N = 55 %. The APU starter is de-energized. The ignition is turned off.
- 2 s after N reached 95 %, or when N is above 99.5 %:
  The ON light on the START pb goes out.
  The APU may now supply bleed air and electrical power to the aircraft systems.
- 10 s later, the APU page disappears from the ECAM display.

AVAIL lt : This green light comes on when N is above 99.5 % or 2 s after N reaches 95 %.

Ident.: DSC-49-20-A-00017439.0003001 / 21 MAR 16

4 **Applicable to: MSN 01767-01920, 02108, 02334, 02388, 02443-02457, 02584, 02649-02670, 02737-02908, 03138, 03750, 04294, 04399-04438, 04510, 05158, 06720-09045**

(2) START pb-sw

ON : Blue ON light comes on.

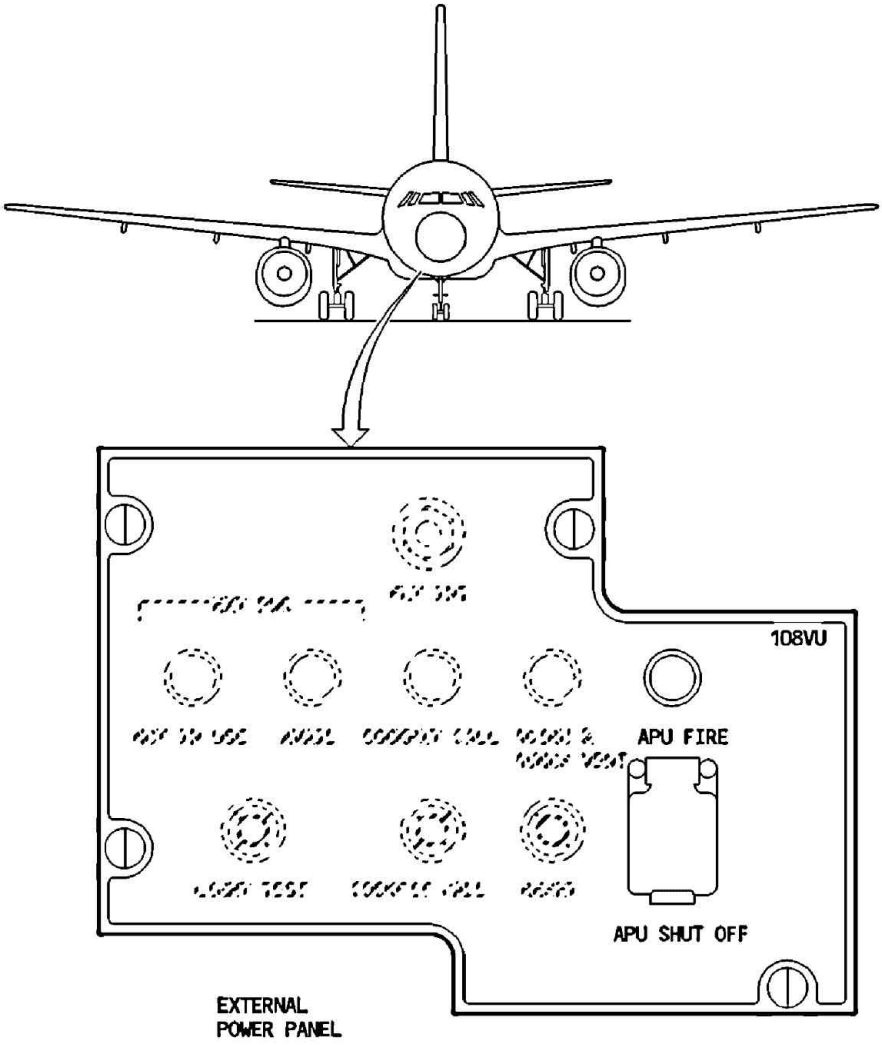
- When the flap is completely open, the starter is energized.
- 1.5 s after the starter is energized, the ignition turns on.
- When N = 60 %. The APU starter is de-energized. The ignition is turned off.
- 2 s after N reached 95 %, or when N is above 99.5 %:
  The ON light on the START pb goes out.
  The APU may now supply bleed air and electrical power to the aircraft systems.
- 10 s later, the APU page disappears from the ECAM display.

AVAIL lt : This green light comes on when N is above 99.5 % or 2 s after N reaches 95 %.

EXTERNAL CONTROLS

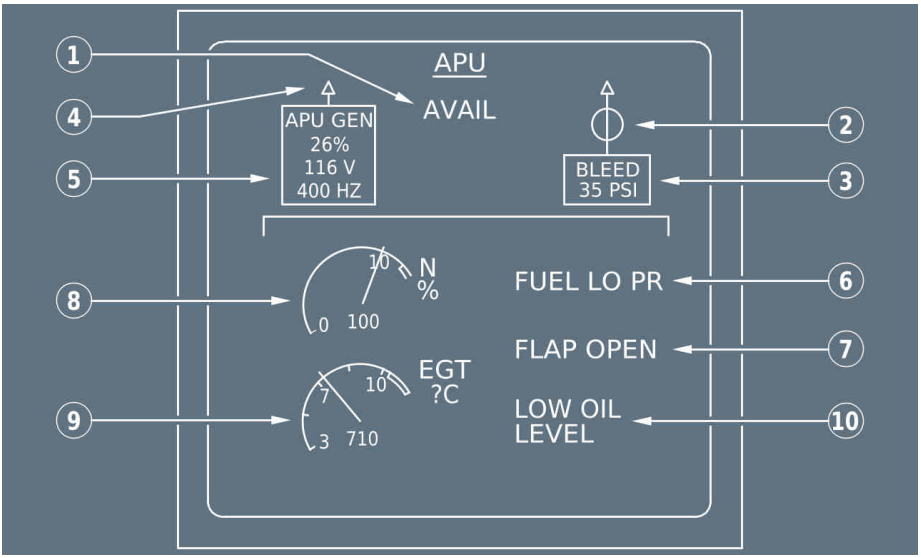
Ident.: DSC-49-20-00001539.0001001 / 21 MAR 16

Applicable to: ALL



ECAM APU PAGE

Ident.: DSC-49-20-B-00017440.0001001 / 21 MAR 16
Applicable to: ALL



Ident.: DSC-49-20-B-00017441.0002001 / 21 MAR 16
5 **Applicable to: MSN 01957-02097, 02121-02139, 02275, 02359, 02405, 02482, 02609-02626, 02712, 02914-03071, 03264-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-06336, 09063**

(1) AVAIL
Displayed in green when APU N is above 99.5 % or 2 s after N is above 95 %.

Ident.: DSC-49-20-B-00017441.0001001 / 21 MAR 16
6 **Applicable to: MSN 01767-01920, 02108, 02195-02204, 02334, 02388, 02443-02457, 02584, 02649-02670, 02737-02908, 03138, 03750, 04294, 04399-04438, 04510, 05158, 06720-09045**

(1) AVAIL
Displayed in green when APU N is above 95 %.

Ident.: DSC-49-20-B-00017442.0001001 / 21 MAR 16
Applicable to: ALL

(2) APU bleed air valve position

Inline-Green	:	The APU bleed air valve is not closed.
Crossline-Green	:	The APU bleed air valve is closed.
Crossline-Amber	:	The APU bleed air valve is closed and the APU bleed is ON.

XX-Amber : The APU bleed air valve status information is not available, or the APU BLEED pb status is not available.

Ident.: DSC-49-20-B-00017443.0001001 / 21 MAR 16
Applicable to: ALL

(3) APU bleed air pressure

This box displays the relative bleed air pressure in green.
It shows an amber XX when the ADIRS1 or the ADIRS2 is not available or selected OFF or the data from the ECB are invalid or not transmitted.

Ident.: DSC-49-20-B-00017444.0001001 / 21 MAR 16
Applicable to: ALL

(4) APU GEN line contactor indication

Displayed in green when the APU GEN line contactor is closed.

Ident.: DSC-49-20-B-00017445.0001001 / 21 MAR 16
Applicable to: ALL

(5) APU GEN parameters

Identical to the APU GEN parameters on the ELEC page.

Ident.: DSC-49-20-B-00017446.0001001 / 21 MAR 16
Applicable to: ALL

(6) FUEL LO PR

Displayed in amber if APU fuel pressure gets low.

Ident.: DSC-49-20-B-00017447.0001001 / 21 MAR 16
Applicable to: MSN 02275, 02405, 02482

(7) FLAP OPEN

Displayed in green when APU air intake flap is fully open.

Ident.: DSC-49-20-B-00017447.0003001 / 21 MAR 16
7 **Applicable to: MSN 01767-02204, 02334-02388, 02443-02457, 02584-09063**

(7) FLAP OPEN

- Displayed in green when APU air intake flap is fully open.
- Advisory if the flap is not fully closed 3 min after the MASTER sw has been turned OFF.

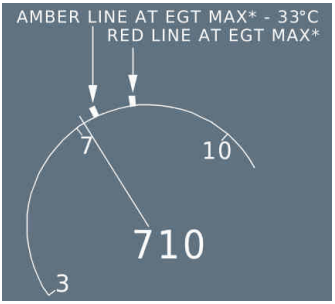
Ident.: DSC-49-20-B-00017448.0001001 / 21 MAR 16
Applicable to: ALL

(8) APU N

- Displays APU speed in green.
- Becomes amber when N ≥ 102 %.
- Becomes red when N ≥ 107 %.

Ident.: DSC-49-20-B-00017449.0001001 / 06 SEP 16
Applicable to: MSN 02195

(9) APU EGT

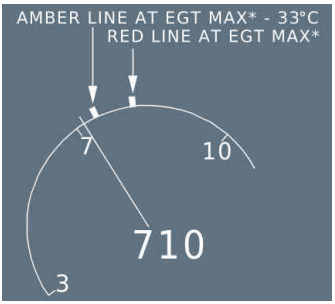


- Displays APU EGT in green.
- Becomes amber when EGT ≥ EGT MAX -33 °C (steady during APU start, pulsing when APU is running).
- Becomes red when EGT ≥ EGT MAX (automatic shutdown begins).

Note: *ECB calculates EGT MAX and transmits it to the ECAM. It is a function of N during start, and a function of ambient temperature when the APU is running.*
Maximum EGT with APU running: 690 to 725 °C depending on ambient temperature.
Maximum EGT during start: 1 038 °C.

Ident.: DSC-49-20-B-00017449.0002001 / 06 SEP 16
8 **Applicable to: MSN 01957-02097, 02121-02139, 02275, 02359, 02405, 02482, 02609-02626, 02712, 02914-03071, 03264-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-06336, 09063**

(9) APU EGT



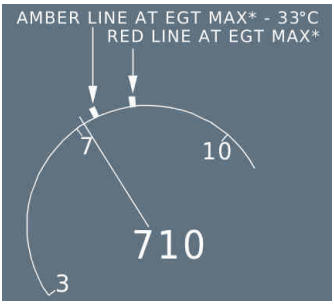
- Displays APU EGT in green.
- Becomes amber when EGT ≥ EGT MAX -33 °C.
- Becomes red when EGT ≥ EGT MAX (automatic shutdown begins).

Note: *ECB calculates EGT MAX and transmits it to the ECAM. It is a function of N during start, and a function of ambient temperature when the APU is running.*
Maximum EGT during start: 982 °C.
Maximum EGT with APU running:

- *682 °C during at least 5 s.*
- *or, 700 °C to 742 °C depending on the ambient temperature.*

Ident.: DSC-49-20-B-00017449.0003001 / 06 SEP 16
9 **Applicable to: MSN 01767-01920, 02108, 02204, 02334, 02388, 02443-02457, 02584, 02649-02670, 02737-02908, 03138, 03750, 04294, 04399-04438, 04510, 05158, 06720-09045**

(9) APU EGT



- Displays APU EGT in green.
- Becomes amber when EGT ≥ EGT MAX -33 °C.
- Becomes red when EGT ≥ EGT MAX (automatic shutdown begins).

Note: *ECB calculates EGT MAX and transmits it to the ECAM. It is a function of N during start, and a function of ambient temperature when the APU is running.*
Maximum EGT during start: 1 120 °C (above 35 000 ft).
Maximum EGT during start: 1 090 °C (below 35 000 ft).
Maximum EGT with APU running: 675 °C.

Ident.: DSC-49-20-B-00017450.0001001 / 21 MAR 16
Applicable to: ALL

(10) LOW OIL LEVEL

Advisory: Displayed if the ECB detects a low APU oil level when the aircraft is on the ground, and the APU is not running.

MEMO DISPLAY

Ident.: DSC-49-20-00016689.0001001 / 21 MAR 16
Applicable to: ALL

APU AVAIL : This memo appears in green, when APU N is above 99.5 % or 2 s after N is above 95 % (depending on the aircraft configuration).

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AIRCRAFT SYSTEMS

DOORS

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DSC-52-10 Description

DSC-52-10-10 General

Description ..... A

DSC-52-10-20 Passenger Doors

General ..... A
Outside ..... B
Inside C

DSC-52-10-30 Emergency Exits

Cockpit ..... A
Cabin ..... B

DSC-52-10-40 Cargo Doors

General ..... A
Fwd and Aft Cargo Doors ..... B
Bulk Cargo Door C
Location of Service Panels ..... D

DSC-52-10-50 Avionics Compartment Access Door

Avionics Compartment Access Door ..... A

DSC-52-10-60 Cockpit Door

Cockpit Door ..... A

DSC-52-10-80 Escape Slides/Rafts

Door Slides ..... A
Wing Slides ..... B
Escape Slide Arrangement C
Cabin Emergency Exit Slides ..... D

DSC-52-20 Controls and Indicators

DOOR/OXY SD Page ..... A

DSC-52-40 Cockpit Door Security System

DSC-52-40-10 Description

Cockpit Door Description ..... A

DSC-52-40-20 Cockpit Door Locking System (CDLS)

COCKPIT DOOR LOCKING SYSTEM (CDLS) ..... A
Controls ..... B

Continued on the following page

Continued from the previous page

DSC-52-40-30 Cockpit Door Surveillance System (CDSS)

General....A
Controls....B

DSC-52-50 How to

How to Operate the Cockpit Door ....A
How to Operate the Fwd and Aft Cargo Door....B
How to Operate the Fwd and Aft Cargo Doors (Auxiliary Operation)....C

Localization Title	Toc Index	ID	Reason
DSC-52-10-10 Description	A	1	Effectivity update: The information now also applies to MSN 09063.
DSC-52-10-10 Description	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-52-10-30 Cabin	B	1	Effectivity update: The information now also applies to MSN 09063.
DSC-52-10-30 Cabin	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-52-10-80 Wing Slides	B	1	Effectivity update: The information now also applies to MSN 09063.
DSC-52-10-80 Wing Slides	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-52-10-80 Escape Slide Arrangement	C	3	Effectivity update: The information now also applies to MSN 09063.
DSC-52-10-80 Escape Slide Arrangement	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-52-10-80 Cabin Emergency Exit Slides	D	5	Effectivity update: The information now also applies to MSN 09063.
DSC-52-20 DOOR/OXY SD Page	A	1	Effectivity update: The information now also applies to MSN 09063.
DSC-52-20 DOOR/OXY SD Page	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
DSC-52-40-20 COCKPIT DOOR LOCKING SYSTEM (CDLS)	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-52-40-20 Controls - Overhead Control Panel	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-52-40-30 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-52-40-30 Central Pedestal	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-52-40-30 Overhead Panel	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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DESCRIPTION

Ident.: DSC-52-10-10-00001544.0021001 / 09 MAR 18

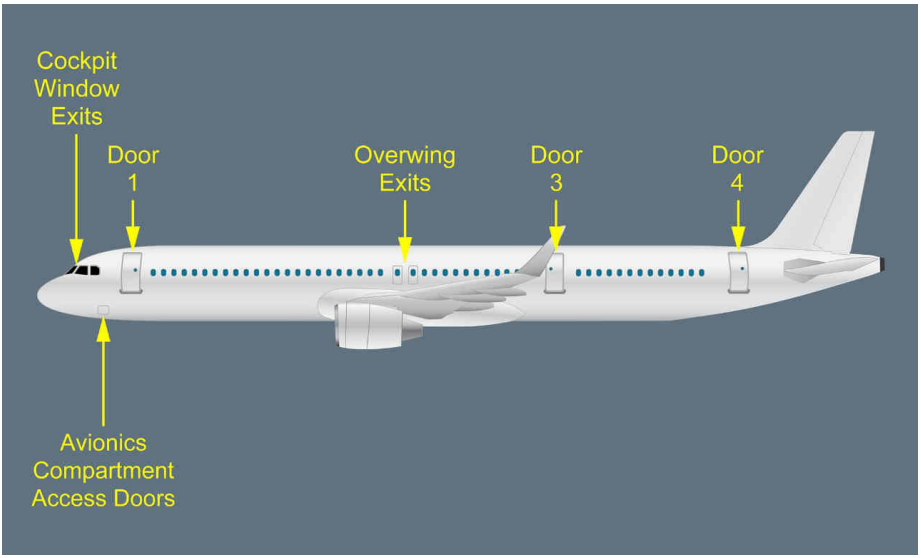
[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

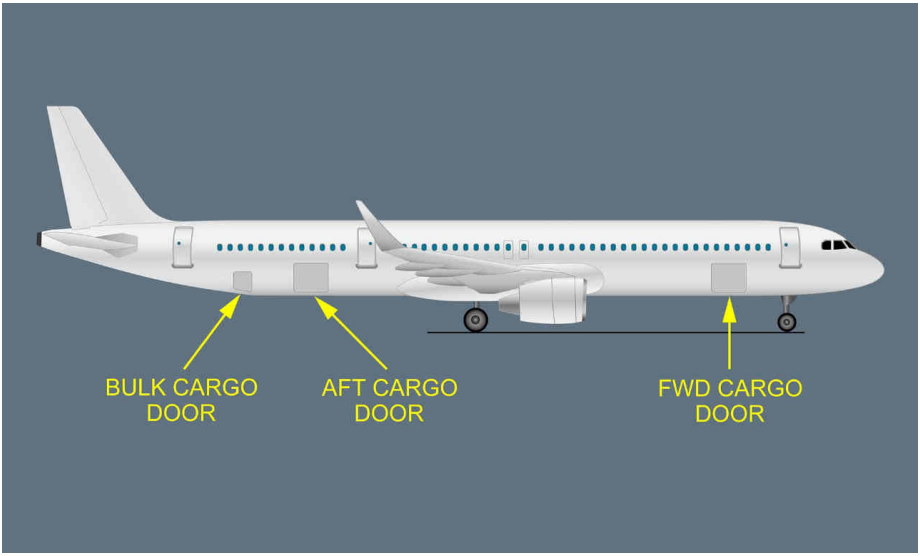
The A321's fuselage has:

- Six cabin doors

  Note: *Cabin doors 3 are considered as emergency exits.*

- Four cabin overwing exits
- Cockpit emergency exits (two sliding windows)
- Three cargo compartment doors
- Four avionic compartment access doors.



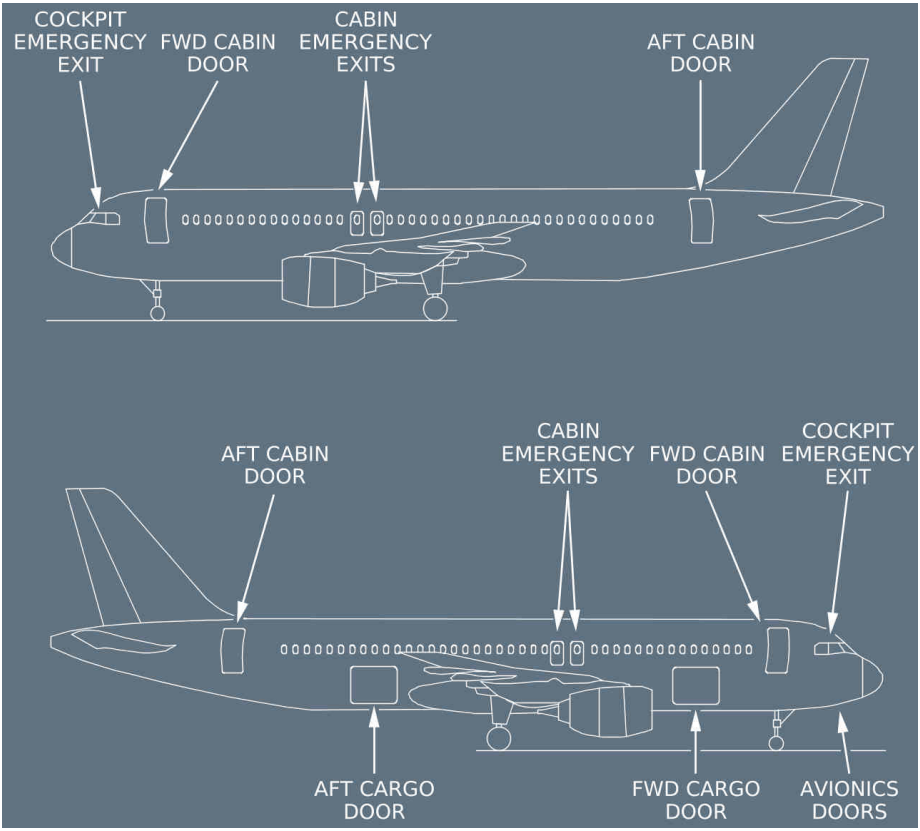


DESCRIPTION

Ident.: DSC-52-10-10-00001544.0001001 / 22 MAY 12
Applicable to: MSN 04510

The A320's fuselage has:

- Four passenger doors
- Four emergency exits in the cabin
- Cockpit emergency exits (two sliding windows)
- Two cargo compartment doors
- Four avionic compartment access doors.



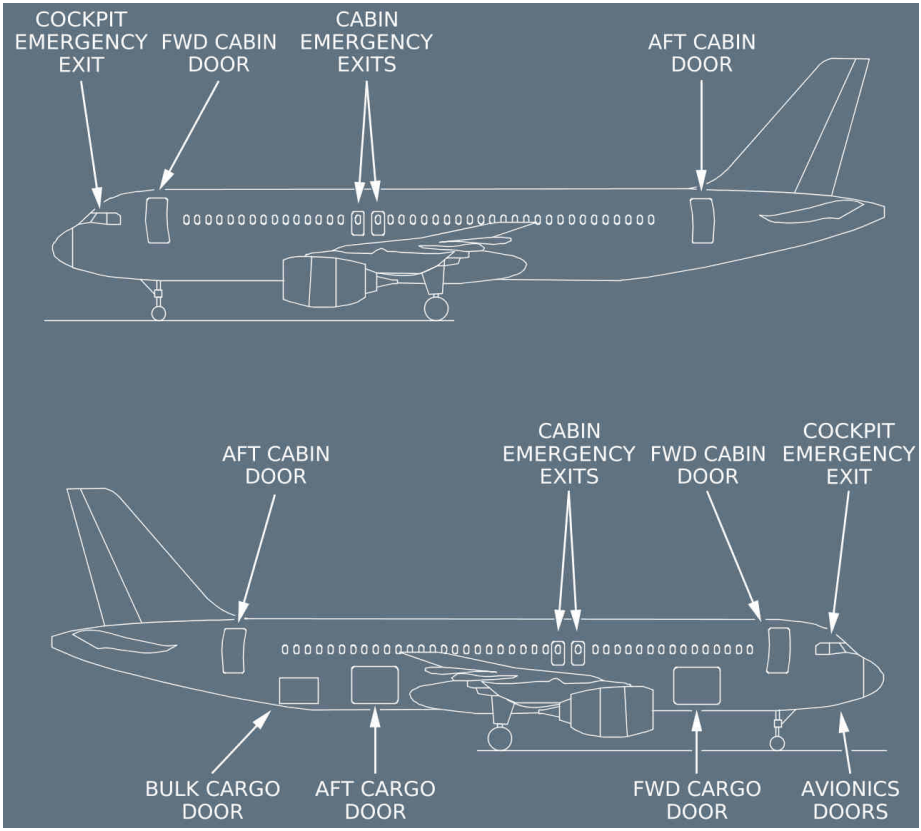
DESCRIPTION

Ident.: DSC-52-10-10-00001544.0002001 / 22 MAY 12

2 **Applicable to: MSN 01767-04384, 04399-04506, 04518-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The A320's fuselage has:

- Four passenger doors
- Four emergency exits in the cabin
- Cockpit emergency exits (two sliding windows)
- Three cargo compartment doors
- Four avionic compartment access doors.

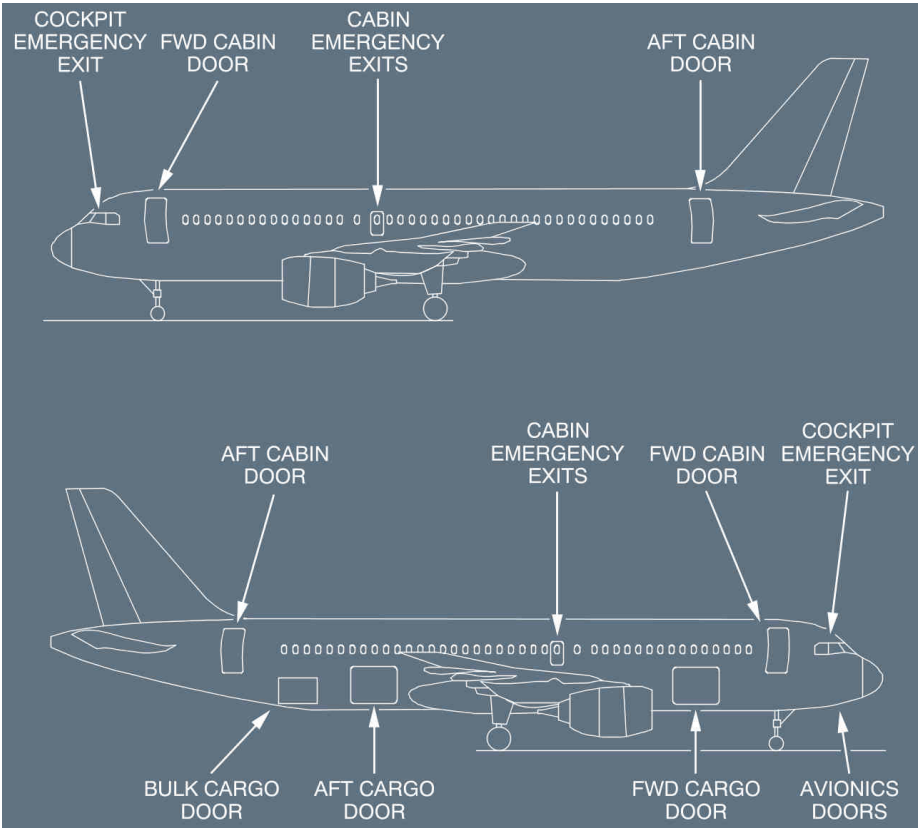


DESCRIPTION

Ident.: DSC-52-10-10-00001544.0016001 / 02 JUL 12
Applicable to: MSN 04393-04397

The A320's fuselage has:

- Four passenger doors
- Two emergency exits in the cabin
- Cockpit emergency exits (two sliding windows)
- Three cargo compartment doors
- Four avionic compartment access doors.


COCKPIT EMERGENCY EXIT
FWD CABIN DOOR
CABIN EMERGENCY EXITS
AFT CABIN DOOR
AFT CABIN DOOR
CABIN EMERGENCY EXITS
FWD CABIN DOOR
COCKPIT EMERGENCY EXIT
BULK CARGO DOOR
AFT CARGO DOOR
FWD CARGO DOOR
AVIONICS DOORS

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GENERAL

Ident.: DSC-52-10-20-00017564.0001001 / 21 MAR 16
Applicable to: ALL

The aircraft has four plug-type doors that open outward and forward. There are two doors on each side of the fuselage (one door in the FWD section and one door in the AFT section).
The doors are operated from inside or outside of the aircraft. Normal operation is manual, with hydraulic damping.

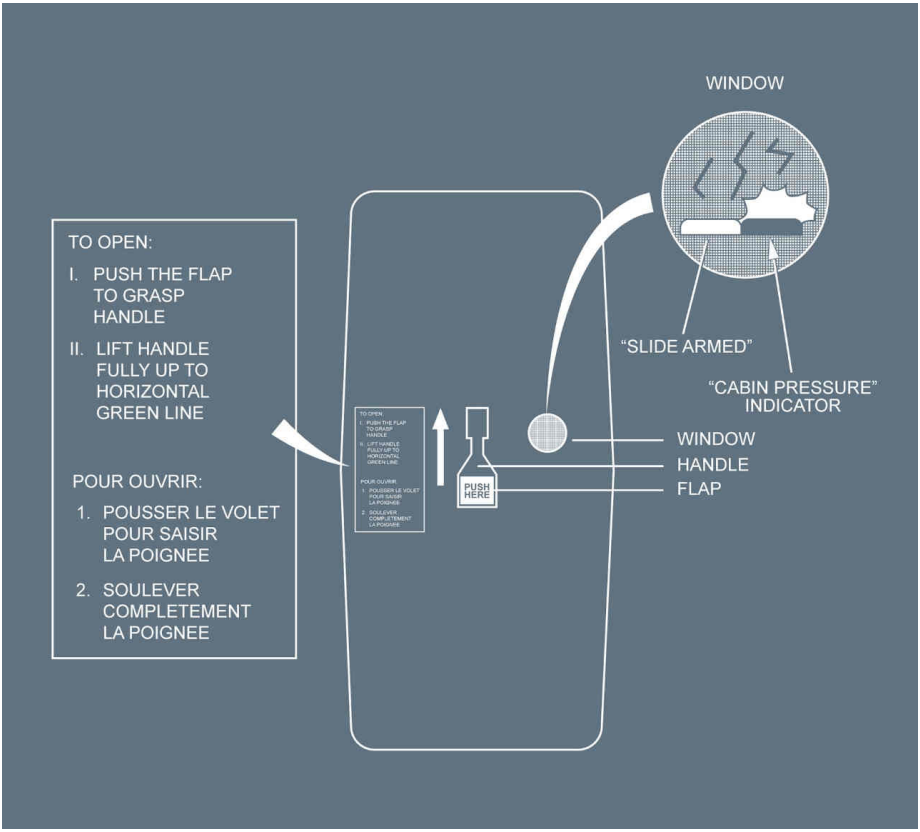
Each door has emergency features:
- An escape slide stowed in a container attached to the inboard lower side of the door
- A damper actuator in normal mode, the damper actuator limits the door travel; in emergency mode, the damper actuator drives the automatic door opening
- A slide arming lever.

When the slide arming lever is in the ARMED position, the slide is connected to the floor brackets on both sides of the door. When the door is open, the slide inflates and deploys automatically. If the inflation bottle fails to discharge automatically, a crew member can open its valve to make it discharge. Opening the door from outside disarms the door and the escape slide.

Each passenger door has :
- A mechanical locking indicator that confirms the locked or unlocked position of the door
- One warning light to show the ARMED or DISARMED indication of the escape slides
- One CABIN PRESSURE warning light that illuminates in the case of a residual pressure in the cabin.

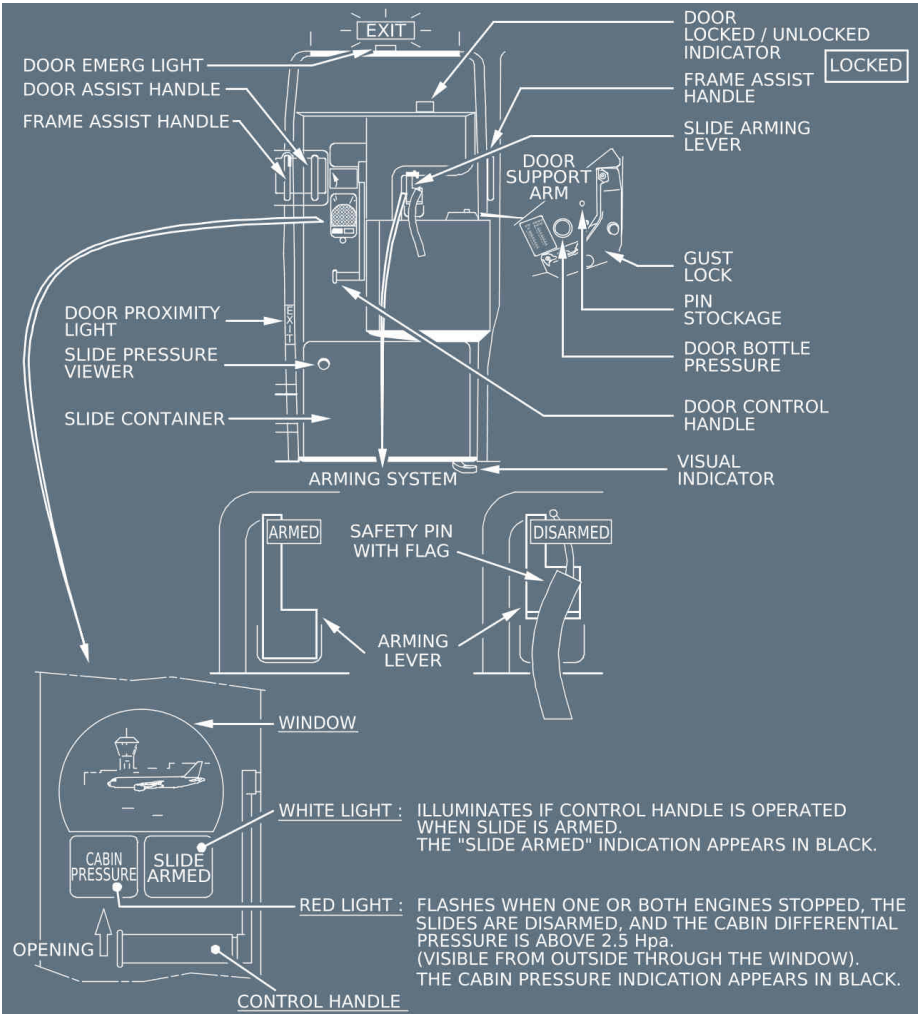
OUTSIDE

Ident.: DSC-52-10-20-00017565.0001001 / 21 MAR 16
Applicable to: ALL



INSIDE

Ident.: DSC-52-10-20-00001547.0002001 / 22 MAY 12
Applicable to: ALL



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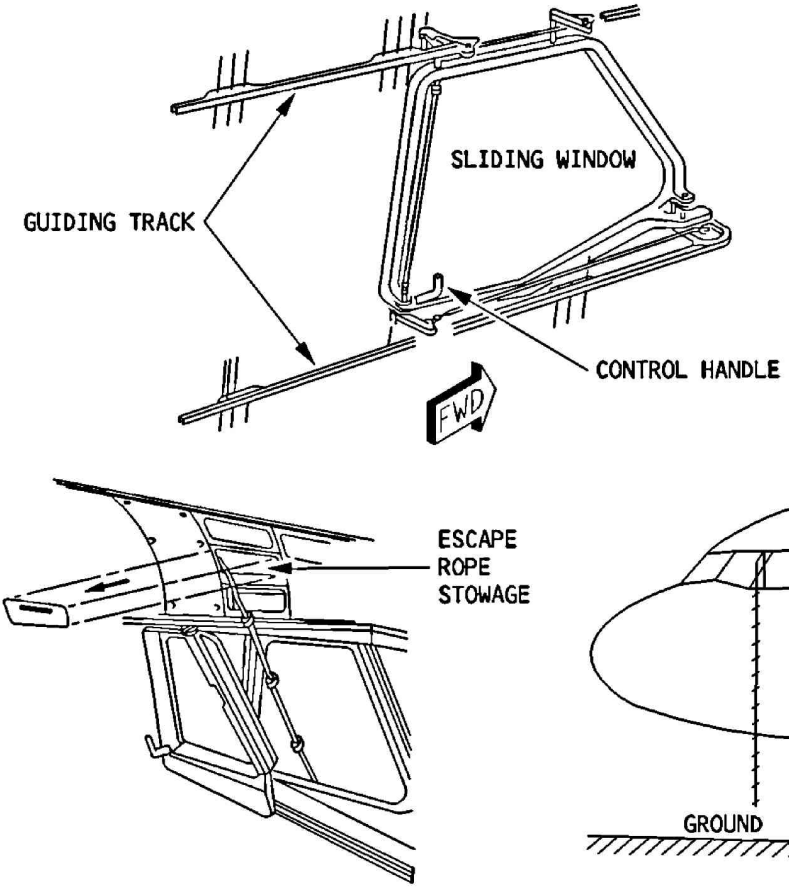
COCKPIT

Ident.: DSC-52-10-30-00017567.0001001 / 21 MAR 16
Applicable to: ALL

The two sliding windows in the cockpit are flight crew emergency exits.
A small compartment, located above each window, contains an escape rope that is long enough to reach the ground when lowered through either sliding window. The cockpit windows can only be opened from inside.



Emergency cockpit evacuation is also possible through the cockpit door escape panel . This panel is designed to be pushed open in the direction of the cabin after removal of the quick-release pins.

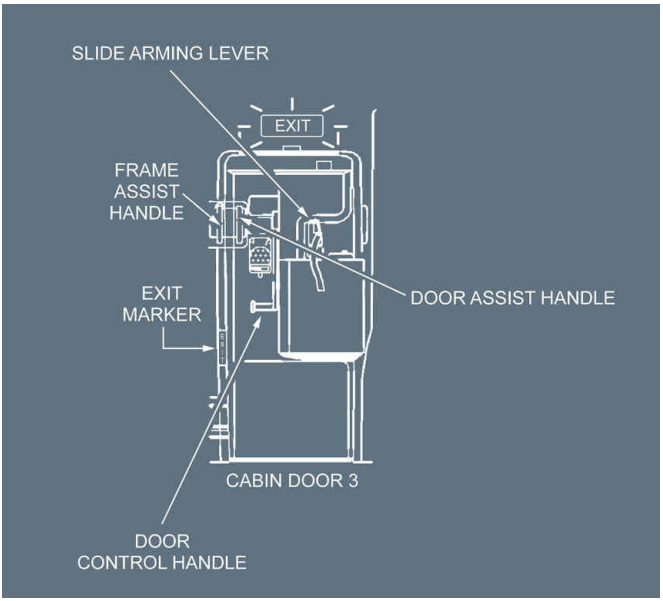
CABIN

Ident.: DSC-52-10-30-00017568.0009001 / 09 MAR 18

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

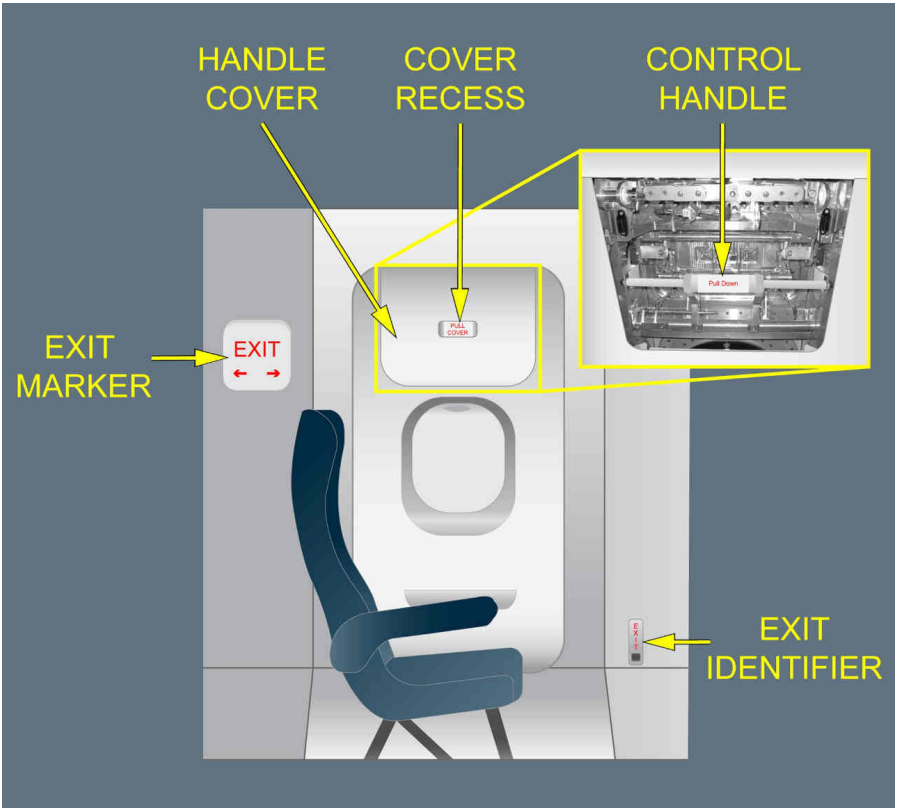
CABIN DOORS 3

One plug type door on each side of the cabin are emergency exits. The exits open outward and forward. Each cabin door 3 has an escape slide stowed in a compartment below the cabin floor. The operation of these emergency exits is similar to the operation of passenger doors.



CABIN OVERWING EXITS

Two overwing exits are located on each side of the cabin, in addition to the passenger doors. The overwing exits are also equipped with escape slides. In the case of an emergency, the overwing exits open outward and up.



The slides of the overwing exits are always in armed configuration.

To open an overwing exit:
- Remove and discard the HANDLE COVER via the COVER RECESS
- Fully pull down and release the CONTROL HANDLE

Each overwing exit is equipped with an electrical flight lock actuator that locks the overwing exit handle, in order to prevent inadvertent operation during flight.
All flight lock actuators engage during the takeoff roll.

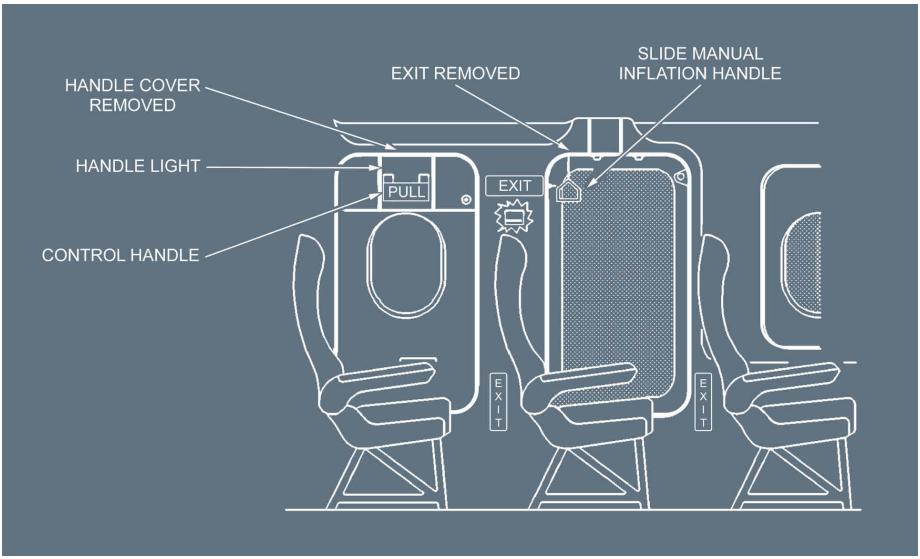
All flight lock actuators disengage:
- During the landing roll, or
- In the case of a rejected takeoff, or
- In the case of a loss of DC BUS 1.

CABIN

Ident.: DSC-52-10-30-00017568.0001001 / 06 DEC 16

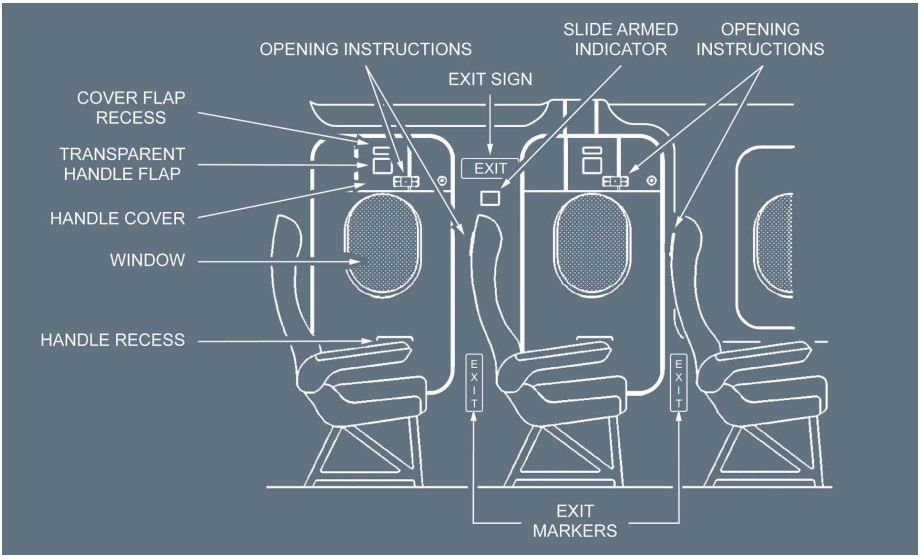
2 **Applicable to: MSN 01767-04384, 04399-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Two emergency exits are located on each side of the cabin, in addition to the passenger doors. The emergency exits are also equipped with escape slides. In the case of an emergency, the exits open inwards.



The slides of the overwing emergency exits are always in armed configuration.

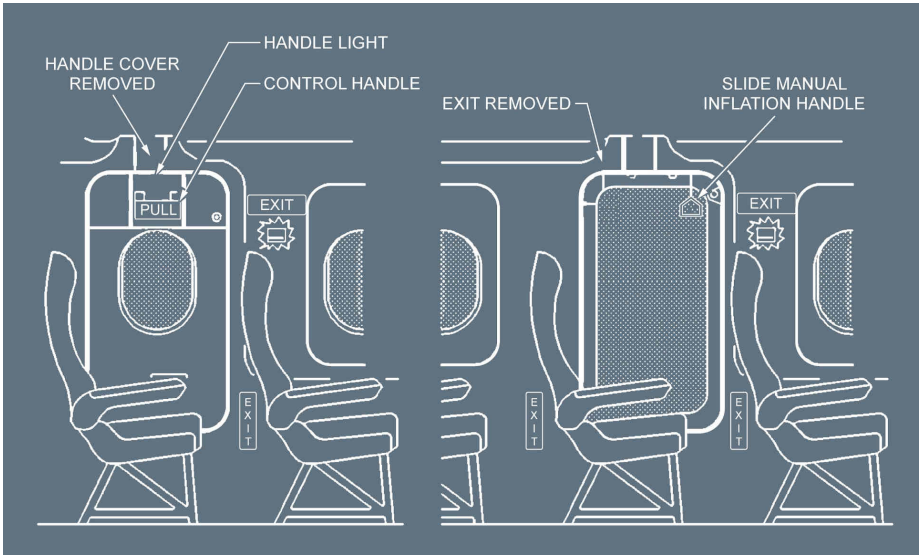
To open :
- Remove HANDLE COVER : The HANDLE LIGHT and SLIDE ARMED indicator illuminate
- Pull CONTROL HANDLE : The EXIT moves inwards
- Lift EXIT from frame by holding the HANDLE RECESS
- Throw EXIT out.



CABIN

Ident.: DSC-52-10-30-00017568.0002001 / 20 MAR 17
Applicable to: MSN 04393-04397

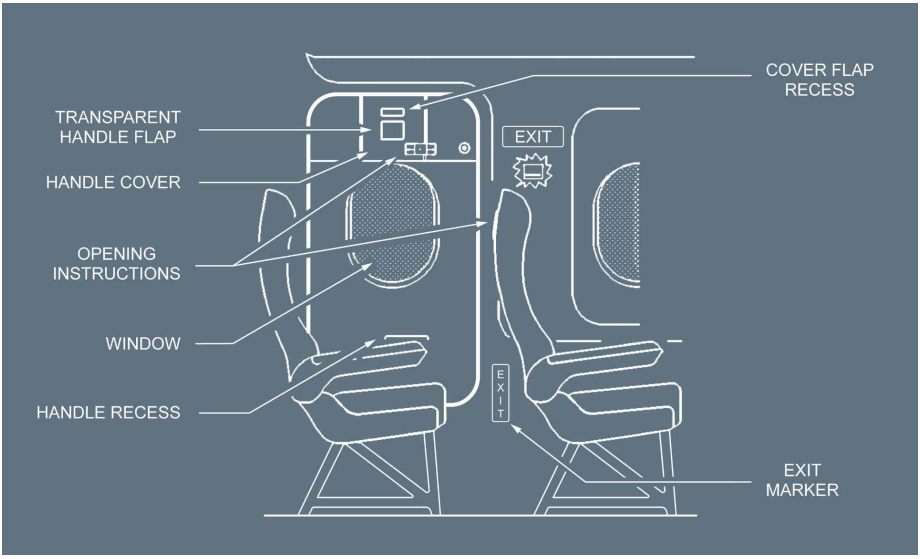
One emergency exits is located on each side of the cabin, in addition to the passenger doors. The emergency exit is also equipped with an escape slide. In the case of an emergency, the exit opens inwards.



The slide of the overwing emergency exits is always in armed configuration.

To open:

- Remove HANDLE COVER : The HANDLE LIGHT and SLIDE ARMED indicator illuminate
- Pull CONTROL HANDLE : The EXIT moves inwards
- Lift EXIT from frame by holding the HANDLE RECESS
- Throw EXIT out.


COVER FLAP
RECESS
TRANSPARENT
HANDLE FLAP
HANDLE COVER
OPENING
INSTRUCTIONS
WINDOW
HANDLE RECESS
EXIT
EXIT
EXIT
MARKER

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GENERAL

Ident.: DSC-52-10-40-00017569.0001001 / 21 MAR 16
Applicable to: ALL

The aircraft has two cargo doors (FWD and AFT cargo doors) on the right side of the fuselage below the cabin floor.

FWD AND AFT CARGO DOORS

Ident.: DSC-52-10-40-00017570.0001001 / 21 MAR 16
Applicable to: ALL

The FWD and AFT cargo doors hydraulically open outward and upward. The doors are hydraulically operated by the yellow hydraulic system. The door locking system (locked open/locked closed) is mechanical.
If the electric pump of the yellow hydraulic system fails, the system can be powered by using a hand pump, located on the hydraulic maintenance panel.
The FWD and AFT cargo doors open only from outside.

Note: *When the electric pump operates the FWD or AFT cargo door, the remaining yellow system devices that operate are the brakes and the engine 2 thrust reverser.*

BULK CARGO DOOR

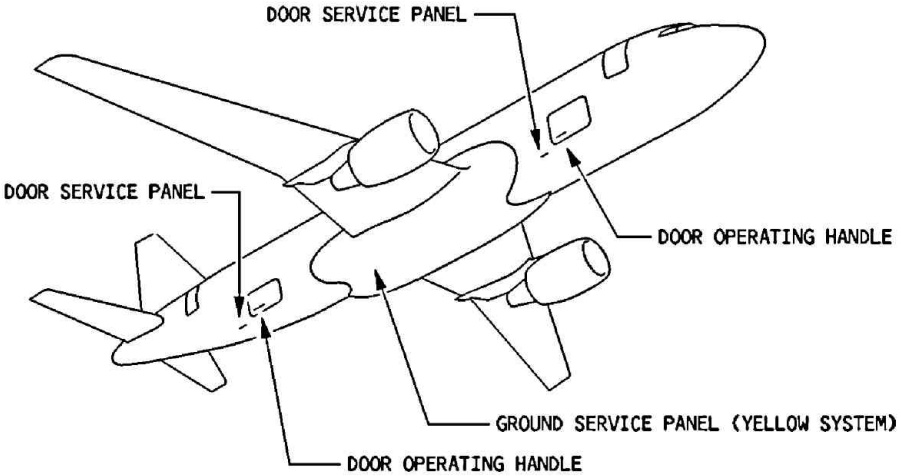
Ident.: DSC-52-10-40-00017571.0001001 / 21 MAR 16
Applicable to: ALL

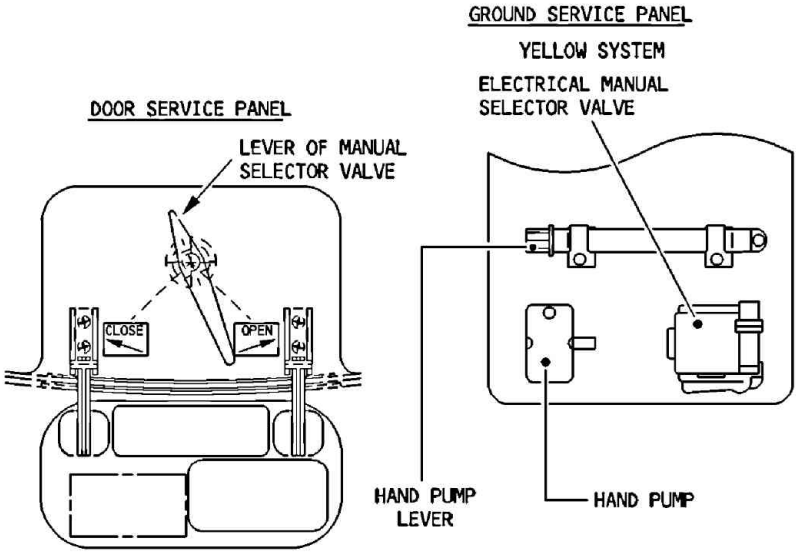
The bulk cargo door opens inward and upward. The bulk cargo door is a plug-type door. The door is mechanically locked and manually operated.
The bulk cargo door opens from the outside or from the inside.

LOCATION OF SERVICE PANELS

Ident.: DSC-52-10-40-00020676.0002001 / 17 MAR 17

Applicable to: ALL





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AVIONICS COMPARTMENT ACCESS DOOR

Ident.: DSC-52-10-50-00017579.0001001 / 21 MAR 16
Applicable to: ALL

Four avionics compartment access doors enable an external access to the avionics compartment.
The doors are manually operated, hinged doors. The doors open inwards.
These doors are in the lower fuselage, around the nose landing gear bay.

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COCKPIT DOOR

Ident.: DSC-52-10-60-00017573.0002001 / 21 MAR 17
Applicable to: ALL

Refer to DSC-52-40-10 Cockpit Door Description for information about the secured cockpit door.

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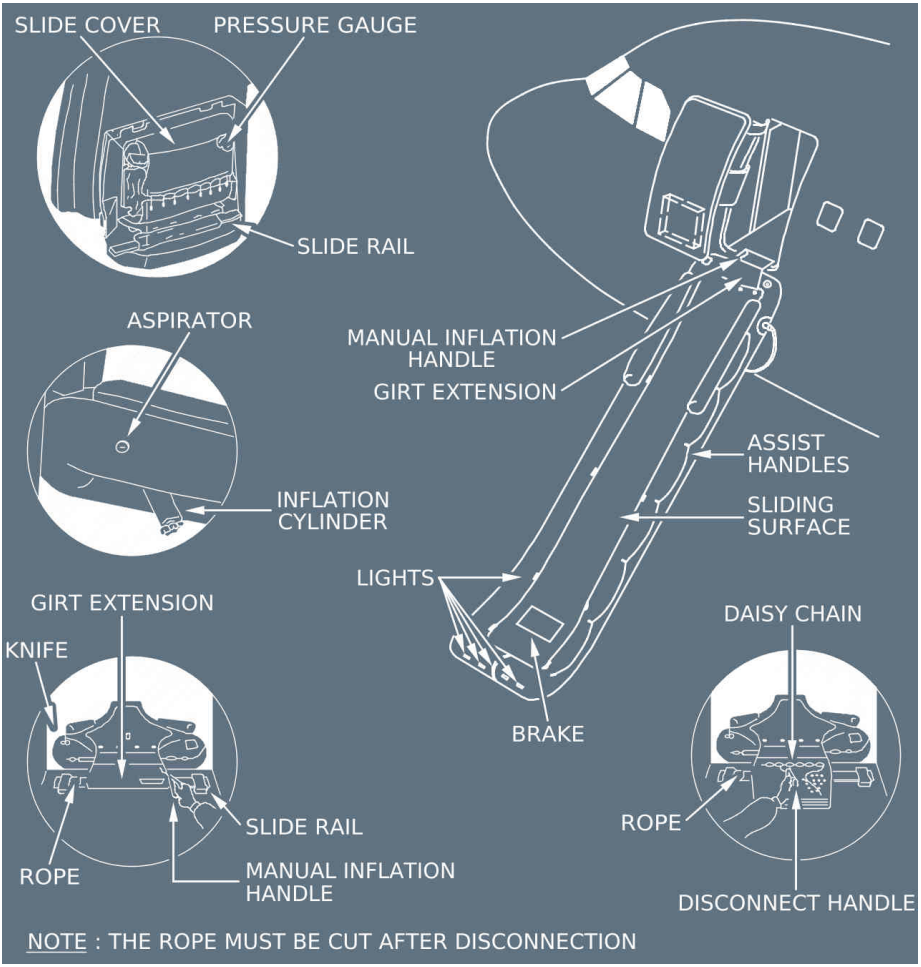
DOOR SLIDES

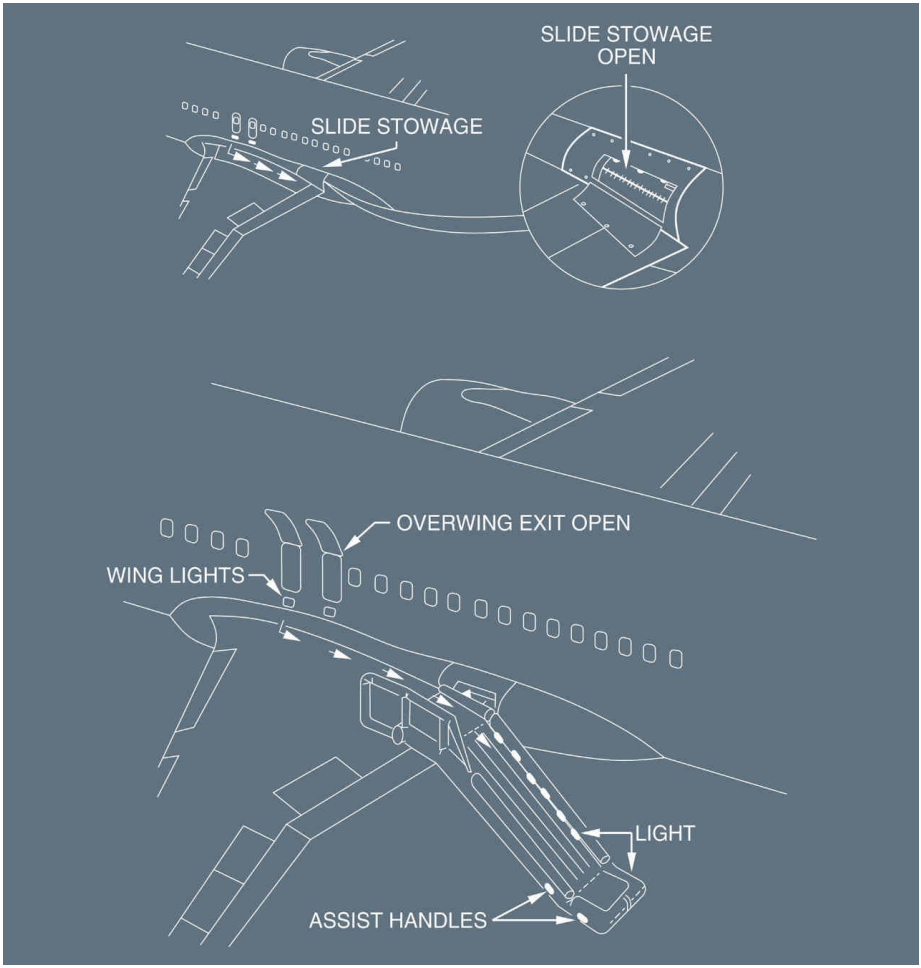
Ident.: DSC-52-10-80-00001555.0001001 / 09 OCT 12
Applicable to: ALL



WING SLIDES

Ident.: DSC-52-10-80-00001556.0007001 / 09 MAR 18

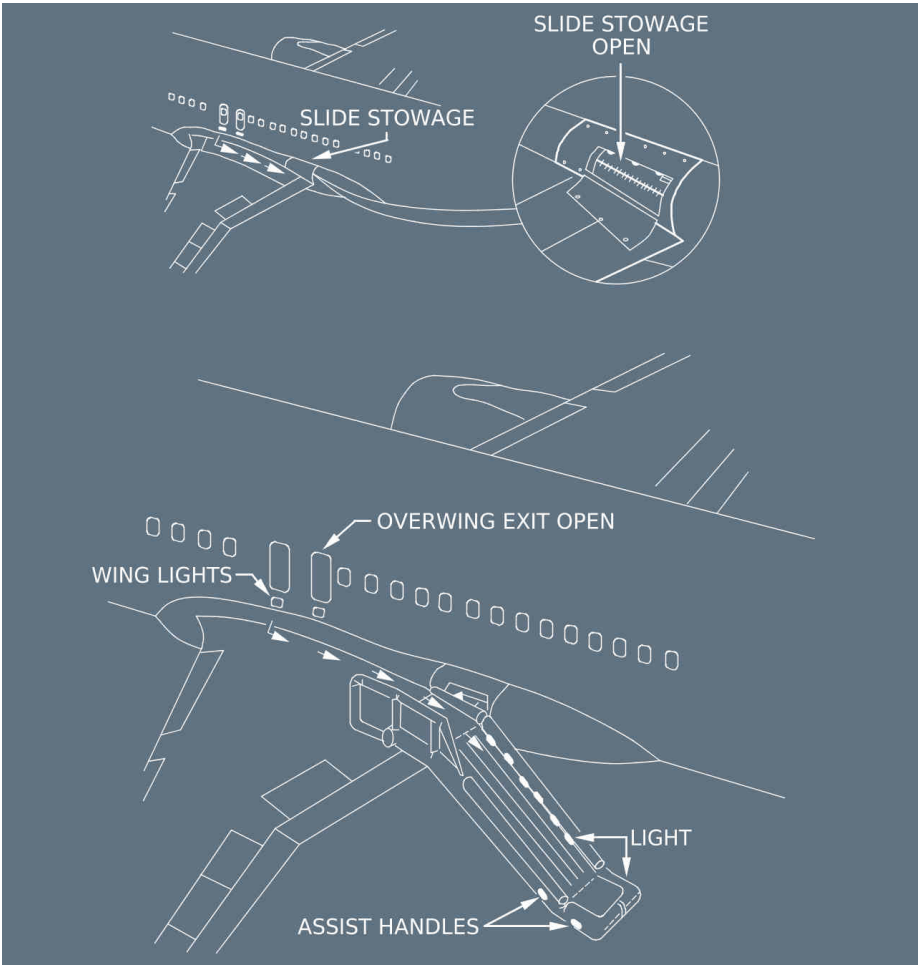
1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



WING SLIDES

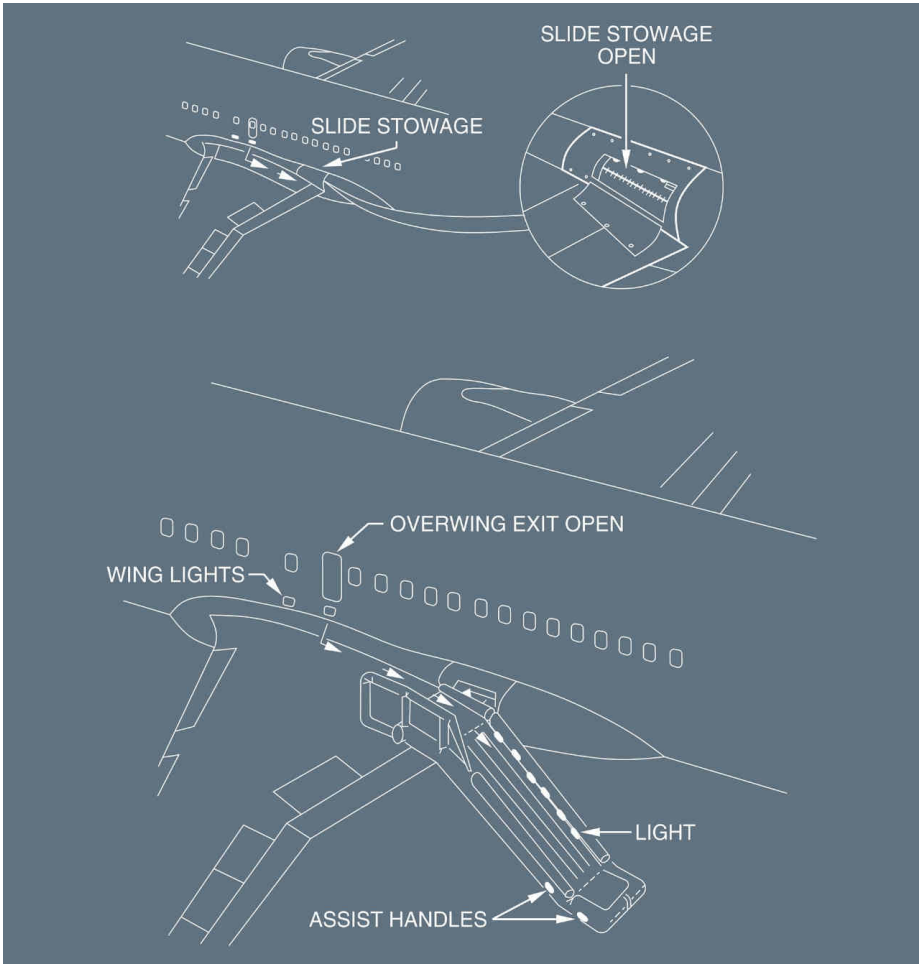
Ident.: DSC-52-10-80-00001556.0001001 / 09 OCT 12

[2] **Applicable to: MSN 01767-04384, 04399-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



WING SLIDES

Ident.: DSC-52-10-80-00001556.0002001 / 09 MAR 18
Applicable to: MSN 04393-04397

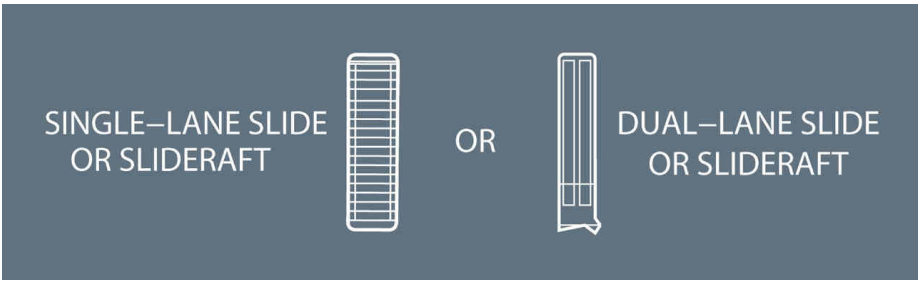


ESCAPE SLIDE ARRANGEMENT

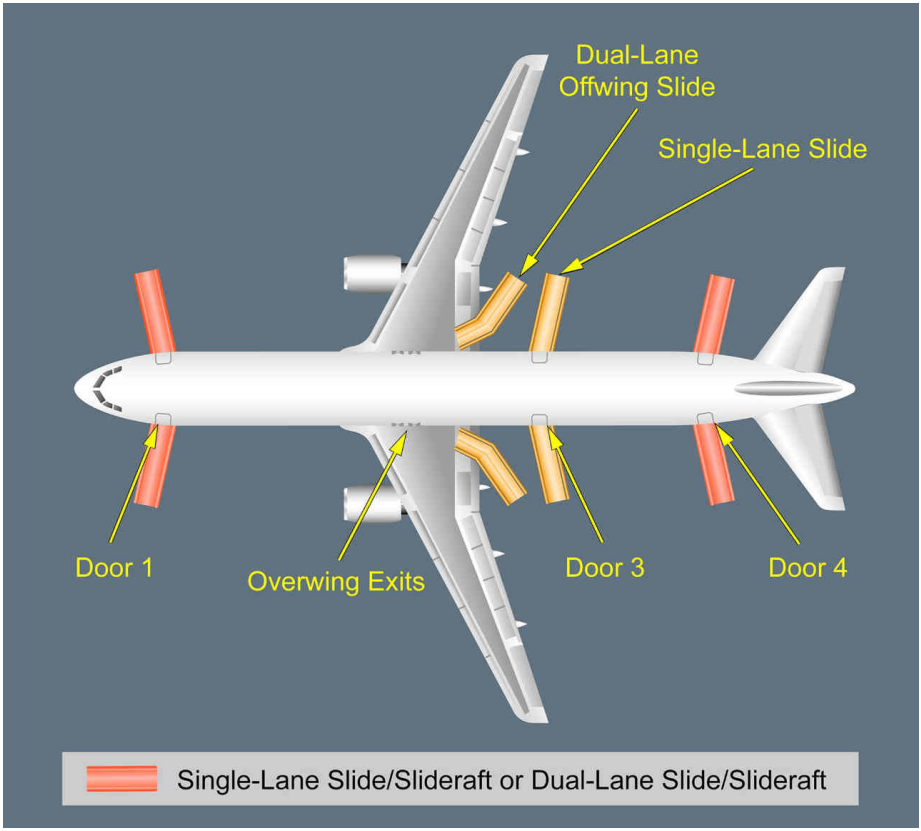
Ident.: DSC-52-10-80-00017577.0009001 / 09 MAR 18

[3] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

There are two types of emergency slides: a single-lane escape slide/slideraft or a dual-lane escape slide/slideraft.



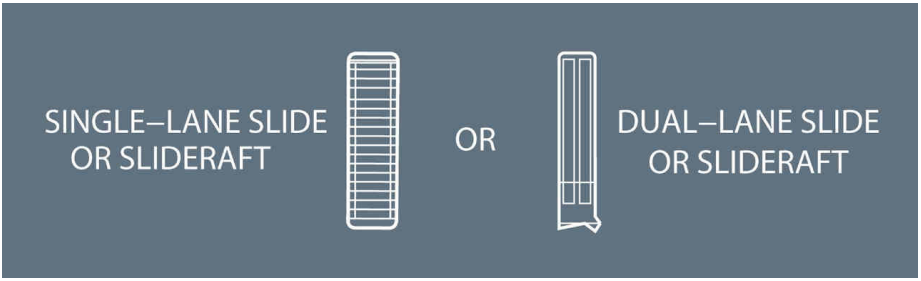
Each cabin door 1 & 4 either has a single-lane escape slide/slideraft or a dual-lane escape slide/slideraft, and each cabin door 3 has a single-lane escape slide.
Each overwing exit has a dual-lane escape slide.
In addition, to accommodate high density configurations, additional rafts may be installed in the overhead stowage compartments that are located near the doors.



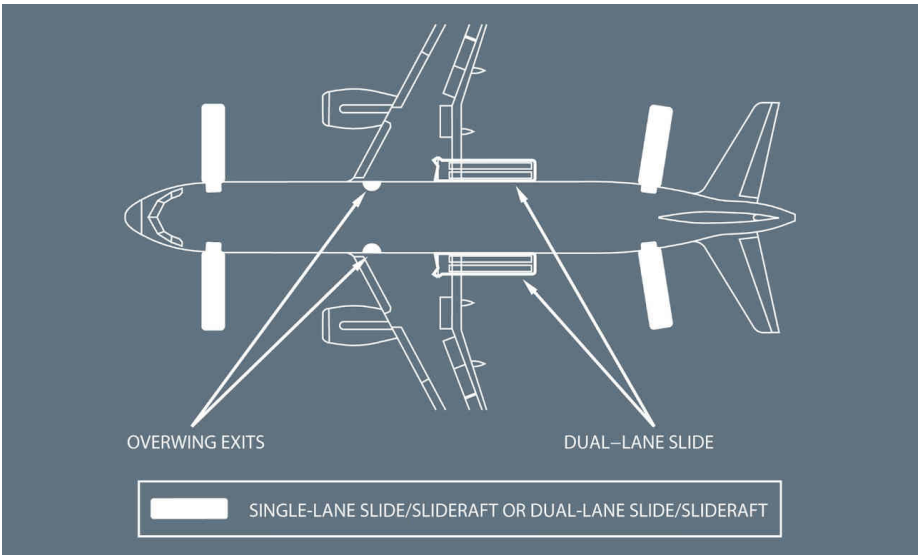
ESCAPE SLIDE ARRANGEMENT

Ident.: DSC-52-10-80-00017577.0003001 / 21 MAR 16
Applicable to: MSN 04393-04397

There are two types of emergency slides: a single-lane escape slide/slideraft or a dual-lane escape slide/slideraft.



Each passenger door either has a single-lane escape slide/slideraft or a dual-lane escape slide/slideraft, and each emergency exit has a dual-lane escape slide.

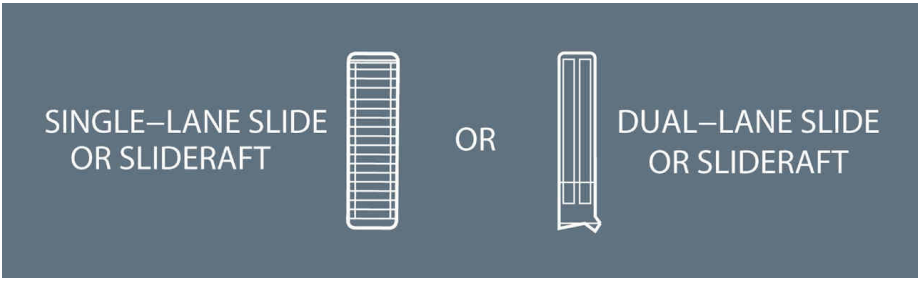


ESCAPE SLIDE ARRANGEMENT

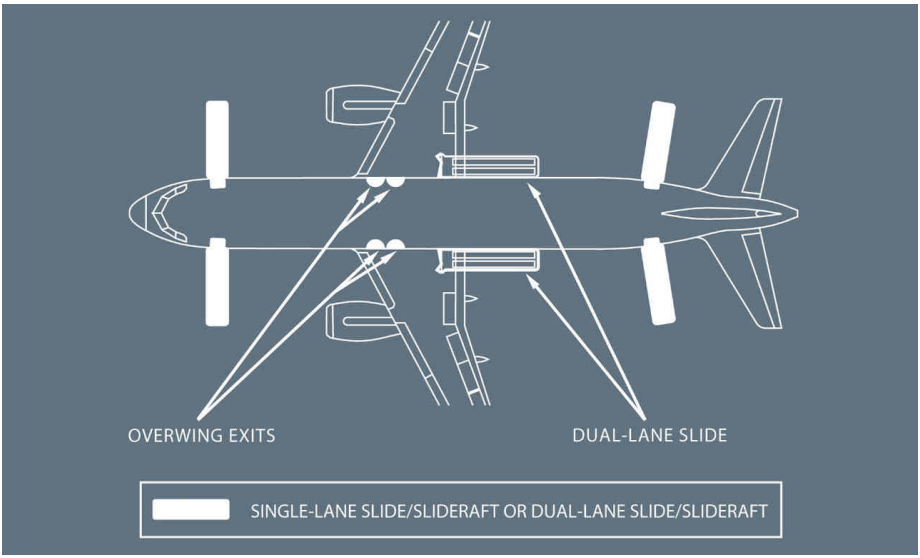
Ident.: DSC-52-10-80-00017577.0001001 / 21 MAR 16

4 **Applicable to: MSN 01767-04384, 04399-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

There are two types of emergency slides: a single-lane escape slide/slideraft or a dual-lane escape slide/slideraft.



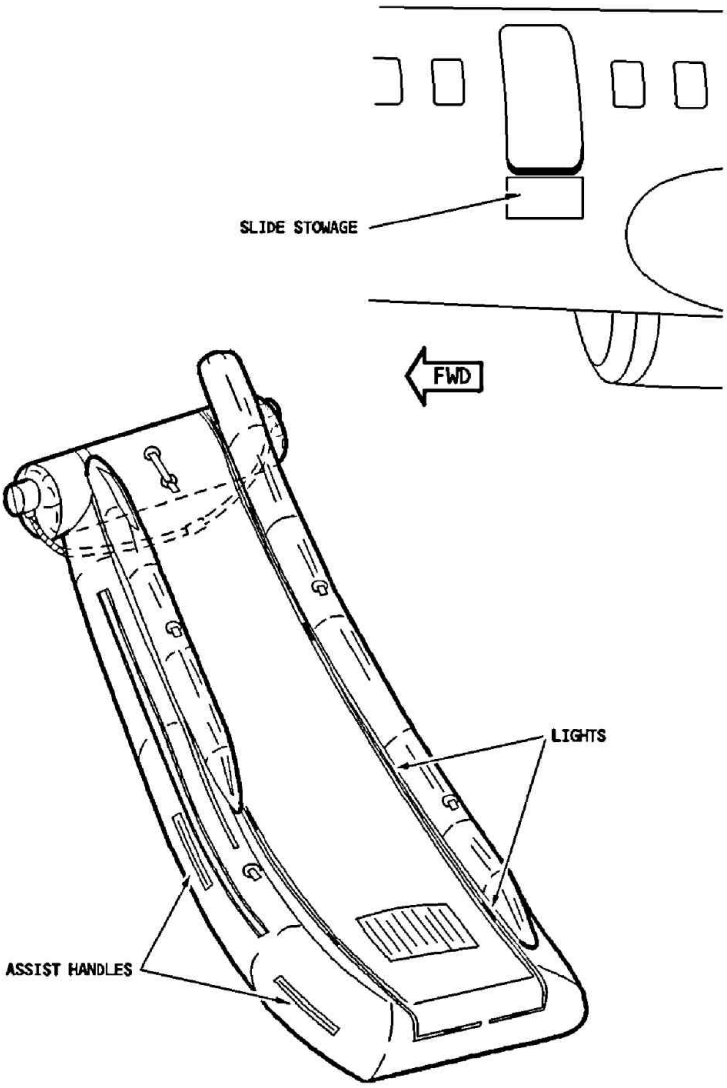
Each passenger door either has a single-lane escape slide, or a single-lane slideraft, and each emergency exit has a dual-lane escape slide.



CABIN EMERGENCY EXIT SLIDES

Ident.: DSC-52-10-80-00005952.0001001 / 21 MAR 16

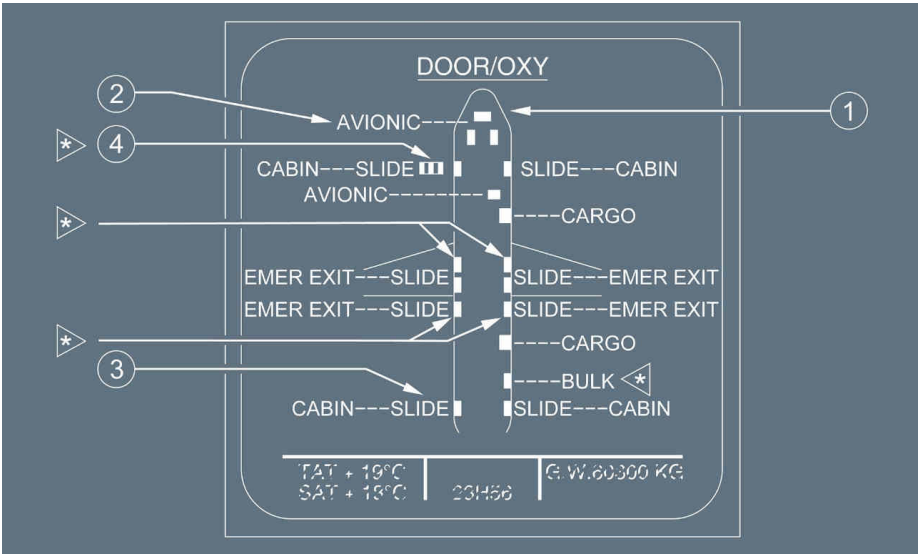
5 Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063



DOOR/OXY SD PAGE

Ident.: DSC-52-20-00017645.0008001 / 09 MAR 18

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



(1) Door Symbol

Green □ : The door is closed and locked.

Amber ■ : The door is not locked.

(2) Door Indication

This appears amber when the door is not locked.

(3) Slide Indication

This appears white when the slide is armed.

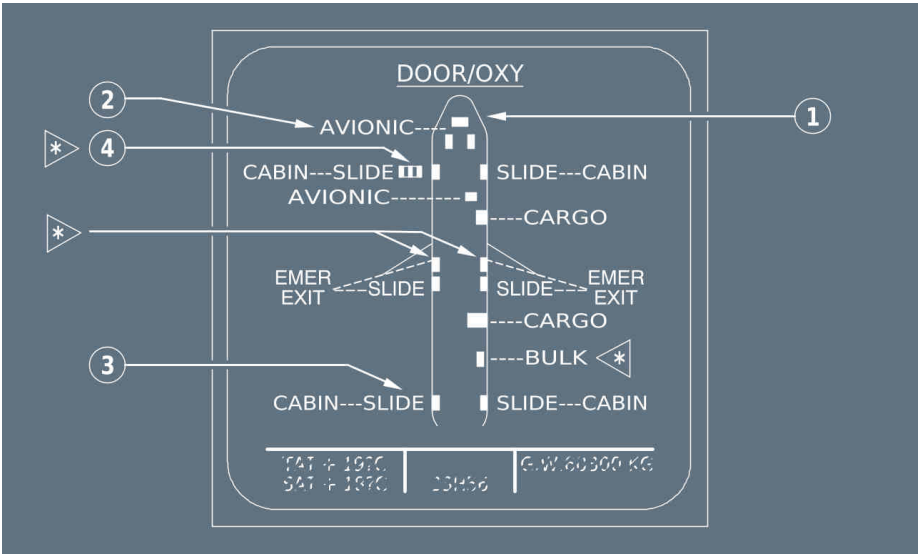
(4) Stair Symbol

This appears in amber when the stair door is not closed.

DOOR/OXY SD PAGE

Ident.: DSC-52-20-00017645.0001001 / 21 MAR 16

[2] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



(1) Door symbol

Green □ : The door is closed and locked.

Amber ■ : The door is not locked.

(2) Door indication

This appears in amber, when the door is not locked.

(3) SLIDE indication

This appears in white, when the slide is armed.

(4) Stair symbol

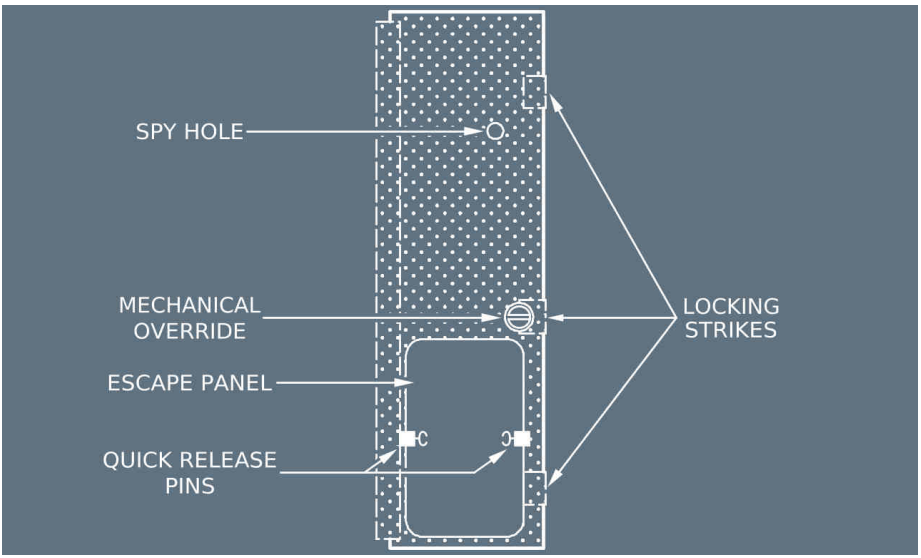
This appears in amber, when the stair door is not closed.

Note: For aircraft without FWD EMER EXIT doors, the FWD EMER EXIT door symbols are always displayed in green.

COCKPIT DOOR DESCRIPTION

Ident.: DSC-52-40-10-00017010.0001001 / 17 MAR 17
Applicable to: ALL

A forward-opening hinge door separates the cockpit from the passenger compartment. It has three electric locking strikes, controlled by the flight crew. In normal conditions, when the door is closed, they remain locked. When there is a request to enter the cockpit, the flight crew can authorize entry by unlocking the door, that remains closed until it is pushed open.
When the flight crew does not respond to requests for entry, the door can also be unlocked by the cabin crew, by entering a two to seven-digit code (programmed by the airline) on the keypad, installed on the lateral side of the Forward Attendant Panel (FAP).
The door is bulletproof and fully compliant with rapid decompression requirements.
A mechanical override enables the flight crew to open the door from the cockpit side.
A deadbolt ◁ is installed at the level of the center latch area of the cockpit door. This deadbolt bolts the door from the cockpit side, in the event that more than one locking latch strike fails, or in the case of a total CLS failure.



Note: *1. The escape panel enables the flight crew to evacuate the cockpit, in case of an emergency, when the door is jammed. This panel can only be removed from the cockpit side by pulling the quick release pins towards the center of the flap and kicking the panel open.*

2. In case of an electrical supply failure, the door is automatically unlocked, but remains closed.

COCKPIT DOOR LOCKING SYSTEM (CDLS)

Ident.: DSC-52-40-20-00001007.0001001 / 21 MAR 17

[1] **Applicable to: MSN 01767-01920, 02108, 02135, 02139-02584, 02649-02914, 03138-09063**

The Cockpit Door Locking System (CDLS) provides a means of electrically locking and unlocking the cockpit door. This system is mainly composed of :

- A keypad, located in the forward cabin, near the cockpit door,
- A toggle switch, located in the center pedestal's Cockpit Door panel,
- A control unit and its CKPT DOOR CONT normal panel, located on the overhead panel,
- A buzzer.

The keypad enables the cabin crew to request access to the cockpit. There are two different access request types : "Routine" and "Emergency" access request.
The toggle switch enables the flight crew to lock or unlock the cockpit door, following an access request, thereby allowing or denying the entry to the cockpit.

The cockpit door control unit is the system controller, in charge of :

- Locking or unlocking the door latches, upon flight crew action.
- Unlocking the door, in case of cockpit decompression (the door then opens towards the cockpit under differential pressure).
- Indicating system failures of electrical latches and pressure sensors.
- Activating the access request buzzer and turning on the keypad LEDs.

The buzzer sounds in the cockpit for 1 to 9 s to indicate that a routine access request has been made, or sounds continuously if an emergency access procedure has been initiated.

COCKPIT DOOR LOCKING SYSTEM (CDLS)

Ident.: DSC-52-40-20-00001007.0003001 / 21 MAR 17

Applicable to: MSN 01957-02097, 02121, 02138, 02609-02626, 03071

The Cockpit Door Locking System (CDLS) provides a means of electrically locking and unlocking the cockpit door. This system is mainly composed of :

- A keypad, located in the forward cabin, near the cockpit door,
- A toggle switch, located in the center pedestal's Cockpit Door panel,
- A control unit and its CKPT DOOR CONT normal panel, located on the left-hand side of the overhead panel,
- A backup control unit, identical to the first one, and its CKPT DOOR CONT backup panel, located on the right-hand side of the overhead panel,
- An additional CKPT DOOR BKUP panel, which is composed of a LKG SYS switch and a OPEN/FAULT control pushbutton,
- A buzzer.

The keypad enables the cabin crew to request access to the cockpit. There are two different access request types : “Routine” and “Emergency” access request.
The toggle switch enables the flight crew to lock or unlock the cockpit door, following an access request, thereby allowing or denying the entry to the cockpit.

The cockpit door control unit is the system controller, in charge of :
- Locking or unlocking the door latches, upon flight crew action.
- Unlocking the door, in case of cockpit decompression (the door then opens towards the cockpit under differential pressure).
- Indicating system failures of electrical latches and pressure sensors.
- Activating the access request buzzer and turning on the keypad LEDs.

The CDLS backup control unit is a backup for locking/unlocking the door by flight crew action, and for unlocking the door in case of decompression. The backup control has to be used only when the normal control unit has failed, or when the two pressure sensors are failed.

When operating the CDLS with the backup control unit, both the toggle switch and the keypad are inoperative. In this condition :
- The cabin crew has to use the interphone to perform any cockpit access request, and
- The flight crew has to use the OPEN/FAULT CTL P/B located on the CKPT DOOR BKUP overhead panel, to unlock the door when access to the cockpit is authorized.
- No emergency access from the cabin to the cockpit is available.

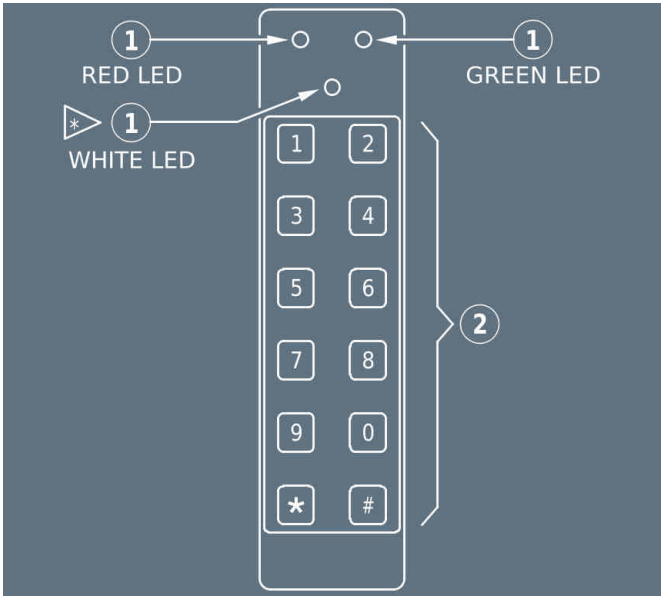
By using the CKPT DOOR BKUP LKG SYS switch, it is possible to operate the CDLS in normal condition, in backup condition, or to deactivate the system to facilitate maintenance tasks and ground operations.
The buzzer sounds in the cockpit for 1 to 9 s to indicate that a routine access request has been made, or sounds continuously if an emergency access procedure has been initiated.

CONTROLS

Ident.: DSC-52-40-20-A-00001008.0001001 / 21 MAR 17
Applicable to: ALL

KEYPAD

The keypad is used by the cabin crew to request pilots to open the door.



(1) Locked/Unlocked Door Indicator

GREEN light ON	:	The door has been unlocked either by a flight crew action, or automatically (during 5 s) when no flight crew action is performed during the delay following an emergency access request. The door can be pushed open.
GREEN light flashes	:	An emergency request to enter the cockpit has been made; the buzzer will sound continuously in the cockpit, but no action has yet been taken by the flight crew.
RED light ON	:	The flight crew has denied access, and the door remains locked.
WHITE light ON	:	The light comes on each time the cabin crew presses a key on the keypad.

(2) Digital Keypad

The keypad is used to sound the buzzer in the cockpit for 1 to 9 s (3 s by default), by entering a zero to seven-digit code, as programmed by the airline, followed by the '#' key. It is also used to enter the two to seven-digit emergency code, followed by the '#' key, when the flight crew does not respond.

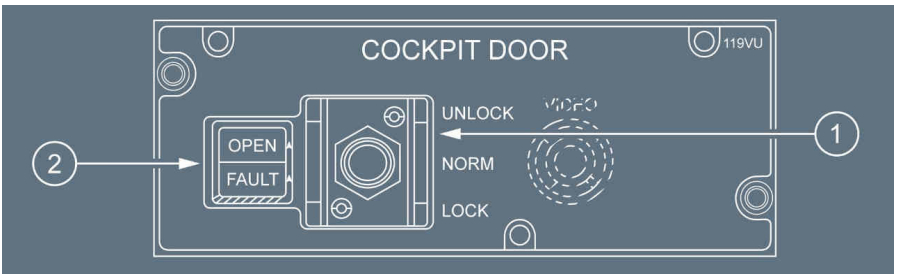
Note: *During the test performed by the cockpit door control unit, the CDLS keypad remains operational, and the CDLS operates as follows:*
The control unit will store access codes that are entered, and the LOCKED/UNLOCKED DOOR INDICATOR (RED/GREEN LEDs) of the keypad will remain on, as long as the test is running.

- *If the correct access code is entered on the keypad, the buzzer will not sound, until the test is completed.*
- *If the emergency access code is entered, the door will unlock. The cockpit buzzer and the LOCKED/UNLOCKED DOOR INDICATOR will be inoperative.*

Ident.: DSC-52-40-20-A-00018437.0001001 / 17 MAR 17
Applicable to: ALL

CENTRAL PEDESTAL COCKPIT DOOR PANEL

The secured cockpit door opening is controlled by a toggle switch, located on the central pedestal.



(1) COCKPIT DOOR toggle switch

UNLOCK position	:	This position is used to enable the cabin crewmember to open the door. The switch must be pulled and maintained in the unlock position until the door is pushed open.
NORM position	:	All latches are locked, and EMERGENCY access is possible for the cabin crew.
LOCK position	:	Once the button has been moved to this position, the door is locked ; emergency access, the buzzer, and the keypad are inhibited for a preselected time (5 to 20 min).

Note: *1. If the LOCK position has not been used by the pilot, for at least 5 to 20 min, the cabin crew is able to request emergency access to open the cockpit door.*
2. The UNLOCK position overrides and resets any previous selection.
3. In case of an electrical supply failure, the cockpit door is automatically unlocked, but remains closed.

(2) COCKPIT DOOR Fault Open indicator

OPEN light ON	:	The door is not closed.
OPEN light flashes	:	The cabin crew has started an emergency access procedure. If there is no reaction from the flight crew, the door will unlock at the end of the adjustable time delay (15 to 120 s).
FAULT	:	This light comes on when a system failure has been identified (Example : Latch, pressure sensors, control unit). The inoperative item can be identified by checking the strike and pressure sensor status lights on the CKPT DOOR CONT panel.

Ident.: DSC-52-40-20-A-00001010.0001001 / 09 OCT 12

2 **Applicable to: MSN 01767-01920, 02108, 02135, 02139-02584, 02649-02914, 03138-09063**

OVERHEAD CONTROL PANEL

The Cockpit Door Locking System's control panel is located on the overhead panel.

(1) Strikes' status lights

Off : The corresponding (upper, mid, or lower) locking latch is operative.

On : The corresponding (upper, mid, or lower) locking latch is faulty.

(2) Pressure sensor

Two redundant differential pressure sensors enable rapid pressure variation in the cockpit to be detected, in order to command simultaneous opening of all latches when a defined pressure drop is detected.

(3) Pressure sensor status lights

Off : The corresponding (1 or 2) pressure sensor is operative.

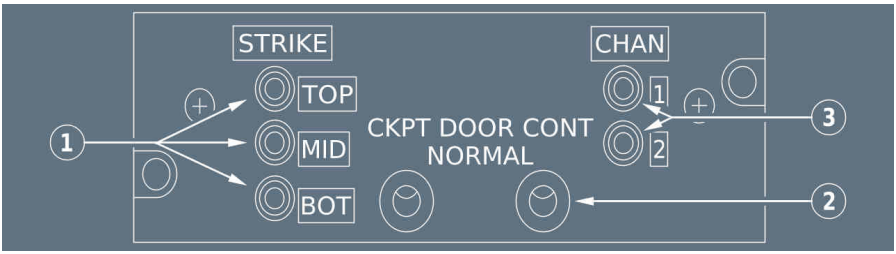
On : The corresponding (1 or 2) pressure sensor is faulty.

Note: These indicators enable the crew to identify the faulty item, when the Central Pedestal Fault indicator light is ON.

Ident.: DSC-52-40-20-A-00001010.0004001 / 23 JUN 15
Applicable to: MSN 01957-02097, 02121, 02138, 02609-02626, 03071

OVERHEAD CONTROL PANEL

TheCDLS consists of two separate but identical control units, and therefore, there are two (normal and backup) CKPT DOOR CONT panels. The normal control panel is located on the overhead left hand side, whereas the backup is located on the right hand side.



(1) Strikes' status lights

Off : The corresponding (upper, mid, or lower) locking latch is operative.

On : The corresponding (upper, mid, or lower) locking latch is faulty.

(2) Pressure sensor

Two redundant differential pressure sensors enable rapid pressure variation in the cockpit to be detected, in order to command simultaneous opening of all latches when a defined pressure drop is detected.

(3) Pressure sensor status lights

Off : The corresponding (1 or 2) pressure sensor is operative.

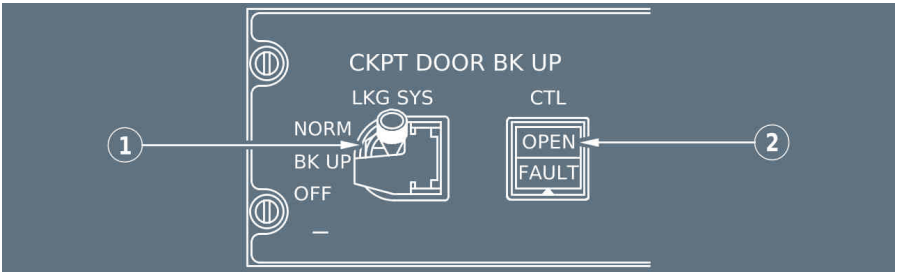
On : The corresponding (1 or 2) pressure sensor is faulty.

Note: These indicators enable the crew to identify the faulty item, when the Fault indicator light is ON.

Ident.: DSC-52-40-20-A-00005341.0002001 / 09 OCT 12
Applicable to: MSN 01957-02097, 02121, 02138, 02609-02626, 03071

COCKPIT DOOR BACKUP

The cockpit door backup panel consists of a guarded three-position switch, and of a control pushbutton with a dual visual indicator.



(1) LKG SYS sw

NORM : The basic system has no failure; the normal control is operative.

BK UP : The normal control is deactivated, and backup control is activated.

OFF : The Cockpit Door Locking System is deactivated. Both normal and backup controls are inoperative. Therefore, the door is unlocked. It can be pushed open from the cabin side.

(2) CTL pb, OPEN/FAULT

OPEN P/B : Pressing the pushbutton unlocks the door. Keep the pushbutton pressed until the door is pushed open.

OPEN light ON : The door is not closed, or not locked.

FAULT light ON : This light comes on when a backup system failure has been identified. The inoperative item can be identified by checking the strikes or pressure sensor status lights on the CKPT DOOR CONT backup panel.

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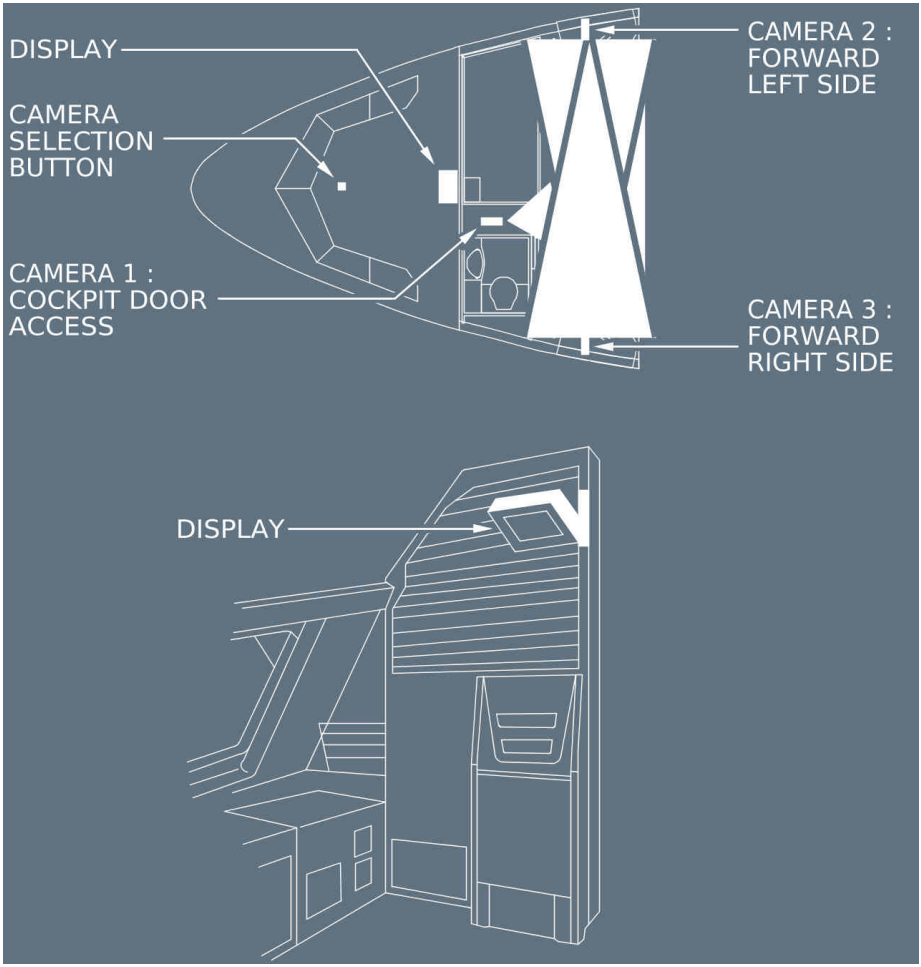
GENERAL

Ident.: DSC-52-40-30-00018415.0002001 / 17 MAR 17

1 **Applicable to: MSN 01767-02121, 02138-02334, 02443-02457, 02584-02670, 02804-04216, 04312-04399, 04438-04506, 04518-09063**

The Cockpit Door Surveillance system consists of three video cameras, which enable the flight crew to identify persons prior to authorizing their entry into the cockpit. An LCD display, located on the rear panel, shows the various camera views. It has automatic brightness adjustment and is activated by the Cockpit Door Video pb.

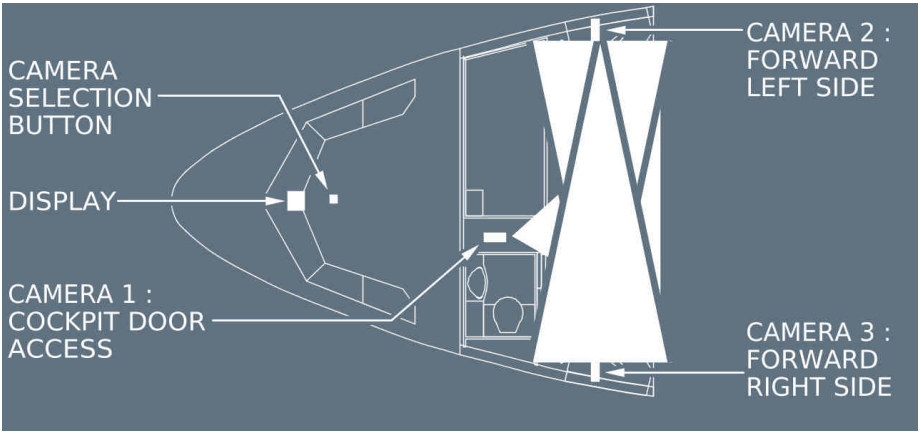


GENERAL

Ident.: DSC-52-40-30-00018415.0001001 / 17 MAR 17
Applicable to: MSN 04294, 04433, 04510

The Cockpit Door Surveillance System (CDSS) consists of three video cameras, that enable the flight crew to identify persons prior to authorizing their entry into the cockpit. The lower ECAM display displays the various camera views. A control panel, located on the central pedestal allows the flight

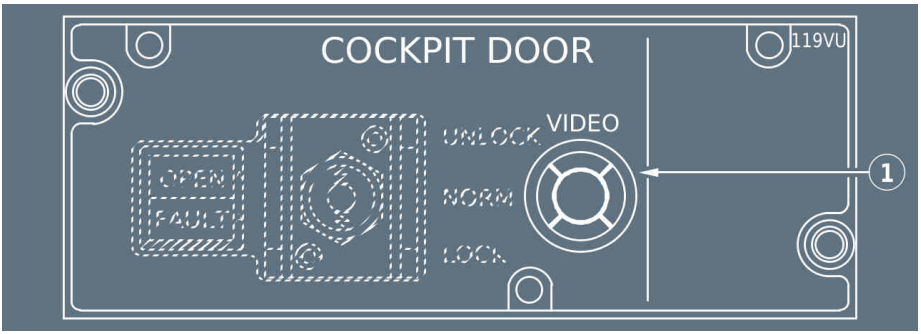
crew members to select the CDSS display on the SD and to swap between the different camera views.



CONTROLS

Ident.: DSC-52-40-30-A-00018416.0004001 / 17 MAR 17

[2] **Applicable to: MSN 01767-01920, 02139, 02275-02334, 02443-02457, 02584-02670, 02804-04216, 04312-04399, 04438-04506, 04518-09063**



(1) Cockpit Door Video pb
Selects the various camera image displays.

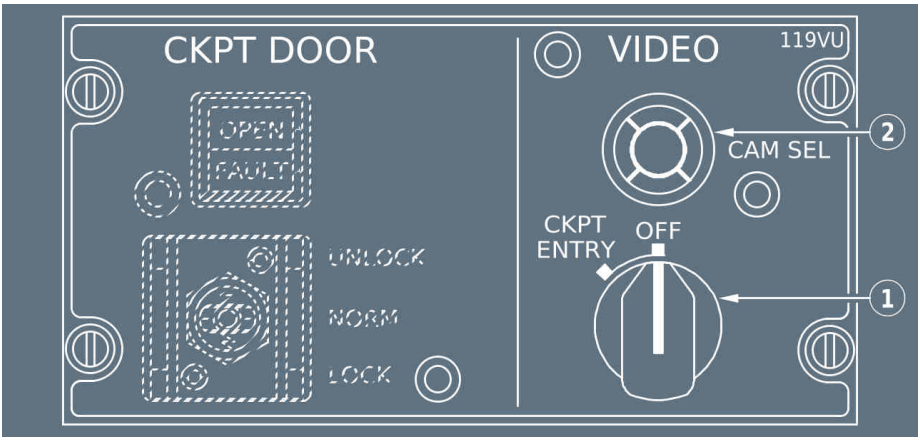
Camera 1 image : Displayed by pressing the pushbutton when the screen is on standby, or after Camera 2 and 3 images have been displayed. Automatically displayed, after an entry request is performed on the keypad.

Camera 2 and 3 images : Displayed on a split screen, when the pushbutton is pressed after Camera 1's image has been displayed.

Standby : If the pushbutton is maintained pressed for at least two seconds, or if no action has been taken for 5 min, the screen goes blank and remains on standby.

Note: An entry request, performed on the keypad within 30 s following an earlier entry request, will not lead to the automatic selection of Camera 1, since the flight crew is given authority to select any desired camera image via the cockpit door video pb. After these 30 s, the system reverts to its normal operation.

Ident.: DSC-52-40-30-A-00018416.0003001 / 17 MAR 17
Applicable to: MSN 04294, 04433, 04510



(1) Lower ECAM rotary selector

CKPT ENTRY : The lower ECAM displays the camera 1 image.

The camera images are not displayed on the Lower ECAM display in the case of:

- A subsequent automatic system page call following a warning, a caution, or an advisory, or
- A subsequent manual selection of a system page on the ECAM Control Panel (ECP), or
- A SD failure, or
- An EWD failure.

OFF : The lower ECAM display operates normally.

(2) Lower ECAM CAM SEL

Selects various camera image displays, when the lower ECAM rotary selector is set to the CKPT ENTRY position.

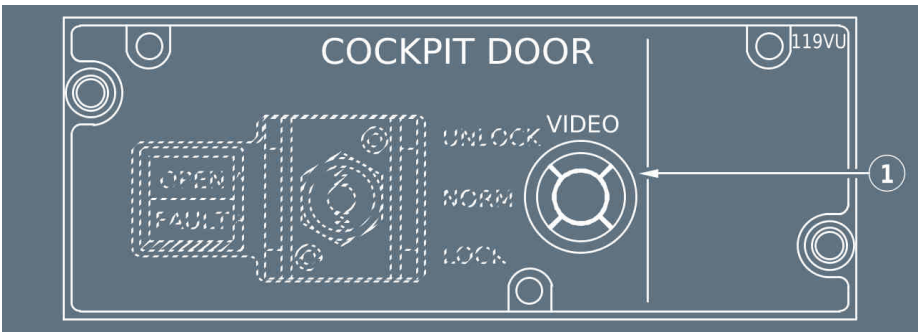
The image from camera 1 appears:

- Automatically, when the lower ECAM rotary selector is set to the CKPT ENTRY position.
- When images from cameras 2 and 3 are displayed, and after the flight crew presses the lower ECAM CAM SEL pb
- Automatically, when images from cameras 2 and 3 are displayed, and after a crew member uses the cabin keypad to make an entry request at least 30 s after a previous entry request.

Images from cameras 2 and 3 are displayed simultaneously on a split screen, when the image from camera 1 is displayed, and after the flight crew presses the lower ECAM CAM SEL pb.

Note: *1. The message "PLEASE WAIT" is displayed during the transition between two video images when the flight crew requests an image change.*
2. The message "VIDEO NOT AVAIL" is displayed when the flight crew requests a video image and no image can be displayed.

Ident.: DSC-52-40-30-A-00018416.0001001 / 17 MAR 17
Applicable to: MSN 01957-02121, 02138, 02195-02204



(1) Cockpit Door Video pb

Selects the various camera image displays.

Camera 1 image	:	Displayed by pressing the pushbutton when the screen is on standby, or after Camera 2 and 3 images have been displayed. Automatically displayed, after an entry request is performed on the keypad.
Camera 2 and 3 images	:	Displayed on a split screen, when the pushbutton is pressed after Camera 1's image has been displayed.

Standby : If no action has been taken for 5 min, the screen goes blank and remains on standby.

Note: An entry request, performed on the keypad within 30 s following an earlier entry request, will not lead to the automatic selection of Camera 1, since the flight crew is given authority to select any desired camera image via the cockpit door video pb. After these 30 s, the system reverts to its normal operation.

Ident.: DSC-52-40-30-A-00018417.0001001 / 17 MAR 17

3 **Applicable to: MSN 01767-02121, 02138-02359, 02405-02670, 02804-09063**

(1) Cockpit Door Video pb

OFF: The Cockpit Door Surveillance System is manually de-energized.

HOW TO OPERATE THE COCKPIT DOOR

Ident.: DSC-52-50-00020495.0001001 / 17 MAR 17
Applicable to: ALL

The secured cockpit door operation is controlled by a toggle sw that is located on the COCKPIT DOOR panel (central pedestal).

DOOR OPENING FROM THE COCKPIT

To enable access to the cockpit, set and maintain the COCKPIT DOOR sw to the UNLOCK position until the door is fully opened. When the door is fully opened, the COCKPIT DOOR sw can be released to the NORM position.

DOOR CLOSING FROM THE COCKPIT

Close the door and check that the OPEN indicator goes off. If the COCKPIT DOOR sw is in the NORM position, the door is locked and emergency access is possible from the cabin. When the door is fully closed, if the cockpit door FAULT light is ON, *Refer to PRO-ABN-DOOR [QRH] COCKPIT DOOR FAULT*.

Note: If the OPEN indicator is ON when the door is closed, the door may be unlocked. Repeat the above-mentioned opening/closing procedure.

When the COCKPIT DOOR sw is in the LOCK position the door is locked. In this position, the emergency access, the buzzer, and the keypad are inhibited for a preselected time (5 to 20 min).

ROUTINE ACCESS TO THE COCKPIT FROM THE CABIN (I.E. NORMAL ACCESS)

To request access to the cockpit from the cabin, use the keypad to enter the code and validate with the “#” key.

L2 The Operator defines this code (between 0 and 7 digits).

L1 The buzzer sounds in the cockpit for 1 to 9 s (3 s by default).

After identification of the person (using the Cockpit Door Surveillance System ◁) that requests access, set the COCKPIT DOOR sw to UNLOCK position to unlock the door. A steady green light on the keypad comes on, that indicates that the door is unlocked.

If the flight crew refuses access to the cockpit by setting the COCKPIT DOOR sw to LOCK position, a steady red light on the keypad comes on, that indicates that the door is locked. The keypad and the buzzer are inhibited for a defined period of time.

If the flight crew does not respond, the door remains locked. If the flight crew does not take any action after a routine cabin request, the cabin crew will be able to open the door with the emergency access procedure.

EMERGENCY ACCESS FROM CABIN TO THE COCKPIT

To request emergency access to the cockpit, use the keypad to enter the emergency code and validate with the “#” key.

L2 The Operator defines this emergency code (between 2 and 7 digits).

L1 The buzzer continuously sounds in the cockpit and the OPEN light flashes on the COCKPIT DOOR panel (central pedestal). In the cabin, the green light on the keypad flashes until the flight crew uses the COCKPIT DOOR sw to either lock or unlock the cockpit door.
After identification of the person (via the Cockpit Door Surveillance system) that requests access, use the COCKPIT DOOR sw to unlock the door.
If the flight crew refuses access by setting the COCKPIT DOOR sw to LOCK position, the keypad and the buzzer are inhibited for a defined period of time.
If the flight crew does not respond, after a preselected time between 15 and 120 s, the door automatically unlocks for 5 s and a steady green light on the keypad comes. The buzzer stops and indicates that the door is unlocked.

EVACUATION THROUGH THE DECOMPRESSION AND EVACUATION PANEL

Pull the quick-release pins of the escape panel towards the center of the flap.
Kick the escape panel toward the cabin and evacuate the cockpit.

HOW TO OPERATE THE FWD AND AFT CARGO DOOR

Ident.: DSC-52-50-00020574.0003001 / 17 MAR 17
Applicable to: ALL

NORMAL OPERATION

OPENING

On the cargo door, push the door handle flap inward to release the door handle from the recess of the door structure. Then, pull the door handle away and upward from the LOCKED to the UNLOCKED position.
Open the access door of the service panel to get access to the selector valve lever. Set the selector valve lever to the OPEN position and maintain the lever in this position until the green indicator light comes on. The green indicator light indicates that the door is fully opened and locked.

Note: The yellow hydraulic system is pressurized (the YELLOW ELEC PUMP is energized). The operation of the flight controls and PTU is inhibited.

When the door is fully open, release the selector valve lever. When released, the selector valve lever returns to the neutral position and shuts down the electrical pump.

CLOSING

In order to close the cargo door, set the selector valve lever to the CLOSE position and maintain the lever in this position until the green indicator light goes off. When this light goes off, it means that the door is fully closed and locked.

Note: *At first the selector valve lever locks in an intermediate position maintaining a preset pressurization to prevent the door from dropping open.*

When the door is fully closed, the selector valve lever returns to the neutral position and shuts down the electrical pump.
On the cargo door, push the door handle flap downwards to the LOCKED position. When the door is locked, the cargo door symbol appears in green on the DOOR/OXY SD page. The CARGO door indication on the ECAM goes off, and the handle flap mechanism locks the operating handle.
Close the access door of the service panel.

HOW TO OPERATE THE FWD AND AFT CARGO DOORS (AUXILIARY OPERATION)

Ident.: DSC-52-50-00020577.0002001 / 17 MAR 17
Applicable to: ALL

AUXILIARY OPERATION

If there is an electrical failure or if the yellow hydraulic electric pump fails, the operator can open or close the cargo door with the use of the hand pump that is accessible via the ground service panel.

Note: *Two persons are necessary for this operation.*

MANUAL OPENING

To open the cargo door with the use of the hand pump, unlock the cargo door by using the operating handle as for normal operation.
Open the ground service panel of the yellow hydraulic system that is in the belly fairing area.
Open the access door of the door service panel. Set the selector valve lever to the OPEN position and maintain the lever in this position during the operation of the hand pump.
Operate the hand pump until the cargo door is in the fully open position. The green light comes on and indicates that the door is fully opened and locked.
When the cargo door is fully opened, release the selector valve lever of the door service panel.

MANUAL CLOSING

To close the cargo door, set the selector valve lever (on the door service panel) to the CLOSE position and maintain the lever in this position during the operation of the hand pump.
Operate the hand pump until the cargo door is in the fully closed position.
When the cargo door is fully closed, release the selector valve lever of the door service panel.
Lock the cargo door with the use of the operating handle as for normal operation.
Close the access door of the door service panel and of the ground service panel.

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AIRCRAFT SYSTEMS

COCKPIT WINDOWS

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DSC-56-10 General

General....A

DSC-56-20 Fixed Windows

Fixed Windows....A

DSC-56-30 Sliding Windows

Sliding Windows....A

DSC-56-40 Description

Description....A

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GENERAL

Ident.: DSC-56-10-00000998.0001001 / 17 MAR 17
Applicable to: ALL

The cockpit has fixed and sliding windows.

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FIXED WINDOWS

Ident.: DSC-56-20-00000999.0001001 / 17 MAR 17
Applicable to: ALL

There are four fixed windows :

- two windshields
- two fixed side windows

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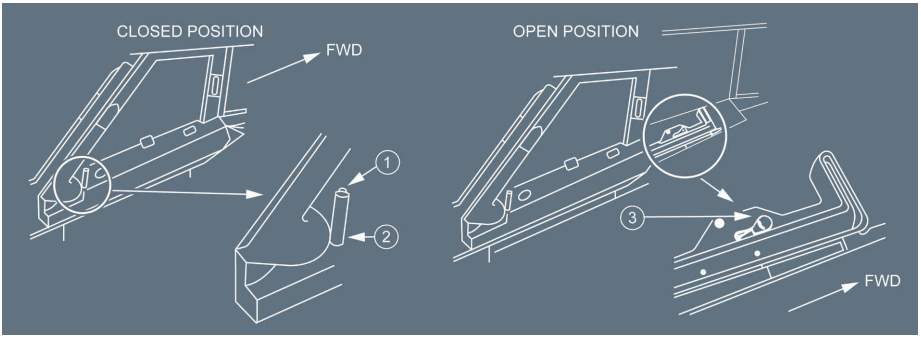
SLIDING WINDOWS

Ident.: DSC-56-30-00018432.0001001 / 17 MAR 17
Applicable to: ALL

The flight crew can use the sliding windows as emergency exits. Therefore they are not permitted to stow any object so that it protrudes into the window area from the side console. Members of the flight crew can use the control handle to slide each of the windows rearward, and can use a locking pin to lock each window open.



(1) Unlocking button
Flight crew presses this button to unlock the control handle.

(2) Control handle

- To open the window, the crew member pulls inward and rearward.
- To close the window, the crew member pushes forward.

(3) Locking pin
This pin locks the window open.
It is near the window's lower guide track and is visible when the window is open.

- Forward
  Between the closed position and the one-third open position, the window is free to move forward and aft.
  When the window is more than one-third open, this pin prevents it from moving forward.
- Aft
  Flight crew must move the locking pin aft in order to close the window. Left sliding window.

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DESCRIPTION

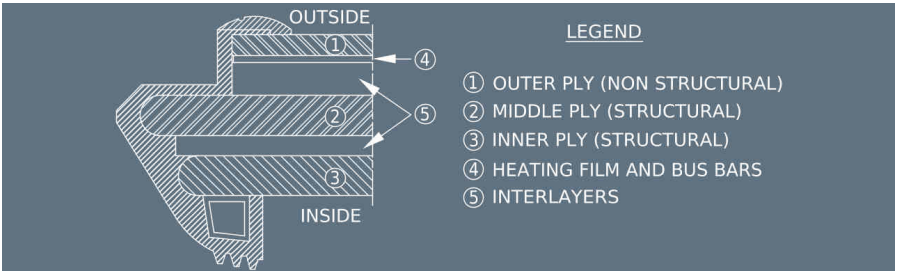
Ident.: DSC-56-40-00013772.0001001 / 17 MAR 17
Applicable to: ALL

COCKPIT WINDSHIELD AND WINDOWS DESCRIPTION

All cockpit windows are fail-safe design.
The windows are made of:

- A non structural ply, the Outer ply (1), which is only a protective layer
- Two structural plies, the Middle ply (2) and the Inner ply (3)
  Each structural ply is able to sustain individually the pressurization loads
- A heating film (4) to defog and/or de-ice the windshield/window
- Two interlayers (5).

Typical Structure Of A Cockpit Window (Cut View)



For information on cockpit window damage procedure, description and evaluation method, *Refer to FCTM/PR-AEP-MISC Cockpit Windshield/Window Cracked*.

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AIRCRAFT SYSTEMS

ENGINES

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DSC-70-10 System Description

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Engine ..... B
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HP Compressor Turbine Assembly ..... D
Combustion Chamber ..... E
Accessory Gearbox ..... F

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Architecture ..... B
Functions C
Idle Control ..... D

DSC-70-30 Thrust Control System (CFM+PW)

DSC-70-30-10 General

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DSC-70-30-20 Thrust Levers

Thrust Levers ..... A

DSC-70-30-30 Thrust Rating Limit

Thrust Rating Limit ..... A

DSC-70-30-40 Thrust Control

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Automatic Mode ..... B
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DSC-70-35 Thrust Control System (IAE)

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DSC-70-35-20 Engine Power Setting

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DSC-70-35-40 Thrust Rating Limit
Thrust Rating Limit....A

DSC-70-35-50 Thrust Control
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Automatic Mode....B

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Hydromechanical Unit....D
IDG Cooling System....E

DSC-70-45 Fuel System (IAE)
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Fuel Metering Unit....D
Fuel Filter....E
IDG Cooling Recirculation System....F

DSC-70-48 Fuel System (PW1100G)
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Integrated Fuel Pump and Control (IFPC)....B
Fuel Oil Heat Exchanger....C
Fuel Filter....D
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DSC-70-60 Airbleed System (CFM56)
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DSC-70-90-20 Pedestal

ENG MODE Selector and ENG MASTER Levers ..... A
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DSC-70-90-30 Maintenance Panel

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DSC-70-90-40 Engine Display

Engine/Warning Display ..... A
ENG SD Page ..... B

DSC-70-90-50 Memo Display

Memo Display ..... A

Localization Title	Toc Index	ID	Reason
DSC-70-80-40 Automatic Engine Start with Dual Cooling - Envelope	G	10	Documentation update: Addition of "Automatic Engine Start with Dual Cooling - Envelope" documentary unit
DSC-70-05 Overview	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-05 Overview	A	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-10 Engine	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-10 Engine	B	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-10 LP Compressor Turbine Assembly	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-10 LP Compressor Turbine Assembly	C	4	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-10 HP Compressor Turbine Assembly	D	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-10 HP Compressor Turbine Assembly	D	6	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-20 Architecture	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-20 Architecture	B	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-20 Functions	C	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-20 Functions	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-20 Idle Control	D	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-20 Idle Control	D	6	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-30-10 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-30-20 Thrust Levers	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-30-30 Thrust Rating Limit	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-30-40 Manual Mode	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-30-40 Automatic Mode	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
DSC-70-30-40 Thrust Control Malfunction Logic	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-35-10 General	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-35-20 General	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-35-20 EPR Mode	B	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-35-20 N1 Modes	C	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-35-20 EPR Recovery Logic	D	4	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-35-30 Thrust Levers	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-35-40 Thrust Rating Limit	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-35-50 Manual Mode	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-35-50 Automatic Mode	B	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-45 General	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-45 Fuel Pump Unit	B	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-45 Fuel Oil Heat Exchanger	C	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-45 Fuel Metering Unit	D	4	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-45 Fuel Filter	E	5	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-45 General	F	6	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-45 Two Returns to Tank Modes	F	7	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-45 Two No-Returns to Tank Modes	F	8	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-48 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-48 Integrated Fuel Pump and Control (IFPC)	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
DSC-70-48 Fuel Oil Heat Exchanger	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-48 Fuel Filter	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-48 IDG Cooling Recirculation System	E	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-50 General	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-50 General	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-65 General	A	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-65 Cooling	B	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-65 Engine Stability	C	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-65 Operation Following Failures	D	4	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-68 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-68 Cooling	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-68 Engine Stability	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-70 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-70 General	A	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-70 Protection	C	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-70 Protection	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-70 Schematic	D	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-70-80-20 Architecture	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-80-20 Architecture	A	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-80-30 Ignition for Starting	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
DSC-70-80-30 Ignition for Starting	B	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-80-30 Continuous Ignition	C	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-80-30 Continuous Ignition	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-80-40 Protection	B	1	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-80-40 Protection	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-80-40 Dry Cranking	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-80-40 Dry Cranking	B	4	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-80-40 Second Step	C	5	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-80-40 Second Step	C	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-80-40 Manual Starting	D	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-80-40 Manual Starting	D	8	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-80-40 Engine Cooling	F	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-80-40 Automatic Engine Start with Dual Cooling - Envelope	G	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
DSC-70-90-10 ENG MAN START Panel	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-10 ENG MAN START Panel	A	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-10 ENG N1 MODE Panel	B	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-10 ENG N1 MODE pb-sw	B	4	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-10 ENG DUAL COOLING Panel	C	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-10 ENG DUAL COOLING pb-sw	C	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 Engine Warning Display	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
DSC-70-90-40 Engine Warning Display	A	2	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 Thrust Rating Mode and Thrust Limit Value	A	3	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 Thrust Rating Mode and Thrust Limit Value	A	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 Thrust Limit Value	A	5	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 Thrust Limit Value	A	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 Flex Temperature	A	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 Flex Temperature	A	8	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 Bleed Air Configuration	A	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 Current EGT	A	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 Current EGT	A	11	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 EGT Limit	A	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 EGT Limit	A	13	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 EGT Red Line	A	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 EGT Red Line	A	15	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 EPR Indicator	A	16	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 Current EPR	A	17	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 EPR Trend	A	18	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 EPR Command	A	19	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 Transient EPR	A	20	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-70-90-40 Thrust Lever Position	A	21	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 EPR Limit	A	22	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 N1 Indicator	A	23	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 N1 Indicator	A	24	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 Current N1	A	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 Current N1	A	26	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 N1 Trend	A	27	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 N1 Command	A	28	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 Transient N1	A	29	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 Thrust Lever Position	A	30	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 Thrust Lever Position	A	31	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 N1 Limit	A	32	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 N1 Limit	A	33	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 N1 Red Line	A	34	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-70-90-40 N2	A	35	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-70-90-40 Cooling Indication	A	36	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 ENG SD Page	B	37	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-70-90-40 Oil Quantity	B	38	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 Oil Quantity	B	39	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
DSC-70-90-40 Oil Pressure	B	40	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 Oil Pressure	B	41	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 Oil Temperature	B	42	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 Oil Temperature	B	43	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 Oil Filter CLOG Indication	B	44	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-70-90-40 N1, N2 Vibrations	B	45	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 N1, N2 Vibrations	B	46	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-40 Starting Sequence Indication	B	47	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
DSC-70-90-40 Nacelle Temperature Indication	B	48	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-40 Nacelle Temperature Indication	B	49	Effectivity update: The information no longer applies to MSN 05449.
DSC-70-90-50 ENG 1(2) COWL	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
DSC-70-90-50 DUAL COOLING	A	2	Effectivity update: The information now also applies to MSN 09063.
DSC-70-90-50 DUAL COOLING	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.

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OVERVIEW

Ident.: DSC-70-05-10-00018242.0007001 / 21 MAR 16

1 **Applicable to: MSN 06720-09063**

The aircraft has two Pratt & Whitney's PurePower PW1100G-JM engines that supply power to the aircraft.

Ident.: DSC-70-05-10-00018242.0004001 / 21 MAR 16

2 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

The aircraft has two International Aero Engines V2500-A5 engines that supply power to the aircraft.

Ident.: DSC-70-05-10-00018242.0002001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

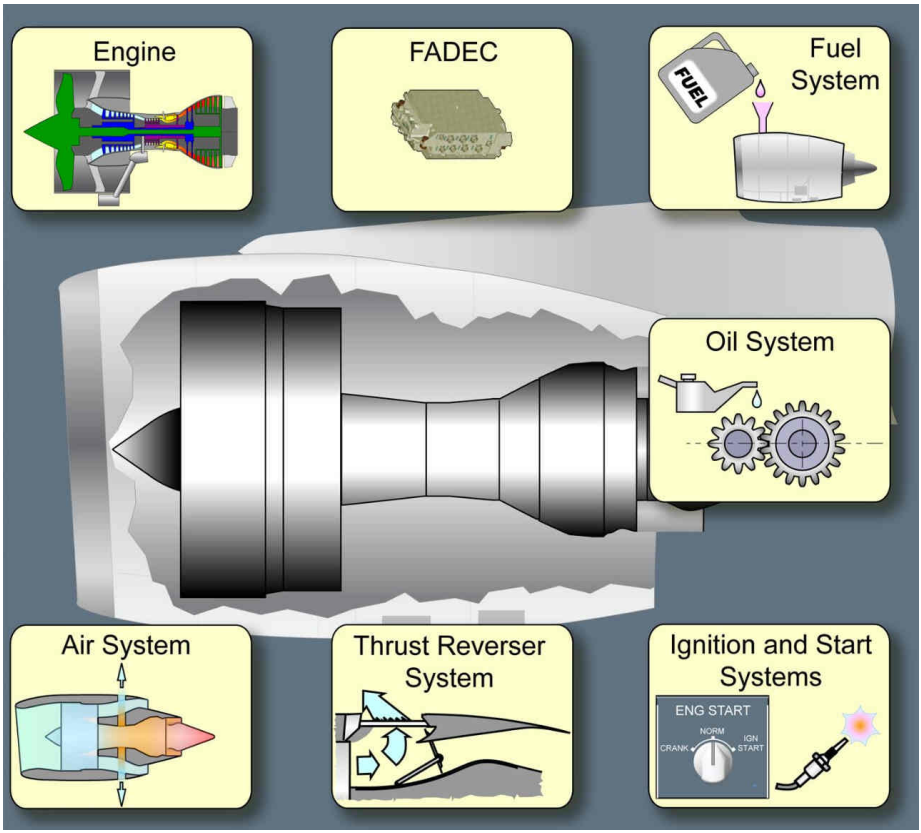
The aircraft has two CFM International CFM56-5B engines that supply power to the aircraft.

Ident.: DSC-70-05-10-00018265.0001001 / 21 MAR 16
Applicable to: ALL

The engines are turbofan engines that have:

- A high bypass ratio,
- A Full Authority Digital Engine Control (FADEC),
- A fuel system,
- An oil system,
- An air system,
- A thrust reverser system,
- An ignition system and a start system.

Overview


Engine
FADEC
Fuel System
FUEL
Oil System
Air System
Thrust Reverser System
Ignition and Start Systems
ENG START
NORM
CRANK
IGN START

ENGINE

Ident.: DSC-70-10-00018361.0001001 / 21 MAR 16
Applicable to: ALL

The engine has:

- Two compressor turbine assemblies:
  - The Low Pressure (LP) compressor turbine assembly,
  - The High Pressure (HP) compressor turbine assembly.

L2 Each turbine operates its associated compressor via a shaft.

L1 - One accessory gearbox,
- One combustion chamber.

The engine operates as follows:

1. The LP compressor, compresses the air.
2. Then, the air is divided into two flows:
   - Most of the air flows out of the core engine, and provides most of the engine thrust.
   - The remaining air enters the core engine.
3. The HP compressor compresses the air that enters the core engine.
4. The fuel is added to and mixed with the compressed air of the core engine. The mixture is ignited in the combustion chamber.
5. The gas that results from combustion drives the HP and the LP turbines.

The rotation speed of the fan provides the N1 engine parameter.
The rotation speed of the HP rotor provides the N2 engine parameter.
The N1 and N2 engine parameters appear on the Engine/Warning Display (E/WD).

L2 The N1 and N2 engine parameters are current rotation speeds displayed in percentage.

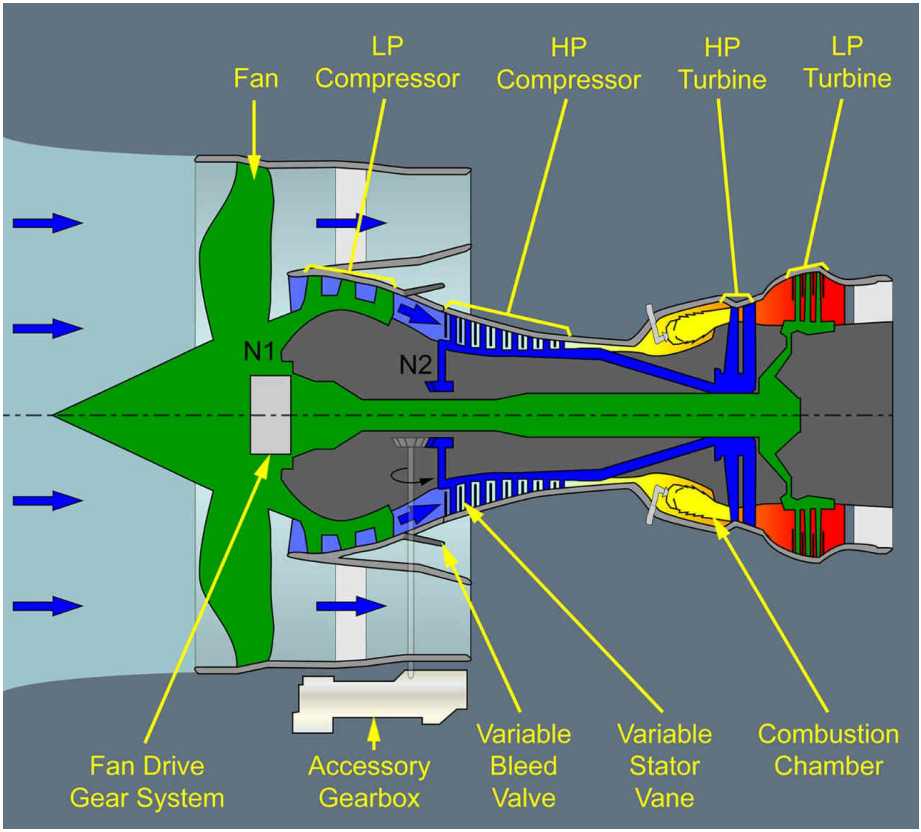
L1 The FADEC uses:

- The N1 engine parameter to compute the applicable engine thrust,
- The N1 and N2 engine parameters for engine control and monitoring.

ENGINE

Ident.: DSC-70-10-00018362.0007001 / 21 MAR 16

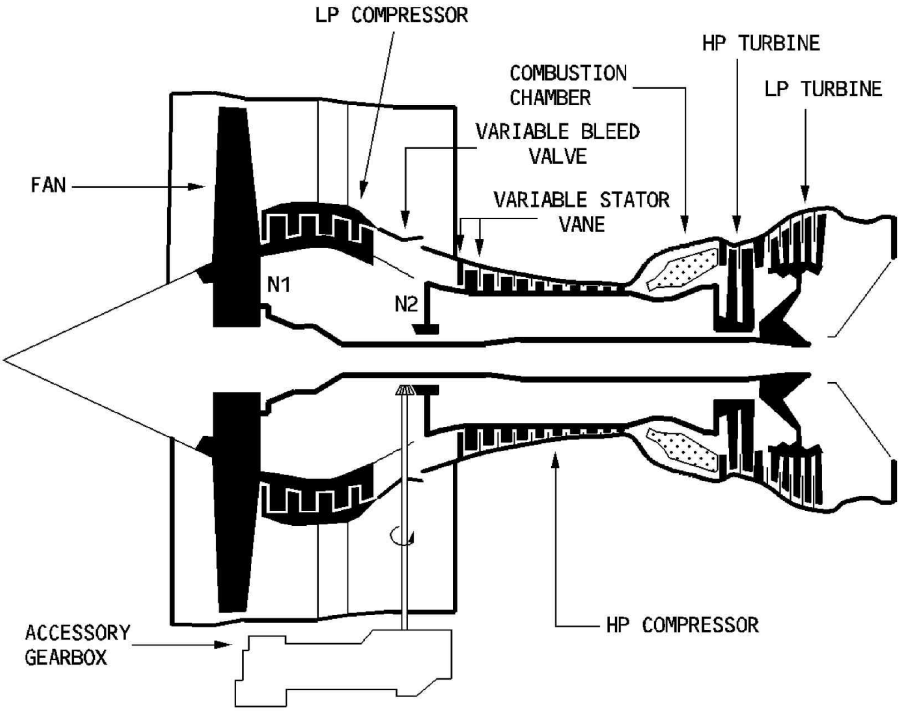
1 **Applicable to: MSN 06720-09063**



ENGINE

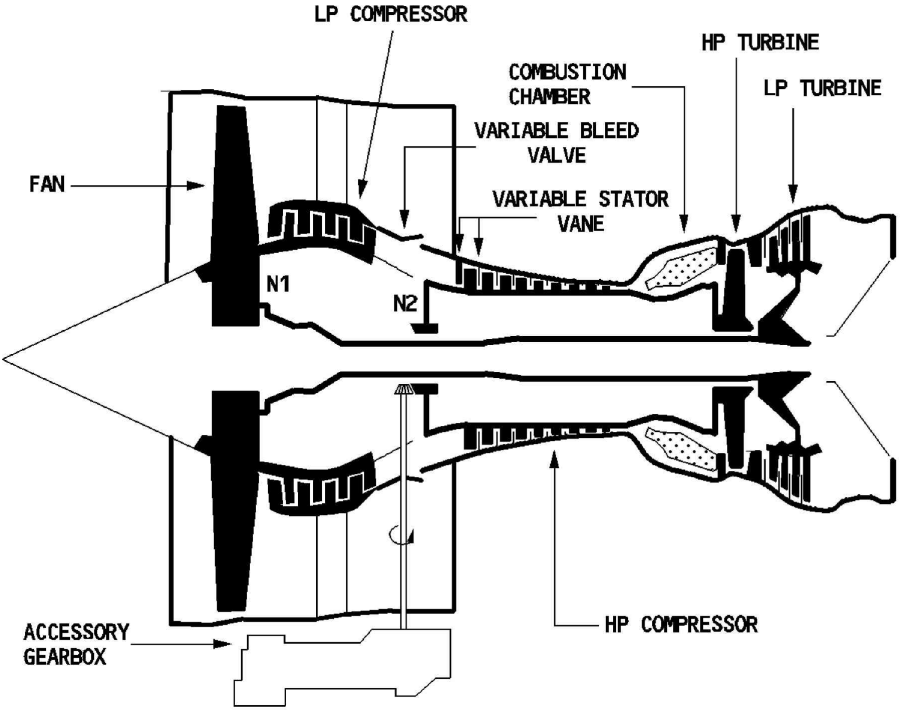
Ident.: DSC-70-10-00018362.0004001 / 21 MAR 16

[2] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**



ENGINE

Ident.: DSC-70-10-00018362.0002001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510



LP COMPRESSOR TURBINE ASSEMBLY

Ident.: DSC-70-10-00018289.0007001 / 21 MAR 16
3 **Applicable to: MSN 06720-09063**

LP COMPRESSOR TURBINE ASSEMBLY

The LP compressor turbine assembly has:

- One LP compressor,
L2 - One Fan Drive Gear System (FDGS),
- One LP shaft,
L1 - One LP turbine.

L2 The FDGS is a planetary gear reduction unit that connects the LP shaft to the LP compressor.

The LP shaft connects the LP compressor to the LP turbine.

L3 The LP compressor has a fan and 3 stages, and the LP turbine has 3 stages.

LP COMPRESSOR TURBINE ASSEMBLY

Ident.: DSC-70-10-00018289.0004001 / 21 MAR 16

4 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

LP COMPRESSOR TURBINE ASSEMBLY

The LP compressor turbine assembly has:

- One LP compressor,

L2 - One LP shaft,

L1 - One LP turbine.

L2 The LP shaft connects the LP compressor to the LP turbine.

L3 The LP compressor has a fan and 4 stages, and the LP turbine has 5 stages.

LP COMPRESSOR TURBINE ASSEMBLY

Ident.: DSC-70-10-00018289.0002001 / 21 MAR 16

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

LP COMPRESSOR TURBINE ASSEMBLY

The LP compressor turbine assembly has:

- One LP compressor,

L2 - One LP shaft,

L1 - One LP turbine.

L2 The LP shaft connects the LP compressor to the LP turbine.

L3 The LP compressor has a fan and 4 stages, and the LP turbine has 4 stages.

HP COMPRESSOR TURBINE ASSEMBLY

Ident.: DSC-70-10-00018290.0007001 / 09 JAN 18

5 **Applicable to: MSN 06720-09063**

HP COMPRESSOR TURBINE ASSEMBLY

The HP compressor turbine assembly has:

- One HP compressor,

L2 - One HP shaft,

L1 - One HP turbine.

L2 The HP shaft connects the HP compressor to the HP turbine.

L3 The HP compressor has 8 stages, and the HP turbine has 2 stages.

HP COMPRESSOR TURBINE ASSEMBLY

Ident.: DSC-70-10-00018290.0003001 / 21 MAR 16

6 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

HP COMPRESSOR TURBINE ASSEMBLY

The HP compressor turbine assembly has:
- One HP compressor,
- L2 One HP shaft,
- L1 One HP turbine.

L2 The HP shaft connects the HP compressor to the HP turbine.
L3 The HP compressor has 10 stages, and the HP turbine has 2 stages.

HP COMPRESSOR TURBINE ASSEMBLY

Ident.: DSC-70-10-00018290.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

HP COMPRESSOR TURBINE ASSEMBLY

The HP compressor turbine assembly has:
- One HP compressor,
- L2 One HP shaft,
- L1 One HP turbine.

L2 The HP shaft connects the HP compressor to the HP turbine.
L3 The HP compressor has 9 stages, and the HP turbine has a single stage.

COMBUSTION CHAMBER

Ident.: DSC-70-10-00018292.0001001 / 21 MAR 16
Applicable to: ALL

COMBUSTION CHAMBER

The combustion chamber burns a mixture of fuel and HP air. The FADEC controls the fuel/air mixture in accordance with the position of the thrust lever and the aircraft operating conditions.
L3 The combustion chamber is an annular assembly with fuel nozzles and two igniters.
The combustion chamber is between the HP compressor and the HP turbine.

ACCESSORY GEARBOX

Ident.: DSC-70-10-00018364.0001001 / 21 MAR 16
Applicable to: ALL

ACCESSORY GEARBOX

The accessory gearbox drives various accessories with mechanical power via the HP shaft for the operation of the engine and the aircraft systems.

L2 The accessory gearbox of each engine operates:

- The oil feed pump that provides the oil system with oil.
- The main engine fuel pump that provides the combustion chamber with fuel.
- The engine-driven hydraulic pumps that pressurize the GREEN and the YELLOW hydraulic systems.
- The engine-driven generators that are the primary source of electrical power.
- The FADEC alternator that provides the FADEC with electrical power.
- The pneumatic starter that enables the engine start.

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GENERAL

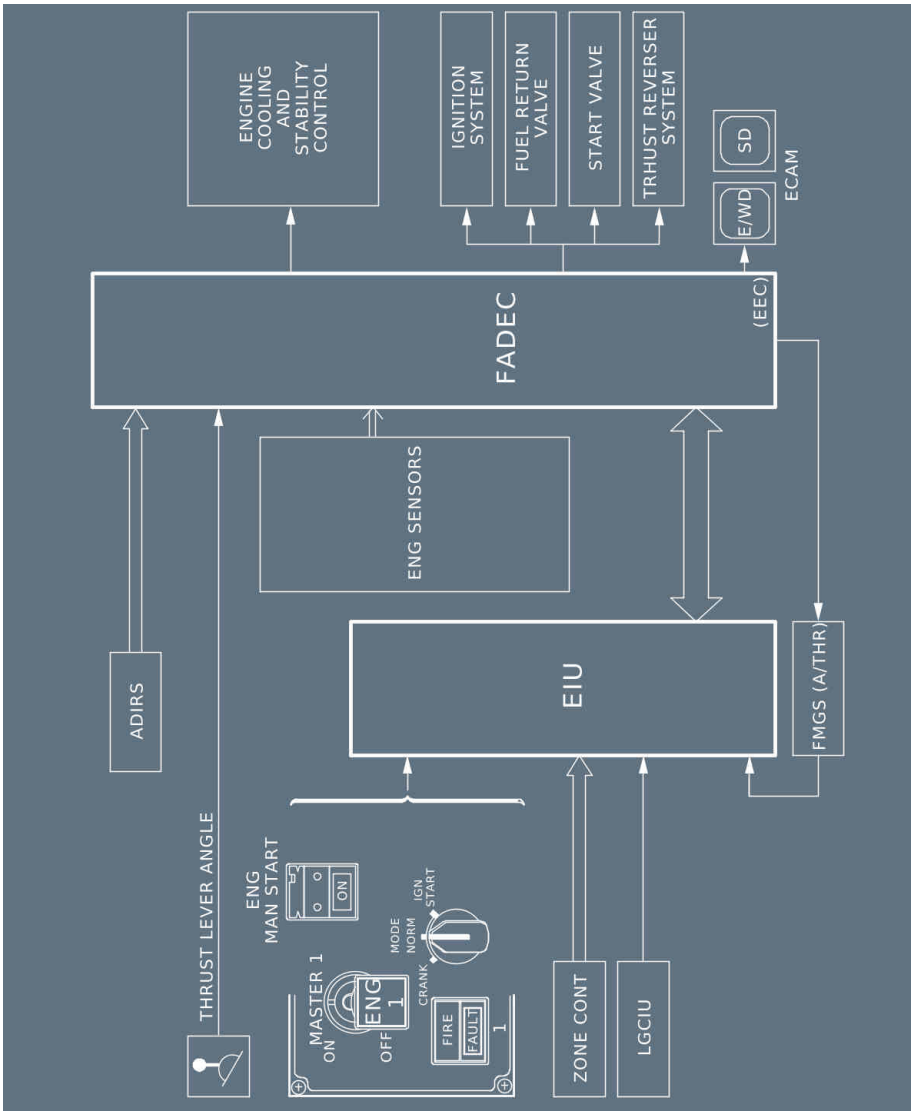
Ident.: DSC-70-20-00020869.0001001 / 17 MAR 17
Applicable to: ALL

Each powerplant has a FADEC (Full Authority Digital Engine Control) system.
FADEC is a digital control system that performs complete engine management.
FADEC has two-channel redundancy, with one channel active and one in standby.
If one channel fails, the other automatically takes control.
The system has a magnetic alternator for an internal power source.
FADEC is mounted on the fan case.
The Engine Interface Unit (EIU) transmits to FADEC the data it uses for engine management.

ARCHITECTURE

Ident.: DSC-70-20-00001566.0002001 / 21 MAR 16

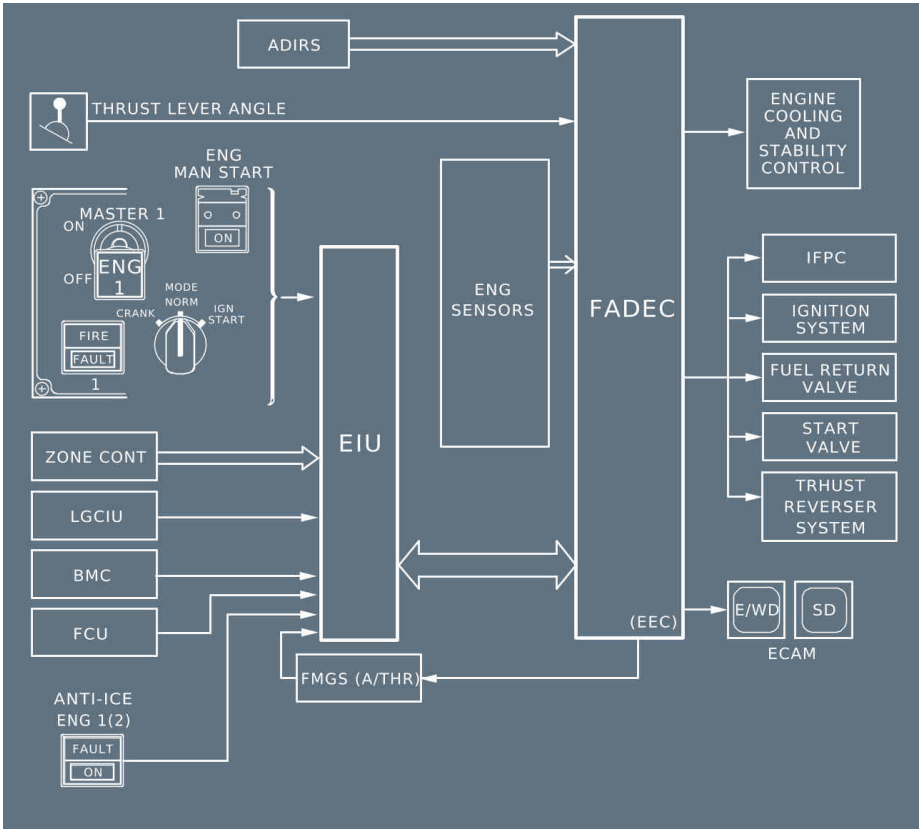
Applicable to: MSN 01957-02359, 02405, 02482



ARCHITECTURE

Ident.: DSC-70-20-00001566.0014001 / 25 FEB 14

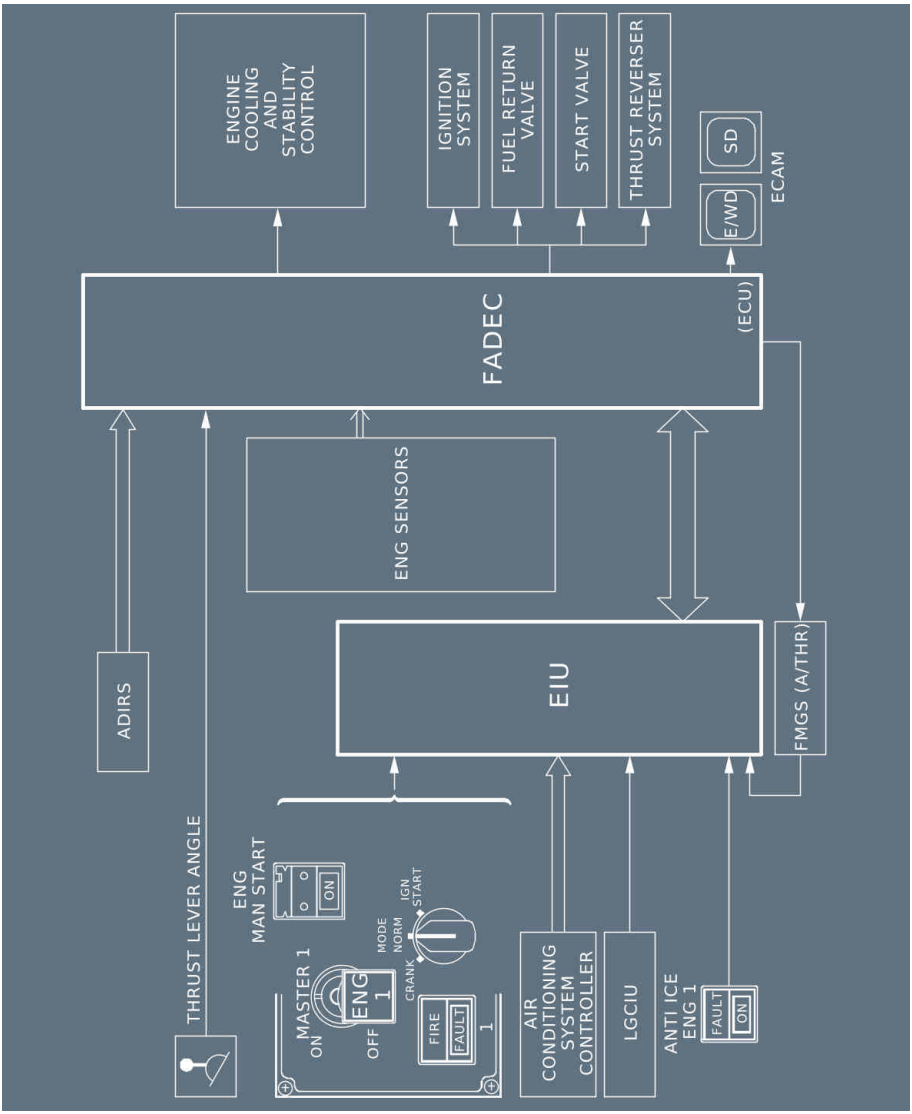
[1] **Applicable to: MSN 06720-09063**



ARCHITECTURE

Ident.: DSC-70-20-00001566.0005001 / 21 MAR 16

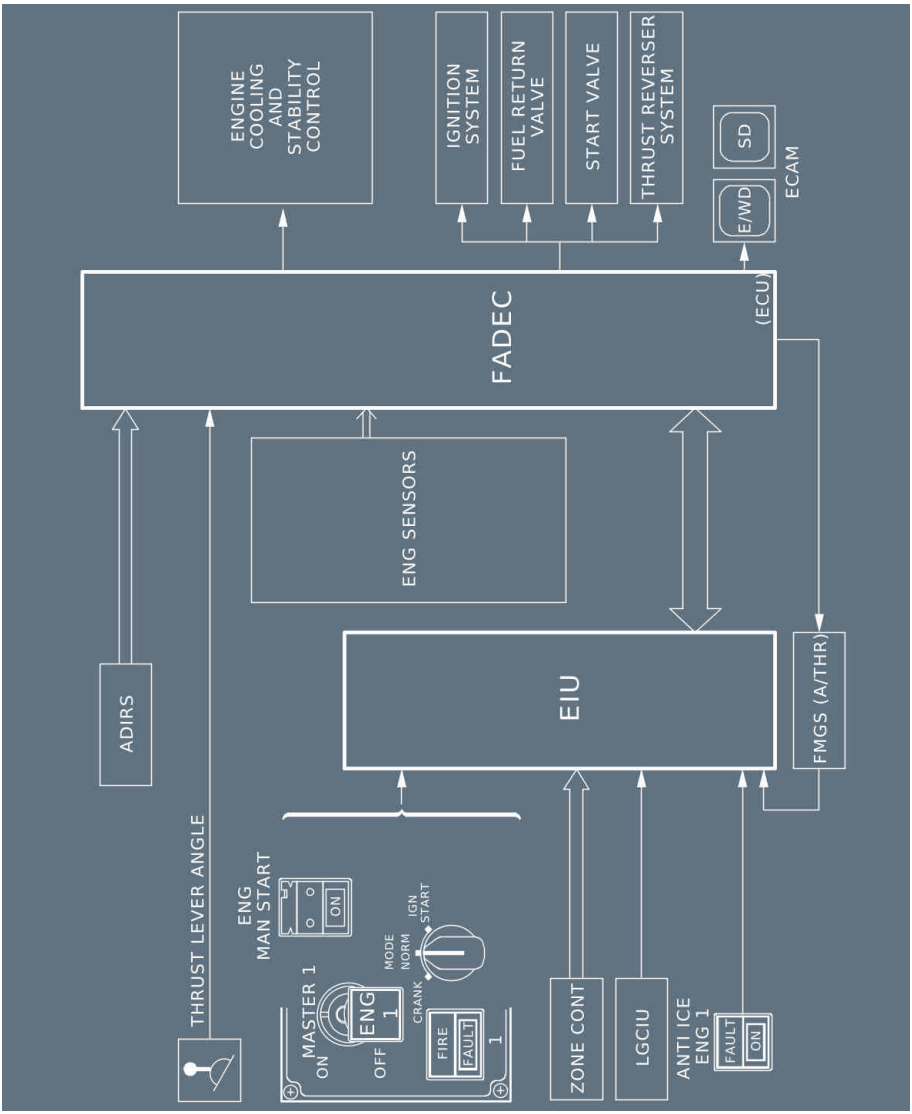
Applicable to: MSN 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510



ARCHITECTURE

Ident.: DSC-70-20-00001566.0004001 / 21 MAR 16

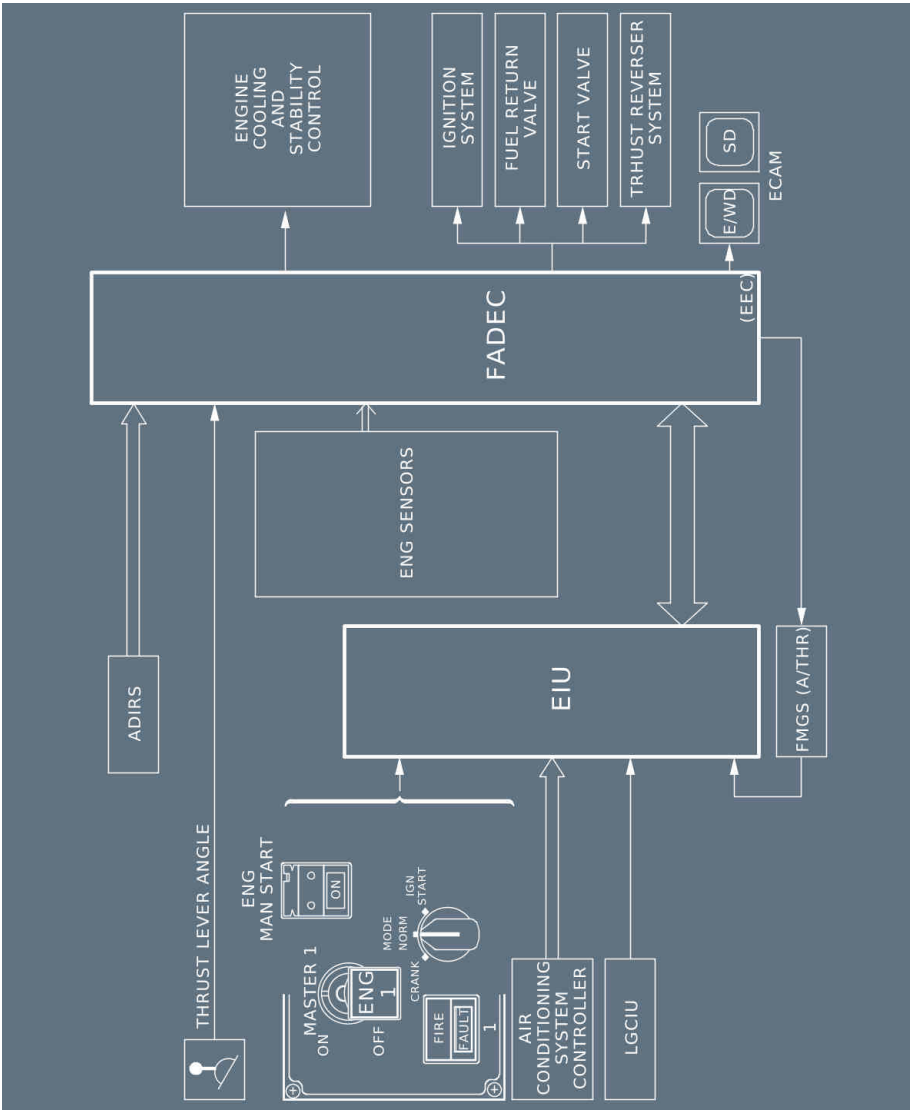
Applicable to: MSN 01767-01920, 02388



ARCHITECTURE

Ident.: DSC-70-20-00001566.0006001 / 21 MAR 16

2 **Applicable to: MSN 02443-02457, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**



FUNCTIONS

Ident.: DSC-70-20-00001567.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The FADEC system performs the following functions :

Control of gas generator

- control of fuel flow
- acceleration and deceleration schedules
- variable bleed valve and variable stator vane schedules
- control of turbine clearance
- idle setting

Protection against engine exceeding limits

- protection against N1 and N2 overspeed
- monitoring of EGT during engine start

Power management

- automatic control of engine thrust rating
- computation of thrust parameter limits
- manual management of power as a function of thrust lever position
- automatic management of power (A/THR demand).

Automatic engine starting sequence

- control of :
  - the start valve (ON/OFF)
  - the HP fuel valve
  - the fuel flow
  - the ignition (ON/OFF)
- monitoring of N1, N2, FF and EGT
- initiation of abort and recycle (on the ground only)

Manual engine starting sequence

- passive monitoring of engine
- control of :
  - the start valve
  - the HP fuel valve
  - the ignition

Thrust reverser control

- Actuation of the blocker doors
- Engine setting during reverser operation

Fuel recirculation control

- Recirculation of fuel to the fuel tanks, depending on the engine oil temperature, the fuel system configuration, and the flight phase.

Transmission of engine parameters and engine monitoring information to cockpit indicators

- Primary engine parameters
- Starting system status
- Thrust reverser system status
- FADEC system status

Detection, isolation, and recording of failures

FADEC cooling

FUNCTIONS

Ident.: DSC-70-20-00001567.0003001 / 21 MAR 16

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

The FADEC system performs the following functions :

Control of gas generator

- control of fuel flow
- acceleration and deceleration schedules
- variable bleed valve and variable stator vane schedules
- control of turbine clearance
- idle setting

Protection against engine exceeding limits

- protection against N1 and N2 overspeed
- monitoring of EGT during engine start

Power management

- automatic control of engine thrust rating
- computation of thrust parameter limits
- manual management of power as a function of thrust lever position
- automatic management of power (A/THR demand).

Automatic engine starting sequence

- control of:
  - the start valve (ON/OFF)
  - the HP fuel valve
  - the fuel flow
  - the ignition (ON/OFF)
- monitoring of N1, N2, FF and EGT
- initiation of abort and recycle (on the ground only)

Manual engine starting sequence

- passive monitoring of engine
- control of:
  - the start valve
  - the HP fuel valve
  - the ignition

Thrust reverser control

- Actuation of the blocker doors
- Engine setting during reverser operation

Fuel recirculation control

- Recirculation of fuel to the fuel tanks, depending on the engine oil temperature, the fuel system configuration, and the flight phase.

Transmission of engine parameters and engine monitoring information to cockpit indicators:

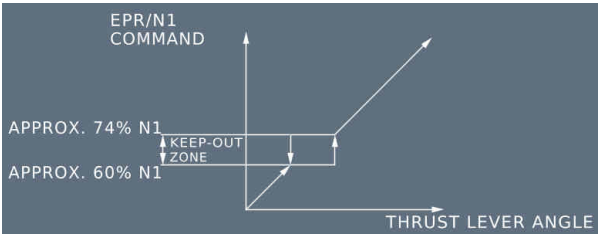
- Primary engine parameters
- Starting system status
- Thrust reverser system status
- FADEC system status

Detection, isolation, and recording of failures

FADEC cooling

Protection against fan flutter

- When on ground at low speed (less than or equal to M 0.1), the Electronic Engine Computer (EEC) protects against fan flutter. In so doing, the EEC prevents the engine from being stabilized between an approximate range of 60 % to 74 % N1 (depending on the outside air temperature). Therefore, during engine acceleration on ground, the pilot may notice a non-linear thrust response to thrust lever movement.



FUNCTIONS

Ident.: DSC-70-20-00001567.0004001 / 16 NOV 15

4 **Applicable to: MSN 06720-09063**

The FADEC system performs the following functions :

Control of gas generator

- Control of fuel and oil flow
- Acceleration and deceleration schedules
- Variable bleed valve and variable stator vane schedules
- Control of turbine clearance
- Idle setting

Protection against engine exceeding limits

- Protection against N1 and N2 overspeed
- Protection against EGT overlimit, during autostart on ground only

Power management

- Automatic control of engine thrust rating
- Computation of thrust parameter limits
- Manual management of power as a function of thrust lever position
- Automatic management of power (A/THR demand)

Automatic engine starting sequence

- Control of :
  - The start valve (ON/OFF)
  - The HP fuel valve
  - The fuel flow
  - The ignition (ON/OFF)
- Monitoring of N1, N2, FF and EGT
- Initiation of abort and recycle (on the ground only)

Manual engine starting sequence

- Passive monitoring of engine
- Actuation of:
  - The start valve
  - The HP fuel valve
  - The ignition

Thrust reverser control

- Actuation of the blocker doors
- Engine setting during reverser operation

Fuel recirculation control

- Recirculation of fuel to the fuel tanks, depending on the engine oil temperature, the fuel system configuration, and the flight phase

Transmission of engine parameters and engine monitoring information to cockpit indicators

- Primary and secondary engine parameters
- Starting system status
- Thrust reverser system status
- Vibration monitoring
- FADEC system status

Detection, isolation, and recording of failures

FADEC cooling

Protection against engine stall

Protection against Thrust Control Malfunction

IDLE CONTROL

Ident.: DSC-70-20-00015374.0002001 / 03 DEC 15

5 **Applicable to: MSN 06720-09063**

The FADEC has the following three idle modes :

Minimum idle

- Is regulated according to :
  - bleed system demand
  - ambient conditions
- Is selected :
  - In flight, when the landing gear is retracted and not in CONF 3 or FULL.
  - On ground, provided reverse is not selected.

Approach idle

- Is regulated according to aircraft altitude, the bleed system demand, and ambient conditions.
- Is selected in flight, in CONF 3 or FULL, or when the landing gear is down.
- Allows the engine to accelerate rapidly from idle to go-around thrust.

Reverse idle

- Is selected on ground, when the thrust lever is in REV IDLE position.
- Is slightly higher than forward idle thrust.

IDLE CONTROL

Ident.: DSC-70-20-00015374.0001001 / 17 NOV 14

6 **Applicable to: MSN 01767-06336**

The FADEC has the following three idle modes :

Modulated idle

- Is regulated according to :
  - bleed system demand
  - ambient conditions
- Is selected :
  - In flight, when the flaps are retracted (FLAPS lever at zero position)
  - On ground, provided reverse is not selected.

Approach idle

- Is regulated according to aircraft altitude, regardless of bleed system demand.
- Is selected in flight, when the flaps are extended (FLAPS lever not at zero position)
- Allows the engine to accelerate rapidly from idle to go-around thrust.

Reverse idle

- Is selected on ground, when the thrust lever is in REV IDLE position.
- Is slightly higher than forward idle thrust.

GENERAL

Ident.: DSC-70-30-10-00020872.0002001 / 17 MAR 17

[1] **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

A FADEC dedicated to each engine controls the thrust.
The pilot uses the thrust levers to set the thrust in manual mode, and the FMGS sets the thrust in automatic mode (A/THR function).
The FADEC prevents the thrust from exceeding the limit for the thrust lever position in both manual and automatic modes.

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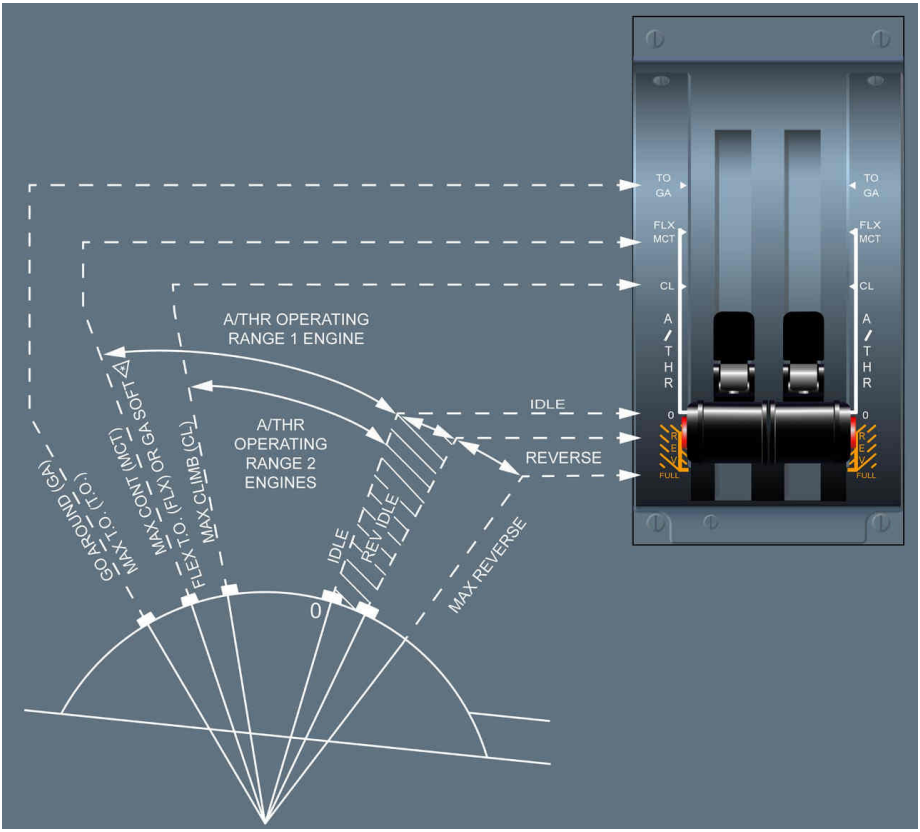
THRUST LEVERS

Ident.: DSC-70-30-20-00020873.0002001 / 04 DEC 17

[1] **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**



The thrust levers are only manually moved.
The thrust levers move over a sector divided into four operating segments.
The sector has five positions defined by detents or stops.
The Full Authority Digital Engine Control (FADEC) receives the thrust lever position, then computes and displays all of the following:

- The thrust rating limit
- The N1 for the Thrust Lever Angle (TLA).

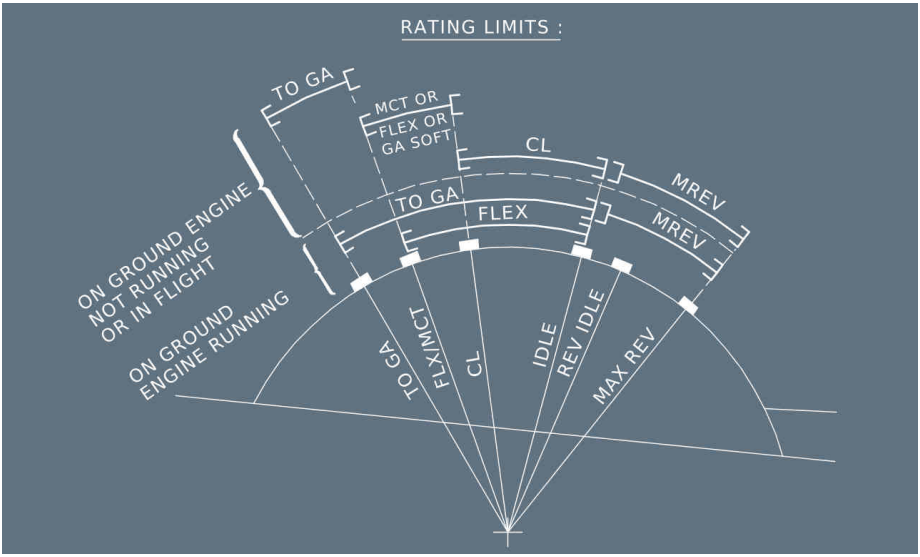
Note: *There is no detent for reverse idle. To select reverse idle, the flight crew pulls up the reverse lever. The thrust lever can no longer remain in the idle position.*

THRUST RATING LIMIT

Ident.: DSC-70-30-30-00001571.0002001 / 04 DEC 17

[1] **Applicable to: MSN 06720-09063**

The FADEC computes the thrust rating limit for each thrust lever position, as shown below.
If the thrust lever is set in a detent, the FADEC selects the rating limit corresponding to this detent.
If the thrust lever is set between two detents, the FADEC selects the rating limit corresponding to the higher detent.

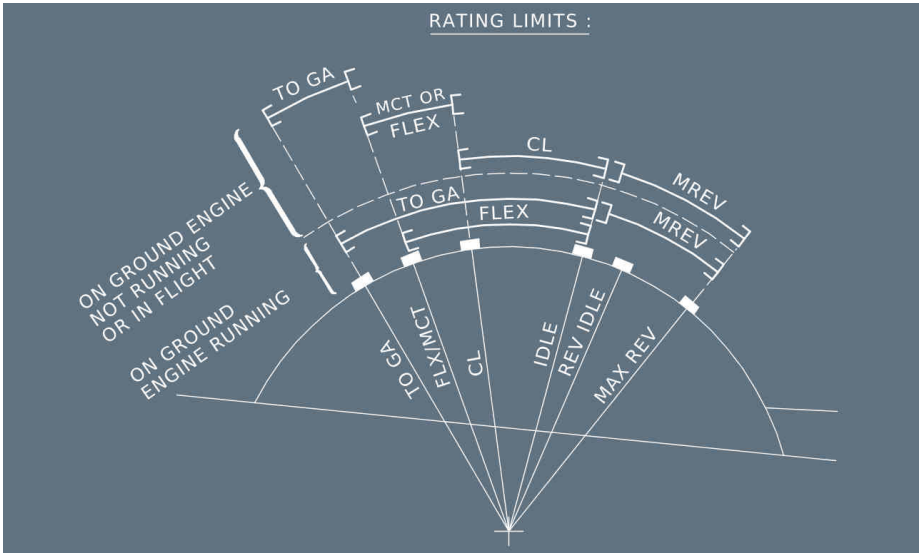


THRUST RATING LIMIT

Ident.: DSC-70-30-30-00001571.0001001 / 21 MAR 16

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The FADEC computes the thrust rating limit for each thrust lever position, as shown below.
If the thrust lever is set in a detent, the FADEC selects the rating limit corresponding to this detent.
If the thrust lever is set between two detents, the FADEC selects the rating limit corresponding to the higher detent.


RATING LIMITS :
TO GA
MCT OR
FLEX
CL
MREV
TO GA
FLEX
MREV
ON GROUND ENGINE
NOT RUNNING
OR IN FLIGHT
ON GROUND
ENGINE RUNNING
TO GA
FLX/MCT
CL
IDLE
REV IDLE
MAX REV

MANUAL MODE

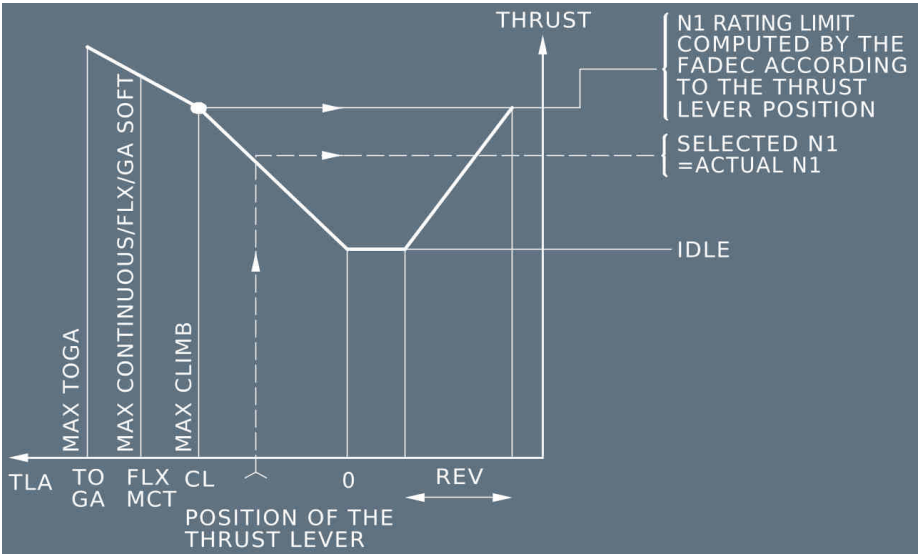
Ident.: DSC-70-30-40-00001572.0002001 / 04 DEC 17

[1] **Applicable to: MSN 06720-09063**

The engines are in the manual mode provided the A/THR function is:

- not armed or
- armed and not active (thrust lever not in the A/THR operating range and no alpha floor).

In these conditions, each engine is controlled by the position of its thrust lever.
The pilot controls thrust by moving the thrust lever between the IDLE and TOGA positions. Each position of the thrust lever within these limits corresponds to an N1.
When the thrust lever is in a detent, the corresponding N1 is equal to the N1 rating limit computed by the FADEC for that engine.



When the thrust lever is in the FLX/MCT detent:

- **On the ground**
  The engine runs at the flex takeoff thrust rating if the crew has selected a flex takeoff temperature on the MCDU that is higher than the current Total Air Temperature (TAT).
  Otherwise the engine produces Maximum Continuous Thrust (MCT).
- **After takeoff**
  The pilot can change from FLX to MCT by moving the thrust lever to TOGA or CL, then back to MCT. After that, he cannot use the FLX rating.

  Note: *Setting the thrust lever out of FLX/MCT detent without reaching TOGA or CL detent has no effect.*

The pilot can always get MAX TO thrust by setting the thrust levers to TOGA.
In go-around, the A/THR controls the thrust in accordance with the following thrust lever position:

- At the TOGA detent, the thrust target is the TOGA thrust
- At the FLX/MCT detent, when TOGA was previously set in the case of soft go-around, the thrust target is one of the following:
  - The thrust to target a vertical speed of approximately 2 000 ft/min, or
  - The maximum thrust (TOGA) if the 2 000 ft/min target cannot be reached.

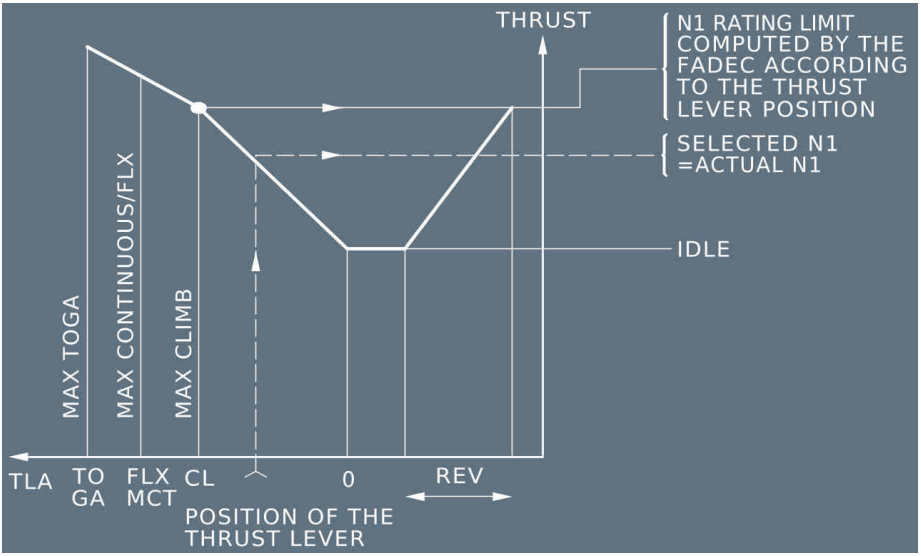
MANUAL MODE

Ident.: DSC-70-30-40-00001572.0001001 / 17 NOV 14
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The engines are in the manual mode provided the A/THR function is:

- not armed or
- armed and not active (thrust lever not in the A/THR operating range and no alpha floor).

In these conditions, each engine is controlled by the position of its thrust lever.
The pilot controls thrust by moving the thrust lever between the IDLE and TOGA positions. Each position of the thrust lever within these limits corresponds to an N1.
When the thrust lever is in a detent, the corresponding N1 is equal to the N1 rating limit computed by the FADEC for that engine.



When the thrust lever is in the FLX/MCT detent:

- **On the ground**
  The engine runs at the flex takeoff thrust rating if the crew has selected a flex takeoff temperature on the MCDU that is higher than the current Total Air Temperature (TAT).
  Otherwise the engine produces Maximum Continuous Thrust (MCT).
- **After takeoff**
  The pilot can change from FLX to MCT by moving the thrust lever to TOGA or CL, then back to MCT. After that, he cannot use the FLX rating.

  Note: Setting the thrust lever out of FLX/MCT detent without reaching TOGA or CL detent has no effect.

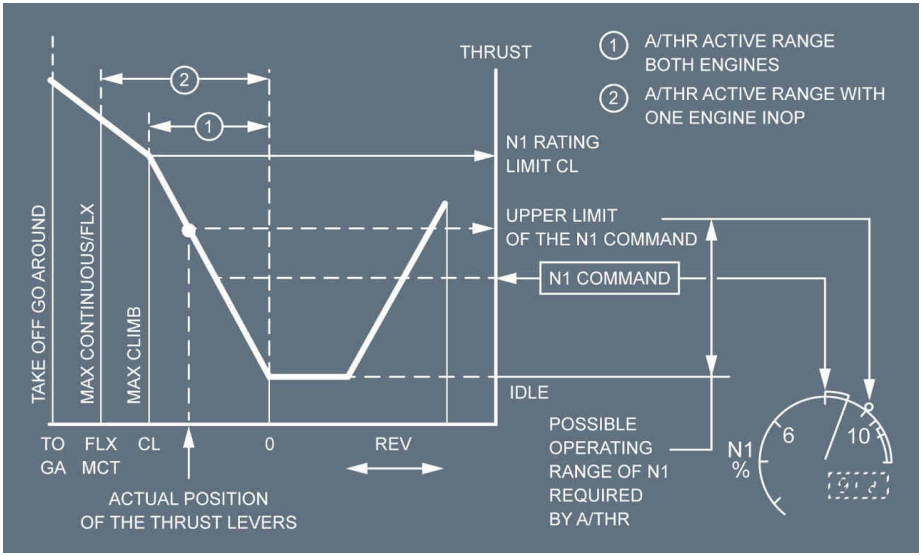
The pilot can always get MAX TO thrust by setting the thrust levers to TOGA.

AUTOMATIC MODE

Ident.: DSC-70-30-40-00020874.0003001 / 17 MAR 17

2 **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

In the autothrust mode (A/THR function active), the FMGC computes the thrust which is limited to the value corresponding to the thrust lever position (unless the alpha-floor mode is activated).



INDICATIONS ON FMA

The FADECs monitor the positions of the thrust levers, and trigger appropriate indications on the FMA. *Refer to DSC-22_30-100 Autothrust Annunciations (FMA Column 1) - Third Line.*

THRUST CONTROL MALFUNCTION LOGIC

Ident.: DSC-70-30-40-00005364.0003001 / 16 NOV 15

3 **Applicable to: MSN 06720-09063**

The FADEC provides a protection in the case of uncontrollable high thrust during critical flight phases: the Thrust Control Malfunction (TCM) protection.
The TCM protection is active on ground and during the takeoff and the approach phases.

TCM protection logic enables the following:
- Detection of the Thrust Control Malfunction
- Reaction to the detected Thrust Control Malfunction

A Thrust Control Malfunction is detected either:
- When actual N1 exceeds the commanded N1 value increased by 3 %, or
- When actual N1 exceeds the maximum possible N1 value for takeoff.

When a Thrust Control Malfunction is detected, the TCM protection function performs the following:

- Shuts down the engine on ground if thrust levers are at idle or in reverse position, or
- Reduces the fuel flow during flare and approach phases.

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GENERAL

Ident.: DSC-70-35-10-00020875.0001001 / 17 MAR 17

[1] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

A FADEC dedicated to each engine controls the thrust.
The pilot uses the thrust levers to set the thrust in manual mode, and the FMGS sets the thrust in automatic mode (A/THR).
The FADEC prevents the thrust from exceeding the limit for the thrust lever position in both manual and automatic modes.
The engine thrust setting is made through control of the Engine Pressure Ratio (EPR).

EPR = Low Pressure Turbine exhaust pressure (P5)/Engine inlet pressure (P2)

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GENERAL

Ident.: DSC-70-35-20-00001576.0001001 / 21 MAR 16

[1] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

The FADEC has two mode of power setting, EPR and N1 modes.

EPR MODE

Ident.: DSC-70-35-20-00020876.0001001 / 17 MAR 17

[2] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

EPR mode is the normal mode to control the thrust.
The required EPR is set by controlling the fuel flow.

The FADEC computes the command EPR as a function of:
- Thrust Lever Angle (TLA)
- Altitude
- Mach number
- Ambient temperature
- Air inlet total temperature (T2)
- Extracted bleed air.

N1 MODES

Ident.: DSC-70-35-20-00020877.0001001 / 17 MAR 17

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

If no EPR is available (either sensed or computed) the affected FADEC will automatically revert to N1 mode.
Depending on the failure case leading to EPR mode loss, the FADEC will revert to either rated or degraded mode.
At the reversion to N1 mode (rated or degraded) an equivalent thrust to that achieved in EPR mode is provided until a thrust lever position change.
Autothrust control is lost. Alpha-floor protection is lost.

RATED N1 MODE

An automatic reversion to rated N1 mode occurs in the event of loss of sensed EPR. This occurs when P2 (engine inlet total pressure) and/or P5 (LP turbine exit total pressure) engine parameters are not available.
The FADEC will determine N1 power setting as a function of TLA, altitude and engine inlet total temperature.

The rated N1 mode can also be manually selected through the ENG N1 MODE pb-sw on the overhead panel.

DEGRADED N1 MODE

An automatic reversion to degraded N1 mode occurs in the event of loss of computed EPR due to the loss of T2 (engine inlet total air temperature) or ambient pressure (ambient pressure engine sensor) engine parameters.
The N1 is defined as a function of TLA only and is limited by the FADEC to either the smaller of maximum N1 or N1 redline (if T2 is available) or N1 redline (if T2 is not available).
The N1 DEGRADED MODE is an unrated N1 mode.
The N1 rating limit, N1 TLA and maximum N1 indications on ECAM E/WD are lost.
In electrical emergency configuration, the EPR mode is lost on both engines, and each FADEC reverts to an degraded N1 mode.

Note: *An overboost can occur during reversion in the degraded N1 mode, with thrust lever at full forward position.*

EPR RECOVERY LOGIC

Ident.: DSC-70-35-20-00001579.0001001 / 03 APR 13

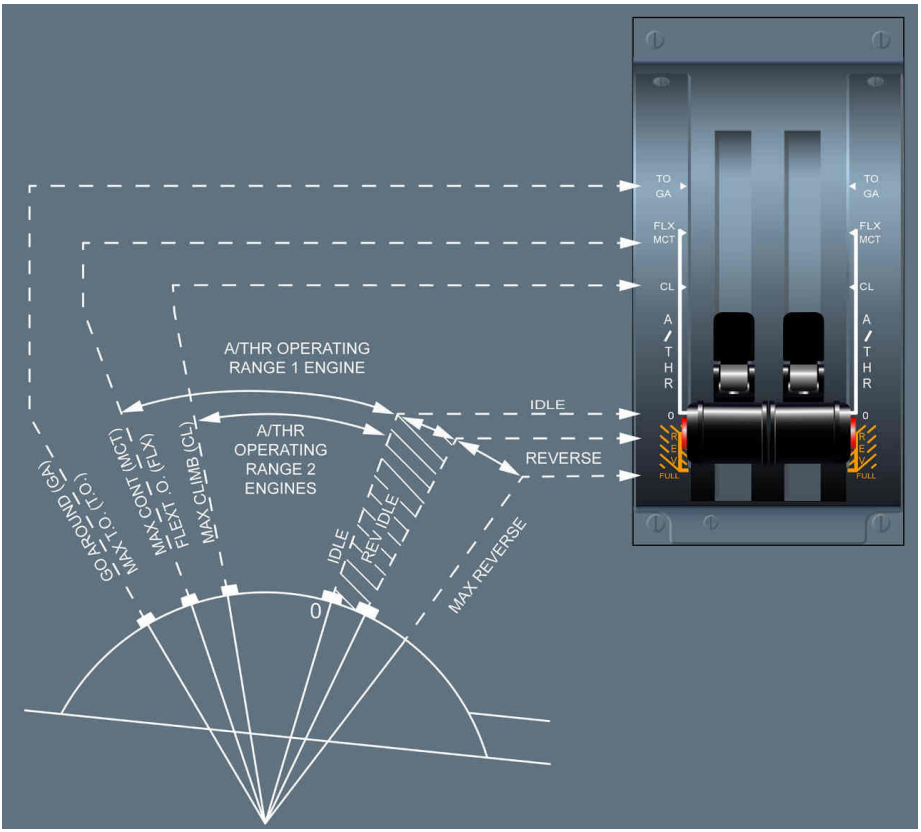
4 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

With the FADEC in either rated or degraded N1 mode, switching OFF the ENG N1 MODE pb on the overhead panel will permit to return to the EPR mode if the failure has disappeared.

THRUST LEVERS

Ident.: DSC-70-35-30-00020878.0002001 / 17 MAR 17

[1] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**



The thrust levers can only be moved manually.
They move over a sector that is divided into four operating segments.
The sector has five positions defined by detents or stops.
Thrust lever position is transmitted to the FADEC, which computes and displays the thrust rating limit and the N1 for that Thrust Lever Angle (TLA).

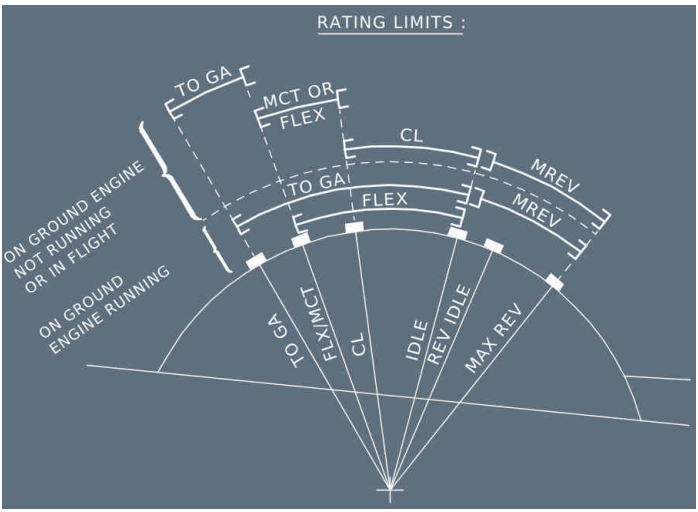
Note: *There is no reverse idle detent. When the pilot moves the lever out of the idle stop by pulling up the reverse lever on the front of the thrust lever, he/she selects reverse idle.*

THRUST RATING LIMIT

Ident.: DSC-70-35-40-00001581.0001001 / 21 MAR 16

[1] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

The FADEC computes the thrust rating limit for each thrust lever position, as shown below.
If the thrust lever is set in a detent, the FADEC selects the rating limit corresponding to this detent.
If the thrust lever is set between two detents, the FADEC selects the rating limit corresponding to the higher detent.



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MANUAL MODE

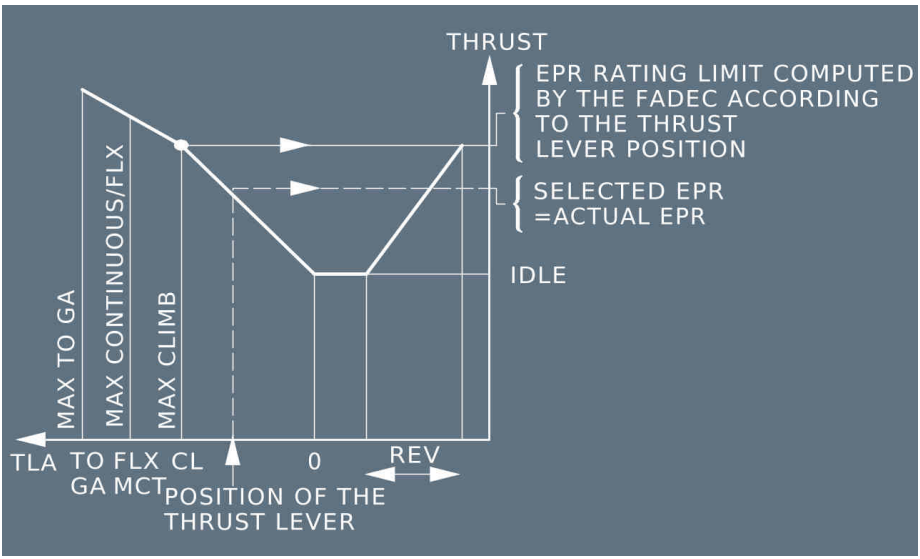
Ident.: DSC-70-35-50-00001582.0001001 / 22 MAR 16

[1] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

The engines are in the manual mode provided the A/THR function is :

- not armed or
- armed and not active (thrust lever not in the A/THR operating range and no alpha floor).

In these conditions, each engine is controlled by the position of its thrust lever.
The pilot controls thrust by moving the thrust lever between IDLE and TOGA positions. Each position of the thrust lever within these limits corresponds to an EPR.
When the thrust lever is in a detent, the corresponding EPR is equal to the EPR rating limit computed by the FADEC for that engine.



When the thrust lever is in the FLX/MCT detent :

- **On the ground**
  The engine runs at the flex takeoff thrust rating if the crew has selected a flex takeoff temperature on the MCDU that is higher than the current Total Air Temperature (TAT).
  Otherwise the engine produces Maximum Continuous Thrust (MCT).

  Note: A change in FLEX TEMP during the takeoff has no effect on the thrust.

- **After takeoff**
  The pilot can change from FLX to MCT by moving the thrust lever to TOGA or CL, then back to MCT. After that, he cannot use the FLX rating.

The pilot can always get MAX TO thrust by pushing the thrust lever all the way forward.

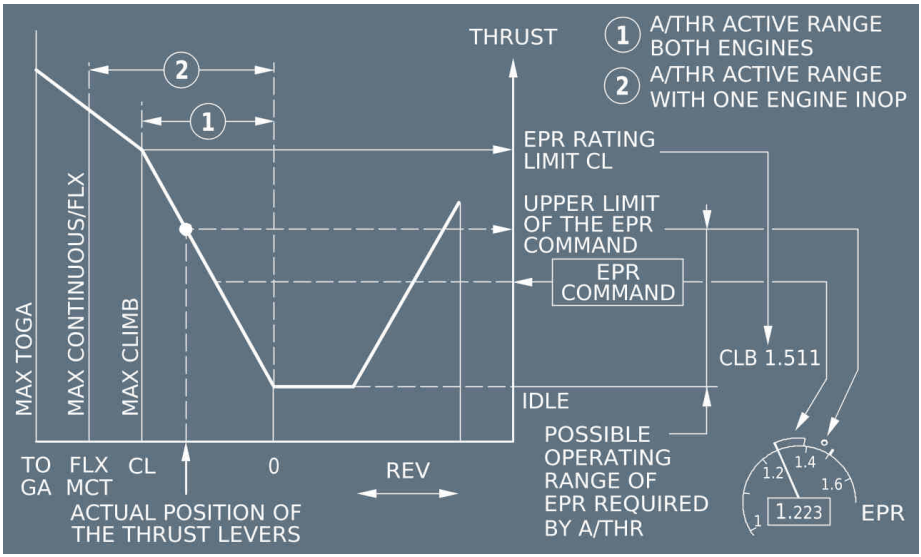
Note: Setting the thrust lever out of FLX/MCT detent without reaching TOGA or CL detent has no effect.

AUTOMATIC MODE

Ident.: DSC-70-35-50-00001583.0003001 / 07 JUN 16

2 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

In the autothrust mode (A/THR function active), the FMGC computes the thrust, which is limited to the value corresponding to the thrust lever position (unless the alpha-floor mode is activated).



INDICATIONS ON FMA

The FADECs monitor the positions of the thrust levers, and trigger appropriate indications on the FMA. *Refer to DSC-22_30-100 Autothrust Annunciations (FMA Column 1) - Third Line*

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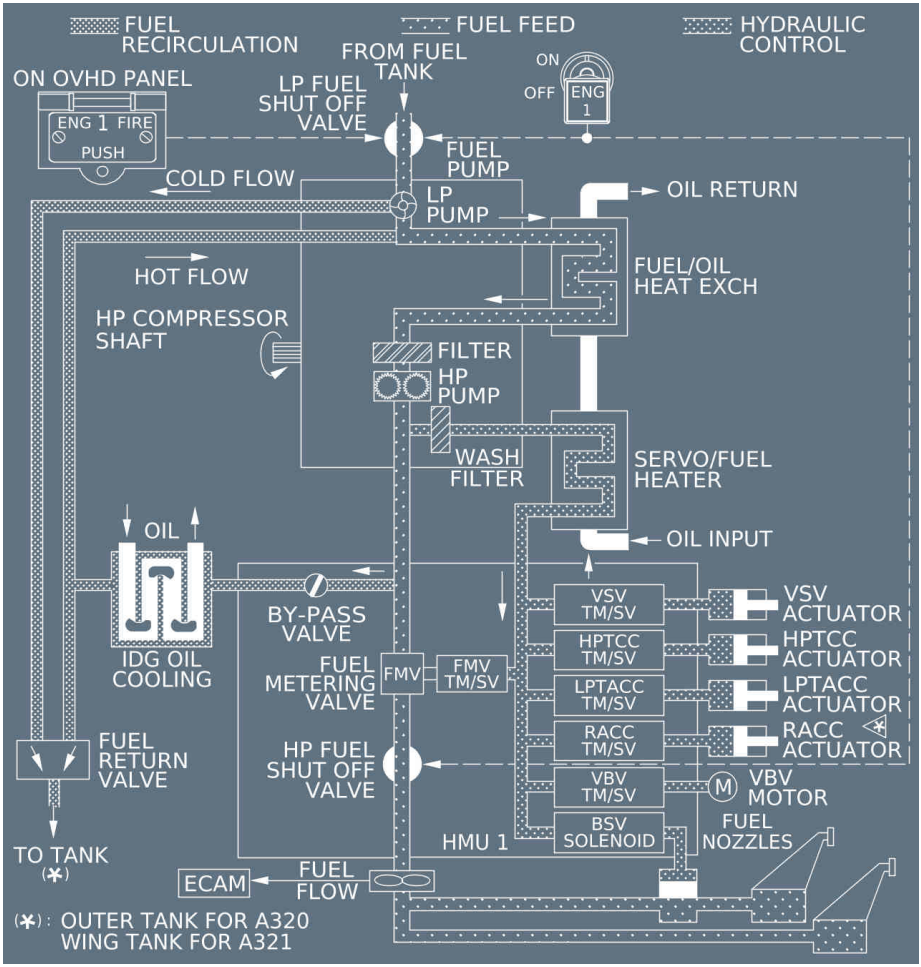
GENERAL

Ident.: DSC-70-40-00020868.0001001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The fuel system supplies fuel to the combustion chamber at the required flow rate, pressure, and temperature.
The fuel flows from the tank, via the fuel pump unit and the fuel/oil heat exchanger, to the Hydromechanical Unit (HMU) and to the fuel nozzles.



FUEL PUMP UNIT

Ident.: DSC-70-40-00001586.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The HP compressor shaft drives the HP fuel pump assembly. Fuel flows through the LP pump, then through the fuel/oil heat exchanger and the HP pump (gear pump).

The fuel then divides into a filtered flow for the servo fuel heater and the servo valves of the HMU, and an unfiltered flow for the metering valve of the HMU.

SHUT-OFF VALVES

Ident.: DSC-70-40-00001587.0001001 / 12 MAY 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Moving the ENG1 (ENG2) MASTER switch to OFF directly commands the closing of the LP and HP fuel shut off valves for that engine's fuel system.
It also closes the fuel return valve and opens the bypass valve.

HYDROMECHANICAL UNIT

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Ident.: DSC-70-40-A-00001588.0001001 / 17 MAR 17

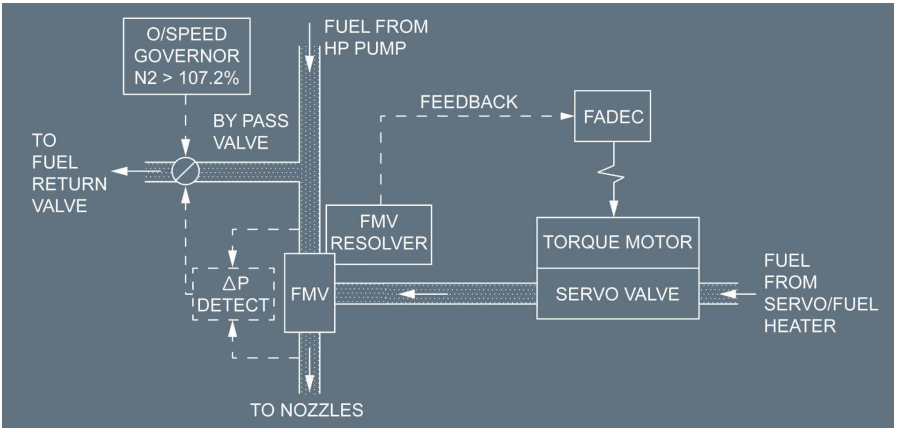
GENERAL

The FADEC controls the HMU, which :
- controls fuel flow to the engine combustion chamber
- controls fuel hydraulic signals to actuators
- protects against overspeeding.

Ident.: DSC-70-40-A-00020880.0001001 / 17 MAR 17

FUEL FLOW

L3 The Fuel Metering Valve (FMV) transforms FADEC orders through a torque motor and servo valve into fuel flow to the engine fuel nozzles.
The FMV resolver generates a feedback signal proportional to the FMV position.
The bypass valve maintains a constant pressure drop across the FMV to ensure that the metered fuel flow is proportional to the FMV position.

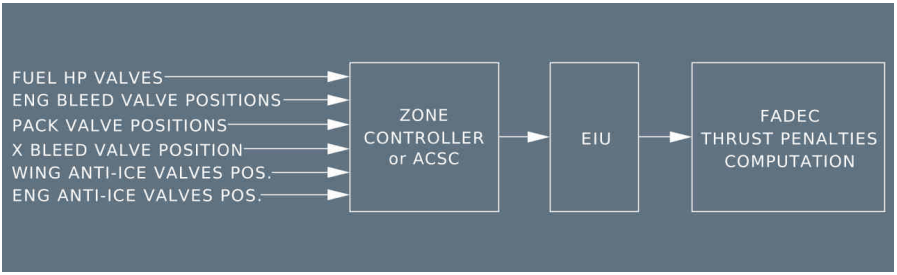


L1 The FADEC computes the fuel flow that will maintain the target N1.

As the FADEC maintains this N1, it allows N2 to vary while remaining between N2 minimum and N2 maximum. The FADEC also controls the engine parameters to :

- Limit acceleration and deceleration ;
- Avoid engine stall or flameout ;
- Limit maximum N1 and N2 ;
- Maintain air bleed pressure requirement.

The FADEC computes an N2 correction according to the bleed configuration.



Ident.: DSC-70-40-A-00001590.0001001 / 17 MAR 17

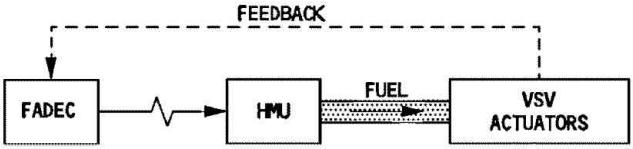
OVERSPEED GOVERNOR SYSTEM

Independent of the FADEC, the overspeed governor limits the N2 by opening the fuel bypass valve, in the event of a malfunction that could lead to an overspeed condition.

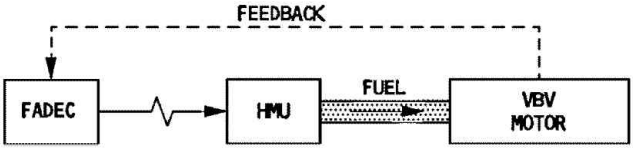
FUEL HYDRAULIC SIGNALS

L3 Fuel hydraulic signals go to :

- Low Pressure Turbine Clearance Control (LPTCC) valves
  (*Refer to DSC-70-60 General*)
- High Pressure Turbine Clearance Control (HPTCC) valves
  (*Refer to DSC-70-60 General*)
- Rotor Active Clearance Control (RACC) system
  (*Refer to DSC-70-60 General*)
- Variable Stator Vanes (VSV)
  The VSV system positions the compressor variable vanes.
  The FADEC maintains optimum compressor efficiency at a steady state and an adequate stall margin for transient engine operation.
  VSVs are fully closed during engine start and are fully open at high thrust.



- Variable Bleed Valves (VBV)
  The FADEC controls the VBVs, upstream of the HP compressor. Their setting depends on compressor inlet temperature and on N2. It varies between full open (start, low thrust, and during fast deceleration) and full closed (high thrust) positions.



IDG COOLING SYSTEM

Ident.: DSC-70-40-00001593.0001001 / 26 JUL 12
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Some of the fuel flowing out of the HMU goes to cool the oil systems of the Integrated Drive Generators (IDGs). It then returns to the fuel pump unit or to the tank.

The Fuel Return Valve (FRV), controlled by the FADEC, ensures that this flow is adequate.

L3 At low engine thrust, if the oil going into the IDG is too hot, the cooling fuel is sent back to the tank (300 kg/h).

If oil temperature continues to rise, the ECU increases the minimum N2.

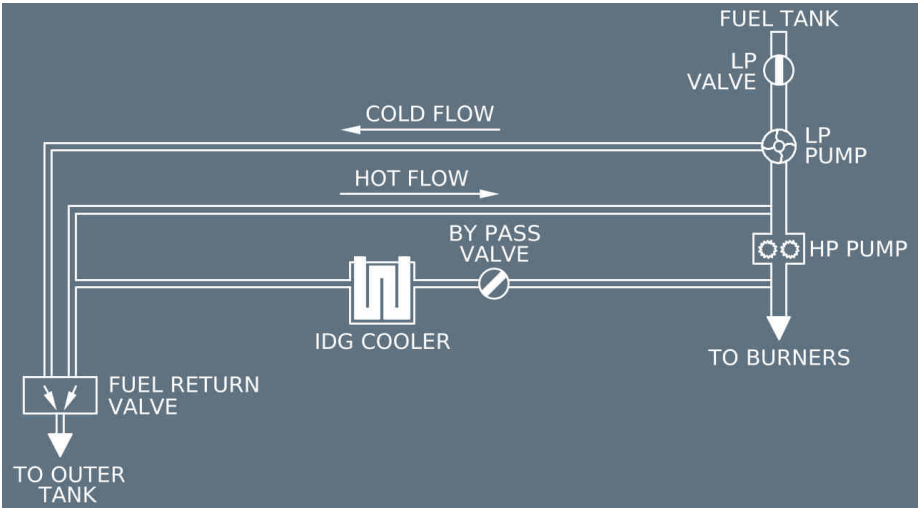
If oil temperature still keeps rising, the FADEC increases the fuel flow to the tank (from 300 to 600 kg/h, depending on fuel return temperature).

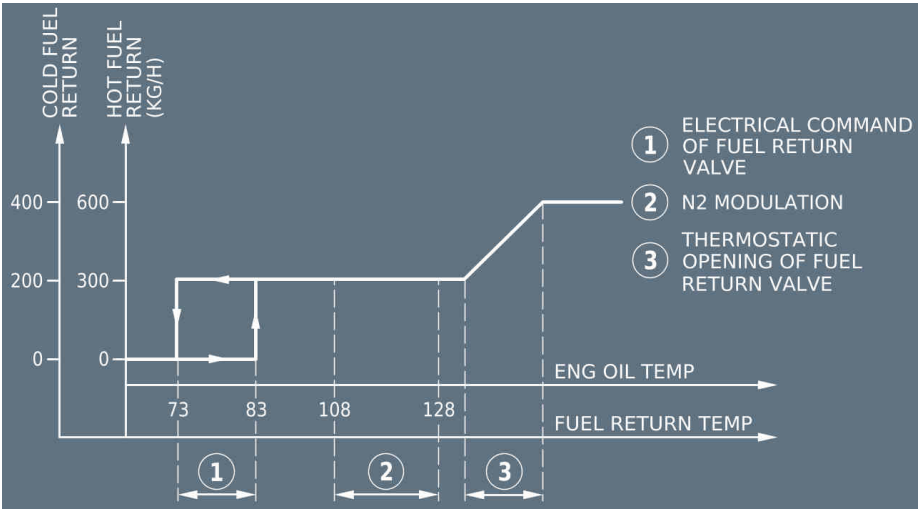
The fuel return valve is always mixing hot fuel with cold fuel so that the temperature of fuel returning to the tank stays below 100 °C (from 200 to 400 kg/h, depending on fuel return temperature).

Fuel recirculation to the tank is inhibited (FRV closed) in the following cases :

- at engine shutdown
- during takeoff and climb
- if :
  - wing tank level is below about 300 kg (660 lb).
  - there is fuel overflow in the surge tank
  - fuel feed is by gravity only.
- when fuel temperature in the wing tank in flight is above 52.5 °C

Note: *On the ground, high fuel temperature in the wing tank or fuel overflow in the surge tank does not inhibit the fuel recirculation to the wing tank (FRV remains open).*


FUEL TANK
LP VALVE
COLD FLOW
LP PUMP
HOT FLOW
BY PASS VALVE
HP PUMP
IDG COOLER
TO BURNERS
FUEL RETURN VALVE
TO OUTER TANK


COLD FUEL RETURN
HOT FUEL RETURN (KG/H)
400
200
0
600
300
0
1 ELECTRICAL COMMAND OF FUEL RETURN VALVE
2 N2 MODULATION
3 THERMOSTATIC OPENING OF FUEL RETURN VALVE
ENG OIL TEMP
73
83
108
128
FUEL RETURN TEMP
1
2
3

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GENERAL

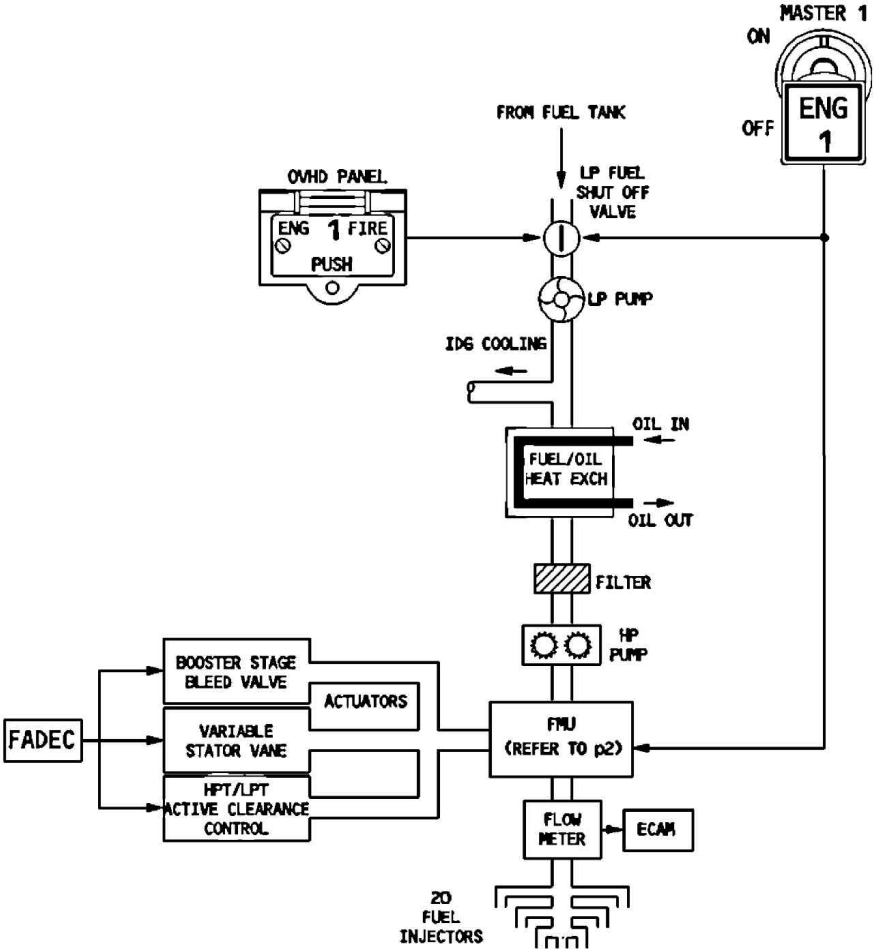
Ident.: DSC-70-45-00001594.0001001 / 21 MAR 16

[1] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

The fuel system enables the combustion of fuel under appropriate conditions of flow rate and pressure. The FADEC controls the fuel supply via the Fuel Metering Unit (FMU).
High pressure fuel is also used to provide pressure for some actuators.

The major components are :

- High and low pressure fuel pumps (dual unit)
- Fuel/oil heat exchanger
- Low pressure fuel filter
- Fuel Metering Unit (FMU)
- Fuel distribution valve
- 20 fuel injectors
- Diverter and return to tank valve
- IDG fuel/oil heat exchanger.



FUEL PUMP UNIT

Ident.: DSC-70-45-00001595.0001001 / 21 MAR 16

2 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

Consists of the low and high pressure stages which are driven from a common gearbox output shaft.

- The LP stage increases the pressure to :
  - suppress the cavitation
  - account for the pressure losses of the fuel oil heat exchanger and the low pressure fuel filter
  - provide enough pressure at the inlet of the HP stage
- The HP stage increases the pressure to the appropriate level for optimum fuel flow and atomization at all engine operating conditions.

FUEL OIL HEAT EXCHANGER

Ident.: DSC-70-45-00001596.0001001 / 21 MAR 16

3 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

Enables fuel to be heated by the oil, to reduce temperature of the oil, and prevent fuel icing.

FUEL METERING UNIT

Ident.: DSC-70-45-00020882.0002001 / 17 MAR 17

4 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

The FADEC controls the Fuel Metering Valve (FMV) which transforms its orders through three torque motors/servo valves.

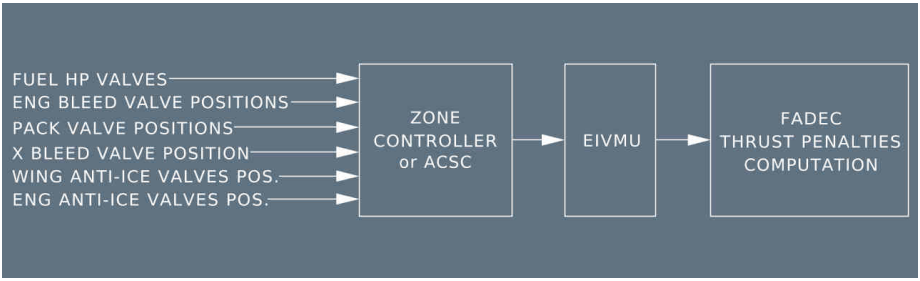
The FMV :
- Controls the fuel flow
- Protects against overspeeding (by reducing down to the minimum fuel flow).
- Controls the shut off valve (to start or stop the engine)
- Supplies high pressure fuel to the various actuators.

The three FADEC controlled torque motors are used to direct fuel servo pressure to open/close three valves :
- The fuel metering valve meters the fuel supply.
- The overspeed valve reduces the fuel flow in case of a FADEC detected overspeed. This reduction is made according to a preset value.
  Once this valve is operated it remains in the minimum fuel flow position until the engine is shutdown.
- The shut off valve opens/closes to isolate fuel supplies for starting or stopping the engine.

The servo pressure regulator regulates the pressure for FMU internal use.
The FADEC computes the fuel flow that will maintain the target EPR.
As the FADEC maintains this EPR, it allows N2 to vary while remaining between minimum N2 and maximum N2.

The FADEC also controls the engine parameters to :
- Limit acceleration and deceleration ;
- Avoid engine stall or flameout ;
- Limit maximum N1 and N2 ;
- Maintain air bleed pressure requirement.

The FADEC computes an N2 correction according to the bleed configuration.



FUEL FILTER

Ident.: DSC-70-45-00001599.0001001 / 21 MAR 16

5 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

Cockpit indication is provided by a differential pressure switch.

IDG COOLING RECIRCULATION SYSTEM

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: DSC-70-45-A-00020885.0001001 / 17 MAR 17

6

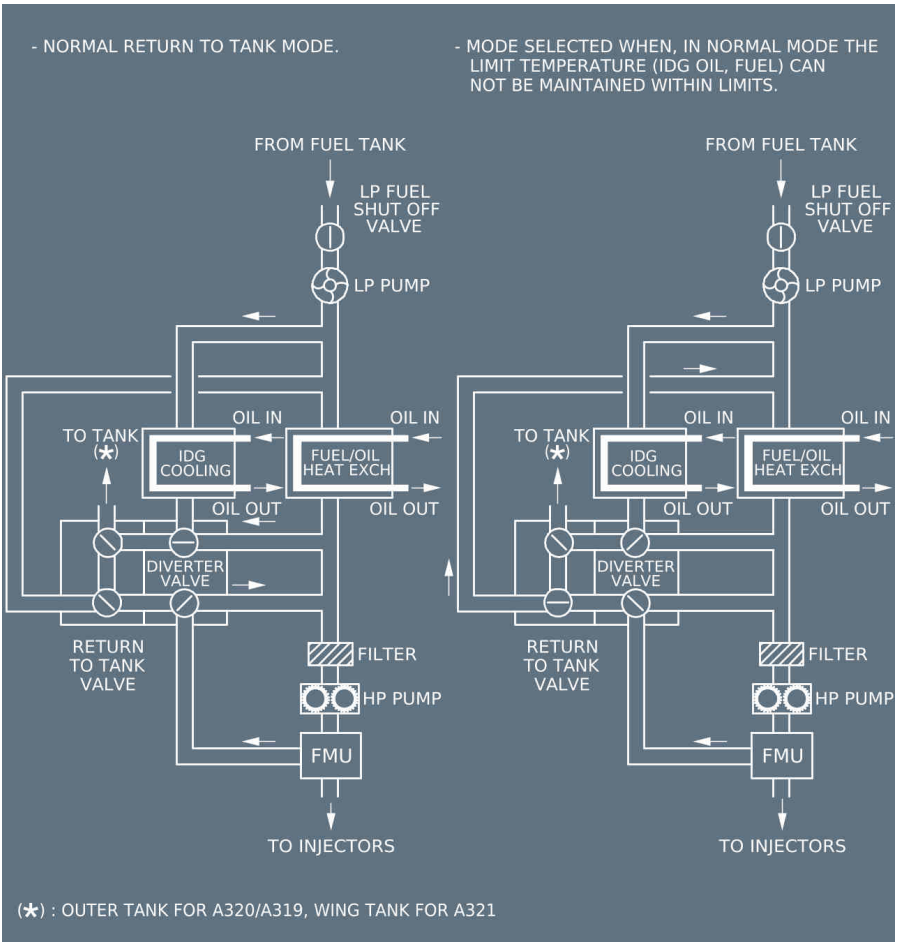
GENERAL

Cooling of IDG oil and engine oil are accomplished respectively by the IDG cooler and by the Fuel/Oil heat exchanger.
Fuel, IDG oil and engine oil temperatures are regulated by the FADEC commanding the fuel diverter valve and the return to tank valve in four operation modes.

Ident.: DSC-70-45-A-00001601.0001001 / 17 MAR 17

7

TWO RETURNS TO TANK MODES



Ident.: DSC-70-45-A-00001602.0001001 / 17 MAR 17

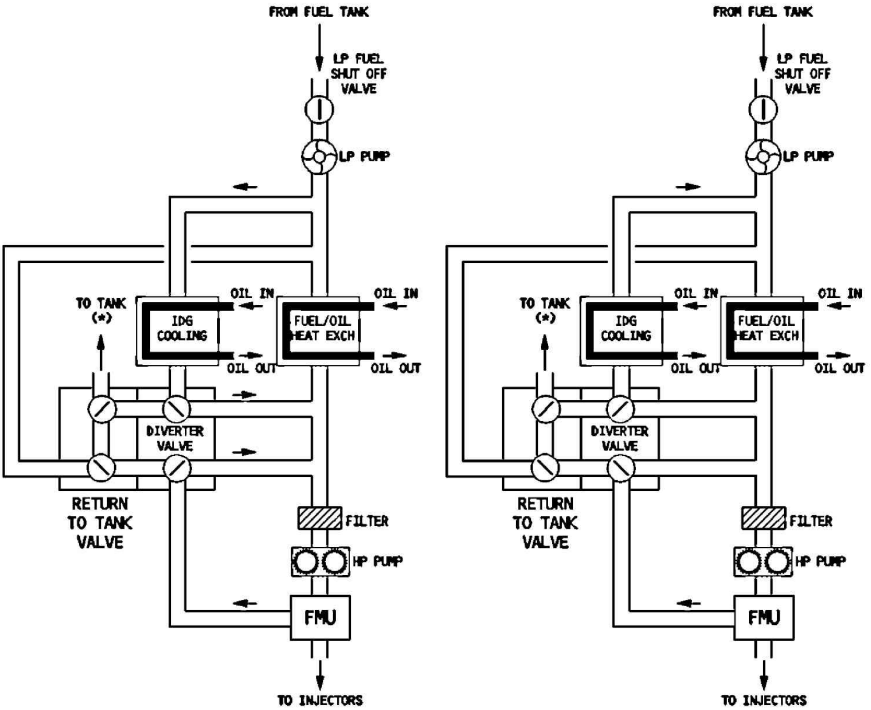
8

TWO NO-RETURNS TO TANK MODES

L3 Modes selected when return to tank is not allowed, in particular in case of high fuel flow or high tank fuel temperature.

- HIGH ENGINE SPEED

- LOW ENGINE SPEED AND HIGH IDG OIL TEMP
- COLD FUEL
- FAIL-SAFE MODE



(*) : OUTER TANK FOR A320/A319, WING TANK FOR A321

GENERAL

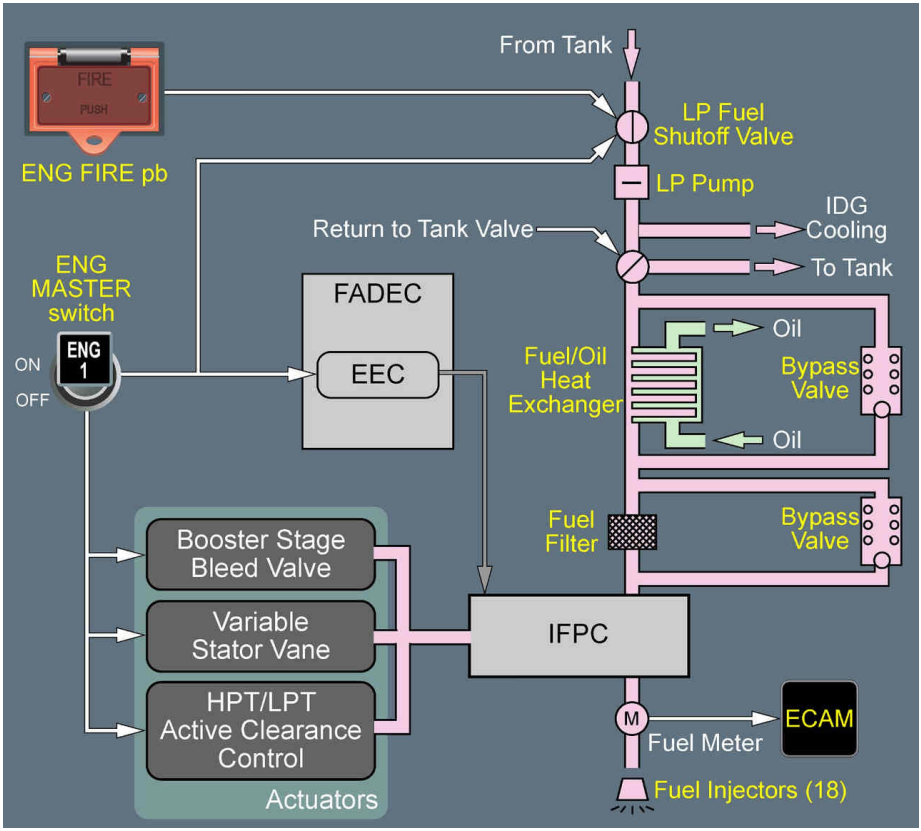
Ident.: DSC-70-48-00015367.0001001 / 21 MAR 16

[1] **Applicable to: MSN 06720-09063**

The fuel system enables the combustion of fuel under appropriate conditions of flow rate and pressure. The FADEC controls the fuel supply via the Integrated Fuel Pump and Control (IFPC). High pressure fuel is also used to provide pressure for some actuators.

The major components are :

- High and low pressure fuel pumps (dual unit)
- Fuel/oil heat exchanger
- Low pressure fuel filter
- Fuel distribution valve
- 18 fuel injectors
- Integrated Fuel Pump and Control (IFPC)
- Diverter and return to tank valve
- Fuel Oil Heat Exchanger (FOHE).



INTEGRATED FUEL PUMP AND CONTROL (IFPC)

Ident.: DSC-70-48-00015368.0001001 / 21 MAR 16

2 **Applicable to: MSN 06720-09063**

The Integrated Fuel Pump and Control (IFPC) combines both fuel pump and fuel control functions into a single unit. Therefore, this enables to reduce the number of components installed on the Main Gearbox (MGB).
The IFPC performs the following functions:

- Provide pressurised and metered fuel to the engine to support combustion, and
- Pressurize the fuel for the engine component actuators

The FADEC controls the Fuel Metering Functions of the IFPC which transmits its orders through valves.

The IFPC :

- Commands the Fuel Metering Valve (FMV) to meter the fuel that flow to the engine combustion chamber
- Commands the overspeed valve to reduce the fuel flow in case the FADEC detects overspeed. Once this valve is operated, it remains in the minimum fuel flow position until the engine is shutdown.
- Controls the shut off valve to isolate fuel supplies to start or stop the engine.
- Supplies high pressure fuel to the various actuators

FUEL OIL HEAT EXCHANGER

Ident.: DSC-70-48-00015369.0001001 / 21 MAR 16

3 **Applicable to: MSN 06720-09063**

The Fuel Oil Heat Exchanger (FOHE) uses the cold fuel to decrease the temperature of the engine oil, and increases the temperature of the fuel.
The heat is continuously transmitted from the oil to the fuel when the engine is in operation. This prevents the fuel from icing.
If the FOHE is clogged (e.g. ice accretion from the upstream pipes), a bypass valve opens to ensure that the fuel continuously flows to the fuel nozzles.

FUEL FILTER

Ident.: DSC-70-48-00015370.0001001 / 21 MAR 16

4 **Applicable to: MSN 06720-09063**

The fuel filter protects the fuel system from contamination.
The fuel filter is downstream of the FOHE.
A fuel filter bypass valve may open if the fuel filter is clogged. It ensures that fuel continuously flows to the fuel nozzles.

IDG COOLING RECIRCULATION SYSTEM

Ident.: DSC-70-48-00020917.0001001 / 17 MAR 17

5 **Applicable to: MSN 06720-09063**

The Integrated Drive Generator/Fuel Oil Heat Exchanger (IDG/FOHE) and the main Fuel/Oil heat exchanger enable cooling of both the IDG oil and the engine oil.
Fuel, IDG oil and engine oil temperatures are regulated by the FADEC.

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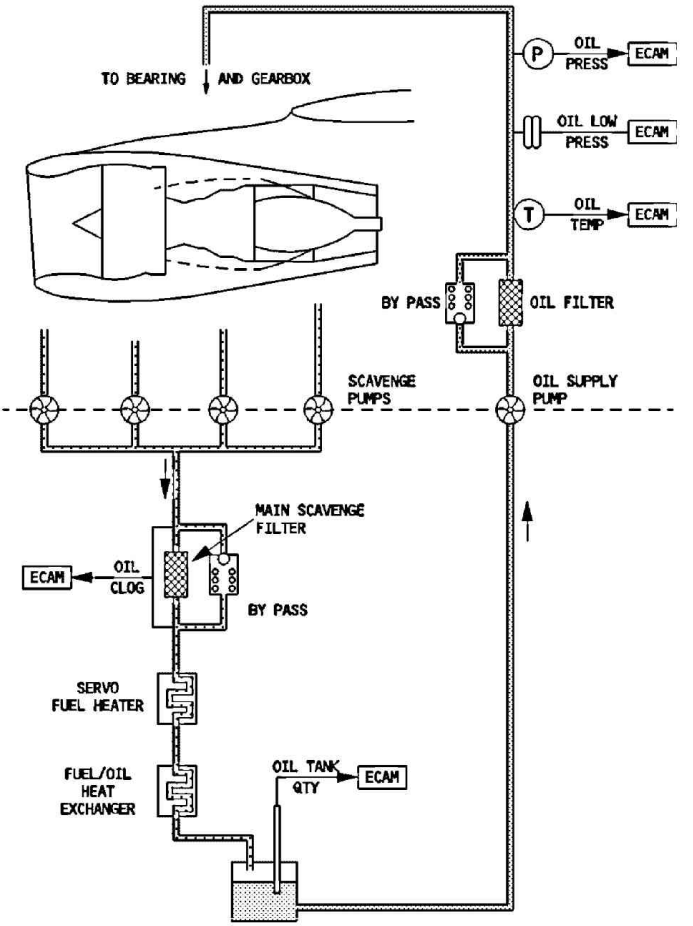
GENERAL

Ident.: DSC-70-50-00001603.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The oil system lubricates the engine components.

It contains :

- the oil tank
- the lube and scavenge pump modules
- the fuel/oil heat exchanger
- the filters, chip detectors, pressure relief and bypass valves.



GENERAL

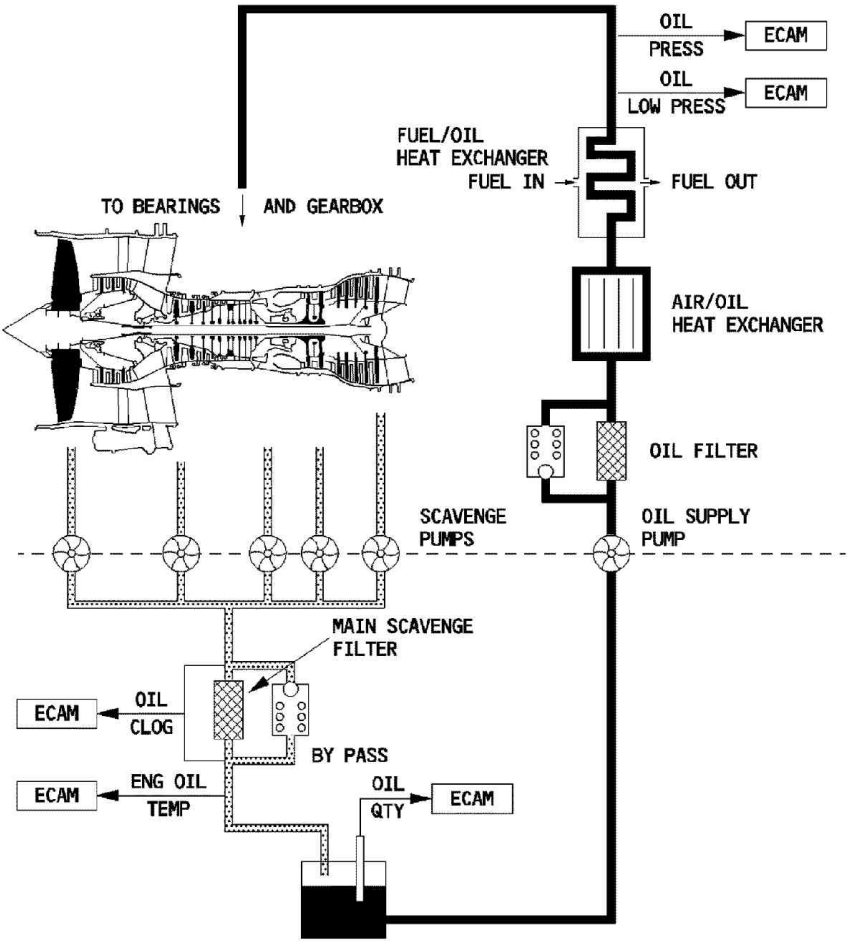
Ident.: DSC-70-50-00001603.0003001 / 21 MAR 16

1 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

The oil system lubricates the engine components.

It contains :

- the oil tank
- the lube and scavenge pump modules
- the fuel/oil heat and air/oil heat exchangers
- the filters, chip detectors, pressure relief and bypass valves.



GENERAL

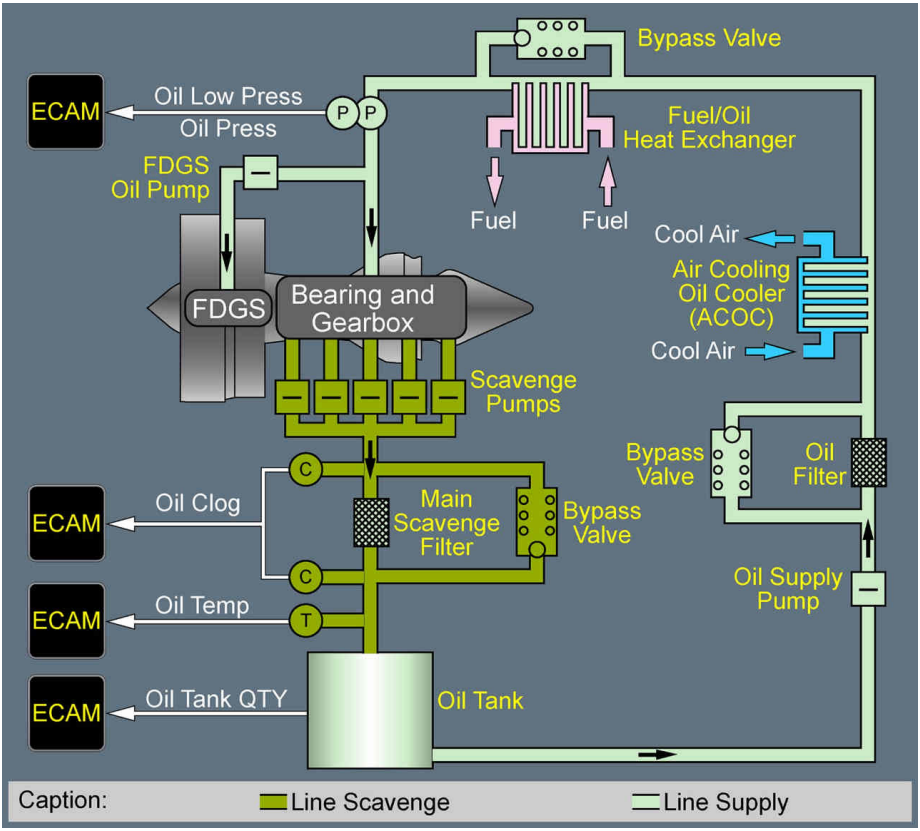
Ident.: DSC-70-50-00001603.0004001 / 21 MAR 16

[2] **Applicable to: MSN 06720-09063**

The oil system lubricates the engine components.

The oil system includes the following:

- The oil tank
- The lube and scavenge pump modules
- The fuel/oil heat and air/oil heat exchangers
- The filters, chip detectors, pressure relief and bypass valves
- Oil pump for HP and LP rotors
- Oil pump for FDGS.


Bypass Valve
ECAM
Oil Low Press
Oil Press
P
P
Fuel/Oil
Heat Exchanger
FDGS
Oil Pump
Fuel
Fuel
Cool Air
Air Cooling
Oil Cooler
(ACOC)
Cool Air
FDGS
Bearing and
Gearbox
Scavenge
Pumps
Bypass
Valve
Oil
Filter
C
ECAM
Oil Clog
Main
Scavenge
Filter
Bypass
Valve
C
Oil Supply
Pump
ECAM
Oil Temp
T
ECAM
Oil Tank QTY
Oil Tank
Caption:
Line Scavenge
Line Supply

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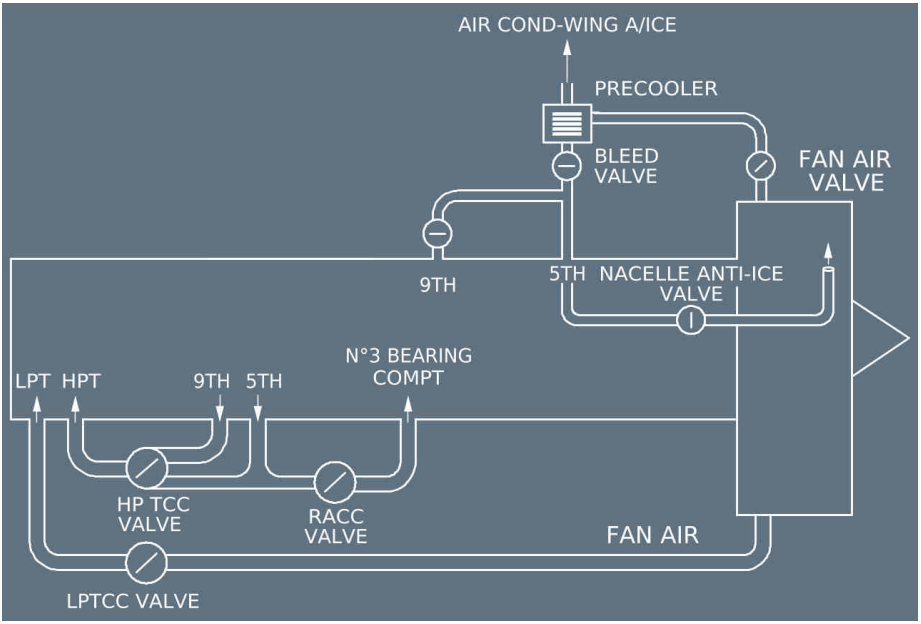
GENERAL

Ident.: DSC-70-60-00001604.0002001 / 21 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The air bleed system supplies the aircraft with compressed air.

It uses the air for:
- pneumatic system (*Refer to DSC-36-10-10 General*)
- cooling the engine compartment and the turbines.



COOLING

Ident.: DSC-70-60-00001605.0002001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

ROTOR ACTIVE CLEARANCE CONTROL (RACC) SYSTEM

The FADEC controls the RACC system through the HMU. The RACC system controls the clearance between the rotor blades of the HP compressor and its stator case.
The RACC system uses fifth-stage compressor bleed air that has been modulated according to the N2 and the flight parameters. The bleed air goes to the N°3 bearing compartment, where it is mixed with fan boost discharge.

Clearances are at the maximum when the RACC valve is closed.

HP TURBINE CLEARANCE CONTROL (HPTCC) SYSTEM

The FADEC controls the HPTCC system through the HMU. The HPTCC system controls the HP turbine clearance by modulating the HP compressor bleed air flow for cooling the HP turbine case. It optimizes HP turbine performance and reduces exhaust gas temperature.

LP TURBINE CLEARANCE CONTROL (LPTCC) SYSTEM

The FADEC controls the LPTCC system through the HMU. The LPTCC system controls LP turbine clearance by modulating the fan bleed air flow for cooling the LP turbine case.

GENERAL

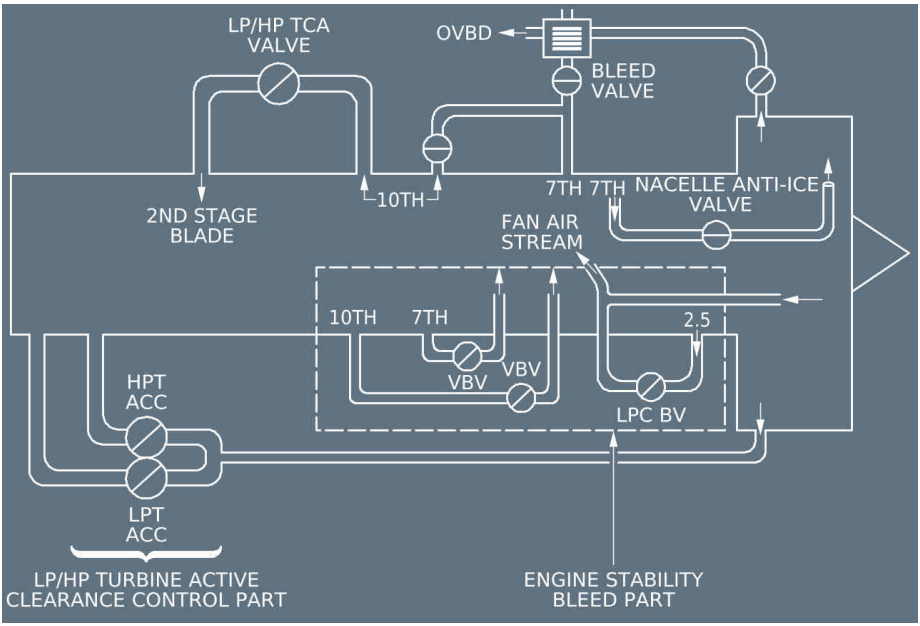
Ident.: DSC-70-65-00012945.0001001 / 21 MAR 17

[1] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

The air bleed system supplies the aircraft with compressed air.

It uses the air for:

- pneumatic system (*Refer to DSC-36-10-10 General*)
- cooling the engine compartment and the turbines
- engine stability.



COOLING

Ident.: DSC-70-65-00012946.0001001 / 20 DEC 10

[2] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

- Active clearance control for the high and low pressure turbines is to optimize the turbine blade tip clearance by cooling the related turbine cases.
  This control is made by the FADEC through the FMU as a function of the high pressure rotor speed, and altitude.
  In case of failures the system is designed to failsafe to the closed position.
  Should this happen, fuel consumption would be slightly higher.
- LP/HP turbine cooling air.
  Under FADEC control as a function of N2 and altitude, cooling air is taken from the 10th stage of the HPC to cool the HPT second stage blade. The control valve is either fully open or closed and is normally (failsafe) open.

ENGINE STABILITY

Ident.: DSC-70-65-00012947.0001001 / 20 DEC 10

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

Two air bleed systems (station 2.5 of the LPC and stages 7th and 10th) provide greater compressor stability in the different flight phases.

- The LPC 2.5 bleed valve moves under FADEC control as a function of the low rotor speed, altitude and Mach and is dedicated to improve stall margin during starting, low power or transient operation. The failsafe position of this valve is open.
- The 7th and 10th stage bleed valves are normally closed for most engine operation but fully open for engine starting. Their failsafe position is open. Theses valves are controlled by FADEC through FMU.

In the two cases, the air is vented to the fan air stream.

OPERATION FOLLOWING FAILURES

Ident.: DSC-70-65-00022717.0001001 / 04 DEC 18

[4] **Applicable to: MSN 01957-02097, 02121, 02138, 02457, 04491, 04532-04535, 04603, 04645, 04757, 04813, 05027, 05076, 05090, 05259, 05411, 05683, 05807, 06036-06289**

In the case of engine bleed or pack set to OFF, the stall margin of the affected engine is reduced when at idle thrust with no bleed demand. Operators reported few occurrences of engine stalls below 5 000 ft during descent.

Therefore, if the ENG BLEED pb-sw or the PACK pb-sw are in the OFF position during descent, the flight crew should set the associated ENG ANTI ICE pb-sw to ON at 10 000 ft during descent, if available, to increase the stall margin and prevent a potential engine stall.

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GENERAL

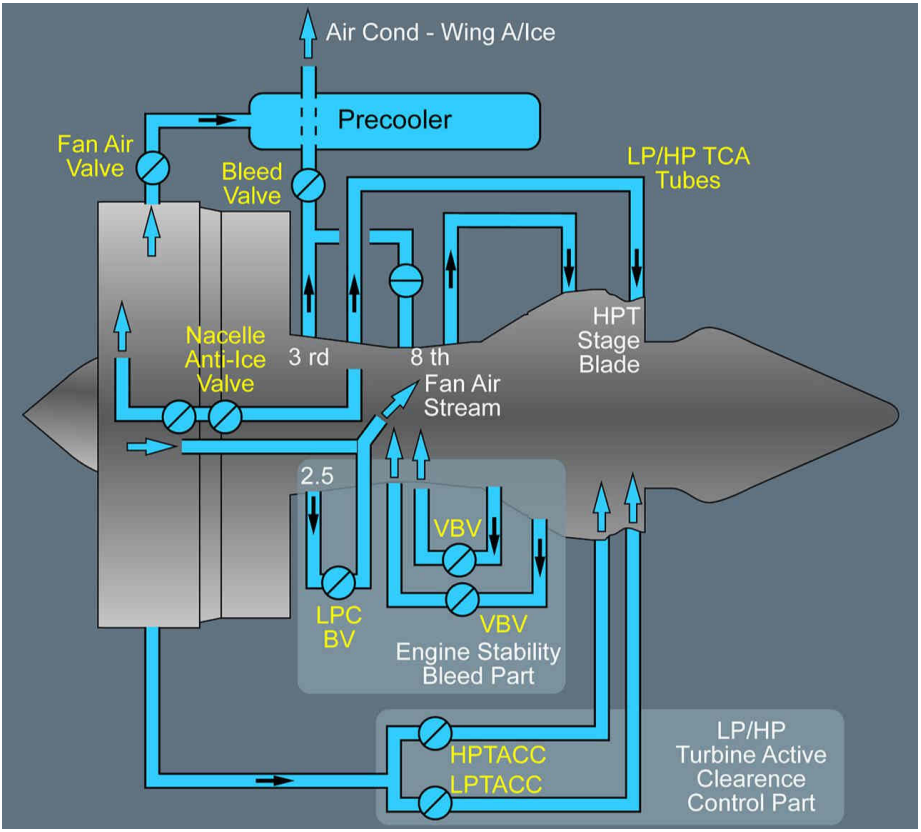
Ident.: DSC-70-68-00015397.0001001 / 21 MAR 17

[1] **Applicable to: MSN 06720-09063**

The air bleed system supplies the aircraft with compressed air.

It uses the air for:

- Pneumatic system (*Refer to DSC-36-10-10 General*)
- Cooling the engine compartment and the turbines
- Engine stability.



COOLING

Ident.: DSC-70-68-00015398.0001001 / 16 NOV 15

[2] **Applicable to: MSN 06720-09063**

The cooling of the engine is ensured by two systems:

- The Active Clearance Control (ACC) system that controls the clearance between the blades and the case. The ACC directs cooling air from the fan to the High Pressure Turbine (HPT) and Low Pressure Turbine (LPT) cases.
  This control is made by the FADEC as a function of the high pressure rotor speed, and altitude.
- The LP/HP Turbine Cooling Air (TCA) system that provides a continuous flow of cooling air.
  This cooling air is taken from either 3rd, 6th or 8th stage of the HPC to cool the LP/HP Turbines and the Turbine Intermediate Case (TIC).
  The control valve is either fully open or closed.

ENGINE STABILITY

Ident.: DSC-70-68-00015399.0001001 / 06 JAN 16

[3] **Applicable to: MSN 06720-09063**

The air system ensures the engine stability via the control of the air flow through LP and HP compressors.

This control is made by the FADEC via the airbleed system. This system includes the following:

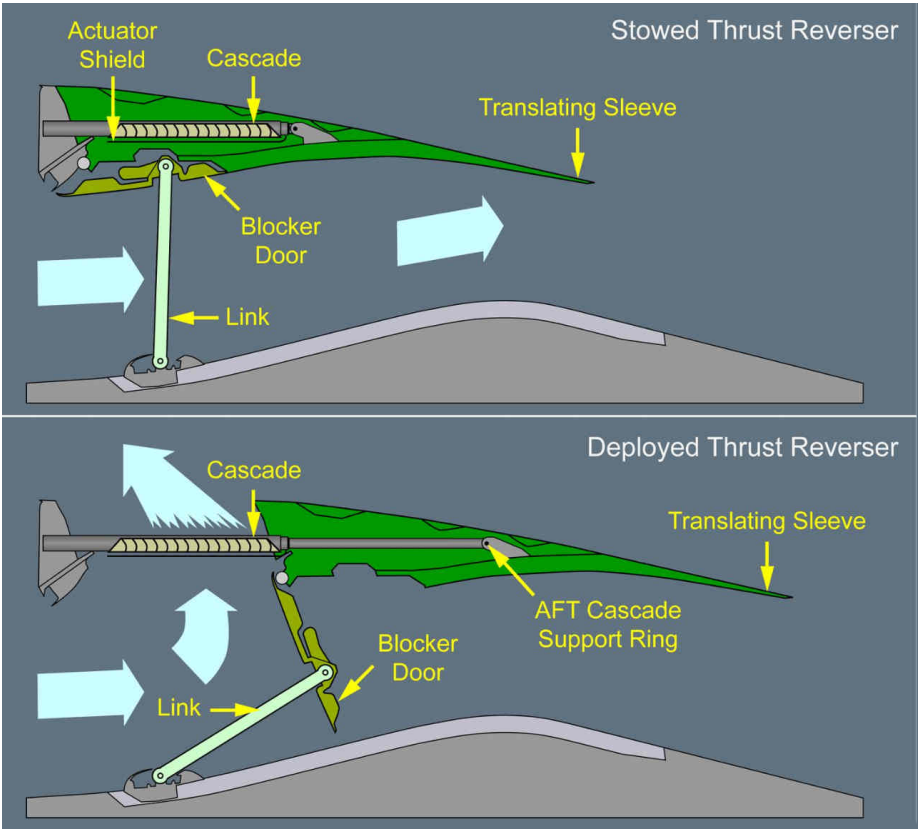
- The bleed valve at the 6th stage of the HP compressor.
  This valve is normally closed for most engine operation but fully open for engine starting.
- The 2.5 Bleed Compressor valve.
  This valve is controlled by the FADEC as a function of N1, altitude and Mach. The valve enables to improve stall margin during engine start, low power or transient operations.

GENERAL

Ident.: DSC-70-70-00020918.0006001 / 17 MAR 17

[1] **Applicable to: MSN 06720-09063**

The reverse thrust is obtained by deflecting the fan airstream. This is done when the translating sleeves are fully deployed rearward, thus enabling the pivoting blocker doors to divert forward the fan flow through the cascades.



The translating sleeves are hydraulically-actuated (ENG 1 : Green circuit, ENG 2 : Yellow circuit). The FADEC controls the thrust reverser system. Each FADEC channel performs control and monitoring functions. The systems for the two engines are independent of each other.

The thrust reverser system on each engine has :

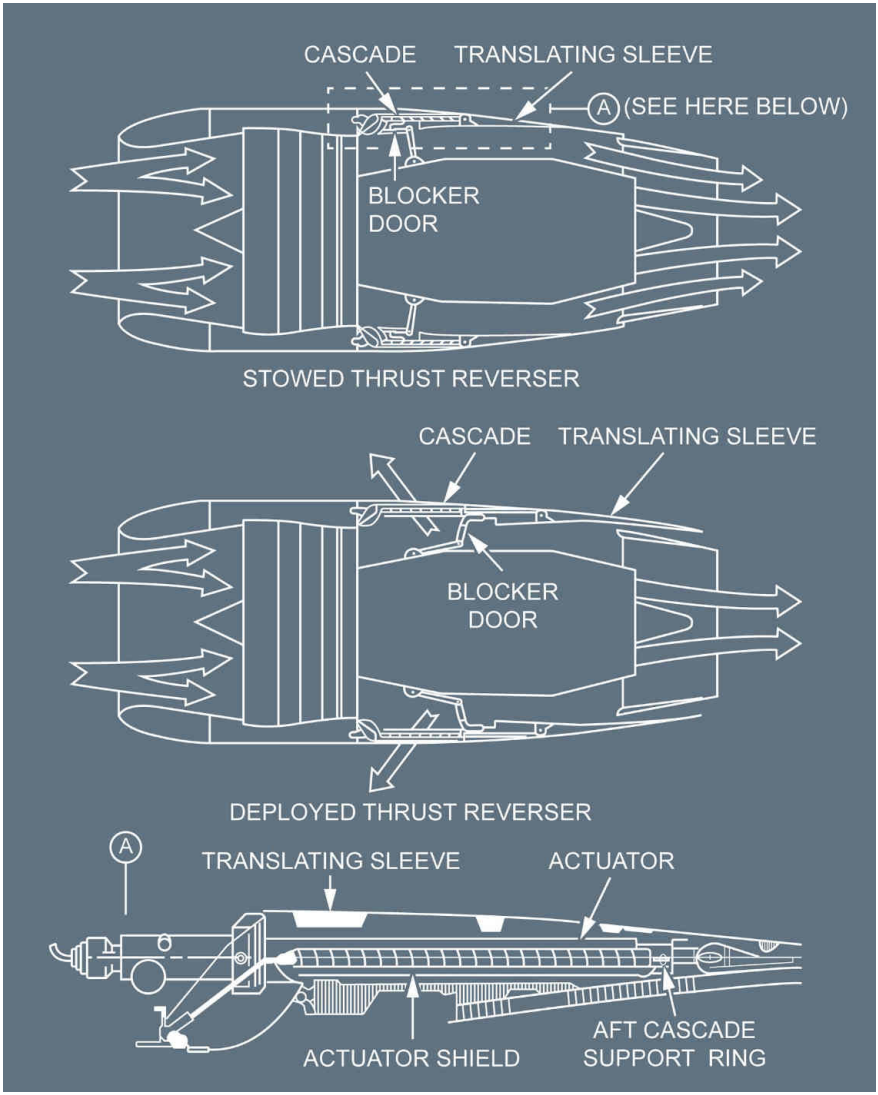
- A Hydraulic Control Unit (HCU), which controls the hydraulic fluid flow to the thrust reverser actuators ;
- 4 hydraulic actuators ;
- A flexible shaft (divided into 3 parts, each of which are connected to the actuators) to synchronize the operation speed of the actuators on each door;
- 2 linear variable differential transducers, which monitor and transmit the reverser position to the FADEC ;
- 8 proximity switches, to monitor whether the sleeves are locked or not (2 per hydraulic actuator).

GENERAL

Ident.: DSC-70-70-00020918.0004001 / 17 MAR 17

2 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

The reverse thrust is obtained by deflecting the fan airstream. This is done when the translating sleeves are fully deployed rearward, thus enabling the pivoting blocker doors to forward divert the fan flow through the cascades.



The translating sleeves are hydraulically-actuated (ENG 1 : Green circuit, ENG 2 : Yellow circuit). The FADEC controls the thrust reverser system. Each FADEC channel performs control and monitoring functions. The systems for the two engines are independent of each other.

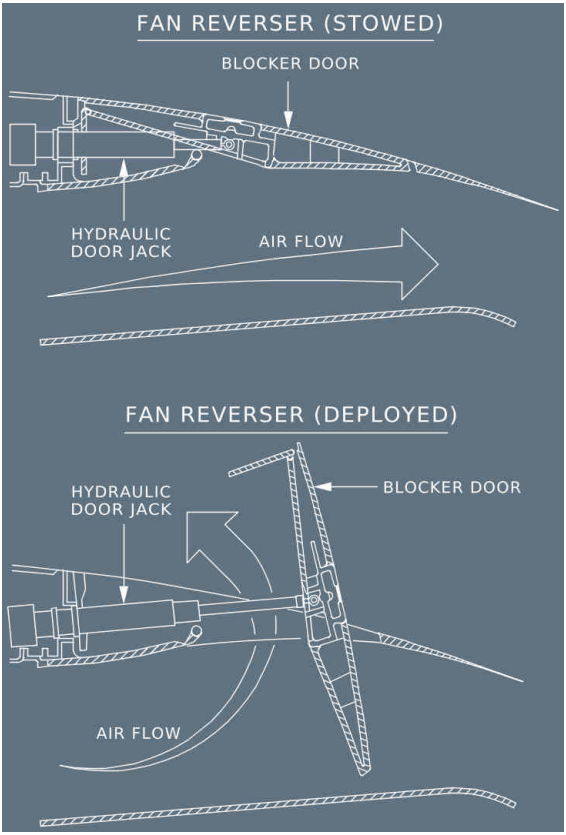
The thrust reverser system on each engine has :

- A Hydraulic Control Unit (HCU), which controls the hydraulic fluid flow to the thrust reverser actuators ;
- A hydraulic shutoff valve, which allows hydraulic pressure to the HCU.
- 4 hydraulic actuators ;
- 1 flexible shaft (divided into 3 parts, each of which are connected to the actuators) to synchronize the operation speed of the actuators ;
- 2 linear variable differential transducers, which monitor and transmit the reverser position to the FADEC ;
- 2 proximity switches, to monitor whether the sleeves are locked or not.

GENERAL

Ident.: DSC-70-70-00020918.0003001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The aircraft reverses engine thrust by using four pivoting blocker doors on each engine to deflect the fan airstream.



A hydraulic door jack positions each door.
- The green circuit powers the doors on ENG 1.
- The yellow circuit powers the doors en ENG 2.

The FADEC controls the thrust reverser system. Each FADEC channel performs control and monitoring functions. The systems for the two engines are independent of each other.

The thrust reverser system on each engine has :
- 4 actuators,
- 4 latches,

- Door position switches,
- A Hydraulic Control Unit (HCU) that :
  - Pressurizes the thrust reverser hydraulic system,
  - Regulates the speed of the blocker doors, and
  - Supplies actuators with hydraulic power.
- A hydraulic shutoff valve which allows hydraulic pressure to the HCU.

Each pivoting door moves independently (the doors are not synchronized).
The total actuation time is less than two seconds.

ACTUATION LOGIC

Ident.: DSC-70-70-00020920.0001001 / 17 MAR 17
Applicable to: ALL

Deployment requires :
- One FADEC channel, operating with its associated throttle reverse signal ;
- Right and left main gear compressed signal from the corresponding LGCIUs ;
- A Thrust Lever Angle (TLA) reverse signals from at least one Spoiler Elevator Computer (SEC).

Before deployment is completed, the FADEC sets reverse idle thrust on the engine that is having its thrust reversed.

PROTECTION

Ident.: DSC-70-70-00020921.0006001 / 17 MAR 17
3 **Applicable to: MSN 01767-06336**

- IDLE PROTECTION

The FADEC will automatically select the thrust to idle :
- In case of inadvertent thrust reverser deployment (while thrust reversers are commanded stowed), as soon as the thrust reverser feedback position is above 15 % deployed (thrust decreasing toward idle, when the detected position is between 10 % and 15 %).
- In case of inadvertent thrust reverser stowage (while thrust reversers are commanded deployed), as soon as the thrust reverser feedback position is below 78 % deployed (thrust decreasing toward idle between 90 % and 78 %).

PROTECTION

Ident.: DSC-70-70-00020921.0004001 / 17 MAR 17

[4] **Applicable to: MSN 06720-09063**

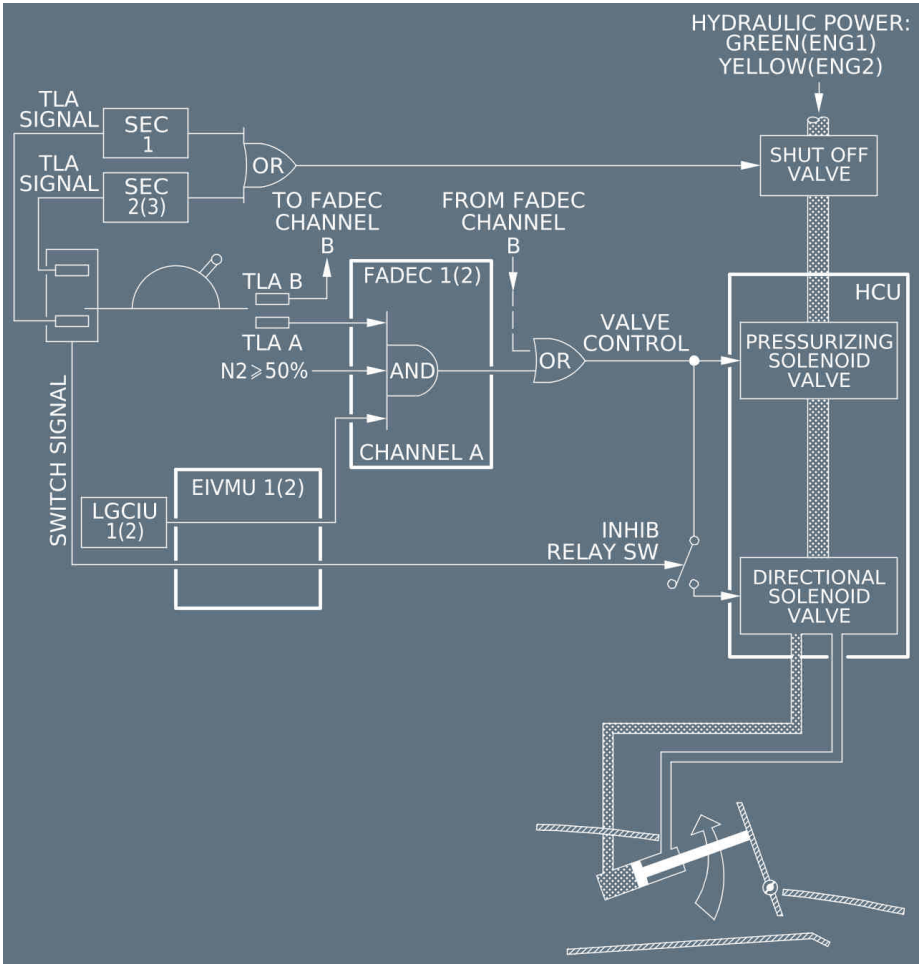
On ground, the FADEC automatically commands the reverse thrust to stow, if the thrust reversers are not commanded to deploy and :

- The thrust levers are in forward thrust position, and
- One lock failed open

In case of inadvertent thrust reverser deployment (while thrust reversers are commanded stowed) the FADEC automatically selects the thrust to idle. This occurs in flight or on ground as soon as the thrust reverser feedback position is above 5 % deployed.

SCHEMATIC

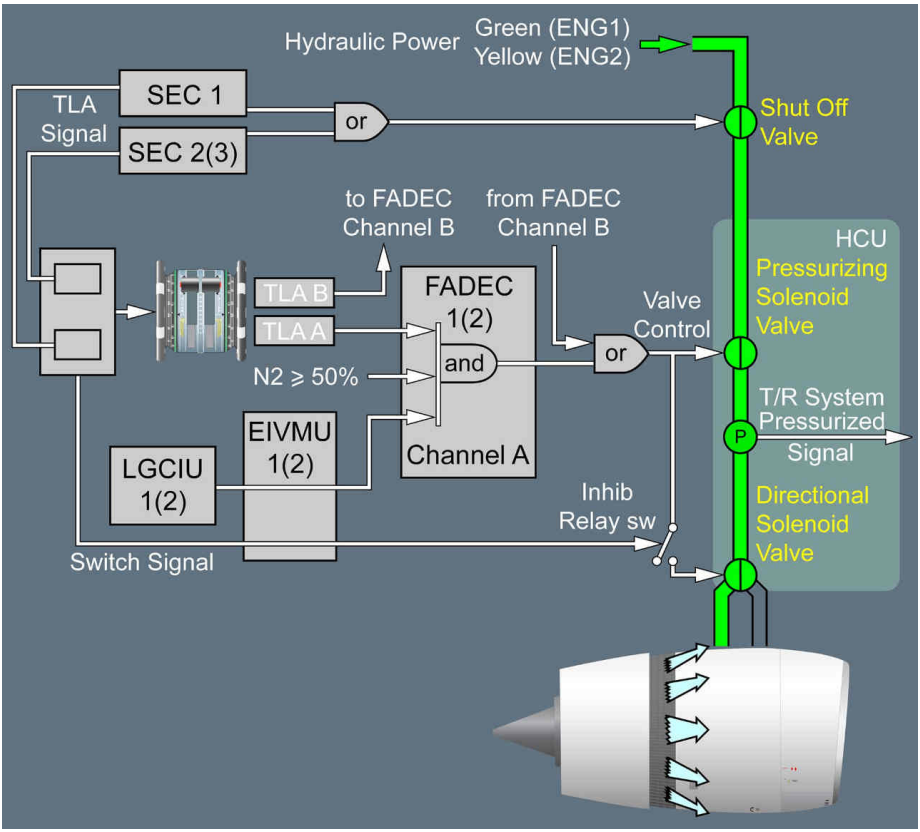
Ident.: DSC-70-70-00020919.0006001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510



SCHEMATIC

Ident.: DSC-70-70-00020919.0005001 / 17 MAR 17

[5] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063**



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GENERAL

Ident.: DSC-70-80-10-00020922.0001001 / 17 MAR 17
Applicable to: ALL

The FADEC controls and monitors the ignition and starting system according to:

- The position of the ENG MODE selector
- The position of the ENG MASTER sw
- The position of the ENG MAN START pb-sw
- The aircraft status (flight or ground)

The FADEC receives the previous inputs from the EIVMU/EIU.

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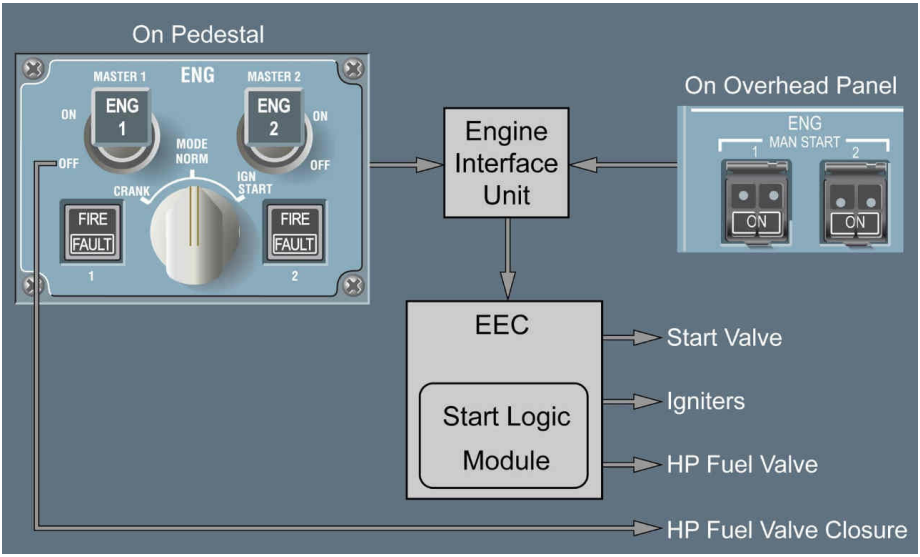
ARCHITECTURE

Ident.: DSC-70-80-20-00001617.0001001 / 21 MAR 16

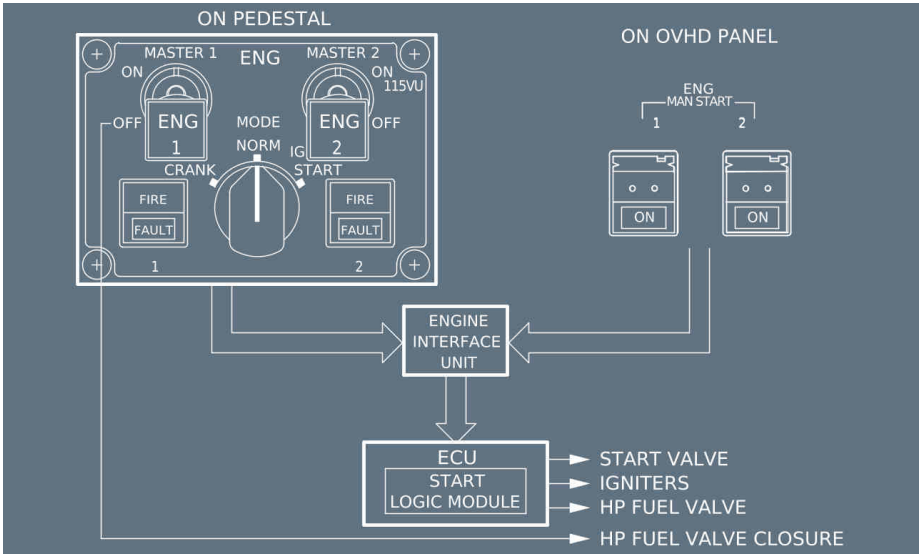
[1] **Applicable to: MSN 06720-09063**



ARCHITECTURE

Ident.: DSC-70-80-20-00001617.0002001 / 21 MAR 16

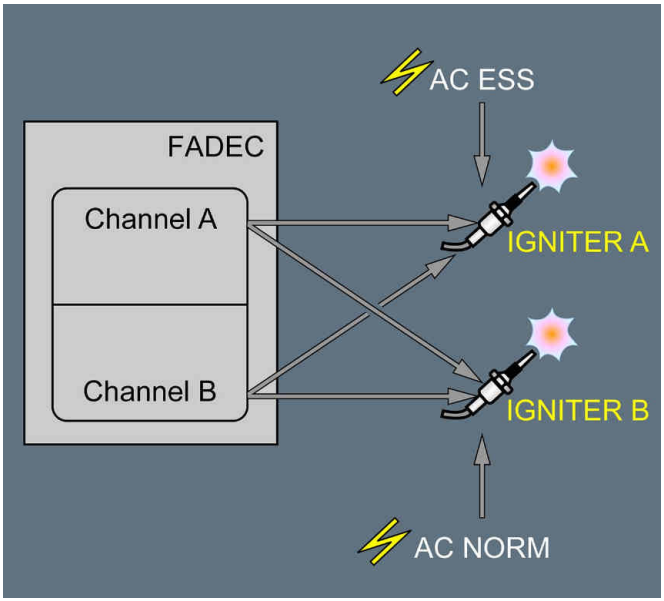
[2] **Applicable to: MSN 01767-06336**



GENERAL

Ident.: DSC-70-80-30-00020923.0001001 / 17 MAR 17
Applicable to: ALL

The ignition system is for engine starting on the ground and restarting in flight. It consists of two identical independent circuits for each engine, normally controlled by the FADEC channel A and channel B. Each FADEC channel can control both igniters.



Note: *Supply for igniter A switches to the STAT INV BUS BAR as soon as the static inverter is operative.*

IGNITION FOR STARTING

Ident.: DSC-70-80-30-00020924.0017001 / 17 MAR 17

1 **Applicable to: MSN 06720-09063**

ON THE GROUND

- Automatic start:
  - During a first automatic start attempt only one igniter is supplied. The FADEC automatically alternates the igniters and/or channels used in successive start sequences.
  - The ignition comes on automatically when N2 reaches 18 % and cuts off automatically when N2 reaches approximately 55 %.
  - During an automatic start, if the first attempt fails, the FADEC automatically initiates a new start attempt with both igniters energized.
- Manual start:
  - During a manual start both igniters are supplied, when the ENG MASTER sw is ON.
  - Both igniters are cut off when N2 reaches approximately 55 %.

IN FLIGHT

In case of start attempt in flight, when the ENG MASTER sw is ON, both igniters are supplied.

IGNITION FOR STARTING

Ident.: DSC-70-80-30-00020924.0002001 / 17 MAR 17

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

ON THE GROUND

Automatic start:

- During a first automatic start attempt only one igniter is supplied. The FADEC automatically alternates the igniters and/or channels used in successive start sequences.
- The ignition comes on automatically when N2 reaches 16 % and cuts off automatically when N2 reaches 50 %.
- During an automatic start, if the first attempt fails, the FADEC automatically initiates a new start attempt with both igniters energized.
- Manual start:
  - During a manual start both igniters are supplied, when the ENG MASTER sw is ON.
  - Both igniters are cut off when N2 reaches approximately 50 %.

IN FLIGHT

In case of start attempt in flight, when the ENG MASTER sw is ON, both igniters are supplied.

IGNITION FOR STARTING

Ident.: DSC-70-80-30-00020924.0001001 / 17 MAR 17

[2] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

ON THE GROUND

- Automatic start:
  - During a first automatic start attempt only one igniter is supplied. The FADEC automatically alternates the igniters and/or channels used in successive start sequences.
  - The ignition comes on automatically after the dry crank sequence, and cuts off automatically when N2 reaches 43 %.
  - After an aborted automatic start, the flight crew initiates another automatic start sequence. The FADEC energizes alternate igniters during successive automatic start sequences.
- Manual start:
  - During a manual start both igniters are supplied, when the ENG MASTER sw is ON.
  - Both igniters are cut off when N2 reaches 43 %.

IN FLIGHT

In case of start attempt in flight, when the ENG MASTER sw is ON, both igniters are supplied.

CONTINUOUS IGNITION

Ident.: DSC-70-80-30-00001620.0004001 / 04 SEP 18

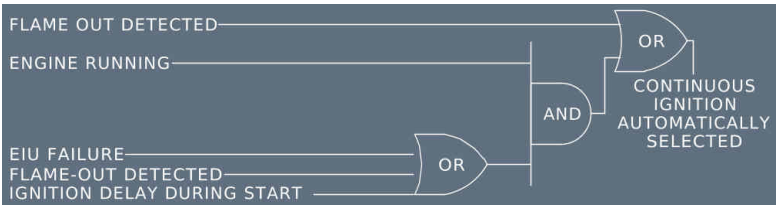
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Continuous ignition may be selected either manually or automatically to maintain engine combustion.

MANUAL SELECTION

In flight, continuous ignition is on when the ENG MODE selector is on IGN/START, if the corresponding engine is running.
Only one igniter is selected. If failed, both igniters are automatically selected.
On the ground after the engine is started, because ignition cuts off automatically, the flight crew must switch the ENG MODE selector to NORM then back to IGN/START to turn on continuous ignition.

AUTOMATIC SELECTION



WINDMILLING QUICK RELIGHT

In case of inadvertent engine shutdown by cycling the Engine Master lever to OFF then ON, in the windmilling quick relight envelope, the FADEC will attempt automatically a relight regardless of the rotary selector position.

CONTINUOUS IGNITION

Ident.: DSC-70-80-30-00001620.0003001 / 04 SEP 18

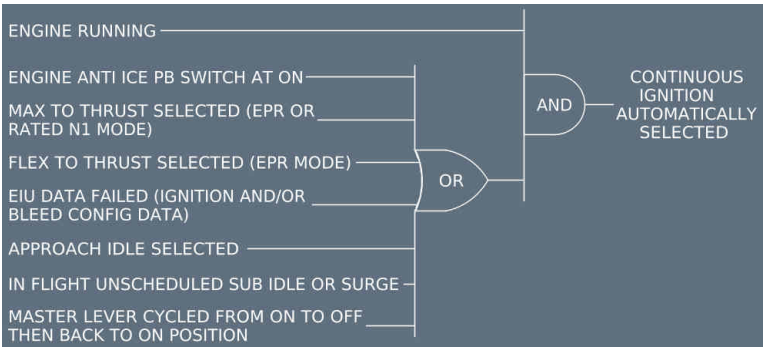
3 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

Continuous ignition may be selected either manually or automatically to maintain engine combustion.

MANUAL SELECTION

In flight, continuous ignition is on when the ENG MODE selector is on IGN/START, if the corresponding engine is running.
On the ground after the engine is started, because ignition cuts off automatically, the flight crew must switch the ENG MODE selector to NORM then back to IGN/START to turn on continuous ignition.
It must be noted that the igniters should be turned off to conserve the life of the ignition system components whenever ignition is not needed on the ground or in flight (mode selector on NORM position).

AUTOMATIC SELECTION



WINDMILLING QUICK RELIGHT

In case of inadvertent engine shutdown by cycling the Engine Master lever to OFF then ON, in the windmilling quick relight envelope, the FADEC will attempt automatically a relight regardless of the rotary selector position.

CONTINUOUS IGNITION

Ident.: DSC-70-80-30-00001620.0005001 / 04 SEP 18

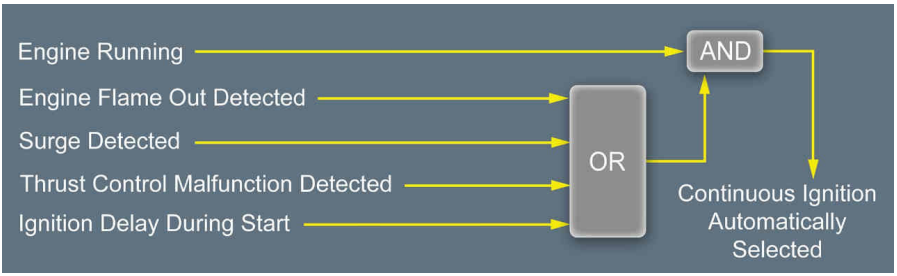
4 **Applicable to: MSN 06720-09063**

Continuous ignition may be selected either manually or automatically to maintain engine combustion.

MANUAL SELECTION

In flight, continuous ignition is on when the ENG MODE selector is on IGN/START, if the corresponding engine is running.
Both igniters are selected.
On the ground after the engine is started, because ignition cuts off automatically, the flight crew must switch the ENG MODE selector to NORM then back to IGN/START to turn on continuous ignition.

AUTOMATIC SELECTION



WINDMILLING QUICK RELIGHT

In case of inadvertent engine shutdown by cycling the Engine Master lever to OFF then ON, in the windmilling quick relight envelope, the FADEC will attempt automatically a relight regardless of the rotary selector position.

GENERAL

Ident.: DSC-70-80-40-00001621.0001001 / 21 MAR 16
Applicable to: ALL

The engine starting system consists of an air turbine starter and a start valve.
The start valve admits air supplied by the pneumatic system to operate the starter.
The FADEC controls the start valve electrically and bleed pressure is required for opening the start valve. If electrical control fails when the aircraft is on the ground, a handle allows the start valve to be operated manually.

AUTOMATIC STARTING

Ident.: DSC-70-80-40-10-00020932.0001001 / 21 MAR 17
Applicable to: ALL

GENERAL

This sequence is under the full authority of the FADEC, which controls:
- The start valve
- The igniters
- The fuel HP valves.

Ident.: DSC-70-80-40-10-00020933.0008001 / 21 MAR 17
[1] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

PROTECTION

The FADEC :
- Detects a hot start, a hung start, a stall, or no light up
- Announces FAULT and identifies the fault in an ECAM message
- Runs an abort sequence if a start aborts on the ground when N2 < 50 %
  - Closes the HP valve
  - Closes the start valve
  - Turns off ignition
  - Cranks the engine crank after the start abort in order to clear out fuel vapors
- Ensures an automatic dry crank sequence of 30 s at maximum motoring speed.

Ident.: DSC-70-80-40-10-00020933.0004001 / 21 MAR 17

2 **Applicable to: MSN 06720-09063**

PROTECTION

The FADEC :

- Detects a hot start, a hung start, a stall, or no light up
- Announces FAULT and identifies the fault in an ECAM message
- Runs an abort sequence if a start aborts on the ground when N2 < 55 %
  - Closes the HP valve
  - Closes the start valve
  - Turns off ignition
  - Cranks the engine crank after the start abort in order to clear out fuel vapors
  - Controls any additional start attempts.

Ident.: DSC-70-80-40-10-00020933.0001001 / 21 MAR 17

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

PROTECTION

The FADEC :

- Detects a hot start, a hung start, a stall, or no light up
- Announces FAULT and identifies the fault in an ECAM message
- Runs an abort sequence if a start aborts on the ground
  - Closes the HP valve
  - Closes the start valve
  - Turns off ignition
  - Cranks the engine crank after the start abort in order to clear out fuel vapors
  - Controls any additional start attempts.

Ident.: DSC-70-80-40-10-00020934.0003001 / 21 MAR 17

3 **Applicable to: MSN 06720-09063**

DRY CRANKING

Depending on the engine thermal state, the FADEC can command an automatic dry cranking before the start of the engine. A memo COOLING is displayed on the E/WD during dry cranking. The dry cranking time is of approximately 2 min.

Ident.: DSC-70-80-40-10-00020934.0002001 / 21 MAR 17

4 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

DRY CRANKING

During engine start with residual EGT > 250 °C, an auto-crank function motors the engine until EGT decreases below 250 °C.
There is no crew awareness message to indicate the reason for the extended motoring.

This auto-crank function may be activated in very hot condition (typically ISA + 40 °C) or short turn-around times (< 20 min).

Ident.: DSC-70-80-40-10-00020934.0001001 / 21 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

DRY CRANKING

Depending on the engine thermal state, the FADEC can initiate a pre-start motoring (dry cranking) up to 60 s. Pre-start motoring is active during all ground starts and ground cranking procedures to limit the engine core speed below the bow rotor critical speed (bow rotor protection). The motoring time will vary depending on the residual thermal condition of the engine and depending on the engine vibration level. During the engine motoring, the FADEC logic limits the maximum N2 around 30 %.

Ident.: DSC-70-80-40-10-00020935.0001001 / 21 MAR 17
Applicable to: ALL

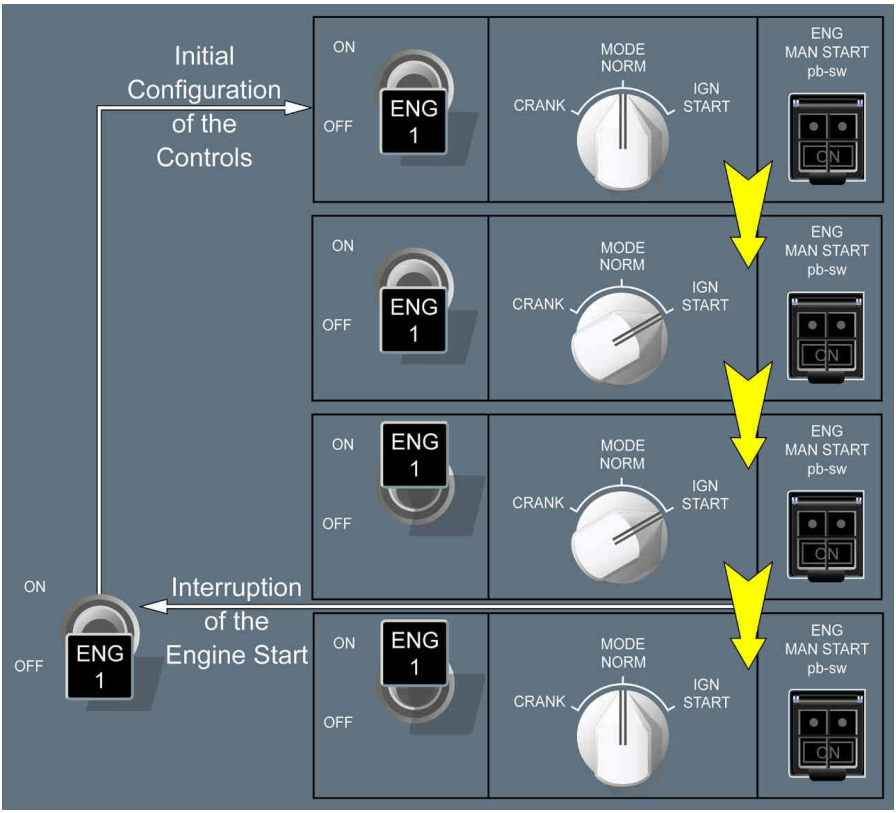
WINDMILLING

For an in-flight start, the FADEC decides whether the engine is windmilling fast enough or needs assistance from the starter in view of current engine parameters and flight environment parameters.
Flight crew may interrupt this start sequence by moving the ENG MASTER sw to OFF.

AUTOMATIC STARTING SEQUENCE

Ident.: DSC-70-80-40-20-00020925.0001001 / 21 MAR 17
Applicable to: ALL

SEQUENCE OF THE AUTOMATIC START



Ident.: DSC-70-80-40-20-00020926.0001001 / 21 MAR 17
Applicable to: ALL

INITIAL CONFIGURATION OF THE CONTROLS

The initial configuration prior an automatic engine start is the following :

- The ENG MASTER sw is set to OFF
- The ENG MODE selector is set to NORM
- The ENG MAN START pb-sw is set to OFF.

Ident.: DSC-70-80-40-20-00020927.0001001 / 21 MAR 17
Applicable to: ALL

FIRST STEP

The flight crew must set the ENG MODE selector to IGN/START, leading to the following:

- The ENG SD page appears on the SD
- All engine parameters are available
- Pack valves automatically close.

After 30 s, if the flight crew does not set the ENG MASTER sw to ON (*Refer to DSC-70-80-40 Second Step*), pack valves automatically open again.

Ident.: DSC-70-80-40-20-00020928.0005001 / 21 MAR 17
5 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

SECOND STEP

The flight crew must set the ENG MASTER sw to ON, and the following steps occur:

- The LP fuel valve opens
- The engine start valve opens
- After the automatic dry crank sequence (approx. 30 s):
  - The ignition starts
  - The HP fuel valve opens.
- When N2 > 43 %:
  - The engine start valve closes
  - The ignition stops
  - The pack valves reopen if another engine is not started within 30 s.

Ident.: DSC-70-80-40-20-00020928.0004001 / 21 MAR 17
6 **Applicable to: MSN 06720-09063**

SECOND STEP

The flight crew must set the ENG MASTER sw to ON, and the following steps occur:
- The LP fuel valve opens
- The engine start valve opens
- After the automatic dry crank sequence (approx. 2 min):
  - The ignition starts
  - The HP fuel valve opens.
- When N2 > 55 %:
  - The engine start valve closes
  - The ignition stops
  - The pack valves reopen if another engine is not started within 60 s.

Ident.: DSC-70-80-40-20-00020928.0001001 / 21 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

SECOND STEP

The flight crew must set the ENG MASTER sw to ON, and the following steps occur:
- The LP fuel valve opens
- The engine start valve opens
- The ignition starts:
  - On ground: when N2 > 16 %
  - In flight: Immediately.
- The HP fuel valve opens:
  - On ground: when N2 > 22 %
  - In flight: when N2 > 15 %.
- When N2 > 50 %:
  - The engine start valve closes
  - The ignition stops if on ground
  - The pack valves reopen if another engine is not started within 30 s.

Ident.: DSC-70-80-40-20-00020929.0001001 / 21 MAR 17
Applicable to: ALL

THIRD STEP

The automatic engine start is finished.

The flight crew must set the ENG START selector to NORM.

Ident.: DSC-70-80-40-20-00020930.0001001 / 21 MAR 17
Applicable to: ALL

INTERRUPTION OF THE AUTOMATIC START

When required by ECAM and after confirmation, the flight crew must set the ENG MASTER lever to OFF.

If the flight crew sets the ENG MASTER sw to OFF, the FADEC automatically :
- Closes the LP and the HP fuel shutoff valves
- Stops to energize the ignitor
- Closes the engine start valve.

MANUAL STARTING

Ident.: DSC-70-80-40-00020937.0004001 / 17 MAR 17
7 **Applicable to: MSN 06720-09063**

If an automatic start is not successful, the flight crew can perform a manual start.
In the manual start sequence, the FADEC has limited control. As a result, the flight crew must monitor engine acceleration.

To perform a manual start, the flight crew must :
- Set the ENG MODE selector to IGN/START
- Set the ENG MAN START pb-sw to ON
- Set the ENG MASTER sw to ON.

The FADEC :
- Opens the engine start valve when the flight crew :
  - Sets the ENG MODE selector to IGN/START
  - Sets the ENG MAN START pb-sw to ON
- Opens the HP shutoff valve, and operates both igniters when the flight crew sets the ENG MASTER sw to ON
- Closes the engine start valve, and cuts off the ignition when N2 reaches 55 %.

For more information about the manual start sequence, *Refer to PRO-NOR-SUP-ENG Manual Engine Start - General*.
Depending on the engine thermal state, the FADEC can command an automatic dry cranking before the start of the engine. A memo COOLING is displayed on the E/WD during dry cranking. Thy dry cranking is of approximately 2 min.

The FADEC makes a passive survey of the engine during the starting sequence (up to 55 % N2) : A dedicated ECAM alert informs the flight crew of an abnormal start, and the flight crew has to interrupt the start sequence.
The FADEC has not the authority to abort the manual start.

MANUAL STARTING

Ident.: DSC-70-80-40-00020937.0002001 / 17 MAR 17

8 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

If an automatic start is not successful, the flight crew can perform a manual start.
In the manual start sequence, the FADEC has limited control. As a result, the flight crew must monitor engine acceleration.

To perform a manual start, the flight crew must :
- Set the ENG MODE selector to IGN/START
- Set the ENG MAN START pb-sw to ON
- Set the ENG MASTER sw to ON.

The FADEC :
- Opens the engine start valve when the flight crew :
  - Sets the ENG MODE selector to IGN/START
  - Sets the ENG MAN START pb-sw to ON
- Opens the HP shutoff valve, and operates both igniters when the flight crew sets the ENG MASTER switch to ON
- Closes the engine start valve, and cuts off the ignition when N2 reaches 43 %.

For more information about the manual start sequence, *Refer to PRO-NOR-SUP-ENG Manual Engine Start - General*.
The FADEC makes a passive survey of the engine during the starting sequence (up to 50 % N2) : the flight crew is made aware of an abnormal start by a proper ECAM warning and has to interrupt the start sequence. The FADEC has not the authority to abort the manual start :
In flight, the FADEC always commands a starter-assisted air start.

MANUAL STARTING

Ident.: DSC-70-80-40-00020937.0001001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

If an automatic start is not successful, the flight crew can perform a manual start.
In the manual start sequence, the FADEC has limited control. As a result, the flight crew must monitor engine acceleration.

To perform a manual start, the flight crew must :
- Set the ENG MODE selector to IGN/START
- Set the ENG MAN START pb-sw to ON
- Set the ENG MASTER sw to ON.

The FADEC:
- Opens the engine start valve when the flight crew :
  - Sets the ENG MODE selector to IGN/START
  - Sets the ENG MAN START pb-sw to ON
- Opens the HP shutoff valve, and operates both igniters when the flight crew sets the ENG MASTER sw to ON
- Closes the engine start valve, and cuts off the ignition when N2 reaches 50 %.

For more information about the manual start sequence,*Refer to PRO-NOR-SUP-ENG Manual Engine Start - General*.

The FADEC makes a passive survey of the engine during the starting sequence : the flight crew is made aware of an abnormal start by a proper ECAM warning and has to interrupt the start sequence. The FADEC has not the authority to abort the manual start :
- in flight
- on ground, except if the start EGT limit is exceeded before reaching 50 % N2. In this case only, the FADEC aborts the start.

In flight, the FADEC always commands a starter-assisted air start.

ENGINE VENTILATION (DRY CRANKING)

Ident.: DSC-70-80-40-00020938.0001001 / 21 MAR 17
Applicable to: ALL

A dry cranking cycle ventilates the engine to remove fuel vapors after an unsuccessful start attempt on the ground.
The flight crew can manually select cranking by setting the ENG MODE selector to CRANK and the ENG MAN START pb-sw to ON (ENG MASTER sw OFF). Flight crew can stop the cranking by setting the ENG MAN START pb-sw to OFF.

ENGINE COOLING

Ident.: DSC-70-80-40-00020228.0003001 / 21 OCT 16
Applicable to: MSN 06720-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252

Before a start (automatic or manual) or before a manual dry crank cycle, the FADEC can command an automatic dry cranking (engine cooling) to prevent any potential bowed rotor condition. During this engine cooling, the FADEC logic limits the maximum N2 around 10 %.

Note: *A bowed rotor can occur when engine internal components cool at different rates, leading to unequal thermal expansion. This can cause some deflection (or bow) of the rotor shaft.*

The engine cooling time depends on the engine temperature at shutdown, the length of time the engine has been shutdown, the current ambient temperature, and the engine oil temperature.
When the FADEC is powered and if engine cooling is required, a COOLING indication appears on the E/WD for both engines with the expected engine cooling time indicated.
Refer to DSC-70-90-40 Engine Warning Display
When the engine cooling process is completed, the COOLING indication and the expected engine cooling time disappear.

Note: *The FADEC takes into account the previous dry cranking operation to reduce the engine cooling time during the subsequent engine start.*

The FADEC does not initiate any automatic dry cranking during an in-flight engine start.

ENGINE COOLING

Ident.: DSC-70-80-40-00020228.0004001 / 21 OCT 16

9 **Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192, 07329-09063**

Before a start (automatic or manual) or before a manual dry crank cycle, the FADEC can command an automatic dry cranking (engine cooling) to prevent any potential bowed rotor condition. During this engine cooling, the FADEC logic limits the maximum N2 around 10 %.

Note: *A bowed rotor can occur when engine internal components cool at different rates, leading to unequal thermal expansion. This can cause some deflection (or bow) of the rotor shaft.*

The engine cooling time depends on the engine temperature at shutdown, the length of time the engine has been shutdown, the current ambient, and the engine oil temperature.
When the FADEC is powered and if engine cooling is required, a COOLING indication appears on the E/WD for both engines with the expected engine cooling time indicated.
Refer to DSC-70-90-40 Engine Warning Display
When the engine cooling process is completed, the COOLING indication and the expected engine cooling time disappear.

Note: *The FADEC takes into account the previous dry cranking operation to reduce the engine cooling time during the subsequent engine start.*

The FADEC does not initiate any automatic dry cranking during an in-flight engine start.

DUAL COOLING:

Dual cooling is commanded via the DUAL COOLING pb-sw on the overhead panel.
Refer to DSC-70-90-10 ENG DUAL COOLING Panel

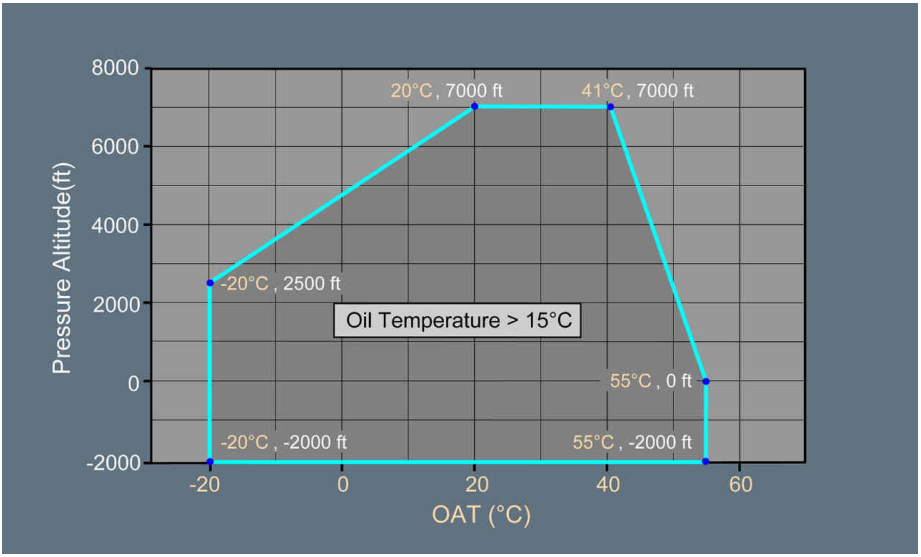
The dual cooling function enables that during an automatic start sequence on ground, when the ENG MASTER lever is set to ON, the FADEC commands the cooling on both engines simultaneously (if cooling is required).
The dual cooling function is available in a dedicated envelope of use depending on the APU performance, and on engine oil temperature.
Refer to DSC-70-80-40 Automatic Engine Start with Dual Cooling - Envelope

Note: The dual cooling function is available if the COOLING message is indicated for both engine on the E/WD.

AUTOMATIC ENGINE START WITH DUAL COOLING - ENVELOPE

10 Ident.: DSC-70-80-40-00020229.0022001 / 03 AUG 17
Applicable to: MSN 09063

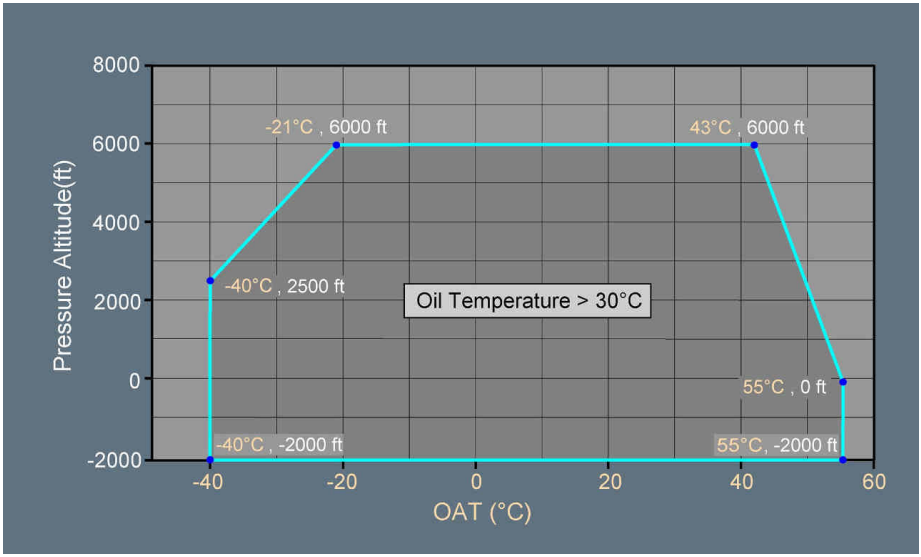
Dual Cooling Assisted by APU



AUTOMATIC ENGINE START WITH DUAL COOLING - ENVELOPE

Ident.: DSC-70-80-40-00020229.0020001 / 21 OCT 16
Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192, 07329-08737

Dual Cooling Assisted by APU

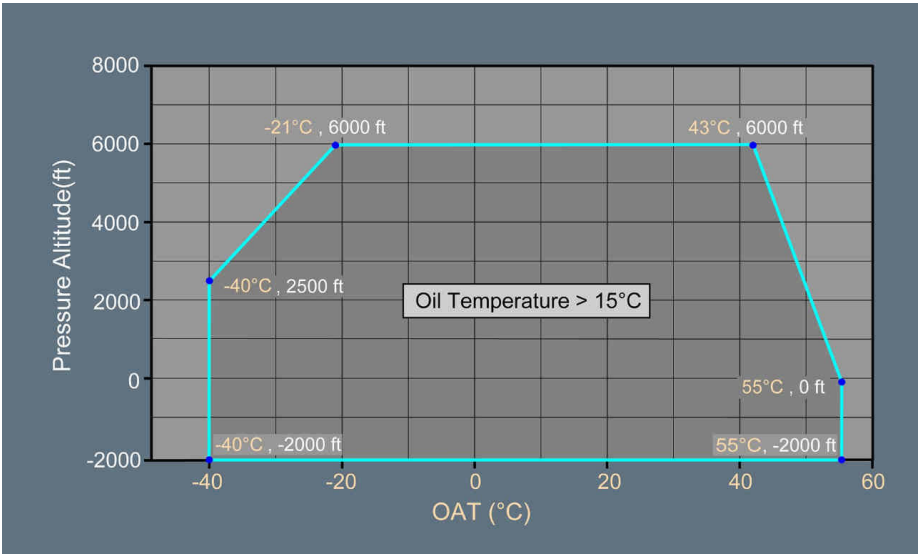


AUTOMATIC ENGINE START WITH DUAL COOLING - ENVELOPE

Ident.: DSC-70-80-40-00020229.0023001 / 24 AUG 18

[11] **Applicable to: MSN 08768-09045**

Dual Cooling Assisted by APU



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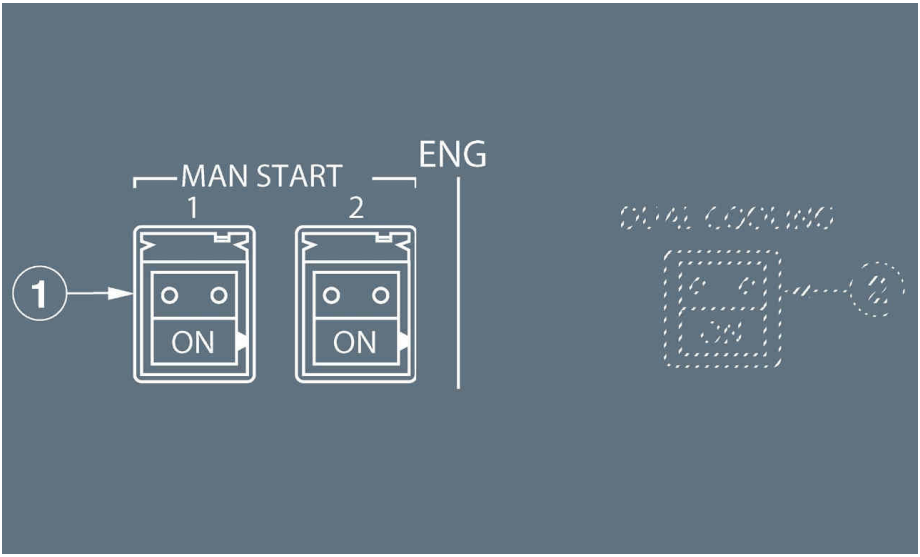
ENG MAN START PANEL

Ident.: DSC-70-90-10-20-00018366.0003001 / 21 OCT 16

1 **Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192, 07329-09063**

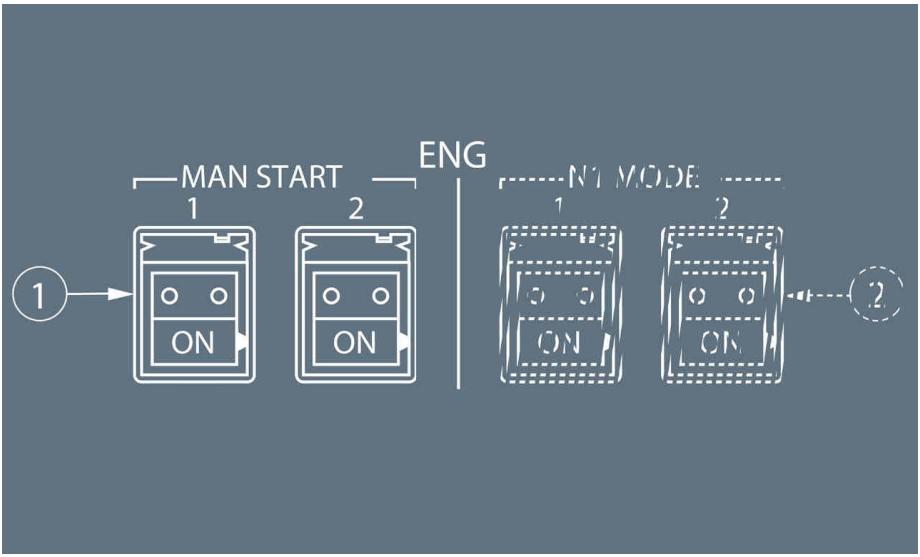
ENG MAN START Panel



Ident.: DSC-70-90-10-20-00018366.0002001 / 21 MAR 16

2 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

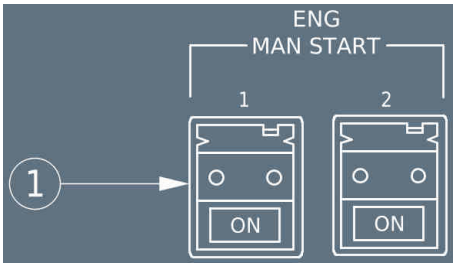
ENG MAN START Panel



Ident.: DSC-70-90-10-20-00018366.0001001 / 21 MAR 16

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252

ENG MAN START Panel



Ident.: DSC-70-90-10-20-00018370.0001001 / 12 MAY 16
Applicable to: ALL

ENG MAN START pb-sw

Off : - Aborts the manual start sequence of the associated engine, when the ENG MODE selector is set to IGN/START and the ENG MASTER lever is set to OFF, or
- Stops the dry crank process of the associated engine, when the ENG MODE selector is set to CRANK and the ENG MASTER lever is set to OFF.

L13

ON (in blue) : - Initiates the manual start sequence of the associated engine, when the ENG MODE selector is set to IGN/START, or
- Initiates the wet crank process of the associated engine, when the ENG MODE selector is set to CRANK and the ENG MASTER lever is set to ON, or
- Initiates the dry crank process of the associated engine, when the ENG MODE selector is set to CRANK and the ENG MASTER lever is set to OFF.

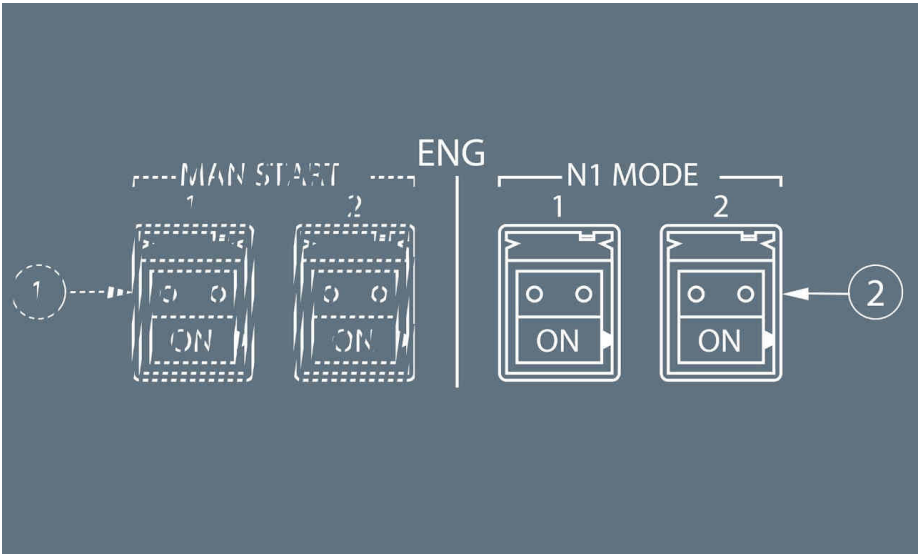
ENG N1 MODE PANEL

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: DSC-70-90-10-25-00018374.0001001 / 21 MAR 16

3

ENG N1 MODE Panel



Ident.: DSC-70-90-10-25-00018375.0001001 / 21 MAR 16

4

ENG N1 MODE pb-sw

Off : The FADEC controls the engine in EPR mode, if available.

ON (in blue) : The FADEC controls the engine in N1 mode.

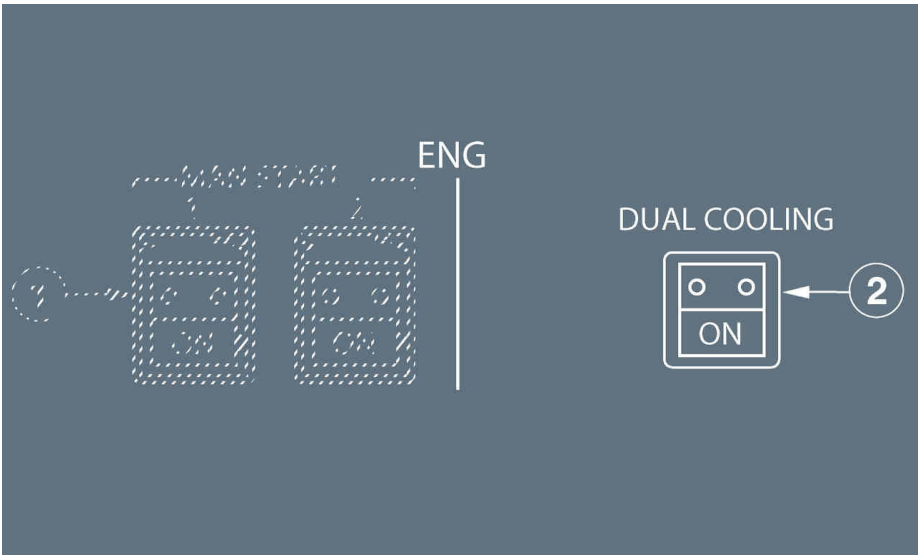
ENG DUAL COOLING PANEL

Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192, 07329-09063

Ident.: DSC-70-90-10-26-00020022.0001001 / 21 OCT 16

5

ENG DUAL COOLING Panel



Ident.: DSC-70-90-10-26-00020023.0001001 / 21 OCT 16

6

ENG DUAL COOLING pb-sw

L12

Off — The dual cooling function is not armed.
If dual cooling is in progress, the FADEC stops the automatic dry cranking on the engine that is not commanded to start.

L12

ON (in blue) — Arms the dual cooling function.
If required, the FADEC can command an automatic dry cranking of both engines simultaneously, when the flight crew initiates the automatic start of the first engine.

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ENG MODE SELECTOR AND ENG MASTER LEVERS

Applicable to: ALL

Ident.: DSC-70-90-20-30-00018367.0001001 / 12 OCT 16

ENG MODE selector and ENG MASTER Levers

Ident.: DSC-70-90-20-30-00018373.0001001 / 21 MAR 17

ENG MODE START selector

NORM : Normal mode of operation.

IGN/START : Use the IGN/START position to:

- Initiate the automatic or manual start sequences of the associated engine, when the ENG MASTER lever is set to OFF, or
- Initiate the ignitors in flight as required.

L13

CRANK : Use the CRANK position to:

- Initiate the dry crank process of the associated engine, when the ENG MASTER lever is set to OFF and the ENG MAN START pb-sw is set to ON.
- Initiate the wet crank process of the associated engine for maintenance purpose, when the ENG MASTER lever, and the ENG MAN START pb-sw are set to ON.

Ident.: DSC-70-90-20-30-00018371.0001001 / 12 MAY 16

ENG MASTER lever

Also called ENG MASTER sw.

ON : The FADEC:

- Initiates the automatic start sequence of the associated engine, when the ENG MODE selector is set to IGN/START, or
- Initiates the manual start sequence of the associated engine, when the ENG MODE selector is set to IGN/START and the ENG MAN START pb-sw is set to ON.

OFF : The FADEC:

- Shuts down the associated engine, or
- Aborts the start sequence of the associated engine.

Ident.: DSC-70-90-20-30-00018372.0001001 / 21 MAR 17

ENG 1(2) FIRE light

FIRE Light :
A fire is detected in the corresponding engine.
Refer to DSC-26-20-20 ENG 1(2) FIRE Light

ENG 1(2) FAULT light

FAULT light :
This amber light comes on, and a caution appears on ECAM, if there is:

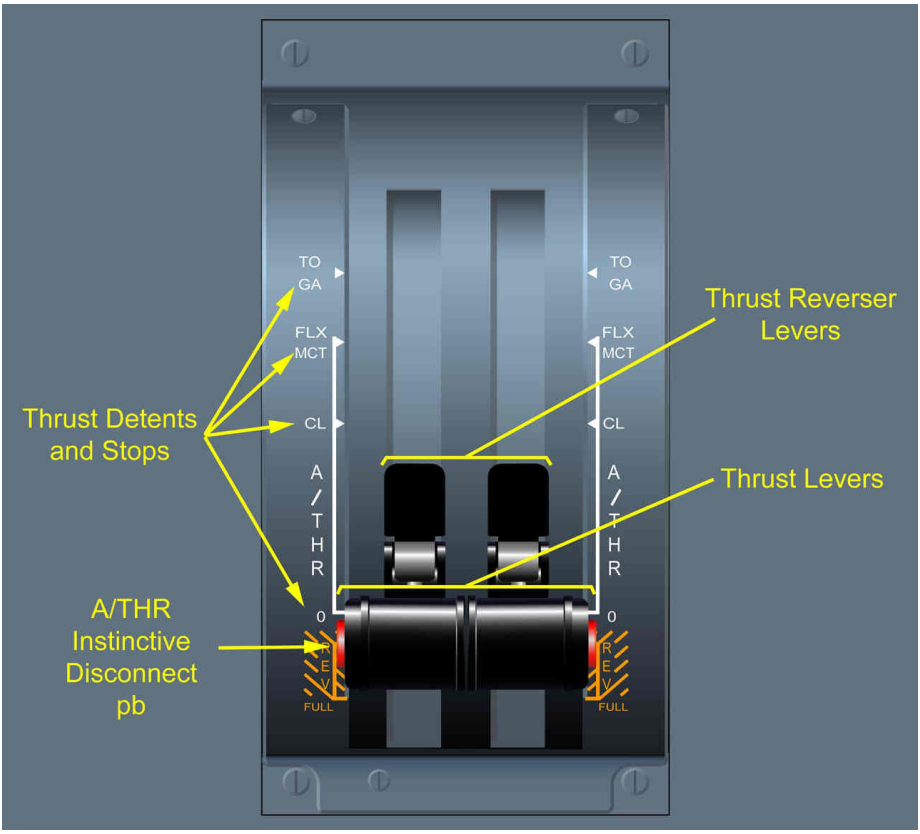
- The position of the HP fuel shutoff valve is abnormal, or
- The automatic start sequence of the associated engine aborts, or
- There is a malfunction of the thrust control.

THRUST LEVERS

Applicable to: ALL

Ident.: DSC-70-90-20-40-00018368.0001001 / 28 JUL 16

Thrust Levers



Ident.: DSC-70-90-20-40-00018376.0001001 / 21 MAR 16

THRUST LEVERS

The flight crew uses the thrust levers in order to:

- Adjust the thrust, or
- Select a thrust stop or detent, or

- Control the deployment and the stowage of the associated reversers, or
- Adjust the associated reverse thrust.

The flight crew can move each thrust lever individually.

L2 The position of the thrust levers appears on the E/WD, via a blue circle on the thrust gauge.

L1 The flight crew can move each thrust lever forward the Idle (0) stop, when the associated thrust reverser lever is set to the locked position.
The flight crew can move each thrust lever backward the Idle (0) stop, when the associated thrust reverser lever is in the unlocked position.

Ident.: DSC-70-90-20-40-00018377.0001001 / 12 OCT 16

THRUST DETENTS AND STOPS

There are two stops and four detents:
- The Idle (0) stop,
- The Climb (CL) detent,
- The Maximum Continuous Thrust (MCT)/Flexible Take Off (FLX) detent,
- The Takeoff (TO)/Go-Around (GA) detent,
- The Rev Idle (R or REV) detent,
- The Rev Max (F or FULL) stop.

Ident.: DSC-70-90-20-40-00018378.0001001 / 21 MAR 16

THRUST REVERSER LEVERS

The flight crew uses the thrust reverser levers in order to unlock the associated thrust lever.
The flight crew can move each thrust reverser lever upward to the unlocked position, when the associated thrust lever is set to the Idle (0) stop.
The thrust reverser levers are automatically reset to the locked position, when the flight crew moves the thrust levers forward the Idle (0) stop.

Ident.: DSC-70-90-20-40-00018379.0001001 / 21 MAR 16

A/THR Instinctive Disconnect pb

Pressing the A/THR instinctive disconnect pb disconnects the A/THR.

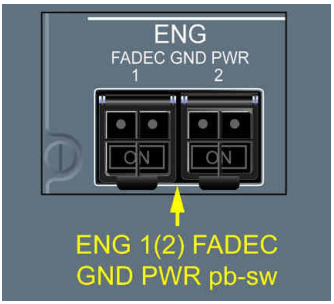
L2 For more information about A/THR instinctive disconnect pb, *Refer to DSC-22_30-90 A/THR Disconnection - General*.

ENG FADEC GND PWR PANEL

Applicable to: ALL

Ident.: DSC-70-90-30-10-00018365.0001001 / 12 OCT 16

ENG FADEC GND PWR Panel



Ident.: DSC-70-90-30-10-00018369.0001001 / 21 MAR 16

ENG FADEC GND PWR PB-SW

Off : The electrical network of the aircraft or the FADEC alternator automatically supplies the FADEC.

ON : On ground, when pressed the electrical network of the aircraft supplies the FADEC when:

- The ENG FIRE pb-sw is not pressed,
- The FADEC alternator does not supply the FADEC.

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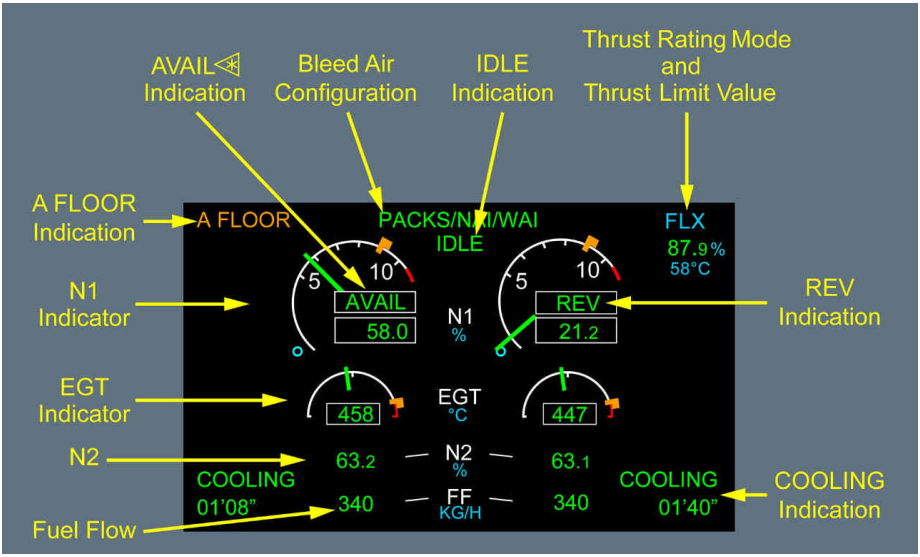
ENGINE/WARNING DISPLAY

Ident.: DSC-70-90-40-50-00017843.0006001 / 12 OCT 16

1 **Applicable to: MSN 06720-09063**

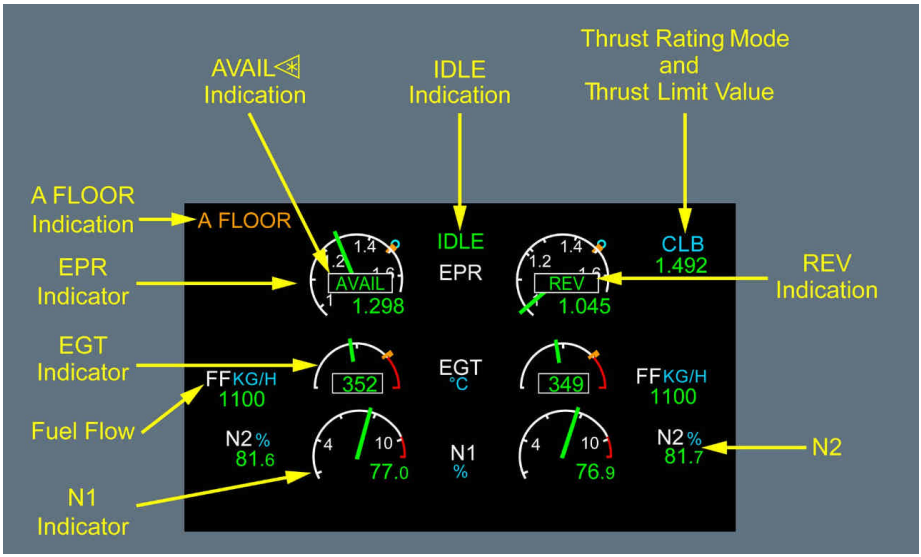
Engine/Warning Display



Ident.: DSC-70-90-40-50-00017843.0004001 / 12 OCT 16

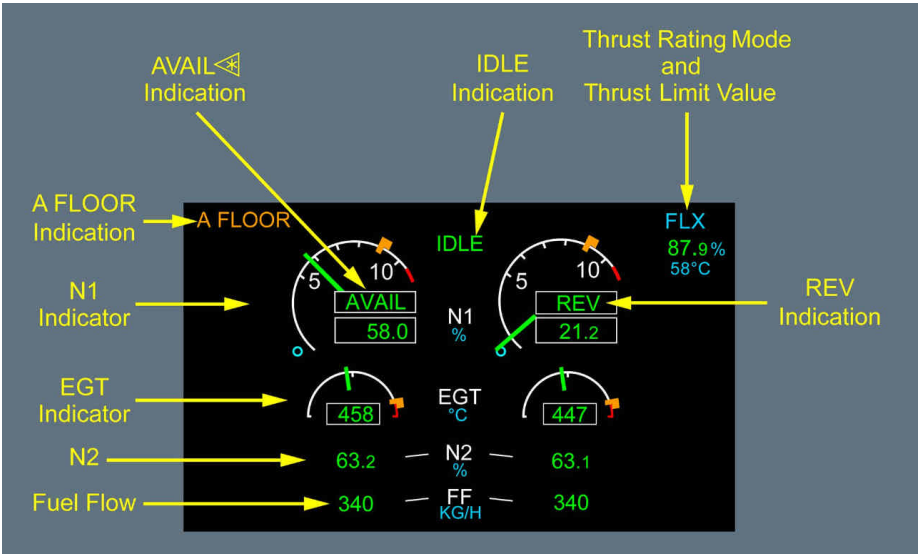
2 **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

Engine/Warning Display



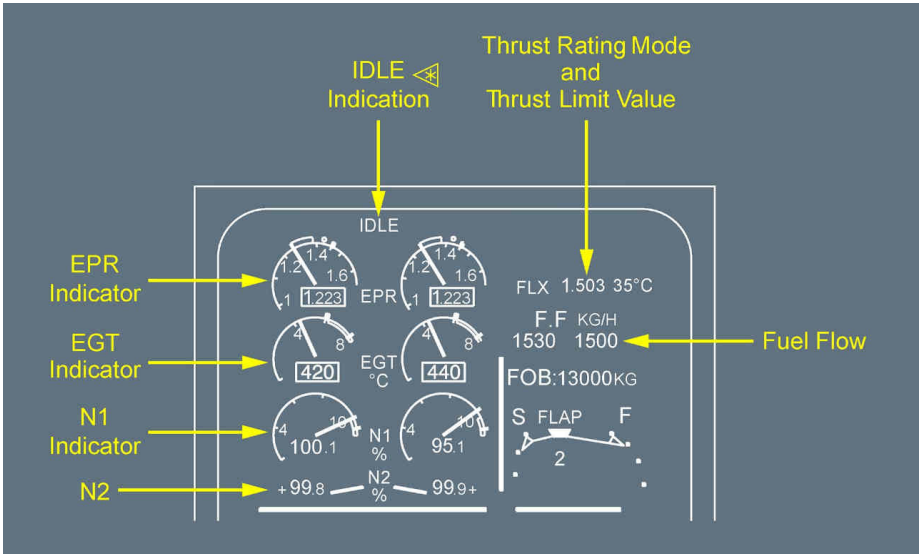
Ident.: DSC-70-90-40-50-00017843.0003001 / 12 OCT 16
Applicable to: MSN 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Engine/Warning Display



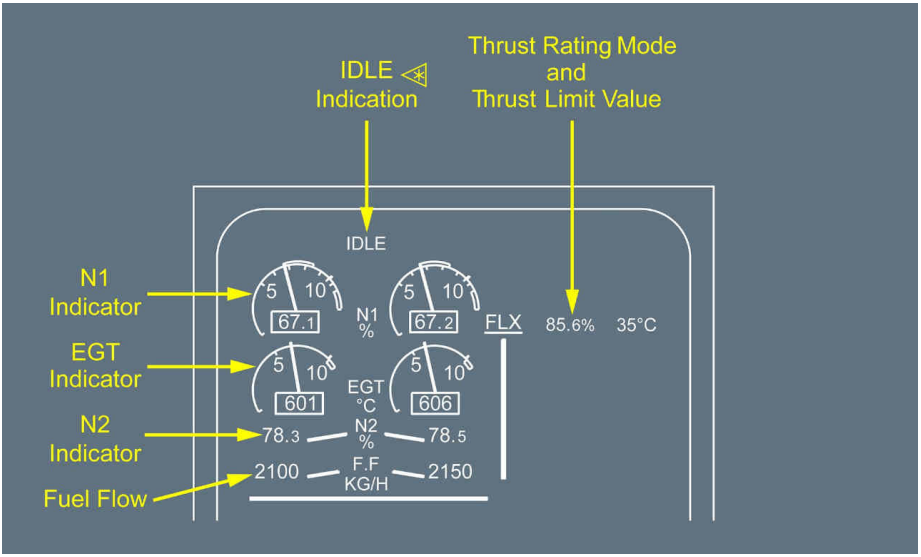
Ident.: DSC-70-90-40-50-00017843.0002001 / 21 MAR 16
Applicable to: MSN 02108, 02195-02359, 02405, 02482

Engine/Warning Display



Ident.: DSC-70-90-40-50-00017843.0001001 / 15 NOV 16
Applicable to: MSN 01767-01920

Engine/Warning Display



Ident.: DSC-70-90-40-50-00017845.0001001 / 21 MAR 16
Applicable to: ALL

A FLOOR INDICATION

The alpha floor protection is active.

L2 For more information, *Refer to DSC-22_30-90 A/THR Modes - ALPHA FLOOR*

Ident.: DSC-70-90-40-50-00017846.0001001 / 21 MAR 16
Applicable to: ALL

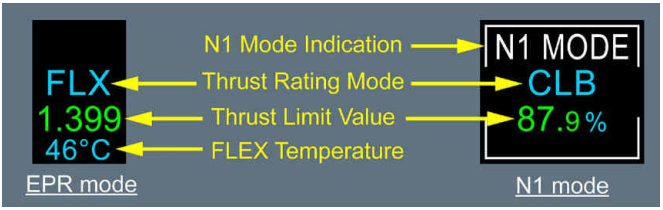
THRUST RATING MODE AND THRUST LIMIT VALUE

Indicates the thrust limit value and the associated thrust rating mode based on:

- The position of the thrust levers,
- Aircraft on ground or in flight,
- The engine status, i.e. running or not running,
- The data entered in the T.O and CLB panels of the FMS ACTIVE/PERF page.

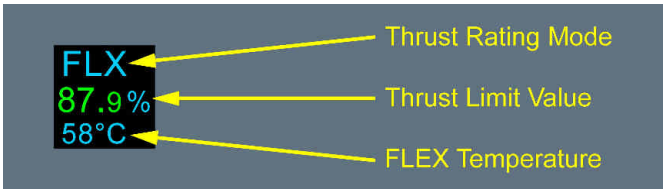
Ident.: DSC-70-90-40-50-00017847.0004001 / 12 OCT 16

3 **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

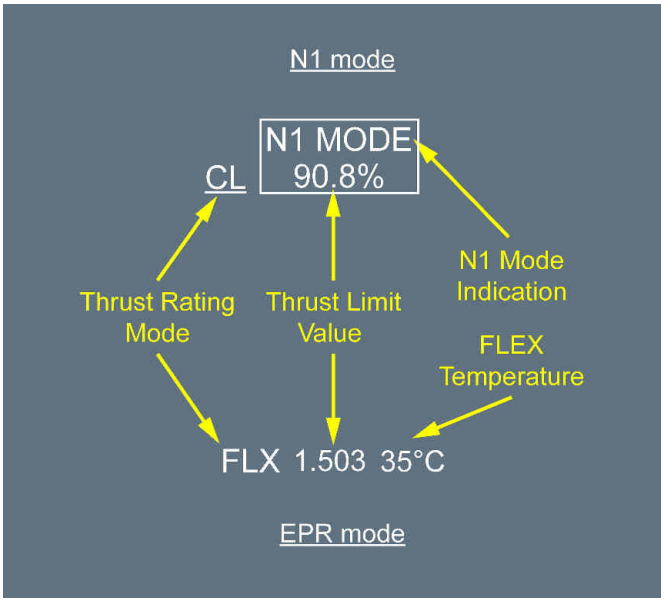


Ident.: DSC-70-90-40-50-00017847.0003001 / 21 MAR 16

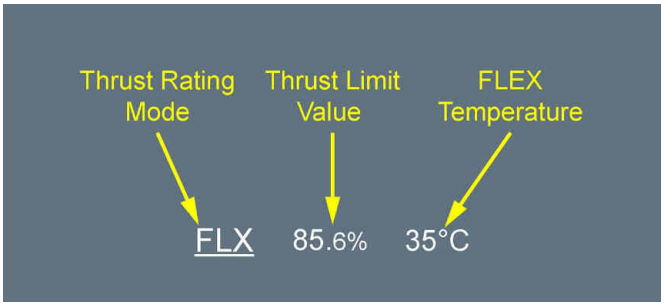
4 **Applicable to: MSN 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**



Ident.: DSC-70-90-40-50-00017847.0002001 / 21 MAR 16
Applicable to: MSN 02108, 02195-02359, 02405, 02482



Ident.: DSC-70-90-40-50-00017847.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920



Ident.: DSC-70-90-40-50-00018201.0001001 / 04 DEC 17
Applicable to: ALL

THRUST RATING MODES

The thrust rating modes are:

TOGA	:	Takeoff or go-around thrust rating mode is selected.
MCT	:	Maximum continuous thrust rating mode is selected.
CLB	:	Climb thrust rating mode is selected.
FLX	:	Flexible takeoff thrust rating mode is selected.
DCLB	:	Derated climb ◁ thrust rating mode is selected.
D04	:	Derated takeoff ◁ thrust rating mode is selected. There are several levels of derated takeoff: D04, D08, D12, D16, D20, ...
GA SOFT	:	Soft go-around ◁ thrust rating mode is selected.
MREV	:	Maximum reverse thrust rating mode is selected.

Ident.: DSC-70-90-40-50-00018203.0002001 / 21 MAR 16
5 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

THRUST LIMIT VALUE

EPR value : Indicates the EPR limit value associated with the thrust rating mode, when at least one engine operates in EPR mode.

L12

N1 value : Indicates the N1 limit value associated with the thrust rating mode, when both engines operate in N1 mode.
The N1 MODE indication appears.

L2 The thrust limit value disappears when the thrust reversers are selected.

Ident.: DSC-70-90-40-50-00018203.0001001 / 21 MAR 16
6 **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

THRUST LIMIT VALUE

N1 value : Indicates the N1 limit value associated with the thrust rating mode.

L2 The thrust limit value disappears when the thrust reversers are selected.

Ident.: DSC-70-90-40-50-00017849.0002001 / 12 MAY 16

7 **Applicable to: MSN 06720-09063**

FLEX TEMPERATURE

Cyan : Indicates the flexible temperature that the flight crew entered in the T.O panel of the FMS PERF page, when the FLX rating mode is selected, and the Static Air Temperature is at most 10 °C above the flexible temperature.

Ident.: DSC-70-90-40-50-00017849.0001001 / 21 MAR 16

8 **Applicable to: MSN 01767-06336**

FLEX TEMPERATURE

Cyan : Indicates the flexible temperature that the flight crew entered in the T.O panel of the FMS PERF page, when the FLX rating mode is selected

Dashes in cyan : Indicates that the Static Air Temperature is above the flexible temperature.

Ident.: DSC-70-90-40-50-00017851.0001001 / 18 MAY 16

9 **Applicable to: MSN 06720-09063**

BLEED AIR CONFIGURATION

PACKS : The engine bleeds supply the air conditioning packs.

NAI : The engine nacelle anti-ice is on.

WAI : The wing anti-ice is on.

All indications can appear independently.

L2 They appear:

- On ground, when at least one engine is running
- During takeoff or go-around phase, until thrust lever reduction to the CL detent
- In flight, when thrust rating mode is MCT.

Ident.: DSC-70-90-40-50-00018209.0001001 / 21 MAR 16

Applicable to: ALL

IDLE INDICATION

Both engines are at idle speed, and the aircraft is in flight.

L2 Pulses during 10 s, and then remains steady.

Ident.: DSC-70-90-40-50-00018210.0001001 / 21 MAR 16

Applicable to: ALL

AVAIL INDICATION

The engine is started, and at or above idle.

L2 On ground, appears steady during 10 s after a successful start. In flight, pulses during 1 min after a successful relight.
The AVAIL Indication ◁ disappears when the flight crew moves the thrust lever forward the idle detent.

Ident.: DSC-70-90-40-50-00018211.0001001 / 21 MAR 16
Applicable to: ALL

REV INDICATION

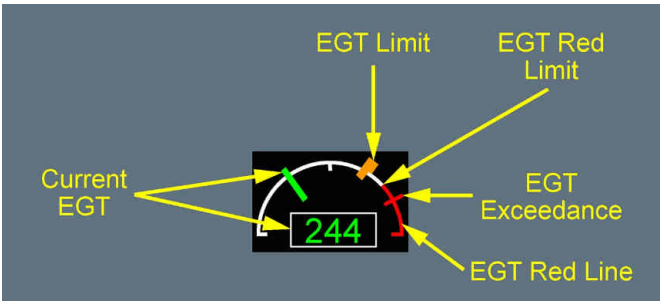
REV in green : On ground, the thrust reverser system is fully deployed.

L12

REV in amber : The thrust reverser system is unlocked.
In flight, the REV indication pulses during 9 s and then remains steady.

Ident.: DSC-70-90-40-50-00018213.0001001 / 21 MAR 16
Applicable to: ALL

EGT INDICATOR



Ident.: DSC-70-90-40-50-00018216.0002001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CURRENT EGT

L12

Green	:	The current EGT is in normal range. The scale goes from 0 °C to 1 000 °C.
Amber	:	The current EGT exceeds the EGT amber limit.
Red	:	The current EGT exceeds the EGT red limit.

Ident.: DSC-70-90-40-50-00018216.0003001 / 21 MAR 16

10 **Applicable to: MSN 06720-09063**

CURRENT EGT

L12

Green	:	The current EGT is in normal range. The scale goes from 0 °C to 1 200 °C.
Amber	:	The current EGT exceeds the EGT amber limit.
Red	:	The current EGT exceeds the EGT red limit.

Ident.: DSC-70-90-40-50-00018216.0001001 / 21 MAR 16

11 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

CURRENT EGT

L12

Green	:	The current EGT is in normal range. The scale goes from 0 °C to 800 °C.
Amber	:	The current EGT exceeds the EGT amber limit.
Red	:	The current EGT exceeds the EGT red limit.

Ident.: DSC-70-90-40-50-00018218.0008001 / 18 MAY 18

12 **Applicable to: MSN 06720-09063**

EGT LIMIT

The amber line indicates the maximum EGT (i.e. the EGT limit).

L2 The maximum EGT is set at 1 043 °C as soon as the engine is started.
The EGT limit does not appear:

- During engine start or engine relight, or
- When a takeoff or a go-around mode is selected, or
- When the thrust reversers are selected, or
- If the alpha floor protection is activated.

Ident.: DSC-70-90-40-50-00018218.0003001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

EGT LIMIT

The amber line indicates the maximum EGT (i.e. the EGT limit).

L2 The maximum EGT is:

- 725 °C, during the engine start sequence on ground, or
- 915 °C, in all other cases.

The EGT limit does not appear:

- When a takeoff or a go-around mode is selected, or
- When the thrust reversers are selected, or
- If the alpha floor protection is activated.

Ident.: DSC-70-90-40-50-00018218.0001001 / 21 MAR 16

13 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

EGT LIMIT

The amber line indicates the maximum EGT (i.e. the EGT limit), when different than the EGT red limit.

L2 The maximum EGT is:

- 635 °C, during the engine start sequence on ground, or
- 610 °C, in all other cases.

The EGT limit does not appear:

- When a takeoff or a go-around mode is selected, or
- When the thrust reversers are selected, or
- If the alpha floor protection is activated.
- During the engine start sequence on ground.

Ident.: DSC-70-90-40-50-00018219.0001001 / 21 MAR 16
Applicable to: ALL

EGT EXCEEDANCE

The EGT exceedance is the highest value that the EGT reached.
The EGT exceedance appears when:

- The current EGT exceeds the EGT red limit, or
- The EGT exceeded the EGT red limit.

L2 The red mark no longer appears at the next engine start sequence on ground, or after a maintenance action.

Ident.: DSC-70-90-40-50-00018220.0006001 / 21 MAR 16

14 **Applicable to: MSN 06720-09063**

EGT RED LINE

The EGT red line appears between the EGT red limit and the end of the scale.

L2 The EGT red limit is 1 083 °C.

Ident.: DSC-70-90-40-50-00018220.0003001 / 21 MAR 16

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

EGT RED LINE

The EGT red line appears between the EGT red limit and the end of the scale.

L2 The EGT red limit is 950 °C.

Ident.: DSC-70-90-40-50-00018220.0001001 / 21 MAR 16

15 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

EGT RED LINE

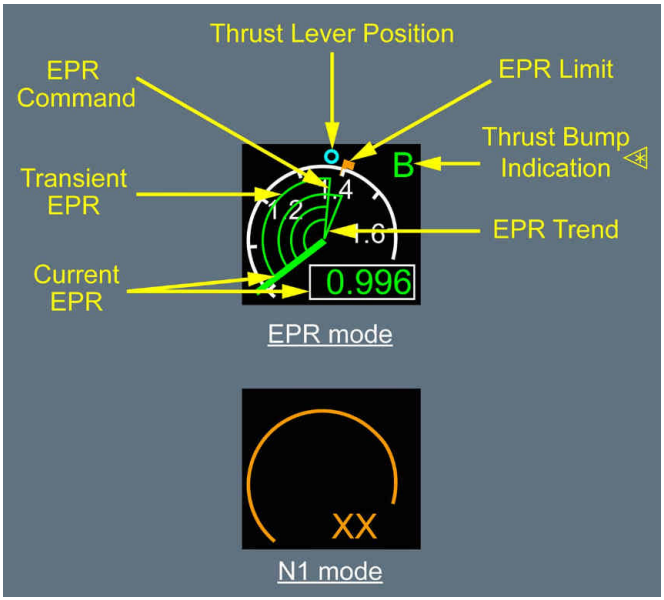
The EGT red line appears between the EGT red limit and the end of the scale.

L2 The EGT red limit is 635 °C.

Ident.: DSC-70-90-40-50-00018221.0005001 / 12 OCT 16

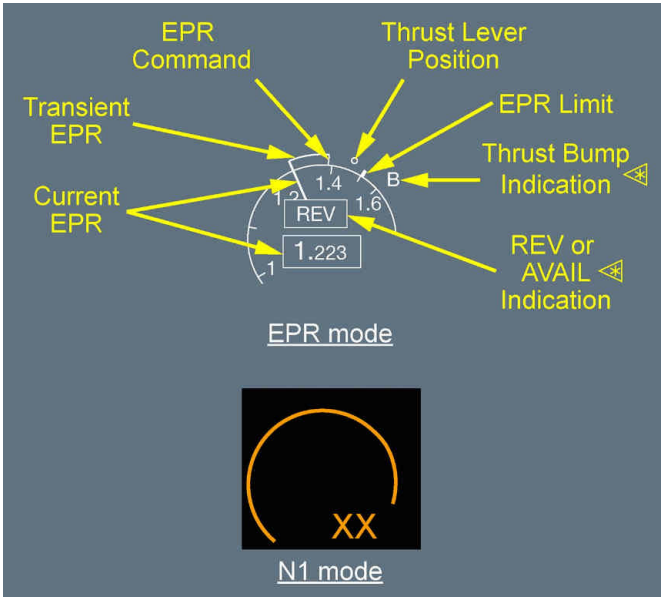
16 **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

EPR INDICATOR



Ident.: DSC-70-90-40-50-00018221.0001001 / 21 MAR 16
Applicable to: MSN 02108, 02195-02359, 02405, 02482

EPR INDICATOR



Ident.: DSC-70-90-40-50-00018222.0001001 / 21 MAR 16
17 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

CURRENT EPR

Green : The current EPR is valid and the engine operates in EPR mode.

L12

XX in amber : The Current EPR is not valid, or the engine operates in N1 mode.
The EPR scale appears in amber.
The EPR needle and the box around current the EPR value disappear.

Ident.: DSC-70-90-40-50-00018223.0001001 / 21 MAR 16
18 **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

EPR TREND

The green triangle indicates the direction of the EPR trend, when the A/THR mode is active.

Ident.: DSC-70-90-40-50-00018224.0001001 / 21 MAR 16

19 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

EPR COMMAND

Indicates the EPR target, when the A/THR mode is active.

Ident.: DSC-70-90-40-50-00018225.0002001 / 21 MAR 16

20 **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

TRANSIENT EPR

The four green arcs indicate the difference between the EPR command and the current EPR, when the A/THR is active.

Ident.: DSC-70-90-40-50-00018225.0001001 / 21 MAR 16
Applicable to: MSN 02108, 02195-02359, 02405, 02482

TRANSIENT EPR

The green arc indicates the difference between the EPR command and the current EPR, when the A/THR is active.

Ident.: DSC-70-90-40-50-00018226.0001001 / 21 MAR 16

21 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

THRUST LEVER POSITION

The blue circle indicates the position of the thrust lever.
In manual mode, the blue circle corresponds to the EPR value reached after the stabilization of the engine parameters.

L2 The thrust lever position disappears when the thrust reversers are selected.

Ident.: DSC-70-90-40-50-00018227.0001001 / 21 MAR 16

22 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

EPR LIMIT

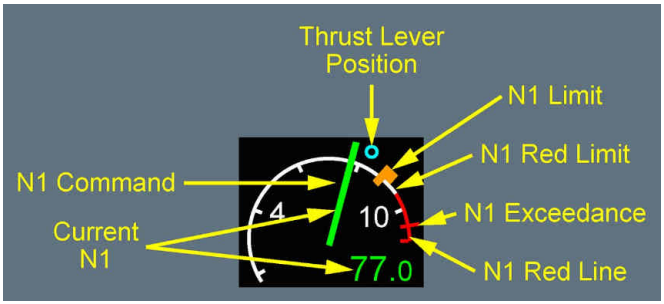
The amber mark indicates the EPR limit.

L2 This corresponds to the maximum EPR value when the thrust levers are in TO/GA detent.
The amber mark disappears when the thrust reversers are selected.

Ident.: DSC-70-90-40-50-00018228.0002001 / 21 MAR 16

23 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

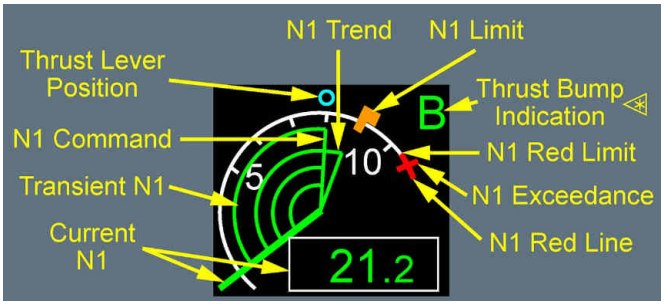
N1 INDICATOR



Ident.: DSC-70-90-40-50-00018228.0001001 / 21 MAR 16

24 **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

N1 INDICATOR



Ident.: DSC-70-90-40-50-00018229.0006001 / 21 MAR 16

25 **Applicable to: MSN 06720-09063**

CURRENT N1

Green : The current N1 is in normal range.

Amber : The current N1 exceeds the N1 limit.

L12

Red : The current N1 exceeds the N1 red limit.
N1 red limit is 100 %.

L12

Dashed : The accuracy of the N1 measurement is degraded.
Two amber dashes appear over the last digit.

Ident.: DSC-70-90-40-50-00018229.0003001 / 04 JUL 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CURRENT N1

Green : The current N1 is in normal range.

Amber : The current N1 exceeds the N1 limit.

L12

Red : The current N1 exceeds the N1 red limit.
N1 red limit is 104 %.

L12

Dashed : The accuracy of the N1 measurement is degraded.
Two amber dashes appear over the last digit.

Ident.: DSC-70-90-40-50-00018229.0001001 / 21 MAR 16
26 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

CURRENT N1

L12

Green : The current N1 is in normal range.
The box around current N1 appears, when the engine operates in N1 mode.

Amber : The current N1 exceeds the N1 limit.

L12

Red : The current N1 exceeds the N1 red limit.
N1 red limit is 100 %.

L12

Dashed : The accuracy of the N1 measurement is degraded.
Two amber dashes appear over the last digit.

Ident.: DSC-70-90-40-50-00018231.0001001 / 21 MAR 16
27 **Applicable to: MSN 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

N1 TREND

The green triangle indicates the direction of the N1 trend, when the A/THR mode is active.

Ident.: DSC-70-90-40-50-00018232.0001001 / 21 MAR 16

28 **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

N1 COMMAND

Indicates the N1 target, when the A/THR mode is active.

Ident.: DSC-70-90-40-50-00018233.0001001 / 21 MAR 16

29 **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

TRANSIENT N1

The four green arcs indicate the difference between the N1 command and the current N1, when the A/THR is active.

Ident.: DSC-70-90-40-50-00018235.0002001 / 21 MAR 16

30 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

THRUST LEVER POSITION

The blue circle indicates the position of the thrust lever, when the engine operates in N1 mode.
In manual mode, the blue circle corresponds to the N1 value reached after the stabilization of the engine parameters.

L2 The thrust lever position disappears when the thrust reversers are selected.

Ident.: DSC-70-90-40-50-00018235.0001001 / 21 MAR 16

31 **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

THRUST LEVER POSITION

The blue circle indicates the position of the thrust lever.
In manual mode, the blue circle corresponds to the N1 value reached after the stabilization of the engine parameters.

Ident.: DSC-70-90-40-50-00018236.0002001 / 21 MAR 16

32 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

N1 LIMIT

The amber mark indicates the N1 limit.

L2 This corresponds to the maximum N1 value when the thrust levers are in TO/GA detent and the engine operates in rated N1 mode.
The N1 limit disappears when the thrust reversers are selected.

Ident.: DSC-70-90-40-50-00018236.0001001 / 21 MAR 16

33 **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

N1 LIMIT

The amber mark indicates the N1 limit.

L2 This corresponds to the maximum N1 value when the thrust levers are in TO/GA detent.

Ident.: DSC-70-90-40-50-00018237.0001001 / 21 MAR 16

Applicable to: ALL

N1 EXCEEDANCE

The N1 exceedance is the highest value that the N1 reached.

The N1 exceedance appears when the current N1 exceeds the N1 red limit.

The N1 exceedance remains even if the N1 value decreases below the N1 red limit.

L2 The red mark no longer appears at the next engine start sequence on ground, or after a maintenance action.

Ident.: DSC-70-90-40-50-00018238.0003001 / 21 MAR 16

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

N1 RED LINE

The N1 red line appears between the N1 red limit and the end of the scale.

L2 The N1 red limit is 104 %.

Ident.: DSC-70-90-40-50-00018238.0001001 / 21 MAR 16

34 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063**

N1 RED LINE

The N1 red line appears between the N1 red limit and the end of the scale.

L2 The N1 red limit is 100 %.

Ident.: DSC-70-90-40-50-00018239.0002001 / 21 MAR 16

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

N2

In a grey box : The engine start sequence or the crank process is in progress.

Green: : N2 is in normal range.

L12

Red : N2 exceeds the N2 red limit.
N2 red limit is 105 %.
A red cross appears.
The red cross no longer appears at the next engine start sequence on ground, or after a maintenance action.

L12

Dashed : The accuracy of the N2 measurement is degraded.
Two amber dashes appear over the last digit.

Ident.: DSC-70-90-40-50-00018239.0001001 / 21 MAR 16

35 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063**

N2

In a grey box : The engine start sequence or the crank process is in progress.

Green: : N2 is in normal range.

L12

Red : N2 exceeds the N2 red limit.
N2 red limit is 100 %.
A red cross appears.
The red cross no longer appears at the next engine start sequence on ground, or after a maintenance action.

L12

Dashed : The accuracy of the N2 measurement is degraded.
Two amber dashes appear over the last digit.

Ident.: DSC-70-90-40-50-00018243.0001001 / 21 MAR 16
Applicable to: ALL

FUEL FLOW

Green : The fuel flow is normal.

Note: *If the system detects a discrepancy between the N1, N2, EGT and fuel flow values on the FADEC-DMC bus and the corresponding displayed values, an amber CHECK appears underneath the affected parameter.*

Ident.: DSC-70-90-40-50-00018244.0001001 / 21 MAR 16
Applicable to: ALL

THRUST BUMP ◁ INDICATION

Green : Indicates that the thrust bump is engaged.

Amber : When on the ground, indicates that the thrust bump is selected but not engaged.

Cyan : When on the ground, Indicates that the thrust bump is selected.

Ident.: DSC-70-90-40-50-00018563.0003001 / 16 JUN 16

36 **Applicable to: MSN 06720-09063**

COOLING INDICATION

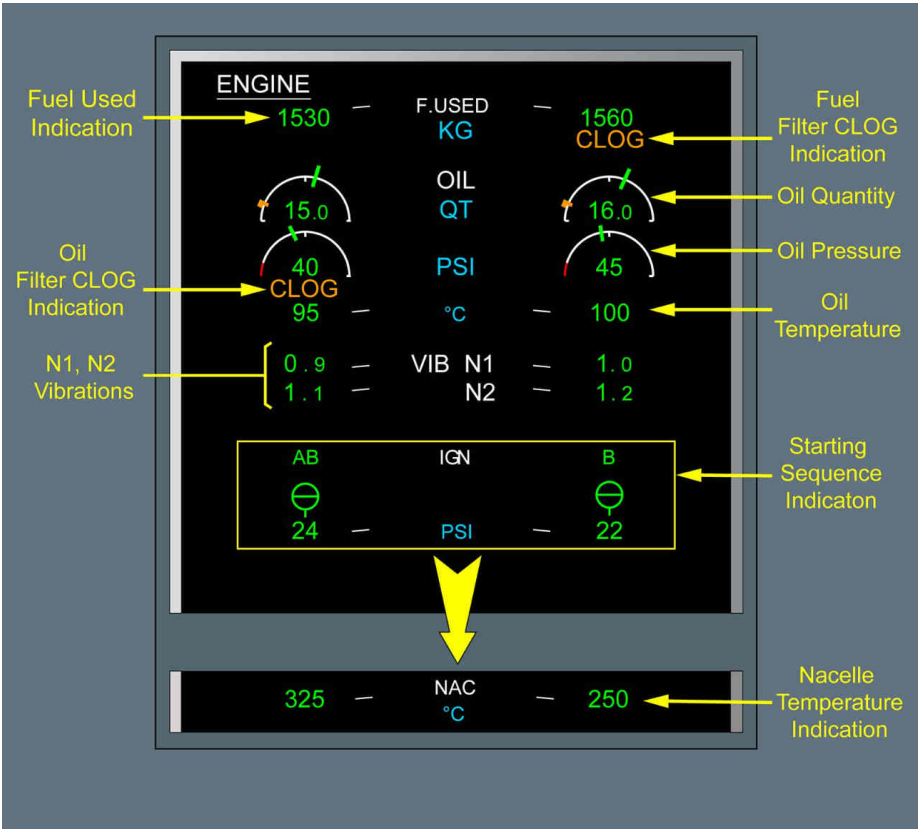
The green COOLING indication is displayed when an automatic dry crank is required to cool the engine before it starts. The timer indicates the time of the automatic dry crank before the engine start.

The COOLING indication can be displayed for automatic and manual start.

ENG SD PAGE

Ident.: DSC-70-90-40-60-00018259.0006001 / 21 MAR 16
Applicable to: MSN 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

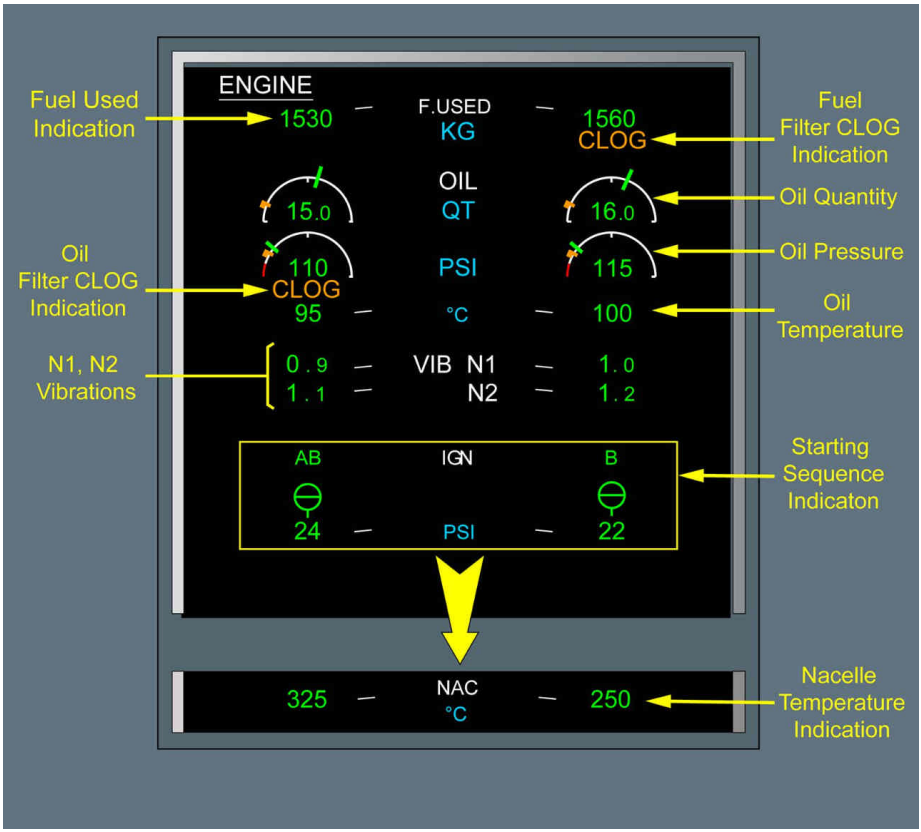
ENG SD page



Ident.: DSC-70-90-40-60-00018259.0005001 / 21 MAR 16

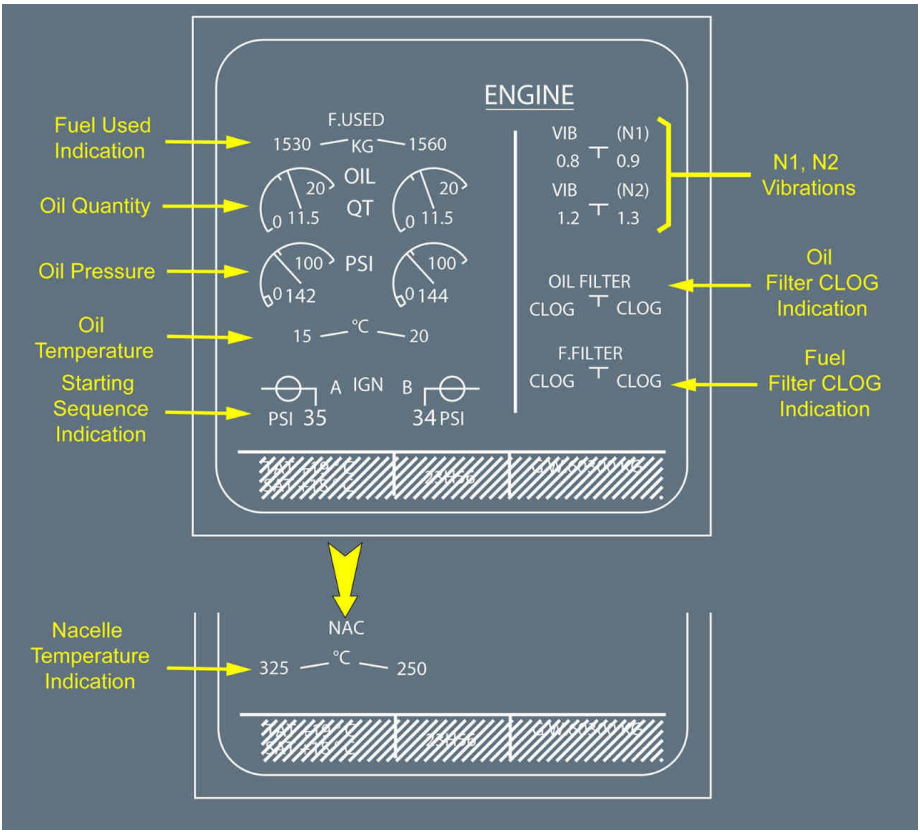
37 **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063**

ENG SD page



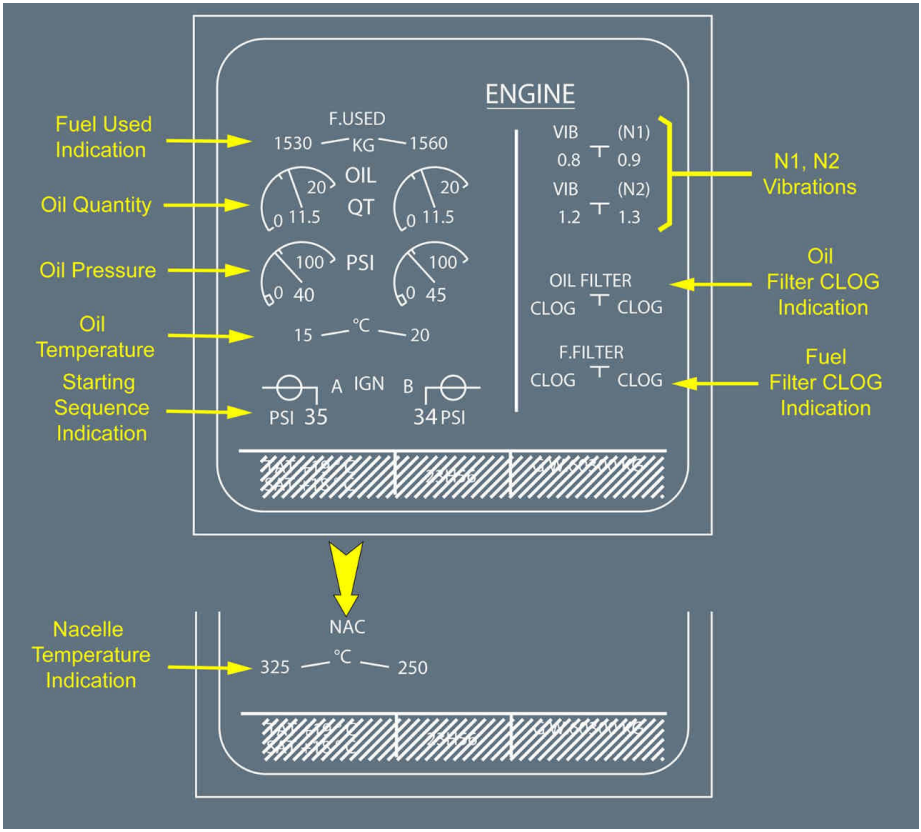
Ident.: DSC-70-90-40-60-00018259.0002001 / 21 MAR 16
Applicable to: MSN 02108, 02195-02359, 02405, 02482

ENG SD page



Ident.: DSC-70-90-40-60-00018259.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920

ENG SD page



Ident.: DSC-70-90-40-60-00018230.0001001 / 21 MAR 16
Applicable to: ALL

FUEL USED INDICATION

L12

Green : Indicates the fuel used by each engine.
This value automatically resets on ground, at the next engine start.
Appears in multiples of 10 kg (20 lb).

L12

Dashed : The value accuracy is degraded.
Two amber dashes appear over all five digits.
This occurs when the Fuel Flow is not valid in flight, for more than 1 min.

Ident.: DSC-70-90-40-60-00018260.0001001 / 21 MAR 16
Applicable to: ALL

FUEL FILTER CLOG INDICATION

Indicates that the pressure loss across the fuel filter is excessive.

Ident.: DSC-70-90-40-60-00018262.0006001 / 22 MAR 16
38 **Applicable to: MSN 06720-09063**

OIL QUANTITY

L12

Green : The oil quantity is in normal range.
The scale goes from 0 to 35 QT.

Pulses green : The oil quantity goes below the oil advisory limit (1.20 QT), that corresponds to the amber mark.
The needle and the oil quantity value pulse green.
The indication pulses, when oil quantity goes below 1.45 QT, and remains pulsing as long as oil quantity is below 2.95 QT.

Ident.: DSC-70-90-40-60-00018262.0002001 / 22 MAR 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

OIL QUANTITY

L12

Green : The oil quantity is in normal range.
The scale goes from 0 to 22 QT.

Pulses green : The oil quantity goes below the oil advisory limit (3 QT), that corresponds to the amber mark.
The needle and the oil quantity value pulse green.
The indication pulses, when oil quantity goes below 3.25 QT, and remains pulsing as long as oil quantity is below 4.75 QT.

Ident.: DSC-70-90-40-60-00018262.0001001 / 22 MAR 16
39 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

OIL QUANTITY

L12

Green : The oil quantity is in normal range.
The scale goes from 0 to 27.5 QT.

Pulses green : The oil quantity goes below the oil advisory limit (5 QT), that corresponds to the amber mark.
The needle and the oil quantity value pulse green.
The indication pulses, when oil quantity goes below 5.25 QT, and remains pulsing as long as oil quantity is below 6.75 QT.

Ident.: DSC-70-90-40-60-00018261.0006001 / 21 MAR 16
40 **Applicable to: MSN 06720-09063**

OIL PRESSURE

L12

Green : The oil pressure is in normal range.
The scale goes from 0 to 450 PSI.

L12

Pulses green : The oil pressure is above the advisory limit.
The advisory limit is 259 PSI.

L12

Amber : The oil pressure is in amber range.
The amber range is between the upper red threshold and the upper amber threshold.
The upper amber threshold varies with N2, and increases from 75 PSI at idle, to 186 PSI at high thrust.

L12

Red : The oil pressure is in the red range.
The red range is between 0 PSI and the upper red threshold.
The upper red threshold varies with N2, and increases from 65 PSI at idle, to 176 PSI at high thrust.

Ident.: DSC-70-90-40-60-00018261.0002001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

OIL PRESSURE

L12

Green : The oil pressure is in normal range.
The scale goes from 0 to 100 PSI.

L12

Pulses green : The oil pressure is:

- Above the upper advisory limit, or

The upper advisory limit is 90 PSI.
The oil pressure stops pulsing when oil pressure goes below 85 PSI.

- Between the upper red threshold and the lower advisory limit, when N2 is above 75 %.

The advisory limit is 16 PSI.
The oil pressure stops pulsing, when oil pressure goes below 20 PSI.

L12

Red : The oil pressure is in the red range.
The red range is between 0 and 13 PSI.

Ident.: DSC-70-90-40-60-00018261.0001001 / 21 MAR 16

41 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

OIL PRESSURE

L12

Green : The oil pressure is in normal range.
The scale goes from 0 to 400 PSI.

L12

Pulses green : The oil pressure is above the advisory limit.
The advisory limit is 390 PSI.
The oil pressure stops pulsing, when oil pressure goes below 385 PSI.

L12

Amber : The oil pressure is in amber range.
The amber range is between 60 and 80 PSI.

L12

Red : The oil pressure is in the red range.
The red range is between 0 and 60 PSI.

Ident.: DSC-70-90-40-60-00018263.0006001 / 21 MAR 16

42 **Applicable to: MSN 06720-09063**

OIL TEMPERATURE

Green : The oil temperature is in normal range.

L12

Pulses green : The oil temperature is between the advisory and caution thresholds for less than 15 min.
The advisory threshold:

- Varies with engine power level,
- Decreases from 146 °C at idle, to 141 °C at cruise thrust, and to 135 °C at high thrust.

L12

Amber : The oil temperature is:

- Between the advisory and caution thresholds for more than 15 min, or
- Above the caution threshold, or
- Below 51.7 °C.

The caution threshold:

- Varies with engine power level,
- Decreases from 152 °C at idle, to 146 °C cruise thrust, and to 141 °C at high thrust.

Ident.: DSC-70-90-40-60-00018263.0002001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

OIL TEMPERATURE

Green : The oil temperature is in normal range.

Pulses green : The oil temperature is between 140 °C and 155 °C for less than 15 min.

Amber : The oil temperature is:

- Between 140 °C and 155 °C for more than 15 min, or
- Above 155 °C.

Ident.: DSC-70-90-40-60-00018263.0001001 / 21 MAR 16

43 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

OIL TEMPERATURE

Green : The oil temperature is in normal range.

Pulses green : The oil temperature is between 155 °C and 165 °C for less than 15 min.

Amber : The oil temperature is:

- Between 155 °C and 165 °C for more than 15 min, or
- Above 165 °C, or
- Below -10 °C.

Ident.: DSC-70-90-40-60-00018266.0002001 / 21 MAR 16

44 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063**

OIL FILTER CLOG INDICATION

Indicates that the pressure loss across the main scavenge oil filter is excessive.

Ident.: DSC-70-90-40-60-00018266.0001001 / 21 MAR 16

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

OIL FILTER CLOG INDICATION

Indicates that the pressure loss across the oil filter is excessive.

Ident.: DSC-70-90-40-60-00018267.0003001 / 14 MAR 17

45 **Applicable to: MSN 06720-09063**

N1, N2 VIBRATIONS

Green : The vibration of the LP(HP) rotor is in normal range.

Amber : The level of LP(HP) rotor vibration is excessive.

Ident.: DSC-70-90-40-60-00018267.0001001 / 21 MAR 16

46 **Applicable to: MSN 01767-06336**

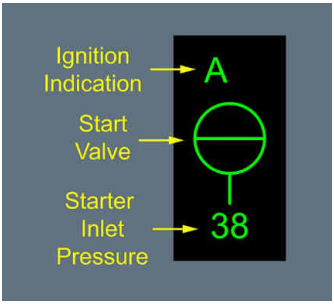
N1, N2 VIBRATIONS

Green : The vibration of the LP(HP) rotor is in normal range.

Pulses green : The level of LP(HP) rotor vibration is excessive.

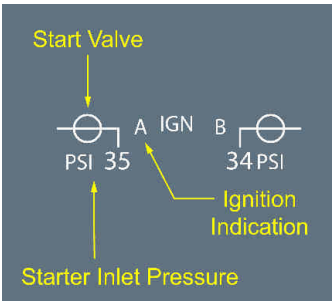
Ident.: DSC-70-90-40-60-00018268.0002001 / 21 MAR 16
47 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

STARTING SEQUENCE INDICATION



Ident.: DSC-70-90-40-60-00018268.0001001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

STARTING SEQUENCE INDICATION



Ident.: DSC-70-90-40-60-00018269.0001001 / 21 MAR 16
Applicable to: ALL

IGNITION INDICATION

A : The igniter A (B) is used for the engine start sequence.

A B : Both igniters A and B are used for the engine start sequence or continuous ignition.

Ident.: DSC-70-90-40-60-00018270.0001001 / 21 MAR 16
Applicable to: ALL

START VALVE

: The engine start valve is fully closed.

: The engine start valve is fully open.

Ident.: DSC-70-90-40-60-00018271.0001001 / 21 MAR 16
Applicable to: ALL

STARTER INLET PRESSURE

Green : The starter inlet pressure is normal.

Amber : The starter inlet pressure is either:

- Abnormally high, or
- Abnormally low (below 21 PSI, when N2 is above 10 % and the starter valve is not closed).

Ident.: DSC-70-90-40-60-00018272.0006001 / 21 MAR 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

NACELLE TEMPERATURE INDICATION

The nacelle temperature indication appears when the nacelle temperature of at least one engine goes above the advisory limit if not during the start sequence.

Green : The nacelle temperature is normal.

L12

Pulses green : The nacelle temperature goes above the advisory limit.
The advisory limit is 240 °C.

Ident.: DSC-70-90-40-60-00018272.0003001 / 21 MAR 16
48 **Applicable to: MSN 06720-09063**

NACELLE TEMPERATURE INDICATION

The nacelle temperature indication appears when the nacelle temperature of at least one engine goes above the advisory limit if not during the start sequence.

Green : The nacelle temperature is normal.

L12

Pulses green : The nacelle temperature goes above the advisory limit.
The advisory limit is 280 °C.

Ident.: DSC-70-90-40-60-00018272.0002001 / 21 MAR 16

49 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

NACELLE TEMPERATURE INDICATION

The nacelle temperature indication appears when the nacelle temperature of at least one engine goes above the advisory limit if not during the start sequence.

Green : The nacelle temperature is normal.

L12

Pulses green : The nacelle temperature goes above the advisory limit.
The advisory limit is 320 °C.

MEMO DISPLAY

Ident.: DSC-70-90-50-A-00019566.0001001 / 13 MAY 16

[1] **Applicable to: MSN 06720-09063**

ENG 1(2) COWL : This memo appears in amber, when the engine fan cowl is not closed on ground.

Ident.: DSC-70-90-50-A-00018777.0001001 / 13 MAY 16

Applicable to: ALL

IGNITION : This memo appears in green when continuous ignition is activated on any engine.

Ident.: DSC-70-90-50-A-00020037.0003001 / 09 APR 18

[2] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

DUAL COOLING : This memo appears in green when the dual cooling function is armed, i.e. when the DUAL COOLING pb-sw is ON. This memo appears in amber when the alert ENG DUAL COOLING - NOT AVAIL is triggered.

Ident.: DSC-70-90-50-A-00020037.0001001 / 21 OCT 16

[3] **Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192, 07329-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

DUAL COOLING : This memo appears in green when the dual cooling function is armed, i.e. when the DUAL COOLING pb-sw is ON.

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PROCEDURES

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PRO-ABN Abnormal and Emergency Procedures

PRO-NOR Normal Procedures

PRO-SPO Special Operations

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M (1)	Localization	DU Title	DU identification	DU date
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 01767** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			

E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 01920** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			

E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 01957, 02097, 02121, 02138** *Impacted DU: 00021058 System Reset Table - WHEEL*			

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02108** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02135, 02139** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			

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M (1)	Localization	DU Title	DU identification	DU date
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02195** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02204** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02275, 02334** *Impacted DU: 00021058 System Reset Table - WHEEL*			

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02359** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02388** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			

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M (1)	Localization	DU Title	DU identification	DU date
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02405** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 02443** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
	PRO-ABN-ABN-RESET	**System Reset Table - COND**	00021073.0001001	20 MAR 17
	Criteria: K6443, K9458 **Applicable to: MSN 02443** *Impacted DU: NONE*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "TRIM AIR SYS FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-01, 1803A0000-03 and 04.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02443** *Impacted DU: 00021058 System Reset Table - WHEEL*			

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 02457, 02649** *Impacted DU: 00021069 System Reset Table - AIR* *Reason for issue:* *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
	PRO-ABN-ABN-RESET	**System Reset Table - COND**	00021073.0001001	20 MAR 17
	Criteria: K6443, K9458 **Applicable to: MSN 02457, 02649** *Impacted DU: NONE* *Reason for issue:* *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "TRIM AIR SYS FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-01, 1803A0000-03 and 04.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02457, 02649** *Impacted DU: 00021058 System Reset Table - WHEEL* *Reason for issue:* *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			

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M (1)	Localization	DU Title	DU identification	DU date
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02482** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 02584** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02584** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			

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M (1)	Localization	DU Title	DU identification	DU date
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 02609** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02609** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 02626** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
	PRO-ABN-ABN-RESET	**System Reset Table - COND**	00021073.0001001	20 MAR 17
	Criteria: K6443, K9458 **Applicable to: MSN 02626** *Impacted DU: NONE*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "TRIM AIR SYS FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-01, 1803A0000-03 and 04.*			

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M (1)	Localization	DU Title	DU identification	DU date
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02626** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 02670, 02804** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
	PRO-ABN-ABN-RESET	**System Reset Table - COND**	00021073.0001001	20 MAR 17
	Criteria: K6443, K9458 **Applicable to: MSN 02670, 02804** *Impacted DU: NONE*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "TRIM AIR SYS FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-01, 1803A0000-03 and 04.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02670, 02804** *Impacted DU: 00021058 System Reset Table - WHEEL*			

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 02712** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
	PRO-ABN-ABN-RESET	**System Reset Table - COND**	00021073.0001001	20 MAR 17
	Criteria: K6443, K9458 **Applicable to: MSN 02712** *Impacted DU: NONE*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "TRIM AIR SYS FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-01, 1803A0000-03 and 04.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02712** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			

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M (1)	Localization	DU Title	DU identification	DU date
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 02737** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
	PRO-ABN-ABN-RESET	**System Reset Table - COND**	00021073.0001001	20 MAR 17
	Criteria: K6443, K9458 **Applicable to: MSN 02737** *Impacted DU: NONE*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "TRIM AIR SYS FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-01, 1803A0000-03 and 04.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02737** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			

E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 02908, 02914** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			

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M (1)	Localization	DU Title	DU identification	DU date
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 02908, 02914** *Impacted DU: 00021058 System Reset Table - WHEEL* *Reason for issue:* *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			

E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 03071, 03264, 03330** *Impacted DU: 00021069 System Reset Table - AIR* *Reason for issue:* *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 03071, 03264, 03330** *Impacted DU: 00021058 System Reset Table - WHEEL* *Reason for issue:* *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			

E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
	Criteria: 21-1160, K10463, K6443, K9458			

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M (1)	Localization	DU Title	DU identification	DU date
E	**Applicable to: MSN 03138** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 03138** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
	Criteria: 21-1160, K10463, K6443, K9458			
E	**Applicable to: MSN 03308, 03357** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 03308, 03357** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			

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M (1)	Localization	DU Title	DU identification	DU date
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
	Criteria: 21-1160, K10463, K6443, K9458			
E	**Applicable to: MSN 03414, 03453, 03457, 03497, 03541, 03618, 03782, 03863, 03943, 04008, 04113, 04156, 04216, 04312, 04328, 04384** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA			
	Applicable to: MSN 03414, 03453, 03457, 03497, 03541, 03618, 03782, 03863, 03943, 04008, 04113, 04156, 04216, 04312, 04328, 04384 *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			

E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
	Criteria: 21-1160, K10463, K6443, K9458			
E	**Applicable to: MSN 03750** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA			
	Applicable to: MSN 03750 *Impacted DU: 00021058 System Reset Table - WHEEL*			

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 04294, 04433** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 04294, 04433** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 04314, 04393-04394, 04397, 04399** *Impacted DU: 00021069 System Reset Table - AIR*			

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 04314, 04393-04394, 04397, 04399** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 04438, 04965, 05027, 05036, 05076, 05080, 05090, 05092, 05094, 05155, 05190, 05230-05231, 05259, 05262, 05291, 05298, 05313** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
E	PRO-ABN-ABN-RESET	**System Reset Table - COM**	00021114.0028001	04 DEC 18
E	Criteria: K12824, K12825, K3901, K8400, SA **Applicable to: MSN 04438, 04965, 05027, 05036, 05076, 05080, 05090, 05092, 05094, 05155, 05190, 05230-05231, 05259, 05262, 05291, 05298, 05313** *Impacted DU: 00021089 System Reset Table - COM*			
	Reason for issue: *CIDS Director Hardware 333B and On Board Replacement Module (OBRM) 33A are sensitive to short power supply interruptions. These power supply interruptions occur when the aircraft is supplied by external power. As a consequence, ECAM caution "COM CIDS 1+2 FAULT" or CIDS Maintenance status 'CIDS 1' or 'CIDS 2' could be spuriously triggered.* *In such event, the flight crew should verify that the CIDS is functioning normally by checking the PA, Cabin Interphone and Cabin lighting function. If the ECAM caution is spurious, it can be removed by resetting the CIDS when the aircraft is powered by the APU.*			

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M (1)	Localization	DU Title	DU identification	DU date
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 04438, 04965, 05027, 05036, 05076, 05080, 05090, 05092, 05094, 05155, 05190, 05230-05231, 05259, 05262, 05291, 05298, 05313** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 04481, 04488, 04506, 04518, 04535, 04552, 04603, 04609, 04614, 04630, 04637, 04752, 04757, 04762, 04813, 04818, 04868, 04888, 04947, 04954** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
E	PRO-ABN-ABN-RESET	**System Reset Table - COM**	00021114.0028001	04 DEC 18
E	Criteria: K12824, K12825, K3901, K8400, SA **Applicable to: MSN 04481, 04488, 04506, 04518, 04535, 04552, 04603, 04609, 04614, 04630, 04637, 04752, 04757, 04762, 04813, 04818, 04868, 04888, 04947, 04954** *Impacted DU: 00021089 System Reset Table - COM*			
	Reason for issue: *CIDS Director Hardware 333B and On Board Replacement Module (OBRM) 33A are sensitive to short power supply interruptions. These power supply interruptions occur when the aircraft is supplied by external power. As a consequence, ECAM caution "COM CIDS 1+2 FAULT" or CIDS Maintenance status 'CIDS 1' or 'CIDS 2' could be spuriously triggered.* *In such event, the flight crew should verify that the CIDS is functioning normally by checking the PA, Cabin Interphone and Cabin lighting function. If the ECAM caution is spurious, it can be removed by resetting the CIDS when the aircraft is powered by the APU.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA			

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M (1)	Localization	DU Title	DU identification	DU date
	Applicable to: MSN 04481, 04488, 04506, 04518, 04535, 04552, 04603, 04609, 04614, 04630, 04637, 04752, 04757, 04762, 04813, 04818, 04868, 04888, 04947, 04954			
	Impacted DU: 00021058 System Reset Table - WHEEL			
	Reason for issue:			
	The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.			
	- Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.			
	- For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.			

E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
	Criteria: 21-1160, K10463, K6443, K9458			
E	**Applicable to: MSN 04491, 04532, 04645, 05120, 05218**			
	Impacted DU: 00021069 System Reset Table - AIR			
	Reason for issue:			
	The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.			
E	PRO-ABN-ABN-RESET	**System Reset Table - COM**	00021114.0028001	04 DEC 18
	Criteria: K12824, K12825, K3901, K8400, SA			
E	**Applicable to: MSN 04491, 04532, 04645, 05120, 05218**			
	Impacted DU: 00021089 System Reset Table - COM			
	Reason for issue:			
	CIDS Director Hardware 333B and On Board Replacement Module (OBRM) 33A are sensitive to short power supply interruptions. These power supply interruptions occur when the aircraft is supplied by external power. As a consequence, ECAM caution "COM CIDS 1+2 FAULT" or CIDS Maintenance status 'CIDS 1' or 'CIDS 2' could be spuriously triggered. *In such event, the flight crew should verify that the CIDS is functioning normally by checking the PA, Cabin Interphone and Cabin lighting function. If the ECAM caution is spurious, it can be removed by resetting the CIDS when the aircraft is powered by the APU.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA			
	Applicable to: MSN 04491, 04532, 04645, 05120, 05218			
	Impacted DU: 00021058 System Reset Table - WHEEL			

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 04510** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
E	PRO-ABN-ABN-RESET	**System Reset Table - COM**	00021114.0028001	04 DEC 18
E	Criteria: K12824, K12825, K3901, K8400, SA **Applicable to: MSN 04510** *Impacted DU: 00021089 System Reset Table - COM*			
	Reason for issue: *CIDS Director Hardware 333B and On Board Replacement Module (OBRM) 33A are sensitive to short power supply interruptions. These power supply interruptions occur when the aircraft is supplied by external power. As a consequence, ECAM caution "COM CIDS 1+2 FAULT" or CIDS Maintenance status 'CIDS 1' or 'CIDS 2' could be spuriously triggered.* *In such event, the flight crew should verify that the CIDS is functioning normally by checking the PA, Cabin Interphone and Cabin lighting function. If the ECAM caution is spurious, it can be removed by resetting the CIDS when the aircraft is powered by the APU.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 04510** *Impacted DU: 00021058 System Reset Table - WHEEL*			

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
	Criteria: 21-1160, K10463, K6443, K9458			
E	**Applicable to: MSN 05158**			
	Impacted DU: 00021069 System Reset Table - AIR			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
E	PRO-ABN-ABN-RESET	**System Reset Table - COM**	00021114.0028001	04 DEC 18
	Criteria: K12824, K12825, K3901, K8400, SA			
E	**Applicable to: MSN 05158**			
	Impacted DU: 00021089 System Reset Table - COM			
	Reason for issue: *CIDS Director Hardware 333B and On Board Replacement Module (OBRM) 33A are sensitive to short power supply interruptions. These power supply interruptions occur when the aircraft is supplied by external power. As a consequence, ECAM caution "COM CIDS 1+2 FAULT" or CIDS Maintenance status 'CIDS 1' or 'CIDS 2' could be spuriously triggered.* *In such event, the flight crew should verify that the CIDS is functioning normally by checking the PA, Cabin Interphone and Cabin lighting function. If the ECAM caution is spurious, it can be removed by resetting the CIDS when the aircraft is powered by the APU.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA			
	Applicable to: MSN 05158			
	Impacted DU: 00021058 System Reset Table - WHEEL			

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 05365, 05411, 05437, 05460, 05473, 05476, 05507, 05537, 05577, 05641, 05676, 05683, 05712, 05727, 05744, 05807, 05829, 05893, 05898, 05923, 05952, 05992, 06010, 06036, 06208, 06247, 06275, 06287, 06289** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
E	PRO-ABN-ABN-RESET	**System Reset Table - COM**	00021114.0028001	04 DEC 18
E	Criteria: K12824, K12825, K3901, K8400, SA **Applicable to: MSN 05365, 05411, 05437, 05460, 05473, 05476, 05507, 05537, 05577, 05641, 05676, 05683, 05712, 05727, 05744, 05807, 05829, 05893, 05898, 05923, 05952, 05992, 06010, 06036, 06208, 06247, 06275, 06287, 06289** *Impacted DU: 00021089 System Reset Table - COM*			
	Reason for issue: *CIDS Director Hardware 333B and On Board Replacement Module (OBRM) 33A are sensitive to short power supply interruptions. These power supply interruptions occur when the aircraft is supplied by external power. As a consequence, ECAM caution "COM CIDS 1+2 FAULT" or CIDS Maintenance status 'CIDS 1' or 'CIDS 2' could be spuriously triggered.* *In such event, the flight crew should verify that the CIDS is functioning normally by checking the PA, Cabin Interphone and Cabin lighting function. If the ECAM caution is spurious, it can be removed by resetting the CIDS when the aircraft is powered by the APU.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 05365, 05411, 05437, 05460, 05473, 05476, 05507, 05537, 05577, 05641, 05676, 05683, 05712, 05727, 05744, 05807, 05829, 05893, 05898, 05923, 05952, 05992, 06010, 06036, 06208, 06247, 06275, 06287, 06289** *Impacted DU: 00021058 System Reset Table - WHEEL*			

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 06336** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
E	PRO-ABN-ABN-RESET	**System Reset Table - COM**	00021114.0028001	04 DEC 18
E	Criteria: K12824, K12825, K3901, K8400, SA **Applicable to: MSN 06336** *Impacted DU: 00021089 System Reset Table - COM*			
	Reason for issue: *CIDS Director Hardware 333B and On Board Replacement Module (OBRM) 33A are sensitive to short power supply interruptions. These power supply interruptions occur when the aircraft is supplied by external power. As a consequence, ECAM caution "COM CIDS 1+2 FAULT" or CIDS Maintenance status 'CIDS 1' or 'CIDS 2' could be spuriously triggered.* *In such event, the flight crew should verify that the CIDS is functioning normally by checking the PA, Cabin Interphone and Cabin lighting function. If the ECAM caution is spurious, it can be removed by resetting the CIDS when the aircraft is powered by the APU.*			
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 06336** *Impacted DU: 00021058 System Reset Table - WHEEL*			

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 06720, 06744, 06772, 06799, 06819, 06829, 06849, 06860, 06868, 06904, 06914, 06946, 06952, 06967, 07001, 07033, 07053, 07083, 07192, 07252, 07329, 07331, 07391, 07396, 07504, 07510, 07618, 07892, 07912, 07914, 07931, 07961, 08077, 08101, 08158, 08168, 08206, 08218, 08255, 08259, 08310, 08345, 08387, 08397, 08414, 08416-08417, 08426, 08432, 08440, 08455, 08459-08460, 08465, 08492, 08511, 08527, 08540-08541, 08558, 08570, 08586, 08627-08628, 08630, 08654, 08688, 08702, 08737, 08771, 08782, 08789, 08832, 08864, 08877, 08896, 08901, 08905, 08922, 08928, 08932, 08961, 08967, 08978, 09031, 09045** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
E	PRO-ABN-ABN-RESET	**System Reset Table - COM**	00021114.0028001	04 DEC 18
E	Criteria: K12824, K12825, K3901, K8400, SA **Applicable to: MSN 06720, 06744, 06772, 06799, 06819, 06829, 06849, 06860, 06868, 06904, 06914, 06946, 06952, 06967, 07001, 07033, 07053, 07083, 07192, 07252, 07329, 07331, 07391, 07396, 07504, 07510, 07618, 07892, 07912, 07914, 07931, 07961, 08077, 08101, 08158, 08168, 08206, 08218, 08255, 08259, 08310, 08345, 08387, 08397, 08414, 08416-08417, 08426, 08432, 08440, 08455, 08459-08460, 08465, 08492, 08511, 08527, 08540-08541, 08558, 08570, 08586, 08627-08628, 08630, 08654, 08688, 08702, 08737, 08771, 08782, 08789, 08832, 08864, 08877, 08896, 08901, 08905, 08922, 08928, 08932, 08961, 08967, 08978, 09031, 09045** *Impacted DU: 00021089 System Reset Table - COM*			
	Reason for issue: *CIDS Director Hardware 333B and On Board Replacement Module (OBRM) 33A are sensitive to short power supply interruptions. These power supply interruptions occur when the aircraft is supplied by external power. As a consequence, ECAM caution "COM CIDS 1+2 FAULT" or CIDS Maintenance status 'CIDS 1' or 'CIDS 2' could be spuriously triggered.* *In such event, the flight crew should verify that the CIDS is functioning normally by checking the PA, Cabin Interphone and Cabin lighting function. If the ECAM caution is spurious, it can be removed by resetting the CIDS when the aircraft is powered by the APU.*			

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M (1)	Localization	DU Title	DU identification	DU date
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17
	Criteria: SA **Applicable to: MSN 06720, 06744, 06772, 06799, 06819, 06829, 06849, 06860, 06868, 06904, 06914, 06946, 06952, 06967, 07001, 07033, 07053, 07083, 07192, 07252, 07329, 07331, 07391, 07396, 07504, 07510, 07618, 07892, 07912, 07914, 07931, 07961, 08077, 08101, 08158, 08168, 08206, 08218, 08255, 08259, 08310, 08345, 08387, 08397, 08414, 08416-08417, 08426, 08432, 08440, 08455, 08459-08460, 08465, 08492, 08511, 08527, 08540-08541, 08558, 08570, 08586, 08627-08628, 08630, 08654, 08688, 08702, 08737, 08771, 08782, 08789, 08832, 08864, 08877, 08896, 08901, 08905, 08922, 08928, 08932, 08961, 08967, 08978, 09031, 09045** *Impacted DU: 00021058 System Reset Table - WHEEL*			
	Reason for issue: *The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.* - *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.* - *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*			
E	PRO-ABN-ABN-RESET	**System Reset Table**	NG01118	
E	PRO-ABN-ABN-RESET	**System Reset Table - AIR**	00021167.0001001	05 JUN 18
E	Criteria: 21-1160, K10463, K6443, K9458 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063** *Impacted DU: 00021069 System Reset Table - AIR*			
	Reason for issue: *The TDU is issued to provide the ACSC C/B reset procedure to apply in the case of "PACK 1(2) REGUL FAULT" triggered on ground for aircraft equipped with ACSC 1803B0000-02.*			
E	PRO-ABN-ABN-RESET	**System Reset Table - COM**	00021114.0036001	04 DEC 18
E	Criteria: K12824, K12825, K2113, K8400, P20374, SA **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063** *Impacted DU: 00021089 System Reset Table - COM*			
	Reason for issue: *CIDS Director Hardware 333B and On Board Replacement Module (OBRM) 33A are sensitive to short power supply interruptions. These power supply interruptions occur when the aircraft is supplied by external power. As a consequence, ECAM caution "COM CIDS 1+2 FAULT or CIDS Maintenance status 'CIDS 1' or 'CIDS 2' could be spuriously triggered.* *In such event, the flight crew should verify that the CIDS is functioning normally by checking the PA, Cabin Interphone and Cabin lighting function. If the ECAM caution is spurious, it can be removed by resetting the CIDS when the aircraft is powered by the APU.*			

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M (1)	Localization	DU Title	DU identification	DU date
	PRO-ABN-ABN-RESET	**System Reset Table - WHEEL**	00021059.0001001	20 MAR 17

Criteria: SA
Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063
Impacted DU: 00021058 System Reset Table - WHEEL

Reason for issue:
The BSCU reset procedure for WHEEL N/W STRG FAULT is amended with a temporary procedure, in order to better address the spurious alerts that are currently encountered in-service.

- *Under the very specific conditions defined in the procedure, the flight crews can continue the flight without troubleshooting after a successful BSCU reset.*
- *For aircraft with BSCU standard 10: The root cause of the spurious alerts that were triggered during taxiing with BSCU standard 10 has been cancelled. Therefore, the associated reset procedure has been removed.*

E	PRO-ABN-ELEC	**ELEC DC ESS BUS FAULT**	NG01103	
	PRO-ABN-ELEC	**ELEC DC ESS BUS FAULT**	00013704.0004001	23 JUN 15

Criteria: 31-1373, 31-1414, K1806, P6319, P7009, P8315, SA
Applicable to: MSN 02108, 02135, 02139, 02204, 02275, 02334, 02359, 02405, 02482
Impacted DU: 00012511 ELEC DC ESS BUS FAULT

Reason for issue:

1. *This Temporary Revision is issued to indicate that, in the case of an ELEC DC ESS BUS FAULT, the audio cards of the digital Audio Management Unit (AMU), that are connected to the VHF transceivers, are lost. As a result, communication via VHF 2 and 3 is not available.*
2. *This Temporary Revision is revised to highlight that, in the case of an ELEC DC ESS BUS FAULT, all audio means of communication (VHF, HF and SATCOM) are lost since all cockpit mikes and headsets are connected to the digital Audio Management Unit (AMU). A corrective modification that provides a backup electrical supply for the AMU audio cards (from DC BUS 1), in the case of an ELEC DC ESS BUS failure, is available through SB 23-1333 / Modification 37782. With this modification audio communications can be recovered, as per ECAM , through VHF 2 or 3.*
3. *This TDU is reissued to add "L/G ... GRVTY EXTN" procedure in case of loss of "DC ESS BUS" and "DC BUS 2" and also the "AVOID ICING CONDITIONS" line for A/C equipped withfor A/C equipped with FWC H2F6 std.*

E	PRO-ABN-ELEC	**ELEC DC ESS BUS FAULT**	NG01103	
	PRO-ABN-ELEC	**ELEC DC ESS BUS FAULT**	00013704.0004001	23 JUN 15

Criteria: 31-1373, 31-1414, K1806, P6319, P7009, P8315, SA
Applicable to: MSN 02195
Impacted DU: 00012511 ELEC DC ESS BUS FAULT

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M (1)	Localization	DU Title	DU identification	DU date

Reason for issue:

1. *This Temporary Revision is issued to indicate that, in the case of an ELEC DC ESS BUS FAULT, the audio cards of the digital Audio Management Unit (AMU), that are connected to the VHF transceivers, are lost. As a result, communication via VHF 2 and 3 is not available.*
2. *This Temporary Revision is revised to highlight that, in the case of an ELEC DC ESS BUS FAULT, all audio means of communication (VHF, HF ◁ and SATCOM ◁) are lost since all cockpit mikes and headsets are connected to the digital Audio Management Unit (AMU). A corrective modification that provides a backup electrical supply for the AMU audio cards (from DC BUS 1), in the case of an ELEC DC ESS BUS failure, is available through SB 23-1333 / Modification 37782. With this modification audio communications can be recovered, as per ECAM , through VHF 2 or 3.*
3. *This TDU is reissued to add "L/G ... GRVTY EXTN" procedure in case of loss of "DC ESS BUS" and "DC BUS 2" and also the "AVOID ICING CONDITIONS" line for A/C equipped withfor A/C equipped with FWC H2F6 std.*

E	PRO-ABN-ELEC	**ELEC DC ESS BUS FAULT**	NG01103	
	PRO-ABN-ELEC	**ELEC DC ESS BUS FAULT**	00013704.0004001	23 JUN 15

Criteria: 31-1373, 31-1414, K1806, P6319, P7009, P8315, SA
Applicable to: MSN 02388
Impacted DU: 00012511 ELEC DC ESS BUS FAULT

Reason for issue:

1. *This Temporary Revision is issued to indicate that, in the case of an ELEC DC ESS BUS FAULT, the audio cards of the digital Audio Management Unit (AMU), that are connected to the VHF transceivers, are lost. As a result, communication via VHF 2 and 3 is not available.*
2. *This Temporary Revision is revised to highlight that, in the case of an ELEC DC ESS BUS FAULT, all audio means of communication (VHF, HF ◁ and SATCOM ◁) are lost since all cockpit mikes and headsets are connected to the digital Audio Management Unit (AMU). A corrective modification that provides a backup electrical supply for the AMU audio cards (from DC BUS 1), in the case of an ELEC DC ESS BUS failure, is available through SB 23-1333 / Modification 37782. With this modification audio communications can be recovered, as per ECAM , through VHF 2 or 3.*
3. *This TDU is reissued to add "L/G ... GRVTY EXTN" procedure in case of loss of "DC ESS BUS" and "DC BUS 2" and also the "AVOID ICING CONDITIONS" line for A/C equipped withfor A/C equipped with FWC H2F6 std.*

E	PRO-ABN-ELEC	**ELEC DC ESS BUS FAULT**	NG01103	
	PRO-ABN-ELEC	**ELEC DC ESS BUS FAULT**	00013704.0004001	23 JUN 15

Criteria: 31-1373, 31-1414, K1806, P6319, P7009, P8315, SA
Applicable to: MSN 02443, 02457, 02609, 02626, 02670, 02737, 02804, 02908, 02914
Impacted DU: 00012511 ELEC DC ESS BUS FAULT

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *1. This Temporary Revision is issued to indicate that, in the case of an ELEC DC ESS BUS FAULT, the audio cards of the digital Audio Management Unit (AMU), that are connected to the VHF transceivers, are lost. As a result, communication via VHF 2 and 3 is not available.* *2. This Temporary Revision is revised to highlight that, in the case of an ELEC DC ESS BUS FAULT, all audio means of communication (VHF, HF and SATCOM) are lost since all cockpit mikes and headsets are connected to the digital Audio Management Unit (AMU). A corrective modification that provides a backup electrical supply for the AMU audio cards (from DC BUS 1), in the case of an ELEC DC ESS BUS failure, is available through SB 23-1333 / Modification 37782. With this modification audio communications can be recovered, as per ECAM , through VHF 2 or 3.* *3. This TDU is reissued to add "L/G ... GRVTY EXTN" procedure in case of loss of "DC ESS BUS" and "DC BUS 2" and also the "AVOID ICING CONDITIONS" line for A/C equipped withfor A/C equipped with FWC H2F6 std.*			
E	PRO-ABN-ELEC	**ELEC DC ESS BUS FAULT**	NG01103	
	PRO-ABN-ELEC	**ELEC DC ESS BUS FAULT**	00013704.0004001	23 JUN 15
	Criteria: 31-1373, 31-1414, K1806, P6319, P7009, P8315, SA **Applicable to: MSN 02712** *Impacted DU: 00012511 ELEC DC ESS BUS FAULT*			
	Reason for issue: *1. This Temporary Revision is issued to indicate that, in the case of an ELEC DC ESS BUS FAULT, the audio cards of the digital Audio Management Unit (AMU), that are connected to the VHF transceivers, are lost. As a result, communication via VHF 2 and 3 is not available.* *2. This Temporary Revision is revised to highlight that, in the case of an ELEC DC ESS BUS FAULT, all audio means of communication (VHF, HF and SATCOM) are lost since all cockpit mikes and headsets are connected to the digital Audio Management Unit (AMU). A corrective modification that provides a backup electrical supply for the AMU audio cards (from DC BUS 1), in the case of an ELEC DC ESS BUS failure, is available through SB 23-1333 / Modification 37782. With this modification audio communications can be recovered, as per ECAM , through VHF 2 or 3.* *3. This TDU is reissued to add "L/G ... GRVTY EXTN" procedure in case of loss of "DC ESS BUS" and "DC BUS 2" and also the "AVOID ICING CONDITIONS" line for A/C equipped withfor A/C equipped with FWC H2F6 std.*			
E	PRO-ABN-ENG	**[QRH] HIGH ENGINE VIBRATION**	00022408.0001001	12 JUN 18
	Criteria: PW1100G-JM			
E	**Applicable to: MSN 06720-09063** *Impacted DU: 00012294 [QRH] HIGH ENGINE VIBRATION*			
	Reason for issue: *This TDU is inserted in order to raise awareness among the flight crew about the transient N2 vibrations observed on Neo PW.*			
	PRO-ABN-FWS	**[QRH] Multiple Undue ECAM Alerts**	00012928.0001001	17 MAR 17
	Criteria: 31-1276, P8671, P9824			

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M (1)	Localization	DU Title	DU identification	DU date
	Applicable to: MSN 02388, 02584-02626, 02804, 03308, 04294, 04433, 04510			
	Impacted DU: NONE			
	Reason for issue:			
	This TDU was re-issued to update the list of possible undue ECAM alerts.			
	This TDU is cancelled with the EIS2 S8-2 Standard (MP P10527)			
	PRO-ABN-NAV	**NAV TCAS FAULT**	NG01075	
	PRO-ABN-NAV	**NAV TCAS FAULT**	00015480.0015001	23 JUN 15
	Criteria: 31-1373, 31-1414, P11819, P2590, P5669, P6316, P9625			
	Applicable to: MSN 03357, 03457, 03497, 04328, 04393-04394, 04397, 04433, 04481, 04752, 04818, 04954, 05090, 05092, 05298, 05313, 05411, 05473, 05537, 05807			
	Impacted DU: 00012434 NAV TCAS FAULT (If Installed)			
	Reason for issue:			
	Following the introduction of a TCAS monitoring function in the Flight Warning Computer (FWC) F6 and F7, an issue has been detected on aircraft equipped with ACSS TCAS 2000/T2CAS/T3CAS computers.			
	To operate, the TCAS needs to receive the ADR barometric altitude through the active transponder.			
	As a consequence, on ground, an undue NAV TCAS FAULT alert is triggered when the ADIRUs are set to OFF.			
	As soon as the ADIRUs are powered, the NAV TCAS FAULT automatically disappears.			
	Therefore, on ground, if the alert is triggered while the ADIRUs are OFF, the flight crew can disregard the alert.			
	The FWC F8 corrects the issue.			

E	PRO-ABN-SMOKE	**[QRH] SMOKE / FUMES / AVNCS SMOKE**	NG01039	
	PRO-ABN-SMOKE	**[QRH] SMOKE / FUMES / AVNCS SMOKE - GENERAL**	00018929.0003001	17 MAR 17
	Criteria: K7755, K7778, K7790, SA			
	Applicable to: MSN 02204			
	Impacted DU: NONE			

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue:			
	A case of burning smell/smoke emanations, caused by a failure of the Cockpit Door Surveillance System (CDSS) LCD monitor (short-circuit) was reported to Airbus. In such a case, smoke emanating from the LCD can be stopped by de-activating the CDSS. This Temporary DU is issued to inform operators that, if smoke and/or burning smell is detected, it may come from the LCD monitor. If such is the case, and as specified in the SMOKE procedure, the faulty equipment must be isolated (by switching OFF the CKPIT DOOR VIDEO pb).			
N	PRO-NOR-SOP-06	**Overhead Panel**	NG00846	
E	PRO-NOR-SOP-06	**Overhead Panel - RCDR**	00021691.0001001	05 DEC 17
E	Criteria: PW1100G-JM, P12301, P20095 **Applicable to: MSN 06720-09045** *Impacted DU: 00015476 Overhead Panel - RCDR*			
	Reason for issue: *On A320neo Family aircraft, before engine start, the RCDR GND CTL pb-sw may revert to AUTO in the case of electrical transient between EXT PWR and APU GEN. In that case, the flight crew must set the RCDR GND CTL pb-sw back to ON.*			
N	PRO-NOR-SOP-06	**Overhead Panel - RCDR**	00021691.0003001	17 JAN 18
	Criteria: PW1100G-JM, P20095, P20327 **Applicable to: MSN 09063** *Impacted DU: 00015476 Overhead Panel - RCDR*			

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M (1)	Localization	DU Title	DU identification	DU date
E	PRO-NOR-SOP-08	**Automatic Engine Start**	00022757.0001001	04 DEC 18
	Criteria: PW1100G-JM, P15967			
E	**Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192, 07329-09063**			
	Impacted DU: 00010162 Automatic Engine Start			
	Reason for issue:			
	This temporary documentary unit adds information about the time to observe before pressing the dual cooling pb-sw in order to avoid the "dual cooling not avail" message while the operating envelope is respected. If the pb-sw is pressed too quickly this message will appear. This issue is planned to be fixed with the introduction of both the EIUS4.1 and FCS6.0.			
E	PRO-NOR-SOP-10	**Taxi**	NG00715	
E	PRO-NOR-SOP-10	**Radar**	00015299.0002001	03 AUG 17
	Criteria: 34-1348, 34-1443, P12173, P7929, P9902			
E	**Applicable to: MSN 02334, 03071, 03782, 04294, 04328, 04433-04438, 04488, 04506-04518, 04535, 04630, 05190, 05230-05259, 05313-05460, 05476, 05537-05577, 05683, 05727, 05829-05923, 06036-06336**			
	Impacted DU: 00015298 Taxi - Radar			
	Reason for issue: *When in the AUTO position, the MultiScan AUTO mode adjusts the tilt according to the altitude of the aircraft.* *In cruise, MULTISCAN function provides a large view of the weather ahead, ie display of weather cells located on and below aircraft path.* *At low altitudes (below FL 200), the tilt is adjusted upward to manage clutter from strong ground targets. In some cases, the weather may be low-lying and therefore may be below the radar beam and not be displayed until the aircraft descends closer to the precipitation level.* *Therefore, this Temporary Revision is issued to indicate that, when the Multiscan is in the AUTO position, the GAIN should be manually set to +4 when the aircraft is below FL 200.* *In addition, the flight crew should temporarily set the MULTISCAN sw to MAN, if:* - *If the weather is good, or not significant, in order to check that the radar is operating correctly: down tilt until displaying ground echoes* - *The weather display is ambiguous or unexpected, in order to better analyze the weather situation using manual tilt according to standard technique* - *In particular below FL 200, for situations with low-level weather, weather with low reflectivity or in front of suspected active cells, the flight crew should switch to Manual mode and adjust the tilt setting downward until the weather is detected or the ground clutter appears on the upper part of the display.* *In addition, the flight crew may increase the manual gain control to display lower reflectivity targets. The manual gain control can be increased in both AUTO and Manual modes to display lower levels of weather. In both cases, ground clutter may also be displayed as a result of low settings and/or increased gain.*			
	PRO-NOR-SOP-10	**Radar**	00015299.0001001	03 AUG 17
	Criteria: P7929			
	Applicable to: MSN 02737, 03308, 03750			
	Impacted DU: 00015298 Taxi - Radar			

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *When the MULTISCAN sw is in the AUTO position (tilt in automatic mode) and the GAIN is set to CAL (automatically calibrated), the radar display may not entirely correspond to the current weather. Therefore, this Temporary DU is issued to indicate that, when the MULTISCAN sw is in the AUTO position, the GAIN should be manually set to +8 to ensure that the radar display provides an optimum reflection of the current weather condition.* *In addition, the flight crew should temporarily set the MULTISCAN sw to MAN, if:* *- The weather is good, or not significant, in order to check that the radar is operating correctly* *- The weather display is ambiguous or unexpected, in order to better analyze the weather situation.* *When the MULTISCAN sw is in the AUTO position and the GAIN is manually set, the Path Attenuation Compensation (PAC) alert is not available. However, the radar display corresponds to the current weather conditions, when the aircraft is above FL 150.* *Therefore, the flight crew can set the GAIN back to CAL, when the aircraft is above FL 150.*			

E	PRO-NOR-SOP-11	**Before Takeoff**	NG00745	
E	PRO-NOR-SOP-11	**Before Takeoff - Exterior Lights**	00014740.0001001	05 MAR 18
	Criteria: J3283, J3448			
E	**Applicable to: MSN 05437-09063** *Impacted DU: 00010392 Before Takeoff - Exterior Lights*			
	Reason for issue: *The new strobe lights on the Sharklet aircraft can cause visual troubles. Pending final fix, this temporary amendment recalls that the flight crew can switch off the strobe lights if deemed necessary.*			

E	PRO-NOR-SOP-14	**Climb**	NG00723	
E	PRO-NOR-SOP-14	**Climb - Initial Climb**	00013057.0006001	05 DEC 17
	Criteria: 34-1259, 34-1260, 34-1265, 34-1369, 34-1377, 34-1383, P10960, P11588, P13843, P14310, P14311, P14828, P3379, P7424, P7425, P7585, P9207, SA			
E	**Applicable to: MSN 01767-03071, 03264-04384, 04399-05365, 06720-09063** *Impacted DU: 00010245 Climb - Initial Climb*			
	Reason for issue: *Issue 2:* *The temporary information is reissued to provide more information concerning BPS issue in line with EASA SIB 2016-05.* *Issue 1:* *The temporary revision is issued to advise operators that above the transition level, when the flight crew selects "STD" on the FCU, the last QNH or QFE barometric pressure setting is transmitted to the ground, instead of the standard pressure value (1 013 hPa).* *Only the FCU selected altitude, if used by the ATC on ground, may be misinterpreted. The real aircraft altitude transmitted to the ground is not affected, because the standard barometric altitude is transmitted, regardless of the barometric setting selected on the FCU.* *In addition, the "STD" value is correctly transmitted to other aircraft systems.*			

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M (1)	Localization	DU Title	DU identification	DU date
E	PRO-NOR-SOP-14	**Climb - Radar**	00013047.0003001	03 MAR 14
	Criteria: 34-1348, 34-1443, P12173, P7929, P9902, SA			
E	**Applicable to: MSN 02334, 03071, 03782, 04294, 04328, 04433-04438, 04488, 04506-04518, 04535, 04630, 05190, 05230-05259, 05313-05460, 05476, 05537-05577, 05683, 05727, 05829-05923, 06036-06336**			
	Impacted DU: 00010259 Climb - Radar			
	Reason for issue:			
	When in the AUTO position, the MultiScan AUTO mode adjusts the tilt according to the altitude of the aircraft. *In cruise, MULTISCAN function provides a large view of the weather ahead, ie display of weather cells located on and below aircraft path.* *At low altitudes (below FL 200), the tilt is adjusted upward to manage clutter from strong ground targets. In some cases, the weather may be low-lying and therefore may be below the radar beam and not be displayed until the aircraft descends closer to the precipitation level.* *Therefore, this Temporary Revision is issued to indicate that, when the Multiscan is in the AUTO position, the GAIN should be manually set to +4 when the aircraft is below FL 200.* *In addition, the flight crew should temporarily set the MULTISCAN sw to MAN, if:* - *If the weather is good, or not significant, in order to check that the radar is operating correctly: down tilt until displaying ground echoes* - *The weather display is ambiguous or unexpected, in order to better analyze the weather situation using manual tilt according to standard technique* - *In particular below FL 200, for situations with low-level weather, weather with low reflectivity or in front of suspected active cells, the flight crew should switch to Manual mode and adjust the tilt setting downward until the weather is detected or the ground clutter appears on the upper part of the display.* *In addition, the flight crew may increase the manual gain control to display lower reflectivity targets. The manual gain control can be increased in both AUTO and Manual modes to display lower levels of weather. In both cases, ground clutter may also be displayed as a result of low settings and/or increased gain.*		
	PRO-NOR-SOP-14	**Climb - Radar**	00013047.0001001	23 JUN 15
	Criteria: P7929, SA			
	Applicable to: MSN 02737, 03308, 03750			
	Impacted DU: 00010259 Climb - Radar			
	Reason for issue:			
	When the MULTISCAN sw is in the AUTO position (tilt in automatic mode) and the GAIN is set to CAL (automatically calibrated), the radar display may not entirely correspond to the current weather. Therefore, this Temporary DU is issued to indicate that, when the MULTISCAN sw is in the AUTO position, the GAIN should be manually set to +8 to ensure that the radar display provides an optimum reflection of the current weather condition. *In addition, the flight crew should temporarily set the MULTISCAN sw to MAN, if:* - *The weather is good, or not significant, in order to check that the radar is operating correctly* - *The weather display is ambiguous or unexpected, in order to better analyze the weather situation.* *When the MULTISCAN sw is in the AUTO position and the GAIN is manually set, the Path Attenuation Compensation (PAC) alert is not available. However, the radar display corresponds to the current weather conditions, when the aircraft is above FL 150.* *Therefore, the flight crew can set the GAIN back to CAL, when the aircraft is above FL 150.*		

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M (1)	Localization	DU Title	DU identification	DU date
E	PRO-NOR-SOP-15	**Cruise**	NG00734	
	PRO-NOR-SOP-15	**Cruise - Radar Tilt**	00013068.0001001	23 JUN 15
	Criteria: P7929, SA **Applicable to: MSN 02737, 03308, 03750** *Impacted DU: 00010291 Cruise - Radar Tilt* *Reason for issue:* *When the MULTISCAN sw is in the AUTO position (tilt in automatic mode) and the GAIN is set to CAL (automatically calibrated), the radar display may not entirely correspond to the current weather. Therefore, this Temporary DU is issued to indicate that, when the MULTISCAN sw is in the AUTO position, the GAIN should be manually set to +8 to ensure that the radar display provides an optimum reflection of the current weather condition.* *In addition, the flight crew should temporarily set the MULTISCAN sw to MAN, if:* *- The weather is good, or not significant, in order to check that the radar is operating correctly* *- The weather display is ambiguous or unexpected, in order to better analyze the weather situation.* *When the MULTISCAN sw is in the AUTO position and the GAIN is manually set, the Path Attenuation Compensation (PAC) alert is not available. However, the radar display corresponds to the current weather conditions, when the aircraft is above FL 150.* *Therefore, the flight crew can set the GAIN back to CAL, when the aircraft is above FL 150.*		
E	PRO-NOR-SOP-15	**Cruise - Radar Tilt**	00013068.0006001	20 SEP 16
E	Criteria: 34-1348, 34-1443, P12173, P7929, P9902, SA **Applicable to: MSN 02334, 03071, 03782, 04294, 04328, 04433-04438, 04488, 04506-04518, 04535, 04630, 05190, 05230-05259, 05313-05460, 05476, 05537-05577, 05683, 05727, 05829-05923, 06036-06336** *Impacted DU: 00010291 Cruise - Radar Tilt*			

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *When in the AUTO position, the MultiScan AUTO mode adjusts the tilt according to the altitude of the aircraft.* *In cruise, MULTISCAN function provides a large view of the weather ahead, ie display of weather cells located on and below aircraft path.* *At low altitudes (below FL 200), the tilt is adjusted upward to manage clutter from strong ground targets. In some cases, the weather may be low-lying and therefore may be below the radar beam and not be displayed until the aircraft descends closer to the precipitation level.* *Therefore, this Temporary Revision is issued to indicate that, when the Multiscan is in the AUTO position, the GAIN should be manually set to +4 when the aircraft is below FL 200.* *In addition, the flight crew should temporarily set the MULTISCAN sw to MAN, if:* - *The weather is good, or not significant, in order to check that the radar is operating correctly: down tilt until displaying ground echoes* - *The weather display is ambiguous or unexpected, in order to better analyze the weather situation using manual tilt according to standard technique* - *In particular below FL 200, for situations with low-level weather, weather with low reflectivity or in front of suspected active cells, the flight crew should switch to Manual mode and adjust the tilt setting downward until the weather is detected or the ground clutter appears on the upper part of the display.* *In addition, the flight crew may increase the manual gain control to display lower reflectivity targets. The manual gain control can be increased in both AUTO and Manual modes to display lower levels of weather. In both cases, ground clutter may also be displayed as a result of low settings and/or increased gain.*		

E	PRO-NOR-SOP-16	**Descent Preparation**	NG00916	
E	PRO-NOR-SOP-16	**Descent PREPARATION - Radar**	00013353.0003001	03 MAR 14
	Criteria: 34-1348, 34-1443, P12173, P7929, P9902, SA			
E	**Applicable to: MSN 02334, 03071, 03782, 04294, 04328, 04433-04438, 04488, 04506-04518, 04535, 04630, 05190, 05230-05259, 05313-05460, 05476, 05537-05577, 05683, 05727, 05829-05923, 06036-06336** *Impacted DU: 00011545 Descent Preparation - Radar*			

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M (1)	Localization	DU Title	DU identification	DU date
	Reason for issue: *When in the AUTO position, the MultiScan AUTO mode adjusts the tilt according to the altitude of the aircraft.* *In cruise, MULTISCAN function provides a large view of the weather ahead, ie display of weather cells located on and below aircraft path.* *At low altitudes (below FL 200), the tilt is adjusted upward to manage clutter from strong ground targets. In some cases, the weather may be low-lying and therefore may be below the radar beam and not be displayed until the aircraft descends closer to the precipitation level.* *Therefore, this Temporary Revision is issued to indicate that, when the Multiscan is in the AUTO position, the GAIN should be manually set to +4 when the aircraft is below FL 200.* *In addition, the flight crew should temporarily set the MULTISCAN sw to MAN, if:* *- If the weather is good, or not significant, in order to check that the radar is operating correctly: down tilt until displaying ground echoes* *- The weather display is ambiguous or unexpected, in order to better analyze the weather situation using manual tilt according to standard technique* *- In particular below FL 200, for situations with low-level weather, weather with low reflectivity or in front of suspected active cells, the flight crew should switch to Manual mode and adjust the tilt setting downward until the weather is detected or the ground clutter appears on the upper part of the display.* *In addition, the flight crew may increase the manual gain control to display lower reflectivity targets. The manual gain control can be increased in both AUTO and Manual modes to display lower levels of weather. In both cases, ground clutter may also be displayed as a result of low settings and/or increased gain.*		
	PRO-NOR-SOP-16	**Descent PREPARATION - Radar**	00013353.0001001	23 JUN 15
	Criteria: P7929, SA **Applicable to: MSN 02737, 03308, 03750** *Impacted DU: 00011545 Descent Preparation - Radar*			
	Reason for issue: *When the MULTISCAN sw is in the AUTO position (tilt in automatic mode) and the GAIN is set to CAL (automatically calibrated), the radar display may not entirely correspond to the current weather. Therefore, this Temporary DU is issued to indicate that, when the MULTISCAN sw is in the AUTO position, the GAIN should be manually set to +8 to ensure that the radar display provides an optimum reflection of the current weather condition.* *In addition, the flight crew should temporarily set the MULTISCAN sw to MAN, if:* *- The weather is good, or not significant, in order to check that the radar is operating correctly* *- The weather display is ambiguous or unexpected, in order to better analyze the weather situation.* *When the MULTISCAN sw is in the AUTO position and the GAIN is manually set, the Path Attenuation Compensation (PAC) alert is not available. However, the radar display corresponds to the current weather conditions, when the aircraft is above FL 150.* *Therefore, the flight crew can set the GAIN back to CAL, when the aircraft is above FL 150.*			

E	PRO-NOR-SOP-18-B	**Initial Approach**	NG01260	
	PRO-NOR-SOP-18-B	**Initial Approach - Radar**	00014648.0002001	23 JUN 15
	Criteria: P7929, SA **Applicable to: MSN 02737, 03308, 03750**			

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M (1)	Localization	DU Title	DU identification	DU date
	Impacted DU: 00014647 Initial Approach - Radar			
	Reason for issue: *When the MULTISCAN sw is in the AUTO position (tilt in automatic mode) and the GAIN is set to CAL (automatically calibrated), the radar display may not entirely correspond to the current weather. Therefore, this Temporary DU is issued to indicate that, when the MULTISCAN sw is in the AUTO position, the GAIN should be manually set to +8 to ensure that the radar display provides an optimum reflection of the current weather condition.* *In addition, the flight crew should temporarily set the MULTISCAN sw to MAN, if:* *- The weather is good, or not significant, in order to check that the radar is operating correctly* *- The weather display is ambiguous or unexpected, in order to better analyze the weather situation.* *When the MULTISCAN sw is in the AUTO position and the GAIN is manually set, the Path Attenuation Compensation (PAC) alert is not available. However, the radar display corresponds to the current weather conditions, when the aircraft is above FL 150.* *Therefore, the flight crew can set the GAIN back to CAL, when the aircraft is above FL 150.*			
E	PRO-NOR-SOP-18-B	**Initial Approach - Radar**	00014648.0003001	03 MAR 14
E	Criteria: 34-1348, 34-1443, P12173, P7929, P9902, SA **Applicable to: MSN 02334, 03071, 03782, 04294, 04328, 04433-04438, 04488, 04506-04518, 04535, 04630, 05190, 05230-05259, 05313-05460, 05476, 05537-05577, 05683, 05727, 05829-05923, 06036-06336** *Impacted DU: 00014647 Initial Approach - Radar*			
	Reason for issue: *When in the AUTO position, the MultiScan AUTO mode adjusts the tilt according to the altitude of the aircraft.* *In cruise, MULTISCAN function provides a large view of the weather ahead, ie display of weather cells located on and below aircraft path.* *At low altitudes (below FL 200), the tilt is adjusted upward to manage clutter from strong ground targets. In some cases, the weather may be low-lying and therefore may be below the radar beam and not be displayed until the aircraft descends closer to the precipitation level.* *Therefore, this Temporary Revision is issued to indicate that, when the Multiscan is in the AUTO position, the GAIN should be manually set to +4 when the aircraft is below FL 200.* *In addition, the flight crew should temporarily set the MULTISCAN sw to MAN, if:* *- If the weather is good, or not significant, in order to check that the radar is operating correctly: down tilt until displaying ground echoes* *- The weather display is ambiguous or unexpected, in order to better analyze the weather situation using manual tilt according to standard technique* *- In particular below FL 200, for situations with low-level weather, weather with low reflectivity or in front of suspected active cells, the flight crew should switch to Manual mode and adjust the tilt setting downward until the weather is detected or the ground clutter appears on the upper part of the display.* *In addition, the flight crew may increase the manual gain control to display lower reflectivity targets. The manual gain control can be increased in both AUTO and Manual modes to display lower levels of weather. In both cases, ground clutter may also be displayed as a result of low settings and/or increased gain.*			

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M (1)	Localization	DU Title	DU identification	DU date
E	PRO-NOR-SUP-MISC-A	**High Altitude Airport Operations**	NG01741	
	PRO-NOR-SUP-MISC-A	**Operation at or Above 9 200 ft**	00021551.0022001	05 JUN 18
	Criteria: 00-1020, CFMI, K2393, K5801, P4378, P4495, P4983 **Applicable to: MSN 03750** *Impacted DU: 00020650 Operation at or Above 9 200 ft*			
	Reason for issue: *TDU to request the changeover of the CPC after descent initiation when cabin has reached 8 500 ft, in order to force the CPC in standby mode to become operational in cruise mode and to limit the cabin altitude to 8 000 ft.*			
E	PRO-NOR-SUP-MISC-A	**Operation at or Above 9 200 ft**	00021551.0025001	05 JUN 18
E	Criteria: 00-1262, CFMI, IAE, IAL, K2393, K5801, P4495, P4983, P8540 **Applicable to: MSN 02443, 02670, 02908-02914, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336, 06744-06829, 06904, 06946, 07053-09063** *Impacted DU: 00020650 Operation at or Above 9 200 ft*			
	Reason for issue: *TDU to request the changeover of the CPC after descent initiation when cabin has reached 8 500 ft, in order to force the CPC in standby mode to become operational in cruise mode and to limit the cabin altitude to 8 000 ft.*			

(1) Evolution code : N=New, R=Revised, E=Effectivity

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PROCEDURES

ABNORMAL AND EMERGENCY PROCEDURES

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PRO-ABN-ABN-00 INTRODUCTION

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Abnormal and Emergency Callouts....C

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PRO-ABN-ABN-MEM [MEM] MEMORY ITEMS

[MEM] Memory Items....A

PRO-ABN-ABN-QRH [QRH] PROCEDURES

[QRH] Procedures....A

PRO-ABN-ABN-RESET [RESET] SYSTEM RESET

System Reset - General....A
System Reset Table....B

PRO-ABN-A-ICE A-ICE

[QRH] DOUBLE AOA HEAT FAILURE....A
ANTI ICE ALL PITOT....B
ANTI ICE CAPT(F/O) TAT....C
ANTI ICE CAPT + F/O AOA....D
ANTI ICE CAPT + F/O PITOT....E
ANTI ICE CAPT + STBY AOA....F
ANTI ICE CAPT + STBY PITOT....G
ANTI ICE CAPT PITOT or L(R) STAT or AOA....H
ANTI ICE CAPT PROBES....I
ANTI ICE DETECT FAULT....J
ANTI ICE ENG 1(2) CTL FAULT (ENG 1(2) A.ICE VALVE OPEN)....K
ANTI ICE ENG 1(2) CTL FAULT (ENG 1(2) A.ICE MON FAULT)....L
ANTI ICE ENG 1(2) OVER PRESS....M
ANTI ICE ENG 1(2) VALVE CLSD....N
ANTI ICE ENG 1(2) VALVE OPEN....O
ANTI ICE F/O + STBY AOA....P
ANTI ICE F/O + STBY PITOT....Q
ANTI ICE F/O PITOT or L(R) STAT or AOA....R
ANTI ICE F/O PROBES....S

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ANTI ICE ICE DETECTED....T
ANTI ICE L + R WINDSHIELD....U
ANTI ICE L(R) WINDOW....V
ANTI ICE L(R) WINDSHIELD....W
ANTI ICE STBY PITOT or L(R) STAT or AOA....X
ANTI ICE STBY PROBES....Y

PRO-ABN-AIR AIR

[QRH] Engine 1+2 Bleed Fault....A
[QRH] BLEED 1+2 FAULT....B
AIR APU BLEED FAULT....C
AIR APU BLEED LEAK....D
AIR APU BLEED LEAK APU LEAK FED BY ENG....E
AIR APU LEAK DET FAULT....F
AIR BLEED 1(2) OFF....G
[redacted] AIR BLEED LEAK [redacted]....H
AIR COND CTL 1(2) - A(B) FAULT....I
AIR ENG 1(2) BLEED ABNORM PR....J
AIR ENG 1(2) BLEED FAULT....K
AIR ENG 1(2) BLEED FAULT BLEED NOT CLOSED....L
AIR ENG 1+2 BLEED FAULT....M
AIR ENG 1+2 BLEED FAULT LEFT LEAK....N
AIR ENG 1+2 BLEED FAULT RIGHT LEAK....O
AIR ENG 1+2 BLEED FAULT LEFT LEAK AND RIGHT LEAK....P
AIR ENG 1(2) BLEED LO TEMP (OPPOSITE BLEED AVAILABLE)....Q
AIR ENG 1(2) BLEED LO TEMP (OPPOSITE BLEED NOT AVAILABLE)....R
AIR ENG 1+2 BLEED LO TEMP....S
AIR ENG 1(2) BLEED HI TEMP....T
AIR ENG 1(2) BLEED NOT CLSD....U
AIR ENG 1(2) HP VALVE FAULT....V
AIR ENG 1(2) LEAK DET FAULT....W
AIR FWD(AFT) CRG VENT FAULT ◁ X
AIR L(R) WING or ENG 1(2) BLEED LEAK....Y
AIR L(R) WNG LEAK DET FAULT....Z

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AIR PACK 1(2) FAULT ..... AA
AIR PACK 1+2 FAULT ..... AB
AIR PACK 1(2) OFF ..... AC
AIR PACK 1(2) OVHT ..... AD
AIR PACK 1(2) REGUL FAULT ..... AE
AIR X BLEED FAULT ..... AF

PRO-ABN-APU APU

APU AUTO (EMER) SHUT DOWN ..... A
APU FIRE DET FAULT ..... B
APU FIRE LOOP A(B) FAULT C

PRO-ABN-APUF APU FIRE

[redacted] APU FIRE [redacted] ..... A

PRO-ABN-AUTO_FLT AUTO FLT

AUTO FLT A/THR LIMITED ..... A
AUTO FLT A/THR OFF ..... B
[redacted] AUTO FLT AP OFF [redacted] C
AUTO FLT FAC 1(2) FAULT ..... D
AUTO FLT FAC 1 + 2 FAULT ..... E
AUTO FLT FCU 1(2) FAULT ..... F
AUTO FLT FCU 1 + 2 FAULT ..... G
AUTO FLT REAC W/S DET FAULT ..... H
AUTO FLT RUD TRIM 1(2) FAULT I
AUTO FLT RUD TRIM SYS ..... J
AUTO FLT RUD TRV LIM 1(2) ..... K
AUTO FLT RUD TRV LIM SYS L
AUTO FLT TCAS MODE FAULT ..... M
AUTO FLT YAW DAMPER 1(2) ..... N
AUTO FLT YAW DAMPER SYS ..... O

PRO-ABN-AVNCS AVIONICS SMOKE

AVIONICS SMOKE ..... A

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PRO-ABN-BLEED BLEED

BLEED MONITORING FAULT ..... A
BLEED MONIT SYS 1(2) FAULT ..... B

PRO-ABN-BRAKES BRAKES

[MEM] LOSS OF BRAKING ..... A
[QRH] ASYMMETRIC BRAKING ..... B
[QRH] RESIDUAL BRAKING C
BRAKES A/SKID N/WS FAULT or A/SKID N/WS OFF ..... D
BRAKES ALTN BRK FAULT ..... E
BRAKES ALTN L(R) RELEASED ..... F
BRAKES AUTO BRK FAULT ..... G
BRAKES BRK Y ACCU LO PR ..... H
BRAKES HOT I
BRAKES NORM + ALTN FAULT ..... J
BRAKES NORM BRK FAULT ..... K
BRAKES PARK BRK FAULT L
BRAKES PARK BRK LO PR ..... M
BRAKES PARK BRK ON ..... N
BRAKES RELEASED ..... O
BRAKES SYS 1(2) FAULT ..... P

PRO-ABN-NWS BRAKES-N/WS

BRAKES-N/WS MINOR FAULT ..... A

PRO-ABN-CAB_PR CAB PR

[QRH] CABIN OVERPRESSURE ..... A
CAB PR EXCESS CAB ALT ..... B
CAB PR EXCES RESIDUAL PR C
CAB PR LDG ELEV FAULT ..... D
CAB PR LO DIFF PR ..... E
CAB PR OFV NOT OPEN ..... F
CAB PR SAFETY VALVE OPEN ..... G
CAB PR SYS 1(2) FAULT ..... H
CAB PR SYS 1+2 FAULT I

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PRO-ABN-CRG_SMOKE CARGO SMOKE

CARGO SMOKE FWD(AFT) BTL SQUIB FAULT ..... A

PRO-ABN-C_B C/B

C/B TRIPPED ..... A

PRO-ABN-COM COM

COM ACARS FAULT ..... A
COM CIDS 1 + 2 FAULT ..... B
COM HF 1(2) DATA FAULT C
COM SATCOM DATA FAULT ..... D
COM SATCOM FAULT ..... E
COM SINGLE PTT STUCK ..... F
COM VHF 1(2)(3) /HF 1(2) EMITTING ..... G
COM VHF 3 DATA FAULT ..... H

PRO-ABN-COND COND

COND FWD CAB/AFT CAB/CKPT DUCT OVHT ..... A
COND FWD(AFT) CARGO DUCT OVHT ..... B
COND FWD(AFT) CRG HEAT FAULT C
COND FWD(AFT) CRG ISOL VALVE ..... D
COND HOT AIR FAULT ..... E
COND L+R CAB FAN FAULT ..... F
COND LAV + GALLEY FAN FAULT ..... G
COND TRIM AIR SYS FAULT ..... H
COND ZONE REGUL FAULT (PRIMARY CHANNEL FAILED) I
COND ZONE REGUL FAULT (PRIMARY AND SECONDARY CHANNELS FAILED) ..... J

PRO-ABN-CONFIG CONFIG

[redacted] CONFIG L(R) SIDESTICK FAULT (BY TAKE OVER) [redacted] ..... A
[redacted] CONFIG PARK BRK ON [redacted] ..... B
[redacted] CONFIG PITCH TRIM NOT IN T.O RANGE [redacted] C
[redacted] CONFIG RUD TRIM NOT IN T.O RANGE [redacted] ..... D
[redacted] CONFIG SLATS (FLAPS) NOT IN T.O CONFIG [redacted] ..... E
[redacted] CONFIG SPD BRK NOT RETRACTED [redacted] ..... F

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PRO-ABN-DATALINK DATALINK

DATALINK ATC FAULT ..... A
DATALINK ATSU FAULT ..... B
DATALINK COMPANY FAULT C

PRO-ABN-DOOR DOOR

[QRH] COCKPIT DOOR FAULT ..... A
DOOR L(R)(FWD)(AFT) AVIONICS (IN FLIGHT) ..... B
DOOR L(R)(FWD)(AFT) AVIONICS (ON GROUND) C
DOOR L(R) FWD(AFT) CABIN (IN FLIGHT) ..... D
DOOR L(R) FWD(AFT) CABIN (ON GROUND) ..... E
DOOR L(R) FWD(AFT) EMER EXIT (IN FLIGHT) ..... F
DOOR L(R) AFT EMER EXIT (IN FLIGHT) ..... G
DOOR L(R) FWD(AFT) EMER EXIT (ON GROUND) ..... H
DOOR L(R) AFT EMER EXIT (ON GROUND) I
DOOR L(R) FWD(AFT) OVERWNG EXIT (IN FLIGHT) ..... J
DOOR L(R) FWD(AFT) OVERWNG EXIT (ON GROUND) ..... K
DOOR L(R) FWD(AFT) OVERWNG FAULT L
DOOR FWD(AFT)(BULK) CARGO (IN FLIGHT) ..... M
DOOR FWD(AFT)(BULK) CARGO (ON GROUND) ..... N

PRO-ABN-EIS EIS

[QRH] Display Unit Failure ..... A
EIS DMC 1(2)(3) FAULT ..... B
EIS DMC/FWC COM FAULT C

PRO-ABN-ELEC ELEC

[QRH] C/B Tripped ..... A
[QRH] ELEC EMER CONFIG SYS REMAINING ..... B
ELEC AC BUS 1 FAULT C
ELEC AC BUS 2 FAULT ..... D
ELEC AC ESS BUS ALTN ..... E
ELEC AC ESS BUS FAULT ..... F
ELEC AC ESS BUS SHED ..... G
ELEC APU GEN FAULT ..... H
ELEC BAT 1(2) FAULT I
ELEC BAT 1(2) OFF ..... J

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ELEC BCL 1(2) FAULT....K
ELEC DC BAT BUS FAULT....L
ELEC DC BUS 1 FAULT....M
ELEC DC BUS 2 FAULT....N
ELEC DC BUS 1+2 FAULT....O
ELEC DC EMER CONFIG....P
ELEC DC ESS BUS FAULT....Q
ELEC DC ESS BUS SHED....R
[redacted] ELEC EMER CONFIG [redacted]....S
ELEC EMER GEN 1 LINE OFF....T
[redacted] ELEC ESS BUSES ON BAT [redacted]....U
ELEC GEN 1(2) or APU GEN OVERLOAD....V
ELEC GEN 1(2) FAULT....W
ELEC GEN 1(2) OFF....X
ELEC IDG 1(2) DISCONNECTED....Y
ELEC IDG 1(2) FILTER CLOG....Z
ELEC IDG 1(2) OIL LO LVL....AA
ELEC IDG 1(2) OIL LO PR/OVHT....AB
ELEC STATIC INV FAULT....AC
ELEC TR 1(2) FAULT....AD

PRO-ABN-ENG ENG

[QRH] ENG RELIGHT IN FLIGHT....A
[QRH] HIGH ENGINE VIBRATION....B
[redacted] [QRH] ALL ENG FAIL [redacted]....C
[redacted] [QRH] ENG DUAL FAILURE - FUEL REMAINING [redacted]....D
[redacted] [QRH] ENG DUAL FAILURE - NO FUEL REMAINING [redacted]....E
[QRH] ENG STALL....F
[QRH] ENGINE TAILPIPE FIRE....G
[QRH] HIGH ENGINE VIBRATION....H
[QRH] On Ground - Non ENG Shutdown after ENG Master OFF....I
[QRH] One Engine Inoperative - Circling Approach....J
[QRH] One Engine Inoperative - Straight-In Approach....K
[redacted] ENG ALL ENGINES FAILURE [redacted]....L
ENG 1(2) A/C FADEC SUPPLY....M
ENG 1(2) AIR EXCHGR FAULT....N
ENG 1(2) AIR MINOR FAULT....O
ENG 1(2) AIR SYS FAULT....P

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ENG 1(2) AIR VALVE....Q
ENG 1(2) BEARING 4 OIL SYS....R
ENG 1(2) BLEED STATUS FAULT (IN FLIGHT)....S
ENG 1(2) BLEED STATUS FAULT (ON GROUND)....T
ENG 1(2) BOWED ROTOR PROTECTION FAULT....U
ENG 1(2) COLD FUEL....V
ENG 1+2 COMPRESSOR VANE....W
ENG COMPRESSOR VANE....X
ENG 1(2) COMPRESSOR VANE....Y
ENG 1(2) CTL SYS FAULT....Z
ENG 1(2) CTL VALVE FAULT....AA
ENG DUAL COOLING NOT AVAIL....AB
[redacted] ENG DUAL FAILURE [redacted]....AC
ENG 1(2) EGT EXCEEDED DURING AIR START....AD
ENG 1(2) EIU FAULT....AE
ENG 1(2) EPR MODE FAULT....AF
ENG 1(2) FADEC A(B) FAULT....AG
ENG 1(2) FADEC ALTERNATOR....AH
ENG 1(2) FADEC FAULT....AI
ENG 1(2) FADEC HI TEMP....AJ
ENG 1(2) FADEC IDENT FAULT....AK
ENG 1(2) FADEC OVHT....AL
ENG 1(2) FADEC PLUG FAULT....AM
ENG 1(2) FADEC SYS FAULT....AN
ENG 1(2) FAN COWL NOT CLSD....AO
ENG 1(2) FAIL....AP
[redacted] ENG 1(2) FIRE (IN FLIGHT) [redacted]....AQ
[redacted] ENG 1(2) FIRE (ON GROUND) [redacted]....AR
ENG 1(2) FIRE DET FAULT....AS
ENG 1(2) FIRE LOOP A(B) FAULT....AT
ENG 1(2) FUEL CTL FAULT....AU
ENG 1(2) FUEL FILTER CLOG....AV
ENG 1(2) FUEL FILTER - PARTLY CLOGGED....AW
ENG 1+2 FUEL FILTER CLOG....AX
ENG 1(2) FUEL FILTER DEGRAD....AY
ENG 1(2) FUEL HEAT SYS....AZ
ENG 1(2) FUEL LEAK....BA

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ENG 1(2) FUEL RETURN VALVE....BB
ENG 1(2) FUEL SENSOR FAULT....BC
ENG 1(2) FUEL VALVE FAULT....BD
ENG GA SOFT FAULT - ANNUNCIATION....BE
ENG 1(2) HEAT EXCHGR CLOG....BF
ENG 1+2 HEAT EXCHGR CLOG....BG
ENG 1(2) HEAT SYS DEGRADED....BH
ENG 1(2) HEAT SYS FAULT....BI
ENG 1(2) HIGH VIBRATION....BJ
ENG 1(2) HOT AIR DET FAULT....BK
ENG 1(2) HOT AIR LEAK....BL
ENG 1(2) HOT FUEL....BM
ENG 1(2) HP FUEL VALVE....BN
ENG 1(2) IGN FAULT (IGN A or B Fault)....BO
ENG 1(2) IGN FAULT (IGN A+B FAULT)....BP
ENG 1(2) LO START AIR PRESS....BQ
ENG 1(2) LOW N1 (On Ground)....BR
ENG 1(2) MINOR FAULT....BS
ENG 1(2) N1 or N2 or EGT or FF DISCREPANCY....BT
ENG 1(2) EPR or N1 or N2 or EGT or FF DISCREPANCY....BU
ENG 1(2) N1/N2/EGT OVER LIMIT....BV
ENG 1(2) OIL CHIP DETECTED....BW
ENG 1(2) OIL FILTER CLOG....BX
ENG 1(2) OIL FILTER - PARTLY CLOGGED....BY
ENG 1(2) OIL FILTER DEGRAD....BZ
ENG 1(2) OIL HI TEMP....CA
[redacted] ENG 1(2) OIL LO PR [redacted]....CB
ENG 1(2) OIL LO PR....CC
ENG 1(2) OIL LO TEMP....CD
ENG 1(2) OIL SENSOR FAULT....CE
ENG 1(2) OIL SYS FAULT....CF
ENG 1(2) ONE TLA FAULT....CG
ENG 1(2) OVSPD PROT FAULT....CH
ENG 1(2) OVTHR PROT FAULT....CI
ENG 1(2) PROBES FAULT....CJ
ENG 1(2) REV INHIBITED....CK
ENG 1(2) REV ISOL FAULT....CL

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ENG 1(2) REV LOCKED (on Ground)....CM
ENG 1(2) REV MINOR FAULT....CN
ENG 1(2) REV PRESSURIZED....CO
ENG REV SET....CP
ENG 1(2) REV SWITCH FAULT....CQ
ENG 1(2) REVERSE UNLOCKED....CR
ENG 1(2) REVERSER CTL FAULT....CS
ENG 1(2) REVERSER FAULT....CT
ENG SAT ABOVE FLEX TEMP....CU
ENG 1(2) SENSOR FAULT....CV
1 ENG 1(2) SHUT DOWN....CW
ENG 1(2) STALL....CX
ENG 1(2) START FAULT....CY
ENG 1(2) START VALVE FAULT....CZ
ENG 1(2) SYSTEM FAULT....DA
[redacted] ENG 1(2) THR LEVER ABV IDLE [redacted]....DB
ENG 1(2) THR LEVER DISAGREE....DC
ENG 1(2) THR LEVER FAULT....DD
ENG T.O. THRUST DISAGREE....DE
ENG 1(2) TURB COOL FAULT....DF
ENG THR LEVERS NOT SET....DG
ENG THR LEVERS NOT SET (ON GROUND)....DH
ENG THR LEVERS NOT SET (AT GO-AROUND)....DI
ENG THRUST LOCKED....DJ
ENG TYPE DISAGREE....DK
ENG VIB SYS FAULT....DL

PRO-ABN-F_CTL F/CTL

[QRH] Landing with Slats or Flaps Jammed....A
[QRH] RUDDER JAM....B
[QRH] STABILIZER JAM....C
ACTIVE CONTROL LAW....D
ELEVATORS AND STABILIZER CONTROL AFTER FAILURE....E
F/CTL AIL SERVO FAULT....F
F/CTL ALTN LAW....G
F/CTL DIRECT LAW....H
F/CTL ELAC 1(2) FAULT (ONE COMPUTER FAILED)....I

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F/CTL ELAC 1(2) FAULT (BOTH COMPUTERS FAILED)..... J
F/CTL ELAC 1(2) PITCH FAULT..... K
F/CTL ELEV SERVO FAULT..... L
F/CTL FCDC 1(2) FAULT..... M
F/CTL FCDC 1+2 FAULT..... N
F/CTL FLAP ATTACH SENSOR..... O
F/CTL FLAPS FAULT/LOCKED..... P
[redacted] F/CTL FLAP LVR NOT ZERO [redacted]..... Q
F/CTL FLAP SYS 1(2) FAULT..... R
F/CTL FLAP/MCDU DISAGREE..... S
F/CTL FLAPS/SLATS FAULT/LOCKED..... T
F/CTL GND SPLR 5 FAULT..... U
F/CTL GND SPLR / 1+2 / 3+4 / FAULT..... V
F/CTL GND SPLR NOT ARMED..... W
F/CTL L(R) AIL FAULT..... X
F/CTL L(R) ELEV FAULT..... Y
[redacted] F/CTL L+R ELEV FAULT [redacted]..... Z
F/CTL L(R) SIDESTICK FAULT..... AA
F/CTL PITCH TRIM/MCDU/CG DISAGREE..... AB
F/CTL SEC 1(2)(3) FAULT..... AC
F/CTL SIDESTICK PRIORITY..... AD
F/CTL SLAT(FLAP) TIP BRK FAULT..... AE
F/CTL SLATS AND FLAPS FAULT IN CONF 0..... AF
F/CTL SLATS FAULT/LOCKED..... AG
F/CTL SLAT SYS 1(2) FAULT..... AH
F/CTL SPD BRK 2 (3+4) FAULT..... AI
F/CTL SPD BRK DISAGREE (SURFACES 3+4 AFFECTED)..... AJ
F/CTL SPD BRK DISAGREE (SURFACES 2+3+4 AFFECTED)..... AK
F/CTL SPD BRK FAULT..... AL
F/CTL SPD BRK STILL OUT..... AM
F/CTL SPLR FAULT..... AN
F/CTL STABILIZER JAM..... AO

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PRO-ABN-FUEL FUEL

[QRH] ACT SYSTEM FAULT....A
[QRH] ACT XFR FAULT....B
[QRH] FUEL IMBALANCE....C
[QRH] FUEL LEAK....D
[QRH] FWD ACT ISOLATED....E
[QRH] GRAVITY FUEL FEEDING....F
[QRH] FUEL OVERREAD....G
FUEL ACT PUMP LO PR....H
FUEL ACT SYSTEM FAULT....I
FUEL ACT XFR FAULT ◁✻....J
FUEL ACT PUMP LO PR ◁✻....K
FUEL APU LP VALVE FAULT....L
FUEL AUTO FEED FAULT....M
FUEL AUTO TRANSFER FAULT....N
FUEL CTR L(R) XFR FAULT (VALVE NOT FULLY CLOSED)....O
FUEL CTR L(R) XFR FAULT (VALVE NOT FULLY OPEN)....P
FUEL CTR L + R XFR FAULT (VALVES NOT FULLY CLOSED)....Q
FUEL CTR L + R XFR FAULT (VALVES NOT FULLY OPEN)....R
FUEL CTR TK PUMP 1(2) LO PR....S
FUEL CTR TK PUMPS LO PR....T
FUEL CTR TK PUMPS OFF....U
FUEL CTR TK XFR OFF....V
FUEL ENG 1(2) LP VALVE OPEN....W
FUEL F. USED/FOB DISAGREE....X
FUEL FQI CH 1(2) FAULT....Y
FUEL FWD ACT ISOLATED....Z
FUEL FWD ACT LINE FAULT....AA
FUEL IDG 1(2) COOL FAULT....AB
FUEL FUEL INERTING SYS FAULT....AC
FUEL L (R) OUTER (INNER) TK HI TEMP....AD
FUEL L (R) OUTER (INNER) TK LO TEMP....AE
FUEL L (R) OUTER XFR CLOSED....AF
FUEL L (R) OUTER XFR OPEN....AG
FUEL L (R) TK PUMP 1(2) LO PR....AH
FUEL L (R) TK PUMP 1 + 2 LO PR....AI
FUEL L (R) TK PUMP 1 + 2 LO PR (CENTER TANK EMPTY)....AJ

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FUEL L (R) TK PUMP 1 + 2 LO PR (CENTER TANK NOT EMPTY)....AK
FUEL L (R) WING TK HI TEMP....AL
FUEL L (R) WING TK LO LVL....AM
FUEL L + R WING TK LO LVL....AN
FUEL L (R) WING TK LO TEMP....AO
FUEL L (R) WING TK OVERFLOW....AP
FUEL LO LVL DET FAULT....AQ
FUEL X FEED VALVE FAULT....AR

PRO-ABN-FWS FWS

[QRH] Multiple Undue ECAM Alerts....A
FWS FWC 1 + 2 FAULT....B
FWS FWC 1(2) FAULT....C
FWS OEB/FWC DISCREPANCY....D
FWS SDAC 1 + 2 FAULT....E
FWS SDAC 1(2) FAULT....F

PRO-ABN-HYD HYD

HYD B ELEC PUMP LO PR or OVHT....A
HYD B RSVR LO AIR PR....B
HYD B RSVR LO LVL....C
HYD B RSVR OVHT....D
HYD G ENG 1 PUMP LO PR (PTU OPERATIVE)....E
HYD G ENG 1 PUMP LO PR (PTU INOPERATIVE)....F
HYD G RSVR LO AIR PR....G
HYD G RSVR LO LVL....H
HYD G RSVR OVHT....I
HYD Y ELEC PUMP LO PR or OVHT....J
HYD Y ENG 2 PUMP LO PR (PTU OPERATIVE)....K
HYD Y ENG 2 PUMP LO PR (PTU INOPERATIVE)....L
HYD Y RSVR LO AIR PR....M
HYD Y RSVR LO LVL....N

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HYD Y RSVR OVHT....O
[redacted] HYD B+Y SYS LO PR [redacted]....P
[redacted] HYD G+B SYS LO PR [redacted]....Q
[redacted] HYD G+Y SYS LO PR [redacted]....R
HYD PTU FAULT....S
HYD RAT FAULT....T

PRO-ABN-LG L/G

[QRH] Landing with Abnormal L/G....A
[QRH] L/G GRAVITY EXTENSION....B
L/G DOORS NOT CLOSED....C
[redacted] L/G GEAR NOT DOWN [redacted]....D
[redacted] L/G GEAR NOT DOWNLOCKED [redacted]....E
L/G GEAR NOT UPLOCKED....F
L/G GEAR UPLOCK FAULT....G
L/G LGCIU 1(2) FAULT....H
L/G LGCIU 1+2 FAULT....I
L/G SHOCK ABSORBER FAULT (SHOCK ABSORBER EXTENDED ON GROUND)....J
L/G SHOCK ABSORBER FAULT (SHOCK ABSORBER NOT EXTENDED AFTER LIFTOFF)....K
L/G SYS DISAGREE....L

PRO-ABN-MISC MISC

[redacted] [MEM] EMER DESCENT [redacted]....A
[redacted] [MEM] Stall Recovery [redacted]....B
[redacted] [MEM] Stall Warning At Lift-Off [redacted]....C
[QRH] BOMB ON BOARD....D
[QRH] COCKPIT WINDSHIELD / WINDOW ARCING....E
[QRH] COCKPIT WINDSHIELD / WINDOW CRACKED....F
[redacted] [QRH] DITCHING [redacted]....G
[redacted] [QRH] EMER EVAC [redacted]....H
[redacted] [QRH] EMER LANDING ALL ENG FAILURE [redacted]....I
[redacted] [QRH] FORCED LANDING [redacted]....J
[QRH] OVERWEIGHT LANDING....K
[QRH] Severe Turbulence....L
[QRH] TAILSTRIKE....M
[QRH] VOLCANIC ASH ENCOUNTER....N

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PRO-ABN-NAV NAV

[MEM] Unreliable Speed Indication ..... A
[QRH] ADR 1+2+3 FAULT ..... B
[QRH] ADR CHECK PROC C
[QRH] ALL ADR OFF ..... D
[QRH] IR Alignment in ATT Mode ..... E
NAV ADR 1(2)(3) FAULT ..... F
NAV ADR 1+2(1+3)(2+3) FAULT ..... G
NAV ADR 1+2+3 FAULT ..... H
NAV ADR DISAGREE I
NAV ADS-B RPTG 1(2) FAULT ..... J
NAV ALTI DISCREPANCY ..... K
NAV CAPT(F/O)(STBY) AOA FAULT L
NAV ATC/XPDR 1(2) FAULT ..... M
NAV ATC/XPDR 1+2 FAULT ..... N
NAV ATC/XPDR STBY ..... O
NAV ATT DISCREPANCY ..... P
NAV BARO REF DISCREPANCY ..... Q
NAV BARO VALUE DISAGREE ..... R
NAV BKUP SPD/ALT ON CAPT(F/O) PFD ..... S
NAV BKUP SPD/ALT ON CAPT+F/O PFD ..... T
NAV FM/GPS POS DISAGREE ..... U
NAV GPS 1(2) FAULT V
NAV GPWS FAULT ..... W
NAV GPWS TERR DET FAULT X
NAV HDG DISCREPANCY ..... Y
NAV IAS DISCREPANCY ..... Z
NAV ILS 1(2)(1+2) FAULT ..... AA
NAV IR 1(2)(3) FAULT ..... AB
NAV IR 1+2(1+3)(2+3) FAULT ..... AC
NAV IR DISAGREE ..... AD
NAV IR NOT ALIGNED ..... AE
NAV LS TUNING DISAGREE ..... AF
NAV PRED W/S DET FAULT ..... AG
NAV RA 1 AND 2 FAULT (DUAL RA FAILURE) ..... AH

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NAV RA 1(2) FAULT ..... AI
NAV RA DEGRADED ..... AJ
NAV TCAS FAULT ..... AK
NAV TCAS STBY ..... AL
NAV L(R) CAPT(F/O) STATIC FAULT ..... AM
[redacted] Stall Warning [redacted] ..... AN
[redacted] STALL WARNING [redacted] ..... AO

PRO-ABN-OVERSPEED OVERSPEED

[redacted] OVERSPEED [redacted] ..... A

PRO-ABN-RECORDER RECORDER

RECORDER DFDR FAULT ..... A
RECORDER SYS FAULT ..... B

PRO-ABN-SEVERE_ICE SEVERE ICE

SEVERE ICE DETECTED ..... A

PRO-ABN-SMOKE SMOKE

[redacted] [QRH] SMOKE / FUMES / AVNCS SMOKE [redacted] ..... A
[redacted] [QRH] SMOKE / FUMES / AVNCS SMOKE - GENERAL [redacted] ..... B
[redacted] [QRH] SMOKE / FUMES / AVNCS SMOKE [redacted] C
[redacted] [QRH] REMOVAL OF SMOKE / FUMES [redacted] ..... D
[QRH] SMOKE / FIRE FROM LITHIUM BATTERY ..... E
[redacted] SMOKE AFT CARGO SMOKE [redacted] ..... F
SMOKE AFT CRG DET FAULT ..... G
[redacted] SMOKE FWD CARGO SMOKE [redacted] ..... H
SMOKE FWD(AFT) CRG BTL 1(2) FAULT I
SMOKE FWD CRG DET FAULT ..... J
SMOKE DET FAULT ..... K
SMOKE LAVATORY DET FAULT L
[redacted] SMOKE LAVATORY SMOKE [redacted] ..... M

PRO-ABN-SURV SURV

[MEM] GPWS Cautions ..... A
[MEM] EGPWS Cautions ..... B

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[MEM] GPWS Cautions....C
[redacted] [MEM] EGPWS Warnings [redacted]....D
[redacted] [MEM] GPWS Warnings [redacted]....E
[redacted] [MEM] EGPWS Warnings [redacted]....F
[redacted] [MEM] GPWS Warnings [redacted]....G
[redacted] [MEM] TCAS WARNINGS [redacted]....H
[redacted] [MEM] WINDSHEAR [redacted]....I
[redacted] [MEM] WINDSHEAR AHEAD [redacted]....J

PRO-ABN-VENT VENT

VENT AVNCS SYS FAULT....A
VENT BLOWER FAULT....B
VENT EXTRACT FAULT....C
VENT SKIN VALVE FAULT....D

PRO-ABN-WHEEL WHEEL

[QRH] WHEEL TIRE DAMAGE SUSPECTED....A
WHEEL HYD SEL FAULT....B
WHEEL N/W STRG FAULT....C
WHEEL TYRE LO PR ◁ ....D

PRO-ABN-W_A_ICE WING A.ICE

WING A.ICE L(R) HI PR....A
WING A.ICE L(R) VALVE OPEN (FAILURE DETECTED IN FLIGHT)....B
WING A.ICE L(R) VALVE OPEN (FAILURE DETECTED ON GROUND)....C
WING A.ICE OPEN ON GND....D
WING A.ICE SYS FAULT (ONE WING VALVE REMAINS CLOSED WHEN THE WING ANTI-ICE IS TURNED ON)....E
WING A.ICE SYS FAULT (THE WING ANTI-ICE IS TURNED ON AFTER ONE ENGINE SHUTDOWN OR AFTER THE LOSS OF ONE BLEED)....F

PRO-ABN-W_S WINDSHEAR

WINDSHEAR DET FAULT....A

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PRO-ABN-90 Detailed Cabin / Cockpit Evacuation Procedure

General....A
Cockpit-Assigned Duties for Evacuation....B
Cabin Crew-Assigned Areas for Evacuation....C
Communications....D
On Ground Evacuation....E
Cockpit Evacuation through Window....F
Evacuation on Water....G

Localization Title	Toc Index	ID	Reason
PRO-ABN-PLP-TOC ENG 1(2) SHUT DOWN		1	Documentation update: Deletion of the "00017852.0010001 ENG 1(2) SHUT DOWN - FWSPAGE" documentary unit.
			Documentation update: Deletion of the "00017852.0014001 ENG 1(2) SHUT DOWN - FWSPAGE" documentary unit.
PRO-ABN-PLP-TOC ENG 1(2) SHUT DOWN		1	Documentation update: Deletion of the "00017852.0010001 ENG 1(2) SHUT DOWN - FWSPAGE" documentary unit.
			Documentation update: Deletion of the "00017852.0014001 ENG 1(2) SHUT DOWN - FWSPAGE" documentary unit.
PRO-ABN-ENG ENG 1(2) SHUT DOWN - FWSPAGE	CW	291	Documentation update: Addition of "ENG 1(2) SHUT DOWN - FWSPAGE" documentary unit
PRO-ABN-ABN-ADV ECAM Advisory Conditions - FUEL	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - APU	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - FUEL	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - APU	A	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - ENG	A	5	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - FUEL	A	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - OXY	A	7	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - ENG	A	8	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - FUEL	A	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - APU	A	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - ENG	A	11	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-ADV ECAM Advisory Conditions - FUEL	A	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - FUEL	A	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - APU	A	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - FUEL	A	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - OXY	A	16	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - ENG	A	17	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - FUEL	A	18	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - OXY	A	19	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - APU	A	20	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - ENG	A	21	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - FUEL	A	22	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - APU	A	23	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - FUEL	A	24	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - APU	A	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - ENG	A	26	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-ADV ECAM Advisory Conditions - FUEL	A	27	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - OXY	A	28	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - APU	A	29	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - ENG	A	30	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - FUEL	A	31	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ABN-ADV ECAM Advisory Conditions - OXY	A	32	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-MEM [MEM] SURV	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-QRH [QRH] AIR	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-QRH [QRH] BRAKES	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-QRH [QRH] ENG	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-QRH [QRH] ENG	A	4	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-QRH [QRH] FUEL	A	5	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ABN-QRH [QRH] FUEL	A	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-QRH [QRH] NAV	A	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-QRH [QRH] SMOKE	A	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	1	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - AUTO FLT	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	4	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	5	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AUTO FLT	B	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	8	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	9	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	12	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	14	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AUTO FLT	B	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	17	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - ENG	B	18	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	19	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	20	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	21	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	22	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	23	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	24	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	26	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	27	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	28	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	29	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	30	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	31	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AUTO FLT	B	32	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	33	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	34	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	35	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	36	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	37	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	38	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	39	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	40	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AUTO FLT	B	41	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	42	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	43	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	44	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	45	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	46	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	47	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	48	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	49	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - COM	B	50	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	51	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	52	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	53	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	54	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	55	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	56	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	57	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AUTO FLT	B	58	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	59	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	60	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	61	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	62	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	63	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	64	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	65	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	66	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	67	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	68	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	69	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	70	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AUTO FLT	B	71	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	72	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	73	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	74	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	75	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	76	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	77	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	78	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	79	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - AUTO FLT	B	80	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	81	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	82	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	83	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	84	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	85	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	86	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	87	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AUTO FLT	B	88	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	89	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	90	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	91	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	92	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	93	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	94	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - AIR	B	95	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AUTO FLT	B	96	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	97	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	98	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	99	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	100	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	101	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	102	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	103	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	104	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	105	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	106	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	107	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	108	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	109	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - AIR	B	110	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AUTO FLT	B	111	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	112	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	113	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	114	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	115	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	116	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	117	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	118	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	119	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	120	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	121	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	122	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	123	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	124	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	125	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	126	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	127	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	128	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	129	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	130	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	131	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	132	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	133	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	134	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	135	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	136	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	137	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	138	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	139	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	140	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	141	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	142	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	143	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	144	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	145	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	146	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	147	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	148	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	149	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	150	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	151	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	152	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	153	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	154	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	155	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	156	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AUTO FLT	B	157	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	158	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	159	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	160	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	161	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	162	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	163	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	164	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	165	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	166	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	167	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	168	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	169	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - NAV	B	170	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	171	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	172	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	173	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	174	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	175	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	176	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	177	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	178	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	179	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	180	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	181	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	183	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	184	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	185	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - ENG	B	186	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	187	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	188	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	189	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	190	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	192	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	193	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	194	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	195	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	196	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	197	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	198	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AUTO FLT	B	199	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	201	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	202	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	203	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	204	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	205	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	206	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	207	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	208	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	210	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	211	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	212	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	213	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	214	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	215	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	216	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	217	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	219	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	220	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	221	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	222	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	223	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	224	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	225	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	226	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	228	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	229	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	230	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	231	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - FUEL	B	232	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	233	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	234	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	235	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - AIR	B	236	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	238	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	239	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	240	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ENG	B	241	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - FUEL	B	242	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	243	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	244	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	245	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	246	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AUTO FLT	B	247	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - COM	B	249	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	250	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	251	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ABN-RESET System Reset Table - FUEL	B	252	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	253	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	254	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - A-ICE	B	255	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-RESET System Reset Table - AIR	B	256	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - AUTO FLT	B	257	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ABN-RESET System Reset Table - COM	B	258	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ABN-RESET System Reset Table - COM	B	259	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ABN-RESET System Reset Table - DATALINK	B	260	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ABN-RESET System Reset Table - ELEC	B	261	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ABN-RESET System Reset Table - FUEL	B	262	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ABN-RESET System Reset Table - NAV	B	263	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ABN-RESET System Reset Table - SMOKE	B	264	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-A-ICE [QRH] DOUBLE AOA HEAT FAILURE	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-A-ICE ANTI ICE CAPT + F/O AOA	D	2	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-A-ICE ANTI ICE CAPT + F/O AOA	D	3	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-A-ICE ANTI ICE CAPT + F/O AOA - FWSPAGE	D	4	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-A-ICE ANTI ICE CAPT + STBY AOA	F	5	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-A-ICE ANTI ICE CAPT + STBY AOA	F	6	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-A-ICE ANTI ICE CAPT + STBY AOA - FWSPAGE	F	7	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-A-ICE ANTI ICE ENG 1(2) CTL FAULT (ENG 1(2) A.ICE VALVE OPEN)	K	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-A-ICE ANTI ICE ENG 1(2) CTL FAULT (ENG 1(2) A.ICE VALVE OPEN)	K	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-A-ICE ANTI ICE ENG 1(2) CTL FAULT (ENG 1(2) A.ICE MON FAULT)	L	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-A-ICE ANTI ICE ENG 1(2) CTL FAULT (ENG 1(2) A.ICE MON FAULT)	L	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-A-ICE ANTI ICE ENG 1(2) CTL FAULT - FWSPAGE (ENG 1(2) A.ICE MON FAULT)	L	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-A-ICE ANTI ICE ENG 1(2) OVER PRESS	M	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-A-ICE ANTI ICE ENG 1(2) OVER PRESS	M	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-A-ICE ANTI ICE ENG 1(2) VALVE CLSD	N	15	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-A-ICE ANTI ICE ENG 1(2) VALVE CLSD	N	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-A-ICE ANTI ICE ENG 1(2) VALVE OPEN	O	17	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-A-ICE ANTI ICE ENG 1(2) VALVE OPEN - FWSPAGE	O	18	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-A-ICE ANTI ICE ENG 1(2) VALVE OPEN	O	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-A-ICE ANTI ICE F/O + STBY AOA	P	20	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-A-ICE ANTI ICE F/O + STBY AOA	P	21	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-A-ICE ANTI ICE F/O + STBY AOA - FWSPAGE	P	22	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-AIR [QRH] BLEED 1+2 FAULT	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR APU BLEED LEAK APU LEAK FED BY ENG	E	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR APU BLEED LEAK APU LEAK FED BY ENG	E	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR APU BLEED LEAK - FWSPAGE APU LEAK FED BY ENG	E	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR APU LEAK DET FAULT	F	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR APU LEAK DET FAULT	F	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR APU LEAK DET FAULT - FWSPAGE	F	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR BLEED LEAK	H	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-AIR AIR BLEED LEAK	H	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR BLEED LEAK	H	10	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-AIR AIR BLEED LEAK	H	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR COND CTL 1(2) - A(B) FAULT	I	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR COND CTL 1(2) - A(B) FAULT	I	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-AIR AIR COND CTL 1(2) - A(B) FAULT - FWSPAGE	I	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) BLEED ABNORM PR	J	15	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) BLEED ABNORM PR - FWSPAGE	J	16	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) BLEED ABNORM PR - FWSPAGE	J	17	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) BLEED ABNORM PR	J	18	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR ENG 1(2) BLEED ABNORM PR - FWSPAGE	J	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT	K	20	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT	K	21	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT - FWSPAGE	K	22	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT	K	23	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT	K	24	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT - FWSPAGE	K	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT	K	26	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT	K	27	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT - FWSPAGE	K	28	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT BLEED NOT CLOSED	L	29	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT BLEED NOT CLOSED	L	30	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT - FWSPAGE BLEED NOT CLOSED	L	31	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT BLEED NOT CLOSED	L	32	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT BLEED NOT CLOSED	L	33	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR ENG 1(2) BLEED FAULT - FWSPAGE BLEED NOT CLOSED	L	34	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT	M	35	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT	M	36	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT - FWSPAGE	M	37	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT	M	38	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT	M	39	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT - FWSPAGE	M	40	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT LEFT LEAK	N	41	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT LEFT LEAK	N	42	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT - FWSPAGE LEFT LEAK	N	43	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT RIGHT LEAK	O	44	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT RIGHT LEAK	O	45	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT - FWSPAGE RIGHT LEAK	O	46	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT LEFT LEAK AND RIGHT LEAK	P	47	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT LEFT LEAK RIGHT LEAK	P	48	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1+2 BLEED FAULT - FWSPAGE LEFT LEAK RIGHT LEAK	P	49	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) BLEED LO TEMP (OPPOSITE BLEED NOT AVAILABLE)	R	50	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1+2 BLEED LO TEMP	S	51	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) BLEED HI TEMP	T	52	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) BLEED HI TEMP	T	53	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) BLEED HI TEMP	T	54	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR ENG 1(2) BLEED HI TEMP	T	55	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR ENG 1(2) BLEED NOT CLSD - FWSPAGE	U	56	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-AIR AIR ENG 1(2) BLEED NOT CLSD - FWSPAGE	U	57	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR ENG 1(2) LEAK DET FAULT	W	58	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) LEAK DET FAULT	W	59	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) LEAK DET FAULT - FWSPAGE	W	60	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) LEAK DET FAULT	W	61	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AIR AIR ENG 1(2) LEAK DET FAULT	W	62	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR ENG 1(2) LEAK DET FAULT - FWSPAGE	W	63	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR L(R) WING or ENG 1(2) BLEED LEAK	Y	64	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR L(R) WING or ENG 1(2) BLEED LEAK	Y	65	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-AIR AIR PACK 1(2) FAULT	AA	66	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR PACK 1(2) FAULT - FWSPAGE	AA	67	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR PACK 1 + 2 FAULT	AB	68	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR PACK 1+2 FAULT	AB	69	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR PACK 1 + 2 FAULT	AB	70	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-AIR AIR PACK 1 + 2 FAULT - FWSPAGE	AB	71	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR PACK 1+2 FAULT	AB	72	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR PACK 1+2 FAULT	AB	73	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR PACK 1 + 2 FAULT	AB	74	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-AIR AIR PACK 1 + 2 FAULT - FWSPAGE	AB	75	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR PACK 1(2) OVHT	AD	76	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR PACK 1(2) REGUL FAULT	AE	77	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR PACK 1(2) REGUL FAULT	AE	78	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR PACK 1(2) REGUL FAULT	AE	79	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR PACK 1(2) REGUL FAULT-FWSPAGE	AE	80	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-AIR AIR PACK 1(2) REGUL FAULT	AE	81	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-AIR AIR PACK 1(2) REGUL FAULT	AE	82	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-AIR AIR PACK 1(2) REGUL FAULT-FWSPAGE	AE	83	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-AUTO_FLT AUTO FLT FAC 1 + 2 FAULT	E	1	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AUTO_FLT AUTO FLT FAC 1 + 2 FAULT - FWSPAGE	E	2	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-AUTO_FLT AUTO FLT FAC 1 + 2 FAULT	E	3	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AUTO_FLT AUTO FLT FAC 1 + 2 FAULT	E	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AUTO_FLT AUTO FLT FAC 1 + 2 FAULT - FWSPAGE	E	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-AUTO_FLT AUTO FLT FAC 1 + 2 FAULT	E	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AUTO_FLT AUTO FLT FAC 1 + 2 FAULT - FWSPAGE	E	7	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-AUTO_FLT AUTO FLT FCU 1 + 2 FAULT	G	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-AUTO_FLT AUTO FLT FCU 1 + 2 FAULT	G	9	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-AUTO_FLT AUTO FLT REAC W/S DET FAULT	H	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AUTO_FLT AUTO FLT REAC W/S DET FAULT	H	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AUTO_FLT AUTO FLT REAC W/S DET FAULT - FWSPAGE	H	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AUTO_FLT AUTO FLT RUD TRV LIM 1(2)	K	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-AUTO_FLT AUTO FLT RUD TRV LIM 1(2)	K	14	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-AUTO_FLT AUTO FLT RUD TRV LIM SYS	L	15	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AUTO_FLT AUTO FLT RUD TRV LIM SYS - FWSPAGE	L	16	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AUTO_FLT AUTO FLT RUD TRV LIM SYS	L	17	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AUTO_FLT AUTO FLT RUD TRV LIM SYS	L	18	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-AUTO_FLT AUTO FLT RUD TRV LIM SYS - FWSPAGE	L	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AUTO_FLT AUTO FLT TCAS MODE FAULT	M	20	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AUTO_FLT AUTO FLT TCAS MODE FAULT	M	21	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AUTO_FLT AUTO FLT TCAS MODE FAULT - FWSPAGE	M	22	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-AUTO_FLT AUTO FLT YAW DAMPER 1(2)	N	23	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-AUTO_FLT AUTO FLT YAW DAMPER SYS - FWSPAGE	O	24	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-AUTO_FLT AUTO FLT YAW DAMPER SYS - FWSPAGE	O	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-BLEED BLEED MONITORING FAULT	A	1	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-BLEED BLEED MONITORING FAULT	A	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-BLEED BLEED MONITORING FAULT - FWSPAGE	A	3	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-BLEED BLEED MONIT SYS 1(2) FAULT	B	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BLEED BLEED MONIT SYS 1(2) FAULT	B	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BLEED BLEED MONIT SYS 1(2) FAULT - FWSPAGE	B	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES [MEM] LOSS OF BRAKING	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES [QRH] ASYMMETRIC BRAKING	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-BRAKES BRAKES ALTN BRK FAULT	E	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES ALTN BRK FAULT	E	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES ALTN BRK FAULT - FWSPAGE	E	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES ALTN L(R) RELEASED	F	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES ALTN L(R) RELEASED	F	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES ALTN L(R) RELEASED - FWSPAGE	F	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES AUTO BRK FAULT	G	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES AUTO BRK FAULT - FWSPAGE	G	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES BRK Y ACCU LO PR	H	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES BRK Y ACCU LO PR	H	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES BRK Y ACCU LO PR - FWSPAGE	H	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES NORM + ALTN FAULT	J	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES NORM + ALTN FAULT	J	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-BRAKES BRAKES NORM + ALTN FAULT - FWSPAGE	J	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES NORM BRK FAULT	K	17	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES NORM BRK FAULT	K	18	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES NORM BRK FAULT - FWSPAGE	K	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES PARK BRK LO PR	M	20	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES PARK BRK LO PR	M	21	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES PARK BRK LO PR - FWSPAGE	M	22	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES RELEASED	O	23	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES RELEASED	O	24	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-BRAKES BRAKES RELEASED - FWSPAGE	O	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NWS BRAKES-N/WS MINOR FAULT	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NWS BRAKES - N/WS MINOR FAULT	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-CAB_PR CAB PR EXCESS CAB ALT	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-CAB_PR CAB PR EXCESS CAB ALT - FWSPAGE	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-CAB_PR CAB PR EXCES RESIDUAL PR	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-CAB_PR CAB PR EXCES RESIDUAL PR	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-COM COM SINGLE PTT STUCK	F	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-COM COM SINGLE PTT STUCK	F	2	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-COND COND FWD CAB/AFT CAB/CKPT DUCT OVHT	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-COND COND FWD CAB/AFT CAB/CKPT DUCT OVHT	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-COND COND FWD CAB/AFT CAB/CKPT DUCT OVHT	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-COND COND FWD CAB/AFT CAB/CKPT DUCT OVHT	A	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-COND COND FWD(AFT) CARGO DUCT OVHT ◁	B	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-COND COND HOT AIR FAULT	E	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-COND COND LAV + GALLEY FAN FAULT - FWSPAGE	G	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-DATALINK DATALINK ATSU FAULT - FWSPAGE	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-DOOR [QRH] COCKPIT DOOR FAULT	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-DOOR DOOR L(R)(FWD)(AFT) AVIONICS (IN FLIGHT)	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-DOOR DOOR L(R)(FWD)(AFT) AVIONICS or STAIRS - FWSPAGE (IN FLIGHT)	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) CABIN (IN FLIGHT)	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) CABIN - FWSPAGE (IN FLIGHT)	D	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) EMER EXIT (IN FLIGHT)	F	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) EMER EXIT (IN FLIGHT)	F	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) EMER EXIT - FWSPAGE (IN FLIGHT)	F	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) EMER EXIT (IN FLIGHT)	F	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-DOOR DOOR L(R) AFT EMER EXIT (IN FLIGHT)	G	10	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-DOOR DOOR L(R) AFT EMER EXIT (IN FLIGHT)	G	11	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-DOOR DOOR L(R) AFT EMER EXIT - FWSPage (IN FLIGHT)	G	12	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) EMER EXIT (ON GROUND)	H	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) EMER EXIT (ON GROUND)	H	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-DOOR	I	15	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
DOOR L(R) AFT EMER EXIT (ON GROUND)			
PRO-ABN-DOOR DOOR L(R) AFT EMER EXIT (ON GROUND)	I	16	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) OVERWNG EXIT (IN FLIGHT)	J	17	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) OVERWNG EXIT (IN FLIGHT)	J	18	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) OVERWNG EXIT - FWSPAGE (IN FLIGHT)	J	19	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) OVERWNG EXIT (ON GROUND)	K	20	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) OVERWNG EXIT (ON GROUND)	K	21	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) OVERWNG FAULT	L	22	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) OVERWNG FAULT	L	23	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-DOOR DOOR L(R) FWD(AFT) OVERWNG FAULT - FWSPAGE	L	24	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-DOOR DOOR FWD(AFT)(BULK) CARGO (IN FLIGHT)	M	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-DOOR DOOR FWD(AFT)(BULK) - FWSPAGE (IN FLIGHT)	M	26	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-EIS [QRH] Display Unit Failure	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-EIS [QRH] Display Unit Failure	A	2	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 23 - COMMUNICATIONS	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 26 - FIRE	B	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 28 - FUEL	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 23 - COMMUNICATIONS	B	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 26 - FIRE	B	5	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 28 - FUEL	B	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 23 - COMMUNICATIONS	B	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 26 - FIRE	B	8	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 28 - FUEL	B	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 34 - NAVIGATION	B	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 21 - AIR CONDITIONING/VENTILATION/ PRESSURIZATION	B	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC	B	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
[QRH] ELEC EMER CONFIG SYS REMAINING - 23 - COMMUNICATIONS			
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 26 - FIRE	B	13	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 28 - FUEL	B	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 23 - COMMUNICATIONS	B	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 26 - FIRE	B	16	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 28 - FUEL	B	17	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 34 - NAVIGATION	B	18	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 21 - AIR CONDITIONING/VENTILATION/ PRESSURIZATION	B	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 26 - FIRE	B	20	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 28 - FUEL	B	21	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 23 - COMMUNICATIONS	B	22	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 26 - FIRE	B	23	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 28 - FUEL	B	24	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 32 - LANDING GEAR	B	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 34 - NAVIGATION	B	26	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 21 - AIR CONDITIONING/VENTILATION/ PRESSURIZATION	B	27	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 23 - COMMUNICATIONS	B	28	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 26 - FIRE	B	29	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 28 - FUEL	B	30	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 32 - LANDING GEAR	B	31	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 34 - NAVIGATION	B	32	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 26 - FIRE	B	33	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 28 - FUEL	B	34	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 32 - LANDING GEAR	B	35	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 23 - COMMUNICATIONS	B	36	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 26 - FIRE	B	37	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 28 - FUEL	B	38	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 32 - LANDING GEAR	B	39	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 34 - NAVIGATION	B	40	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 21 - AIR CONDITIONING/VENTILATION/ PRESSURIZATION	B	41	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 23 - COMMUNICATIONS	B	42	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 26 - FIRE	B	43	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 28 - FUEL	B	44	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 32 - LANDING GEAR	B	45	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 34 - NAVIGATION	B	46	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 21 - AIR	B	47	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
CONDITIONING/VENTILATION/ PRESSURIZATION			
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 23 - COMMUNICATIONS	B	48	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 26 - FIRE	B	49	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 28 - FUEL	B	50	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 32 - LANDING GEAR	B	51	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC [QRH] ELEC EMER CONFIG SYS REMAINING - 34 - NAVIGATION	B	52	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC AC BUS 1 FAULT	C	53	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ELEC ELEC AC BUS 1 FAULT	C	54	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC AC BUS 1 FAULT	C	55	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC AC BUS 1 FAULT	C	56	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC AC BUS 1 FAULT - FWSPAGE	C	57	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC AC BUS 1 FAULT	C	58	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC AC BUS 1 FAULT	C	59	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC AC BUS 1 FAULT - FWSPAGE	C	60	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ELEC ELEC AC BUS 1 FAULT	C	61	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ELEC ELEC AC BUS 1 FAULT - FWSPAGE	C	62	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ELEC ELEC AC BUS 2 FAULT - FWSPAGE	D	63	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC AC BUS 2 FAULT - FWSPAGE	D	64	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ELEC ELEC AC ESS BUS FAULT - FWSPAGE	F	65	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC AC ESS BUS SHED - FWSPAGE	G	66	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC APU GEN FAULT - FWSPAGE	H	67	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC APU GEN FAULT - FWSPAGE	H	68	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ELEC ELEC DC BAT BUS FAULT - FWSPAGE	L	69	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC DC BUS 1 FAULT - FWSPAGE	M	70	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC DC BUS 1 FAULT - FWSPAGE	M	71	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ELEC ELEC DC BUS 2 FAULT - FWSPAGE	N	72	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC DC BUS 2 FAULT - FWSPAGE	N	73	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ELEC ELEC DC BUS 1 + 2 FAULT - FWSPAGE	O	74	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ELEC ELEC DC BUS 1 + 2 FAULT - FWSPAGE	O	75	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ELEC ELEC DC BUS 1 + 2 FAULT - FWSPAGE	O	76	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ELEC ELEC DC ESS BUS FAULT	Q	77	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC DC ESS BUS FAULT	Q	78	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC DC ESS BUS FAULT - FWSPAGE	Q	83	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC DC ESS BUS FAULT	Q	84	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC DC ESS BUS FAULT - FWSPAGE	Q	85	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ELEC ELEC DC ESS BUS FAULT	Q	86	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC DC ESS BUS FAULT - FWSPAGE	Q	87	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC DC ESS BUS FAULT - FWSPAGE	Q	89	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ELEC ELEC DC ESS BUS FAULT	Q	90	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ELEC ELEC DC ESS BUS FAULT - FWSPAGE	Q	91	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ELEC ELEC EMER CONFIG - FWSPAGE	S	92	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC EMER CONFIG - FWSPAGE	S	93	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ELEC ELEC GEN 1(2) FAULT - FWSPAGE	W	94	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC GEN 1(2) FAULT - FWSPAGE	W	95	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ELEC ELEC GEN 1(2) OFF	X	96	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC GEN 1(2) OFF - FWSPAGE	X	97	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC GEN 1(2) OFF - FWSPAGE	X	98	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC GEN 1(2) OFF	X	99	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC GEN 1(2) OFF - FWSPAGE	X	100	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ELEC ELEC IDG 1(2) DISCONNECTED - FWSPAGE	Y	101	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC IDG 1(2) DISCONNECTED - FWSPAGE	Y	102	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ELEC ELEC IDG 1(2) FILTER CLOG	Z	103	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ELEC ELEC IDG 1(2) FILTER CLOG	Z	104	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ELEC ELEC IDG 1(2) OIL LO LVL	AA	105	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ELEC ELEC IDG 1(2) OIL LO LVL	AA	106	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ELEC ELEC IDG 1(2) OIL LO PR/OVHT - FWSPAGE	AB	107	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ELEC ELEC IDG 1(2) OIL LO PR/OVHT - FWSPAGE	AB	108	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG [QRH] ENG RELIGHT IN FLIGHT	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG [QRH] ENG RELIGHT IN FLIGHT	A	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] HIGH ENGINE VIBRATION	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ECAM - Relight Attempted or not Attempted	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight cannot be attempted	C	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated	C	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated	C	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG ECAM - Relight Attempted or not Attempted	C	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight cannot be attempted	C	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated	C	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated	C	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL	C	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ECAM - Note	C	13	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ECAM - Pitch Table	C	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG ECAM - Gliding Distance & FAC	C	15	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ECAM - Relight Attempted or not Attempted	C	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight can be attempted	C	17	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight cannot be attempted	C	18	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated	C	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated	C	20	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL	C	21	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ECAM - Pitch Table	C	22	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG ECAM - Gliding Distance & FAC	C	23	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ECAM - Relight Attempted or not Attempted	C	24	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight can be attempted	C	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight cannot be attempted	C	26	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated	C	27	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated	C	28	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL	C	29	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ECAM - Pitch Table	C	30	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ECAM - Gliding Distance & FAC	C	31	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ECAM - Relight Attempted or not Attempted	C	32	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight can be attempted	C	33	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight cannot be attempted	C	34	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated	C	35	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated	C	36	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG [QRH] ENG STALL	F	37	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG [QRH] ENG STALL	F	38	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ENGINE TAILPIPE FIRE	G	39	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] ENGINE TAILPIPE FIRE	G	40	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG [QRH] HIGH ENGINE VIBRATION	H	41	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG [QRH] HIGH ENGINE VIBRATION	H	42	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG [QRH] One Engine Inoperative - Circling Approach	J	43	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG [QRH] One Engine Inoperative - Circling Approach	J	44	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG [QRH] One Engine Inoperative - Circling Approach	J	45	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG ALL ENGINES FAILURE	L	46	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG FAC 1	L	47	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG ALL ENGINES FAILURE	L	48	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG ALL ENGINES FAILURE	L	49	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG ALL ENGINES FAILURE	L	50	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG Note	L	51	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG FAC 1	L	52	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG ALL ENGINES FAILURE	L	53	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG ALL ENGINES FAILURE	L	54	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG ALL ENGINES FAILURE	L	55	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG FAC 1	L	56	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG ALL ENGINES FAILURE	L	57	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) A/C FADEC SUPPLY	M	58	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) A/C FADEC SUPPLY	M	59	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) AIRCRAFT FADEC SUPPLY - FWSPAGE	M	60	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) A/C FADEC SUPPLY	M	61	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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PRO-ABN-ENG ENG 1(2) A/C FADEC SUPPLY	M	62	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) A/C FADEC SUPPLY - FWSPAGE	M	63	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) AIR EXCHGR FAULT	N	64	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) AIR EXCHGR FAULT	N	65	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) AIR MINOR FAULT	O	66	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) AIR MINOR FAULT - FWSPAGE	O	67	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) AIR MINOR FAULT	O	68	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) AIR MINOR FAULT	O	69	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) AIR MINOR FAULT - FWSPAGE	O	70	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) AIR SYS FAULT	P	71	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) AIR SYS FAULT	P	72	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) AIR SYS FAULT - FWSPAGE	P	73	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) AIR SYS FAULT	P	74	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) AIR SYS FAULT	P	75	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) AIR VALVE	Q	76	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) AIR VALVE	Q	77	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) BEARING 4 OIL SYS	R	78	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) BEARING 4 OIL SYS	R	79	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ENG 1(2) BOWED ROTOR PROTECTION FAULT	U	80	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) BOWED ROTOR PROTECTION FAULT	U	81	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) BOWED ROTOR PROTECTION FAULT	U	82	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) COLD FUEL	V	83	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) COLD FUEL	V	84	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1+2 COMPRESSOR VANE	W	85	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1+2 COMPRESSOR VANE	W	86	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) COMPRESSOR VANE	Y	87	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) COMPRESSOR VANE	Y	88	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) COMPRESSOR VANE - FWSPAGE	Y	89	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) COMPRESSOR VANE	Y	90	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) COMPRESSOR VANE	Y	91	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) COMPRESSOR VANE - FWSPAGE	Y	92	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) CTL SYS FAULT	Z	93	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) CTL SYS FAULT	Z	94	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) CTL SYS FAULT	Z	95	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) CTL SYS FAULT	Z	96	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ENG 1(2) CTL SYS FAULT - FWSPAGE	Z	97	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG DUAL COOLING NOT AVAIL	AB	98	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG DUAL COOLING NOT AVAIL	AB	99	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG DUAL COOLING NOT AVAIL	AB	100	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG DUAL COOLING NOT AVAIL	AB	101	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) EGT EXCEEDED DURING AIR START	AD	102	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) EGT EXCEEDED DURING AIR START	AD	103	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) EIU FAULT	AE	104	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) EIU FAULT - FWSPAGE	AE	105	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) EIU FAULT	AE	106	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) EIU FAULT	AE	107	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) EIU FAULT - FWSPAGE	AE	108	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) EIU FAULT	AE	109	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) EIU FAULT	AE	110	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) EIU FAULT	AE	111	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) EIU FAULT	AE	112	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ENG 1(2) EIU FAULT	AE	113	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) EIU FAULT - FWSPAGE	AE	114	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) EIU FAULT	AE	115	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) EIU FAULT	AE	116	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) EIU FAULT - FWSPAGE	AE	117	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) EPR MODE FAULT	AF	118	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) EPR MODE FAULT	AF	119	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) EPR MODE FAULT	AF	120	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) EPR MODE FAULT - FWSPAGE	AF	121	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT	AG	122	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT	AG	123	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FADEC FAULT - FWSPAGE	AI	124	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FADEC FAULT	AI	125	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FADEC FAULT - FWSPAGE	AI	126	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FADEC FAULT	AI	127	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) FADEC FAULT - FWSPAGE	AI	128	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FADEC FAULT	AI	129	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) FADEC IDENT FAULT	AK	130	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ENG 1(2) FADEC IDENT FAULT	AK	131	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) FADEC OVHT	AL	132	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FADEC OVHT	AL	133	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FADEC OVHT	AL	134	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FADEC OVHT	AL	135	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) FADEC PLUG FAULT	AM	136	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FADEC PLUG FAULT	AM	137	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FADEC SYS FAULT	AN	138	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) FADEC SYS FAULT	AN	139	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) FADEC SYS FAULT	AN	140	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) FADEC SYS FAULT	AN	141	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) FAN COWL NOT CLSD	AO	142	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) FAN COWL NOT CLSD	AO	143	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) FAIL	AP	144	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FAIL	AP	145	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) FAIL	AP	146	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) FUEL CTL FAULT	AU	147	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FUEL CTL FAULT - FWSPAGE	AU	148	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FUEL CTL FAULT	AU	149	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ENG 1(2) FUEL CTL FAULT - FWSPAGE	AU	150	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) FUEL FILTER - PARTLY CLOGGED	AW	151	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) FUEL FILTER - PARTLY CLOGGED	AW	152	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1+2 FUEL FILTER CLOG	AX	153	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1+2 FUEL FILTER CLOG	AX	154	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1+2 FUEL FILTER CLOG	AX	155	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1+2 FUEL FILTER CLOG	AX	156	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) FUEL FILTER DEGRAD	AY	157	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) FUEL FILTER DEGRAD	AY	158	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) FUEL HEAT SYS	AZ	159	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FUEL HEAT SYS	AZ	160	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FUEL LEAK	BA	161	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) FUEL LEAK	BA	162	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) FUEL SENSOR FAULT	BC	163	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) FUEL SENSOR FAULT	BC	164	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) FUEL VALVE FAULT	BD	165	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FUEL VALVE FAULT	BD	166	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ENG 1(2) FUEL VALVE FAULT	BD	167	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) FUEL VALVE FAULT	BD	168	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG GA SOFT FAULT - ANNUNCIATION	BE	169	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG GA SOFT FAULT	BE	170	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG GA SOFT FAULT - FWSPAGE	BE	171	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) HEAT EXCHGR CLOG	BF	172	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) HEAT EXCHGR CLOG	BF	173	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) HEAT EXCHGR CLOG	BF	174	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) HEAT EXCHGR CLOG	BF	175	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1+2 HEAT EXCHGR CLOG	BG	176	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1+2 HEAT EXCHGR CLOG	BG	177	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1+2 HEAT EXCHGR CLOG - FWSPAGE	BG	178	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1+2 HEAT EXCHGR CLOG	BG	179	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1+2 HEAT EXCHGR CLOG	BG	180	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1+2 HEAT EXCHGR CLOG - FWSPAGE	BG	181	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) HEAT SYS DEGRADED	BH	182	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) HEAT SYS DEGRADED	BH	183	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) HEAT SYS FAULT	BI	184	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ENG 1(2) HEAT SYS FAULT	BI	185	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) HEAT SYS FAULT	BI	186	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) HEAT SYS FAULT	BI	187	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) HIGH VIBRATION	BJ	188	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) HIGH VIBRATION	BJ	189	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) HOT AIR DET FAULT	BK	190	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) HOT AIR DET FAULT	BK	191	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) HOT AIR DET FAULT	BK	192	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) HOT AIR DET FAULT	BK	193	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) HOT AIR LEAK	BL	194	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) HOT AIR LEAK	BL	195	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) HOT AIR LEAK - FWSPAGE	BL	196	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) HOT AIR LEAK	BL	197	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) HOT AIR LEAK	BL	198	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) HOT AIR LEAK - FWSPAGE	BL	199	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) HOT FUEL	BM	200	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) HOT FUEL	BM	201	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) HOT FUEL - FWSPAGE	BM	202	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ENG 1(2) IGN FAULT (IGN A+B Fault) - FWSPAGE	BP	203	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) IGN FAULT (IGN A+B Fault) - FWSPAGE	BP	204	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) LO START AIR PRESS	BQ	205	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) LO START AIR PRESS	BQ	206	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) LO START AIR PRESS	BQ	207	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) LO START AIR PRESS	BQ	208	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) MINOR FAULT	BS	209	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) MINOR FAULT	BS	210	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) N1 or N2 or EGT or FF DISCREPANCY	BT	211	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) EPR or N1 or N2 or EGT or FF DISCREPANCY	BU	212	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) N1/N2/EGT OVER LIMIT	BV	213	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) N1/N2/EGT OVER LIMIT	BV	214	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) N1/N2/EGT OVER LIMIT	BV	215	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) N1/N2/EGT OVER LIMIT	BV	216	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) OIL CHIP DETECTED	BW	217	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) OIL CHIP DETECTED	BW	218	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) OIL FILTER CLOG	BX	219	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) OIL FILTER CLOG	BX	220	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ENG 1(2) OIL FILTER CLOG	BX	221	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) OIL FILTER - PARTLY CLOGGED	BY	222	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) OIL FILTER - PARTLY CLOGGED	BY	223	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) OIL FILTER DEGRAD	BZ	224	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) OIL FILTER DEGRAD	BZ	225	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) OIL HI TEMP	CA	226	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) OIL HI TEMP	CA	227	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) OIL HI TEMP	CA	228	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) OIL HI TEMP	CA	229	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) OIL HI TEMP	CA	230	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) OIL LO PR	CB	231	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) OIL LO PR	CB	232	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) OIL LO PR	CB	233	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) OIL LO PR	CB	234	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) OIL LO PR	CC	235	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) OIL LO PR	CC	236	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) OIL LO PR	CC	237	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) OIL LO PR	CC	238	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ENG 1(2) OIL LO TEMP	CD	239	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) OIL LO TEMP	CD	240	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) OIL LO TEMP	CD	241	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) OIL LO TEMP	CD	242	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) OIL SENSOR FAULT	CE	243	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) OIL SENSOR FAULT	CE	244	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) OIL SYS FAULT	CF	245	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) OIL SYS FAULT	CF	246	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) OIL SYS FAULT	CF	247	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) OIL SYS FAULT	CF	248	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) OVSPD PROT FAULT	CH	249	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) OVSPD PROT FAULT	CH	250	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) OVSPD PROT FAULT	CH	251	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) OVSPD PROT FAULT	CH	252	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) OVTHR PROT FAULT	CI	253	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) OVTHR PROT FAULT	CI	254	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) OVTHR PROT FAULT - FWSPAGE	CI	255	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) REV INHIBITED	CK	256	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ENG 1(2) REV INHIBITED	CK	257	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) REV INHIBITED - FWSPAGE	CK	258	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) REV ISOL FAULT	CL	259	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) REV ISOL FAULT	CL	260	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) REV LOCKED (on Ground)	CM	261	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) REV LOCKED (On Ground)	CM	262	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) REV LOCKED - FWSPAGE (ON GROUND)	CM	263	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) REV MINOR FAULT	CN	264	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) REV MINOR FAULT	CN	265	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) REV PRESSURIZED	CO	266	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) REV PRESSURIZED	CO	267	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) REV PRESSURIZED	CO	268	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) REV PRESSURIZED	CO	269	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) REV PRESSURIZED	CO	270	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) REV PRESSURIZED	CO	271	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) REV PRESSURIZED	CO	272	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) REV SWITCH FAULT	CQ	273	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ENG 1(2) REV SWITCH FAULT	CQ	274	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) REVERSE UNLOCKED	CR	275	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) REVERSE UNLOCKED	CR	276	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) REVERSER CTL FAULT	CS	277	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) REVERSER CTL FAULT	CS	278	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) REVERSER CTL FAULT - FWSPAGE	CS	279	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) REVERSER FAULT - FWSPAGE	CT	280	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) REVERSER FAULT - FWSPAGE	CT	281	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG SAT ABOVE FLEX TEMP	CU	282	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG SAT ABOVE FLEX TEMP	CU	283	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) SENSOR FAULT	CV	284	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) SENSOR FAULT	CV	285	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) SENSOR FAULT	CV	286	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) SENSOR FAULT	CV	287	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) SHUT DOWN	CW	288	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) SHUT DOWN - FWSPAGE	CW	289	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) SHUT DOWN	CW	290	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ENGINE STALL	CX	292	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) START FAULT	CY	293	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) START FAULT	CY	294	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) START FAULT	CY	295	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-ENG ENG 1(2) START FAULT	CY	296	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) START FAULT - FWSPAGE	CY	297	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) START FAULT	CY	298	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) START FAULT	CY	299	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) START FAULT - FWSPAGE	CY	300	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) START VALVE FAULT	CZ	301	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) START VALVE FAULT	CZ	302	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) START VALVE FAULT - FWSPAGE	CZ	303	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) START VALVE FAULT	CZ	304	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) START VALVE FAULT - FWSPAGE	CZ	305	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) SYSTEM FAULT	DA	306	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) SYSTEM FAULT	DA	307	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) SYSTEM FAULT	DA	308	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) SYSTEM FAULT	DA	309	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ENG 1(2) SYSTEM FAULT - FWSPAGE	DA	310	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) SYSTEM FAULT	DA	311	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) SYSTEM FAULT	DA	312	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-ENG ENG 1(2) SYSTEM FAULT - FWSPAGE	DA	313	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) THR LEVER DISAGREE	DC	314	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) THR LEVER DISAGREE	DC	315	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) THR LEVER DISAGREE - FWSPAGE	DC	316	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) THR LEVER DISAGREE	DC	317	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) THR LEVER DISAGREE	DC	318	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) THR LEVER DISAGREE - FWSPAGE	DC	319	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) THR LEVER FAULT	DD	320	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) THR LEVER FAULT - FWSPAGE	DD	321	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) THR LEVER FAULT	DD	322	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) THR LEVER FAULT	DD	323	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) THR LEVER FAULT - FWSPAGE	DD	324	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG 1(2) THR LEVER FAULT	DD	325	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) THR LEVER FAULT	DD	326	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-ENG ENG 1(2) THR LEVER FAULT - FWSPAGE	DD	327	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG T.O. THRUST DISAGREE	DE	328	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG T.O. THRUST DISAGREE	DE	329	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) TURB COOL FAULT	DF	330	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG 1(2) TURB COOL FAULT	DF	331	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG THR LEVERS NOT SET	DG	332	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG THR LEVERS NOT SET	DG	333	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG THR LEVERS NOT SET	DG	334	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG THR LEVERS NOT SET (ON GROUND)	DH	335	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG THR LEVERS NOT SET (ON GROUND)	DH	336	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG THR LEVERS NOT SET (AT GO-AROUND)	DI	337	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG THR LEVERS NOT SET (AT GO-AROUND)	DI	338	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-ENG ENG VIB SYS FAULT	DL	339	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-ENG ENG VIB SYS FAULT	DL	340	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed	A	2	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-F_CTL ACTIVE CONTROL LAW	D	3	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-F_CTL ACTIVE CONTROL LAW	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-F_CTL F/CTL ALTN LAW - FWSPAGE	G	5	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL ALTN LAW - FWSPAGE	G	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-F_CTL F/CTL DIRECT LAW - FWSPAGE	H	7	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL DIRECT LAW - FWSPAGE	H	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-F_CTL F/CTL ELAC 1 (2) FAULT (BOTH COMPUTERS FAILED)	J	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL ELAC 1 (2) FAULT (Both Computers Failed) - FWSPAGE	J	10	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL ELAC 1 (2) FAULT (BOTH COMPUTERS FAILED)	J	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL ELAC 1(2) FAULT (Both Computers Failed) - FWSPAGE	J	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-F_CTL F/CTL ELAC 1 (2) FAULT (BOTH COMPUTERS FAILED)	J	13	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-F_CTL F/CTL ELAC 1(2) FAULT (Both Computers Failed) - FWSPAGE	J	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-F_CTL F/CTL FLAPS FAULT/LOCKED - FWSPAGE	P	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL FLAPS FAULT/LOCKED - FWSPAGE	P	16	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-F_CTL F/CTL FLAPS/SLATS FAULT/LOCKED	T	17	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-F_CTL F/CTL FLAPS/SLATS FAULT/LOCKED	T	18	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-F_CTL F/CTL FLAPS/SLATS FAULT/LOCKED	T	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-F_CTL F/CTL L(R) ELEV FAULT	Y	20	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL L (R) ELEV FAULT - FWSPAGE	Y	21	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL L(R) ELEV FAULT	Y	22	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-F_CTL F/CTL L (R) ELEV FAULT - FWSPAGE	Y	23	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-F_CTL F/CTL L(R) ELEV FAULT	Y	24	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-F_CTL F/CTL L(R) ELEV FAULT - FWSPAGE	Y	25	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-F_CTL F/CTL L+R ELEV FAULT - FWSPAGE	Z	26	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL L+R ELEV FAULT - FWSPAGE	Z	27	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-F_CTL F/CTL PITCH TRIM/MCDU/CG DISAGREE	AB	28	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL PITCH TRIM/MCDU/CG DISAGREE	AB	29	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL PITCH TRIM/MCDU/CG DISAGREE	AB	30	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL PITCH TRIM/MCDU/CG DISAGREE	AB	31	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL PITCH TRIM/MCDU/CG DISAGREE	AB	32	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-F_CTL F/CTL SEC 1(2)(3) FAULT	AC	33	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL SEC 1(2)(3) FAULT - FWSPAGE	AC	34	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL SEC 1(2)(3) FAULT	AC	35	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL SEC 1(2) (3) FAULT - FWSPAGE	AC	36	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-F_CTL F/CTL SEC 1(2)(3) FAULT	AC	37	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-F_CTL F/CTL SEC 1(2) (3) FAULT - FWSPAGE	AC	38	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-F_CTL F/CTL SLATS AND FLAPS FAULT IN CONF 0 - FWSPAGE	AF	39	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL SLATS AND FLAPS FAULT IN CONF 0 - FWSPAGE	AF	40	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-F_CTL F/CTL SLATS AND FLAPS FAULT IN CONF 0 - FWSPAGE	AF	41	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-F_CTL F/CTL SLATS FAULT/LOCKED	AG	42	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL SLATS FAULT/LOCKED - FWSPAGE	AG	43	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL SLATS FAULT/LOCKED	AG	44	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-F_CTL F/CTL SLATS FAULT/LOCKED - FWSPAGE	AG	45	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-F_CTL F/CTL SLATS FAULT/LOCKED	AG	46	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-F_CTL F/CTL SLATS FAULT/LOCKED - FWSPAGE	AG	47	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-F_CTL F/CTL SPLR FAULT - FWSPAGE	AN	48	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL SPLR FAULT - FWSPAGE	AN	49	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-F_CTL F/CTL STABILIZER JAM	AO	50	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL STABILIZER JAM - FWSPAGE	AO	51	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL STABILIZER JAM	AO	52	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-F_CTL F/CTL STABILIZER JAM - FWSPAGE	AO	53	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-F_CTL F/CTL STABILIZER JAM	AO	54	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-F_CTL F/CTL STABILIZER JAM - FWSPAGE	AO	55	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL [QRH] ACT SYSTEM FAULT	A	1	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL [QRH] ACT XFR FAULT	B	2	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL [QRH] FUEL IMBALANCE	C	3	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL [QRH] FUEL IMBALANCE	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL [QRH] FUEL LEAK	D	5	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL [QRH] FUEL LEAK	D	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-FUEL [QRH] FUEL LEAK	D	7	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL [QRH] FWD ACT ISOLATED	E	8	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL [QRH] GRAVITY FUEL FEEDING	F	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL [QRH] GRAVITY FUEL FEEDING	F	10	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-FUEL [QRH] FUEL OVERREAD	G	11	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL ACT PUMP LO PR	H	12	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL ACT PUMP LO PR	H	13	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL ACT PUMP LO PR - FWSPAGE	H	14	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL ACT SYSTEM FAULT	I	15	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL ACT SYSTEM FAULT	I	16	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL ACT XFR FAULT ◁	J	17	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL ACT ◁ XFR FAULT - FWSPAGE	J	18	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL ACT XFR FAULT ◁	J	19	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL ACT PUMP LO PR ◁	K	20	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL ACT PUMP LO PR ◁	K	21	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL AUTO FEED FAULT	M	22	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL AUTO FEED FAULT	M	23	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL AUTO FEED FAULT - FWSPAGE	M	24	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL AUTO TRANSFER FAULT	N	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL AUTO TRANSFER FAULT	N	26	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL AUTO TRANSFER FAULT - FWSPAGE	N	27	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-FUEL FUEL CTR L(R) XFR FAULT (VALVE NOT FULLY CLOSED)	O	28	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL CTR L (R) XFR FAULT (VALVE NOT FULLY CLOSED)	O	29	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL CTR L (R) XFR FAULT - FWSPAGE (VALVE NOT FULLY CLOSED)	O	30	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL CTR L(R) XFR FAULT (VALVE NOT FULLY OPEN)	P	31	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL CTR L(R) XFR FAULT (VALVE NOT FULLY OPEN)	P	32	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL CTR L (R) XFR FAULT - FWSPAGE (VALVE NOT FULLY OPEN)	P	33	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL CTR L + R XFR FAULT (VALVES NOT FULLY CLOSED)	Q	34	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL CTR L + R XFR FAULT (VALVES NOT FULLY CLOSED)	Q	35	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL CTR L + R XFR FAULT - FWSPAGE (VALVES NOT FULLY CLOSED)	Q	36	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL CTR L + R XFR FAULT (VALVES NOT FULLY OPEN)	R	37	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL CTR L + R XFR FAULT (VALVES NOT FULLY OPEN)	R	38	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL CTR L + R XFR FAULT - FWSPAGE (VALVES NOT FULLY OPEN)	R	39	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-FUEL FUEL CTR TK PUMP 1(2) LO PR	S	40	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL CTR TK PUMP 1(2) LO PR	S	41	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL CTR TK PUMP 1(2) LO PR - FWSPAGE	S	42	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL CTR TK PUMPS LO PR	T	43	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL CTR TK PUMPS LO PR	T	44	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL CTR TK PUMPS LO PR - FWSPAGE	T	45	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL CTR TK PUMPS OFF	U	46	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL CTR TK PUMPS OFF	U	47	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL CTR TK XFR OFF	V	48	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL CTR TK XFR OFF	V	49	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL F. USED/FOB DISAGREE	X	50	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL F. USED/FOB DISAGREE	X	51	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL F. USED/FOB DISAGREE	X	52	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL F.USED/FOB DISAGREE	X	53	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL FWD ACT ISOLATED	Z	54	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL FWD ACT ISOLATED	Z	55	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL FWD ACT LINE FAULT	AA	56	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL FWD ACT LINE FAULT	AA	57	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-FUEL FUEL IDG 1(2) COOL FAULT	AB	58	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL IDG 1(2) COOL FAULT	AB	59	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL FUEL INERTING SYS FAULT	AC	60	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL INERTING SYS FAULT	AC	61	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL INERTING SYS FAULT - FWSPAGE	AC	62	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) OUTER (INNER) TK HI TEMP	AD	63	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) OUTER (INNER) TK HI TEMP	AD	64	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) OUTER (INNER) TK LO TEMP	AE	65	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) OUTER (INNER) TK LO TEMP	AE	66	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) OUTER XFR CLOSED	AF	67	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) OUTER XFR CLOSED	AF	68	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) OUTER XFR CLOSED - FWSPAGE	AF	69	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) OUTER XFR OPEN	AG	70	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) OUTER XFR OPEN	AG	71	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-FUEL FUEL L (R) OUTER XFR OPEN - FWSPAGE	AG	72	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) TK PUMP 1(2) LO PR	AH	73	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) TK PUMP 1(2) LO PR	AH	74	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL L (R) TK PUMP 1 + 2 LO PR	AI	75	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL L (R) TK PUMP 1 + 2 LO PR	AI	76	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL L (R) TK PUMP 1 + 2 LO PR - FWSPAGE	AI	77	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL L (R) TK PUMP 1 + 2 LO PR (CENTER TANK EMPTY)	AJ	78	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) TK PUMP 1 + 2 LO PR (CENTER TANK EMPTY)	AJ	79	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) TK PUMP 1 + 2 LO PR - FWSPAGE (CENTER TANK EMPTY)	AJ	80	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) TK PUMP 1 + 2 LO PR (CENTER TANK NOT EMPTY)	AK	81	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) TK PUMP 1 + 2 LO PR - FWSPAGE (CENTER TANK NOT EMPTY)	AK	82	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) TK PUMP 1 + 2 LO PR (CENTER TANK NOT EMPTY)	AK	83	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) TK PUMP 1 + 2 LO PR (CENTER TANK NOT EMPTY)	AK	84	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L (R) TK PUMP 1 + 2 LO PR - FWSPAGE (CENTER TANK NOT EMPTY)	AK	85	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-FUEL FUEL L (R) WING TK HI TEMP	AL	86	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL L (R) WING TK HI TEMP	AL	87	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL L (R) WING TK LO LVL	AM	88	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L(R) WING TK LO LVL	AM	89	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL L + R WING TK LO LVL	AN	90	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L + R WING TK LO LVL	AN	91	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L + R WING TK LO LVL	AN	92	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-FUEL FUEL L + R WING TK LO LVL	AN	93	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL L + R WING TK LO LVL	AN	94	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL L + R WING TK LO LVL	AN	95	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL L (R) WING TK LO TEMP	AO	96	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL L (R) WING TK LO TEMP	AO	97	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-FUEL FUEL L (R) WING TK OVERFLOW	AP	98	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL L (R) WING TK OVERFLOW	AP	99	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL L (R) WING TK OVERFLOW	AP	100	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-FUEL FUEL L (R) WING TK OVERFLOW - FWSPAGE	AP	101	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL L (R) WING TK OVERFLOW	AP	102	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL L (R) WING TK OVERFLOW	AP	103	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-FUEL FUEL L (R) WING TK OVERFLOW - FWSPAGE	AP	104	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL LO LVL DET FAULT	AQ	105	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-FUEL FUEL LO LVL DET FAULT	AQ	106	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-HYD HYD B RSVR LO AIR PR	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD B RSVR LO AIR PR	B	2	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-HYD HYD G ENG 1 PUMP LO PR - FWSPAGE (PTU OPERATIVE)	E	3	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD G ENG 1 PUMP LO PR (PTU Operative) - FWSPAGE	E	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-HYD HYD G ENG 1 PUMP LO PR - FWSPAGE (PTU INOPERATIVE)	F	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD G RSVR LO AIR PR - FWSPAGE	G	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD G RSVR LO LVL - FWSPAGE	H	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD G RSVR OVHT	I	8	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD G RSVR OVHT	I	9	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD G RSVR OVHT - FWSPAGE	I	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD G RSVR OVHT	I	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-HYD HYD G RSVR OVHT - FWSPAGE	I	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-HYD HYD Y ELEC PUMP LO PR or OVHT - FWSPAGE	J	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD Y ENG 2 PUMP LO PR - FWSPAGE (PTU INOPERATIVE)	L	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD Y RSVR LO AIR PR - FWSPAGE	M	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD Y RSVR LO LVL - FWSPAGE	N	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD Y RSVR OVHT	O	17	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD Y RSVR OVHT	O	18	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD Y RSVR OVHT - FWSPAGE	O	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD Y RSVR OVHT	O	20	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-HYD HYD Y RSVR OVHT - FWSPAGE	O	21	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD B+Y SYS LO PR	P	22	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD B+Y SYS LO PR	P	23	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD B+Y SYS LO PR - FWSPAGE	P	24	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD B+Y SYS LO PR	P	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD B+Y SYS LO PR - FWSPAGE	P	26	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-HYD HYD B+Y SYS LO PR	P	27	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-HYD HYD B+Y SYS LO PR - FWSPAGE	P	28	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-HYD HYD G+B SYS LO PR	Q	29	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD G+B SYS LO PR	Q	30	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD G+B SYS LO PR - FWSPAGE	Q	31	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD G+B SYS LO PR	Q	32	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-HYD HYD G+B SYS LO PR - FWSPAGE	Q	33	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-HYD HYD G+B SYS LO PR	Q	34	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-HYD HYD G+B SYS LO PR - FWSPAGE	Q	35	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-HYD HYD G+Y SYS LO PR	R	36	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD G+Y SYS LO PR - FWSPAGE	R	37	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD G+Y SYS LO PR	R	38	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-HYD HYD G+Y SYS LO PR - FWSPAGE	R	39	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-HYD HYD G+Y SYS LO PR	R	40	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-HYD HYD G+Y SYS LO PR - FWSPAGE	R	41	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-LG L/G GEAR NOT DOWNLOCKED - FWSPAGE	E	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-LG L/G LGCIU 1(2) FAULT - FWSPAGE	H	3	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-LG L/G LGCIU 1(2) FAULT - FWSPAGE	H	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-LG L/G LGCIU 1+2 FAULT - FWSPAGE	I	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-MISC [MEM] Stall Recovery	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-MISC [MEM] Stall Warning At Lift-Off	C	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-MISC [QRH] DITCHING	G	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-MISC [QRH] EMER EVAC	H	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-MISC [QRH] FORCED LANDING	J	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-MISC [QRH] OVERWEIGHT LANDING	K	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-MISC [QRH] OVERWEIGHT LANDING	K	7	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-MISC [QRH] OVERWEIGHT LANDING	K	8	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-MISC Thrust and Airspeed	L	9	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-MISC Thrust and Airspeed	L	10	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-MISC Thrust and Airspeed	L	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-MISC Thrust Setting (N1) for Recommended Speed	L	12	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-MISC Thrust Setting (N1) for Recommended Speed	L	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-MISC Thrust Setting (N1) for Recommended Speed	L	14	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-MISC [QRH] VOLCANIC ASH ENCOUNTER	N	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV	A	1	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
Unreliable Speed Indication - Flight Path Stabilized			
PRO-ABN-NAV Unreliable Speed Indication - Level-Off	A	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV Unreliable Speed Indication - Flight Path Stabilized	A	3	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV Unreliable Speed Indication - Troubleshooting	A	4	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV Unreliable Speed Indication - Pitch/Thrust Tables	A	5	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV Unreliable Speed Indication - Level-Off	A	6	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV Unreliable Speed Indication - Flight Path Stabilized	A	7	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV Unreliable Speed Indication - Pitch/Thrust Tables	A	8	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV Unreliable Speed Indication - Flight Path Stabilized	A	9	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV Unreliable Speed Indication - Troubleshooting	A	10	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV Unreliable Speed Indication - Flight Path Stabilized	A	11	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV Unreliable Speed Indication - Troubleshooting	A	12	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV Unreliable Speed Indication - Pitch/Thrust Tables	A	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-NAV Unreliable Speed Indication - Level-Off	A	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-NAV Unreliable Speed Indication - Flight Path Stabilized	A	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV Unreliable Speed Indication - Troubleshooting	A	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV Unreliable Speed Indication - Pitch/Thrust Tables	A	17	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-ABN-NAV Unreliable Speed Indication - Level-Off	A	18	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-NAV Unreliable Speed Indication - Flight Path Stabilized	A	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV Unreliable Speed Indication - Troubleshooting	A	20	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV Unreliable Speed Indication - Pitch/Thrust Tables	A	21	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-NAV [QRH] ALL ADR OFF	D	22	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV [QRH] IR Alignment in ATT Mode	E	23	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ADR 1+2(1+3)(2+3) FAULT - FWSPAGE	G	24	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ADR 1+2(1+3)(2+3) FAULT - FWSPAGE	G	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV ADR 1+2+3 FAULT	H	26	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ADR 1+2+3 FAULT	H	27	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ADR 1+2+3 FAULT - FWSPAGE	H	28	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-NAV NAV ADR 1+2+3 FAULT	H	29	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ADR 1+2+3 FAULT	H	30	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ADR 1+2+3 FAULT - FWSPAGE	H	31	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV ADR 1+2+3 FAULT	H	32	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ADR 1+2+3 FAULT	H	33	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV ADR 1+2+3 FAULT - FWSPAGE	H	34	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV ADR DISAGREE	I	35	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ADR DISAGREE - FWSPAGE	I	36	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ADR DISAGREE	I	37	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ADR DISAGREE - FWSPAGE	I	38	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV ADR DISAGREE	I	39	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV ADR DISAGREE - FWSPAGE	I	40	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV ADS-B RPTG 1(2) FAULT	J	41	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV ADS-B RPTG 1(2) FAULT	J	42	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV ADS-B RPTG 1 (2) FAULT - FWSPAGE	J	43	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV ATC/XPDR 1(2) FAULT	M	44	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ATC/XPDR 1(2) FAULT	M	45	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-NAV NAV ATC/XPDR 1(2) FAULT - FWSPAGE	M	46	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ATC/XPDR 1(2) FAULT	M	47	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ATC/XPDR 1(2) FAULT	M	48	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ATC/XPDR 1(2) FAULT - FWSPAGE	M	49	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV ATC/XPDR 1+2 FAULT	N	50	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ATC/XPDR 1+2 FAULT	N	51	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ATC/XPDR 1+2 FAULT - FWSPAGE	N	52	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ATC/XPDR 1+2 FAULT	N	53	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ATC/XPDR 1+2 FAULT	N	54	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ATC/XPDR 1+2 FAULT - FWSPAGE	N	55	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV ATC/XPDR STBY	O	56	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV ATC/XPDR STBY	O	57	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV BARO VALUE DISAGREE	R	58	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-NAV NAV BARO VALUE DISAGREE	R	59	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-NAV NAV BKUP SPD/ALT ON CAPT(F/O) PFD	S	60	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV BKUP SPD/ALT ON CAPT(F/O) PFD	S	61	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV BKUP SPD/ALT ON CAPT+F/O PFD	T	62	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV BKUP SPD/ALT ON CAPT+F/O PFD	T	63	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV FM/GPS POS DISAGREE	U	64	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV FM/GPS POS DISAGREE	U	65	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV FM/GPS POS DISAGREE	U	66	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV FM/GPS POS DISAGREE	U	67	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV HDG DISCREPANCY	Y	68	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV IR 1+2(1+3)(2+3) FAULT - FWSPAGE	AC	69	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV IR 1+2(1+3)(2+3) FAULT - FWSPAGE	AC	70	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV IR DISAGREE- FWSPAGE	AD	71	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV IR DISAGREE- FWSPAGE	AD	72	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV IR NOT ALIGNED	AE	73	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-NAV NAV IR NOT ALIGNED	AE	74	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV LS TUNING DISAGREE	AF	75	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV LS TUNING DISAGREE	AF	76	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV LS TUNING DISAGREE - FWSPAGE	AF	77	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV PRED W/S DET FAULT ◁	AG	78	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV RA 1 AND 2 FAULT - FWSPAGE (DUAL RA FAILURE)	AH	79	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV RA 1 AND 2 FAULT - FWSPAGE (DUAL RA FAILURE)	AH	80	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV RA 1(2) FAULT - FWSPAGE	AI	81	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-NAV NAV RA 1(2) FAULT - FWSPAGE	AI	82	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV L(R) CAPT(F/O) STATIC FAULT	AM	83	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV L(R) CAPT(F/O) STATIC FAULT	AM	84	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV NAV L(R) CAPT(F/O) STATIC FAULT - FWSPAGE	AM	85	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-NAV STALL WARNING	AO	86	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-OVERSPEED OVERSPEED	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-OVERSPEED OVERSPEED	A	2	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-SMOKE SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-SMOKE SMOKE / FUMES / AVNCS SMOKE - AIR COND SMOKE / CAB EQUIPMENT SMOKE	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG	A	3	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE/FUMES/AVNCS SMOKE - ELEC EMER CONFIG - FWSPAGE	A	4	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG	A	5	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE/FUMES/AVNCS SMOKE - ELEC EMER CONFIG - FWSPAGE	A	6	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG	B	7	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE/FUMES/AVNCS SMOKE - ELEC EMER CONFIG - FWSPAGE	B	8	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE / FUMES / AVNCS SMOKE - AIR COND SMOKE / CAB EQUIPMENT SMOKE	C	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG	C	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-SMOKE SMOKE / FUMES / AVNCS SMOKE - AIR COND SMOKE / CAB EQUIPMENT SMOKE	C	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG	C	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-SMOKE SMOKE/FUMES/AVNCS SMOKE - ELEC EMER CONFIG - FWSPAGE	C	13	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG	C	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-SMOKE SMOKE/FUMES/AVNCS SMOKE - ELEC EMER CONFIG - FWSPAGE	C	15	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE / FUMES / AVNCS SMOKE - AIR COND SMOKE / CAB EQUIPMENT SMOKE	C	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG	C	17	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE / FUMES / AVNCS SMOKE - AIR COND SMOKE / CAB EQUIPMENT SMOKE	C	18	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG	C	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-SMOKE SMOKE/FUMES/AVNCS SMOKE - ELEC EMER CONFIG - FWSPAGE	C	20	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES	D	21	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE AFT CARGO SMOKE ◁	F	22	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-SMOKE SMOKE AFT CARGO SMOKE ◁	F	23	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE FWD CARGO SMOKE ◁	H	24	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-SMOKE SMOKE FWD CARGO SMOKE ◁	H	25	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE FWD(AFT) CRG BTL 1(2) FAULT ◁	I	26	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-ABN-SMOKE SMOKE FWD(AFT) CRG BTL (1)(2) FAULT	I	27	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-SMOKE SMOKE LAVATORY DET FAULT	L	28	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-SURV [MEM] EGPWS Cautions	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-SURV [MEM] EGPWS Warnings	F	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-SURV [MEM] TCAS WARNINGS	H	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-SURV [MEM] TCAS WARNINGS	H	4	Effectivity update: The information no longer applies to MSN 05449.
PRO-ABN-SURV [MEM] WINDSHEAR AHEAD	J	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-VENT VENT SKIN VALVE FAULT	D	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-VENT VENT SKIN VALVE FAULT - FWSPAGE	D	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-WHEEL [QRH] WHEEL TIRE DAMAGE SUSPECTED	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-WHEEL WHEEL HYD SEL FAULT	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-W_A_ICE WING A.ICE SYS FAULT (ONE WING VALVE REMAINS CLOSED WHEN THE WING ANTI-ICE IS TURNED ON)	E	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-W_A_ICE WING A.ICE SYS FAULT (ONE WING VALVE REMAINS CLOSED WHEN THE WING ANTI-ICE IS TURNED ON)	E	2	Effectivity update: The information now also applies to MSN 09063.

Continued on the following page

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Localization Title	Toc Index	ID	Reason
PRO-ABN-90 Cabin Crew-Assigned Areas for Evacuation	C	1	Effectivity update: The information now also applies to MSN 09063.
PRO-ABN-90 Cabin Crew-Assigned Areas for Evacuation	C	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-ABN-90 On Ground Evacuation - Cockpit Crew Procedures	E	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-ABN-90 Evacuation on Water - Cabin Crew Responsible for Type "I" Doors	G	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-ABN-90 Evacuation on Water - Cabin Crew Responsible for Type "I" Doors	G	5	Effectivity update: The information no longer applies to MSN 05449.

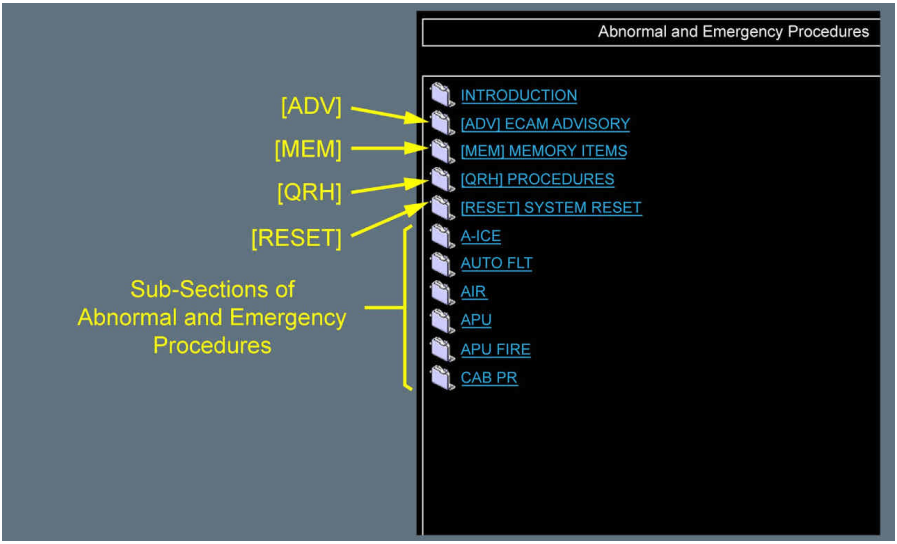
CONTENT

Ident.: PRO-ABN-ABN-00-00020862.0001001 / 20 APR 17
Applicable to: ALL

Abnormal and Emergency procedures involve actions that the flight crew must perform to ensure the overall safety of the flight, and adequate workload.

L2 For more information about the management of abnormal operations, *Refer to FCTM/AOP-30-10 Introduction*.

Abnormal and Emergency Procedure Overview



L1 [ADV] ECAM ADVISORY

The [ADV] ECAM ADVISORY section provides direct access to the list of all advisories that can be displayed on the ECAM SD pages. The [ADV] section is also available in the QRH.

L2 For more information, *Refer to [ADV] ECAM Advisory*.

L1 Advisories are system parameters that start to deviate from their usual operational range. However, an advisory does not require flight crew actions, except monitoring.

L2 For more information about Advisory function, *Refer to DSC-31-20 System Pages*.

L1 [MEM] MEMORY ITEMS

The [MEM] MEMORY ITEMS menu provides direct access to the list of memory items.

L2 For more information, *Refer to [MEM] Memory Items*.

L1 The content of the memory items are described in the applicable sub-sections of the abnormal and emergency procedures.
Memory items are procedures, or critical immediate actions of an ECAM/QRH/OEB procedure, that the flight crew must apply by memory to ensure a safe flight path. In some time-critical situations, the flight crew has no time to refer to the ECAM and/or to the QRH.

L2 For more information, *Refer to FCTM/AOP-10-40 Abnormal and Emergency Procedures*.

L1 [QRH] PROCEDURES

The [QRH] PROCEDURES menu provides direct access to the list of all the FCOM abnormal and emergency procedures that are also in the QRH.

L2 For more information, *Refer to [QRH] Procedures*.

L1 The content of the QRH procedures are described in the applicable sub-sections of the abnormal and emergency procedures.

Note: *Only the FCOM version of a procedure provides layer 2 and 3 information for consultation purpose.*

[RESET] SYSTEM RESET

The [RESET] SYSTEM RESET section provides direct access to the table listing all the system resets that are permitted, and the condition to apply them. The [RESET] section is also available in the QRH.

L2 For direct access to the table, *Refer to [RESET] System Reset*.

L1 SUB-SECTIONS OF ABNORMAL AND EMERGENCY PROCEDURES

This part of the FCOM describes the detailed content of all abnormal and emergency procedures.
All procedures are grouped in sub-sections that can be system related (e.g. AIR, FUEL, etc.) or non-system related (e.g. MISC, T.O, CONFIG, etc.).
The sub-sections are sorted by alphabetic order.
For each sub-section, procedures are listed in the following order:

1. The memory items
   The title of the memory items starts with the [MEM] prefix
2. The abnormal and emergency procedures of the QRH
   The title of these procedures starts with the [QRH] prefix
3. The ECAM procedures.

PROCEDURE LAYOUT

Applicable to: ALL

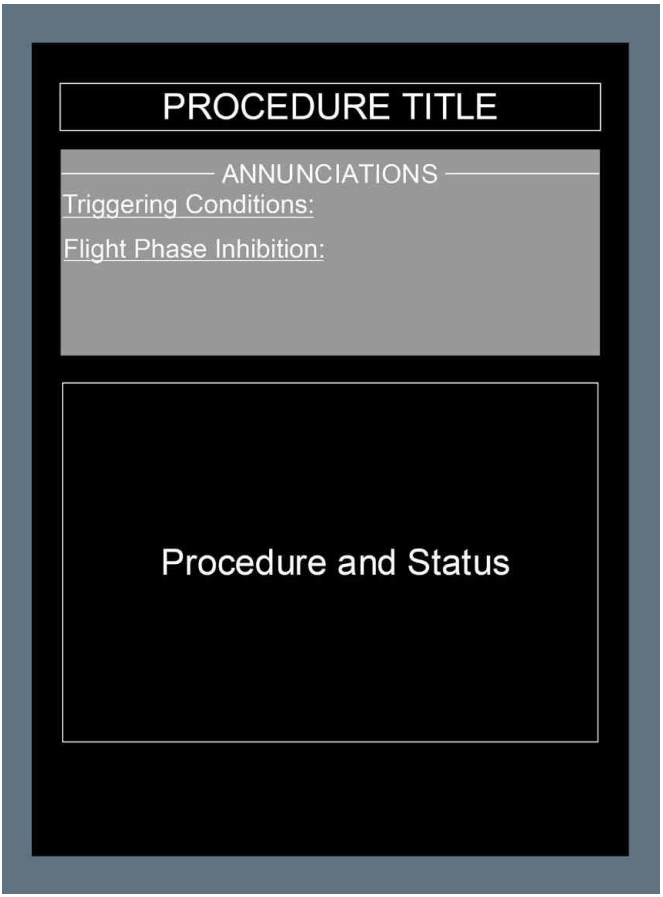
Ident.: PRO-ABN-ABN-00-A-00020863.0001001 / 17 MAR 17

GENERAL

The presentation of procedures is, as far as practicable, identical to the way it is displayed on the ECAM. The abbreviations are identical to those used on the cockpit panels.
All actions and information displayed on ECAM are provided in large letters. Other information, not on ECAM, is provided in small letters.
Expanded information is as far as practicable provided in layer 2. This information:

- Identifies the particular failures
- Explains actions for which the reason is not self-evident
- Provides some background on the reasons and /or the effects of a given action.

FCOM presentation of ABN or EMER procedures



Ident.: PRO-ABN-ABN-00-A-00020864.0001001 / 17 MAR 17

PROCEDURE TITLE

The title of an abnormal or emergency procedure, displayed on the ECAM, appears on white background.
Abnormal procedure displayed on ECAM (amber caution) :

CAB PR SAFETY VALVE OPEN

Emergency procedure displayed on ECAM (red warning) :

CAB PR EXCESS CAB ALT

The title of an abnormal or emergency procedure, that does not appear on the ECAM is on a grey background.
Abnormal procedure not displayed on ECAM :

[QRH] L/G GRAVITY EXTENSION

Emergency procedure not displayed on ECAM :

[QRH] DITCHING

SEVERAL ALERTS UNDER THE SAME TITLE

When applicable, several alerts may be grouped under the same procedure title. However, depending on the failure, the actions that the flight crew should perform may differ.

Note: Alerts that have the same procedure title may be differentiated by a subtitle (e.g. ENG FIRE (On Ground) versus ENG FIRE (In Flight)).

Ident.: PRO-ABN-ABN-00-A-00020865.0001001 / 17 MAR 17

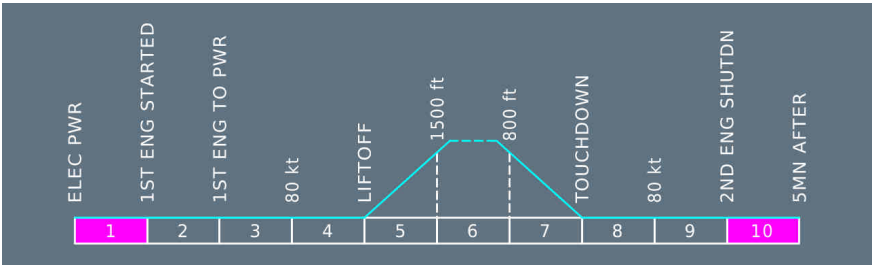
ANNUNCIATIONS

When applicable, the annunciations section provides:

- The triggering conditions, that describe the cause of the alert activation
- The flight phase inhibition.

FLIGHT PHASE INHIBITION

The Flight Phase Inhibition section indicates the flight phases during which the alert is inhibited. In the below example, the alert is inhibited in flight phase 1, and 10.



L2 For more information, *Refer to DSC-31-15 Flight Phases*.

Ident.: PRO-ABN-ABN-00-A-00020866.0001001 / 27 FEB 18

PROCEDURES AND STATUS

The Procedure and Status section provides the procedure and the Status (including approach procedure, limitations, inoperative systems, etc.), with additional information when relevant.

CONDITIONS

BLACK SQUARE

When several procedures appear under the same title, a black square marks the starting point of each procedure.
For example:

Black squares also indicate parts of a procedure among which only one is applicable.
For example:

The ECAM does not display black squares.

BLACK DOT

If an action depends on a precondition, a black dot identifies the precondition. If the precondition appears on ECAM, it appears in LARGE LETTERS. If not, it appears in small letters.
For example:

F / CTL FLAPS FAULT	
FLAPS LEVER . . . . . .RECYCLE • If unsuccessful : GPWS FLAP MODE . . . . . OFF	"If unsuccessful" does not appear on ECAM

INDENTATION

Indentation is used in order to identify when an action depends on a precondition/flight phase/procedure.
For example:

■ IN FLIGHT
• If Flaps locked
APPR SPEED . . . . . .VREF +30
MAX SPEED . . . . . 250 kt

- The APPR SPEED is equal to VREF +30 kt only if the flaps are locked, because "APPR SPEED.....VREF +30" is indented below "• If flaps locked".
- The MAX SPEED of 250 kt does not depend on the flaps locked condition because it is aligned with "• If Flaps locked". Therefore, MAX SPEED has to be respected whether the flaps are locked or not.

MEMORY ITEMS

Memory items are items that the flight crew must memorize, in order to be able to rapidly apply them, without referring to the ECAM, and/or to the QRH.
Memory items are surrounded by a box in the FCOM/QRH procedure, in order to enable the flight crew to easily identify them.

Memory items

ABNORMAL AND EMERGENCY CALLOUTS

Applicable to: ALL

Ident.: PRO-ABN-ABN-00-B-00011915.0001001 / 17 MAR 17

ECAM PROCEDURES

1. "ECAM ACTION" is commanded by PF when required.
2. "CLEAR __ (title of the system) ?" is asked by the PM for confirmation by the PF, that all actions have been taken/reviewed on the present WARNING/CAUTION or SYSTEM PAGE. e.g.: CLEAR HYDRAULIC ?
3. "CLEAR __ (title of the system)" is the command by the PF that the action and review is confirmed. For status page; REMOVE STATUS will be used.
4. "ECAM ACTIONS COMPLETE" is the announcement by the PM that all APPLICABLE ACTIONS have been completed.
5. Should the PF require an action from the PM during ECAM procedures, the order "STOP ECAM" will be used. When ready to resume the ECAM the order "CONTINUE ECAM" will be used.

Ident.: PRO-ABN-ABN-00-B-00020059.0001001 / 16 JAN 18

EMERGENCY CALL

Some abnormal/emergency procedures require flight and cabin crews to use specific phraseology when communicating with each other. To ensure effective communication between the flight and cabin crews, the standard phraseology may be recalled at the preflight phase.

FROM	TO	PHRASEOLOGY	REMARKS
cockpit	cabin	Passenger Address (PA) System: "PURSER TO COCKPIT, PLEASE!"	The Purser, or any other cabin crewmember, must go to the cockpit
Cockpit	Cabin	Passenger Address (PA) System: "ATTENTION CREW! AT STATIONS!"	An emergency evacuation may soon be required.
cockpit	cabin	Passenger Address (PA) System: "CABIN CREW and PASSENGERS REMAIN SEATED!"	The captain decides that an evacuation is not required

Continued on the following page

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cockpit	cabin	Passenger Address (PA) System: "EVACUATE, EVACUATE"	The captain orders an immediate evacuation
cabin	cockpit	Interphone: "PRIO CAPT"	Any crew member can make such a call. The flight crew must reply.

Ident.: PRO-ABN-ABN-00-B-00011916.0001001 / 31 AUG 17

MEMORY ITEMS

The aim of such callouts is to callout the appropriate procedure by calling out, in most cases, the title of the procedure. This will allow the crew to be aware of the situation and be prepared to properly react (crew coordination, task sharing and communication).

GPWS

As soon as avoidance manoeuver is envisaged.
"PULL UP TOGA"

REACTIVE WINDSHEAR

"WINDSHEAR TOGA"

UNRELIABLE SPEED INDICATION

"UNRELIABLE SPEED"

TCAS

- **For aircraft equipped with AP/FD TCAS function ◁ :**

  As soon as a Traffic Advisory (TA) is triggered:

  - If the AP/FD TCAS mode is armed : "TCAS blue"
  - If the AP/FD TCAS mode does not arm : "TCAS, I have control"

- **For aircraft not equipped with AP/FD TCAS function ◁ :**

  As soon as a Traffic Advisory (TA) is triggered: "TCAS, I have control".

EMERGENCY DESCENT

"EMERGENCY DESCENT"

LOSS OF BRAKING

"LOSS OF BRAKING"

STALL RECOVERY

As soon as any stall indication is recognized.
"STALL, I have control"

STALL WARNING AT LIFT-OFF

"STALL, TOGA 15°"

ECAM ADVISORY CONDITIONS

Applicable to: MSN 01767

SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012117.0001001 / 17 MAR 17		
APU	FLAP OPEN Flap not fully closed when APU master switch is off.	
	EGT > EGT MAX - 33 °C (inhibited during APU start)	
	OIL QTY (message LOW OIL LEVEL pulsing)	If there is no oil leak, then the remaining oil quantity allows normal APU operation for about 10 h.
Ident.: PRO-ABN-ABN-ADV-A-00012107.0001001 / 31 AUG 17		
CAB PR	CAB VERTICAL SPEED V/S > 1 800 ft/min	CPC changeover is recommended: MODE SEL: MAN Wait 10 s then: MODE SEL: AUTO
	CAB ALTITUDE altitude ≥ 8 800 ft	PACK FLOW: HI MODE SEL: MAN Manual pressure control
	ΔP ≥ 1.5 PSI in phase 7	LDG ELEV: ADJUST If unsuccessful: MODE SEL: MAN Manual pressure control
Ident.: PRO-ABN-ABN-ADV-A-00012112.0001001 / 17 MAR 17		
ELEC	IDG OIL TEMP ≥ 147 °C	Reduce IDG load if possible (GALLEY or GEN OFF). If required, restore when temperature has dropped. Restrict use of generator to short time, if temperature rises again excessively.

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012122.0002001 / 02 MAY 17		
ENG	OIL PRESS P < 16 PSI	- If oil pressure is between 16 and 13 PSI (advisory), continue normal operation. - If oil pressure is below 13 PSI (red indication) without the ENG OIL LO PR ECAM warning, continue normal engine operation (it can be assumed that the oil pressure transducer is faulty). In both cases, monitor other engine parameters especially oil temperature and oil quantity.
	OIL PRESS P > 90 PSI	Monitor other engine parameters closely for symptoms of engine malfunction. If high oil pressure is not accompanied by other abnormal indications operate engine normally for remainder of flight. Record high oil pressure and corresponding N2 readings for maintenance action.
	OIL TEMP T > 140 °C	A rise in oil temperature during normal steady-state operation indicates a system malfunction and should be closely monitored for other symptoms of engine malfunction. Note: *If the OIL TEMP rise follows thrust reduction, increasing thrust may reduce oil temperature.* In addition, a rise in oil temperature could be related to the IDG oil cooling system. To reduce oil temperature rise before limits are reached, the following are recommended: 1. Low Speed - Increase engine speed to increase fuel flow and thereby cool IDG oil. 2. High Speed - Reduce generator load or turn off generator. If oil temperature continues to rise, mechanically disconnect IDG.
	OIL QTY < 3 qt	If oil quantity low at high power setting, expect level increase after power reduction. Monitor affected engine oil parameters and crosscheck with other engine - If pressure and temperature remain normal, continue normal operation.
	NAC TEMP ≥ 240 °C	Monitor engine parameters and crosscheck with other engine
	VIBRATION N1 ≥ 6 units N2 ≥ 4.3 units	*Refer to PRO-ABN-ENG [QRH] HIGH ENGINE VIBRATION*

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012114.0001001 / 21 MAR 17		
1 FUEL	Difference between wing fuel quantities greater than 1 500 kg (3 307 lb)	FUEL MANAGEMENT: CHECK If a fuel leak is suspected, *Refer to PRO-ABN-FUEL [QRH] FUEL LEAK*. For limitations, *Refer to LIM-FUEL Maximum Allowed Fuel Imbalance*
	Fuel temp greater than 45 °C in inner cell, or 55 °C in outer cell	GALLEY: OFF
	Fuel temp lower than -40 °C in inner or outer cell	Consider descending to a lower altitude and/or increasing Mach to increase TAT.
Ident.: PRO-ABN-ABN-ADV-A-00012119.0001001 / 17 MAR 17		
OXY	OXY Amber when pressure is < 400 PSI.	If mask is not being used, check if it is correctly stowed, *Refer to DSC-35-20-10 Mask Stowage*.

ECAM ADVISORY CONDITIONS

Applicable to: MSN 01920

SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012117.0003001 / 17 MAR 17		
2 APU	EGT > EGT MAX -33 °C (inhibited during APU start)	
	OIL QTY (message LOW OIL LEVEL pulsing)	If there is no oil leak, then the remaining oil quantity allows normal APU operation for about 10 h.
Ident.: PRO-ABN-ABN-ADV-A-00012107.0001001 / 31 AUG 17		
CAB PR	CAB VERTICAL SPEED V/S > 1 800 ft/min	CPC changeover is recommended: MODE SEL: MAN Wait 10 s then: MODE SEL: AUTO
	CAB ALTITUDE altitude ≥ 8 800 ft	PACK FLOW: HI MODE SEL: MAN Manual pressure control
	ΔP ≥ 1.5 PSI in phase 7	LDG ELEV: ADJUST If unsuccessful: MODE SEL: MAN Manual pressure control

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012112.0001001 / 17 MAR 17		
ELEC	IDG OIL TEMP ≥ 147 °C	Reduce IDG load if possible (GALLEY or GEN OFF). If required, restore when temperature has dropped. Restrict use of generator to short time, if temperature rises again excessively.

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012122.0002001 / 02 MAY 17		
ENG	OIL PRESS P < 16 PSI	- If oil pressure is between 16 and 13 PSI (advisory), continue normal operation. - If oil pressure is below 13 PSI (red indication) without the ENG OIL LO PR ECAM warning, continue normal engine operation (it can be assumed that the oil pressure transducer is faulty). In both cases, monitor other engine parameters especially oil temperature and oil quantity.
	OIL PRESS P > 90 PSI	Monitor other engine parameters closely for symptoms of engine malfunction. If high oil pressure is not accompanied by other abnormal indications operate engine normally for remainder of flight. Record high oil pressure and corresponding N2 readings for maintenance action.
	OIL TEMP T > 140 °C	A rise in oil temperature during normal steady-state operation indicates a system malfunction and should be closely monitored for other symptoms of engine malfunction. *Note:* *If the OIL TEMP rise follows thrust reduction, increasing thrust may reduce oil temperature.* In addition, a rise in oil temperature could be related to the IDG oil cooling system. To reduce oil temperature rise before limits are reached, the following are recommended: 1. Low Speed - Increase engine speed to increase fuel flow and thereby cool IDG oil. 2. High Speed - Reduce generator load or turn off generator. If oil temperature continues to rise, mechanically disconnect IDG.
	OIL QTY < 3 qt	If oil quantity low at high power setting, expect level increase after power reduction. Monitor affected engine oil parameters and crosscheck with other engine - If pressure and temperature remain normal, continue normal operation.
	NAC TEMP ≥ 240 °C	Monitor engine parameters and crosscheck with other engine
	VIBRATION N1 ≥ 6 units N2 ≥ 4.3 units	*Refer to PRO-ABN-ENG [QRH] HIGH ENGINE VIBRATION*

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012114.0001001 / 21 MAR 17		
3 FUEL	Difference between wing fuel quantities greater than 1 500 kg (3 307 lb)	FUEL MANAGEMENT: CHECK If a fuel leak is suspected, *Refer to PRO-ABN-FUEL [QRH] FUEL LEAK.* For limitations, *Refer to LIM-FUEL Maximum Allowed Fuel Imbalance*
	Fuel temp greater than 45 °C in inner cell, or 55 °C in outer cell	GALLEY: OFF
	Fuel temp lower than -40 °C in inner or outer cell	Consider descending to a lower altitude and/or increasing Mach to increase TAT.
Ident.: PRO-ABN-ABN-ADV-A-00012119.0001001 / 17 MAR 17		
OXY	OXY Amber when pressure is < 400 PSI.	If mask is not being used, check if it is correctly stowed, *Refer to DSC-35-20-10 Mask Stowage*.

ECAM ADVISORY CONDITIONS

Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02609-02670, 02737, 02908-03071, 03264, 03330, 04491, 04532, 04645, 05120, 05218

SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012117.0003001 / 17 MAR 17		
4 APU	EGT > EGT MAX -33 °C (inhibited during APU start)	
	OIL QTY (message LOW OIL LEVEL pulsing)	If there is no oil leak, then the remaining oil quantity allows normal APU operation for about 10 h.
Ident.: PRO-ABN-ABN-ADV-A-00012107.0001001 / 31 AUG 17		
CAB PR	CAB VERTICAL SPEED V/S > 1 800 ft/min	CPC changeover is recommended: MODE SEL: MAN Wait 10 s then: MODE SEL: AUTO
	CAB ALTITUDE altitude ≥ 8 800 ft	PACK FLOW: HI MODE SEL: MAN Manual pressure control
	ΔP ≥ 1.5 PSI in phase 7	LDG ELEV: ADJUST If unsuccessful: MODE SEL: MAN Manual pressure control

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012112.0001001 / 17 MAR 17		
ELEC	IDG OIL TEMP ≥ 147 °C	Reduce IDG load if possible (GALLEY or GEN OFF). If required, restore when temperature has dropped. Restrict use of generator to short time, if temperature rises again excessively.

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Continued from the previous page

Ident.: PRO-ABN-ABN-ADV-A-00012122.0003001 / 02 MAY 17

SYSTEM	CONDITIONS	RECOMMENDED ACTION
ENG	OIL PRESS P < 80 PSI	- If the oil pressure is between 80 and 60 PSI, continue normal engine operation. - If the oil pressure is below 60 PSI (red indication) without the ENG OIL LO PR warning, continue normal engine operation (it can be assumed that the oil pressure transducer is faulty). In both cases, monitor other engine parameters, particularly oil temperature and oil quantity.
	OIL PRESS P > 390 PSI	Closely monitor other engine parameters for symptoms of engine malfunction. If high oil pressure is not accompanied by other abnormal indications operate engine normally for remainder of the flight. Record high oil pressure, and corresponding N2 readings for maintenance action.
	OIL TEMP T > 155 °C	An increase in oil temperature during normal steady-state operation indicates a system malfunction and should be closely monitored for other symptoms of engine malfunction. Note: *If the OIL TEMP increase thrust reduction: Increasing thrust may decrease oil temperature.* In addition, an increase in oil temperature could be related to the IDG oil cooling system. To decrease oil temperature, before limits are reached, the following are recommended: 1. Low Speed - Increase engine speed to increase fuel flow and thereby cool IDG oil. 2. High Speed - Reduce generator load or turn off generator. If oil temperature continues to rise, mechanically disconnect IDG.
	OIL QTY < 5 qt	If the quantity of oil is low at a high power setting, expect level increase after power reduction. Monitor affected engine oil parameters and crosscheck with other engine - If pressure and temperature remain normal, continue normal operation.
	NAC TEMP ≥ 320 °C	Monitor engine parameters and crosscheck with other engine.
	VIBRATION N1 ≥ 5 units N2 ≥ 5 units	*Refer to PRO-ABN-ENG [QRH] HIGH ENGINE VIBRATION.*

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012114.0001001 / 21 MAR 17		
6 FUEL	Difference between wing fuel quantities greater than 1 500 kg (3 307 lb)	FUEL MANAGEMENT: CHECK If a fuel leak is suspected, *Refer to PRO-ABN-FUEL [QRH] FUEL LEAK*. For limitations, *Refer to LIM-FUEL Maximum Allowed Fuel Imbalance*
	Fuel temp greater than 45 °C in inner cell, or 55 °C in outer cell	GALLEY: OFF
	Fuel temp lower than -40 °C in inner or outer cell	Consider descending to a lower altitude and/or increasing Mach to increase TAT.
Ident.: PRO-ABN-ABN-ADV-A-00012119.0029001 / 17 MAR 17		
7 OXY	CKPT OXY Pulsing green: When pressure is < 600 PSI. Amber: When pressure is < 300 PSI.	If mask is not being used, check if it is correctly stowed, *Refer to DSC-35-20-10 Mask Stowage*.

ECAM ADVISORY CONDITIONS

Applicable to: MSN 02108

SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012117.0001001 / 17 MAR 17		
APU	FLAP OPEN Flap not fully closed when APU master switch is off.	
	EGT > EGT MAX - 33 °C (inhibited during APU start)	
	OIL QTY (message LOW OIL LEVEL pulsing)	If there is no oil leak, then the remaining oil quantity allows normal APU operation for about 10 h.

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012107.0001001 / 31 AUG 17		
CAB PR	CAB VERTICAL SPEED V/S > 1 800 ft/min	CPC changeover is recommended: MODE SEL: MAN Wait 10 s then: MODE SEL: AUTO
	CAB ALTITUDE altitude ≥ 8 800 ft	PACK FLOW: HI MODE SEL: MAN Manual pressure control
	ΔP ≥ 1.5 PSI in phase 7	LDG ELEV: ADJUST If unsuccessful: MODE SEL: MAN Manual pressure control
Ident.: PRO-ABN-ABN-ADV-A-00012112.0001001 / 17 MAR 17		
ELEC	IDG OIL TEMP ≥ 147 °C	Reduce IDG load if possible (GALLEY or GEN OFF). If required, restore when temperature has dropped. Restrict use of generator to short time, if temperature rises again excessively.

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012122.0003001 / 02 MAY 17		
ENG	OIL PRESS P < 80 PSI	- If the oil pressure is between 80 and 60 PSI, continue normal engine operation. - If the oil pressure is below 60 PSI (red indication) without the ENG OIL LO PR warning, continue normal engine operation (it can be assumed that the oil pressure transducer is faulty). In both cases, monitor other engine parameters, particularly oil temperature and oil quantity.
	OIL PRESS P > 390 PSI	Closely monitor other engine parameters for symptoms of engine malfunction. If high oil pressure is not accompanied by other abnormal indications operate engine normally for remainder of the flight. Record high oil pressure, and corresponding N2 readings for maintenance action.
	OIL TEMP T > 155 °C	An increase in oil temperature during normal steady-state operation indicates a system malfunction and should be closely monitored for other symptoms of engine malfunction. Note: *If the OIL TEMP increase thrust reduction: Increasing thrust may decrease oil temperature.* In addition, an increase in oil temperature could be related to the IDG oil cooling system. To decrease oil temperature, before limits are reached, the following are recommended: 1. Low Speed - Increase engine speed to increase fuel flow and thereby cool IDG oil. 2. High Speed - Reduce generator load or turn off generator. If oil temperature continues to rise, mechanically disconnect IDG.
	OIL QTY < 5 qt	If the quantity of oil is low at a high power setting, expect level increase after power reduction. Monitor affected engine oil parameters and crosscheck with other engine - If pressure and temperature remain normal, continue normal operation.
	NAC TEMP ≥ 320 °C	Monitor engine parameters and crosscheck with other engine.
	VIBRATION N1 ≥ 5 units N2 ≥ 5 units	*Refer to PRO-ABN-ENG [QRH] HIGH ENGINE VIBRATION.*

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012114.0001001 / 21 MAR 17		
9 FUEL	Difference between wing fuel quantities greater than 1 500 kg (3 307 lb)	FUEL MANAGEMENT: CHECK If a fuel leak is suspected, *Refer to PRO-ABN-FUEL [QRH] FUEL LEAK.* For limitations, *Refer to LIM-FUEL Maximum Allowed Fuel Imbalance*
	Fuel temp greater than 45 °C in inner cell, or 55 °C in outer cell	GALLEY: OFF
	Fuel temp lower than -40 °C in inner or outer cell	Consider descending to a lower altitude and/or increasing Mach to increase TAT.
Ident.: PRO-ABN-ABN-ADV-A-00012119.0001001 / 17 MAR 17		
OXY	OXY Amber when pressure is < 400 PSI.	If mask is not being used, check if it is correctly stowed, *Refer to DSC-35-20-10 Mask Stowage.*

ECAM ADVISORY CONDITIONS

Applicable to: MSN 02195-02359, 02405, 02482

SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012117.0003001 / 17 MAR 17		
10 APU	EGT > EGT MAX -33 °C (inhibited during APU start)	
	OIL QTY (message LOW OIL LEVEL pulsing)	If there is no oil leak, then the remaining oil quantity allows normal APU operation for about 10 h.
Ident.: PRO-ABN-ABN-ADV-A-00012107.0001001 / 31 AUG 17		
CAB PR	CAB VERTICAL SPEED V/S > 1 800 ft/min	CPC changeover is recommended: MODE SEL: MAN Wait 10 s then: MODE SEL: AUTO
	CAB ALTITUDE altitude ≥ 8 800 ft	PACK FLOW: HI MODE SEL: MAN Manual pressure control
	ΔP ≥ 1.5 PSI in phase 7	LDG ELEV: ADJUST If unsuccessful: MODE SEL: MAN Manual pressure control

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012112.0001001 / 17 MAR 17		
ELEC	IDG OIL TEMP ≥ 147 °C	Reduce IDG load if possible (GALLEY or GEN OFF). If required, restore when temperature has dropped. Restrict use of generator to short time, if temperature rises again excessively.

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Ident.: PRO-ABN-ABN-ADV-A-00012122.0003001 / 02 MAY 17

SYSTEM	CONDITIONS	RECOMMENDED ACTION
11 ENG	OIL PRESS P < 80 PSI	- If the oil pressure is between 80 and 60 PSI, continue normal engine operation. - If the oil pressure is below 60 PSI (red indication) without the ENG OIL LO PR warning, continue normal engine operation (it can be assumed that the oil pressure transducer is faulty). In both cases, monitor other engine parameters, particularly oil temperature and oil quantity.
	OIL PRESS P > 390 PSI	Closely monitor other engine parameters for symptoms of engine malfunction. If high oil pressure is not accompanied by other abnormal indications operate engine normally for remainder of the flight. Record high oil pressure, and corresponding N2 readings for maintenance action.
	OIL TEMP T > 155 °C	An increase in oil temperature during normal steady-state operation indicates a system malfunction and should be closely monitored for other symptoms of engine malfunction. Note: *If the OIL TEMP increase thrust reduction: Increasing thrust may decrease oil temperature.* In addition, an increase in oil temperature could be related to the IDG oil cooling system. To decrease oil temperature, before limits are reached, the following are recommended: 1. Low Speed - Increase engine speed to increase fuel flow and thereby cool IDG oil. 2. High Speed - Reduce generator load or turn off generator. If oil temperature continues to rise, mechanically disconnect IDG.
	OIL QTY < 5 qt	If the quantity of oil is low at a high power setting, expect level increase after power reduction. Monitor affected engine oil parameters and crosscheck with other engine - If pressure and temperature remain normal, continue normal operation.
	NAC TEMP ≥ 320 °C	Monitor engine parameters and crosscheck with other engine.
	VIBRATION N1 ≥ 5 units N2 ≥ 5 units	*Refer to PRO-ABN-ENG [QRH] HIGH ENGINE VIBRATION.*

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012114.0001001 / 21 MAR 17		
12 FUEL	Difference between wing fuel quantities greater than 1 500 kg (3 307 lb)	FUEL MANAGEMENT: CHECK If a fuel leak is suspected, *Refer to PRO-ABN-FUEL [QRH] FUEL LEAK*. For limitations, *Refer to LIM-FUEL Maximum Allowed Fuel Imbalance*
	Fuel temp greater than 45 °C in inner cell, or 55 °C in outer cell	GALLEY: OFF
	Fuel temp lower than -40 °C in inner or outer cell	Consider descending to a lower altitude and/or increasing Mach to increase TAT.
Ident.: PRO-ABN-ABN-ADV-A-00012119.0001001 / 17 MAR 17		
OXY	OXY Amber when pressure is < 400 PSI.	If mask is not being used, check if it is correctly stowed, *Refer to DSC-35-20-10 Mask Stowage*.

ECAM ADVISORY CONDITIONS

Applicable to: MSN 02388

SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012117.0001001 / 17 MAR 17		
APU	FLAP OPEN Flap not fully closed when APU master switch is off.	
	EGT > EGT MAX - 33 °C (inhibited during APU start)	
	OIL QTY (message LOW OIL LEVEL pulsing)	If there is no oil leak, then the remaining oil quantity allows normal APU operation for about 10 h.
Ident.: PRO-ABN-ABN-ADV-A-00012107.0001001 / 31 AUG 17		
CAB PR	CAB VERTICAL SPEED V/S > 1 800 ft/min	CPC changeover is recommended: MODE SEL: MAN Wait 10 s then: MODE SEL: AUTO
	CAB ALTITUDE altitude ≥ 8 800 ft	PACK FLOW: HI MODE SEL: MAN Manual pressure control
	ΔP ≥ 1.5 PSI in phase 7	LDG ELEV: ADJUST If unsuccessful: MODE SEL: MAN Manual pressure control

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012112.0001001 / 17 MAR 17		
ELEC	IDG OIL TEMP ≥ 147 °C	Reduce IDG load if possible (GALLEY or GEN OFF). If required, restore when temperature has dropped. Restrict use of generator to short time, if temperature rises again excessively.

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012122.0002001 / 02 MAY 17		
ENG	OIL PRESS P < 16 PSI	- If oil pressure is between 16 and 13 PSI (advisory), continue normal operation. - If oil pressure is below 13 PSI (red indication) without the ENG OIL LO PR ECAM warning, continue normal engine operation (it can be assumed that the oil pressure transducer is faulty). In both cases, monitor other engine parameters especially oil temperature and oil quantity.
	OIL PRESS P > 90 PSI	Monitor other engine parameters closely for symptoms of engine malfunction. If high oil pressure is not accompanied by other abnormal indications operate engine normally for remainder of flight. Record high oil pressure and corresponding N2 readings for maintenance action.
	OIL TEMP T > 140 °C	A rise in oil temperature during normal steady-state operation indicates a system malfunction and should be closely monitored for other symptoms of engine malfunction. *Note: If the OIL TEMP rise follows thrust reduction, increasing thrust may reduce oil temperature.* In addition, a rise in oil temperature could be related to the IDG oil cooling system. To reduce oil temperature rise before limits are reached, the following are recommended: 1. Low Speed - Increase engine speed to increase fuel flow and thereby cool IDG oil. 2. High Speed - Reduce generator load or turn off generator. If oil temperature continues to rise, mechanically disconnect IDG.
	OIL QTY < 3 qt	If oil quantity low at high power setting, expect level increase after power reduction. Monitor affected engine oil parameters and crosscheck with other engine - If pressure and temperature remain normal, continue normal operation.
	NAC TEMP ≥ 240 °C	Monitor engine parameters and crosscheck with other engine
	VIBRATION N1 ≥ 6 units N2 ≥ 4.3 units	*Refer to PRO-ABN-ENG [QRH] HIGH ENGINE VIBRATION*

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012114.0001001 / 21 MAR 17		
FUEL	Difference between wing fuel quantities greater than 1 500 kg (3 307 lb)	FUEL MANAGEMENT: CHECK If a fuel leak is suspected, *Refer to PRO-ABN-FUEL [QRH] FUEL LEAK*. For limitations, *Refer to LIM-FUEL Maximum Allowed Fuel Imbalance*
	Fuel temp greater than 45 °C in inner cell, or 55 °C in outer cell	GALLEY: OFF
	Fuel temp lower than -40 °C in inner or outer cell	Consider descending to a lower altitude and/or increasing Mach to increase TAT.
Ident.: PRO-ABN-ABN-ADV-A-00012119.0028001 / 17 MAR 17		
OXY	CKPT OXY Pulsing green: When pressure is < 800 PSI. Amber: When pressure is < 400 PSI.	If mask is not being used, check if it is correctly stowed, *Refer to DSC-35-20-10 Mask Stowage*.

ECAM ADVISORY CONDITIONS

Applicable to: MSN 02584, 02712, 03138, 03750, 04294, 04314, 04393-04397, 04433, 04510

SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012117.0003001 / 17 MAR 17		
APU	EGT > EGT MAX -33 °C (inhibited during APU start)	
	OIL QTY (message LOW OIL LEVEL pulsing)	If there is no oil leak, then the remaining oil quantity allows normal APU operation for about 10 h.
Ident.: PRO-ABN-ABN-ADV-A-00012107.0001001 / 31 AUG 17		
CAB PR	CAB VERTICAL SPEED V/S > 1 800 ft/min	CPC changeover is recommended: MODE SEL: MAN Wait 10 s then: MODE SEL: AUTO
	CAB ALTITUDE altitude ≥ 8 800 ft	PACK FLOW: HI MODE SEL: MAN Manual pressure control
	ΔP ≥ 1.5 PSI in phase 7	LDG ELEV: ADJUST If unsuccessful: MODE SEL: MAN Manual pressure control

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012112.0001001 / 17 MAR 17		
ELEC	IDG OIL TEMP ≥ 147 °C	Reduce IDG load if possible (GALLEY or GEN OFF). If required, restore when temperature has dropped. Restrict use of generator to short time, if temperature rises again excessively.

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012122.0002001 / 02 MAY 17		
ENG	OIL PRESS P < 16 PSI	- If oil pressure is between 16 and 13 PSI (advisory), continue normal operation. - If oil pressure is below 13 PSI (red indication) without the ENG OIL LO PR ECAM warning, continue normal engine operation (it can be assumed that the oil pressure transducer is faulty). In both cases, monitor other engine parameters especially oil temperature and oil quantity.
	OIL PRESS P > 90 PSI	Monitor other engine parameters closely for symptoms of engine malfunction. If high oil pressure is not accompanied by other abnormal indications operate engine normally for remainder of flight. Record high oil pressure and corresponding N2 readings for maintenance action.
	OIL TEMP T > 140 °C	A rise in oil temperature during normal steady-state operation indicates a system malfunction and should be closely monitored for other symptoms of engine malfunction. Note: *If the OIL TEMP rise follows thrust reduction, increasing thrust may reduce oil temperature.* In addition, a rise in oil temperature could be related to the IDG oil cooling system. To reduce oil temperature rise before limits are reached, the following are recommended: 1. Low Speed - Increase engine speed to increase fuel flow and thereby cool IDG oil. 2. High Speed - Reduce generator load or turn off generator. If oil temperature continues to rise, mechanically disconnect IDG.
	OIL QTY < 3 qt	If oil quantity low at high power setting, expect level increase after power reduction. Monitor affected engine oil parameters and crosscheck with other engine - If pressure and temperature remain normal, continue normal operation.
	NAC TEMP ≥ 240 °C	Monitor engine parameters and crosscheck with other engine
	VIBRATION N1 ≥ 6 units N2 ≥ 4.3 units	*Refer to PRO-ABN-ENG [QRH] HIGH ENGINE VIBRATION*

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012114.0001001 / 21 MAR 17		
15 FUEL	Difference between wing fuel quantities greater than 1 500 kg (3 307 lb)	FUEL MANAGEMENT: CHECK If a fuel leak is suspected, *Refer to PRO-ABN-FUEL [QRH] FUEL LEAK*. For limitations, *Refer to LIM-FUEL Maximum Allowed Fuel Imbalance*
	Fuel temp greater than 45 °C in inner cell, or 55 °C in outer cell	GALLEY: OFF
	Fuel temp lower than -40 °C in inner or outer cell	Consider descending to a lower altitude and/or increasing Mach to increase TAT.
Ident.: PRO-ABN-ABN-ADV-A-00012119.0029001 / 17 MAR 17		
16 OXY	CKPT OXY Pulsing green: When pressure is < 600 PSI. Amber: When pressure is < 300 PSI.	If mask is not being used, check if it is correctly stowed, *Refer to DSC-35-20-10 Mask Stowage*.

ECAM ADVISORY CONDITIONS

Applicable to: MSN 02804

SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012117.0001001 / 17 MAR 17		
APU	FLAP OPEN Flap not fully closed when APU master switch is off.	
	EGT > EGT MAX - 33 °C (inhibited during APU start)	
	OIL QTY (message LOW OIL LEVEL pulsing)	If there is no oil leak, then the remaining oil quantity allows normal APU operation for about 10 h.

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012107.0001001 / 31 AUG 17		
CAB PR	CAB VERTICAL SPEED V/S > 1 800 ft/min	CPC changeover is recommended: MODE SEL: MAN Wait 10 s then: MODE SEL: AUTO
	CAB ALTITUDE altitude ≥ 8 800 ft	PACK FLOW: HI MODE SEL: MAN Manual pressure control
	ΔP ≥ 1.5 PSI in phase 7	LDG ELEV: ADJUST If unsuccessful: MODE SEL: MAN Manual pressure control
Ident.: PRO-ABN-ABN-ADV-A-00012112.0001001 / 17 MAR 17		
ELEC	IDG OIL TEMP ≥ 147 °C	Reduce IDG load if possible (GALLEY or GEN OFF). If required, restore when temperature has dropped. Restrict use of generator to short time, if temperature rises again excessively.

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012122.0003001 / 02 MAY 17		
17 ENG	OIL PRESS P < 80 PSI	- If the oil pressure is between 80 and 60 PSI, continue normal engine operation. - If the oil pressure is below 60 PSI (red indication) without the ENG OIL LO PR warning, continue normal engine operation (it can be assumed that the oil pressure transducer is faulty). In both cases, monitor other engine parameters, particularly oil temperature and oil quantity.
	OIL PRESS P > 390 PSI	Closely monitor other engine parameters for symptoms of engine malfunction. If high oil pressure is not accompanied by other abnormal indications operate engine normally for remainder of the flight. Record high oil pressure, and corresponding N2 readings for maintenance action.
	OIL TEMP T > 155 °C	An increase in oil temperature during normal steady-state operation indicates a system malfunction and should be closely monitored for other symptoms of engine malfunction. *Note:* *If the OIL TEMP increase thrust reduction: Increasing thrust may decrease oil temperature.* In addition, an increase in oil temperature could be related to the IDG oil cooling system. To decrease oil temperature, before limits are reached, the following are recommended: 1. Low Speed - Increase engine speed to increase fuel flow and thereby cool IDG oil. 2. High Speed - Reduce generator load or turn off generator. If oil temperature continues to rise, mechanically disconnect IDG.
	OIL QTY < 5 qt	If the quantity of oil is low at a high power setting, expect level increase after power reduction. Monitor affected engine oil parameters and crosscheck with other engine - If pressure and temperature remain normal, continue normal operation.
	NAC TEMP ≥ 320 °C	Monitor engine parameters and crosscheck with other engine.
	VIBRATION N1 ≥ 5 units N2 ≥ 5 units	*Refer to PRO-ABN-ENG [QRH] HIGH ENGINE VIBRATION.*

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012114.0001001 / 21 MAR 17		
18 FUEL	Difference between wing fuel quantities greater than 1 500 kg (3 307 lb)	FUEL MANAGEMENT: CHECK If a fuel leak is suspected, *Refer to PRO-ABN-FUEL [QRH] FUEL LEAK*. For limitations, *Refer to LIM-FUEL Maximum Allowed Fuel Imbalance*
	Fuel temp greater than 45 °C in inner cell, or 55 °C in outer cell	GALLEY: OFF
	Fuel temp lower than -40 °C in inner or outer cell	Consider descending to a lower altitude and/or increasing Mach to increase TAT.
Ident.: PRO-ABN-ABN-ADV-A-00012119.0029001 / 17 MAR 17		
19 OXY	CKPT OXY Pulsing green: When pressure is < 600 PSI. Amber: When pressure is < 300 PSI.	If mask is not being used, check if it is correctly stowed, *Refer to DSC-35-20-10 Mask Stowage*.

ECAM ADVISORY CONDITIONS

Applicable to: MSN 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012117.0003001 / 17 MAR 17		
20 APU	EGT > EGT MAX -33 °C (inhibited during APU start)	
	OIL QTY (message LOW OIL LEVEL pulsing)	If there is no oil leak, then the remaining oil quantity allows normal APU operation for about 10 h.
Ident.: PRO-ABN-ABN-ADV-A-00012107.0001001 / 31 AUG 17		
CAB PR	CAB VERTICAL SPEED V/S > 1 800 ft/min	CPC changeover is recommended: MODE SEL: MAN Wait 10 s then: MODE SEL: AUTO
	CAB ALTITUDE altitude ≥ 8 800 ft	PACK FLOW: HI MODE SEL: MAN Manual pressure control
	ΔP ≥ 1.5 PSI in phase 7	LDG ELEV: ADJUST If unsuccessful: MODE SEL: MAN Manual pressure control

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012112.0001001 / 17 MAR 17		
ELEC	IDG OIL TEMP ≥ 147 °C	Reduce IDG load if possible (GALLEY or GEN OFF). If required, restore when temperature has dropped. Restrict use of generator to short time, if temperature rises again excessively.

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012122.0003001 / 02 MAY 17		
ENG	OIL PRESS P < 80 PSI	- If the oil pressure is between 80 and 60 PSI, continue normal engine operation. - If the oil pressure is below 60 PSI (red indication) without the ENG OIL LO PR warning, continue normal engine operation (it can be assumed that the oil pressure transducer is faulty). In both cases, monitor other engine parameters, particularly oil temperature and oil quantity.
	OIL PRESS P > 390 PSI	Closely monitor other engine parameters for symptoms of engine malfunction. If high oil pressure is not accompanied by other abnormal indications operate engine normally for remainder of the flight. Record high oil pressure, and corresponding N2 readings for maintenance action.
	OIL TEMP T > 155 °C	An increase in oil temperature during normal steady-state operation indicates a system malfunction and should be closely monitored for other symptoms of engine malfunction. Note: *If the OIL TEMP increase thrust reduction: Increasing thrust may decrease oil temperature.* In addition, an increase in oil temperature could be related to the IDG oil cooling system. To decrease oil temperature, before limits are reached, the following are recommended: 1. Low Speed - Increase engine speed to increase fuel flow and thereby cool IDG oil. 2. High Speed - Reduce generator load or turn off generator. If oil temperature continues to rise, mechanically disconnect IDG.
	OIL QTY < 5 qt	If the quantity of oil is low at a high power setting, expect level increase after power reduction. Monitor affected engine oil parameters and crosscheck with other engine - If pressure and temperature remain normal, continue normal operation.
	NAC TEMP ≥ 320 °C	Monitor engine parameters and crosscheck with other engine.
	VIBRATION N1 ≥ 5 units N2 ≥ 5 units	*Refer to PRO-ABN-ENG [QRH] HIGH ENGINE VIBRATION.*

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012114.0001001 / 21 MAR 17		
22 FUEL	Difference between wing fuel quantities greater than 1 500 kg (3 307 lb)	FUEL MANAGEMENT: CHECK If a fuel leak is suspected, *Refer to PRO-ABN-FUEL [QRH] FUEL LEAK*. For limitations, *Refer to LIM-FUEL Maximum Allowed Fuel Imbalance*
	Fuel temp greater than 45 °C in inner cell, or 55 °C in outer cell	GALLEY: OFF
	Fuel temp lower than -40 °C in inner or outer cell	Consider descending to a lower altitude and/or increasing Mach to increase TAT.
Ident.: PRO-ABN-ABN-ADV-A-00012119.0028001 / 17 MAR 17		
OXY	CKPT OXY Pulsing green: When pressure is < 800 PSI. Amber: When pressure is < 400 PSI.	If mask is not being used, check if it is correctly stowed, *Refer to DSC-35-20-10 Mask Stowage*.

ECAM ADVISORY CONDITIONS

Applicable to: MSN 04399, 04438

SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012117.0003001 / 17 MAR 17		
23 APU	EGT > EGT MAX -33 °C (inhibited during APU start)	
	OIL QTY (message LOW OIL LEVEL pulsing)	If there is no oil leak, then the remaining oil quantity allows normal APU operation for about 10 h.
Ident.: PRO-ABN-ABN-ADV-A-00012107.0001001 / 31 AUG 17		
CAB PR	CAB VERTICAL SPEED V/S > 1 800 ft/min	CPC changeover is recommended: MODE SEL: MAN Wait 10 s then: MODE SEL: AUTO
	CAB ALTITUDE altitude ≥ 8 800 ft	PACK FLOW: HI MODE SEL: MAN Manual pressure control
	ΔP ≥ 1.5 PSI in phase 7	LDG ELEV: ADJUST If unsuccessful: MODE SEL: MAN Manual pressure control

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012112.0001001 / 17 MAR 17		
ELEC	IDG OIL TEMP ≥ 147 °C	Reduce IDG load if possible (GALLEY or GEN OFF). If required, restore when temperature has dropped. Restrict use of generator to short time, if temperature rises again excessively.

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012122.0002001 / 02 MAY 17		
ENG	OIL PRESS P < 16 PSI	- If oil pressure is between 16 and 13 PSI (advisory), continue normal operation. - If oil pressure is below 13 PSI (red indication) without the ENG OIL LO PR ECAM warning, continue normal engine operation (it can be assumed that the oil pressure transducer is faulty). In both cases, monitor other engine parameters especially oil temperature and oil quantity.
	OIL PRESS P > 90 PSI	Monitor other engine parameters closely for symptoms of engine malfunction. If high oil pressure is not accompanied by other abnormal indications operate engine normally for remainder of flight. Record high oil pressure and corresponding N2 readings for maintenance action.
	OIL TEMP T > 140 °C	A rise in oil temperature during normal steady-state operation indicates a system malfunction and should be closely monitored for other symptoms of engine malfunction. *Note:* *If the OIL TEMP rise follows thrust reduction, increasing thrust may reduce oil temperature.* In addition, a rise in oil temperature could be related to the IDG oil cooling system. To reduce oil temperature rise before limits are reached, the following are recommended: 1. Low Speed - Increase engine speed to increase fuel flow and thereby cool IDG oil. 2. High Speed - Reduce generator load or turn off generator. If oil temperature continues to rise, mechanically disconnect IDG.
	OIL QTY < 3 qt	If oil quantity low at high power setting, expect level increase after power reduction. Monitor affected engine oil parameters and crosscheck with other engine - If pressure and temperature remain normal, continue normal operation.
	NAC TEMP ≥ 240 °C	Monitor engine parameters and crosscheck with other engine
	VIBRATION N1 ≥ 6 units N2 ≥ 4.3 units	*Refer to PRO-ABN-ENG [QRH] HIGH ENGINE VIBRATION*

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012114.0001001 / 21 MAR 17		
FUEL	Difference between wing fuel quantities greater than 1 500 kg (3 307 lb)	FUEL MANAGEMENT: CHECK If a fuel leak is suspected, *Refer to PRO-ABN-FUEL [QRH] FUEL LEAK*. For limitations, *Refer to LIM-FUEL Maximum Allowed Fuel Imbalance*
	Fuel temp greater than 45 °C in inner cell, or 55 °C in outer cell	GALLEY: OFF
	Fuel temp lower than -40 °C in inner or outer cell	Consider descending to a lower altitude and/or increasing Mach to increase TAT.
Ident.: PRO-ABN-ABN-ADV-A-00012119.0028001 / 17 MAR 17		
OXY	CKPT OXY Pulsing green: When pressure is < 800 PSI. Amber: When pressure is < 400 PSI.	If mask is not being used, check if it is correctly stowed, *Refer to DSC-35-20-10 Mask Stowage*.

ECAM ADVISORY CONDITIONS

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012117.0003001 / 17 MAR 17		
APU	EGT > EGT MAX -33 °C (inhibited during APU start)	
	OIL QTY (message LOW OIL LEVEL pulsing)	If there is no oil leak, then the remaining oil quantity allows normal APU operation for about 10 h.
Ident.: PRO-ABN-ABN-ADV-A-00012107.0001001 / 31 AUG 17		
CAB PR	CAB VERTICAL SPEED V/S > 1 800 ft/min	CPC changeover is recommended: MODE SEL: MAN Wait 10 s then: MODE SEL: AUTO
	CAB ALTITUDE altitude ≥ 8 800 ft	PACK FLOW: HI MODE SEL: MAN Manual pressure control
	ΔP ≥ 1.5 PSI in phase 7	LDG ELEV: ADJUST If unsuccessful: MODE SEL: MAN Manual pressure control

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012112.0001001 / 17 MAR 17		
ELEC	IDG OIL TEMP ≥ 147 °C	Reduce IDG load if possible (GALLEY or GEN OFF). If required, restore when temperature has dropped. Restrict use of generator to short time, if temperature rises again excessively.

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012122.0004001 / 02 MAY 17		
ENG	OIL PRESS P < amber threshold value	- If the oil pressure indication is amber, continue normal engine operation. - If the oil pressure indication becomes red without the ENG OIL LO PR warning, continue normal engine operation. In both cases, monitor other engine parameters, particularly oil temperature and oil quantity.
	OIL PRESS P > 259 PSI	Closely monitor other engine parameters for symptoms of engine malfunction. If a high oil pressure is not accompanied by other abnormal indications, operate the engine normally for the remainder of flight. Record high oil pressure, and corresponding N2 readings, for maintenance action.
	OIL TEMP Oil temperature above the advisory threshold and below the caution threshold.	An increase in oil temperature during normal steady-state operation indicates a system malfunction and should be closely monitored for other symptoms of engine malfunction. *Note: If the OIL TEMP increases at thrust reduction, consider increasing the thrust again in order to attempt to lower the oil temperature.* In addition, an increase in oil temperature could be related to the IDG oil cooling system. To reduce oil temperature, before limits are reached, the following are recommended: 1. Low Speed - Increase engine speed to increase fuel flow and thereby cool IDG oil. 2. High Speed - Reduce generator load or turn off generator. If the oil temperature continues to rise, mechanically disconnect IDG.
	OIL QTY < 1.45 QT	If the quantity of oil is low at a high power setting, expect level increase after power reduction. Monitor affected engine oil parameters and crosscheck with other engine - If pressure and temperature remain normal, continue normal operation.
	NAC TEMP ≥ 280 °C	Monitor engine parameters and crosscheck with other engine.

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012114.0001001 / 21 MAR 17		
27 FUEL	Difference between wing fuel quantities greater than 1 500 kg (3 307 lb)	FUEL MANAGEMENT: CHECK If a fuel leak is suspected, *Refer to PRO-ABN-FUEL [QRH] FUEL LEAK*. For limitations, *Refer to LIM-FUEL Maximum Allowed Fuel Imbalance*
	Fuel temp greater than 45 °C in inner cell, or 55 °C in outer cell	GALLEY: OFF
	Fuel temp lower than -40 °C in inner or outer cell	Consider descending to a lower altitude and/or increasing Mach to increase TAT.
Ident.: PRO-ABN-ABN-ADV-A-00012119.0030001 / 17 MAR 17		
28 OXY	CKPT OXY Pulsing green: When pressure is < 500 PSI. Amber: When pressure is < 200 PSI.	If mask is not being used, check if it is correctly stowed, *Refer to DSC-35-20-10 Mask Stowage*.

ECAM ADVISORY CONDITIONS

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012117.0003001 / 17 MAR 17		
29 APU	EGT > EGT MAX -33 °C (inhibited during APU start)	
	OIL QTY (message LOW OIL LEVEL pulsing)	If there is no oil leak, then the remaining oil quantity allows normal APU operation for about 10 h.
Ident.: PRO-ABN-ABN-ADV-A-00012107.0001001 / 31 AUG 17		
CAB PR	CAB VERTICAL SPEED V/S > 1 800 ft/min	CPC changeover is recommended: MODE SEL: MAN Wait 10 s then: MODE SEL: AUTO
	CAB ALTITUDE altitude ≥ 8 800 ft	PACK FLOW: HI MODE SEL: MAN Manual pressure control
	ΔP ≥ 1.5 PSI in phase 7	LDG ELEV: ADJUST If unsuccessful: MODE SEL: MAN Manual pressure control

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012112.0001001 / 17 MAR 17		
ELEC	IDG OIL TEMP ≥ 147 °C	Reduce IDG load if possible (GALLEY or GEN OFF). If required, restore when temperature has dropped. Restrict use of generator to short time, if temperature rises again excessively.

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Ident.: PRO-ABN-ABN-ADV-A-00012122.0004001 / 02 MAY 17

SYSTEM	CONDITIONS	RECOMMENDED ACTION
ENG	OIL PRESS P < amber threshold value	- If the oil pressure indication is amber, continue normal engine operation. - If the oil pressure indication becomes red without the ENG OIL LO PR warning, continue normal engine operation. In both cases, monitor other engine parameters, particularly oil temperature and oil quantity.
	OIL PRESS P > 259 PSI	Closely monitor other engine parameters for symptoms of engine malfunction. If a high oil pressure is not accompanied by other abnormal indications, operate the engine normally for the remainder of flight. Record high oil pressure, and corresponding N2 readings, for maintenance action.
	OIL TEMP Oil temperature above the advisory threshold and below the caution threshold.	An increase in oil temperature during normal steady-state operation indicates a system malfunction and should be closely monitored for other symptoms of engine malfunction. *Note: If the OIL TEMP increases at thrust reduction, consider increasing the thrust again in order to attempt to lower the oil temperature.* In addition, an increase in oil temperature could be related to the IDG oil cooling system. To reduce oil temperature, before limits are reached, the following are recommended: 1. Low Speed - Increase engine speed to increase fuel flow and thereby cool IDG oil. 2. High Speed - Reduce generator load or turn off generator. If the oil temperature continues to rise, mechanically disconnect IDG.
	OIL QTY < 1.45 QT	If the quantity of oil is low at a high power setting, expect level increase after power reduction. Monitor affected engine oil parameters and crosscheck with other engine - If pressure and temperature remain normal, continue normal operation.
	NAC TEMP ≥ 280 °C	Monitor engine parameters and crosscheck with other engine.

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SYSTEM	CONDITIONS	RECOMMENDED ACTION
Ident.: PRO-ABN-ABN-ADV-A-00012114.0003001 / 12 JUL 18		
31 FUEL	Difference between wing fuel quantities greater than 1 500 kg (3 307 lb)	FUEL MANAGEMENT: CHECK If a fuel leak is suspected, *Refer to PRO-ABN-FUEL [QRH] FUEL LEAK*. For limitations, *Refer to LIM-FUEL Maximum Allowed Fuel Imbalance*
	Fuel temp greater than 45 °C in wing tank	GALLEY: OFF
	Fuel temp lower than -40 °C in wing tank	Consider descending to a lower altitude and/or increasing Mach to increase TAT.
	ACT to be manually transferred	Turn the rotary selector to select the required ACT for manual transfer.
Ident.: PRO-ABN-ABN-ADV-A-00012119.0030001 / 17 MAR 17		
32 OXY	CKPT OXY Pulsing green: When pressure is < 500 PSI. Amber: When pressure is < 200 PSI.	If mask is not being used, check if it is correctly stowed, *Refer to DSC-35-20-10 Mask Stowage*.

[MEM] MEMORY ITEMS

Ident.: PRO-ABN-ABN-MEM-ABN-MEM-00020871.0001001 / 17 MAR 17
Applicable to: ALL

BRAKES

[MEM] LOSS OF BRAKING (*Refer to procedure*)

Ident.: PRO-ABN-ABN-MEM-ABN-MEM-00020948.0001001 / 17 MAR 17
Applicable to: ALL

MISC

[MEM] EMER DESCENT (*Refer to procedure*)
[MEM] STALL RECOVERY (*Refer to procedure*)
[MEM] STALL WARNING AT LIFT OFF (*Refer to procedure*)

Ident.: PRO-ABN-ABN-MEM-ABN-MEM-00020949.0001001 / 01 JUN 17
Applicable to: ALL

NAV

[MEM] UNRELIABLE SPEED INDICATION (*Refer to procedure*)

Ident.: PRO-ABN-ABN-MEM-ABN-MEM-00020950.0001001 / 17 MAR 17
Applicable to: MSN 02359, 02405, 02482

SURV

[MEM] GPWS/EGPWS CAUTIONS (*Refer to procedure*)
[MEM] GPWS/EGPWS WARNINGS (*Refer to procedure*)
[MEM] TCAS WARNINGS (*Refer to procedure*)
[MEM] WINDSHEAR (*Refer to procedure*)

Ident.: PRO-ABN-ABN-MEM-ABN-MEM-00020950.0002001 / 17 MAR 17
1 **Applicable to: MSN 01767-02334, 02388, 02443-02457, 02584-09063**

SURV

[MEM] GPWS/EGPWS CAUTIONS (*Refer to procedure*)
[MEM] GPWS/EGPWS WARNINGS (*Refer to procedure*)
[MEM] TCAS WARNINGS (*Refer to procedure*)
[MEM] WINDSHEAR (*Refer to procedure*)
[MEM] WINDSHEAR AHEAD (*Refer to procedure*)

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[QRH] PROCEDURES

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021342.0002001 / 17 MAR 17
Applicable to: ALL

A-ICE

[QRH] DOUBLE AOA HEAT FAILURE (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021355.0001001 / 17 MAR 17
Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

AIR

[QRH] ENGINE 1+2 BLEED FAULT (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021355.0002001 / 17 MAR 17
1 **Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063**

AIR

[QRH] BLEED 1+2 FAULT (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021352.0001001 / 17 MAR 17
Applicable to: MSN 01767-02405, 02482

BRAKES

[QRH] RESIDUAL BRAKING (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021352.0002001 / 17 MAR 17
2 **Applicable to: MSN 02443-02457, 02584-09063**

BRAKES

[QRH] ASYMMETRIC BRAKING (*Refer to procedure*)
[QRH] RESIDUAL BRAKING (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021343.0001001 / 17 MAR 17
Applicable to: ALL

CAB PR

[QRH] CABIN OVERPRESSURE (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021346.0001001 / 17 MAR 17
Applicable to: ALL

DOOR

[QRH] COCKPIT DOOR FAULT (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021511.0001001 / 17 MAR 17
Applicable to: ALL

EIS

[QRH] DISPLAY UNIT FAILURE (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021345.0002001 / 17 MAR 17
Applicable to: ALL

ELEC

[QRH] C/B TRIPPED (*Refer to procedure*)
[QRH] ELEC EMER CONFIG SYS REMAINING (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021356.0001001 / 17 MAR 17
Applicable to: MSN 04393-04397, 04433

ENG

[QRH] ENG DUAL FAILURE - FUEL REMAINING (*Refer to procedure*)
[QRH] ENG DUAL FAILURE - NO FUEL REMAINING (*Refer to procedure*)
[QRH] ENG RELIGHT IN FLIGHT (*Refer to procedure*)
[QRH] ENG STALL (*Refer to procedure*)
[QRH] ENG TAILPIPE FIRE (*Refer to procedure*)
[QRH] HIGH ENGINE VIBRATION (*Refer to procedure*)
[QRH] ON GROUND - NON ENG SHUTDOWN AFTER ENG MASTER OFF (*Refer to procedure*)
[QRH] ONE ENGINE INOPERATIVE - CIRCLING APPROACH (*Refer to procedure*)
[QRH] ONE ENGINE INOPERATIVE - STRAIGHT-IN APPROACH (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021356.0002001 / 17 MAR 17
Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

ENG

[QRH] ENG DUAL FAILURE - FUEL REMAINING (*Refer to procedure*)
[QRH] ENG DUAL FAILURE - NO FUEL REMAINING (*Refer to procedure*)
[QRH] ENG RELIGHT IN FLIGHT (*Refer to procedure*)
[QRH] ENG STALL (*Refer to procedure*)
[QRH] ENG TAILPIPE FIRE (*Refer to procedure*)
[QRH] HIGH ENGINE VIBRATION (*Refer to procedure*)
[QRH] ON GROUND - NON ENG SHUTDOWN AFTER ENG MASTER OFF (*Refer to procedure*)
[QRH] ONE ENGINE INOPERATIVE - CIRCLING APPROACH (*Refer to procedure*)
[QRH] ONE ENGINE INOPERATIVE - STRAIGHT-IN APPROACH (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021356.0006001 / 17 MAR 17

3 **Applicable to: MSN 06720-09063**

ENG

[QRH] ALL ENG FAIL (*Refer to procedure*)
[QRH] ENG RELIGHT IN FLIGHT (*Refer to procedure*)
[QRH] ENG STALL (*Refer to procedure*)
[QRH] ENG TAILPIPE FIRE (*Refer to procedure*)
[QRH] HIGH ENGINE VIBRATION (*Refer to procedure*)
[QRH] ON GROUND - NON ENG SHUTDOWN SETTING ENG MASTER OFF (*Refer to procedure*)
[QRH] ONE ENGINE INOPERATIVE - CIRCLING APPROACH (*Refer to procedure*)
[QRH] ONE ENGINE INOPERATIVE - STRAIGHT-IN APPROACH (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021356.0003001 / 17 MAR 17

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04399, 04438, 04510

ENG

[QRH] ALL ENG FAIL (*Refer to procedure*)
[QRH] ENG RELIGHT IN FLIGHT (*Refer to procedure*)
[QRH] ENG STALL (*Refer to procedure*)
[QRH] ENG TAILPIPE FIRE (*Refer to procedure*)
[QRH] HIGH ENGINE VIBRATION (*Refer to procedure*)
[QRH] ON GROUND - NON ENG SHUTDOWN AFTER ENG MASTER OFF (*Refer to procedure*)
[QRH] ONE ENGINE INOPERATIVE - CIRCLING APPROACH (*Refer to procedure*)
[QRH] ONE ENGINE INOPERATIVE - STRAIGHT-IN APPROACH (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021356.0004001 / 17 MAR 17

4 **Applicable to: MSN 01957-02359, 02443-02482, 02609-02626, 02670, 02737-03071, 03264-03330, 03414-03453, 03541-03618, 03782-04216, 04312, 04384, 04488-04506, 04518-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336**

ENG

[QRH] ALL ENG FAIL (*Refer to procedure*)
[QRH] ENG RELIGHT IN FLIGHT (*Refer to procedure*)
[QRH] ENG STALL (*Refer to procedure*)
[QRH] ENG TAILPIPE FIRE (*Refer to procedure*)
[QRH] HIGH ENGINE VIBRATION (*Refer to procedure*)
[QRH] ON GROUND - NON ENG SHUTDOWN AFTER ENG MASTER OFF (*Refer to procedure*)
[QRH] ONE ENGINE INOPERATIVE - CIRCLING APPROACH (*Refer to procedure*)
[QRH] ONE ENGINE INOPERATIVE - STRAIGHT-IN APPROACH (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021347.0001001 / 05 JUN 18
Applicable to: ALL

F/CTL

[QRH] LANDING WITH SLATS OR FLAPS JAMMED (Refer to procedure)
[QRH] RUDDER JAM (Refer to procedure)
[QRH] STABILIZER JAM (Refer to procedure)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021348.0007001 / 20 NOV 18
5 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

FUEL

[QRH] ACT SYSTEM FAULT (*Refer to procedure*)
[QRH] ACT XFR FAULT (*Refer to procedure*)
[QRH] FUEL IMBALANCE (*Refer to procedure*)
[QRH] FUEL LEAK (*Refer to procedure*)
[QRH] FWD ACT ISOLATED (*Refer to procedure*)
[QRH] GRAVITY FUEL FEEDING (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021348.0001001 / 04 MAY 18
6 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

FUEL

[QRH] FUEL IMBALANCE (*Refer to procedure*)
[QRH] FUEL LEAK (*Refer to procedure*)
[QRH] GRAVITY FUEL FEEDING (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021350.0002001 / 17 MAR 17
Applicable to: MSN 02388, 02584-02626, 02804, 03308, 04294, 04433, 04510

FWS

[QRH] MULTIPLE UNDUE ECAM ALERTS (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021353.0001001 / 17 MAR 17
Applicable to: ALL

L/G

[QRH] LANDING WITH ABNORMAL L/G (*Refer to procedure*)
[QRH] L/G GRAVITY EXTENSION (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00022319.0001001 / 05 JUN 18
Applicable to: ALL

MISC

[QRH] BOMB ON BOARD (*Refer to procedure*)
[QRH] COCKPIT WINDSHIELD / WINDOW ARCING (*Refer to procedure*)
[QRH] COCKPIT WINDSHIELD / WINDOW CRACKED (*Refer to procedure*)
[QRH] DITCHING (*Refer to procedure*)
[QRH] EMER EVAC (*Refer to procedure*)
[QRH] EMER LANDING (*Refer to procedure*)
[QRH] FORCED LANDING (*Refer to procedure*)
[QRH] OVERWEIGHT LANDING (*Refer to procedure*)
[QRH] SEVERE TURBULENCE (*Refer to procedure*)
[QRH] TAILSTRIKE (*Refer to procedure*)
[QRH] VOLCANIC ASH ENCOUNTER (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021354.0001001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02108, 02135, 02139-02649, 02712-02737, 02908-02914, 03264-03330, 03750, 04294, 04399-04438

NAV

[QRH] ADR 1+2+3 FAULT (*Refer to procedure*)
[QRH] ADR CHECK PROC (*Refer to procedure*)
[QRH] IR ALIGNMENT IN ATT MODE (*Refer to procedure*)
[QRH] NAV FM / GPS POS DISAGREE (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021354.0002001 / 17 MAR 17
7 **Applicable to: MSN 01957-02097, 02121, 02138, 02670, 02804, 03071-03138, 03357-03618, 03782-04216, 04312-04397, 04481-09063**

NAV

[QRH] ADR CHECK PROC (*Refer to procedure*)
[QRH] ALL ADR OFF (*Refer to procedure*)
[QRH] IR ALIGNMENT IN ATT MODE (*Refer to procedure*)
[QRH] NAV FM / GPS POS DISAGREE (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00020870.0001001 / 17 MAR 17
8 **Applicable to: MSN 01767-02195, 02275-09063**

SMOKE

[QRH] SMOKE / FUMES / AVNCS SMOKE (*Refer to procedure*)
[QRH] REMOVAL OF SMOKE / FUMES (*Refer to procedure*)
[QRH] SMOKE / FIRE FROM LITHIUM BATTERY (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00020870.0003001 / 17 MAR 17
Applicable to: MSN 02204

SMOKE

[QRH] SMOKE / FUMES / AVNCS SMOKE (*Refer to procedure*)
[QRH] REMOVAL OF SMOKE / FUMES (*Refer to procedure*)
[QRH] SMOKE / FIRE FROM LITHIUM BATTERY (*Refer to procedure*)

Ident.: PRO-ABN-ABN-QRH-ABN-QRH-00021512.0001001 / 17 MAR 17
Applicable to: ALL

WHEEL

[QRH] WHEEL TIRE DAMAGE SUSPECTED (*Refer to procedure*)

SYSTEM RESET - GENERAL

Applicable to: ALL

Ident.: PRO-ABN-ABN-RESET-A-00012644.0001001 / 17 MAR 17

Some systems that operate abnormally can be recovered by a reset. The flight crew can perform a system reset with the use of:

- The associated cockpit control, or
- The associated circuit breaker.

WARNING	Only perform one reset at a time, unless indicated differently.

Ident.: PRO-ABN-ABN-RESET-A-00012645.0001001 / 17 MAR 17

Guidelines to reset a system:

- Set the related normal cockpit control to OFF, or pull the corresponding circuit breaker
- Wait 3 s if a normal cockpit control is used, or 5 s if a circuit breaker is used (unless a different time is indicated)
- Set the related normal cockpit control to ON, or push the corresponding circuit breaker
- Wait 3 s for the end of the reset.

Note: *The flight crew should report any in-flight reset to the maintenance.*

Ident.: PRO-ABN-ABN-RESET-A-00014340.0001001 / 05 JUN 18

■ **On ground:**

Reset ECU (CFM) or EEC (IAE) or EIU only when engine shut down.

Reset BSCU only when aircraft stopped.

Reset ELAC or SEC only when listed in the System Reset Table.

Other Systems not listed in the System Reset Table can be reset following the guidelines described above.

■ **In flight:**

WARNING	The flight crew can attempt a system reset only when: - An ECAM/OEB/FCOM/QRH procedure requests to reset the system, or - The System Reset Table permits.

CAUTION	Do not pull the following circuit breakers: - SFCC - ECU or EEC or EIU.

Note: *Before taking any action on the cockpit C/Bs, both the PF and PM must crosscheck and ensure the C/B label corresponds to the affected system.*

Refer to System Reset Table.

SYSTEM RESET TABLE

Applicable to: MSN 01767

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

1	A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18

AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0007001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **On ground:** • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* **In flight:** - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0008001 / 04 DEC 18		
COM	COM CIDS 1+2 FAULT (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: G01 on 49VU, P13, M05 on 121VU G02 on 49VU, P14, M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, P13, P14, G01, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁✻ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, P14, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, P13, M05 on 121VU - Wait for 1 min, then - Push the C/Bs for DIR 2 in the following order: M06, P14, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP or Tape reproducer/PRAM)	**On ground, or in flight:** - Pull C/B M14 (or Q14 ◁✻) of the FAP in the 121VU - Wait 10 s before pushing the C/B. • IF UNSUCCESSFUL: - Pull the tape reproducer/PRAM C/B D01 or E01 or F07 on 2000VU (cabin)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Wait 10 s before pushing the C/B.
	Failure messages on the CIDS FAP in the cabin (VSC)	**On ground, or in flight:** - Pull C/B A06 or B06 on 2001VU, aft cabin - Wait 30 s , then push the C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

3	DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0018001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *The fuel quantity indication will be re-established within 1 min.*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0001001 / 20 MAR 17		
NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00012651.0011001 / 20 MAR 17		
SMOKE	SMOKE DET FAULT (SDCU)	**On ground only:** - Pull C/B C06 on 49VU, and C/B T18 on 122VU - Wait 10 s before pushing the C/Bs.
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 01920

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17		
5 A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18		
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0007001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **On ground:** • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* **In flight:** - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. *Note: After any BSCU reset:* *- Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0004001 / 04 DEC 18		
COM	COM CIDS 1+2 FAULT (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: G01 on 49VU, M05 on 121VU G02 on 49VU, M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁✻ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs for DIR 2 in the following order: M06, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP or Tape reproducer/PRAM)	**On ground, or in flight:** - Pull C/B M14 (or Q14 ◁✻) of the FAP in the 121VU - Wait 10 s before pushing the C/B. • IF UNSUCCESSFUL: - Pull the tape reproducer/PRAM C/B D01 or E01 or F07 on 2000VU (cabin)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Wait 10 s before pushing the C/B.
	Failure messages on the CIDS FAP in the cabin (VSC)	**On ground, or in flight:** - Pull C/B A06 or B06 on 2001VU, aft cabin - Wait 30 s , then push the C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17

ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0018001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. Note: *The fuel quantity indication will be re-established within 1 min.*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0041001 / 20 MAR 17		
NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00012651.0011001 / 20 MAR 17		
SMOKE	SMOKE DET FAULT (SDCU)	**On ground only:** - Pull C/B C06 on 49VU, and C/B T18 on 122VU - Wait 10 s before pushing the C/Bs.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 01957-02097, 02121, 02138

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

9 A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18

AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0001001 / 04 DEC 18		
COM	COM CIDS 1+2 FAULT (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: G02 on 49VU, M05 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs in the following order: G02 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs in the following order: M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP or Tape reproducer/PRAM)	**On ground, or in flight:** - Pull C/B M14 (or Q14 ◁) of the FAP in the 121VU - Wait 10 s before pushing the C/B. • IF UNSUCCESSFUL: - Pull the tape reproducer/PRAM C/B D01 or E01 or F07 on 2000VU (cabin) - Wait 10 s before pushing the C/B.
	Failure messages on the CIDS FAP in the cabin (VSC)	**On ground, or in flight:** - Pull C/B A06 or B06 on 2001VU, aft cabin - Wait 30 s , then push the C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. Note: - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
11 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
12 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0018001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. Note: *The fuel quantity indication will be re-established within 1 min.*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0008001 / 20 MAR 17		
13 NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU - Wait 5 s, then push the C/B - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*
Ident.: PRO-ABN-ABN-RESET-B-00012651.0011001 / 20 MAR 17		
SMOKE	SMOKE DET FAULT (SDCU)	**On ground only:** - Pull C/B C06 on 49VU, and C/B T18 on 122VU - Wait 10 s before pushing the C/Bs.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02108

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17		
14 A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18

AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0007001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **On ground:** • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* **In flight:** - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. *Note:* *After any BSCU reset:* *- Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0001001 / 04 DEC 18		
COM	COM CIDS 1+2 FAULT (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: G02 on 49VU, M05 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁⋘ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs in the following order: G02 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs in the following order: M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP or Tape reproducer/PRAM)	**On ground, or in flight:** - Pull C/B M14 (or Q14 ◁⋘) of the FAP in the 121VU - Wait 10 s before pushing the C/B. • IF UNSUCCESSFUL: - Pull the tape reproducer/PRAM C/B D01 or E01 or F07 on 2000VU (cabin) - Wait 10 s before pushing the C/B.
	Failure messages on the CIDS FAP in the cabin (VSC)	**On ground, or in flight:** - Pull C/B A06 or B06 on 2001VU, aft cabin - Wait 30 s , then push the C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

16	DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
17 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
18 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0018001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *The fuel quantity indication will be re-established within 1 min.*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0041001 / 20 MAR 17		
NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00012651.0011001 / 20 MAR 17		
SMOKE	SMOKE DET FAULT (SDCU)	**On ground only:** - Pull C/B C06 on 49VU, and C/B T18 on 122VU - Wait 10 s before pushing the C/Bs.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02135, 02139

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

19	A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18

AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	Note: *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0001001 / 04 DEC 18		
COM	COM CIDS 1+2 FAULT (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: G02 on 49VU, M05 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs in the following order: G02 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs in the following order: M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP or Tape reproducer/PRAM)	**On ground, or in flight:** - Pull C/B M14 (or Q14 ◁) of the FAP in the 121VU - Wait 10 s before pushing the C/B. • IF UNSUCCESSFUL: - Pull the tape reproducer/PRAM C/B D01 or E01 or F07 on 2000VU (cabin) - Wait 10 s before pushing the C/B.
	Failure messages on the CIDS FAP in the cabin (VSC)	**On ground, or in flight:** - Pull C/B A06 or B06 on 2001VU, aft cabin - Wait 30 s , then push the C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

20 DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
21 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
22 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0023001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *The fuel quantity indication will be re-established within 1 min.* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0041001 / 20 MAR 17		
NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00012651.0011001 / 20 MAR 17		
SMOKE	SMOKE DET FAULT (SDCU)	**On ground only:** - Pull C/B C06 on 49VU, and C/B T18 on 122VU - Wait 10 s before pushing the C/Bs.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02195

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

23	A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18

AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	Note: *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0002001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**On ground, or in flight:** In order to perform a reset, use the associated FAC pushbutton: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0001001 / 04 DEC 18		
COM	COM CIDS 1+2 FAULT (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: G02 on 49VU, M05 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁⋘ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs in the following order: G02 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs in the following order: M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP or Tape reproducer/PRAM)	**On ground, or in flight:** - Pull C/B M14 (or Q14 ◁⋘) of the FAP in the 121VU - Wait 10 s before pushing the C/B. • IF UNSUCCESSFUL: - Pull the tape reproducer/PRAM C/B D01 or E01 or F07 on 2000VU (cabin) - Wait 10 s before pushing the C/B.
	Failure messages on the CIDS FAP in the cabin (VSC)	**On ground, or in flight:** - Pull C/B A06 or B06 on 2001VU, aft cabin - Wait 30 s , then push the C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
25 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
26 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0023001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *The fuel quantity indication will be re-established within 1 min.* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0041001 / 20 MAR 17		
NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00012651.0011001 / 20 MAR 17		
SMOKE	SMOKE DET FAULT (SDCU)	**On ground only:** - Pull C/B C06 on 49VU, and C/B T18 on 122VU - Wait 10 s before pushing the C/Bs.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02204

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

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A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18

AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	Note: *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0004001 / 04 DEC 18		
COM	COM CIDS 1+2 FAULT (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: G01 on 49VU, M05 on 121VU G02 on 49VU, M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁✻ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs for DIR 2 in the following order: M06, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP or Tape reproducer/PRAM)	**On ground, or in flight:** - Pull C/B M14 (or Q14 ◁✻) of the FAP in the 121VU - Wait 10 s before pushing the C/B. • IF UNSUCCESSFUL: - Pull the tape reproducer/PRAM C/B D01 or E01 or F07 on 2000VU (cabin)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Wait 10 s before pushing the C/B.
	Failure messages on the CIDS FAP in the cabin (VSC)	**On ground, or in flight:** - Pull C/B A06 or B06 on 2001VU, aft cabin - Wait 30 s , then push the C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

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DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
29 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0023001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *The fuel quantity indication will be re-established within 1 min.* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0048001 / 20 MAR 17		
30 NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU, - Wait 5 s, then push the C/B, - Normal operation is expected after approximately 2 min. Note: *In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0011001 / 20 MAR 17		
SMOKE	SMOKE DET FAULT (SDCU)	**On ground only:** - Pull C/B C06 on 49VU, and C/B T18 on 122VU - Wait 10 s before pushing the C/Bs.
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02275-02334

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

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A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18

AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0007001 / 04 DEC 18		
32 AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
AUTO FLT	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **On ground:** • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* **In flight:** - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0001001 / 04 DEC 18		
COM	COM CIDS 1+2 FAULT (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: G02 on 49VU, M05 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs in the following order: G02 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs in the following order: M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP or Tape reproducer/PRAM)	**On ground, or in flight:** - Pull C/B M14 (or Q14 ◁) of the FAP in the 121VU - Wait 10 s before pushing the C/B. • IF UNSUCCESSFUL: - Pull the tape reproducer/PRAM C/B D01 or E01 or F07 on 2000VU (cabin) - Wait 10 s before pushing the C/B.
	Failure messages on the CIDS FAP in the cabin (VSC)	**On ground, or in flight:** - Pull C/B A06 or B06 on 2001VU, aft cabin - Wait 30 s , then push the C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
34 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
35 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0023001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. Note: *The fuel quantity indication will be re-established within 1 min.* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0048001 / 20 MAR 17		
36 NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU, - Wait 5 s, then push the C/B, - Normal operation is expected after approximately 2 min. *Note:* *In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0011001 / 20 MAR 17		
SMOKE	SMOKE DET FAULT (SDCU)	**On ground only:** - Pull C/B C06 on 49VU, and C/B T18 on 122VU - Wait 10 s before pushing the C/Bs.
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02359

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17		
37 A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18

AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0002001 / 04 DEC 18		
COM	COM CIDS 1+2 FAULT (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: G02 on 49VU, M05 and N11 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: N11, M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs in the following order: G02 on 49VU, M05 and N11 on 121VU - Wait for 1 min, then - Push the C/Bs in the following order: N11, M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP or Tape reproducer/PRAM)	**On ground, or in flight:** - Pull C/B M14 (or Q14 ◁) of the FAP in the 121VU - Wait 10 s before pushing the C/B. • IF UNSUCCESSFUL: - Pull the tape reproducer/PRAM C/B D01 or E01 or F07 on 2000VU (cabin) - Wait 10 s before pushing the C/B.
	Failure messages on the CIDS FAP in the cabin (VSC)	**On ground, or in flight:** - Pull C/B A06 or B06 on 2001VU, aft cabin

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Wait 30 s , then push the C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

38	DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17

39	ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0023001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *The fuel quantity indication will be re-established within 1 min.* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17

L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).

Ident.: PRO-ABN-ABN-RESET-B-00012657.0041001 / 20 MAR 17

NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.

Ident.: PRO-ABN-ABN-RESET-B-00012651.0011001 / 20 MAR 17

SMOKE	SMOKE DET FAULT (SDCU)	**On ground only:** - Pull C/B C06 on 49VU, and C/B T18 on 122VU - Wait 10 s before pushing the C/Bs.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02388

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

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A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18

AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0007001 / 04 DEC 18		
41 AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **On ground:** • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* **In flight:** - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. *Note: After any BSCU reset:* *- Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0001001 / 04 DEC 18		
COM	COM CIDS 1+2 FAULT (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: G02 on 49VU, M05 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs in the following order: G02 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs in the following order: M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP or Tape reproducer/PRAM)	**On ground, or in flight:** - Pull C/B M14 (or Q14 ◁) of the FAP in the 121VU - Wait 10 s before pushing the C/B. • IF UNSUCCESSFUL: - Pull the tape reproducer/PRAM C/B D01 or E01 or F07 on 2000VU (cabin) - Wait 10 s before pushing the C/B.
	Failure messages on the CIDS FAP in the cabin (VSC)	**On ground, or in flight:** - Pull C/B A06 or B06 on 2001VU, aft cabin - Wait 30 s , then push the C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. Note: - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
43 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
44 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0022001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. Note: 1. *The fuel quantity indication will be re-established within 1 min* 2. *The fuel leak detection function will be lost for the remainder of the flight. The flight crew must monitor the fuel quantity according to this FCOM (Refer to PRO-NOR-SOP-15).* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0041001 / 20 MAR 17		
NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00012651.0011001 / 20 MAR 17		
SMOKE	SMOKE DET FAULT (SDCU)	**On ground only:** - Pull C/B C06 on 49VU, and C/B T18 on 122VU - Wait 10 s before pushing the C/Bs.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02405

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17		
45 A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18

AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. *Note: After any BSCU reset:* *- Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0002001 / 04 DEC 18		
COM	COM CIDS 1+2 FAULT (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: G02 on 49VU, M05 and N11 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: N11, M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs in the following order: G02 on 49VU, M05 and N11 on 121VU - Wait for 1 min, then - Push the C/Bs in the following order: N11, M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP or Tape reproducer/PRAM)	**On ground, or in flight:** - Pull C/B M14 (or Q14 ◁) of the FAP in the 121VU - Wait 10 s before pushing the C/B. • IF UNSUCCESSFUL: - Pull the tape reproducer/PRAM C/B D01 or E01 or F07 on 2000VU (cabin) - Wait 10 s before pushing the C/B.
	Failure messages on the CIDS FAP in the cabin (VSC)	**On ground, or in flight:** - Pull C/B A06 or B06 on 2001VU, aft cabin

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Wait 30 s , then push the C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

46	DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17

47	ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0023001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *The fuel quantity indication will be re-established within 1 min.* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0001001 / 20 MAR 17		
NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00012651.0011001 / 20 MAR 17		
SMOKE	SMOKE DET FAULT (SDCU)	**On ground only:** - Pull C/B C06 on 49VU, and C/B T18 on 122VU - Wait 10 s before pushing the C/Bs.
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02443

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

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A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note: Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note: Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18		
49 Impacted DU: 00021069 System Reset Table - AIR		
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18		
50 COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: TDU / PRO-ABN-ABN-RESET-B-00021073.0001001 / 20 MAR 17
Impacted DU: NONE

COND	COND TRIM AIR SYS FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. *Note:* *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17		
51 DATALINK	ATSU ◁	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
52 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
53 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0022001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *1. The fuel quantity indication will be re-established within 1 min* *2. The fuel leak detection function will be lost for the remainder of the flight. The flight crew must monitor the fuel quantity according to this FCOM (Refer to PRO-NOR-SOP-15).* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0048001 / 20 MAR 17		
NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU, - Wait 5 s, then push the C/B, - Normal operation is expected after approximately 2 min. Note: *In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
55 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02457, 02649

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

56	A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR		
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18
57 Impacted DU: 00021069 System Reset Table - AIR

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0007001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **On ground:** • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* **In flight:** - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18		
59 COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: TDU / PRO-ABN-ABN-RESET-B-00021073.0001001 / 20 MAR 17
Impacted DU: NONE

COND	COND TRIM AIR SYS FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. *Note:* *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17		
60 DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
61 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
62 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0023001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *The fuel quantity indication will be re-established within 1 min.* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0048001 / 20 MAR 17		
63 NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU, - Wait 5 s, then push the C/B, - Normal operation is expected after approximately 2 min. Note: *In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02482

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

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A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18

AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0002001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**On ground, or in flight:** In order to perform a reset, use the associated FAC pushbutton: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0002001 / 04 DEC 18		
COM	COM CIDS 1+2 FAULT (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: G02 on 49VU, M05 and N11 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: N11, M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs in the following order: G02 on 49VU, M05 and N11 on 121VU - Wait for 1 min, then - Push the C/Bs in the following order: N11, M05, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP or Tape reproducer/PRAM)	**On ground, or in flight:** - Pull C/B M14 (or Q14 ◁) of the FAP in the 121VU - Wait 10 s before pushing the C/B. • IF UNSUCCESSFUL: - Pull the tape reproducer/PRAM C/B D01 or E01 or F07 on 2000VU (cabin) - Wait 10 s before pushing the C/B.
	Failure messages on the CIDS FAP in the cabin (VSC)	**On ground, or in flight:** - Pull C/B A06 or B06 on 2001VU, aft cabin

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Wait 30 s , then push the C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

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DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
67 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
68 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0023001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. Note: *The fuel quantity indication will be re-established within 1 min.* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0041001 / 20 MAR 17		
NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00012651.0011001 / 20 MAR 17		
SMOKE	SMOKE DET FAULT (SDCU)	**On ground only:** - Pull C/B C06 on 49VU, and C/B T18 on 122VU - Wait 10 s before pushing the C/Bs.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02584

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

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A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18
70 Impacted DU: 00021069 System Reset Table - AIR

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0007001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **On ground:** • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* **In flight:** - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18		
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

73	DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
74 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
75 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0022001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *1. The fuel quantity indication will be re-established within 1 min* *2. The fuel leak detection function will be lost for the remainder of the flight. The flight crew must monitor the fuel quantity according to this FCOM (Refer to PRO-NOR-SOP-15).* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0048001 / 20 MAR 17		
NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU, - Wait 5 s, then push the C/B, - Normal operation is expected after approximately 2 min. Note: *In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02609

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17		
78 A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18
79 Impacted DU: 00021069 System Reset Table - AIR

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0007001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **On ground:** • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* **In flight:** - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. *Note:* *After any BSCU reset:* *- Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18		
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. Note: - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

82	DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
83 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
84 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG Note: *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0022001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *1. The fuel quantity indication will be re-established within 1 min* *2. The fuel leak detection function will be lost for the remainder of the flight. The flight crew must monitor the fuel quantity according to this FCOM (Refer to PRO-NOR-SOP-15).* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0041001 / 20 MAR 17		
NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
85 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02626

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

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A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18
87 Impacted DU: 00021069 System Reset Table - AIR

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0007001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **On ground:** • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* **In flight:** - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18		
89 COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: TDU / PRO-ABN-ABN-RESET-B-00021073.0001001 / 20 MAR 17
Impacted DU: NONE

COND	COND TRIM AIR SYS FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. *Note:* *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17		
90 DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
91 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
92 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0022001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *1. The fuel quantity indication will be re-established within 1 min* *2. The fuel leak detection function will be lost for the remainder of the flight. The flight crew must monitor the fuel quantity according to this FCOM (Refer to PRO-NOR-SOP-15).* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0041001 / 20 MAR 17		
NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
93 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02670, 02804

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

94	A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR		
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18 95 Impacted DU: 00021069 System Reset Table - AIR		
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0007001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **On ground:** • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* **In flight:** - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18		
97 COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: TDU / PRO-ABN-ABN-RESET-B-00021073.0001001 / 20 MAR 17
Impacted DU: NONE

COND	COND TRIM AIR SYS FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. *Note:* *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17		
98 DATALINK	ATSU ◁	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
99 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
100 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0022001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *1. The fuel quantity indication will be re-established within 1 min* *2. The fuel leak detection function will be lost for the remainder of the flight. The flight crew must monitor the fuel quantity according to this FCOM (Refer to PRO-NOR-SOP-15).* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0048001 / 20 MAR 17		
101 NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU, - Wait 5 s, then push the C/B, - Normal operation is expected after approximately 2 min. Note: *In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
102 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02712

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

103	A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18
104 Impacted DU: 00021069 System Reset Table - AIR

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0018001 / 04 DEC 18		
COM	COM CIDS 1+2 FAULT (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: G01 on 49VU, M05 on 121VU G02 on 49VU, M06 on 121VU - Wait 10 s, then - Push the C/B in the following order: M05, M06, G01, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁✻ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs for DIR 2 in the following order: M06, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP or Tape reproducer/PRAM)	**On ground, or in flight:** - Pull C/B M14 (or Q14 ◁✻) of the FAP in the 121VU - Wait 10 s before pushing the C/B. • IF UNSUCCESSFUL: - Pull the tape reproducer/PRAM C/B D01 or E01 or F07 on 2000VU (cabin)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Wait 10 s before pushing the C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: TDU / PRO-ABN-ABN-RESET-B-00021073.0001001 / 20 MAR 17
Impacted DU: NONE

COND	COND TRIM AIR SYS FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. *Note:* *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17		
105 DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
106 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
107 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0023001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. Note: *The fuel quantity indication will be re-established within 1 min.* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0048001 / 20 MAR 17		
108 NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU, - Wait 5 s, then push the C/B, - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0011001 / 20 MAR 17		
SMOKE	SMOKE DET FAULT (SDCU)	**On ground only:** - Pull C/B C06 on 49VU, and C/B T18 on 122VU - Wait 10 s before pushing the C/Bs.
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02737

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17		
109 A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18
		110 Impacted DU: 00021069 System Reset Table - AIR
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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Ident.: PRO-ABN-ABN-RESET-B-00021067.0007001 / 04 DEC 18

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **On ground:** • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* **In flight:** - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18		
112 COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: TDU / PRO-ABN-ABN-RESET-B-00021073.0001001 / 20 MAR 17
Impacted DU: NONE

COND	COND TRIM AIR SYS FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. *Note:* *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17		
113 DATALINK	ATSU ◁	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
114 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
115 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0023001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *The fuel quantity indication will be re-established within 1 min.* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0008001 / 20 MAR 17		
116 NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU - Wait 5 s, then push the C/B - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
117 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 02908-02914

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

118	A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18
		119 Impacted DU: 00021069 System Reset Table - AIR
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18		
120 COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. Note: - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
122 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
123 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0022001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. Note: 1. *The fuel quantity indication will be re-established within 1 min* 2. *The fuel leak detection function will be lost for the remainder of the flight. The flight crew must monitor the fuel quantity according to this FCOM (Refer to PRO-NOR-SOP-15).* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0048001 / 20 MAR 17		
124 NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU, - Wait 5 s, then push the C/B, - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
125 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 03071, 03264, 03330

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17		
126 A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note: Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note: Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18		
127 Impacted DU: 00021069 System Reset Table - AIR		
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* *- Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18		
128 COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

129	DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
130 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
131 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0023001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *The fuel quantity indication will be re-established within 1 min.* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0008001 / 20 MAR 17		
132 NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU - Wait 5 s, then push the C/B - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
133 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 03138

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

134	A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR		
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18
135 Impacted DU: 00021069 System Reset Table - AIR

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. *Note: After any BSCU reset:* *- Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18		
136 COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. Note: - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
138 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
139 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0023001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. Note: *The fuel quantity indication will be re-established within 1 min.* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0037001 / 20 MAR 17		
NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K7 on 121VU - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU - Wait 5 s, then push the C/B - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
140 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 03308, 03357

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

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A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note: Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note: Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18		
142 Impacted DU: 00021069 System Reset Table - AIR		
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. *Note: During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note: Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18		
143 COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. Note: - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

144	DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
145 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
146 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0023001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *The fuel quantity indication will be re-established within 1 min.* **CAUTION** The FUEL AUTO FEED FAULT caution will be lost for the remainder of the flight. In flight: - If center tank is not empty, while one inner tank contains less than 5 000 kg (11 000 lb) of fuel: • FUEL MODE SEL (MAN) - When center tank is empty: • CTR TK PUMP 1 and 2 (OFF) • FUEL MODE SEL (MAN)

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0001001 / 20 MAR 17		
NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
147 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 03414-03618, 03782-04216, 04312, 04328-04384

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17		
148 A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18
149 Impacted DU: 00021069 System Reset Table - AIR

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. *Note: After any BSCU reset:* *- Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18		
150 COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. Note: - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
152 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
153 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0018001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. Note: *The fuel quantity indication will be re-established within 1 min.*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0001001 / 20 MAR 17		
NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
154 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 03750

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

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A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note: Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note: Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18
		156 Impacted DU: 00021069 System Reset Table - AIR
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0007001 / 04 DEC 18		
157 AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **On ground:** • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* **In flight:** - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18		
158 COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. Note: - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
160 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
161 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0018001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. Note: *The fuel quantity indication will be re-established within 1 min.*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0048001 / 20 MAR 17		
NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU, - Wait 5 s, then push the C/B, - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
163 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 04294, 04433

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

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A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note: Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note: Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18		
165 Impacted DU: 00021069 System Reset Table - AIR		
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18		
166 COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00014274.0001001 / 20 MAR 17

DOOR	Flickering or total loss of the video camera display (on the SD) accompanied by the "VIDEO NOT AVAIL" message. (CDSS)	**On ground, or in flight:** - Set the VIDEO rotary selector to OFF, on the center pedestal VIDEO panel - Set the COCKPIT DOOR VIDEO pb-sw to OFF, on the overhead panel - Wait 2 min, then - Set the COCKPIT DOOR VIDEO pb-sw back to ON, on the overhead panel - Wait 15 s, then - Set the VIDEO rotary selector to ″CKPT ENTRY″, on the center pedestal VIDEO panel.

Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17

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ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.

Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17

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ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0018001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *The fuel quantity indication will be re-established within 1 min.*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0008001 / 20 MAR 17		
170 NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU - Wait 5 s, then push the C/B - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
171 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 04314, 04393-04399

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

172	A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18
173 Impacted DU: 00021069 System Reset Table - AIR

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
174 COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. Note: - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
176 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
177 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0018001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. Note: *The fuel quantity indication will be re-established within 1 min.*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0008001 / 20 MAR 17		
178 NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU - Wait 5 s, then push the C/B - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
179 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ⋘ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ⋘ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 04438, 04965-05094, 05155, 05190, 05230-05313

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17		
180 A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note: Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note: Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18
		181 Impacted DU: 00021069 System Reset Table - AIR
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. *Note: During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note: Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* *- Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18
		182 Impacted by TDU: 00021114 System Reset Table - COM
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021114.0028001 / 04 DEC 18
183 Impacted DU: 00021089 System Reset Table - COM

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**Confirm if spurious:** - Check PA function - Check cabin Interphone function - Check cabin Lighting function. If spurious, reset the CIDS when aircraft is self powered (APU or engine). **On ground or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ ,P14 ◁ - After CIDS reset, wait approximately 4 min before recovering normal operation.
	Uncommanded EVAC horn actuation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs for DIR 2 in the following order: M06 , G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

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DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
185 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
186 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0018001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *The fuel quantity indication will be re-established within 1 min.*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0008001 / 20 MAR 17		
187 NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU - Wait 5 s, then push the C/B - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 04481-04488, 04506, 04518, 04535-04637, 04752-04954

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

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A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18 190 Impacted DU: 00021069 System Reset Table - AIR		
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. *Note: After any BSCU reset:* *- Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18
		191 Impacted by TDU: 00021114 System Reset Table - COM
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 and P14 on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 , P14 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then; - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021114.0028001 / 04 DEC 18
192 Impacted DU: 00021089 System Reset Table - COM

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**Confirm if spurious:** - Check PA function - Check cabin Interphone function - Check cabin Lighting function. If spurious, reset the CIDS when aircraft is self powered (APU or engine). **On ground or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ ,P14 ◁ - After CIDS reset, wait approximately 4 min before recovering normal operation.
	Uncommanded EVAC horn actuation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs for DIR 2 in the following order: M06 , G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

193	DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
194 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
195 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0018001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. Note: *The fuel quantity indication will be re-established within 1 min.*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0001001 / 20 MAR 17		
NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
196 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 04491, 04532, 04645, 05120, 05218

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

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A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR		
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18
		198 Impacted DU: 00021069 System Reset Table - AIR
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0007001 / 04 DEC 18		
199 AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
AUTO FLT	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **On ground:** • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* **In flight:** - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18

200 Impacted by TDU: 00021114 System Reset Table - COM

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 and P14 on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 , P14 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then; - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021114.0028001 / 04 DEC 18

201 Impacted DU: 00021089 System Reset Table - COM

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**Confirm if spurious:** - Check PA function - Check cabin Interphone function - Check cabin Lighting function. If spurious, reset the CIDS when aircraft is self powered (APU or engine). **On ground or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ ,P14 ◁ - After CIDS reset, wait approximately 4 min before recovering normal operation.
	Uncommanded EVAC horn actuation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs for DIR 2 in the following order: M06 , G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

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DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
203 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
204 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0018001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. Note: *The fuel quantity indication will be re-established within 1 min.*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0048001 / 20 MAR 17		
205 NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU, - Wait 5 s, then push the C/B, - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
206 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 04510

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

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A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR		
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18		
208 Impacted DU: 00021069 System Reset Table - AIR		
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18
		209 Impacted by TDU: 00021114 System Reset Table - COM
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ , P14 ◁ - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation ◁ (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021114.0028001 / 04 DEC 18
210 Impacted DU: 00021089 System Reset Table - COM

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**Confirm if spurious:** - Check PA function - Check cabin Interphone function - Check cabin Lighting function. If spurious, reset the CIDS when aircraft is self powered (APU or engine). **On ground or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ ,P14 ◁ - After CIDS reset, wait approximately 4 min before recovering normal operation.
	Uncommanded EVAC horn actuation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs for DIR 2 in the following order: M06 , G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

211	DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00014274.0001001 / 20 MAR 17

DOOR	Flickering or total loss of the video camera display (on the SD) accompanied by the "VIDEO NOT AVAIL" message. (CDSS)	**On ground, or in flight:** - Set the VIDEO rotary selector to OFF, on the center pedestal VIDEO panel - Set the COCKPIT DOOR VIDEO pb-sw to OFF, on the overhead panel - Wait 2 min, then - Set the COCKPIT DOOR VIDEO pb-sw back to ON, on the overhead panel - Wait 15 s, then - Set the VIDEO rotary selector to ″CKPT ENTRY″, on the center pedestal VIDEO panel.

Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17

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ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.

Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17

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ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0018001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. *Note:* *The fuel quantity indication will be re-established within 1 min.*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0008001 / 20 MAR 17		
214 NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU - Wait 5 s, then push the C/B - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
215 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 05158

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

216	A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18
		217 Impacted DU: 00021069 System Reset Table - AIR
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18

218 Impacted by TDU: 00021114 System Reset Table - COM

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 and P14 on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 , P14 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then; - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021114.0028001 / 04 DEC 18

219 Impacted DU: 00021089 System Reset Table - COM

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**Confirm if spurious:** - Check PA function - Check cabin Interphone function - Check cabin Lighting function. If spurious, reset the CIDS when aircraft is self powered (APU or engine). **On ground or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ ,P14 ◁ - After CIDS reset, wait approximately 4 min before recovering normal operation.
	Uncommanded EVAC horn actuation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs for DIR 2 in the following order: M06 , G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

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DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
221 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
222 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0018001 / 20 MAR 17

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs. Note: *The fuel quantity indication will be re-established within 1 min.*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0048001 / 20 MAR 17		
223 NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU, - Wait 5 s, then push the C/B, - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
224 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 05365-06289

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

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A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR		
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18		
226 Impacted DU: 00021069 System Reset Table - AIR		
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If FMGC reset is unsuccessful:
  - Consider FMGC reset with engines not running.

  Note: *The FMGC reset is more effective with engines not running.*

In flight:
- Set FD 1(2) pb to OFF.
- Pull the C/B of the affected FMGC.
- Wait 10 s.
- Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

Long FMGC Reset:

On ground:
- If no engine running:
  - Apply external power or APU generator power.
  - Wait 2 min before resetting the FMGC circuit breakers.
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

- If engines running:
  - Set FD 1(2) pb to OFF.
  - Pull the C/B of the affected FMGC.
  - Wait 15 min.
  - Push the C/B of the affected FMGC.

CAUTION	Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18

227 Impacted by TDU: 00021114 System Reset Table - COM

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 and P14 on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 , P14 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then: - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021114.0028001 / 04 DEC 18
228 Impacted DU: 00021089 System Reset Table - COM

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**Confirm if spurious:** - Check PA function - Check cabin Interphone function - Check cabin Lighting function. If spurious, reset the CIDS when aircraft is self powered (APU or engine). **On ground or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ ,P14 ◁ - After CIDS reset, wait approximately 4 min before recovering normal operation.
	Uncommanded EVAC horn actuation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs for DIR 2 in the following order: M06 , G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

229	DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
230 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
231 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** **CAUTION** - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check *Note:* *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0019001 / 20 MAR 17

232

FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs *Note:* *1. The fuel quantity indication will be re-established within 1 min* *2. The fuel leak detection function will be lost for the remainder of the flight. The flight crew must monitor the fuel quantity according to this FCOM (Refer to PRO-NOR-SOP-15).*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0008001 / 20 MAR 17		
233 NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU - Wait 5 s, then push the C/B - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17		
234 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 06336

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0001001 / 09 NOV 17

235	A-ICE	ANTI ICE L(R) WINDSHIELD(WINDOW) (WHC)	On ground: If the air conditioning packs are OFF with the OAT above 40 °C, and/or the windshield is under direct sunlight, a spurious ANTI ICE L(R) WINDSHIELD(WINDOW) may trigger. In that case, select both air conditioning packs to ON and wait at least 5 minutes for the cockpit temperature to decrease. After, pull, then push the C/B of the affected WHC: - X13 on 122VU (WHC1) - W13 on 122VU (WHC2).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18 236 Impacted DU: 00021069 System Reset Table - AIR		
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0009001 / 04 DEC 18		
AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **Short FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. **Long FMGC Reset:** On ground: • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		• If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* In flight: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 15 min. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the reset, before engaging or reengaging the FD and the AP of the reset FMGC. *Note:* *Consider a long FMGC reset only if a short FMGC reset has no effect.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17		
BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. *Note: After any BSCU reset:* *- Record BSCU reset in the logbook.*

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Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18

237 Impacted by TDU: 00021114 System Reset Table - COM

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 and P14 on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 , P14 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then; - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021114.0028001 / 04 DEC 18

238 Impacted DU: 00021089 System Reset Table - COM

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**Confirm if spurious:** - Check PA function - Check cabin Interphone function - Check cabin Lighting function. If spurious, reset the CIDS when aircraft is self powered (APU or engine). **On ground or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ ,P14 ◁ - After CIDS reset, wait approximately 4 min before recovering normal operation.
	Uncommanded EVAC horn actuation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs for DIR 2 in the following order: M06 , G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

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DATALINK	ATSU	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
240 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.
Ident.: PRO-ABN-ABN-RESET-B-00012660.0001001 / 20 MAR 17		
241 ENG	ENG 1(2) FADEC A(B) FAULT (FADEC)	*Refer to PRO-ABN-ENG ENG 1(2) FADEC A(B) FAULT*, if applicable.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0019001 / 20 MAR 17

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FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs Note: *1. The fuel quantity indication will be re-established within 1 min* *2. The fuel leak detection function will be lost for the remainder of the flight. The flight crew must monitor the fuel quantity according to this FCOM (Refer to PRO-NOR-SOP-15).*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0048001 / 20 MAR 17		
243 NAV	NAV GPWS FAULT and NAV GPWS TERR DET FAULT (EGPWS)	**On ground, or in flight:** Perform the following reset when both alerts are displayed at the same time. - Pull C/B P07 on 121VU, - Set GPWS SYS pb and GPWS TERR pb to ON, - Wait 5 s, then push the C/B.
	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU. - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU, - Wait 5 s, then push the C/B, - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
244 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012654.0002001 / 20 MAR 17		
245 A-ICE	WING A.ICE SYS FAULT (WAI)	When setting the WAI pb-sw to ON above FL 310, the air bleed pressure might not be sufficient, and the WING A.ICE SYS FAULT alert can trigger: - After ECAM application, another WAI selection attempt can be performed below FL 310 - If the ECAM triggers again, apply ECAM.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note: Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note: Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18		
246 Impacted DU: 00021069 System Reset Table - AIR		
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and** **If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or** **If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0007001 / 04 DEC 18		
247 AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
AUTO FLT	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 B1 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 B2 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **On ground:** • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* **In flight:** - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. Note: *After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. Note: *After any BSCU reset:* - *Record BSCU reset in the logbook.*

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Ident.: PRO-ABN-ABN-RESET-B-00021089.0010001 / 04 DEC 18

248 Impacted by TDU: 00021114 System Reset Table - COM

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 and P14 on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 , P14 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then; - Push the C/Bs for DIR 2 in the following order: M06 , G02 . - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

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Ident.: TDU / PRO-ABN-ABN-RESET-B-00021114.0028001 / 04 DEC 18
249 Impacted DU: 00021089 System Reset Table - COM

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**Confirm if spurious:** - Check PA function - Check cabin Interphone function - Check cabin Lighting function. If spurious, reset the CIDS when aircraft is self powered (APU or engine). **On ground or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ ,P14 ◁ - After CIDS reset, wait approximately 4 min before recovering normal operation.
	Uncommanded EVAC horn actuation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs for DIR 2 in the following order: M06 , G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	FAP freezing (FAP)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: H01 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, H01 C/B.
	SATCOM ◁ malfunction (SATCOM ◁)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0001001 / 18 DEC 17

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DATALINK	ATSU ◁	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: L16, L15 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: L15, L16.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
251 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0019001 / 20 MAR 17

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FUEL	Loss of fuel quantity indication or Simultaneous triggering of FUEL L OUTER XFR CLOSED and FUEL R OUTER XFR CLOSED, although FUEL SD indicates no anomaly. (FQIC)	**On ground, or in flight:** - Pull the 3 C/Bs • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU) • Channel 1 and 2 (L26 on 121VU). - Wait 5 s, before pushing the 3 C/Bs Note: *1. The fuel quantity indication will be re-established within 1 min* *2. The fuel leak detection function will be lost for the remainder of the flight. The flight crew must monitor the fuel quantity according to this FCOM (Refer to PRO-NOR-SOP-15).*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0008001 / 20 MAR 17		
253 NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU - Wait 5 s, then push the C/B - Normal operation is expected after approximately 2 min. *Note: In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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Ident.: PRO-ABN-ABN-RESET-B-00012651.0016001 / 20 MAR 17

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
254 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ⋘ on 121VU, G01 and G02 on 49VU, M05 or M06 and M06 or M07 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 or M06 and M06 or M07 on 121VU, G01 and G02 on 49VU, P13 and P14 ⋘ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

SYSTEM RESET TABLE

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012654.0002001 / 20 MAR 17

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A-ICE	WING A.ICE SYS FAULT (WAI)	When setting the WAI pb-sw to ON above FL 310, the air bleed pressure might not be sufficient, and the WING A.ICE SYS FAULT alert can trigger: - After ECAM application, another WAI selection attempt can be performed below FL 310 - If the ECAM triggers again, apply ECAM.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Ident.: PRO-ABN-ABN-RESET-B-00021069.0001001 / 05 JUN 18 Impacted by TDU: 00021167 System Reset Table - AIR
AIR	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	*Note: Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If AIR ENG (AFFECTED) BLEED FAULT alert or AIR ENG (AFFECTED) BLEED ABNORM PR alert reoccurs, or If Engine Bleed Valve (affected side) not open on the BLEED SD page:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note: Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note: Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021167.0001001 / 05 JUN 18		
256 Impacted DU: 00021069 System Reset Table - AIR		
AIR	AIR PACK 1(2) REGUL FAULT (ACSC)	**On ground only:** - Pull C/Bs W21 and W22 on 122VU - Pull C/Bs X21 and X22 on 122VU - Pull C/Bs Y18, Y20 and Y21 on 122VU - Pull C/B D8 on 49VU - Wait 5 s before pushing all the C/Bs. Note: *During the reset, a small increase of the engine thrust may be observed (N1 or EPR, as applicable). If the parking brake is set, vibrations can occur.*
	AIR ENG 1(2) BLEED FAULT or AIR ENG 1(2) BLEED ABNORM PR (Engine Bleed Supply System)	Note: *Do not attempt more than one reset. However, if the first reset is unsuccessful and if the AIR ENG 1(2) BLEED FAULT alert occurred after takeoff with APU bleed ON, a second reset may be attempted when flight conditions permit and when the aircraft is stabilized in level flight.* **On ground or in flight** • **If the PACK (non-affected side) is operative, and If the Wing Anti-Ice is OFF:** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - X BLEED.....AUTO - PACK (affected side).....ON - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is open on the BLEED SD page. • **If** AIR ENG (AFFECTED) BLEED FAULT **alert or** AIR ENG (AFFECTED) BLEED ABNORM PR **alert reoccurs, or If Engine Bleed Valve (affected side) not open on the** BLEED SD page**:** - ENG BLEED (affected side).....OFF - X BLEED.....OPEN

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*
	AIR ENG 1(2) BLEED NOT CLSD (Engine Bleed Supply System)	*Note:* *Do not attempt more than one reset.* **On ground only** - ENG BLEED (affected side).....OFF ■ **If the ENG BLEED (affected side) pb-sw FAULT light is on:** - Delay application of the reset until FAULT light extinguishes. ■ **If the ENG BLEED (affected side) pb-sw FAULT light is off:** - ENG BLEED (affected side).....ON - Check that the affected Engine Bleed Valve is closed on the BLEED SD page. *Note:* *Record the ENG BLEED reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021067.0008001 / 04 DEC 18		
257 AUTO FLT	AUTO FLT FCU 1(2) FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, or M21 on 121VU for FCU 2 - Push it after 5 s - If AUTO FLT FCU 1(2) FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1(2) FAULT remains, pull both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 s for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful).
AUTO FLT	AUTO FLT FCU 1 + 2 FAULT (FCU)	**In flight:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push them after 5 s - Check the displayed targets and the barometer reference, and correct them if necessary. **On ground:** - Pull the C/B B05 on 49VU for FCU 1, and then pull M21 on 121VU for FCU 2 - Push the C/Bs after 5 s - If AUTO FLT FCU 1+2 FAULT disappears, check the displayed targets and barometer reference, and correct them if necessary (RESET successful) - If AUTO FLT FCU 1+2 FAULT remains, pull again both C/B B05 on 49VU and M21 on 121VU - Push them after 7 min , with a delay of less than 5 s between side 1 and 2 - Wait at least 30 seconds for FCU 1 and FCU 2 safety tests completion - Check the displayed targets and barometer reference, and correct them if necessary (RESET successful)

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		FCU targets are synchronized on current aircraft values and displayed as selected targets. - Re–enter the barometer altimeter setting value, if necessary.
	AUTO FLT YAW DAMPER 1(2) (FAC 1(2))	**In flight:** If AP is inoperative: - Set FAC 1(2) pb to OFF - Wait 3 s - Set FAC 1(2) pb to ON.
	One MCDU locked or blank (MCDU)	**On ground, or in flight:** - Pull the C/B for the locked or blank MCDU and push it back after 10 s. The circuit breakers for the MCDUs are: • AUTO FLT/MCDU 1 H07 ON 49 VU (Overhead Panel) • AUTO FLT/MCDU 2 N20 ON 121 VU (Right Rear Maintenance Panel) • AUTO FLT/MCDU 3 N21 ON 121 VU (Right Rear Maintenance Panel)
	Both MCDU locked or blank or FMGC malfunction (FMGC)	The circuit breakers for the FMGCs are: • AUTO FLT/FMGC 1 H08 ON 49 VU (Overhead Panel) • AUTO FLT/FMGC 2 M17 ON 121 VU (Right Rear Maintenance Panel) **On ground:** • If no engine running: - Apply external power or APU generator power. - Wait 2 min before resetting the FMGC circuit breakers. - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. CAUTION: Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If engines running: - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		CAUTION Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC. • If FMGC reset is unsuccessful: - Consider FMGC reset with engines not running. *Note:* *The FMGC reset is more effective with engines not running.* **In flight:** - Set FD 1(2) pb to OFF. - Pull the C/B of the affected FMGC. - Wait 10 s. - Push the C/B of the affected FMGC. **CAUTION** Always wait 1 min after the "PLEASE WAIT" message disappears from the MCDU, before engaging or reengaging the FDs and the AP of the reset FMGC.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00021056.0001001 / 20 MAR 17

BRAKES	BRAKES SYS 1(2) FAULT or BRAKES BSCU CH 1(2) FAULT (BSCU)	**On ground:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. • IF UNSUCCESSFUL: - Pull C/Bs M33 and M34 on 121VU for BSCU channel 1 - Pull C/Bs M36 and M35 on 121VU for BSCU channel 2 - Push C/Bs. After a successful reset, resume to normal operation. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record BSCU reset in the logbook.* **In flight:** When landing gear is up only: - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON - If required, rearm the autobrake. When landing gear is down: reset not authorized. *Note: After any BSCU reset:* *- Record BSCU reset in the logbook.*

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Ident.: PRO-ABN-ABN-RESET-B-00021089.0023001 / 04 DEC 18

258 Impacted by TDU: 00021114 System Reset Table - COM

ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**On ground, or in flight:** - Pull the C/Bs in the following order: P13 and P14 on 121VU G01 and G02 on 49 VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 , P14 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Uncommanded EVAC horn activation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU, • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs for DIR 2 in the following order: M06, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.
	FAP freezing (FAP or Tape reproducer/PRAM)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: G03 C/B on 49VU, Q14 on 121VU - Wait 10 s, then

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Push the C/Bs in the following order: Q14, G03 C/B.
	SATCOM malfunction (SATCOM)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021114.0036001 / 04 DEC 18		
259 Impacted DU: 00021089 System Reset Table - COM		
COM	COM CIDS 1+2 FAULT and/or Loss of Passenger Adress and/or Loss of Cabin Interphone (CIDS)	**Confirm if spurious:** - Check PA function - Check cabin Interphone function - Check cabin Lighting function. If spurious, reset the CIDS when aircraft is self powered (APU or engine). **On ground or in flight:** - Pull the C/Bs in the following order: P13 ◁ and P14 ◁ on 121VU G01 and G02 on 49VU M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05, M06, G01, G02, P13 ◁ ,P14 ◁ - After CIDS reset, wait approximately 4 min before recovering normal operation.
	Uncommanded EVAC horn actuation (CIDS)	**On ground, or in flight:** Press the EVAC HORN SHUT OFF pb. Set the EVAC CAPT & PURS/CAPT sw to the CAPT only position. Wait for 3 s. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 2 in the following order: G02 on 49VU, M06 on 121VU. • IF UNSUCCESSFUL: - Pull the C/Bs for DIR 1 in the following order: G01 on 49VU, M05 on 121VU - Wait for 1 min, then - Push the C/Bs for DIR 2 in the following order: M06, G02 - After CIDS reset, wait approximately 4 min, before recovering normal operation.
	Frozen RMP (RMP)	**On ground, or in flight:** The flight crew must reset all the RMPs one after the other via the RMP control panel: - Set RMP ON/OFF sw to OFF position - Wait 5 s - Set RMP ON/OFF sw to ON position.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
	FAP freezing (FAP or Tape reproducer/PRAM)	**On ground, or in flight:** - Pull FAP C/Bs in the following order: G03 C/B on 49VU, Q14 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: Q14, G03 C/B.
	SATCOM ◁ malfunction (SATCOM ◁)	**On ground, or in flight:** - Pull the SATCOM C/B K01 C/B on 121VU - Wait 5 s - Push the SATCOM C/B K01 C/B on 121VU. *Note:* - *The Satellite Data Unit (SDU) should reset in less than 2 min* - *The flight crew cannot perform a software reset for SATCOM via the MCDU.*

Ident.: PRO-ABN-ABN-RESET-B-00022080.0002001 / 16 JAN 18

260	DATALINK	ATSU ◁	The ATSU reset should be attempted, only if: - "INVALID DATA" is displayed on the DCDU, or - Key selection has no effect on the DCDU or any of the MCDU ATSU DATALINK submenus, or - ADS-C, CPDLC or AOC are inoperative When the ATSU is reset, the following connections are no longer active: - CPDLC: • The flight crew should send a notification to the ATC center to re-establish the CPDLC connection - ADS-C: • As no ADS-C disconnect message is sent, the ATC center(s) assumes that the ADS-C connection is still alive • The flight crew must check that ADS-C is ARMED or ON. **On ground or in flight:** - Pull the C/Bs in the following order: K43, K42 on 121VU - Wait 5 s, then - Push the C/Bs in the following order: K42, K43.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012650.0001001 / 20 MAR 17		
261 ELEC	GPU cannot be connected to the aircraft (GAPCU)	**On ground only:** The GPU cannot be connected to the electrical network of the aircraft (AVAIL light is OFF): • If at least one power source (IDG 1 or 2, APU GEN or batteries) is connected to the electrical network of the aircraft - Reset the EXT PWR pb switch on 35VU (Press and release). • If no power source is connected to the electrical network of the aircraft - Set the BAT 1 pb-sw and BAT 2 pb-sw to AUTO.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure

Ident.: PRO-ABN-ABN-RESET-B-00012652.0001001 / 05 JUN 18

F/CTL	F/CTL ELAC 1 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 2 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 1 pb-sw to OFF - Wait 3 s - Set ELAC 1 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note:* *Record the ELAC 1 reset in the logbook (successful or unsuccessful).*
	F/CTL ELAC 2 PITCH FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION: - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1 or SEC 2. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set pitch trim to 5 UP position - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - After 15 s, check pitch trim at 0 position - Perform a flight control check - Set ELAC 1 pb-sw to On - Set pitch trim to takeoff CG

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		Note: *Record the ELAC 2 reset in the logbook (successful or unsuccessful).*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
F/CTL	F/CTL AIL SERVO FAULT (ELAC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset ELAC if more than one aileron actuator indication box is displayed in amber on the F/CTL SD page. - Do not reset ELAC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set ELAC 1 pb-sw to OFF - Set ELAC 2 pb-sw to OFF - Wait 3 s - Set ELAC 2 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to OFF - Set ELAC 1 pb-sw to On - Perform a flight control check - Set ELAC 2 pb-sw to On - Set pitch trim to takeoff CG *Note: Record the ELAC 1 and ELAC 2 resets in the logbook (successful or unsuccessful).*
F/CTL	F/CTL SPLR FAULT (SEC)	**In flight:** - Not authorized. **On ground:** CAUTION - Do not reset SEC in case of dispatch with MMEL item ELAC 1, SEC 1, SEC 2 or SEC 3. - Do not attempt more than one reset. - Set SEC 1 pb-sw to OFF - Wait 3 s - Set SEC 1 pb-sw to On - Set SEC 2 pb-sw to OFF - Wait 3 s - Set SEC 2 pb-sw to On - Set SEC 3 pb-sw to OFF - Wait 3 s - Set SEC 3 pb-sw to On

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
		- Perform a flight control check Note: *Record the SEC 1, SEC 2 and SEC 3 resets in the logbook (successful or unsuccessful).*

Ident.: PRO-ABN-ABN-RESET-B-00012653.0009001 / 20 MAR 17

262

FUEL	Loss of fuel quantity indication (FQIC)	**On ground, or in flight:** - Pull the C/B of the affected channel: • Channel 1 (A13 on 49VU) • Channel 2 (M27 on 121VU). - Wait 5 s, before pushing both C/Bs. Note: 1. *The fuel quantity indication will be re-established within 1 min* 2. *The fuel leak detection function will be lost for the remainder of the flight. The flight crew must monitor the fuel quantity according to this FCOM (Refer to PRO-NOR-SOP-15).*

Ident.: PRO-ABN-ABN-RESET-B-00012655.0002001 / 20 MAR 17

FWC	FWS FWC 1(2) FAULT (FWC)	**On ground:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU). Wait 50 s after pushing the C/Bs. **In flight:** Pull, then push, the C/B of the affected FWC: - FWC 1 (F01 on 49VU) - FWC 2 (Q7 on 121VU).

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021057.0001001 / 21 MAR 17		
L/G	L/G LGCIU 1(2) FAULT (LGCIU 1(2))	**On ground only:** The flight crew must depressurize the green hydraulic system before resetting the LGCIU: - ENG 1 PUMP OFF - PTU OFF. When there is no green hydraulic pressure: - To reset LGCIU 1: • Pull C/B Q34 on 121VU, then C09 on 49VU • Wait for 15 s , then push the C/Bs. - To reset LGCIU 2: • Pull C/B Q35 on 121VU • Wait for 15 s , then push the C/B. After the LGCIU reset, restore green hydraulic pressure (ENG 1 PUMP ON, PTU AUTO).
Ident.: PRO-ABN-ABN-RESET-B-00012657.0008001 / 20 MAR 17		
263 NAV	NAV TCAS FAULT (TCAS)	**On ground only:** - Pull C/B K10 on 121VU - Wait 5 s, then push the C/B.
	ISIS malfunction (ISIS)	**On ground only:** With aircraft not moving: - Pull C/B F12 on 49VU - Wait 5 s, then push the C/B - Normal operation is expected after approximately 2 min. *Note:* *In the case of small aircraft motion during the C/B reset (refueling, cargo loading conditions, etc.), the ATT red flag may appear on the ISIS. In this case, press the RST P/B for 2 s wait 2 min additional to recover normal operation.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00012651.0018001 / 16 JAN 18		
264 SMOKE	SMOKE DET FAULT (CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs C05 and C06 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C05 and C06 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE LAVATORY DET FAULT with all lavatories declared inoperative on the FAP (CIDS or CIDS-SDF)	**On ground, or in flight:** Apply the following actions in the presented order: - Pull the C/Bs P13 and P14 ◁ on 121VU, G01 and G02 on 49VU, M05 and M06 on 121VU - Wait 10 s, then - Push the C/Bs in the following order: M05 and M06 on 121VU, G01 and G02 on 49VU, P13 and P14 ◁ on 121VU. - After CIDS reset, wait approximately 4 min before recovering normal operation. **If unsuccessful, on ground only:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU. - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.
	SMOKE FWD (AFT) CARGO DET FAULT SMOKE FWD (AFT) CRG 1/2 BTL FAULT (CIDS-SDF)	**On ground:** Apply the following actions in the presented order: - Pull the C/Bs C06 and C05 on 49VU, T17 and T18 on 122VU - Wait 10 s, then - Push simultaneously the C/Bs C06 and C05 on 49VU - Within 2 s push simultaneously the C/Bs T17 and T18 on 122VU - After CIDS reset, wait approximately 4 min before recovering normal operation.

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: PRO-ABN-ABN-RESET-B-00021071.0001001 / 20 MAR 17		
VENT	VENT AVNCS SYS FAULT (AEVC)	**On ground only:** - Pull C/B Y17 on 122VU - Wait 5 s before pushing the C/B.
Ident.: PRO-ABN-ABN-RESET-B-00021058.0001001 / 20 MAR 17 Impacted by TDU: 00021059 System Reset Table - WHEEL		
WHEEL	WHEEL N/W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. In the case of a WHEEL N/W STRG FAULT, the flight crew may attempt a BSCU reset. However, even if the BSCU reset is successful, the flight crew must return to the gate for troubleshooting. The taxi speed must not exceed 10 kt. *Note: After any BSCU reset:* *1. Check brake efficiency* *2. Record the BSCU reset in the logbook.*

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ECAM System	System malfunction or ECAM Alert (Affected System)	Reset Procedure
Ident.: TDU / PRO-ABN-ABN-RESET-B-00021059.0001001 / 20 MAR 17 Impacted DU: 00021058 System Reset Table - WHEEL		
WHEEL	WHEEL N.W STEER FAULT or WHEEL N/W STRG FAULT (BSCU)	**On ground only:** **Case A** If the three conditions below are fulfilled: - the WHEEL N/W STRG FAULT alert was triggered just after engine start - the N/W STRG DISC memo was displayed before the start of the pushback (before the aircraft starts moving) - the N/W STRG DISC memo remained displayed even after the pushback is finished (nosewheel steering selector bypass pin is in the steering position). Apply the below reset procedure. If the ECAM alert disappears after the reset, the flight crew may continue the flight without troubleshooting. **Case B** In all other cases, including in case of doubt on the above conditions, troubleshooting must be performed before continuing the flight, even if the ECAM alert disappears after the reset. For a return to the gate : - Apply the below reset procedure - The taxi speed must not exceed 10 kt. **Reset Procedure:** - STOP aircraft - Set PARK BRK handle to ON - Confirm that towing bar is disconnected - Set A/SKID & N/W STRG sw to OFF - Set A/SKID & N/W STRG sw to ON. *Note:* *After any BSCU reset:* *1. Check brake efficiency* *2. Check absence of aircraft veering* *3. Record the BSCU reset in the logbook.*

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[QRH] DOUBLE AOA HEAT FAILURE

Ident.: PRO-ABN-A-ICE-00010253.0002001 / 17 MAR 17

1 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

In the case of double failure of alpha probe heaters, the choice made by the computers among the 3 ADR values may be erroneous.

One of affected ADRs.....OFF

Keep preferably ADR1 available as ADR1 is supplied in EMER ELEC config.

NAV ADR 1(2)(3) FAULT

In the case of disagreement between the two remaining ADRs, the NAV ADR DISAGREE ECAM alert will trigger.

ANTI ICE ALL PITOT

Applicable to: ALL

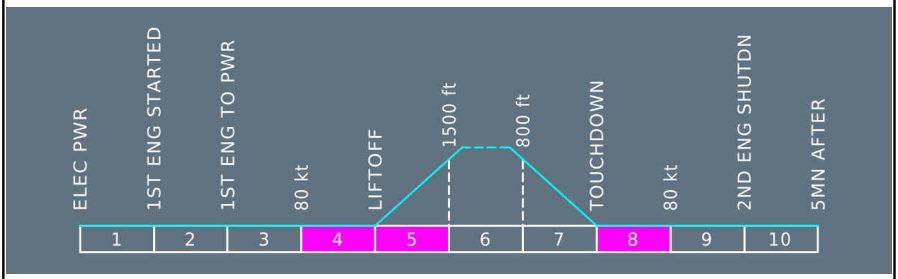
Ident.: PRO-ABN-A-ICE-U-00017184.0003001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heating systems of the CAPT, F/O and STBY pitot probes are failed.

Flight Phase Inhibition:



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ANTI ICE ALL PITOT (Cont'd)

Ident.: PRO-ABN-A-ICE-U-00018180.0004001 / 21 MAR 17

L2 In the case of simultaneous pitot icing and in the same amount, ADR 1, ADR 2, and ADR 3 speeds will be in agreement, but incorrect. The following ECAM procedure avoids that the flight controls use erroneous, but coherent, sources.

L1 ADR 1(2)(3) P/B.....OFF

L2 *Depending on the status of the static, AOA, and TAT heating, the ECAM requires that either ADR 1, 2 or 3 be switched OFF.*

Note: In the case of subsequent, significant, speed discrepancy between the two remaining ADRs, the "ADR DISAGREE" ECAM caution will trigger.

L1 ● **IF ICING EXPECTED:**

ADR 2(3) P/B.....OFF

L2 *Depending on the status of the static, AOA, and TAT heating, the ECAM requires that either ADR 2 or 3 be switched OFF.*

L1 UNREL SPD PROC.....APPLY

L2 *Only one ADR is available, and the corresponding pitot probe may be affected by ice accretion. Be prepared to use the UNRELIABLE SPEED INDICATION procedure (Refer to procedure).*

L12

ASSOCIATED PROCEDURES

NAV ADR FAULT

Single ADR FAULT or double ADR FAULT ECAM cautions may trigger, depending on the number of ADRs switched OFF.

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

Alternate law becomes active, if:
- *One ADR was already switched OFF, and the two remaining ADRs are not in agreement, or*
- *Two ADRs were switched OFF.*

Continued on the following page

ANTI ICE ALL PITOT (Cont'd)

Ident.: PRO-ABN-A-ICE-U-00018298.0002001 / 21 MAR 16

STATUS

	INOP SYS
● **IF ICING EXPECTED:** ADR 2(3) P/B..... OFF UNREL SPD PROC.....APPLY	CAPT PITOT F/O PITOT STBY PITOT CAPT PROBES (1) F/O PROBES (2) STBY PROBES (3) STEEP APPR (If in ALTN LAW)

(1) *(If all CAPT PROBES heating is lost)*
(2) *(If all F/O PROBES heating is lost)*
(3) *(If all STBY PROBES heating is lost)*

ANTI ICE CAPT(F/O) TAT

Applicable to: ALL

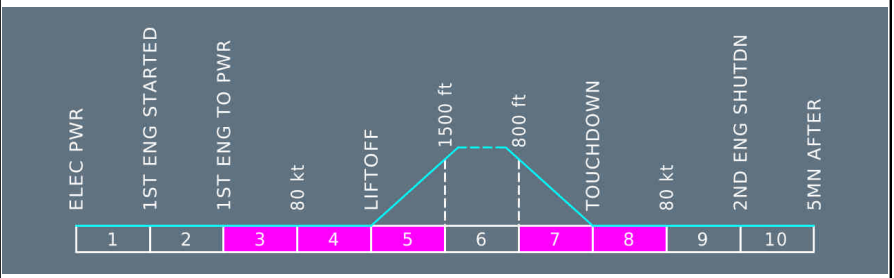
Ident.: PRO-ABN-A-ICE-E-00017171.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heating system of the corresponding probe is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-E-00018299.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-A-ICE-E-00018889.0001001 / 21 MAR 16

STATUS

INOP SYS

CAPT(F/O) TAT

ANTI ICE CAPT + F/O AOA

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-A-ICE-AA-00022251.0001001 / 30 MAR 18

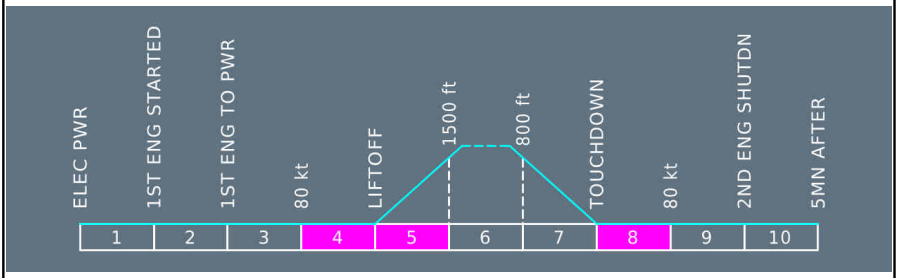
2

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heating systems of the CAPT and F/O AOA probes are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-AA-00022252.0001001 / 30 MAR 18

3

L2 In the case of simultaneous AOA probes icing and if the AOA probes are blocked in the same angular position, AOA values from ADR 1 and ADR 2 will be in agreement but incorrect. Therefore, flight controls will consider the remaining correct ADR 3 source as being faulty, and will reject the only correct source. The following ECAM procedure avoids that the flight controls use two erroneous but coherent AOA sources.

L1 ADR 1(2) P/B..... OFF

L2 *Depending on the status of the static, pitot and TAT heating, the ECAM requires that either ADR 1 or 2 be switched OFF.*

Note: In the case of subsequent and significant AOA discrepancy between the two remaining ADRs, the "NAV ADR DISAGREE" ECAM caution will trigger.

L1

ASSOCIATED PROCEDURES

NAV ADR FAULT

Continued on the following page

ANTI ICE CAPT + F/O AOA (Cont'd)

Ident.: PRO-ABN-A-ICE-AA-00022253.0001001 / 30 MAR 18

4

STATUS

INOP SYS
CAPT AOA
F/O AOA
CAPT PROBES (1)
F/O PROBES (2)

(1) *(If all CAPT PROBES heating is lost)*
(2) *(If all F/O PROBES heating is lost)*

ANTI ICE CAPT + F/O PITOT

Applicable to: ALL

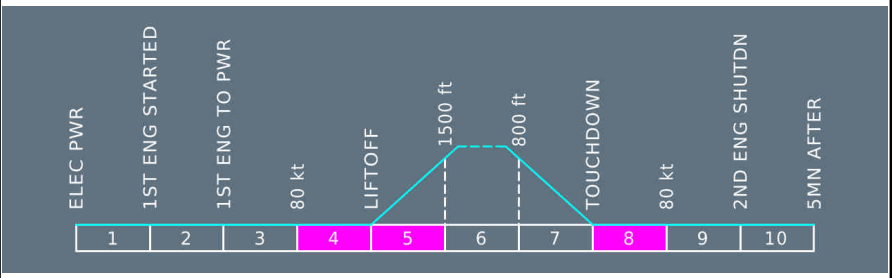
Ident.: PRO-ABN-A-ICE-R-00017177.0003001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heating systems of the CAPT and F/O pitot probes are failed.

Flight Phase Inhibition:



Continued on the following page

ANTI ICE CAPT + F/O PITOT (Cont'd)

Ident.: PRO-ABN-A-ICE-R-00018300.0002001 / 21 MAR 17

L2 In the case of simultaneous pitot icing and in the same amount, ADR 1 and ADR 2 speeds will be in agreement, but incorrect. Therefore, flight controls will consider the remaining correct source as being faulty, and will reject the only correct source. The following ECAM procedure avoids that the flight controls use two erroneous, but coherent, sources.

L1 ■ **If ADR 3 operative and ON:**

ADR 1(2) P/B.....OFF

L2 *Depending on the status of the static, AOA, and TAT heating, the ECAM requires that either ADR 1 or 2 be switched OFF*

Note: In the case of subsequent, significant, speed discrepancy between the two remaining ADRs, the "ADR DISAGREE" ECAM caution will trigger.

L1 ■ **If ADR 3 failed or OFF:**

L2 No action is required, as long as there are no icing conditions, in order to keep two independent speed sources.

L1 ● **IF ICING EXPECTED:**

ADR 1(2) P/B.....OFF

L2 *Depending on the status of the static, AOA, and TAT heating, the ECAM requires that either ADR 1 or 2 be switched OFF.*

L1 UNREL SPD PROC.....APPLY

L2 *Only one ADR is available, and the corresponding pitot probe may be affected by ice accretion. Be prepared to use the UNRELIABLE SPEED INDICATION procedure (Refer to procedure).*

L1

ASSOCIATED PROCEDURES

NAV ADR FAULT

Continued on the following page

ANTI ICE CAPT + F/O PITOT (Cont'd)

Ident.: PRO-ABN-A-ICE-R-00018301.0002001 / 21 MAR 16

STATUS

- **If ADR 3 failed or OFF:**
  - **IF ICING EXPECTED:**
    ADR 1(2) P/B.....OFF
    UNREL SPD PROC..... APPLY

INOP SYS

CAPT PITOT
F/O PITOT
CAPT PROBES (1)
F/O PROBES (2)

(1) *(If all CAPT PROBES heating is lost)*
(2) *(If all F/O PROBES heating is lost)*

ANTI ICE CAPT + STBY AOA

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-A-ICE-AB-00022254.0001001 / 30 MAR 18

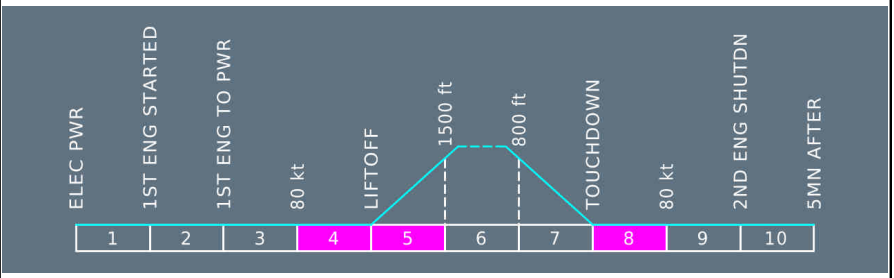
5

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heating systems of the CAPT and STBY AOA probes are failed.

Flight Phase Inhibition:



Continued on the following page

ANTI ICE CAPT + STBY AOA (Cont'd)

Ident.: PRO-ABN-A-ICE-AB-00022256.0001001 / 30 MAR 18

6

L2 In the case of simultaneous AOA probes icing and if the AOA probes are blocked in the same angular position, AOA values from ADR 1 and ADR 3 will be in agreement but incorrect. Therefore, flight controls will consider the remaining correct ADR 2 source as being faulty, and will reject the only correct source. The following ECAM procedure avoids that the flight controls use two erroneous but coherent AOA sources.

L1 ADR 1(3) P/B..... OFF

L2 *Depending on the status of the static, pitot and TAT heating, the ECAM requires that either ADR 1 or 3 be switched OFF.*

Note: In the case of subsequent and significant AOA discrepancy between the two remaining ADRs, the "NAV ADR DISAGREE" ECAM caution will trigger.

L1

ASSOCIATED PROCEDURES

NAV ADR FAULT

Ident.: PRO-ABN-A-ICE-AB-00022257.0001001 / 30 MAR 18

7

STATUS

INOP SYS
CAPT AOA
stby AOA
CAPT PROBES (1)
STBY PROBES (2)

(1) *(If all CAPT PROBES heating is lost)*
(2) *(If all STBY PROBES heating is lost)*

ANTI ICE CAPT + STBY PITOT

Applicable to: ALL

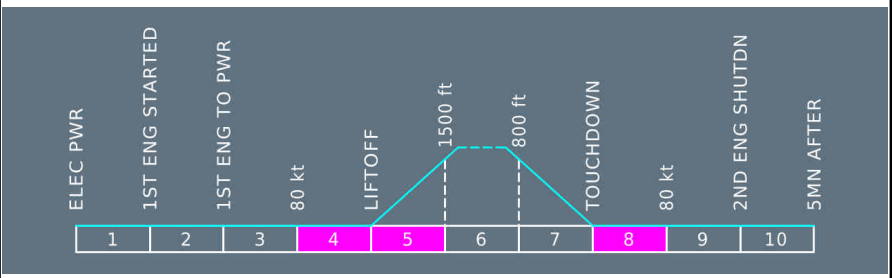
Ident.: PRO-ABN-A-ICE-S-00017178.0003001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heating systems of the CAPT and STBY pitot probes are failed.

Flight Phase Inhibition:



Continued on the following page

ANTI ICE CAPT + STBY PITOT (Cont'd)

Ident.: PRO-ABN-A-ICE-S-00018302.0002001 / 21 MAR 17

L2 In the case of simultaneous pitot icing and in the same amount, ADR 1 and ADR 3 speeds will be in agreement, but incorrect. Flight controls will consider the remaining correct source as being faulty, and will reject the only correct source. The following ECAM procedure avoids that the flight controls use two erroneous, but coherent, sources.

L1 ■ **If ADR 2 operative and ON:**

ADR 1(3) P/B.....OFF

L2 *Depending on the status of the static, AOA, and TAT heating, the ECAM requires that either ADR 1 or 3 be switched OFF*

Note: In the case of subsequent, significant, speed discrepancy between the two remaining ADRs, the "ADR DISAGREE" ECAM caution will trigger.

L1 ■ **If ADR 2 failed or OFF:**

L2 No action is required, as long as there are no icing conditions, in order to keep two independent speed sources.

L1 ● **IF ICING EXPECTED:**

ADR 1(3) P/B.....OFF

L2 *Depending on the status of the static, AOA, and TAT heating, the ECAM requires that either ADR 1 or 3 be switched OFF.*

L1 UNREL SPD PROC.....APPLY

L2 *Only one ADR is available, and the corresponding pitot probe may be affected by ice accretion. Be prepared to use the UNRELIABLE SPEED INDICATION procedure (Refer to procedure).*

L1

ASSOCIATED PROCEDURES

NAV ADR FAULT

Continued on the following page

ANTI ICE CAPT + STBY PITOT (Cont'd)

Ident.: PRO-ABN-A-ICE-S-00018303.0002001 / 21 MAR 16

STATUS

- **If ADR 2 failed or OFF:**
  - **IF ICING EXPECTED:**
    ADR 1(3) P/B.....OFF
    UNREL SPD PROC..... APPLY

INOP SYS

CAPT PITOT
STBY PITOT
CAPT PROBES (1)
STBY PROBES (2)

(1) *(If all CAPT PROBES heating is lost)*
(2) *(If all STBY PROBES heating is lost)*

ANTI ICE CAPT PITOT OR L(R) STAT OR AOA

Applicable to: ALL

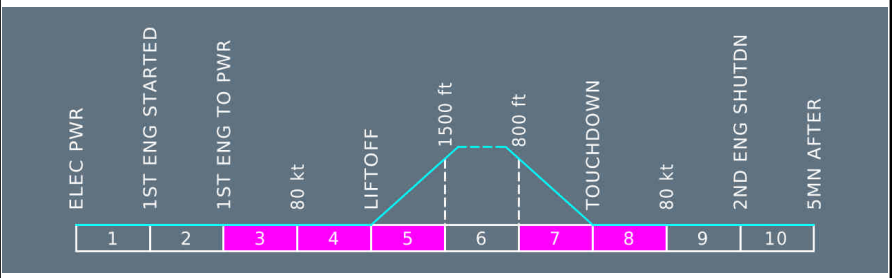
Ident.: PRO-ABN-A-ICE-C-00017169.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heating system of the corresponding probe is failed.

Flight Phase Inhibition:



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ANTI ICE CAPT PITOT OR L(R) STAT OR AOA (Cont'd)

Ident.: PRO-ABN-A-ICE-C-00018310.0002001 / 21 MAR 16

AIR DATA SWTG .....CAPT 3

L2 *ADR 3 supplies data to PFD 1 and ND 1.*

Note: AIR DATA SWTG should not be selected to CAPT 3 if ADR 3 is not available.

Ident.: PRO-ABN-A-ICE-C-00018900.0001001 / 21 MAR 16

STATUS

INOP SYS

CAPT PITOT
CAPT L(R) STAT
CAPT AOA

ANTI ICE CAPT PROBES

Applicable to: ALL

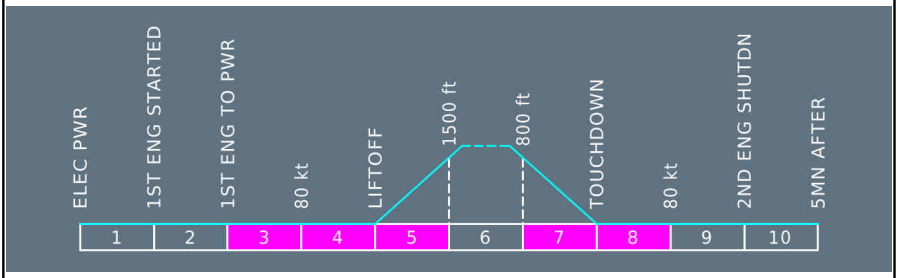
Ident.: PRO-ABN-A-ICE-G-00017173.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the captain probe heat computer is failed.

Flight Phase Inhibition:



Continued on the following page

ANTI ICE CAPT PROBES (Cont'd)

Ident.: PRO-ABN-A-ICE-G-00010255.0002001 / 05 AUG 10

AIR DATA SWTG.....CAPT 3

L2 *Note: AIR DATA SWTG should not be selected to CAPT 3 if ADR 3 is not available.*

Ident.: PRO-ABN-A-ICE-G-00010256.0001001 / 05 AUG 10

STATUS	
	INOP SYS
	CAPT PROBES

ANTI ICE DETECT FAULT

Applicable to: MSN 01767, 02584-02649, 04314, 04393-04397

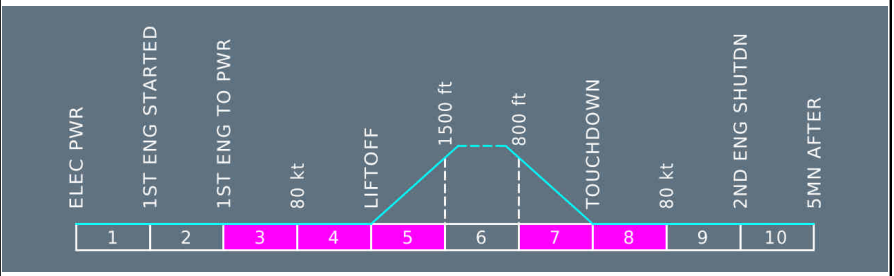
Ident.: PRO-ABN-A-ICE-L-00017189.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both ice detectors are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-L-00018890.0001001 / 21 MAR 16

ANTI ICE.....AS RQRD

Continued on the following page

ANTI ICE DETECT FAULT (Cont'd)

Ident.: PRO-ABN-A-ICE-L-00010276.0001001 / 05 AUG 10

STATUS

	INOP SYS
	ICE DETECT

ANTI ICE ENG 1(2) CTL FAULT
(ENG 1(2) A.ICE VALVE OPEN)

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-A-ICE-X-00017164.0001001 / 21 MAR 16

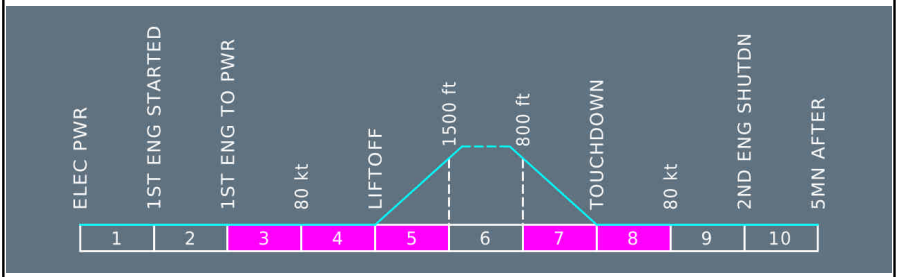
8

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the NAI control system is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-X-00015626.0001001 / 09 FEB 15

9

ENG 1(2) A.ICE VALVE OPEN
ENG 1(2) ANTI ICE..... ON

L2 *Note:* *This is to have the NAI command consistent with system status and allow thrust adaptation.*

ANTI ICE ENG 1(2) CTL FAULT
(ENG 1(2) A.ICE MON FAULT)

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-A-ICE-W-00017494.0001001 / 21 MAR 16

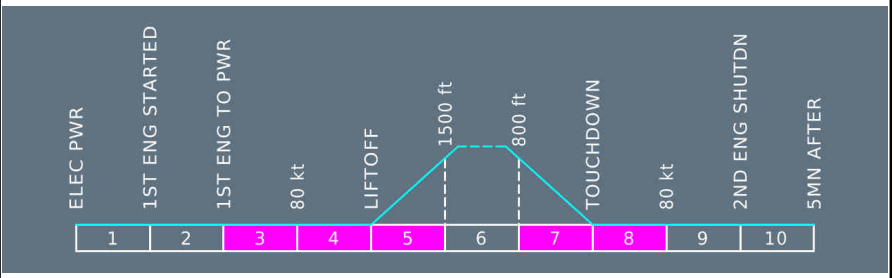
10

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the NAI control system is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-W-00016138.0001001 / 09 FEB 15

11

ENG 1(2) A.ICE MON FAULT
AVOID ICING CONDITIONS

Ident.: PRO-ABN-A-ICE-W-00016134.0001001 / 09 FEB 15

12

STATUS

AVOID ICING CONDITIONS

ANTI ICE ENG 1(2) OVER PRESS

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-A-ICE-Y-00017165.0001001 / 21 MAR 16

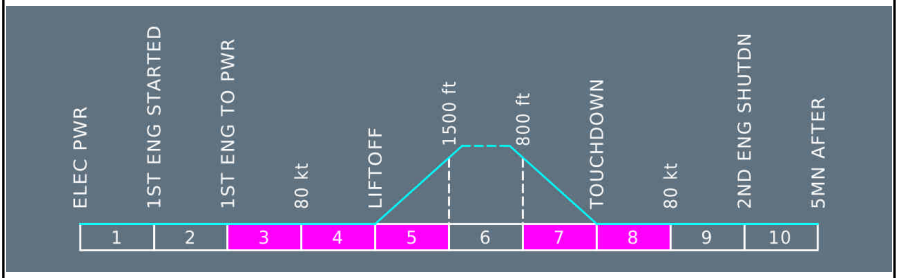
13

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pressure regulation is lost on both NAI valves.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-Y-00018306.0001001 / 21 MAR 16

14

Crew awareness.

ANTI ICE ENG 1(2) VALVE CLSD

Applicable to: MSN 01767-06336

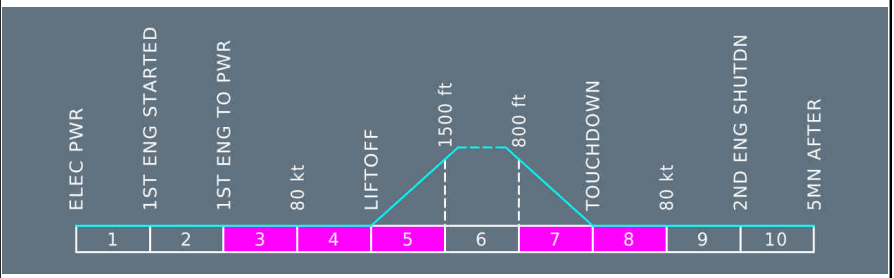
Ident.: PRO-ABN-A-ICE-J-00017163.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the valve is abnormally closed.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-J-00010269.0001001 / 05 AUG 10

15

AVOID ICING CONDITIONS

Ident.: PRO-ABN-A-ICE-J-00010270.0001001 / 05 AUG 10

STATUS

AVOID ICING CONDITIONS

INOP SYS

ENG 1 (2) A. ICE

ANTI ICE ENG 1(2) VALVE CLSD

Applicable to: MSN 06720-09063

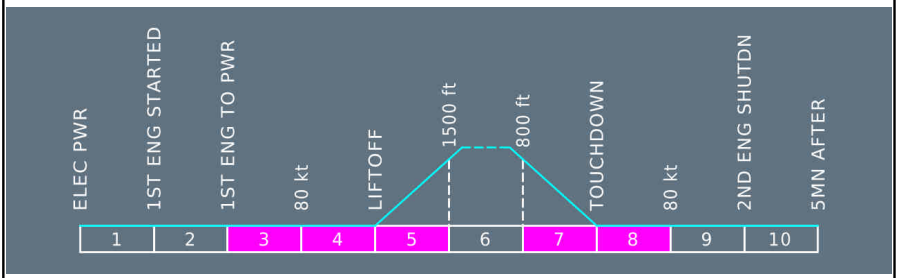
Ident.: PRO-ABN-A-ICE-J-00017163.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the valve is abnormally closed.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-J-00010269.0005001 / 03 JAN 17

16

THRUST..... INCREASE

- **IF UNSUCCESSFUL:**
  AVOID ICING CONDITIONS

Ident.: PRO-ABN-A-ICE-J-00010270.0001001 / 05 AUG 10

STATUS

AVOID ICING CONDITIONS

INOP SYS

ENG 1 (2) A. ICE

ANTI ICE ENG 1(2) VALVE OPEN

Applicable to: MSN 01767-06336

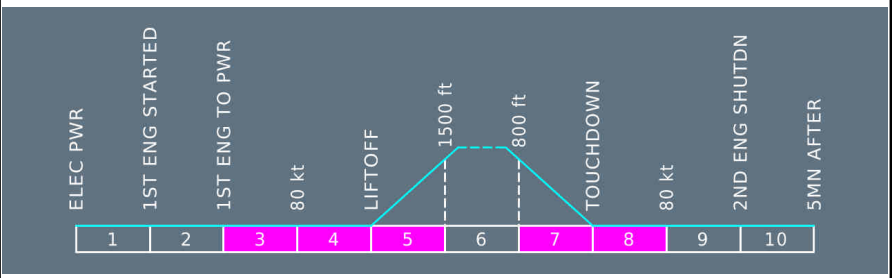
Ident.: PRO-ABN-A-ICE-K-00017162.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the valve is abnormally open.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-K-00010272.0001001 / 05 AUG 10

17

THRUST LIM PENALTY

Ident.: PRO-ABN-A-ICE-K-00010273.0001001 / 05 AUG 10

18

STATUS

THRUST LIM PENALTY

ANTI ICE ENG 1(2) VALVE OPEN

Applicable to: MSN 06720-09063

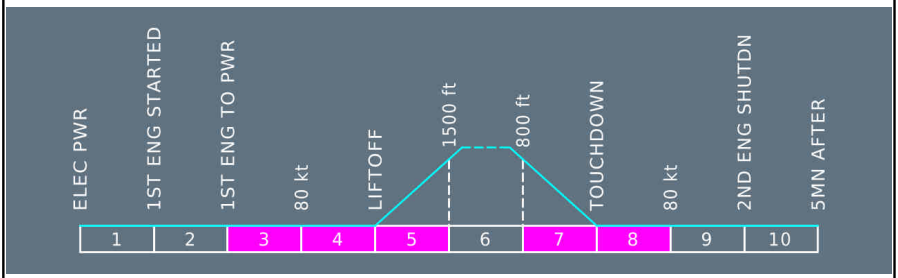
Ident.: PRO-ABN-A-ICE-K-00017162.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the valve is abnormally open.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-K-00010272.0002001 / 17 JUN 14

19 ENG 1(2) ANTI ICE..... ON

ANTI ICE F/O + STBY AOA

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-A-ICE-AC-00022258.0001001 / 30 MAR 18

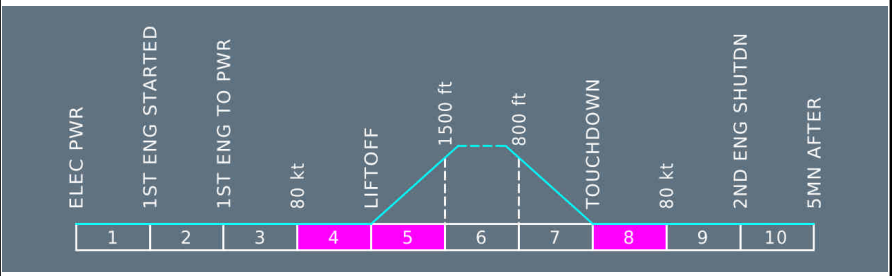
20

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heating systems of the F/O and STBY AOA probes are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-AC-00022259.0001001 / 30 MAR 18

21

L2 In the case of simultaneous AOA probes icing and if the AOA probes are blocked in the same angular position, AOA values from ADR 2 and ADR 3 will be in agreement but incorrect. Therefore, flight controls will consider the remaining correct ADR 1 source as being faulty, and will reject the only correct source. The following ECAM procedure avoids that the flight controls use two erroneous but coherent AOA sources.

L1 ADR 2(3) P/B..... OFF

L2 *Depending on the status of the static, pitot and TAT heating, the ECAM requires that either ADR 2 or 3 be switched OFF.*

Note: In the case of subsequent and significant AOA discrepancy between the two remaining ADRs, the "NAV ADR DISAGREE" ECAM caution will trigger.

L1

ASSOCIATED PROCEDURES

NAV ADR FAULT

Continued on the following page

ANTI ICE F/O + STBY AOA (Cont'd)

Ident.: PRO-ABN-A-ICE-AC-00022260.0001001 / 30 MAR 18

22

STATUS

INOP SYS
F/O AOA
STBY AOA
F/O PROBES (1)
STBY PROBES (2)

(1) *(If all F/O PROBES heating is lost)*
(2) *(If all STBY PROBES heating is lost)*

ANTI ICE F/O + STBY PITOT

Applicable to: ALL

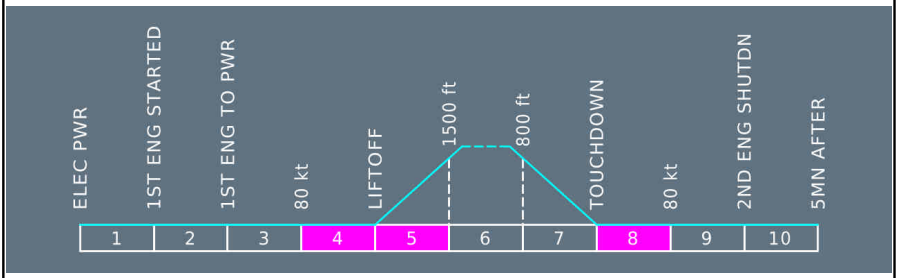
Ident.: PRO-ABN-A-ICE-T-00017179.0003001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heating systems of the F/O and STBY pitot probes are failed.

Flight Phase Inhibition:



Continued on the following page

ANTI ICE F/O + STBY PITOT (Cont'd)

Ident.: PRO-ABN-A-ICE-T-00018307.0002001 / 21 MAR 17

L2 In the case of simultaneous pitot icing and in the same amount, ADR 2 and ADR 3 speeds will be in agreement, but incorrect. Therefore, flight controls will consider the remaining correct source as being faulty, and will reject the only correct source. The following ECAM procedure avoids that the flight controls use two erroneous, but coherent, sources.

L1 ■ **If ADR 1 operative and ON:**

ADR 2(3) P/B.....OFF

L2 *Depending on the status of the static, AOA, and TAT heating, the ECAM requires that either ADR 2 or 3 be switched OFF.*

Note: In the case of subsequent, significant, speed discrepancy between the two remaining ADRs, the "ADR DISAGREE" ECAM caution will trigger.

L1 ■ **If ADR 1 failed or OFF:**

L2 No action is required, as long as there are no icing conditions, in order to keep two independent speed sources.

L1 ● **IF ICING EXPECTED:**

ADR 2(3) P/B.....OFF

L2 *Depending on the status of the static, AOA, and TAT heating, the ECAM requires that either ADR 2 or 3 be switched OFF.*

L1 UNREL SPD PROC.....APPLY

L2 *Only one ADR is available, and the corresponding pitot probe may be affected by ice accretion. Be prepared to use the UNRELIABLE SPEED INDICATION procedure (Refer to procedure).*

L1

ASSOCIATED PROCEDURES

NAV ADR FAULT

Continued on the following page

ANTI ICE F/O + STBY PITOT (Cont'd)

Ident.: PRO-ABN-A-ICE-T-00018308.0002001 / 21 MAR 16

STATUS

- **If ADR 1 failed or OFF:**
  - **IF ICING EXPECTED:**
    ADR 2(3) P/B.....OFF
    UNREL SPD PROC.....APPLY

INOP SYS

F/O PITOT
STBY PITOT
F/O PROBES (1)
STBY PROBES (2)

(1) *(If all F/O PROBES heating is lost)*
(2) *(If all STBY PROBES heating is lost)*

ANTI ICE F/O PITOT OR L(R) STAT OR AOA

Applicable to: ALL

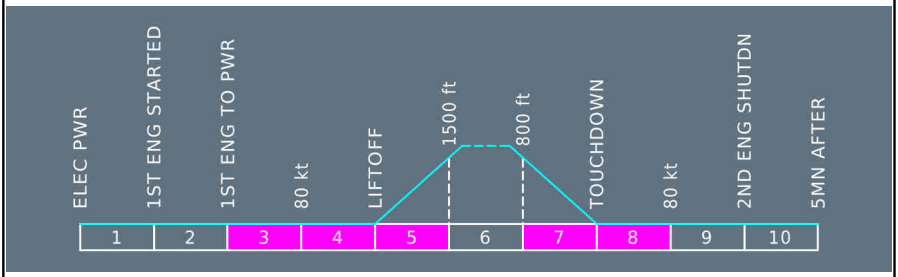
Ident.: PRO-ABN-A-ICE-D-00017170.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heating system of the corresponding probe is failed.

Flight Phase Inhibition:



Continued on the following page

ANTI ICE F/O PITOT OR L(R) STAT OR AOA (Cont'd)

Ident.: PRO-ABN-A-ICE-D-00018309.0002001 / 21 MAR 16

AIR DATA SWTG.....F/O 3

L2 *ADR 3 supplies data to PFD 2 and ND 2.*

Note: *AIR DATA SWTG should not be selected to F/O 3 if ADR 3 is not available.*

Ident.: PRO-ABN-A-ICE-D-00018901.0001001 / 21 MAR 16

STATUS	INOP SYS
	F/O PITOT F/O L(R) STAT F/O AOA

ANTI ICE F/O PROBES

Applicable to: ALL

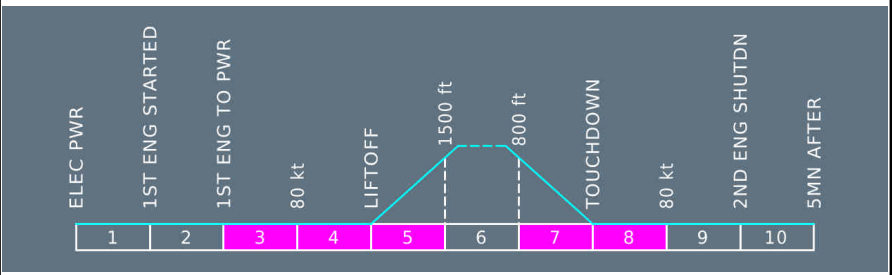
Ident.: PRO-ABN-A-ICE-H-00017174.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the F/O probe heat computer is failed.

Flight Phase Inhibition:



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ANTI ICE F/O PROBES (Cont'd)

Ident.: PRO-ABN-A-ICE-H-00010261.0002001 / 05 AUG 10

AIR DATA SWTG.....F/O 3

L2 *Note: AIR DATA SWTG should not be selected to F/O 3 if ADR 3 is not available.*

Ident.: PRO-ABN-A-ICE-H-00010263.0001001 / 05 AUG 10

STATUS	
	INOP SYS
	F/O PROBES

ANTI ICE ICE DETECTED

Applicable to: MSN 01767, 02584-02649, 04314, 04393-04397

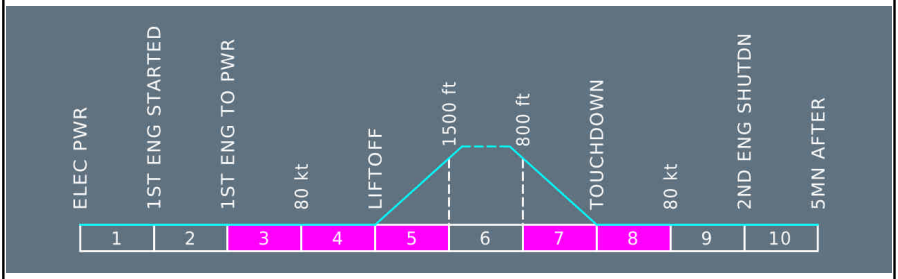
Ident.: PRO-ABN-A-ICE-Z-00017187.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when ice is detected in flight above 1 500 ft (with TAT<10 °C) and the ENG ANTI ICE pb-sw is set to OFF.

Flight Phase Inhibition:



Continued on the following page

ANTI ICE ICE DETECTED (Cont'd)

Ident.: PRO-ABN-A-ICE-Z-00018891.0001001 / 21 MAR 16

ENG 1 ANTI ICE.....ON
ENG 2 ANTI ICE.....ON

ANTI ICE L + R WINDSHIELD

Applicable to: ALL

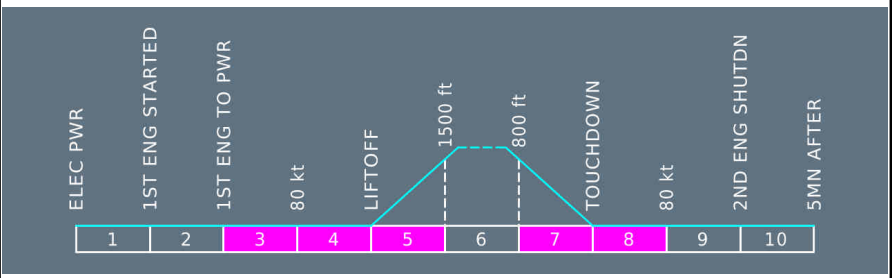
Ident.: PRO-ABN-A-ICE-B-00017167.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heating system of both windshields is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-B-00010236.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-A-ICE-B-00010237.0001001 / 05 AUG 10

STATUS

	INOP SYS
	WSHLD HEAT

ANTI ICE L(R) WINDOW

Applicable to: ALL

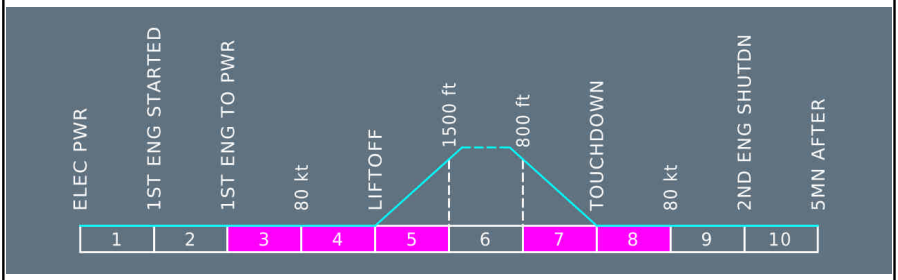
Ident.: PRO-ABN-A-ICE-V-00017168.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heating system of the left(right) cockpit window is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-V-00010234.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-A-ICE-V-00010235.0001001 / 05 AUG 10

STATUS

INOP SYS
L(R) WNDW HEAT

ANTI ICE L(R) WINDSHIELD

Applicable to: ALL

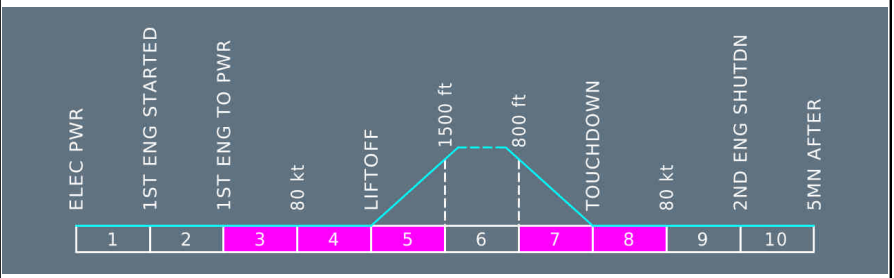
Ident.: PRO-ABN-A-ICE-A-00017166.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heating system of the left(right) windshield is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-A-00010232.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-A-ICE-A-00010233.0001001 / 05 AUG 10

STATUS

INOP SYS
L(R) WSHLD HEAT

ANTI ICE STBY PITOT OR L(R) STAT OR AOA

Applicable to: ALL

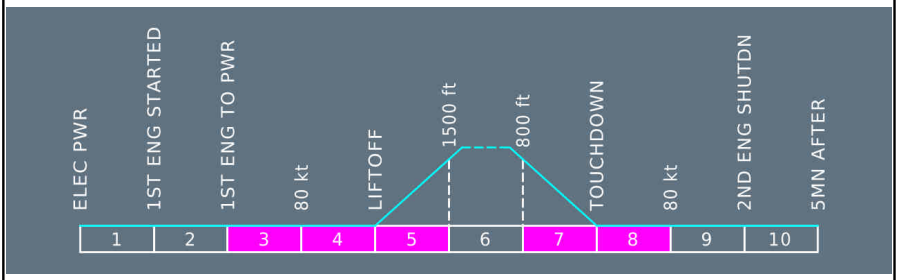
Ident.: PRO-ABN-A-ICE-F-00017172.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heating system of the corresponding probe is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-F-00010250.0001001 / 25 FEB 14

Crew awareness.

L2 If standby instruments are used, monitor air data information.

Ident.: PRO-ABN-A-ICE-F-00010251.0001001 / 05 AUG 10

STATUS

INOP SYS

STBY PITOT
STBY L(R) STAT
STBY AOA

ANTI ICE STBY PROBES

Applicable to: ALL

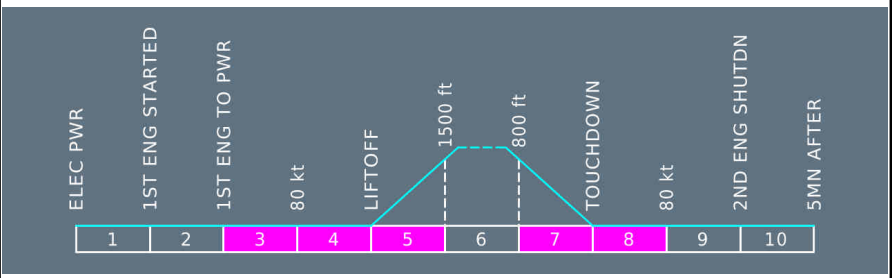
Ident.: PRO-ABN-A-ICE-I-00017176.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the standby probe heat computer is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-A-ICE-I-00010265.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-A-ICE-I-00010266.0001001 / 05 AUG 10

STATUS

INOP SYS
STBY PROBES

[QRH] ENGINE 1+2 BLEED FAULT

Ident.: PRO-ABN-AIR-00017611.0001001 / 21 MAR 17
Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

Apply this procedure when both engine bleed supply systems are failed.

- **At ANY TIME of the procedure, if** CAB PR EXCESS CAB ALT **alert triggers:**
  APPLY ECAM PROC

■ **If** AIR ENG 1 BLEED FAULT **alert or** AIR ENG 1 BLEED ABNORM PR **alert**
and
If AIR ENG 2 BLEED FAULT **alert or** AIR ENG 2 BLEED ABNORM PR **alert:**
X BLEED ..... SHUT
ENG 1 BLEED ..... OFF THEN ON
ENG 2 BLEED ..... OFF THEN ON

- **If reset unsuccessful (NO engine bleed recovered):**
  DESCENT TO FL 100 / MEA-MORA ..... INITIATE

L2 *Descend rapidly to FL 100 / MEA-MORA, to prevent excessive cabin altitude.*

L1 ENG 1 BLEED ..... OFF
ENG 2 BLEED ..... OFF
APU BLEED ..... OFF
APU ..... START
WING A.ICE ..... OFF
AVOID ICING CONDITIONS

■ **If APU available:**

- **When at or below FL 200:**
  KEEP WING A.ICE OFF

L2 *APU BLEED must not be used for wing anti-ice.*

L1 APU BLEED ..... ON

L2 *When APU BLEED is ON and pressurization is recovered, reduce rate of descent and consider MAX FL 200.*

L1 ■ **If APU bleed available:**
MAX FL: 200
ENG 1 BLEED ..... ON
ENG 2 BLEED ..... ON
APU BLEED ..... OFF

Continued on the following page

[QRH] ENGINE 1+2 BLEED FAULT (Cont'd)

- **If no engine bleed recovered:**
  APU BLEED.....ON
  ENG 1 BLEED.....OFF
  ENG 2 BLEED.....OFF

  WING A.ICE NOT AVAILABLE

  - **If PACK 1 inoperative:**
    X BLEED.....OPEN

    L2 *To supply the PACK 2 from the APU bleed.*

L1 ■ **If APU bleed not available:**
CONTINUE DESCENT TO FL 100 / MEA-MORA
APU BLEED.....OFF

- **When at or below FL 100 / MEA-MORA:**
  ENG 1 BLEED.....ON
  ENG 2 BLEED.....ON

  - **If no engine bleed recovered:**
    ENG 1 BLEED.....OFF
    ENG 2 BLEED.....OFF

    WING A.ICE NOT AVAILABLE

    - **When CAB PR ΔP < 1 psi:**
      RAM AIR.....ON

      MAX FL: 100 / MEA-MORA

■ **If APU not available:**
CONTINUE DESCENT TO FL 100 / MEA-MORA
APU BLEED.....OFF

- **When at or below FL 100 / MEA-MORA:**
  ENG 1 BLEED.....ON
  ENG 2 BLEED.....ON

  - **If no engine bleed recovered:**
    ENG 1 BLEED.....OFF
    ENG 2 BLEED.....OFF

    WING A.ICE NOT AVAILABLE

    - **When CAB PR ΔP < 1 psi:**
      RAM AIR.....ON

Continued on the following page

[QRH] ENGINE 1+2 BLEED FAULT (Cont'd)

MAX FL: 100 / MEA-MORA

■ **If at least one engine bleed failed due to bleed leak or engine fire or Start Air Valve failed open:**

DESCENT TO FL 100 / MEA-MORA..... INITIATE

L2 *Descend rapidly to FL 100 / MEA-MORA, to prevent excessive cabin altitude.*

L1 X BLEED..... SHUT
ENG 1 BLEED..... OFF
ENG 2 BLEED..... OFF
APU BLEED..... OFF
APU..... START
WING A.ICE..... OFF
AVOID ICING CONDITIONS

■ **If** AIR ENG 2 BLEED FAULT **alert or** AIR ENG 2 BLEED ABNORM PR **alert:**

● **When at or below FL 100 / MEA-MORA:**

ENG 2 BLEED..... ON

● **If engine 2 bleed not recovered:**

ENG 2 BLEED..... OFF

WING A.ICE NOT AVAILABLE

● **When CAB PR ΔP < 1 psi:**

RAM AIR..... ON

MAX FL: 100 / MEA-MORA

■ **If** AIR ENG 1 BLEED FAULT **alert or** AIR ENG 1 BLEED ABNORM PR **alert:**

■ **If APU available:**

● **When at or below FL 200:**

KEEP WING A.ICE OFF

L2 *APU BLEED must not be used for wing anti-ice.*

L1 APU BLEED..... ON

L2 *When APU BLEED is ON and pressurization is recovered, reduce rate of descent and consider MAX FL 200.*

L1 ■ **If APU bleed available:**

MAX FL: 200
ENG 1 BLEED..... ON
APU BLEED..... OFF

Continued on the following page

[QRH] ENGINE 1+2 BLEED FAULT (Cont'd)

- **If engine 1 bleed not recovered:**
  APU BLEED.....ON
  ENG 1 BLEED.....OFF

  WING A.ICE NOT AVAILABLE

■ **If APU bleed not available:**
CONTINUE DESCENT TO FL 100 / MEA-MORA
APU BLEED.....OFF

- **When at or below FL 100 / MEA-MORA:**
  ENG 1 BLEED.....ON
  - **If engine 1 bleed not recovered:**
    ENG 1 BLEED.....OFF

    WING A.ICE NOT AVAILABLE
    - **When CAB PR ΔP < 1 psi:**
      RAM AIR.....ON
      MAX FL: 100 / MEA-MORA

■ **If APU not available:**
CONTINUE DESCENT TO FL 100 / MEA-MORA
APU BLEED.....OFF

- **When at or below FL 100 / MEA-MORA:**
  ENG 1 BLEED.....ON
  - **If engine 1 bleed not recovered:**
    ENG 1 BLEED.....OFF

    WING A.ICE NOT AVAILABLE
    - **When CAB PR ΔP < 1 psi:**
      RAM AIR.....ON
      MAX FL: 100 / MEA-MORA

■ **If neither** AIR ENG 1(2) BLEED FAULT **alert nor** AIR ENG 1(2) BLEED ABNORM PR **alert on any side:**

NO ENGINE BLEED CAN BE RECOVERED
WING A.ICE NOT AVAILABLE

Continued on the following page

[QRH] ENGINE 1+2 BLEED FAULT (Cont'd)

- **When at or below FL 100 / MEA-MORA**
  and
  CAB PR ΔP < 1 psi:
  RAM AIR.....ON
  MAX FL: 100 / MEA-MORA

[QRH] BLEED 1+2 FAULT

Ident.: PRO-ABN-AIR-00017611.0002001 / 21 MAR 17

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

Apply this procedure when both engine bleed supply systems are failed at the end of the AIR ENG 1+2 BLEED FAULT ECAM procedure.

- **At ANY TIME of the procedure, if CAB PR EXCESS CAB ALT alert triggers:**
  APPLY ECAM PROC

CONTINUE DESCENT TO FL 100 / MEA-MORA
KEEP WING A.ICE OFF

L2 *APU BLEED must not be used for wing anti-ice.*

L1 AVOID ICING CONDITIONS

RCL pb..... PRESS

This action enables to recover the subtitle (if any) associated with the AIR ENG 1+2 BLEED FAULT alert.

- **If no subtitle with AIR ENG 1+2 BLEED FAULT alert**
  and
  If both engine bleeds lost NOT due to engine fire NOR Start Air Valve failed open:
  APU..... START
  - **If APU available:**
    - **When at or below FL 200:**
      KEEP WING A.ICE OFF

      L2 *APU BLEED must not be used for wing anti-ice.*

      L1 APU BLEED.....ON

      When APU bleed is ON and pressurization is recovered, reduce rate of descent and consider MAX FL 200.

      - **If PACK 1 available:**
        PACK 2.....OFF

      - **If APU bleed available:**
        MAX FL: 200
        PACK 1..... ON
        PACK 2..... ON
        ENG 1 BLEED..... ON
        ENG 2 BLEED..... ON

Continued on the following page

[QRH] BLEED 1+2 FAULT (Cont'd)

APU BLEED..... OFF

- **If no engine bleed recovered:**
  APU BLEED..... ON
  - **If PACK 1 available:**
    PACK 2.....OFF

  ENG 1 BLEED.....OFF
  ENG 2 BLEED.....OFF

  WING A.ICE NOT AVAILABLE

■ **If APU bleed not available:**
APU BLEED..... OFF

- **When at or below FL 100 / MEA-MORA:**
  PACK 1.....ON
  PACK 2.....ON
  ENG 1 BLEED.....ON
  ENG 2 BLEED.....ON
  - **If no engine bleed recovered:**
    ENG 1 BLEED..... OFF
    ENG 2 BLEED..... OFF
    MAX FL: 100 / MEA-MORA

    WING A.ICE NOT AVAILABLE
    - **When CAB PR ΔP < 1 psi:**
      RAM AIR.....ON

■ **If APU not available:**
APU BLEED..... OFF

- **When at or below FL 100 /MEA-MORA:**
  PACK 1.....ON
  PACK 2.....ON
  ENG 1 BLEED.....ON
  ENG 2 BLEED.....ON
  - **If no engine bleed recovered:**
    ENG 1 BLEED..... OFF
    ENG 2 BLEED..... OFF
    MAX FL: 100 / MEA-MORA

Continued on the following page

[QRH] BLEED 1+2 FAULT (Cont'd)

WING A.ICE NOT AVAILABLE

- **When CAB PR ΔP < 1 psi:**
  RAM AIR.....ON

■ **If** LEFT LEAK **subtitle with** AIR ENG 1+2 BLEED FAULT **alert**
or
If engine 1 bleed lost due to engine 1 fire or Start Air Valve 1 failed open or APU leak fed by engine:

- **When at or below FL 100 / MEA-MORA:**
  PACK 2.....ON
  ENG 2 BLEED.....ON
  - **If engine 2 bleed not recovered:**
    ENG 2 BLEED.....OFF
    MAX FL: 100 / MEA-MORA
    WING A.ICE NOT AVAILABLE
    - **When CAB PR ΔP < 1 psi:**
      RAM AIR.....ON

■ **If** RIGHT LEAK **subtitle with** AIR ENG 1+2 BLEED FAULT **alert**
or
If engine 2 bleed lost due to engine 2 fire or Start Air Valve 2 failed open:
APU.....START

■ **If APU available:**

- **When at or below FL 200:**
  KEEP WING A.ICE OFF

L2 *APU BLEED must not be used for wing anti-ice.*

L1 APU BLEED.....ON

When APU bleed is ON and pressurization is recovered, reduce rate of descent and consider MAX FL 200.

■ **If APU bleed available:**
MAX FL: 200
PACK 1.....ON
ENG 1 BLEED.....ON
APU BLEED.....OFF

Continued on the following page

[QRH] BLEED 1+2 FAULT (Cont'd)

- **If engine 1 bleed not recovered:**
  APU BLEED..... ON
  ENG 1 BLEED..... OFF

  WING A.ICE NOT AVAILABLE

■ **If APU bleed not available:**
  APU BLEED..... OFF

- **When at or below FL 100 / MEA-MORA:**
  PACK 1..... ON
  ENG 1 BLEED..... ON

- **If engine 1 bleed not recovered:**
  ENG 1 BLEED..... OFF

  MAX FL: 100 / MEA-MORA

  WING A.ICE NOT AVAILABLE

- **When CAB PR ΔP < 1 psi:**
  RAM AIR..... ON

■ **If APU not available:**
  APU BLEED..... OFF

- **When at or below FL 100 / MEA-MORA:**
  PACK 1..... ON
  ENG 1 BLEED..... ON

- **If engine 1 bleed not recovered:**
  ENG 1 BLEED..... OFF

  MAX FL: 100 / MEA-MORA

  WING A.ICE NOT AVAILABLE

- **When CAB PR ΔP < 1 psi:**
  RAM AIR..... ON

■ **If both LEFT LEAK and RIGHT LEAK subtitles with AIR ENG 1+2 BLEED FAULT alert**
or
If both engine bleeds lost due to engine fire or Start Air Valve failed open or APU leak fed by engine:

NO ENGINE BLEED CAN BE RECOVERED

MAX FL: 100 / MEA-MORA

Continued on the following page

[QRH] BLEED 1+2 FAULT (Cont'd)

WING A.ICE NOT AVAILABLE

- **When CAB PR ΔP < 1 psi:**
  RAM AIR..... ON

AIR APU BLEED FAULT

Applicable to: ALL

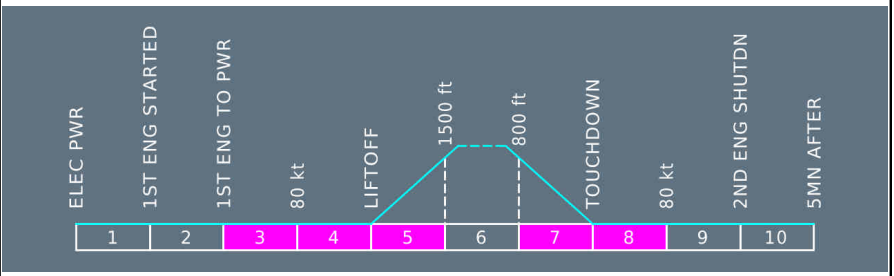
Ident.: PRO-ABN-AIR-G-00017375.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the APU is running and the position of the APU bleed valve disagrees with the selected position of the APU BLEED pb-sw.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-G-00017552.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-AIR-G-00011266.0001001 / 05 AUG 10

STATUS

INOP SYS
APU BLEED (If valve closed)

AIR APU BLEED LEAK

Applicable to: ALL

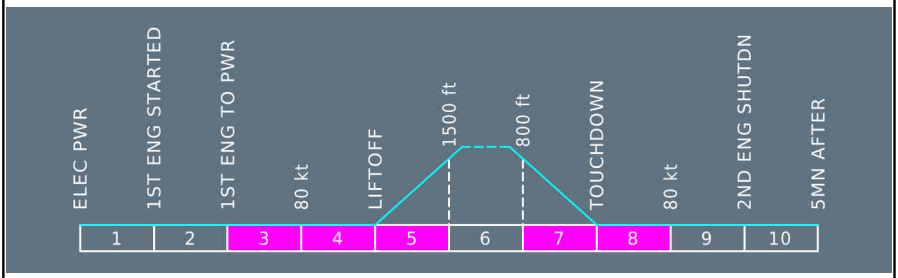
Ident.: PRO-ABN-AIR-F-00017376.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the APU bleed leak detection loop detects a temperature above 124 °C.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-F-00017553.0001001 / 21 MAR 16

APU BLEED (IF NOT CLOSED).....OFF

L2 *When the APU BLEED pb-sw is ON, the FAULT light remains on.*
When the APU BLEED pb-sw is OFF, the FAULT light goes off when the overheat disappears.

Ident.: PRO-ABN-AIR-F-00011100.0001001 / 05 AUG 10

STATUS

INOP SYS
APU BLEED

AIR APU BLEED LEAK
APU LEAK FED BY ENG

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-AIR-Z-00018057.0001001 / 21 MAR 16

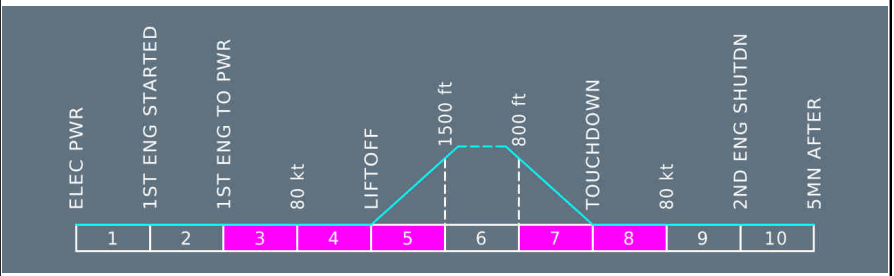
2

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a bleed leak is detected in the APU bleed ducts and the APU is OFF.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-Z-00017554.0001001 / 21 MAR 16

3

ENG 1 BLEED.....OFF
X BLEED.....SHUT
PACK 1.....OFF
WING ANTI ICE.....OFF
AVOID ICING CONDITIONS

Continued on the following page

AIR APU BLEED LEAK (Cont'd)
APU LEAK FED BY ENG

Ident.: PRO-ABN-AIR-Z-00015878.0001001 / 17 MAR 17

4

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION:**
  MIN SPD.....VLS +10 / G DOT
  MANEUVER WITH CARE
  LDG DIST PROC.....APPLY

INOP SYS

WING A. ICE
ENG 1 BLEED
PACK 1
APU BLEED

AIR APU LEAK DET FAULT

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

Ident.: PRO-ABN-AIR-Q-00017394.0001001 / 21 MAR 16

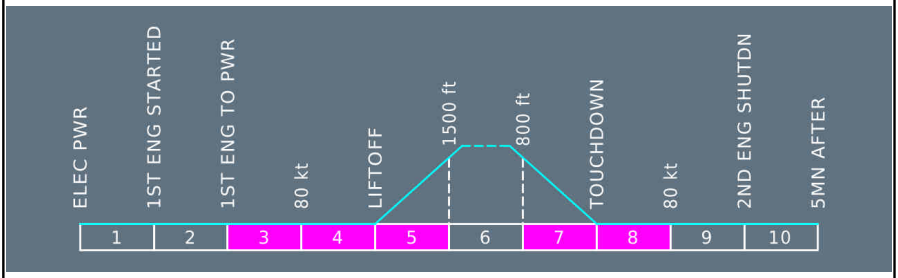
5

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the APU bleed leak detection loop is inoperative.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-Q-00015830.0001001 / 21 AUG 15

6

Crew awareness.

Continued on the following page

AIR APU LEAK DET FAULT (Cont'd)

Ident.: PRO-ABN-AIR-Q-00015831.0001001 / 21 AUG 15

7

STATUS

INOP SYS
APU LEAK DET

AIR BLEED 1(2) OFF

Applicable to: ALL

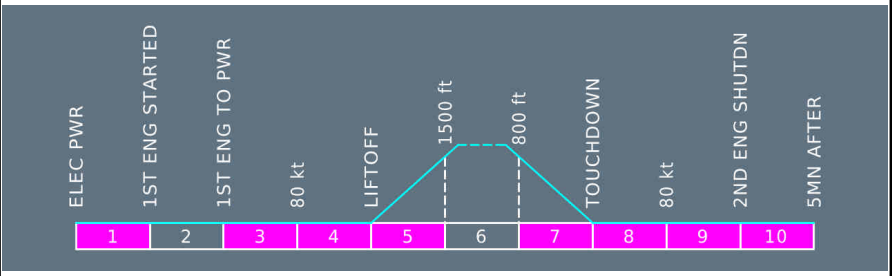
Ident.: PRO-ABN-AIR-AA-00017374.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the ENG 1(2) BLEED pb-sw is abnormally set to OFF.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-AA-00017555.0001001 / 21 MAR 16

Crew awareness.

AIR BLEED LEAK

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-AIR-AB-00018172.0001001 / 21 MAR 16

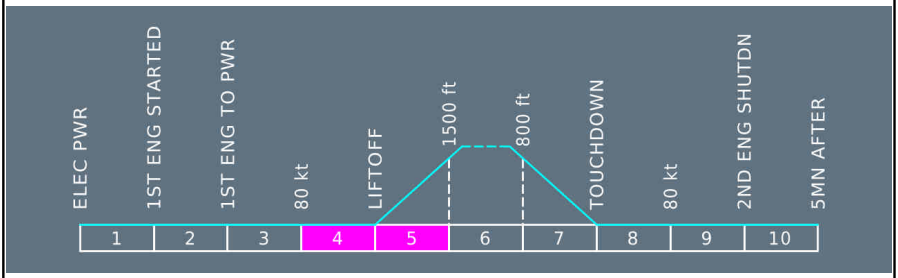
8

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a leak is detected in a bleed duct and the X-BLEED selector is set to OPEN.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-AB-00016189.0001001 / 21 AUG 15

9

X BLEED.....SHUT

L2 *Closing the crossbleed valve isolates the bleed leak.* *Refer to DSC-36-10-50 Leak Detection.*

AIR BLEED LEAK

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-AIR-AB-00018172.0002001 / 27 FEB 18

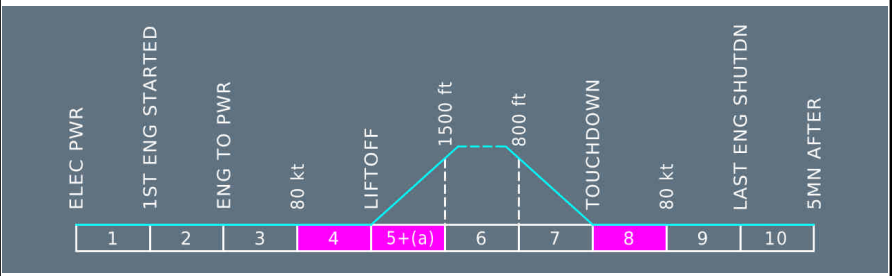
10

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a leak is detected in a bleed duct and the X-BLEED selector is set to OPEN.

Flight Phase Inhibition:



Note: *(a) Alert inhibited during the first 15 s of the flight phase 5.*

Ident.: PRO-ABN-AIR-AB-00016189.0001001 / 21 AUG 15

11

X BLEED.....SHUT

L2 *Closing the crossbleed valve isolates the bleed leak.* *Refer to DSC-36-10-50 Leak Detection.*

AIR COND CTL 1(2) - A(B) FAULT

Applicable to: MSN 02443-02457, 02584-09063

Ident.: PRO-ABN-AIR-AC-00017315.0001001 / 21 MAR 16

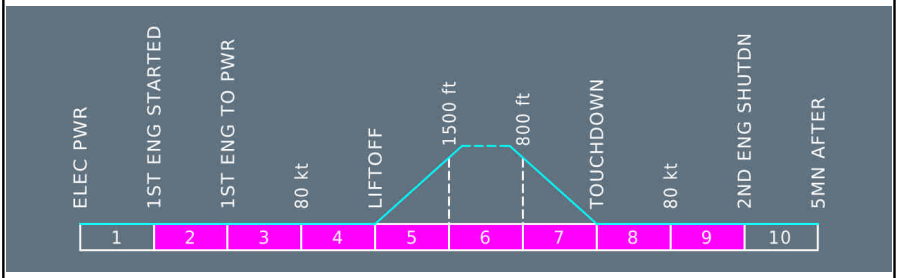
12

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the lane A(B) of ACSC 1(2) is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-AC-00018084.0001001 / 21 MAR 16

13

Crew awareness.

Ident.: PRO-ABN-AIR-AC-00010777.0001001 / 05 AUG 10

14

STATUS

INOP SYS

COND CTL 1(2)-A(B)

AIR ENG 1(2) BLEED ABNORM PR

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336

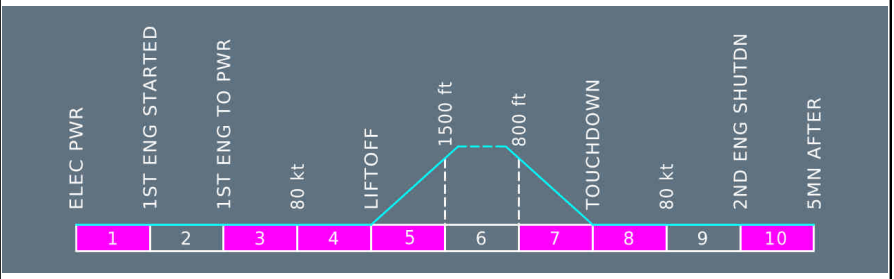
Ident.: PRO-ABN-AIR-B-00017378.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the regulated pressure in the engine bleed duct is abnormal.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-B-00017584.0009001 / 02 MAY 16

15

- **If wing anti-ice is off, and both packs are on:**
  PACK FLOW..... LO

L2 *The PACK FLOW selector must be set to LO, due to precooler performance.*

L1 - **If wing anti-ice is on, and both packs are on:**
  PACK (AFFECTED)..... OFF

L2 *One pack must be closed when the flight crew uses wing anti-ice because of precooler performance.*

L1 ENG BLEED (AFFECTED)..... OFF
X BLEED..... OPEN

Continued on the following page

AIR ENG 1(2) BLEED ABNORM PR (Cont'd)

Ident.: PRO-ABN-AIR-B-00011089.0001001 / 05 AUG 10

16

STATUS

	INOP SYS
ONE PACK ONLY IF WAI ON	ENG 1(2) BLEED PACK 1(2) (If closed)

AIR ENG 1(2) BLEED ABNORM PR

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

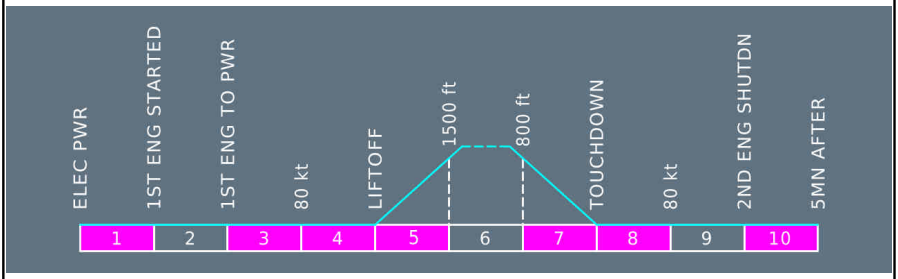
Ident.: PRO-ABN-AIR-B-00017378.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the regulated pressure in the engine bleed duct is abnormal.

Flight Phase Inhibition:



Continued on the following page

AIR ENG 1(2) BLEED ABNORM PR (Cont'd)

Ident.: PRO-ABN-AIR-B-00017584.0005001 / 21 MAR 16

- **If wing anti-ice is off, and both packs are on:**

PACK FLOW..... LO

L2 *The PACK FLOW selector must be set to LO, due to precooler performance.*

L1 - **If wing anti-ice is on, and both packs are on:**

PACK (AFFECTED).....OFF

L2 *One pack must be closed when the flight crew uses wing anti-ice because of precooler performance.*

L1 X BLEED..... OPEN

Ident.: PRO-ABN-AIR-B-00011089.0001001 / 05 AUG 10

17

STATUS	INOP SYS
ONE PACK ONLY IF WAI ON	ENG 1(2) BLEED PACK 1(2) (If closed)

AIR ENG 1(2) BLEED ABNORM PR

Applicable to: MSN 06720-09063

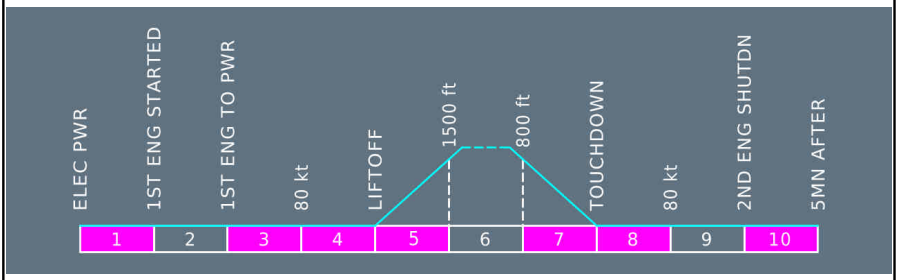
Ident.: PRO-ABN-AIR-B-00017378.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the regulated pressure in the engine bleed duct is abnormal.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-B-00017584.0008001 / 02 MAY 16

18

AFT CRG HOT AIR ..... OFF

- **If both packs are on:**
  PACK (AFFECTED)..... OFF

ENG BLEED (AFFECTED)..... OFF
X BLEED..... OPEN

Ident.: PRO-ABN-AIR-B-00011089.0002001 / 21 AUG 15

19

STATUS

INOP SYS
ENG 1(2) BLEED
PACK 1(2)

AIR ENG 1(2) BLEED FAULT

Applicable to: MSN 01767-06336

Ident.: PRO-ABN-AIR-C-00017369.0001001 / 21 MAR 16

20

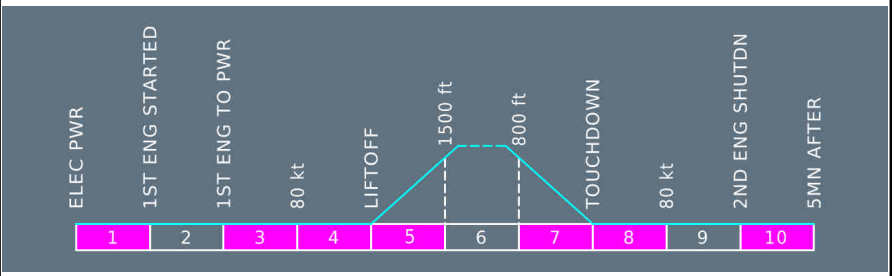
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the engine 1(2) is running and:

- The engine bleed air pressure is above 57 PSI (+3/-0), or
- The engine bleed air temperature is above:
  - 257 °C for more than 55 s
  - 270 °C for more than 15 s
  - 290 °C for more than 5 s.

Flight Phase Inhibition:



Continued on the following page

AIR ENG 1(2) BLEED FAULT (Cont'd)

Ident.: PRO-ABN-AIR-C-00017605.0005001 / 21 MAR 16

21

ENG BLEED (AFFECTED, IF NOT AUTOMATICALLY CLOSED).....OFF

L2 *When the ENG BLEED pb-sw is ON, the FAULT light remains on.*
When the ENG BLEED pb-sw is OFF, the FAULT light goes off when the failure (overheat or overpressure) disappears.

L1 ● **If wing anti-ice is off and both packs are on:**
PACK FLOW..... LO

The PACK FLOW selector must be set to LO, due to precooler performance.

● **If wing anti-ice is on and both packs are on:**
PACK (AFFECTED).....OFF

L2 *One pack must be closed when the flight crew uses wing anti-ice because of precooler performance.*

L1 X BLEED..... OPEN

Ident.: PRO-ABN-AIR-C-00011092.0001001 / 05 AUG 10

22

STATUS	INOP SYS
ONE PACK ONLY IF WAI ON	ENG 1(2) BLEED PACK 1(2) (If closed)

AIR ENG 1(2) BLEED FAULT

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-AIR-C-00017369.0002001 / 20 JAN 18

23

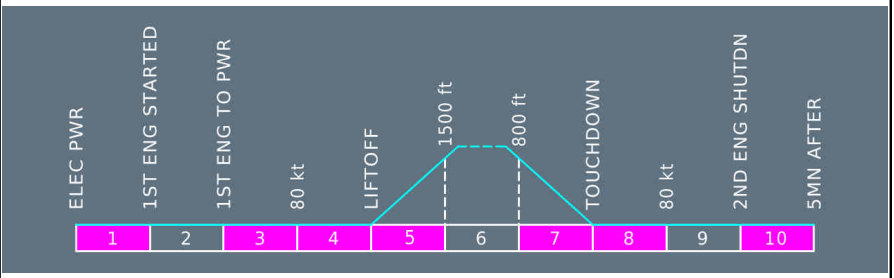
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the engine 1(2) is running and:

- Both bleed temperature sensors are lost, or
- The engine bleed air pressure is above 57 PSI (+3/-0), or
- The engine bleed air temperature is above:
  - 257 °C for more than 55 s
  - 270 °C for more than 15 s
  - 290 °C for more than 5 s.

Flight Phase Inhibition:



Continued on the following page

AIR ENG 1(2) BLEED FAULT (Cont'd)

Ident.: PRO-ABN-AIR-C-00017605.0010001 / 27 FEB 18

24

- **On ground, if only one bleed temperature sensor is lost:**

  Crew awareness.

  L2 Maintenance action is due.

L1 ENG BLEED (AFFECTED, IF NOT AUTOMATICALLY CLOSED).....OFF

L2 *When the ENG BLEED pb-sw is ON, the FAULT light remains on.*
When the ENG BLEED pb-sw is OFF, the FAULT light goes off when the failure (overheat or overpressure) disappears.

L1 AFT CRG HOT AIR .....OFF
PACK (AFFECTED).....OFF
X BLEED.....OPEN

Ident.: PRO-ABN-AIR-C-00011092.0002001 / 21 AUG 15

25

STATUS

INOP SYS
ENG 1(2) BLEED PACK 1(2)

AIR ENG 1(2) BLEED FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-AIR-C-00017369.0002001 / 20 JAN 18

26

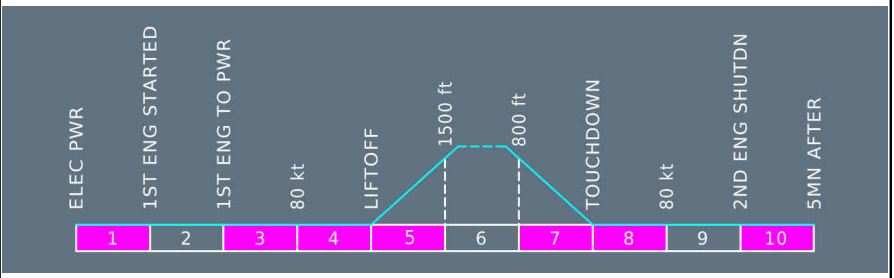
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the engine 1(2) is running and:

- Both bleed temperature sensors are lost, or
- The engine bleed air pressure is above 57 PSI (+3/-0), or
- The engine bleed air temperature is above:
  - 257 °C for more than 55 s
  - 270 °C for more than 15 s
  - 290 °C for more than 5 s.

Flight Phase Inhibition:



Continued on the following page

AIR ENG 1(2) BLEED FAULT (Cont'd)

Ident.: PRO-ABN-AIR-C-00017605.0011001 / 27 FEB 18

27

- **On ground, if only one bleed temperature sensor is lost:**

  Crew awareness.

  L2 Maintenance action is due.

L1 ENG BLEED (AFFECTED)..... OFF

L2 *When the ENG BLEED pb-sw is ON, the FAULT light remains on.*
When the ENG BLEED pb-sw is OFF, the FAULT light goes off when the failure (overheat or overpressure) disappears.

L1 AFT CRG HOT AIR ..... OFF
PACK (AFFECTED)..... OFF
X BLEED..... OPEN

Ident.: PRO-ABN-AIR-C-00011092.0002001 / 21 AUG 15

28

STATUS

	INOP SYS
	ENG 1(2) BLEED PACK 1(2)

AIR ENG 1(2) BLEED FAULT
BLEED NOT CLOSED

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336

Ident.: PRO-ABN-AIR-T-00018049.0002001 / 02 MAY 16

29

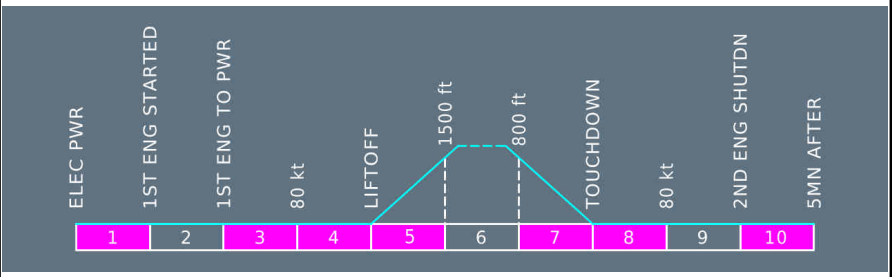
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the engine 1(2) is running, the engine 1(2) bleed valve fails to close, and:

- The engine 1(2) bleed air pressure is above 57 PSI (+3/-0), or
- The engine 1(2) bleed air temperature is above:
  - 257 °C for more than 55 s
  - 270 °C for more than 15 s
  - 290 °C for more than 5 s.

Flight Phase Inhibition:



Continued on the following page

AIR ENG 1(2) BLEED FAULT (Cont'd)
BLEED NOT CLOSED

Ident.: PRO-ABN-AIR-T-00017607.0005001 / 02 MAY 16

30

ENG BLEED (AFFECTED)..... OFF

- **If wing anti-ice is off:**
  PACK FLOW..... LO

PACK (AFFECTED)..... OFF
X BLEED.....SHUT
WING ANTI ICE..... OFF
AVOID ICING CONDITIONS

- **If engine 1 bleed is affected:**
  APU BLEED.....OFF

Ident.: PRO-ABN-AIR-T-00015887.0001001 / 17 MAR 17

31

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION:**
  MIN SPD.....VLS +10 / G DOT
  MANEUVER WITH CARE
  LDG DIST PROC.....APPLY

INOP SYS

ENG 1(2) BLEED
PACK 1(2)
WING A. ICE

AIR ENG 1(2) BLEED FAULT
BLEED NOT CLOSED

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-AIR-T-00018049.0002001 / 02 MAY 16

32

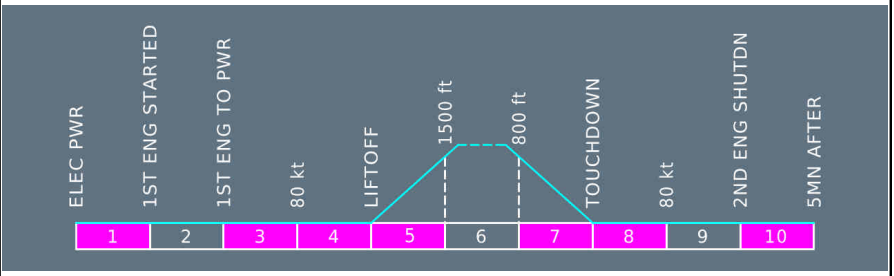
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the engine 1(2) is running, the engine 1(2) bleed valve fails to close, and:

- The engine 1(2) bleed air pressure is above 57 PSI (+3/-0), or
- The engine 1(2) bleed air temperature is above:
  - 257 °C for more than 55 s
  - 270 °C for more than 15 s
  - 290 °C for more than 5 s.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-T-00017607.0003001 / 02 MAY 16

33

ENG BLEED (AFFECTED)..... OFF
AFT CRG HOT AIR ..... OFF
PACK (AFFECTED)..... OFF
X BLEED..... SHUT
WING ANTI ICE..... OFF
AVOID ICING CONDITIONS

- **If engine 1 bleed is affected:**
  APU BLEED..... OFF

Continued on the following page

AIR ENG 1(2) BLEED FAULT (Cont'd)
BLEED NOT CLOSED

Ident.: PRO-ABN-AIR-T-00015887.0001001 / 17 MAR 17

34

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION:**
  MIN SPD.....VLS +10 / G DOT
  MANEUVER WITH CARE
  LDG DIST PROC.....APPLY

INOP SYS

ENG 1(2) BLEED
PACK 1(2)
WING A. ICE

AIR ENG 1+2 BLEED FAULT

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336

Ident.: PRO-ABN-AIR-R-00017092.0001001 / 21 MAR 16

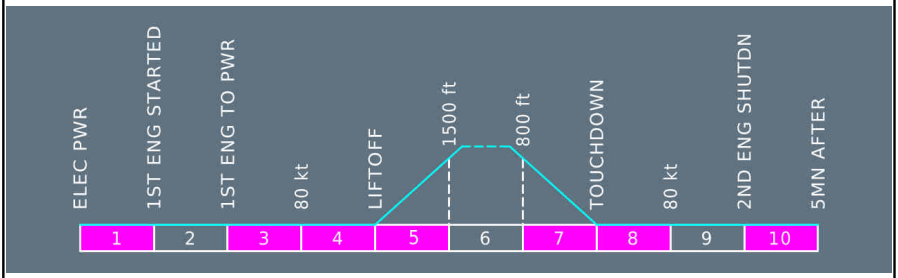
35

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both engine bleed supply systems are lost without wing leak or pylon leak on any side.

Flight Phase Inhibition:



Continued on the following page

AIR ENG 1+2 BLEED FAULT (Cont'd)

Ident.: PRO-ABN-AIR-R-00017556.0001001 / 21 MAR 17

36

X BLEED.....AUTO
WING ANTI ICE.....OFF
AVOID ICING CONDITIONS

- **If APU Bleed is ON and fails:**
  APU BLEED.....OFF

L2 *Recall in the case of failure of the APU Bleed.*

L1 ENG 1 BLEED.....OFF THEN ON
ENG 2 BLEED.....OFF THEN ON

- **IF UNSUCCESSFUL:**
  ENG 1 BLEED.....OFF
  ENG 2 BLEED.....OFF
  DES TO FL 100/MEA-MORA
  BLEED 1+2 PROC.....APPLY
  Refer to procedure.

Ident.: PRO-ABN-AIR-R-00015836.0001001 / 17 MAR 17

37

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION:**
  MIN SPD.....VLS +10 / G DOT
  MANEUVER WITH CARE
  LDG DIST PROC.....APPLY

INOP SYS

WING A. ICE
ENG 1 BLEED
ENG 2 BLEED
APU BLEED
PACK 1+2

AIR ENG 1+2 BLEED FAULT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-AIR-R-00017092.0001001 / 21 MAR 16

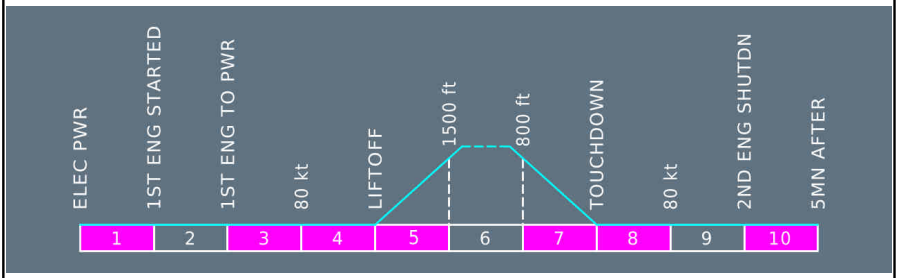
38

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both engine bleed supply systems are lost without wing leak or pylon leak on any side.

Flight Phase Inhibition:



Continued on the following page

AIR ENG 1+2 BLEED FAULT (Cont'd)

Ident.: PRO-ABN-AIR-R-00017556.0001001 / 21 MAR 17

39

X BLEED.....AUTO
WING ANTI ICE.....OFF
AVOID ICING CONDITIONS

- **If APU Bleed is ON and fails:**
  APU BLEED.....OFF

L2 *Recall in the case of failure of the APU Bleed.*

L1 ENG 1 BLEED.....OFF THEN ON
ENG 2 BLEED.....OFF THEN ON

- **IF UNSUCCESSFUL:**
  ENG 1 BLEED.....OFF
  ENG 2 BLEED.....OFF
  DES TO FL 100/MEA-MORA
  BLEED 1+2 PROC.....APPLY
  Refer to procedure.

Ident.: PRO-ABN-AIR-R-00015836.0002001 / 17 MAR 17

40

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETIONS:**
  MIN SPD.....VLS + 10 / G DOT
  MANEUVER WITH CARE
  LDG DIST PROC.....APPLY

INOP SYS

WING A. ICE
ENG 1 BLEED
ENG 2 BLEED
APU BLEED
BMC 1+2 (1)
PACK 1+2

(1) *(If dual BMC fault)*

AIR ENG 1+2 BLEED FAULT
LEFT LEAK

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

Ident.: PRO-ABN-AIR-Y-00017094.0001001 / 21 MAR 16

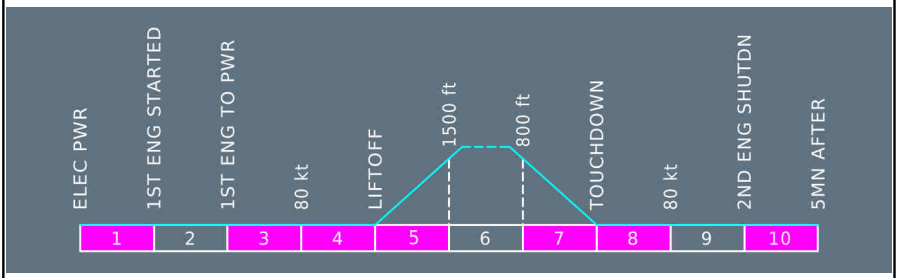
41

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both engine bleed supply systems are lost with a left wing leak or a pylon leak on side 1.

Flight Phase Inhibition:



Continued on the following page

AIR ENG 1+2 BLEED FAULT (Cont'd)
LEFT LEAK

Ident.: PRO-ABN-AIR-Y-00017557.0001001 / 21 MAR 17

42

X BLEED.....SHUT
WING ANTI ICE.....OFF
AVOID ICING CONDITIONS

- **If APU bleed is ON:**
  APU BLEED.....OFF

ENG 2 BLEED.....OFF THEN ON

- **IF UNSUCCESSFUL:**
  ENG 1 BLEED.....OFF
  ENG 2 BLEED.....OFF
  DES TO FL 100/MEA-MORA
  BLEED 1+2 PROC.....APPLY
  Refer to procedure.

Ident.: PRO-ABN-AIR-Y-00015880.0001001 / 17 MAR 17

43

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION:**
  MIN SPD.....VLS +10 / G DOT
  MANEUVER WITH CARE
  LDG DIST PROC.....APPLY

INOP SYS

WING A. ICE
ENG 1 BLEED
ENG 2 BLEED
APU BLEED
PACK 1+2

AIR ENG 1+2 BLEED FAULT
RIGHT LEAK

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

Ident.: PRO-ABN-AIR-X-00017093.0001001 / 21 MAR 16

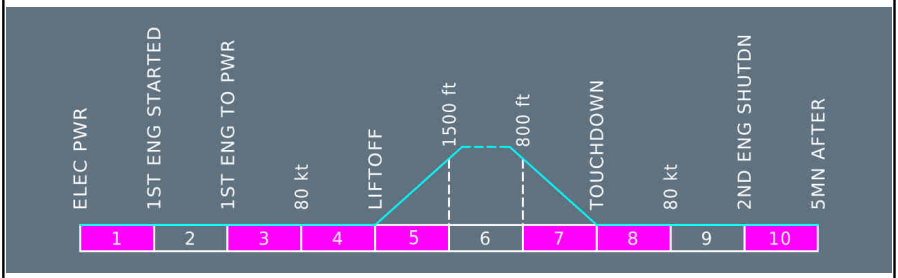
44

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both engine bleed supply systems are lost with a right wing leak or a pylon leak on side 2.

Flight Phase Inhibition:



Continued on the following page

AIR ENG 1+2 BLEED FAULT (Cont'd)
RIGHT LEAK

Ident.: PRO-ABN-AIR-X-00017558.0001001 / 21 MAR 17

45

X BLEED.....SHUT
WING ANTI ICE.....OFF
AVOID ICING CONDITIONS

- **If APU bleed is ON and fails:**
  APU BLEED.....OFF

L2 *Recall in the case of failure of the APU Bleed.*

L1 ENG 1 BLEED.....OFF THEN ON

- **IF UNSUCCESSFUL:**
  ENG 1 BLEED.....OFF
  ENG 2 BLEED.....OFF
  DES TO FL 100/MEA-MORA
  BLEED 1+2 PROC.....APPLY
  Refer to procedure.

Ident.: PRO-ABN-AIR-X-00015882.0001001 / 17 MAR 17

46

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION:**
  MIN SPD.....VLS +10 / G DOT
  MANEUVER WITH CARE
  LDG DIST PROC.....APPLY

INOP SYS

WING A. ICE
ENG 1 BLEED
ENG 2 BLEED
APU BLEED
PACK 1+2

AIR ENG 1+2 BLEED FAULT
LEFT LEAK AND RIGHT LEAK

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

Ident.: PRO-ABN-AIR-W-00017095.0001001 / 21 MAR 16

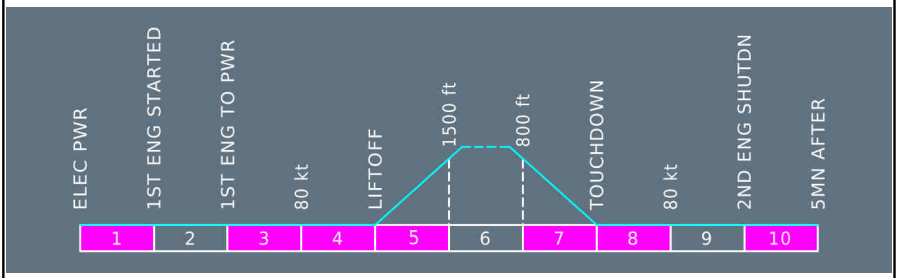
47

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both engine bleed supply systems are lost with a wing leak or a pylon leak on both sides.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-W-00017559.0001001 / 21 MAR 17

48

X BLEED.....SHUT
WING ANTI ICE..... OFF
AVOID ICING CONDITIONS

- **If APU bleed is ON:**
  APU BLEED.....OFF

ENG 1 BLEED.....OFF
ENG 2 BLEED.....OFF
DES TO FL 100/MEA-MORA
BLEED 1+2 PROC.....APPLY
Refer to procedure.

Continued on the following page

AIR ENG 1+2 BLEED FAULT (Cont'd)
LEFT LEAK AND RIGHT LEAK

Ident.: PRO-ABN-AIR-W-00015884.0001001 / 17 MAR 17

49

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION:**
  MIN SPD.....VLS +10 / G DOT
  MANEUVER WITH CARE
  LDG DIST PROC.....APPLY

INOP SYS

WING A. ICE
ENG 1 BLEED
ENG 2 BLEED
APU BLEED
PACK 1+2

AIR ENG 1(2) BLEED LO TEMP
(OPPOSITE BLEED AVAILABLE)

Applicable to: ALL

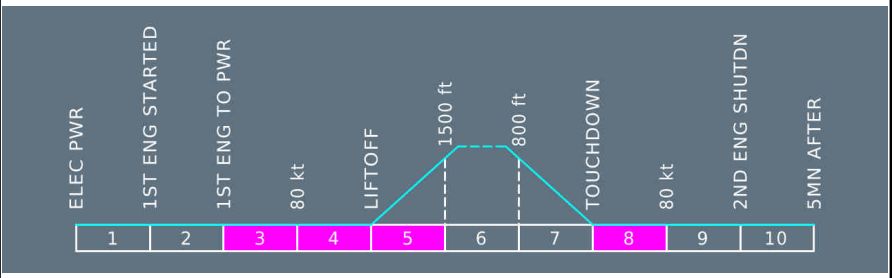
Ident.: PRO-ABN-AIR-M-00017379.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the associated engine bleed supplies bleed air at a temperature below 150 °C in flight and the WING A-ICE pb-sw is set to ON.

Flight Phase Inhibition:



Continued on the following page

AIR ENG 1(2) BLEED LO TEMP (Cont'd)
(OPPOSITE BLEED AVAILABLE)

Ident.: PRO-ABN-AIR-M-00017560.0001001 / 21 MAR 16

A/THR.....OFF
THR LEVER (AFFECTED ENGINE).....ADVANCE

L2 *The thrust lever of the affected engine must be advanced, with the autothrust OFF.*
Low bleed temperature may be due to low outside air temperature. Therefore, increasing engine thrust may increase bleed temperature and clear the ECAM caution.

L1 ● **IF UNSUCCESSFUL:**

X BLEED.....OPEN
ENG BLEED (AFFECTED).....OFF
ASSOCIATED PACK (IF OPPOSITE PACK ON).....OFF

L2 *One pack must be closed, when the flight crew uses wing anti-ice, due to precooler performance.*

Ident.: PRO-ABN-AIR-M-00011115.0001001 / 21 AUG 15

STATUS

INOP SYS

ENG 1(2) BLEED
PACK 1(2) (If selected OFF)

AIR ENG 1(2) BLEED LO TEMP
(OPPOSITE BLEED NOT AVAILABLE)

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

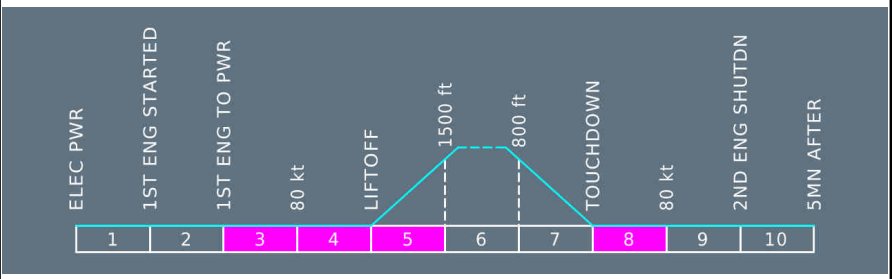
Ident.: PRO-ABN-AIR-N-00018208.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the associated engine bleed supplies bleed air at a temperature below 150 °C in flight and the WING A-ICE pb-sw is set to ON.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-N-00017561.0002001 / 21 MAR 16

50

A/THR.....OFF
THR LEVER (AFFECTED ENGINE).....ADVANCE

L2 *The thrust lever of the affected engine must be advanced, with the autothrust OFF.*
Low bleed temperature may be due to low outside air temperature. Therefore, increasing engine thrust may increase bleed temperature and clear the ECAM caution.

L1 ● **IF UNSUCCESSFUL:**
WING ANTI ICE.....OFF
AVOID ICING CONDITIONS

Continued on the following page

AIR ENG 1(2) BLEED LO TEMP (Cont'd)
(OPPOSITE BLEED NOT AVAILABLE)

Ident.: PRO-ABN-AIR-N-00011117.0003001 / 17 MAR 17

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION:**
  MIN SPD.....VLS +10 / G DOT
  MANEUVER WITH CARE
  LDG DIST PROC.....APPLY

INOP SYS

WING A. ICE

AIR ENG 1(2) BLEED LO TEMP
(OPPOSITE BLEED NOT AVAILABLE)

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

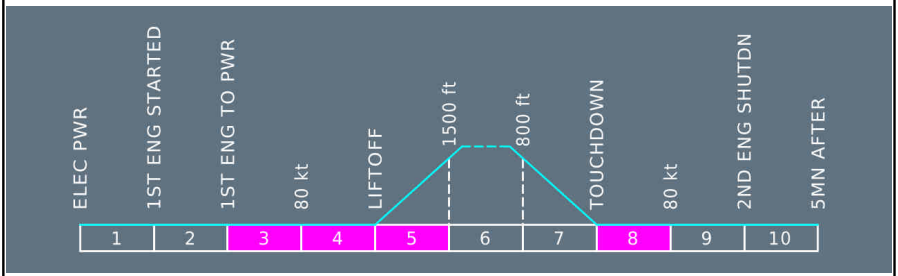
Ident.: PRO-ABN-AIR-N-00018208.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the associated engine bleed supplies bleed air at a temperature below 150 °C in flight and the WING A-ICE pb-sw is set to ON.

Flight Phase Inhibition:



Continued on the following page

AIR ENG 1(2) BLEED LO TEMP (Cont'd)
(OPPOSITE BLEED NOT AVAILABLE)

Ident.: PRO-ABN-AIR-N-00017561.0001001 / 21 MAR 16

A/THR.....OFF
THR LEVER (AFFECTED ENGINE).....ADVANCE

L2 *The thrust lever of the affected engine must be advanced, with the autothrust OFF.*
Low bleed temperature may be due to low outside air temperature. Therefore, increasing engine thrust may increase bleed temperature and clear the ECAM caution.

L1 ● **IF UNSUCCESSFUL:**
WING A. ICE.....OFF
AVOID ICING CONDITIONS

Ident.: PRO-ABN-AIR-N-00011117.0003001 / 17 MAR 17

STATUS

AVOID ICING CONDITIONS

INOP SYS

WING A. ICE

● **IF SEVERE ICE ACCRETION:**
MIN SPD.....VLS +10 / G DOT
MANEUVER WITH CARE
LDG DIST PROC.....APPLY

AIR ENG 1+2 BLEED LO TEMP

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

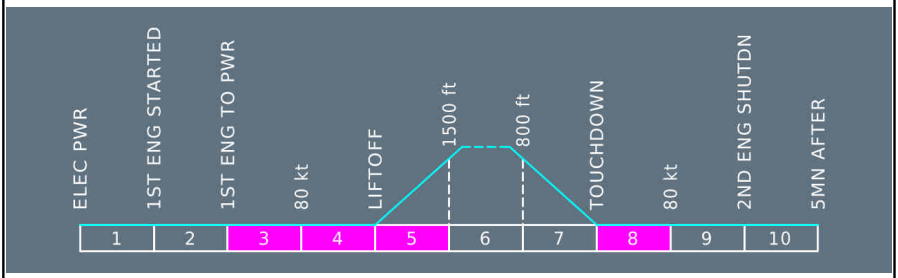
Ident.: PRO-ABN-AIR-O-00017381.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both engine bleeds supply bleed air at a temperature below 150 °C in flight and the WING A-ICE pb-sw is set to ON.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-O-00011118.0002001 / 21 AUG 15

51

A/THR .....OFF
THR LEVERS.....ADVANCE

L2 *The thrust lever of the affected engine must be advanced, with the autothrust OFF.*
Low bleed temperature may be due to low outside air temperature. Therefore, increasing engine thrust may increase bleed temperature and clear the ECAM caution.

L1 ● **IF UNSUCCESSFUL:**
WING ANTI ICE.....OFF
AVOID ICING CONDITIONS

Continued on the following page

AIR ENG 1+2 BLEED LO TEMP (Cont'd)

Ident.: PRO-ABN-AIR-O-00011119.0003001 / 17 MAR 17

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION:**
  MIN SPD.....VLS +10 / G DOT
  MANEUVER WITH CARE
  LDG DIST PROC.....APPLY

INOP SYS

WING A. ICE

AIR ENG 1+2 BLEED LO TEMP

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

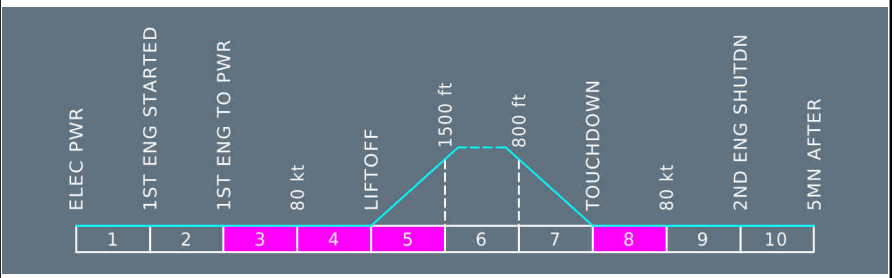
Ident.: PRO-ABN-AIR-O-00017381.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both engine bleeds supply bleed air at a temperature below 150 °C in flight and the WING A-ICE pb-sw is set to ON.

Flight Phase Inhibition:



Continued on the following page

AIR ENG 1+2 BLEED LO TEMP (Cont'd)

Ident.: PRO-ABN-AIR-O-00011118.0001001 / 05 AUG 10

A/THR .....OFF
THR LEVERS.....ADVANCE

L2 *The thrust lever of the affected engine must be advanced, with the autothrust OFF.*
Low bleed temperature may be due to low outside air temperature. Therefore, increasing engine thrust may increase bleed temperature and clear the ECAM caution.

L1 ● **IF UNSUCCESSFUL:**
WING A. ICE..... OFF
AVOID ICING CONDITIONS

Ident.: PRO-ABN-AIR-O-00011119.0003001 / 17 MAR 17

STATUS

AVOID ICING CONDITIONS

● **IF SEVERE ICE ACCRETION:**
MIN SPD.....VLS +10 / G DOT
MANEUVER WITH CARE
LDG DIST PROC.....APPLY

INOP SYS

WING A. ICE

AIR ENG 1(2) BLEED HI TEMP

Applicable to: MSN 01767-06336

Ident.: PRO-ABN-AIR-P-00017391.0002001 / 21 MAR 16

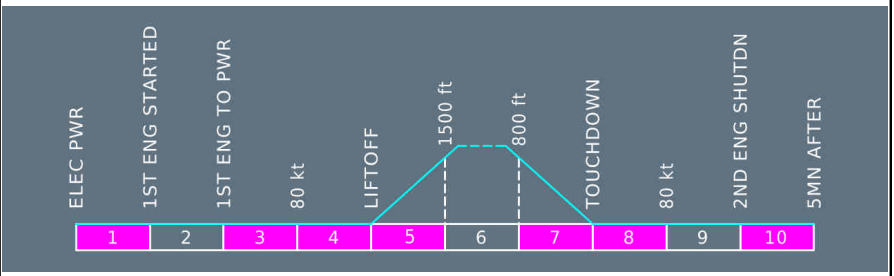
52

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the precooler outlet temperature is above 240 °C.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-P-00014306.0001001 / 21 AUG 15

53

- **If wing anti-ice off:**
  PACK 2 (1)..... OFF
- **If wing anti-ice on and opposite pack off:**

  Note: *If Wing Anti-Ice is required (icing conditions) while operating with one PACK, consider switching OFF the remaining pack, if aircraft's altitude permits.*

  PACK 1 (2) OR WAI.....OFF
- **If wing anti-ice on and affected pack off:**
  PACK 2 (1) OR WAI.....OFF

Continued on the following page

AIR ENG 1(2) BLEED HI TEMP (Cont'd)

Ident.: PRO-ABN-AIR-P-00014307.0005001 / 17 MAR 17

L12

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION:**
  MIN SPD..... VLS+10/G DOT

  Note: *In the case of severe ice accretion, with wing anti-ice failed, the Angle-of-Attack (AOA) protections remain efficient.*

  MANEUVER WITH CARE
  LDG DIST PROC.....APPLY

INOP SYS

WING A. ICE

AIR ENG 1(2) BLEED HI TEMP

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-AIR-P-00017391.0003001 / 03 JUN 16

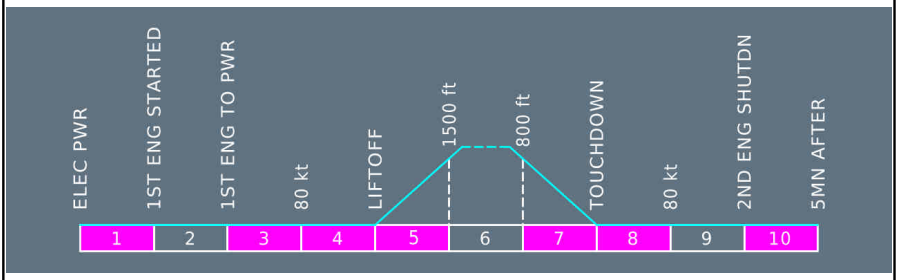
54

ANNUNCIATIONS

Triggering Conditions:

This alert triggers when the precooler outlet temperature is above 245 °C.

Flight Phase Inhibition:



Continued on the following page

AIR ENG 1(2) BLEED HI TEMP (Cont'd)

Ident.: PRO-ABN-AIR-P-00014306.0004001 / 21 AUG 15

55

AFT CRG HOT AIR ..... OFF

■ **If wing anti-ice off:**

PACK 2 (1)..... OFF

■ **If wing anti-ice on and opposite pack off:**

Note: If Wing Anti-Ice is required (icing conditions) while operating with one PACK, consider switching OFF the remaining pack, if aircraft's altitude permits.

PACK 1 (2) OR WAI..... OFF

■ **If wing anti-ice on and affected pack off:**

PACK 2 (1) OR WAI..... OFF

Ident.: PRO-ABN-AIR-P-00014307.0005001 / 17 MAR 17

L12

STATUS

AVOID ICING CONDITIONS

● **IF SEVERE ICE ACCRETION:**

MIN SPD..... VLS+10/G DOT

Note: In the case of severe ice accretion, with wing anti-ice failed, the Angle-of-Attack (AOA) protections remain efficient.

MANEUVER WITH CARE

LDG DIST PROC..... APPLY

INOP SYS

WING A. ICE

AIR ENG 1(2) BLEED NOT CLSD

Applicable to: MSN 01767-06336

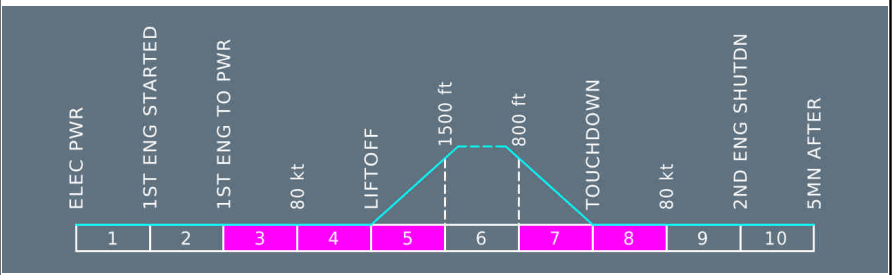
Ident.: PRO-ABN-AIR-A-00017372.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the engine bleed valve fails to close:
- During engine start or when APU BLEED pb-sw is set to ON
- At engine shutdown or when APU BLEED pb-sw is set to OFF with engine not running.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-A-00017562.0001001 / 21 MAR 16

ENG BLEED (AFFECTED)..... OFF

L2 *Note:* *The warning may be triggered due to residual pressure between the HP or IP valves and the engine bleed valve after:*
- *Engine shutdown, or*
- *APU BLEED pb-sw is selected OFF with engine not running.*

Ident.: PRO-ABN-AIR-A-00011087.0001001 / 05 AUG 10

56

STATUS

	INOP SYS
ONE PACK ONLY IF WAI ON	ENG 1(2) BLEED

AIR ENG 1(2) BLEED NOT CLSD

Applicable to: MSN 06720-09063

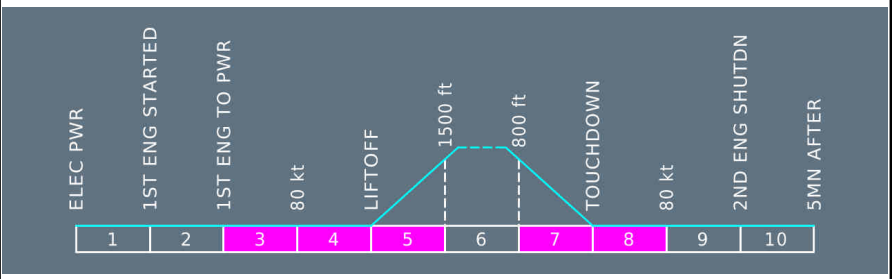
Ident.: PRO-ABN-AIR-A-00017372.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the engine bleed valve fails to close:
- During engine start or when APU BLEED pb-sw is set to ON
- At engine shutdown or when APU BLEED pb-sw is set to OFF with engine not running.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-A-00017562.0001001 / 21 MAR 16

ENG BLEED (AFFECTED)..... OFF

L2 *Note:* *The warning may be triggered due to residual pressure between the HP or IP valves and the engine bleed valve after:*
- *Engine shutdown, or*
- *APU BLEED pb-sw is selected OFF with engine not running.*

Ident.: PRO-ABN-AIR-A-00011087.0002001 / 17 SEP 15

57

STATUS

INOP SYS

ENG 1(2) BLEED

AIR ENG 1(2) HP VALVE FAULT

Applicable to: ALL

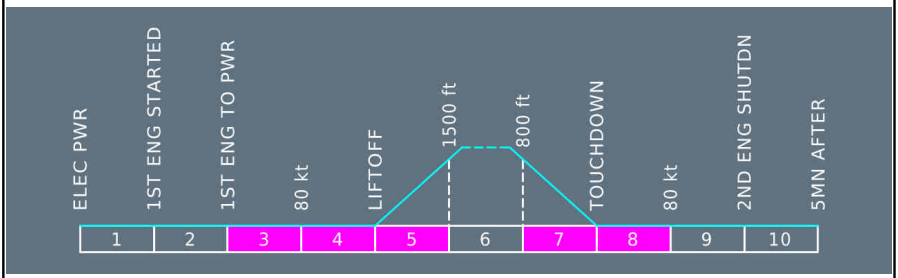
Ident.: PRO-ABN-AIR-H-00017384.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the HP valve is abnormally closed.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-H-00011103.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-AIR-H-00011104.0001001 / 05 AUG 10

STATUS

AIR PRESS LOW AT IDLE

AIR ENG 1(2) LEAK DET FAULT

Applicable to: MSN 02135, 02139-02195, 03071, 04008-06336

Ident.: PRO-ABN-AIR-I-00017389.0002001 / 21 MAR 16

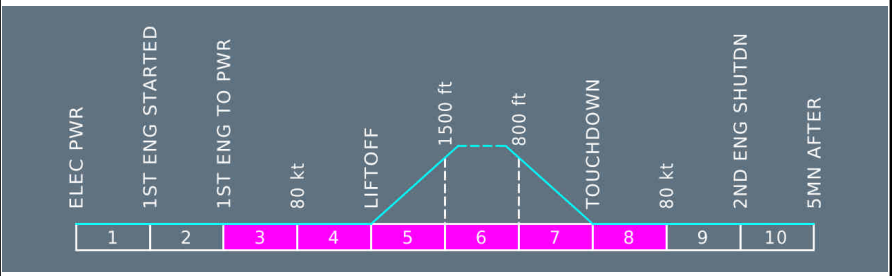
58

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pylon bleed leak detection loop is inoperative.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-I-00011105.0004001 / 25 FEB 14

59

Crew awareness.

Ident.: PRO-ABN-AIR-I-00011106.0004001 / 17 MAR 11

60

STATUS

	INOP SYS
	ENG 1(2) LK DET

AIR ENG 1(2) LEAK DET FAULT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-AIR-I-00017389.0003001 / 21 MAR 16

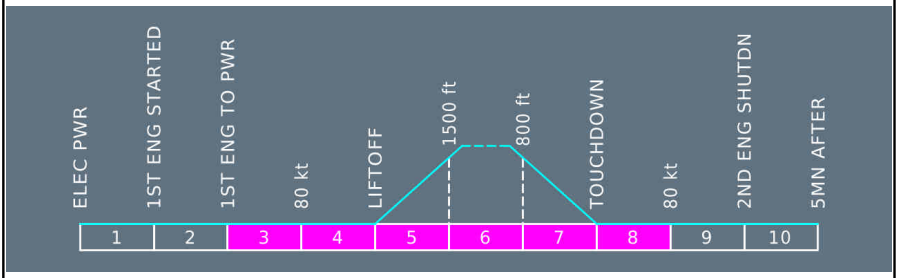
61

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both pylon bleed leak detection loops are inoperative.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-I-00011105.0004001 / 25 FEB 14

62

Crew awareness.

Ident.: PRO-ABN-AIR-I-00011106.0004001 / 17 MAR 11

63

STATUS

INOP SYS
ENG 1(2) LK DET

AIR FWD(AFT) CRG VENT FAULT

Applicable to: ALL

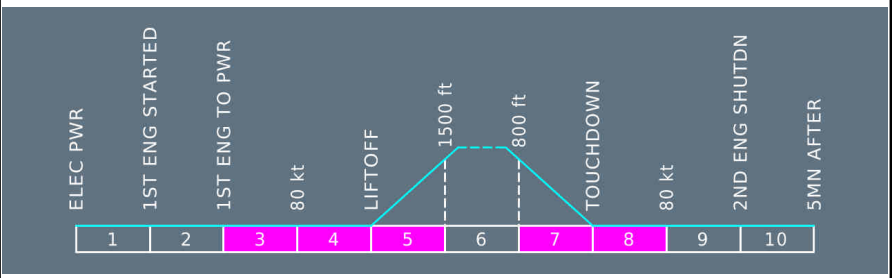
Ident.: PRO-ABN-AIR-AE-00017337.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the forward(aft) cargo ventilation fan is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-AE-00017933.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-AIR-AE-00017934.0001001 / 21 MAR 16

STATUS

INOP SYS

FWD(AFT) CRG HEAT
FWD(AFT) CRG VENT

AIR L(R) WING OR ENG 1(2) BLEED LEAK

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

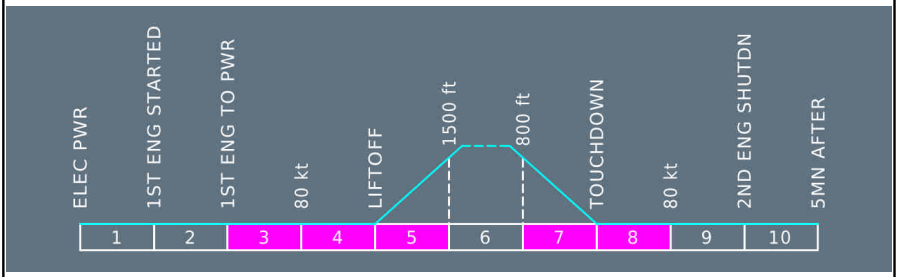
Ident.: PRO-ABN-AIR-D-00017370.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 The AIR L(R) WING LEAK alert triggers when both wing bleed leak detection loops detect a temperature above 124 °C .
The AIR ENG 1(2) BLEED LEAK alert triggers when the pylon bleed leak detection loop detects a temperature above 204 °C and engine 1(2) is running.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-D-00017563.0001001 / 09 NOV 17

64

ENG BLEED (AFFECTED, IF NOT AUTOMATICALLY CLOSED).....OFF

L2 *When the ENG BLEED pb-sw is ON, the FAULT light remains on.*
When the ENG BLEED pb-sw is OFF, the FAULT light goes off when the overheat disappears.

L1 ● **If AIR L WING LEAK or AIR ENG 1 BLEED LEAK:**
APU BLEED (IF NOT CLOSED).....OFF

X BLEED (IF NOT CLOSED).....SHUT
WING ANTI-ICE.....OFF
AVOID ICING CONDITIONS

Continued on the following page

AIR L(R) WING OR ENG 1(2) BLEED LEAK (Cont'd)

Ident.: PRO-ABN-AIR-D-00011096.0003001 / 17 MAR 17

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION:**
  MIN SPD.....VLS +10 / G DOT
  MANEUVER WITH CARE
  LDG DIST PROC.....APPLY

INOP SYS

WING A.ICE
ENG 1(2) BLEED
PACK 1(2)

AIR L(R) WING OR ENG 1(2) BLEED LEAK

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

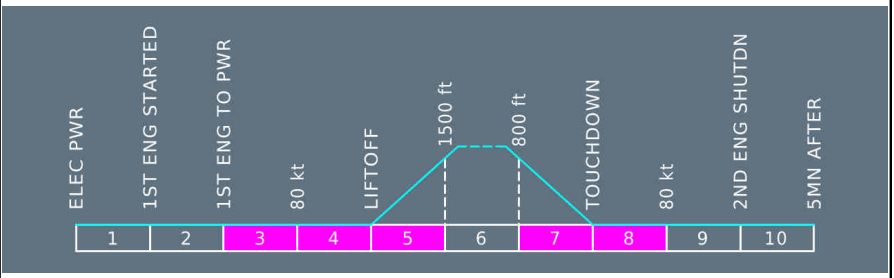
Ident.: PRO-ABN-AIR-D-00017370.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 The AIR L(R) WING LEAK alert triggers when both wing bleed leak detection loops detect a temperature above 124 °C .
The AIR ENG 1(2) BLEED LEAK alert triggers when the pylon bleed leak detection loop detects a temperature above 204 °C and engine 1(2) is running.

Flight Phase Inhibition:



Continued on the following page

AIR L(R) WING OR ENG 1(2) BLEED LEAK (Cont'd)

Ident.: PRO-ABN-AIR-D-00017563.0002001 / 27 FEB 18

65

ENG BLEED (AFFECTED)..... OFF

L2 *When the ENG BLEED pb-sw is ON, the FAULT light remains on.*
When the ENG BLEED pb-sw is OFF, the FAULT light goes off when the overheat disappears.

L1 ● **If AIR L WING LEAK or AIR ENG 1 BLEED LEAK:**
APU BLEED (IF NOT CLOSED)..... OFF

X BLEED (IF NOT CLOSED)..... SHUT
WING ANTI-ICE..... OFF
AVOID ICING CONDITIONS

Ident.: PRO-ABN-AIR-D-00011096.0003001 / 17 MAR 17

STATUS

AVOID ICING CONDITIONS

● **IF SEVERE ICE ACCRETION:**
MIN SPD.....VLS +10 / G DOT
MANEUVER WITH CARE
LDG DIST PROC.....APPLY

INOP SYS

WING A.ICE
ENG 1(2) BLEED
PACK 1(2)

AIR L(R) WNG LEAK DET FAULT

Applicable to: ALL

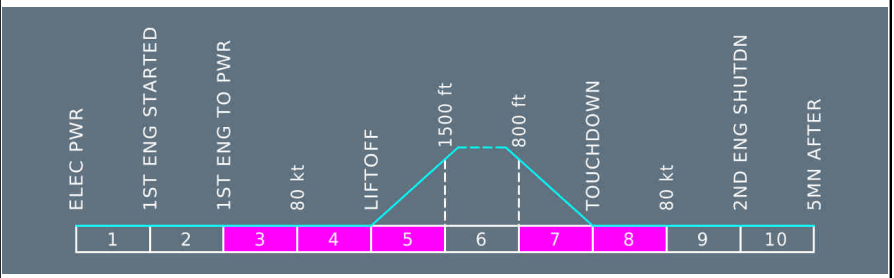
Ident.: PRO-ABN-AIR-J-00017387.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both wing bleed leak detection loops are inoperative in one wing.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-J-00011107.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-AIR-J-00011108.0005001 / 17 MAR 11

STATUS

INOP SYS
L(R) WNG LK DET

AIR PACK 1(2) FAULT

Applicable to: MSN 01767-02405, 02482

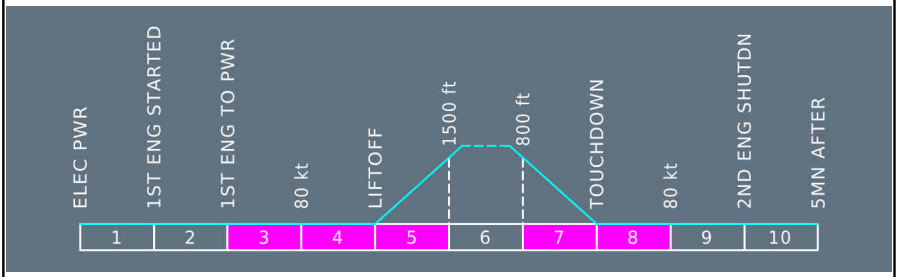
Ident.: PRO-ABN-AIR-AF-00017290.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- The position of the pack flow control valve disagrees with the commanded position, or
- The pack compressor outlet temperature rises above 230 °C four times during the same flight.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-AF-00010712.0001001 / 05 AUG 10

PACK (AFFECTED)..... OFF

Ident.: PRO-ABN-AIR-AF-00010713.0001001 / 05 AUG 10

STATUS

	INOP SYS
	PACK 1(2)

AIR PACK 1(2) FAULT

Applicable to: MSN 02443-02457, 02584-09063

Ident.: PRO-ABN-AIR-AF-00017290.0002001 / 21 MAR 16

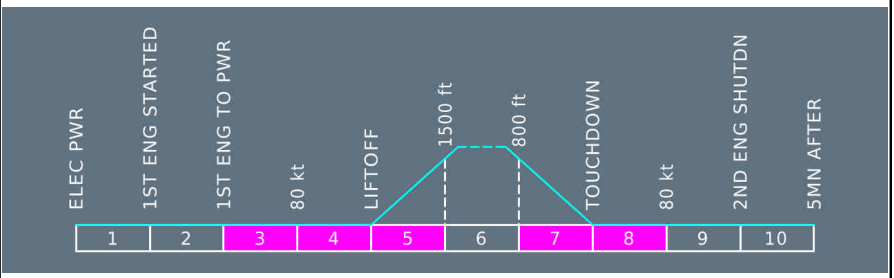
66

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- The position of the pack flow control valve disagrees with the commanded position, or
- The pack valve is closed.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-AF-00010712.0001001 / 05 AUG 10

PACK (AFFECTED)..... OFF

Ident.: PRO-ABN-AIR-AF-00010713.0002001 / 16 NOV 11

67

STATUS

- **If ACSC 1 failed:**
  CKPT AT FIXED TEMP
- **If ACSC 2 failed:**
  CAB AT FIXED TEMP

INOP SYS

PACK 1(2)
COND CTL 1(2)
FWD CRG HEAT (If ACSC 1 failed)

AIR PACK 1+2 FAULT

Applicable to: MSN 01767-02388, 02482

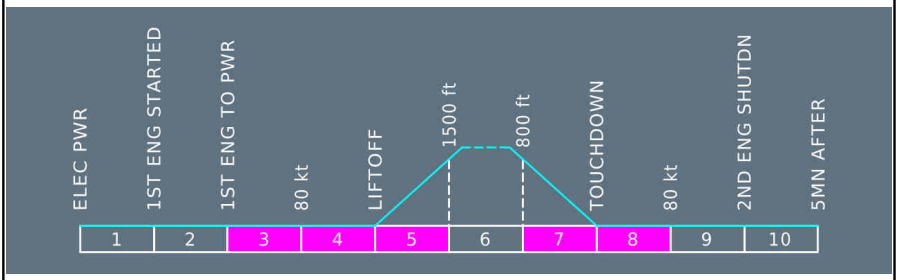
Ident.: PRO-ABN-AIR-AG-00017292.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one pack is off, and the other is failed.

Flight Phase Inhibition:



Continued on the following page

AIR PACK 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-AIR-AG-00017935.0002001 / 21 MAR 16

68

PACK 1.....OFF
PACK 2.....OFF

L2 *The fault light goes off, when the failure disappears.*

Note: The rate at which the cabin altitude increases may be minimized by closing the FWD CARGO ISOL VALVE , if the cargo freight permits.

L1 DESCENT TO FL 100/MEA-MORA.

L2 *Descend to FL 100, or MEA-MORA, whichever is higher.*

L1 ● **WHEN DIFF PR < 1 PSI AND FL BELOW 100:**
RAM AIR.....ON
MAX FL.....100/MEA-MORA

● **If FAULT was due to an overheat:**

ASSOCIATED PROCEDURES

AIR PACK 1 (2) OVHT

● **WHEN PACK OVHT OUT:**
PACK (AFFECTED).....ON

Ident.: PRO-ABN-AIR-AG-00017936.0006001 / 17 MAR 17

STATUS

● **If packs not recovered:**
MAX FL.....100/MEA-MORA

● **If FAULT was due to an overheat:**

● **WHEN PACK OVHT OUT:**
PACK (AFFECTED).....ON

INOP SYS

PACK 1+2
FWD CRG HEAT

AIR PACK 1+2 FAULT

Applicable to: MSN 02405

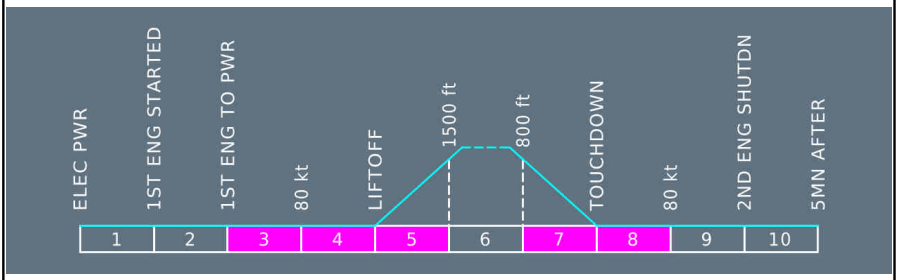
Ident.: PRO-ABN-AIR-AG-00017292.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one pack is off, and the other is failed.

Flight Phase Inhibition:



Continued on the following page

AIR PACK 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-AIR-AG-00017935.0001001 / 21 MAR 16

PACK (AFFECTED)..... OFF

L2 *The fault light goes off, when the failure disappears.*

Note: The rate at which the cabin altitude increases may be minimized by closing the FWD CARGO ISOL VALVE ◁, if the cargo freight permits.

L1 DESCENT TO FL 100/MEA.

L2 *Descend to FL 100, or MEA, whichever is higher.*

L1 ● **WHEN DIFF PR < 1 PSI AND FL BELOW 100:**
RAM AIR.....ON
MAX FL..... 100/MEA

● **If FAULT was due to an overheat:**

ASSOCIATED PROCEDURES

AIR PACK 1 (2) OVHT

● **WHEN PACK OVHT OUT:**
PACK (AFFECTED)..... ON

Ident.: PRO-ABN-AIR-AG-00017936.0001001 / 17 MAR 17

STATUS

● **If packs not recovered:**
MAX FL.....100/MEA

● **If FAULT was due to an overheat:**

● **WHEN PACK OVHT OUT:**
PACK (AFFECTED)..... ON

INOP SYS

PACK 1 + 2
FWD CRG HEAT ◁

AIR PACK 1+2 FAULT

Applicable to: MSN 02443-02457, 02584-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-AIR-AG-00017292.0002001 / 21 MAR 16

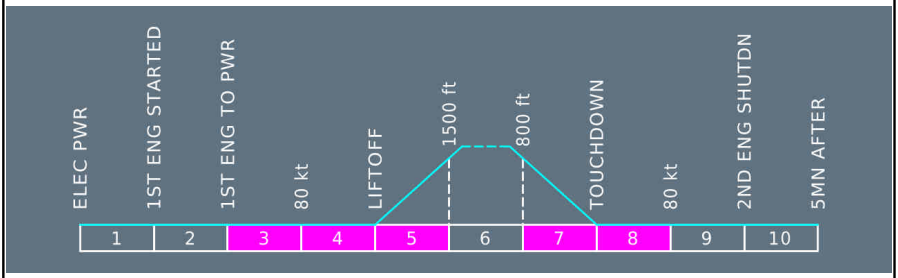
69

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both ACSCs are failed.

Flight Phase Inhibition:



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AIR PACK 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-AIR-AG-00017935.0002001 / 21 MAR 16

70

PACK 1.....OFF
PACK 2.....OFF

L2 *The fault light goes off, when the failure disappears.*

Note: The rate at which the cabin altitude increases may be minimized by closing the FWD CARGO ISOL VALVE , if the cargo freight permits.

L1 DESCENT TO FL 100/MEA-MORA.

L2 *Descend to FL 100, or MEA-MORA, whichever is higher.*

L1 ● **WHEN DIFF PR < 1 PSI AND FL BELOW 100:**
RAM AIR.....ON
MAX FL.....100/MEA-MORA

● **If FAULT was due to an overheat:**

ASSOCIATED PROCEDURES

AIR PACK 1 (2) OVHT

● **WHEN PACK OVHT OUT:**
PACK (AFFECTED).....ON

Ident.: PRO-ABN-AIR-AG-00017936.0005001 / 17 MAR 17

71

STATUS

● **If packs not recovered:**
MAX FL.....100/MEA-MORA
CKPT AT FIXED TEMP
CAB AT FIXED TEMP

● **If FAULT was due to an overheat:**

● **WHEN PACK OVHT OUT:**
PACK (AFFECTED).....ON

INOP SYS

PACK 1 + 2
COND CTL 1
COND CTL 2
FWD CRG HEAT

AIR PACK 1+2 FAULT

Applicable to: MSN 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

Ident.: PRO-ABN-AIR-AG-00017292.0002001 / 21 MAR 16

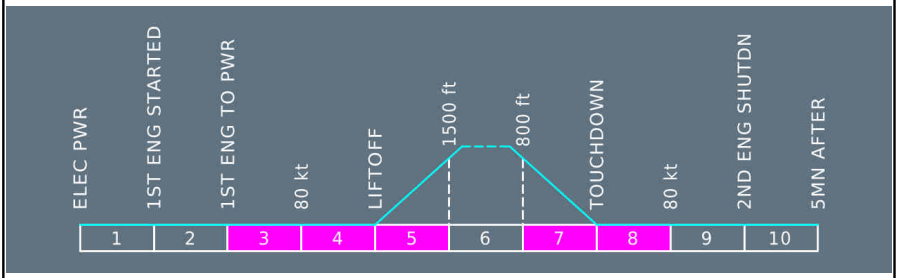
72

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both ACSCs are failed.

Flight Phase Inhibition:



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AIR PACK 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-AIR-AG-00017935.0001001 / 21 MAR 16

PACK (AFFECTED)..... OFF

L2 *The fault light goes off, when the failure disappears.*

Note: The rate at which the cabin altitude increases may be minimized by closing the FWD CARGO ISOL VALVE , if the cargo freight permits.

L1 DESCENT TO FL 100/MEA.

L2 *Descend to FL 100, or MEA, whichever is higher.*

L1 ● **WHEN DIFF PR < 1 PSI AND FL BELOW 100:**
RAM AIR..... ON
MAX FL..... 100/MEA

● **If FAULT was due to an overheat:**

ASSOCIATED PROCEDURES

AIR PACK 1 (2) OVHT

● **WHEN PACK OVHT OUT:**
PACK (AFFECTED)..... ON

Ident.: PRO-ABN-AIR-AG-00017936.0002001 / 17 MAR 17

STATUS

● **If packs not recovered:**
MAX FL..... 100/MEA
CKPT AT FIXED TEMP
CAB AT FIXED TEMP

● **If FAULT was due to an overheat:**

● **WHEN PACK OVHT OUT:**
PACK (AFFECTED)..... ON

INOP SYS

PACK 1 + 2
COND CTL 1
COND CTL 2
FWD CRG HEAT

AIR PACK 1+2 FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-AIR-AG-00017292.0002001 / 21 MAR 16

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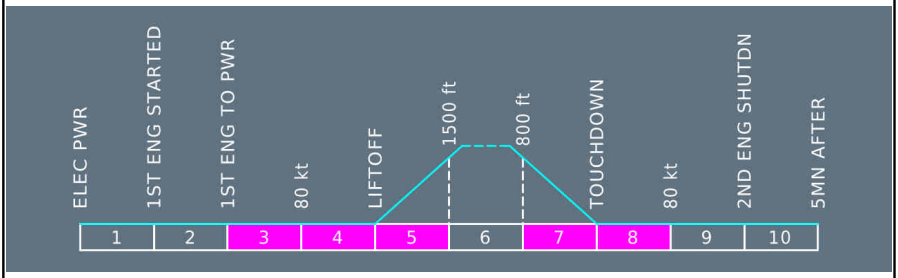
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both ACSCs are failed.

Flight Phase Inhibition:



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AIR PACK 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-AIR-AG-00017935.0005001 / 27 FEB 18

74

■ **If PACK 1(2) was previously set to OFF due to a failure of the associated ENG BLEED:**

PACK 2(1).....OFF
PACK 1(2).....ON

L2 *When PACK 1(2) is ON, AIR PACK 1+2 FAULT is replaced by AIR PACK 2(1) FAULT.*

L1 ■ **In all other cases:**

PACK 1.....OFF
PACK 2.....OFF

L2 *The fault light goes off, when the failure disappears.*

Note: The rate at which the cabin altitude increases may be minimized by closing the FWD CARGO ISOL VALVE ◁ , if the cargo freight permits.

L1 DESCENT TO FL 100/MEA-MORA.

L2 *Descend to FL 100, or MEA-MORA, whichever is higher.*

L1 ● **WHEN DIFF PR < 1 PSI AND FL BELOW 100:**

RAM AIR.....ON
MAX FL.....100/MEA-MORA

● **If FAULT was due to an overheat:**

ASSOCIATED PROCEDURES

AIR PACK 1 (2) OVHT

● **WHEN PACK OVHT OUT:**

PACK (AFFECTED).....ON

Continued on the following page

AIR PACK 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-AIR-AG-00017936.0005001 / 17 MAR 17

75

STATUS

- **If packs not recovered:**
  MAX FL..... 100/MEA-MORA
  CKPT AT FIXED TEMP
  CAB AT FIXED TEMP
  - **If FAULT was due to an overheat:**
    - **WHEN PACK OVHT OUT:**
      PACK (AFFECTED)..... ON

INOP SYS

PACK 1 + 2
COND CTL 1
COND CTL 2
FWD CRG HEAT

AIR PACK 1(2) OFF

Applicable to: ALL

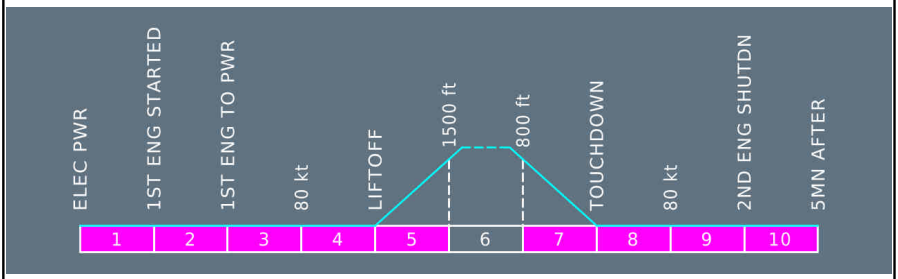
Ident.: PRO-ABN-AIR-AJ-00017294.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the PACK 1(2) pb-sw is set to OFF and no failure is detected.

Flight Phase Inhibition:



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AIR PACK 1(2) OFF (Cont'd)

Ident.: PRO-ABN-AIR-AJ-00017941.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-AIR-AJ-00010715.0001001 / 05 AUG 10

STATUS	
	INOP SYS
	PACK 1(2)

AIR PACK 1(2) OVHT

Applicable to: MSN 01767-02405, 02482

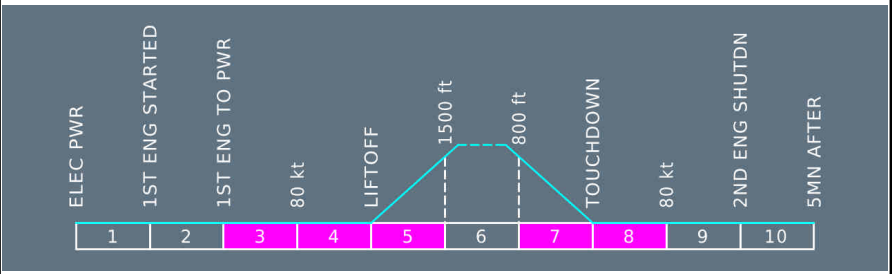
Ident.: PRO-ABN-AIR-AK-00017284.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- The pack compressor outlet temperature rises above 260 °C, or
- The pack compressor outlet temperature rises above 230 °C four times during the same flight, or
- The pack outlet temperature rises above 95 °C.

Flight Phase Inhibition:



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AIR PACK 1(2) OVHT (Cont'd)

Ident.: PRO-ABN-AIR-AK-00017942.0001001 / 21 MAR 16

PACK (AFFECTED)..... OFF

L2 *High flow is automatically selected on the remaining pack.*
Fault light goes off, when the overheat disappears.

L1 ● **WHEN PACK OVHT OUT:**
PACK (AFFECTED).....ON

Ident.: PRO-ABN-AIR-AK-00010711.0001001 / 10 JAN 11

	STATUS
	INOP SYS
● **WHEN PACK OVHT OUT:** PACK (AFFECTED)..... ON	PACK 1(2) (1)

(1) *(If pack not recovered)*

AIR PACK 1(2) OVHT

Applicable to: MSN 02443-02457, 02584-09063

Ident.: PRO-ABN-AIR-AK-00017284.0002001 / 21 MAR 16

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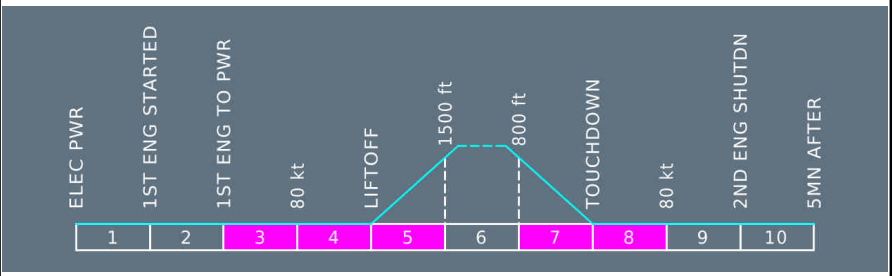
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pack compressor outlet temperature rises above 260 °C.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-AK-00017942.0001001 / 21 MAR 16

PACK (AFFECTED)..... OFF

L2 *High flow is automatically selected on the remaining pack.*
Fault light goes off, when the overheat disappears.

L1 ● **WHEN PACK OVHT OUT:**
PACK (AFFECTED).....ON

Ident.: PRO-ABN-AIR-AK-00010711.0001001 / 10 JAN 11

STATUS	INOP SYS
● **WHEN PACK OVHT OUT:** PACK (AFFECTED)..... ON	PACK 1(2) (1)

(1) *(If pack not recovered)*

AIR PACK 1(2) REGUL FAULT

Applicable to: MSN 01767-02405, 02482

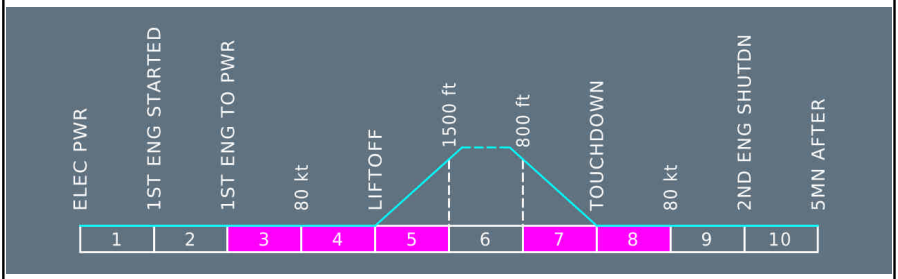
Ident.: PRO-ABN-AIR-AL-00017298.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- The pack main channel is failed, or
- The pack main and secondary channels are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-AL-00018089.0001001 / 21 MAR 16

77 Crew awareness.

Continued on the following page

AIR PACK 1(2) REGUL FAULT (Cont'd)

Ident.: PRO-ABN-AIR-AL-00010719.0002001 / 10 JAN 11

L12

STATUS	INOP SYS
■ **If the primary channel fails:** The pack air inlet flap fully opens; pack flow is fixed at the previous setting. ■ **If the primary and secondary channels fail:** PACK 1(2) AT FIXED TEMP *The pack outlet temperature is controlled by the pack anti-ice valve and is stabilized to a temperature between 5 °C (41 °F) and 30 °C (86 °F) within a maximum of 6 min.*	PACK 1(2) REGUL

AIR PACK 1(2) REGUL FAULT

Applicable to: MSN 02443-02457, 02584-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-AIR-AL-00017298.0002001 / 21 MAR 16

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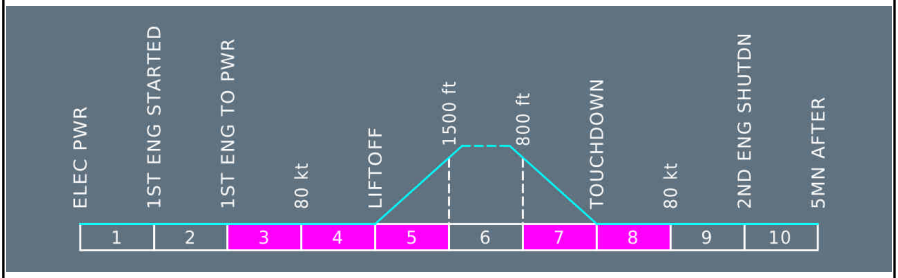
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the temperature regulation performance is degraded.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-AL-00018089.0001001 / 21 MAR 16

79

Crew awareness.

Ident.: PRO-ABN-AIR-AL-00010719.0003001 / 10 JAN 11

80

STATUS

INOP SYS
PACK 1(2) REGUL (1)
HOT AIR (2)

(1) *(In case of By Pass Valve or RAM Air Inlet failure)*
(2) *(In case of Flow Control Valve in backup mode)*

AIR PACK 1(2) REGUL FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-AIR-AL-00017298.0005001 / 09 APR 18

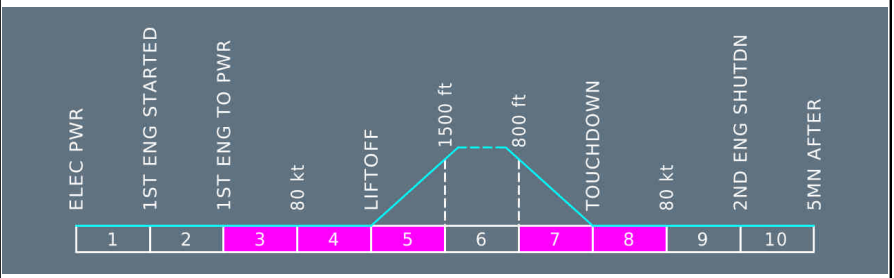
81

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- The temperature regulation performance is degraded, or
- An inconsistency is detected between air flow taken on the engine computed by EIU and pack flow computed by ACSC.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-AL-00018089.0005001 / 09 APR 18

82

■ **If the alert triggers when the temperature regulation performance is degraded:**

Crew awareness.

■ **If the alert triggers when an inconsistency is detected between air flow taken on the engine computed by EIU and pack flow computed by ACSC:**

● **On ground:**
PACK 1(2)..... OFF

Continued on the following page

AIR PACK 1(2) REGUL FAULT (Cont'd)

Ident.: PRO-ABN-AIR-AL-00010719.0006001 / 09 APR 18

83

L12

STATUS

INOP SYS

- **In case of an inconsistency is detected between air flow taken on the engine computed by EIU and pack flow computed by ACSC:**
  PACK 1(2) AVAIL IN FLT
  This status information is inhibited when the associated pack is already on in flight.

PACK 1(2) REGUL (1)
HOT AIR (2)

(1) *(In case of By Pass Valve or RAM Air Inlet failure)*
(2) *(In case of Flow Control Valve in backup mode)*

AIR X BLEED FAULT

Applicable to: ALL

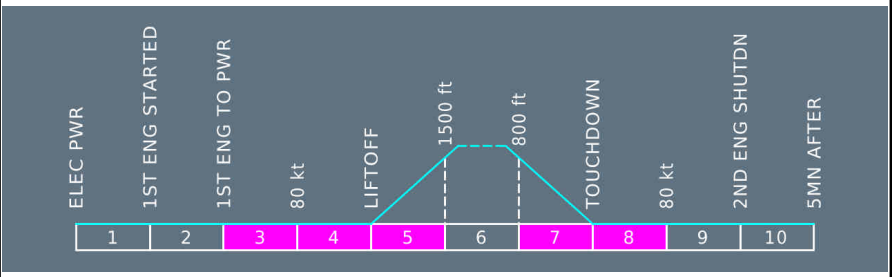
Ident.: PRO-ABN-AIR-E-00017383.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the crossbleed valve position disagrees with the X-BLEED selector position.

Flight Phase Inhibition:



Ident.: PRO-ABN-AIR-E-00011097.0001001 / 05 AUG 10

X BLEED..... MAN CTL

L2 *Select OPEN, when the APU BLEED pb-sw is ON, or for engine start, or when WING ANTI-ICE pb-sw is ON and one bleed is inoperative.*
Select SHUT in other cases.

L1 ● **If manual opening inoperative, and only one bleed available:**
WING ANTI ICE.....OFF
AVOID ICING CONDITIONS

Continued on the following page

AIR X BLEED FAULT (Cont'd)

Ident.: PRO-ABN-AIR-E-00017612.0002001 / 21 MAR 16

STATUS

- **If manual opening inoperative, and only one bleed available:**

  AVOID ICING CONDITIONS

  - **IF SEVERE ICE ACCRETION:**

    MIN SPD..... VLS +10 / G DOT

    MANEUVER WITH CARE

  LDG DIST PROC.....APPLY

X BLEED MAN CTL

INOP SYS

WING A.ICE
X BLEED

Intentionally left blank

APU AUTO (EMER) SHUT DOWN

Applicable to: ALL

Ident.: PRO-ABN-APU-A-00016876.0001001 / 21 MAR 16

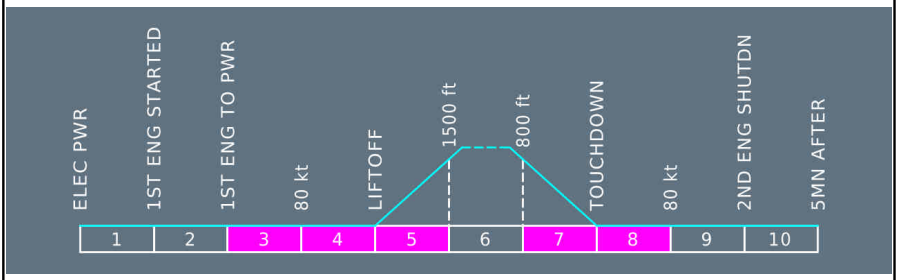
ANNUNCIATIONS

Triggering Conditions:

L2 The APU AUTO SHUT DOWN alert triggers when an automatic shutdown of the APU occurs for a reason other than a fire.
The APU EMER SHUT DOWN triggers when:

- The APU SHUT OFF sw on the External Power Panel is pushed or,
- The APU FIRE pb is pushed or,
- An APU fire on ground is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-APU-A-00018193.0001001 / 21 MAR 16

MASTER SW.....OFF

Ident.: PRO-ABN-APU-A-00010106.0001001 / 05 AUG 10

STATUS

	INOP SYS
	APU

APU FIRE DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-APU-D-00021359.0001001 / 17 MAR 17

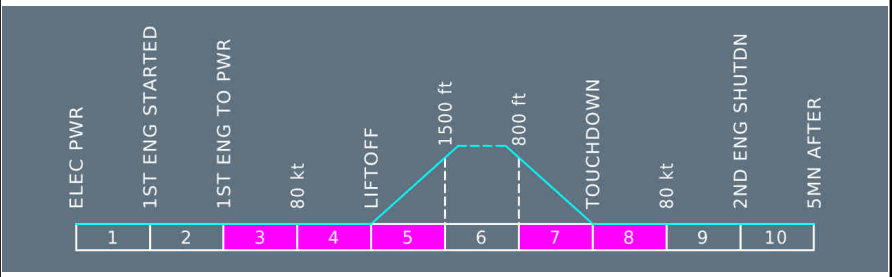
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- Both loops are inoperative, or
- Fire Detector Unit is inoperative.

Flight Phase Inhibition:



Ident.: PRO-ABN-APU-D-00021360.0001001 / 17 MAR 17

Crew awareness.

Ident.: PRO-ABN-APU-D-00021361.0001001 / 17 MAR 17

STATUS

	INOP SYS
	APU FIRE DET

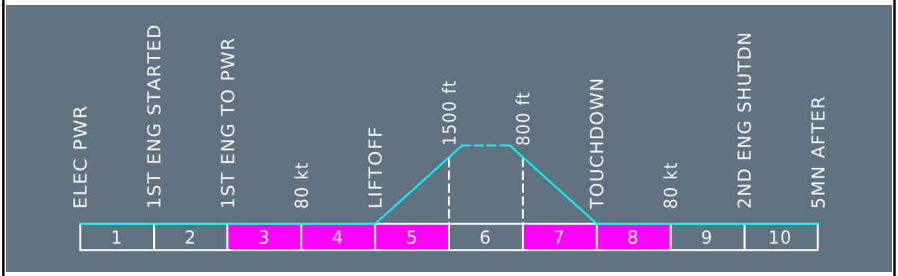
APU FIRE LOOP A(B) FAULT

Applicable to: ALL

Ident.: PRO-ABN-APU-B-00021362.0001001 / 17 MAR 17

ANNUNCIATIONS

Flight Phase Inhibition:



Ident.: PRO-ABN-APU-B-00021363.0001001 / 17 MAR 17

L2 Crew awareness.

Ident.: PRO-ABN-APU-B-00021364.0001001 / 17 MAR 17

STATUS

INOP SYS
APU LOOP A(B)

Intentionally left blank

APU FIRE

Applicable to: ALL

Ident.: PRO-ABN-APUF-C-00017402.0001001 / 21 MAR 16

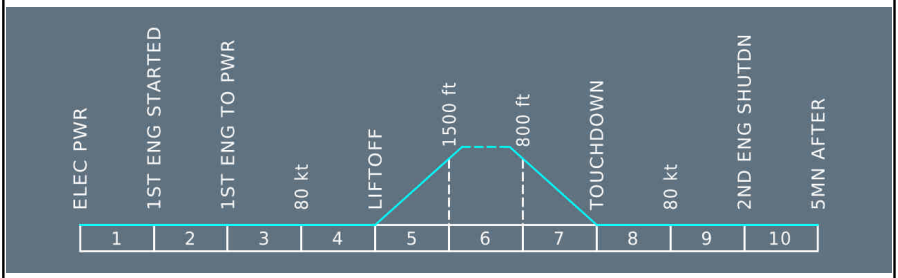
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- Fire is detected by both loops, or
- Fire is detected by one loop when the other loop is faulty, or
- A rupture occurs in both loops within 5 s.

Flight Phase Inhibition:



Ident.: PRO-ABN-APUF-C-00017925.0001001 / 21 MAR 16

LAND ASAP

APU FIRE P/B..... PUSH

L2 *APU LP valve closes.*
Aural warning stops.
APU FIRE pb-sw remains on, as long as a fire is detected.

L1 AGENT AFTER 10 S..... DISCH

L2 *The 10 s delay allows the airflow to decrease, which increases the effect of the agent.*
Automatic countdown on the ECAM.

L1 MASTER SW..... OFF

L2 *Do not attempt to restart the APU.*

Continued on the following page

APU FIRE (Cont'd)

Ident.: PRO-ABN-APUF-C-00012211.0001001 / 16 NOV 11

STATUS	
	INOP SYS
	APU

AUTO FLT A/THR LIMITED

Applicable to: ALL

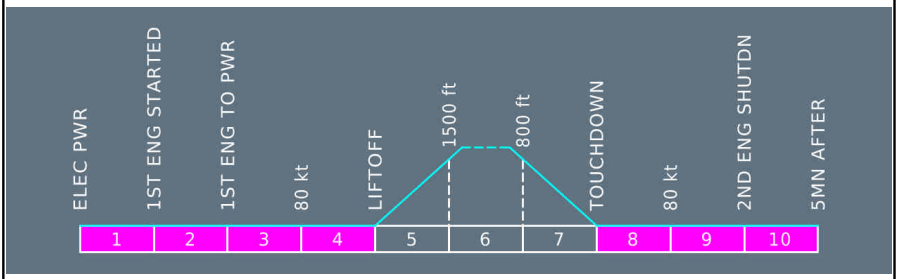
Ident.: PRO-ABN-AUTO_FLT-S-00016943.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when A/THR is active but thrust levers are set below CL detent (2 engines), or MCT detent (1 engine).
This caution is repeated every 5 s as long as the thrust lever are not moved.

Flight Phase Inhibition:



Ident.: PRO-ABN-AUTO_FLT-S-00018689.0001001 / 21 MAR 16

THR LEVERS.....MOVE

L2 *Thrust lever must be set in the relevant detent.*

AUTO FLT A/THR OFF

Applicable to: ALL

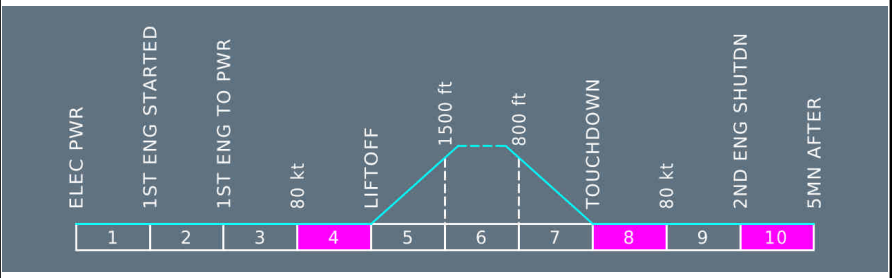
Ident.: PRO-ABN-AUTO_FLT-L-00016941.0002001 / 20 APR 17

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when this warning is displayed only for involuntary disconnection. The amber A/THR OFF and ENG THRUST LOCKED messages are displayed in the left lower part of ECAM upper DU.
For voluntary disconnection, an amber A/THR OFF message is displayed on the right lower part of ECAM upper DU.

Flight Phase Inhibition:



Ident.: PRO-ABN-AUTO_FLT-L-00018694.0002001 / 21 MAR 16

L2 If the A/THR is failed, the flight crew may recover it by engaging the other AP, and then trying to re-engage the A/THR.

Note: *If the A/THR is recovered with AP 2, A/THR will be lost again at AP 2 disengagement.*

L1 THR LEVERS.....MOVE

L2 *If the thrust levers are not moved within 5 s, the "ENG THRUST LOCKED" warning is displayed (Refer to PRO-ABN-ENG ENG THRUST LOCKED).*

Continued on the following page

AUTO FLT A/THR OFF (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-L-00010469.0001001 / 05 AUG 10

STATUS	INOP SYS
CAT 2 ONLY	A/THR CAT 3

AUTO FLT AP OFF

Applicable to: ALL

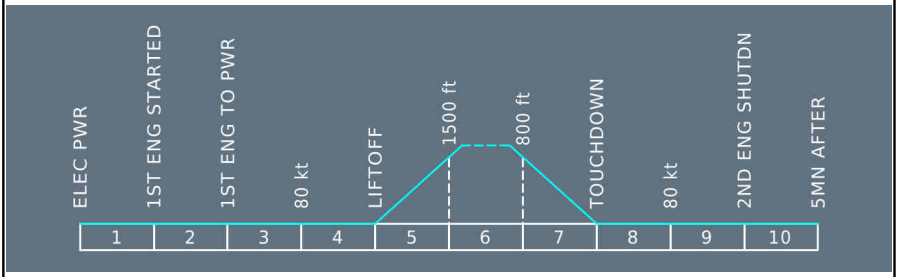
Ident.: PRO-ABN-AUTO_FLT-K-00016947.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when this warning is displayed only for involuntary disconnection.
For voluntary disconnection, a red AP OFF message is displayed in the right lower part of ECAM upper DU.

Flight Phase Inhibition:



Ident.: PRO-ABN-AUTO_FLT-K-00018695.0001001 / 21 MAR 16

Crew awareness.

Continued on the following page

AUTO FLT AP OFF (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-K-00017453.0002001 / 21 MAR 16

STATUS

INOP SYS
AP (Affected)
CAT 2 (1)
GLS AUTOLAND (1)

(1) *(If both AP lost)*

AUTO FLT FAC 1(2) FAULT

Applicable to: ALL

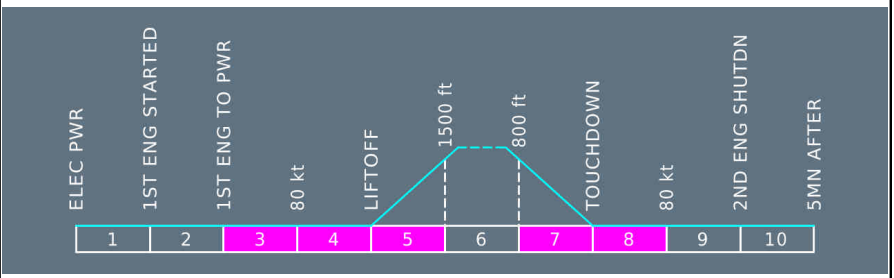
Ident.: PRO-ABN-AUTO_FLT-G-00016911.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one FAC computer is failed.

Flight Phase Inhibition:



Continued on the following page

AUTO FLT FAC 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-G-00010457.0001001 / 05 AUG 10

FAC (AFFECTED)..... OFF THEN ON

- **IF UNSUCCESSFUL:**
  FAC (AFFECTED)..... OFF

L2 *All functions are performed by the remaining FAC.*

Ident.: PRO-ABN-AUTO_FLT-G-00017506.0001001 / 21 MAR 16

L12

STATUS	INOP SYS
BOTH PFD ON SAME FAC *See* (1) CAT 3 SINGLE ONLY	CAT 3 DUAL FAC 1(2)

(1) *Characteristic speeds, displayed on the two PFDs, are computed by the same FAC.*

AUTO FLT FAC 1 + 2 FAULT

Applicable to: MSN 01767-05411

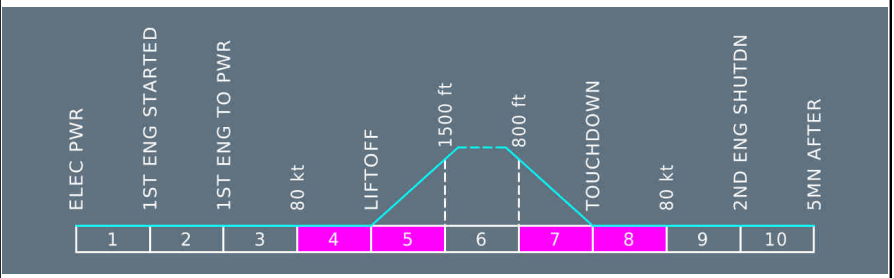
Ident.: PRO-ABN-AUTO_FLT-H-00016926.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the two FAC computers are failed.

Flight Phase Inhibition:



Continued on the following page

AUTO FLT FAC 1 + 2 FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-H-00017454.0002001 / 22 MAR 17

1

RUD WITH CARE ABV 160 KT

L2 *Depending on when the failure occurs, the rudder travel limiter system may not be in the correct position for the flight speed. Therefore, to prevent damage to the aircraft structure, use the rudder with care, when the speed is above 160 kt.*
At slats' extension, full rudder travel authority is recovered.

L1 FAC 1 ..... OFF THEN ON
FAC 2..... OFF THEN ON

- **IF UNSUCCESSFUL:**

  FAC 1 + 2..... OFF

L2 *With FAC 1 + 2 inoperative, the rudder travel limit system, rudder trim control, yaw damper and PFD characteristic speeds are lost.*

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

F/CTL normal laws are lost. All protections, except maneuver protections, are lost.

L1 MAX SPEED..... 320 KT

L2 *Speed is limited, due to the loss of high-speed protections.*

Continued on the following page

AUTO FLT FAC 1 + 2 FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-H-00017456.0006001 / 22 MAR 17

2

L12

STATUS

MAX SPEED..... 320 KT
RUD WITH CARE ABV 160 KT

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Displayed, when flaps in CONF 3.

APPR SPD.....VREF + 10 KT
LDG DIST PROC..... APPLY

ALTN LAW : PROT LOST
WHEN L/G DN : DIRECT LAW
See [2]

INOP SYS

WNDSHEAR DET [1]
REAC W/S DET [1]
F/CTL PROT
FAC 1 + 2
AP 1 + 2
A/THR
CAT 2
GLS AUTOLAND ◁
STEEP APPR ◁
ROW/ROP ◁

[1] *(The REAC W/S DET inop sys replaces the WNDSHEAR DET inop sys on aircraft equipped with the PWS ◁)*

[2] *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

AUTO FLT FAC 1 + 2 FAULT

Applicable to: MSN 05437-06336

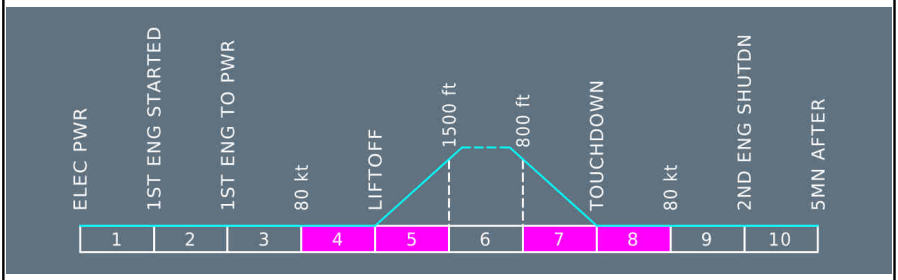
Ident.: PRO-ABN-AUTO_FLT-H-00016926.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the two FAC computers are failed.

Flight Phase Inhibition:



Continued on the following page

AUTO FLT FAC 1 + 2 FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-H-00017454.0002001 / 22 MAR 17

3

RUD WITH CARE ABV 160 KT

L2 *Depending on when the failure occurs, the rudder travel limiter system may not be in the correct position for the flight speed. Therefore, to prevent damage to the aircraft structure, use the rudder with care, when the speed is above 160 kt.*
At slats' extension, full rudder travel authority is recovered.

L1 FAC 1 ..... OFF THEN ON
FAC 2..... OFF THEN ON

- **IF UNSUCCESSFUL:**

  FAC 1 + 2..... OFF

L2 *With FAC 1 + 2 inoperative, the rudder travel limit system, rudder trim control, yaw damper and PFD characteristic speeds are lost.*

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

F/CTL normal laws are lost. All protections, except maneuver protections, are lost.

L1 MAX SPEED..... 320 KT

L2 *Speed is limited, due to the loss of high-speed protections.*

Continued on the following page

AUTO FLT FAC 1 + 2 FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-H-00017456.0008001 / 22 MAR 17

L12

STATUS

MAX SPEED..... 320 KT
RUD WITH CARE ABV 160 KT

APPR PROC

FOR LDG..... USE FLAP 3
This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.
GPWS LDG FLAP 3.....ON
Displayed, when flaps in CONF 3.
APPR SPD.....VREF + 10 KT
LDG DIST PROC..... APPLY

ALTN LAW : PROT LOST

INOP SYS

WNDSHEAR DET (1)
REAC W/S DET (1)
F/CTL PROT
FAC 1 + 2
AP 1 + 2
A/THR
CAT 2
GLS AUTOLAND ◁
STEEP APPR ◁
ROW/ROP ◁

(1) *(The REAC W/S DET inop sys replaces the WNDSHEAR DET inop sys on aircraft equipped with the PWS ◁)*

AUTO FLT FAC 1 + 2 FAULT

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

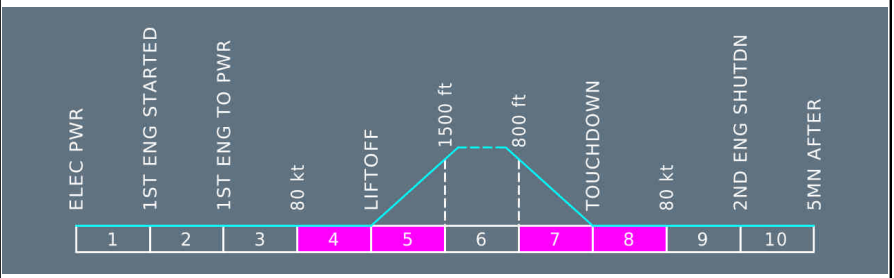
Ident.: PRO-ABN-AUTO_FLT-H-00016926.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the two FAC computers are failed.

Flight Phase Inhibition:



Continued on the following page

AUTO FLT FAC 1 + 2 FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-H-00017454.0004001 / 21 MAR 16

4

RUD WITH CARE ABV 140 KT

L2 *Depending on when the failure occurs, the rudder travel limiter system may not be in the correct position for the flight speed. Therefore, to prevent damage to the aircraft structure, use the rudder with care, when the speed is above 140 kt.*
At slats' extension, full rudder travel authority is recovered.

L1 FAC 1..... OFF THEN ON
FAC 2..... OFF THEN ON

- **IF UNSUCCESSFUL:**

FAC 1 + 2.....OFF

L2 *With FAC 1 + 2 inoperative, the rudder travel limit system, rudder trim control, yaw damper and PFD characteristic speeds are lost.*

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

F/CTL normal laws are lost. All protections, except maneuver protections, are lost.

L1 MAX SPEED..... 320 KT

L2 *Speed is limited, due to the loss of high-speed protections.*

Continued on the following page

AUTO FLT FAC 1 + 2 FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-H-00017456.0021001 / 04 DEC 18

5

L12

STATUS

MAX SPEED..... 320 KT
RUD WITH CARE ABV 140 KT
GA THR: TOGA ONLY

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG: USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Displayed, when flaps in CONF 3.

APPR SPD..... VREF + 15 KT
LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST

INOP SYS

WNDSHEAR DET (1)
REAC W/S DET (1)
F/CTL PROT
STEEP APPR ◁✈
FAC 1 + 2
AP 1 + 2
A/THR
CAT 2
GLS AUTOLAND ◁✈
GA SOFT
ROW/ROP ◁✈

(1) *(The REAC W/S DET INOP SYS replaces the WNDSHEAR DET INOP SYS on aircraft equipped with the PWS ◁✈)*

AUTO FLT FAC 1 + 2 FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

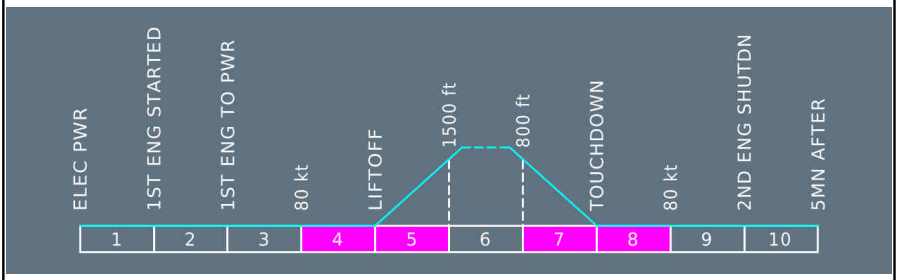
Ident.: PRO-ABN-AUTO_FLT-H-00016926.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the two FAC computers are failed.

Flight Phase Inhibition:



Continued on the following page

AUTO FLT FAC 1 + 2 FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-H-00017454.0004001 / 21 MAR 16

6

RUD WITH CARE ABV 140 KT

L2 *Depending on when the failure occurs, the rudder travel limiter system may not be in the correct position for the flight speed. Therefore, to prevent damage to the aircraft structure, use the rudder with care, when the speed is above 140 kt.*
At slats' extension, full rudder travel authority is recovered.

L1 FAC 1..... OFF THEN ON
FAC 2..... OFF THEN ON

- **IF UNSUCCESSFUL:**

  FAC 1 + 2.....OFF

L2 *With FAC 1 + 2 inoperative, the rudder travel limit system, rudder trim control, yaw damper and PFD characteristic speeds are lost.*

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

F/CTL normal laws are lost. All protections, except maneuver protections, are lost.

L1 MAX SPEED..... 320 KT

L2 *Speed is limited, due to the loss of high-speed protections.*

Continued on the following page

AUTO FLT FAC 1 + 2 FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-H-00017456.0016001 / 08 NOV 16

7

L12

STATUS

MAX SPEED..... 320 KT
RUD WITH CARE ABV 140 KT

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Displayed, when flaps in CONF 3.

APPR SPD.....VREF + 15 KT
LDG DIST PROC..... APPLY

ALTN LAW : PROT LOST

INOP SYS

WNDSHEAR DET (1)
REAC W/S DET (1)
F/CTL PROT
FAC 1 + 2
AP 1 + 2
A/THR
CAT 2
GLS AUTOLAND ◁
ROW/ROP ◁

(1) *(The REAC W/S DET inop sys replaces the WNDSHEAR DET inop sys on aircraft equipped with the PWS ◁)*

AUTO FLT FCU 1(2) FAULT

Applicable to: ALL

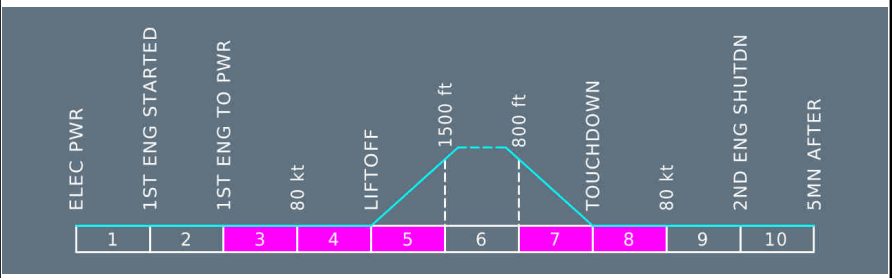
Ident.: PRO-ABN-AUTO_FLT-J-00016923.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when only one FCU channel remain operative.

Flight Phase Inhibition:



Ident.: PRO-ABN-AUTO_FLT-J-00010464.0001001 / 05 AUG 10

BARO REF.....X CHECK

L2 *One FCU channel is lost:*
Therefore, crosscheck the barometric reference settings on the FCU and PFDs.

Ident.: PRO-ABN-AUTO_FLT-J-00010465.0001001 / 05 AUG 10

STATUS

	INOP SYS
	FCU 1(2)

AUTO FLT FCU 1 + 2 FAULT

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

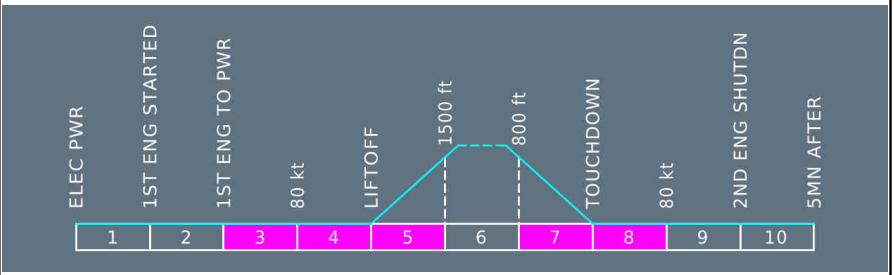
Ident.: PRO-ABN-AUTO_FLT-I-00016946.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FCU is completely loss.

Flight Phase Inhibition:



Continued on the following page

AUTO FLT FCU 1 + 2 FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-I-00017463.0001001 / 21 MAR 16

8

PFD BARO REF: STD ONLY

L2 *With both FCU channels failed, the barometer reference automatically goes to 1 013 hPa.*
Use standby altimeter, and change this to the actual barometer setting.
Do not insert the MDA (MDH) value on the MCDU PERF APPR Page (because the PFD altitude is referenced to STD, and not to the correct barometric value).
The PM must then perform the standard callouts ("HUNDRED ABOVE"and "MINIMUM"), using the STBY altimeter.

In addition:

- *All FCU controls are inoperative.*
- *A/THR, AP 1 + 2, and FD 1 + 2 are not available.*
  (Except in LAND or GO AROUND mode where only A/THR is lost).
- *On PFD:*
  - *Altitude alert is inoperative.*
  - *ILS/GLS ◁ /MLS ◁ deviation scales are displayed.*
  - *Flight path vector is displayed.*
  - *Mach indication is inoperative.*
  - *FMA is lost except in LAND or GA mode.*
- *On ND:*
  - *ROSE NAV mode with map (80 NM range) is displayed.*
  - *VOR/ADF needles:*
    Needle 1 is related to VOR1 only.
    Needle 2 is related to ADF2 only (ADF1 if ADF2 not installed).
    (VOR selection on DDRMI ◁ is not affected)
    (ADF selection on DDRMI ◁ (if available) is not affected).
  - *The weather radar image may be lost. If the image remains displayed it must be disregarded.*
    In all cases, red "WXR RNG" message is displayed.

Continued on the following page

AUTO FLT FCU 1 + 2 FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-I-00017512.0002001 / 21 MAR 16

STATUS

	INOP SYS
PFD BARO REF : STD ONLY ● **If in LAND or GA:** CAT 2 ONLY	FCU 1 + 2 AP 1 + 2 (1) A/THR CAT 3 (2) CAT 2 (1) GPWS TERR

(1) *(If not LAND or GA)*
(2) *(If in LAND or GA mode)*

AUTO FLT FCU 1 + 2 FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

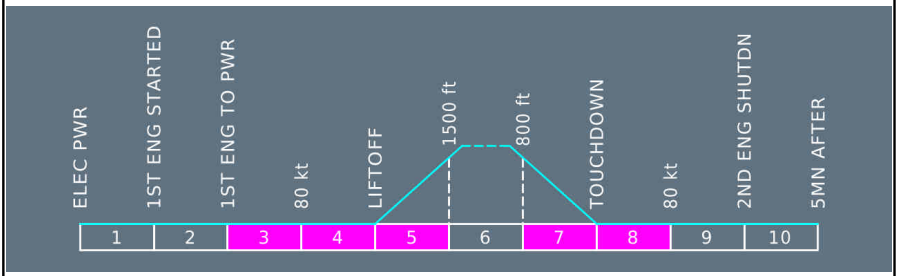
Ident.: PRO-ABN-AUTO_FLT-I-00016946.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FCU is completely loss.

Flight Phase Inhibition:



Continued on the following page

AUTO FLT FCU 1 + 2 FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-I-00017463.0002001 / 18 JUL 17

9

PFD BARO REF: STD ONLY

L2 *With both FCU channels failed, the barometer reference automatically goes to 1 013 hPa.*
Use standby altimeter, and change this to the actual barometer setting.
Do not insert the MDA (MDH) value on the MCDU PERF APPR Page (because the PFD altitude is referenced to STD, and not to the correct barometric value).
The PM must then perform the standard callouts ("HUNDRED ABOVE"and "MINIMUM"), using the STBY altimeter.

In addition:

- *All FCU controls are inoperative.*
- *A/THR, AP 1 + 2, and FD 1 + 2 are not available.*
  (Except in LAND or GO AROUND mode where only A/THR is lost).
- *On PFD:*
  - *Altitude alert is inoperative.*
  - *ILS/GLS ◁ /MLS ◁ deviation scales are displayed.*
  - *Flight path vector is displayed.*
  - *Mach indication is inoperative.*
  - *FMA is lost except in LAND or GA mode.*
- *On ND:*
  - *ARC mode with map (20 NM range) is displayed.*
  - *VOR/ADF needles:*
    Needle 1 is related to VOR1 only.
    Needle 2 is related to ADF2 only (ADF1 if ADF2 not installed).
    (VOR selection on DDRMI ◁ is not affected)
    (ADF selection on DDRMI ◁ (if available) is not affected).
  - *The weather radar image may be lost. If the image remains displayed it must be disregarded.*
    In all cases, red "WXR RNG" message is displayed.

Continued on the following page

AUTO FLT FCU 1 + 2 FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-I-00017512.0002001 / 21 MAR 16

STATUS

	INOP SYS
PFD BARO REF : STD ONLY ● **If in LAND or GA:** CAT 2 ONLY	FCU 1 + 2 AP 1 + 2 (1) A/THR CAT 3 (2) CAT 2 (1) GPWS TERR

(1) *(If not LAND or GA)*
(2) *(If in LAND or GA mode)*

AUTO FLT REAC W/S DET FAULT

Applicable to: MSN 01767-02334, 02388, 02443-02457, 02584-09063

Ident.: PRO-ABN-AUTO_FLT-N-00017473.0001001 / 21 MAR 16

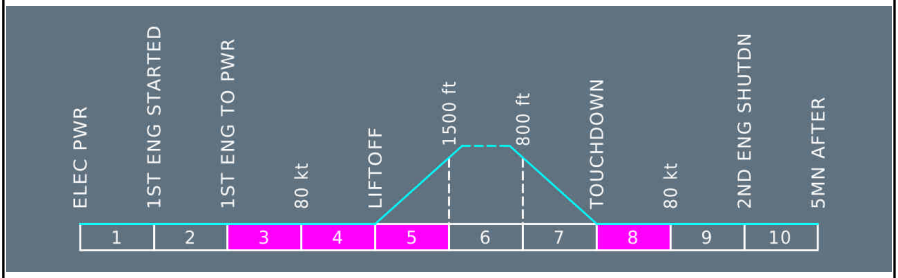
10

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the reactive windshear function is lost.

Flight Phase Inhibition:



Continued on the following page

AUTO FLT REAC W/S DET FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-N-00017479.0001001 / 21 MAR 16

11

Crew awareness.

Ident.: PRO-ABN-AUTO_FLT-N-00017480.0001001 / 05 JUN 18

12

STATUS

INOP SYS
REAC W/S DET

AUTO FLT RUD TRIM 1(2) FAULT

Applicable to: ALL

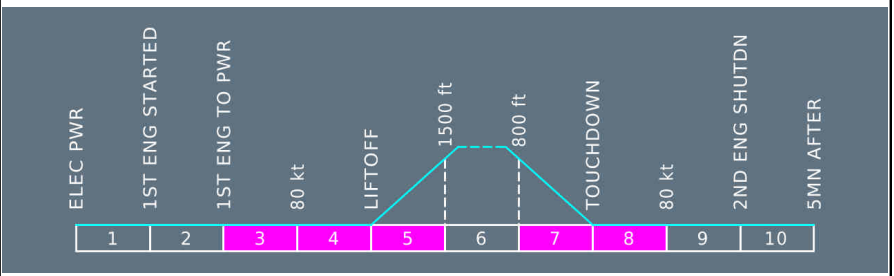
Ident.: PRO-ABN-AUTO_FLT-C-00016921.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one rudder trim actuator is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-AUTO_FLT-C-00010449.0001001 / 25 FEB 14

Crew awareness.

Continued on the following page

AUTO FLT RUD TRIM 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-C-00017513.0001001 / 21 MAR 16

STATUS	INOP SYS
CAT 3 SINGLE ONLY	CAT 3 DUAL RUD TRIM 1(2)

AUTO FLT RUD TRIM SYS

Applicable to: ALL

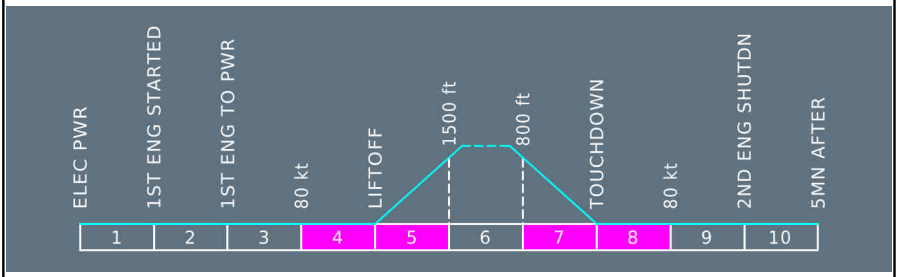
Ident.: PRO-ABN-AUTO_FLT-D-00016928.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the rudder trim system is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-AUTO_FLT-D-00010451.0002001 / 05 AUG 10

FAC 1..... OFF THEN ON
FAC 2..... OFF THEN ON

Continued on the following page

AUTO FLT RUD TRIM SYS (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-D-00017464.0002001 / 21 MAR 16

STATUS

INOP SYS

RUD TRIM
AP 1 + 2
CAT 2
GLS AUTOLAND

AUTO FLT RUD TRV LIM 1(2)

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

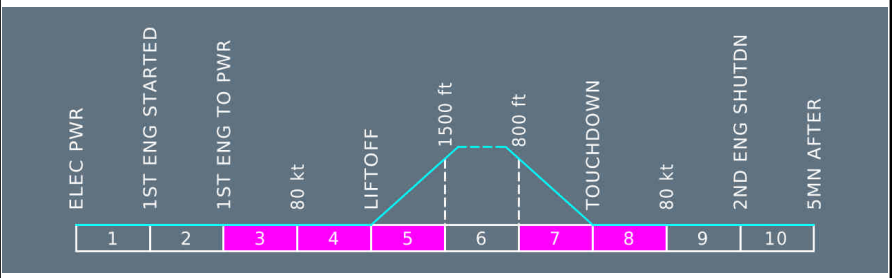
Ident.: PRO-ABN-AUTO_FLT-E-00016922.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one rudder travel limitation actuator is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-AUTO_FLT-E-00010453.0001001 / 25 FEB 14

13 Crew awareness.

Continued on the following page

AUTO FLT RUD TRV LIM 1(2) (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-E-00010454.0001001 / 05 AUG 10

STATUS

	INOP SYS
	RUD TRV LIM 1(2)

AUTO FLT RUD TRV LIM 1(2)

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

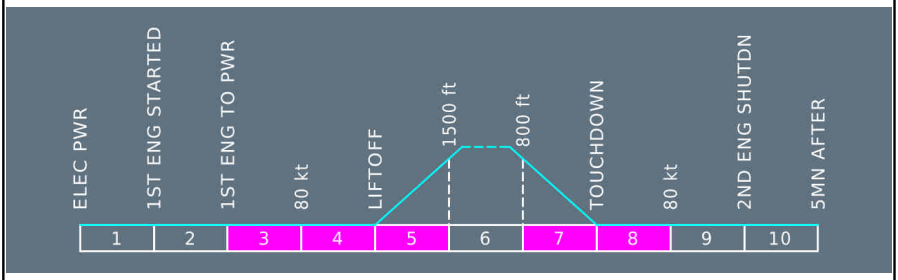
Ident.: PRO-ABN-AUTO_FLT-E-00016922.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one rudder travel limitation actuator is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-AUTO_FLT-E-00010453.0002001 / 09 APR 18

14

FAC 1..... OFF THEN ON
FAC 2..... OFF THEN ON

L2 The reset of both FACs enables to recover the AP function.

Continued on the following page

AUTO FLT RUD TRV LIM 1(2) (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-E-00010454.0001001 / 05 AUG 10

STATUS

INOP SYS
RUD TRV LIM 1(2)

AUTO FLT RUD TRV LIM SYS

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336

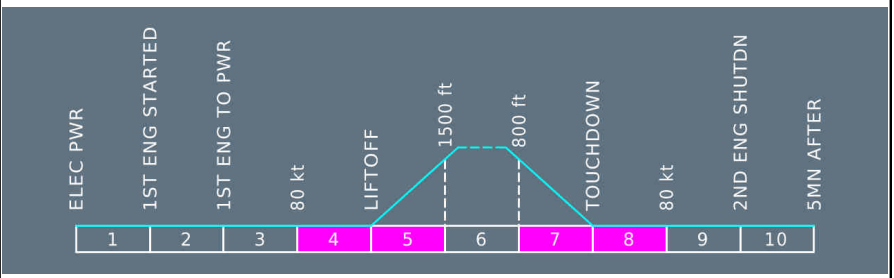
Ident.: PRO-ABN-AUTO_FLT-F-00016929.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the rudder travel limitation system is failed.

Flight Phase Inhibition:



Continued on the following page

AUTO FLT RUD TRV LIM SYS (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-F-00017465.0003001 / 22 MAR 17

15

RUD WITH CARE ABV 160 KT

L2 *Depending on when the failure occurs, the rudder travel limiter system may not be in the correct position for the flight speed. Therefore, to prevent damage to the aircraft structure, use the rudder with care, when the speed is greater than 160 kt.*
At slats' extension, full rudder travel authority can be recovered.

L1 FAC 1..... OFF THEN ON
FAC 2..... OFF THEN ON

- **If TLU (rudder or pedals) remains locked at high speed after slat extension:**

  MAX X WIND FOR LDG 15 KT
  AUTO BRK.....DO NOT USE

  L2 *Do not use the autobrake, so as not to delay the application of differential braking at landing roll.*

  L1
- **AT LDG ROLL:**
  DIFF BRAKING..... AS RQRD

Ident.: PRO-ABN-AUTO_FLT-F-00017467.0007001 / 30 AUG 18

16

L12

STATUS

RUD WITH CARE ABV 160 KT

- **If TLU (rudder or pedals) remains locked at high speed after slat extension:**

  MAX X WIND FOR LDG 15 KT
  AUTO BRK..... DO NOT USE

  Do not use the autobrake, so as not to delay the application of differential braking at landing roll.

  - **AT LDG ROLL:**
    DIFF BRAKING..... AS RQRD

INOP SYS

RUD TRV LIM

AUTO FLT RUD TRV LIM SYS

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

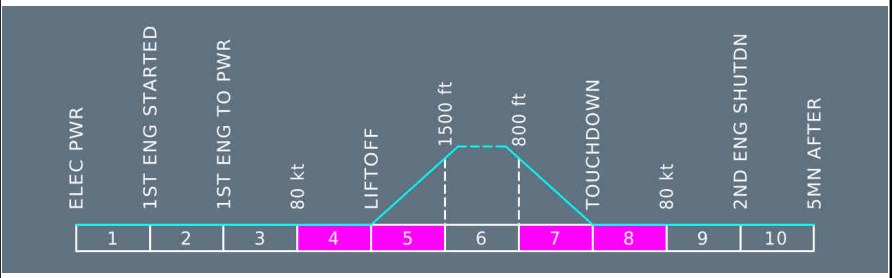
Ident.: PRO-ABN-AUTO_FLT-F-00016929.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the rudder travel limitation system is failed.

Flight Phase Inhibition:



Continued on the following page

AUTO FLT RUD TRV LIM SYS (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-F-00017465.0003001 / 22 MAR 17

17

RUD WITH CARE ABV 160 KT

L2 *Depending on when the failure occurs, the rudder travel limiter system may not be in the correct position for the flight speed. Therefore, to prevent damage to the aircraft structure, use the rudder with care, when the speed is greater than 160 kt.*
At slats' extension, full rudder travel authority can be recovered.

L1 FAC 1..... OFF THEN ON
FAC 2..... OFF THEN ON

- **If TLU (rudder or pedals) remains locked at high speed after slat extension:**

  MAX X WIND FOR LDG 15 KT
  AUTO BRK.....DO NOT USE

  L2 *Do not use the autobrake, so as not to delay the application of differential braking at landing roll.*

  L1 - **AT LDG ROLL:**
  DIFF BRAKING..... AS RQRD

Ident.: PRO-ABN-AUTO_FLT-F-00017467.0003001 / 22 MAR 17

L12

STATUS

RUD WITH CARE ABV 160 KT

- **If TLU (rudder or pedals) remains locked at high speed after slat extension:**

  MAX X WIND FOR LDG 15 KT
  AUTO BRK..... DO NOT USE

  Do not use the autobrake, so as not to delay the application of differential braking at landing roll.

  - **AT LDG ROLL:**
    DIFF BRAKING..... AS RQRD

CAT 3 SINGLE ONLY

INOP SYS

RUD TRV LIM

Note: *An autoland must not be performed with a crosswind greater than 12 kt.*

AUTO FLT RUD TRV LIM SYS

Applicable to: MSN 06720-09063

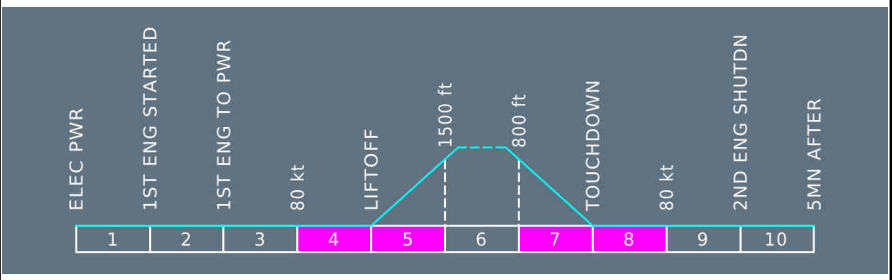
Ident.: PRO-ABN-AUTO_FLT-F-00016929.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the rudder travel limitation system is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-AUTO_FLT-F-00017465.0004001 / 21 MAR 16

18

RUD WITH CARE ABV 140 KT

L2 *Depending on when the failure occurs, the rudder travel limiter system may not be in the correct position for the flight speed. Therefore, to prevent damage to the aircraft structure, use the rudder with care, when the speed is greater than 140 kt.*
At slats' extension, full rudder travel authority can be recovered.

L1 FAC 1..... OFF THEN ON
FAC 2..... OFF THEN ON

- **If TLU (rudder or pedals) remains locked at high speed after slat extension:**

  MAX X WIND FOR LDG 15 KT
  AUTO BRK.....DO NOT USE

  L2 *Do not use the autobrake, so as not to delay the application of differential braking at landing roll.*

L1 - **AT LDG ROLL:**

  DIFF BRAKING..... AS RQRD

Continued on the following page

AUTO FLT RUD TRV LIM SYS (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-F-00017467.0010001 / 30 AUG 18

19

L12

STATUS

RUD WITH CARE ABV 140 KT

INOP SYS

RUD TRV LIM

- **If TLU (rudder or pedals) remains locked at high speed after slat extension:**

  MAX X WIND FOR LDG 15 KT
  AUTO BRK..... DO NOT USE

  Do not use the autobrake, so as not to delay the application of differential braking at landing roll.

  - **AT LDG ROLL:**
    DIFF BRAKING..... AS RQRD

AUTO FLT TCAS MODE FAULT

Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063

Ident.: PRO-ABN-AUTO_FLT-R-00016998.0001001 / 21 MAR 16

20

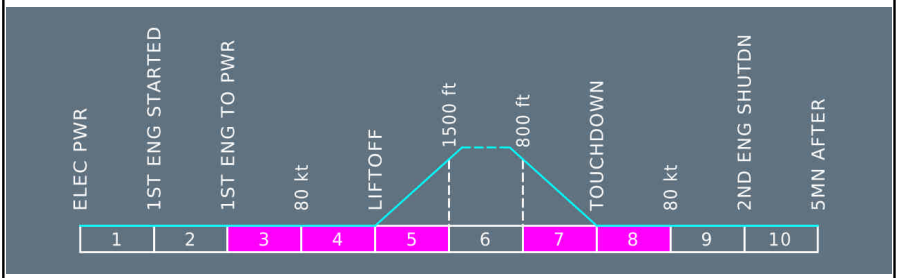
ANNUNCIATIONS

Triggering Conditions:

L2

This alert triggers when the TCAS flight guidance mode is inoperative.

Flight Phase Inhibition:



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AUTO FLT TCAS MODE FAULT (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-R-00014408.0001001 / 07 NOV 13

21

- **FOR TCAS ALERT**
  AP+FD.....OFF
  FLY MANUALLY TCAS ORDER

Ident.: PRO-ABN-AUTO_FLT-R-00014409.0001001 / 07 NOV 13

22

STATUS

	INOP SYS
	AP/FD TCAS

AUTO FLT YAW DAMPER 1(2)

Applicable to: MSN 01767-02139, 02204-02457, 02584-09063

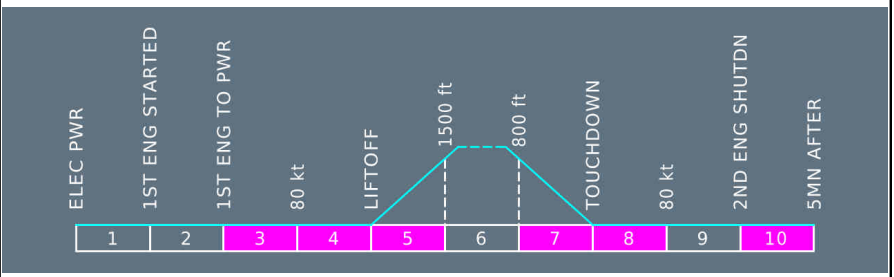
Ident.: PRO-ABN-AUTO_FLT-A-00016912.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one yaw damper actuator is failed.

Flight Phase Inhibition:



Continued on the following page

AUTO FLT YAW DAMPER 1(2) (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-A-00010444.0001001 / 25 FEB 14

23

Crew awareness.

Ident.: PRO-ABN-AUTO_FLT-A-00017515.0001001 / 21 MAR 16

STATUS	
	INOP SYS
CAT 3 SINGLE ONLY	CAT 3 DUAL YAW DAMPER 1(2)

AUTO FLT YAW DAMPER 1(2)

Applicable to: MSN 02195, 02482

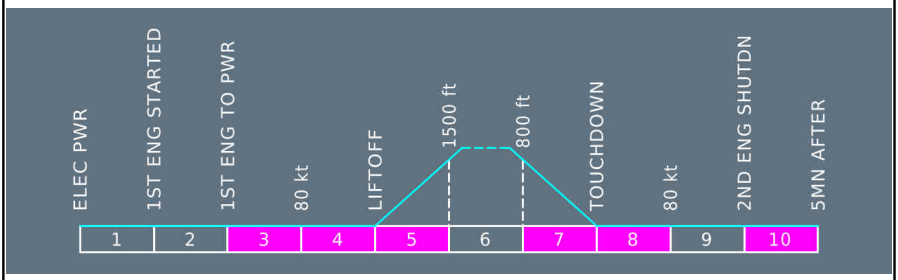
Ident.: PRO-ABN-AUTO_FLT-A-00016912.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one yaw damper actuator is failed.

Flight Phase Inhibition:



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AUTO FLT YAW DAMPER 1(2) (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-A-00010444.0002001 / 25 FEB 14

Crew awareness.

L2 *Note:* *The crew can try to reset the affected FAC by using the FAC pb-sw. On ground only, if the reset is unsuccessful, the taxi and takeoff can be continued with the failed yaw damper inoperative.*

Ident.: PRO-ABN-AUTO_FLT-A-00017515.0001001 / 21 MAR 16

STATUS	INOP SYS
CAT 3 SINGLE ONLY	CAT 3 DUAL YAW DAMPER 1(2)

AUTO FLT YAW DAMPER SYS

Applicable to: MSN 01767-05411

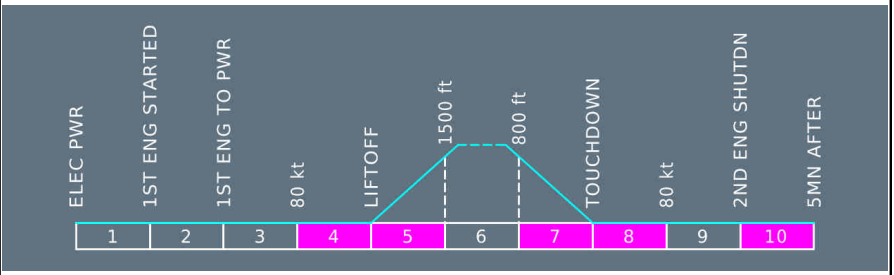
Ident.: PRO-ABN-AUTO_FLT-B-00016927.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the yaw damper system is failed.

Flight Phase Inhibition:



Continued on the following page

AUTO FLT YAW DAMPER SYS (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-B-00017469.0002001 / 22 MAR 17

L2 Loss of yaw dampers 1 + 2.

L1 FAC 1 ..... OFF THEN ON
FAC 2 ..... OFF THEN ON

- **If fault remains:**

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

F/CTL normal laws are lost. All protections, except maneuver protections, are lost.

MAX SPEED ..... 320 KT

Continued on the following page

AUTO FLT YAW DAMPER SYS (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-B-00017470.0003001 / 22 MAR 17

24

L12

STATUS

MAX SPEED..... 320 KT

Speed is limited, due to the loss of high-speed protections.

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will be displayed, when flaps in CONF 3.

APPR SPD.....VREF + 10 KT

LDG DIST PROC..... APPLY

ALTN LAW : PROT LOST

WHEN L/G DN : DIRECT LAW

See (1)

INOP SYS

F/CTL PROT
YAW DAMPER
AP 1 + 2
CAT 2
STEEP APPR
GLS AUTOLAND

(1) *At landing gear extension, control reverts to direct law in pitch,as well as in roll*
Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW.

AUTO FLT YAW DAMPER SYS

Applicable to: MSN 05437-06336

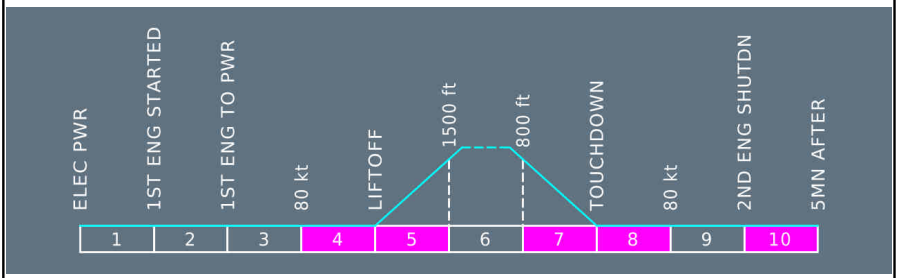
Ident.: PRO-ABN-AUTO_FLT-B-00016927.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the yaw damper system is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-AUTO_FLT-B-00017469.0002001 / 22 MAR 17

L2 Loss of yaw dampers 1 + 2.

L1 FAC 1..... OFF THEN ON
FAC 2..... OFF THEN ON

- **If fault remains:**

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

F/CTL normal laws are lost. All protections, except maneuver protections, are lost.

MAX SPEED..... 320 KT

Continued on the following page

AUTO FLT YAW DAMPER SYS (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-B-00017470.0005001 / 21 MAR 16

L12

STATUS

MAX SPEED..... 320 KT

Speed is limited, due to the loss of high-speed protections.

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will be displayed, when flaps in CONF 3.

APPR SPD..... VREF + 10 KT

LDG DIST PROC..... APPLY

ALTN LAW : PROT LOST

INOP SYS

F/CTL PROT
YAW DAMPER
AP 1 + 2
CAT 2
GLS AUTOLAND

AUTO FLT YAW DAMPER SYS

Applicable to: MSN 06720-09063

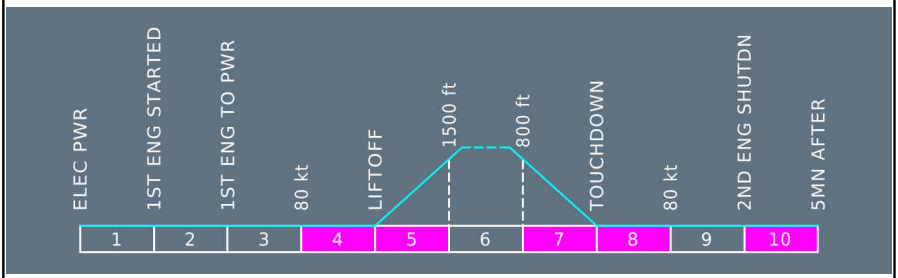
Ident.: PRO-ABN-AUTO_FLT-B-00016927.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the yaw damper system is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-AUTO_FLT-B-00017469.0002001 / 22 MAR 17

L2 Loss of yaw dampers 1 + 2.

L1 FAC 1..... OFF THEN ON
FAC 2..... OFF THEN ON

- **If fault remains:**

L12

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

F/CTL normal laws are lost. All protections, except maneuver protections, are lost.

MAX SPEED..... 320 KT

Continued on the following page

AUTO FLT YAW DAMPER SYS (Cont'd)

Ident.: PRO-ABN-AUTO_FLT-B-00017470.0010001 / 08 NOV 16

25

L12

STATUS

MAX SPEED..... 320 KT

Speed is limited, due to the loss of high-speed protections.

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will be displayed, when flaps in CONF 3.

APPR SPD.....VREF + 15 KT

LDG DIST PROC..... APPLY

ALTN LAW : PROT LOST

INOP SYS

F/CTL PROT
YAW DAMPER
AP 1 + 2
CAT 2
GLS AUTOLAND

AVIONICS SMOKE

Applicable to: ALL

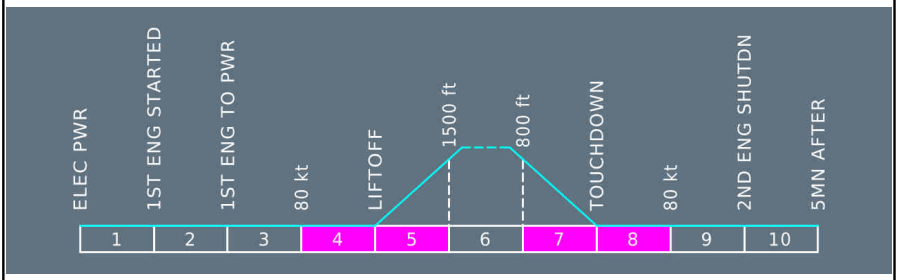
Ident.: PRO-ABN-AVNCS-M-00017405.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when smoke in the ventilation extraction duct is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-AVNCS-M-00014922.0001001 / 22 MAR 17

L2 The description of this procedure is included in the SMOKE/FUMES/AVNCS SMOKE procedure (*Refer to procedure*)

Intentionally left blank

BLEED MONITORING FAULT

Applicable to: MSN 01767-06336

Ident.: PRO-ABN-BLEED-L-00017385.0001001 / 21 MAR 16

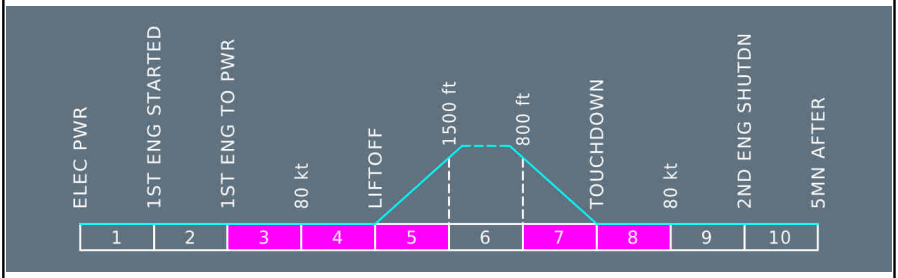
1

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both BMC are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-BLEED-L-00011111.0001001 / 25 FEB 14

2

Crew awareness.

Ident.: PRO-ABN-BLEED-L-00011112.0001001 / 05 AUG 10

3

STATUS

	INOP SYS
	BMC 1 + 2

BLEED MONIT SYS 1(2) FAULT

Applicable to: MSN 02135, 02139-02195, 03071, 04008-09063

Ident.: PRO-ABN-BLEED-K-00017388.0002001 / 21 MAR 16

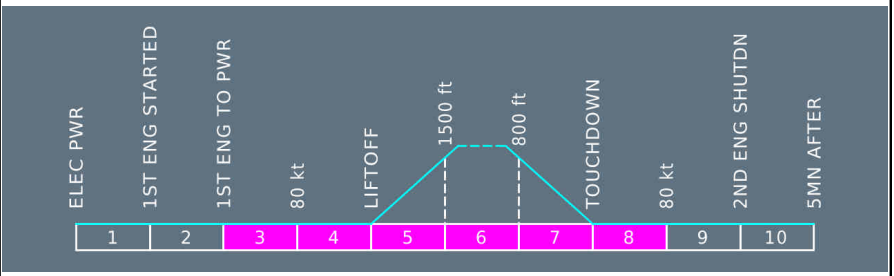
4

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the BMC 1(2) is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-BLEED-K-00011109.0004001 / 25 FEB 14

5

Crew awareness.

Ident.: PRO-ABN-BLEED-K-00011110.0004001 / 17 MAR 11

6

STATUS

INOP SYS
BMC 1(2)

[MEM] LOSS OF BRAKING

Ident.: PRO-ABN-BRAKES-00011315.0002001 / 05 JUN 18

1 **Applicable to: MSN 02443-02457, 02584-09063**

- **If no braking:**

REV	MAX

L2 *If needed, the flight crew may keep maximum reverse thrust until full aircraft stop.*

L1

BRAKE PEDALS	RELEASE

L2 *When the flight crew sets the A/SKID & N/W STRG sw to OFF, the control of the braking system is transferred from the BSCU to the ABCU, and the alternate braking mode is activated. Consequently the PF should release the brake pedals before the PM selects the A/SKID off. This action avoids brutal braking application.*
For information on the alternate braking mode, Refer to DSC-32-30-10 Braking Modes - Alternate Braking without Anti-Skid.

L1

A/SKID OFF	ORDER

L2 *The PF orders the PM to set the A/SKID & N/W STRG sw to OFF.*

L1

A/SKID & N/W STRG	OFF
BRAKE PEDALS	PRESS
MAX BRK PR	1000 PSI

L2 *The ABCU automatically limits the brake pressure to 1 000 PSI. Monitor brake pressure on the BRAKES PRESS indicator.*

L1 - **If still no braking:**

PARK BRAKE	USE

Use short successive parking brake applications to stop the aircraft.
L2 *For more information on the parking brake, Refer to DSC-32-30-10 Braking Modes - Parking Brake.*

[MEM] LOSS OF BRAKING

Ident.: PRO-ABN-BRAKES-00011315.0001001 / 05 JUN 18
Applicable to: MSN 01767-02405, 02482

- **If no braking:**

REV	MAX

L2 *If needed, the flight crew may keep maximum reverse thrust until full aircraft stop.*

L1 BRAKE PEDALS	RELEASE

L2 *When the flight crew sets the A/SKID & N/W STRG sw to OFF, the alternate braking mode is activated. Consequently the PF should release the brake pedals before the PM selects the A/SKID off. This action avoids brutal braking application.*
For information on the alternate braking mode, Refer to DSC-32-30-10 Braking Modes - Alternate Braking without Anti-Skid.

L1 A/SKID OFF	ORDER

L2 *The PF orders the PM to set the A/SKID & N/W STRG sw to OFF.*

L1 A/SKID & N/W STRG	OFF
BRAKE PEDALS	PRESS
MAX BRK PR	1000 PSI

L2 *Limit brake pressure to approximately 1 000 PSI. Monitor brake pressure on the BRAKES PRESS indicator.*

L1 - **If still no braking:**

PARK BRAKE	USE

Use short successive parking brake applications to stop the aircraft.
L2 *For more information on the parking brake, Refer to DSC-32-30-10 Braking Modes - Parking Brake.*

[QRH] ASYMMETRIC BRAKING

Ident.: PRO-ABN-BRAKES-00011331.0001001 / 17 MAR 17

2 **Applicable to: MSN 02443-02457, 02584-09063**

Apply this procedure when all brakes of one gear are released.

AVOID XWIND > 10 KT FROM SIDE OF AVAILABLE BRAKE
APPLY BRAKE PROGRESSIVELY ON AVAILABLE SIDE
USE RUDDER TO COUNTER LATERAL DEVIATION

- **If reverser inoperative on same side as inoperative brakes:**
  DO NOT USE REVERSERS

LDG DIST PROC.....APPLY

[QRH] RESIDUAL BRAKING

Ident.: PRO-ABN-BRAKES-00011318.0001001 / 17 MAR 17
Applicable to: ALL

- **In flight:**
  BRAKE PEDALS.....PRESS SEVERAL TIMES
  Press the brake pedals several times. This could zero a residual pressure on the alternate system.
  - **If residual pressure remains:**
    A/SKID & N/W STRG sel.....KEEP ON
    - **For landing:**
      AUTO/BRK.....MED
      Using MED mode gives immediate priority to normal braking upon landing gear touchdown, which cancels residual alternate pressure.
      - **If autobrake not available:**
        APPLY BRAKING JUST AFTER TOUCHDOWN

    POSSIBLE BRAKING ASYMMETRY

  Note: *If tire damage is suspected after landing, Refer to LIM-LG Taxi with Deflated or Damaged Tires.*

BRAKES A/SKID N/WS FAULT OR A/SKID N/WS OFF

Applicable to: ALL

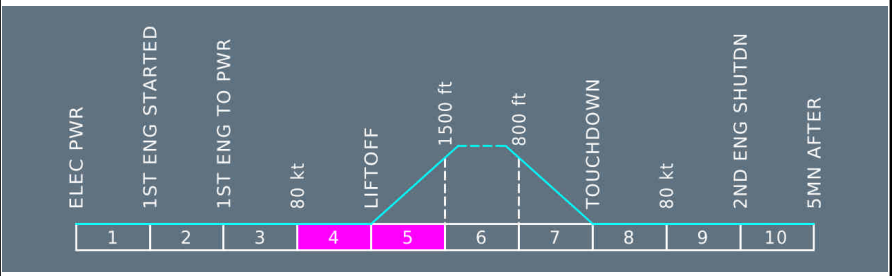
Ident.: PRO-ABN-BRAKES-J-00017807.0002001 / 04 DEC 18

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- There is a loss of normal brake system associated with Y HYD SYS LO PRESS, or
- Both BSCU channels are failed, or
- The A/SKID & N/W STRG sw is set to OFF.

Flight Phase Inhibition:



Ident.: PRO-ABN-BRAKES-J-00018571.0001001 / 21 MAR 16

MAX BRK PR..... 1000 PSI

L2 *Monitor brake pressure on the BRAKES PRESS indicator. Limit brake pressure to approximately 1 000 PSI and, at low ground speed, adjust brake pressure as required. Avoid landing on an icy runway.*

Continued on the following page

BRAKES A/SKID N/WS FAULT OR A/SKID N/WS OFF (Cont'd)

Ident.: PRO-ABN-BRAKES-J-00018670.0003001 / 21 MAR 16

L12

STATUS

MAX BRK PR.....1000 PSI

LDG DIST PROC..... APPLY

- **If Y SYS LO PR:**
  BRK Y ACCU PR ONLY

CAT 3 SINGLE ONLY

See (1)

INOP SYS

CAT 3 DUAL
ANTI SKID
N/W STRG
NORM BRK
AUTO BRK

(1) Note: *Automatic rollout is not permitted as specified in QRH (Refer to QRH/OPS Required Equipment for CAT2 and CAT3).*

BRAKES ALTN BRK FAULT

Applicable to: MSN 02443-02457, 02584-09063

Ident.: PRO-ABN-BRAKES-R-00017816.0001001 / 21 MAR 16

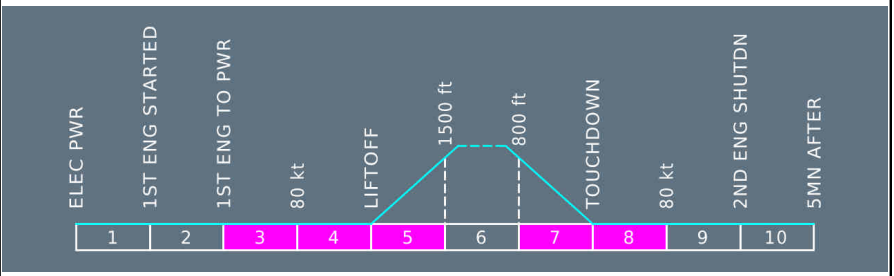
3

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the alternate braking function is lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-BRAKES-R-00018357.0001001 / 21 MAR 16

4

Crew awareness.

Ident.: PRO-ABN-BRAKES-R-00011328.0001001 / 05 AUG 10

5

STATUS

	INOP SYS
	ALTN BRK

BRAKES ALTN L(R) RELEASED

Applicable to: MSN 02443-02457, 02584-09063

Ident.: PRO-ABN-BRAKES-S-00017817.0001001 / 21 MAR 16

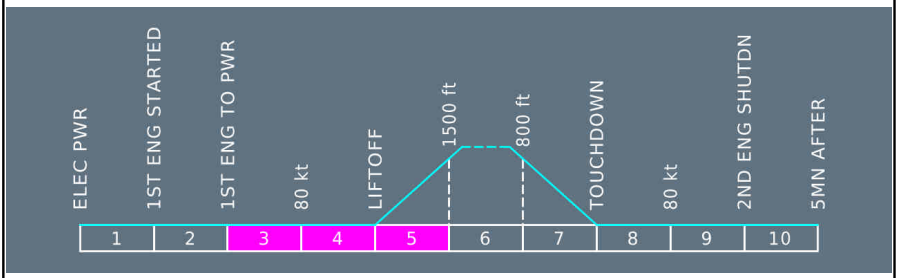
6

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the brakes of one gear is released.
It is detected when the landing gear is downlocked, at least one engine is running, and alternate braking is active.

Flight Phase Inhibition:



Ident.: PRO-ABN-BRAKES-S-00011329.0001001 / 05 AUG 10

7

L2 As long as the normal braking system is available, braking is normal. In alternate braking mode, braking of all wheels on one gear is lost.

L1 ● **If normal braking is lost:**
ASYM BRK PROC..... APPLY

Ident.: PRO-ABN-BRAKES-S-00011330.0001001 / 11 MAY 12

8

STATUS

	INOP SYS
● **If normal braking is lost:** LDG DIST PROC.....APPLY	ALTN L(R) BRK

BRAKES AUTO BRK FAULT

Applicable to: MSN 01767-02405, 02482

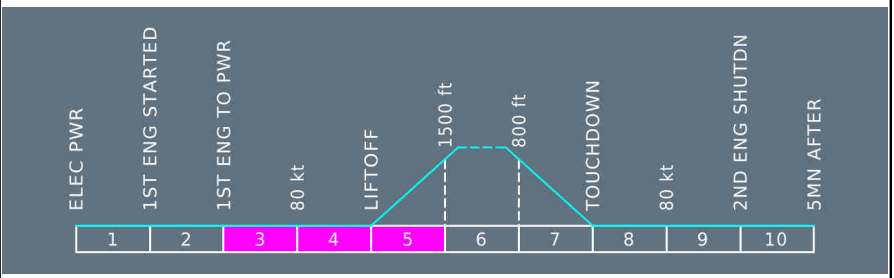
Ident.: PRO-ABN-BRAKES-N-00017806.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the autobrake is failed, after being armed.

Flight Phase Inhibition:



Ident.: PRO-ABN-BRAKES-N-00018672.0001001 / 21 MAR 16

L2 The AUTO BRK FAULT alert may be due to a failure of the autobrake mode itself, or to a brake released condition. The flight crew should, therefore, be prepared to counter a possible slight lateral drift at landing, via the rudder.

L1 BRAKE RELEASED

Continued on the following page

BRAKES AUTO BRK FAULT (Cont'd)

Ident.: PRO-ABN-BRAKES-N-00011314.0001001 / 21 NOV 17

STATUS

	INOP SYS
LDG DIST PROC..... APPLY	CAT 3 DUAL AUTO BRK NORM BRK (1)
CAT 3 SINGLE ONLY	

(1) *(NORM BRK is inoperative in case of failure causing the AUTO BRK FAULT caution to trigger with a switch to alternate braking (failures affecting the BSCU, the Normal Selector Valve, the Normal Servo Valve, or brake pedal transmitter unit).)*

BRAKES AUTO BRK FAULT

Applicable to: MSN 02443-02457, 02584-09063

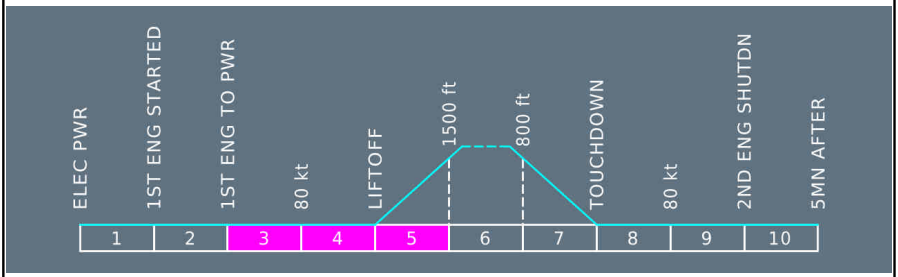
Ident.: PRO-ABN-BRAKES-N-00017806.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the autobrake is failed, after being armed.

Flight Phase Inhibition:



Continued on the following page

BRAKES AUTO BRK FAULT (Cont'd)

Ident.: PRO-ABN-BRAKES-N-00018672.0004001 / 21 MAR 16

9

Crew awareness.

Ident.: PRO-ABN-BRAKES-N-00011314.0004001 / 21 NOV 17

10

STATUS

	INOP SYS
CAT 3 SINGLE ONLY	CAT 3 DUAL AUTO BRK

BRAKES BRK Y ACCU LO PR

Applicable to: MSN 02443-02457, 02584-09063

Ident.: PRO-ABN-BRAKES-T-00017820.0001001 / 21 MAR 16

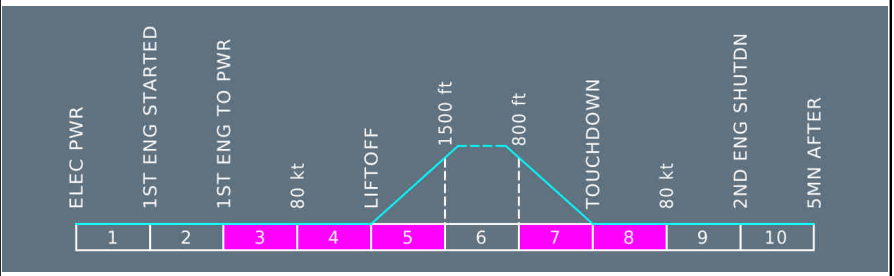
11

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the yellow accumulator is in low pressure.

Flight Phase Inhibition:



Continued on the following page

BRAKES BRK Y ACCU LO PR (Cont'd)

Ident.: PRO-ABN-BRAKES-T-00011332.0002001 / 05 AUG 10

12

L2 The yellow electrical pump can be used to pressurize the accumulator. If the accumulator pressure is still low, chocks are required before Engine 1 shut down. This message is replaced on ground by BRAKES PARK BRK LO PR if parking brake is on and yellow hydraulic system pressure is low.

L1 ● **On ground:**

- **BEFORE ENG SHUT DOWN:**
  CHOCKS CONSIDER

Ident.: PRO-ABN-BRAKES-T-00011333.0001001 / 05 AUG 10

13

STATUS	INOP SYS
● **If Y SYS LO PR** NORM BRK ONLY	BRK Y ACCU

BRAKES HOT

Applicable to: ALL

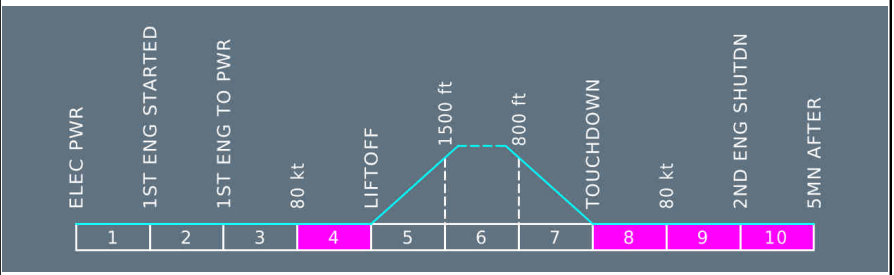
Ident.: PRO-ABN-BRAKES-M-00017786.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one brake temperature is above 300 °C. The alert disappears when the highest brake temperature is below 290 °C.

Flight Phase Inhibition:



Continued on the following page

BRAKES HOT (Cont'd)

Ident.: PRO-ABN-BRAKES-M-00018675.0008001 / 21 MAR 17

■ **On ground:**

PARK BRK: PREFER CHOCKS

L2 *If the BRAKES HOT alert is still on when the aircraft is parked, the flight crew should not set the PARKING BRK ON.*

L1 BRK FAN ..... ON

L2 *Note: Before they select the brake fans ◁ at the gate, the flight crew should first warn the ground personnel in order to avoid blowing carbon brake dust on them.*

L1 DELAY T.O. FOR COOL

L2 - *Delay takeoff, until the brake temperature is below 300 °C with the brake fans OFF, and 150 °C with the brake fans ◁ ON*
- *Refer to PRO-NOR-SOP-21 After Landing - Brake Temperature for brake temperature limitations requiring maintenance actions.*

L1 ■ **In flight:**

● **IF PERF PERMITS:**

MAX SPEED.....250/.60
L/G.....DN FOR COOL

L2 *If performance permits, the landing gear should be extended or, if already extended, it should remain so, to improve brake cooling.*

L1 ● **FOR L/G RETRACTION:**

MAX SPEED.....220/.54

L2 *Reduce speed for landing gear retraction, when the brake temperature is within limits.*

Ident.: PRO-ABN-BRAKES-M-00011312.0001001 / 05 AUG 10

L12

STATUS
MAX SPEED..... 280/.67 *See* (1)

(1) *As long as the landing gear is extended, limit the speed to 280 kt/M 0.67.*
For landing gear retraction when the brake temperature is within limits, reduce the speed to 220 kt.

BRAKES NORM + ALTN FAULT

Applicable to: MSN 02443-02457, 02584-09063

Ident.: PRO-ABN-BRAKES-Q-00017819.0001001 / 21 MAR 16

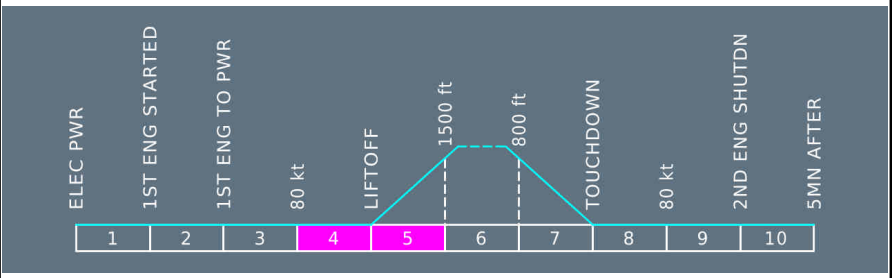
14

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the normal and alternate braking functions are lost. The parking brake is still available.

Flight Phase Inhibition:



Ident.: PRO-ABN-BRAKES-Q-00018358.0001001 / 21 MAR 16

15

PARK BRK ONLY

Ident.: PRO-ABN-BRAKES-Q-00011325.0001001 / 21 NOV 17

16

STATUS

PARK BRK ONLY

LDG DIST PROC..... APPLY

CAT 3 SINGLE ONLY

INOP SYS

CAT 3 DUAL
ANTI SKID
N/W STRG
NORM BRK
AUTO BRK
ALTN BRK

BRAKES NORM BRK FAULT

Applicable to: MSN 02443-02457, 02584-09063

Ident.: PRO-ABN-BRAKES-O-00017814.0001001 / 21 MAR 16

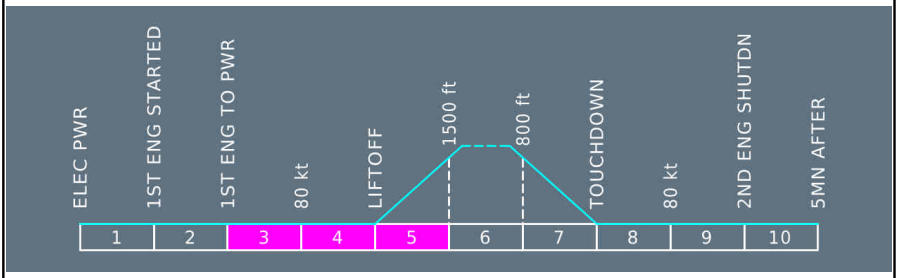
17

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the normal braking function is lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-BRAKES-O-00018679.0001001 / 21 MAR 16

18

Crew awareness.

Ident.: PRO-ABN-BRAKES-O-00011321.0001001 / 09 NOV 17

19

STATUS

LDG DIST PROC..... APPLY

ALTN Y BRK WITH A/SKID
CAT 3 SINGLE ONLY

INOP SYS

CAT 3 DUAL
NORM BRK
AUTO BRK

BRAKES PARK BRK FAULT

Applicable to: ALL

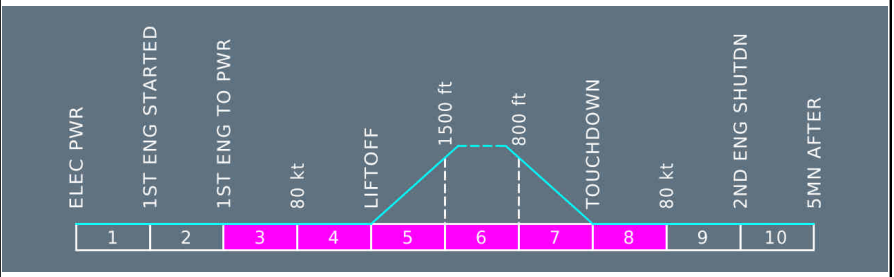
Ident.: PRO-ABN-BRAKES-X-00017823.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a discrepancy between the position of the parking brake handle and the applied parking brake pressure is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-BRAKES-X-00018359.0002001 / 20 MAY 16

- **On ground:**
  - **If PARKING BRK handle is OFF and parking brake pressure is still applied:**
    BRK PRESS STILL APPLIED
  - **If PARKING BRK handle is ON and no parking brake pressure is applied:**
    BRK PRESS RELEASED
    PARK BRK..... OFF
    - **BEFORE ENG SHUT DOWN:**
      CHOCKS..... CONSIDER

BRAKES PARK BRK LO PR

Applicable to: MSN 02443-02457, 02584-09063

Ident.: PRO-ABN-BRAKES-U-00017821.0003001 / 21 MAR 16

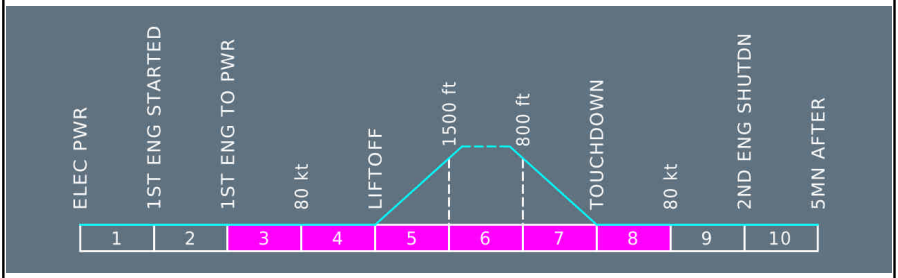
20

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pressure in the yellow accumulator and hydraulic system is low and the parking brake is on.

Flight Phase Inhibition:



Ident.: PRO-ABN-BRAKES-U-00018572.0003001 / 21 MAR 16

21

L2 Chocks are required before Engine 1 shut down.

L1 ● **On ground:**

- **BEFORE ENG SHUT DOWN:**
  CHOCKS CONSIDER

Ident.: PRO-ABN-BRAKES-U-00011335.0003001 / 05 AUG 10

22

STATUS	INOP SYS
NORM BRK ONLY	BRK Y ACCU

BRAKES PARK BRK ON

Applicable to: ALL

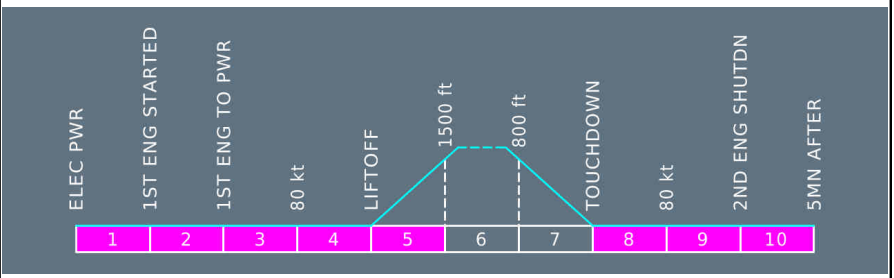
Ident.: PRO-ABN-BRAKES-Y-00017815.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the parking brake is ON in flight.

Flight Phase Inhibition:



Ident.: PRO-ABN-BRAKES-Y-00018360.0001001 / 21 MAR 16

PARK BRK..... OFF

BRAKES RELEASED

Applicable to: MSN 02443-02457, 02584-09063

Ident.: PRO-ABN-BRAKES-P-00017813.0001001 / 21 MAR 16

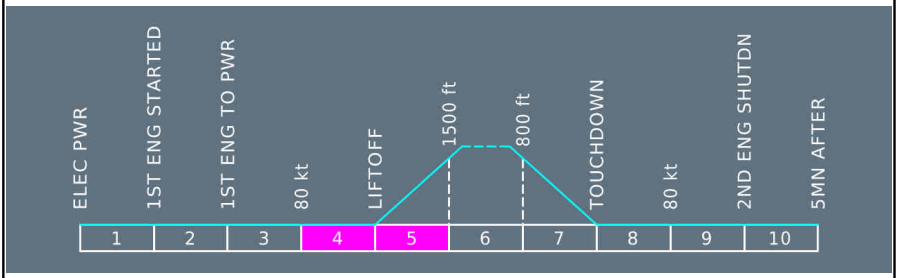
23

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the brake of one wheel is released. It is detected when the landing gear is downlocked, at least one engine is running, and normal braking is active.

Flight Phase Inhibition:



Ident.: PRO-ABN-BRAKES-P-00018663.0001001 / 21 MAR 16

24

Crew awareness.

Ident.: PRO-ABN-BRAKES-P-00011323.0001001 / 21 NOV 17

25

STATUS

LDG DIST PROC..... APPLY

CAT 2 ONLY

INOP SYS

CAT 3
AUTO BRK

BRAKES SYS 1(2) FAULT

Applicable to: ALL

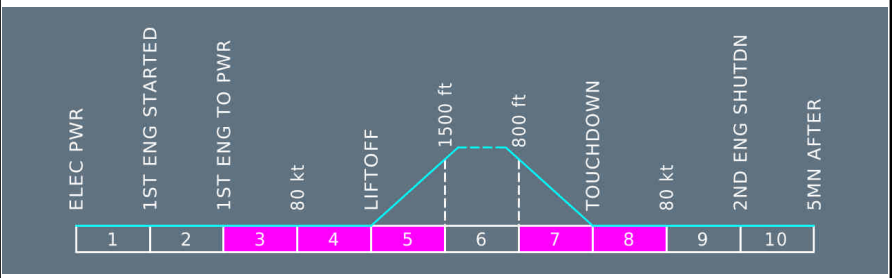
Ident.: PRO-ABN-BRAKES-L-00017812.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one BSCU channel is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-BRAKES-L-00011309.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-BRAKES-L-00011310.0001001 / 05 AUG 10

STATUS

INOP SYS

BRK SYS 1(2)

BRAKES-N/WS MINOR FAULT

Applicable to: MSN 02443-02457, 02584-09063

Ident.: PRO-ABN-NWS-W-00017730.0001001 / 21 MAR 16

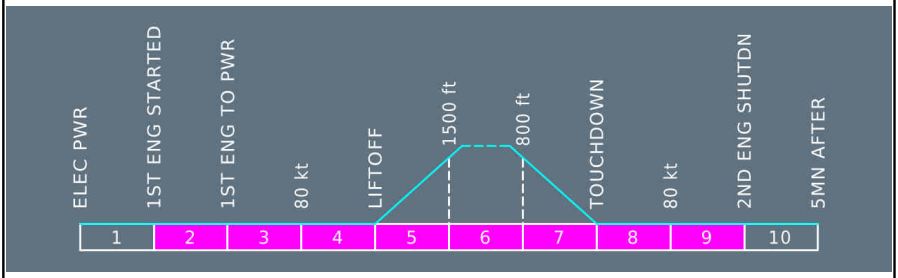
1

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a minor fault of the nose wheel steering system is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-NWS-W-00011326.0001001 / 25 FEB 14

2

Crew awareness.

Intentionally left blank

[QRH] CABIN OVERPRESSURE

Ident.: PRO-ABN-CAB_PR-00010761.0001001 / 17 MAR 17
Applicable to: ALL

Apply the following procedure (not displayed on ECAM) in case of total loss of cabin pressure control leading to overpressure.

PACK 1 OR 2.....OFF
VENTILATION BLOWER.....OVRD
VENTILATION EXTRACT.....OVRD

Cabin air is extracted overboard

ΔP.....FREQUENTLY MONITOR

- **If ΔP > 9 PSI:**
  LAND ASAP

  PACK 1.....OFF
  PACK 2.....OFF

- **10 min before landing:**
  PACK 1.....OFF
  PACK 2.....OFF
  VENTILATION BLOWER.....AUTO
  VENTILATION EXTRACT.....AUTO

- **Before door opening:**
  CHECK ΔP ZERO

CAB PR EXCESS CAB ALT

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

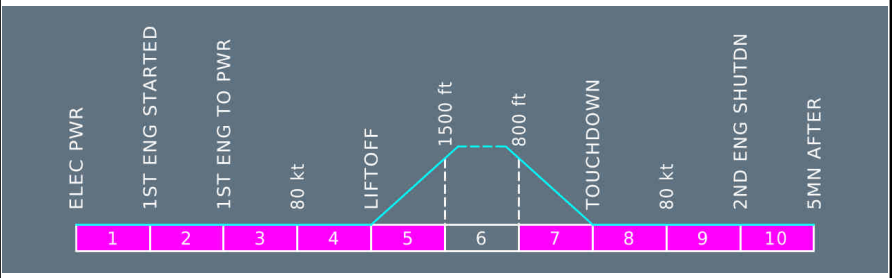
Ident.: PRO-ABN-CAB_PR-T-00017316.0005001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- In climb or descent, the cabin altitude is above the higher of:
  - 9 550 ft, or
  - 1 000 ft above the airfield pressure altitude.
- In cruise, the cabin altitude is above 9 550 ft.

Flight Phase Inhibition:



Continued on the following page

CAB PR EXCESS CAB ALT (Cont'd)

Ident.: PRO-ABN-CAB_PR-T-00018066.0005001 / 20 DEC 16

1

Rely on the CAB PR EXCESS CAB ALT warning even if not confirmed on the CAB PRESS SD page. The warning can be triggered by a cabin pressure sensor different from the one used to control the pressure and display the cabin altitude on the SD.

- **If above FL 100:**

  CREW OXY MASKS..... USE

  - **If below FL 160:**

    DESCENT..... INITIATE
    CABIN CREW.....ADVISE
    MAX FL..... 100/MEA-MORA

  - **If above FL 160:**

    SIGNS..... ON
    EMER DESCENT:
    DESCENT..... INITIATE

    - **If A/THR is not active:**

      THR LEVERS.....IDLE

      L2 *If the A/THR is active, check A/THR is at IDLE on the ED.*

    L1 SPD BRK..... FULL

    L2 *Extension of speedbrakes will significantly increase VLS.*
    In order to avoid autopilot disconnection and automatic retraction of speedbrakes due to possible activation of angle of attack protection, allow the speed to increase before starting to use speedbrakes.

    L1 SPD..... MAX/APPROPRIATE

    L2 *Descend at maximum appropriate speed. However, if structural damage is suspected use the flight controls with care and reduce speed as appropriate. The landing gear may be extended. In this case, speed must be reduced to VLO/VLE.*

    L1 ENG MODE SEL.....IGN
    ATC.....NOTIFY

    L2 *Notify ATC of the nature of the emergency, and state intention. The flight crew can communicate with the ATC using voice, or CPDLC when the voice contact cannot be established or has a poor quality.*

    L1 EMER DESCENT (PA)..... ANNOUNCE

    L2 *The flight crew must inform the cabin of emergency descent on the PA system.*

Continued on the following page

CAB PR EXCESS CAB ALT (Cont'd)

L1 XPDR 7700.....CONSIDER

L2 *Squawk 7700 unless otherwise specified by ATC.*

Note: To save oxygen, set the oxygen diluter selector to N position.
With the oxygen diluter left to 100 %, oxygen quantity may not be sufficient for the entire descent profile.
Ensure crew communication is established with oxygen masks. Avoid continuous use of the interphone to minimize the interference from the oxygen mask breathing noise.

L1 MAX FL.....100/MEA-MORA

● **IF CAB ALT > 14 000 FT:**

PAX OXY MASKS.....MAN ON

L2 *This action confirms that the passenger oxygen masks are released.*

Note: When descent is established and if time permits, check that the OUTFLOW VALVE is closed on the CAB PRESS SD page. If it is not closed and ΔP is positive, select the other CPC. If the OUTFLOW VALVE is still not closing set the cabin pressure MODE SEL pb to MAN and the V/S CTL sw to full down.
Notify the cabin crew when the aircraft reaches a safe flight level, and when cabin oxygen is no more necessary.

Ident.: PRO-ABN-CAB_PR-T-00010755.0002001 / 22 DEC 14

2

STATUS

MAX FL.....100/MEA-MORA

CAB PR EXCESS CAB ALT

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

Ident.: PRO-ABN-CAB_PR-T-00017316.0005001 / 21 MAR 16

ANNUNCIATIONS

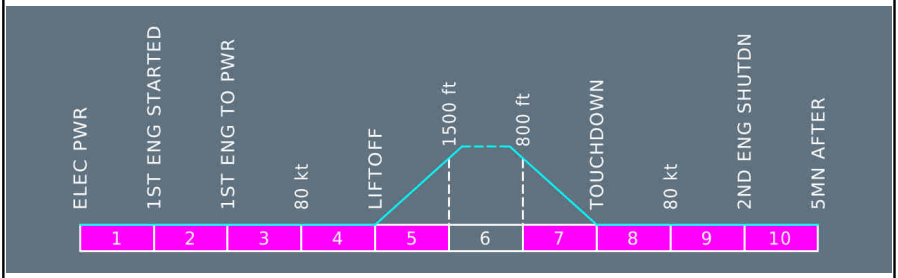
Triggering Conditions:

L2

This alert triggers when:

- In climb or descent, the cabin altitude is above the higher of:
  - 9 550 ft, or
  - 1 000 ft above the airfield pressure altitude.
- In cruise, the cabin altitude is above 9 550 ft.

Flight Phase Inhibition:



Continued on the following page

CAB PR EXCESS CAB ALT (Cont'd)

Ident.: PRO-ABN-CAB_PR-T-00018066.0004001 / 20 DEC 16

Rely on the CAB PR EXCESS CAB ALT warning even if not confirmed on the CAB PRESS SD page. The warning can be triggered by a cabin pressure sensor different from the one used to control the pressure and display the cabin altitude on the SD.

- **If above FL 100:**

  CREW OXY MASK.....USE

  - **If below FL 160:**

    DESCENT.....INITIATE
    MAX FL.....100/MEA

  - **If above FL 160:**

    SIGNS.....ON
    EMER DESCENT:
    DESCENT.....INITIATE

    - **If A/THR is not active:**

      THR LEVERS.....IDLE

L2 *If the A/THR is active, check A/THR is at IDLE on the ED.*

L1 SPD BRK.....FULL

L2 *Extension of speedbrakes will significantly increase VLS.*
In order to avoid autopilot disconnection and automatic retraction of speedbrakes due to possible activation of angle of attack protection, allow the speed to increase before starting to use speedbrakes.

L1 SPD.....MAX/APPROPRIATE

L2 *Descend at maximum appropriate speed. However, if structural damage is suspected use the flight controls with care and reduce speed as appropriate. The landing gear may be extended. In this case, speed must be reduced to VLO/VLE.*

L1 ENG MODE SEL.....IGN
ATC.....NOTIFY

L2 *Notify ATC of the nature of the emergency, and state intention. The flight crew can communicate with the ATC using voice, or CPDLC when the voice contact cannot be established or has a poor quality.*
Squawk 7700 unless otherwise specified by ATC.

L12 *Note: To save oxygen, set the oxygen diluter selector to N position.*

Continued on the following page

CAB PR EXCESS CAB ALT (Cont'd)

With the oxygen diluter left to 100 %, oxygen quantity may not be sufficient for the entire descent profile.
Ensure that the flight crew can communicate wearing oxygen masks. Avoid the continuous use of the interphone position to minimize the interference from the noise of the oxygen mask.

L1 MAX FL.....100/MEA

- **IF CAB ALT > 14 000 FT:**

PAX OXY MASKS.....MAN ON

L2 *This action confirms that the passenger oxygen masks are released.*

Note: When descent is established and if time permits, check that the OUTFLOW VALVE is closed on the CAB PRESS SD page. If it is not closed and ΔP is positive, select the other CPC. If the OUTFLOW VALVE is still not closing set the cabin pressure MODE SEL pb to MAN and the V/S CTL sw to full down.
Notify the cabin crew when the aircraft reaches a safe flight level, and when cabin oxygen is no longer necessary.

Ident.: PRO-ABN-CAB_PR-T-00010755.0001001 / 05 AUG 10

STATUS

MAX FL..... 100/MEA

CAB PR EXCES RESIDUAL PR

Applicable to: MSN 02584-09063

Ident.: PRO-ABN-CAB_PR-AE-00017328.0001001 / 21 MAR 16

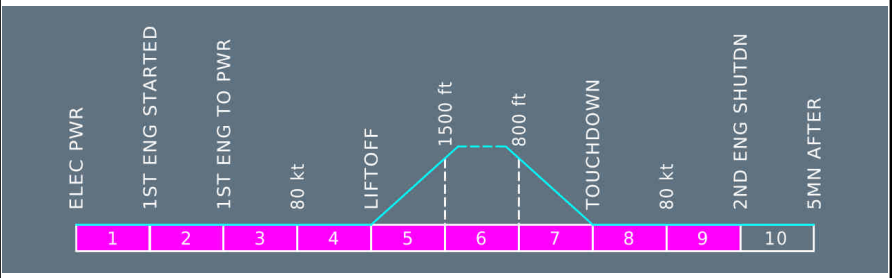
3

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the differential pressure is still above 2.5 hPa (0.036 PSI) 12 s after the last engine shutdown.

Flight Phase Inhibition:



Ident.: PRO-ABN-CAB_PR-AE-00018790.0002001 / 21 MAR 16

4

PACK 1.....OFF
PACK 2.....OFF
CABIN CREW..... ALERT

CAB PR LDG ELEV FAULT

Applicable to: ALL

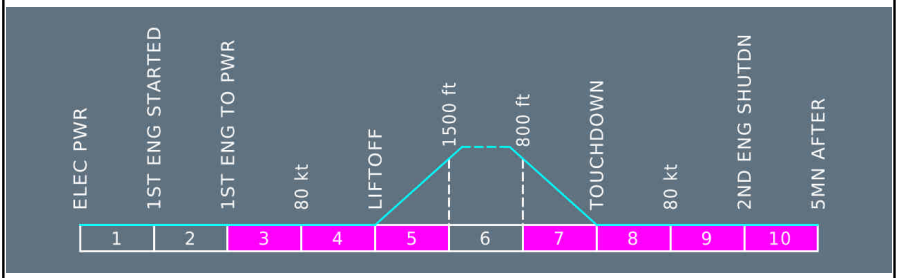
Ident.: PRO-ABN-CAB_PR-AF-00017325.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the LDG ELEV selector is set to AUTO and the landing field elevation of the FMGS is not available.

Flight Phase Inhibition:



Ident.: PRO-ABN-CAB_PR-AF-00018936.0002001 / 21 MAR 16

LDG ELEV..... ADJUST

L2 *The flight crew must select the landing field elevation manually with the LDG ELEV selector. Refer to the LDG ELEV indication on the CRUISE page on the CAB PRESS SD page to adjust the required landing field elevation.*

Note: If the landing is performed on QFE, set 0 ft on LDG ELEV selector.

CAB PR LO DIFF PR

Applicable to: ALL

Ident.: PRO-ABN-CAB_PR-AG-00017320.0001001 / 21 MAR 16

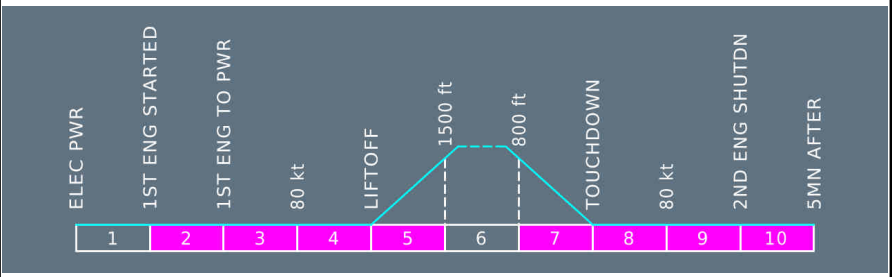
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- The time to reach ΔP = 0 is less than 1.5 min, and
- The time to reach ΔP = 0 is less than the time for CAB ALT to reach landing field elevation +30 s, and
- The aircraft is at least 3 000 ft above the landing field elevation.

Note: *The alert remains, when the aircraft descends within 3 000 ft of the landing field elevation.*

Flight Phase Inhibition:



Ident.: PRO-ABN-CAB_PR-AG-00010762.0002001 / 05 AUG 10

EXPECT HI CAB RATE
A/C V/S.....REDUCE

L2 *This line is not displayed in case of Emergency Descent due to Excessive Cabin Altitude.*

CAB PR OFV NOT OPEN

Applicable to: ALL

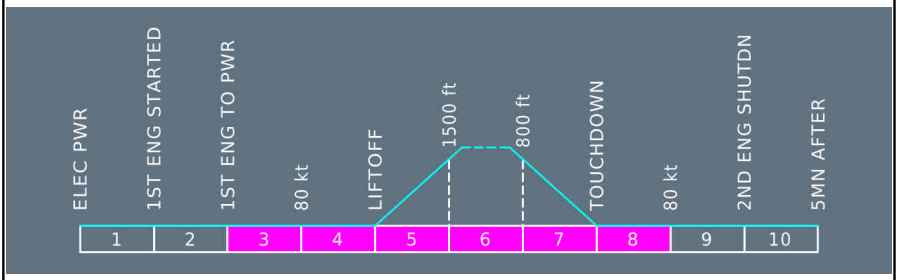
Ident.: PRO-ABN-CAB_PR-AH-00017323.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers, on ground, when the outflow valve is not fully open (time delay 70 s).

Flight Phase Inhibition:



Ident.: PRO-ABN-CAB_PR-AH-00018802.0001001 / 21 MAR 16

MODE SEL.....MAN
MAN V/S CTL.....FULL UP

L2 *It may take 10 s in manual mode before the crew notices a change of the outflow valve position.*

L1 ● **IF UNSUCCESSFUL :**

PACK 1.....OFF
PACK 2.....OFF

CAB PR SAFETY VALVE OPEN

Applicable to: ALL

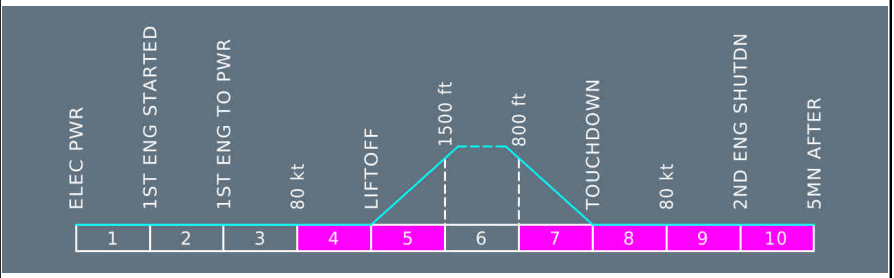
Ident.: PRO-ABN-CAB_PR-W-00017324.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers:
- On ground, if the safety valve is not fully closed, or
- In flight, if the safety valve is not fully closed for more than 1 min.

Flight Phase Inhibition:



Ident.: PRO-ABN-CAB_PR-W-00018092.0002001 / 21 MAR 16

■ **IF DIFF PR ABV 8 PSI:**

MODE SEL.....MAN
MAN V/S CTL.....AS RQRD

L2 *If overpressure is confirmed, reduce cabin ΔP.*
It may take 10 s in manual mode before the flight crew notices a change of the outflow valve position.

L1 ● **IF UNSUCCESSFUL:**

A/C FL..... REDUCE

■ **IF DIFF PR BELOW 0 PSI:**

EXPECT HI CAB RATE
A/C V/S..... REDUCE

Continued on the following page

CAB PR SAFETY VALVE OPEN (Cont'd)

Ident.: PRO-ABN-CAB_PR-W-00018093.0003001 / 21 MAR 16

STATUS

MAN CAB PR CTL
TGT V/S: CLIMB 500 FT/MIN
TGT V/S: DESC 300 FT/MIN

A/C FL	CAB ALT TGT
390	8 000
350	7 000
300	5 500
250	3 000
< 200	0

- **DURING FINAL APPR :**
  MAN V/S CTL.....FULL UP

CAUTION	Check that ΔP is zero before opening the doors.

CAB PR SYS 1(2) FAULT

Applicable to: ALL

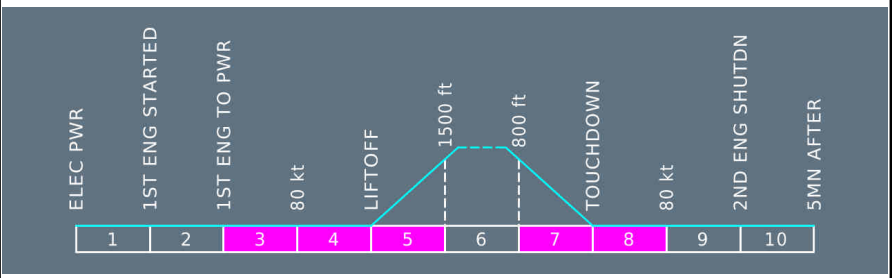
Ident.: PRO-ABN-CAB_PR-U-00017326.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the cabin pressure controller is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-CAB_PR-U-00010756.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-CAB_PR-U-00010758.0001001 / 05 AUG 10

STATUS

INOP SYS

CAB PR 1 (2)

CAB PR SYS 1+2 FAULT

Applicable to: ALL

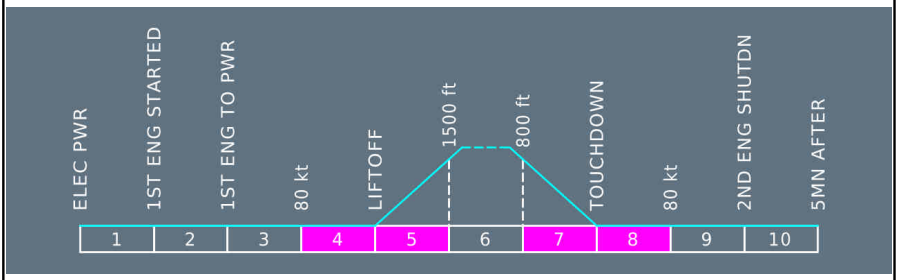
Ident.: PRO-ABN-CAB_PR-V-00017319.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both cabin pressure controllers are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-CAB_PR-V-00010759.0001001 / 05 AUG 10

L2 Due to the slow closure of the outflow valve in manual pressurization mode and depending on the failure, the following procedure may not avoid the depressurization.

L1 MODE SEL ..... MAN
MAN V/S CTL ..... AS RQRD

L2
- *It may take 10 s in manual mode before the crew notices a change of the outflow valve position. Use the cabin V/S indication to confirm the outflow valve operation.*
- *Monitor cabin V/S and CAB ALT frequently and adjust as necessary. Maintain aircraft altitude at or above cabin altitude.*
- *The two safety valves limit ΔP to 8.6 PSI.*

Continued on the following page

CAB PR SYS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-CAB_PR-V-00018107.0003001 / 21 MAR 16

L12

STATUS

INOP SYS

CAB PR 1+2

MAN CAB PR CTL
TGT V/S : CLIMB 500 FT/MIN
TGT V/S : DESC 300 FT/MIN

A/C FL	CAB ALT TGT
390	8 000
350	7 000
300	5 500
250	3 000
< 200	0

- **DURING FINAL APPR :**
  V/S CTL.....FULL UP
  When on intermediate approach (below airfield pressure altitude +2 500 ft), adjust ΔP = 0.

CAUTION	Check that ΔP is zero before opening the doors.

CARGO SMOKE FWD(AFT) BTL SQUIB FAULT

Applicable to: MSN 01767-02405, 02482, 02712

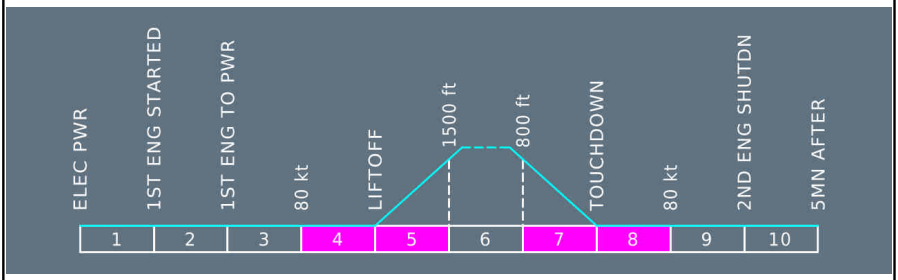
Ident.: PRO-ABN-CRG_SMOKE-I-00017415.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when FWD or AFT bottle squib is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-CRG_SMOKE-I-00018442.0001001 / 21 MAR 16

Crew awareness.

Intentionally left blank

C/B TRIPPED

Applicable to: ALL

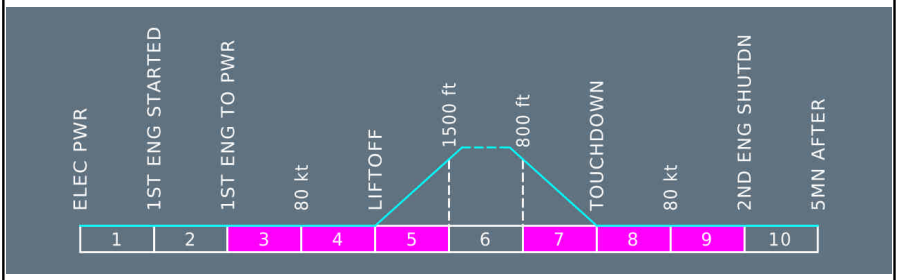
Ident.: PRO-ABN-C_B-Y-00017390.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one C/B is tripped in the designated zone.

Flight Phase Inhibition:



Ident.: PRO-ABN-C_B-Y-00012551.0001001 / 25 FEB 14

Crew awareness.

- **If one green circuit breaker (C/B) is tripped, one of the following messages appears after one minute, depending on the location of the affected C/B:**
  C/B TRIPPED ON OVHD PNL
  C/B TRIPPED ON L(R) ELEC BAY
  C/B TRIPPED REAR PNL J-M OR N-R OR S-V OR W-Z

L2 Note: *In flight, do not reengage a C/B that has tripped by itself, unless the Captain judges it necessary to do so for the safe continuation of the flight. This procedure should be adopted only as a last resort, and only one reengagement should be attempted. On ground, do not reengage the C/B of the fuel pump(s) of any tank. For all other C/Bs, if the flight crew coordinates the action with maintenance, the flight crew may reengage a tripped C/B, provided that the cause of the tripped C/B is identified.*

Intentionally left blank

COM ACARS FAULT

Applicable to: ALL

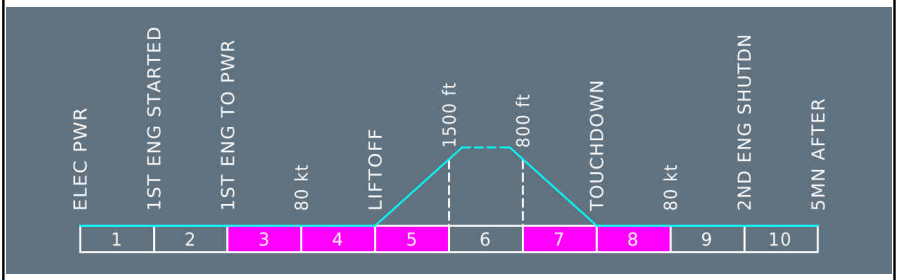
Ident.: PRO-ABN-COM-B-00016895.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a failure of ACARS.

Flight Phase Inhibition:



Ident.: PRO-ABN-COM-B-00017538.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-COM-B-00010037.0001001 / 05 AUG 10

STATUS

INOP SYS

ACARS

COM CIDS 1 + 2 FAULT

Applicable to: ALL

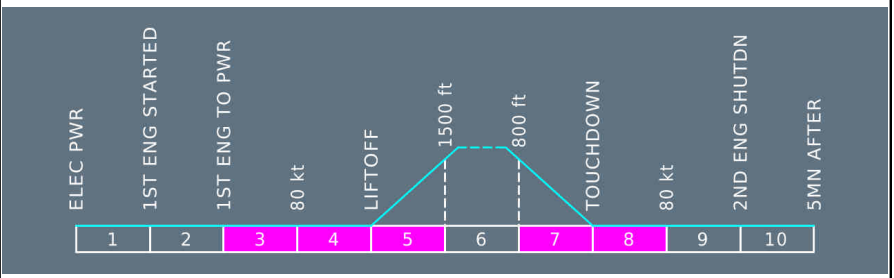
Ident.: PRO-ABN-COM-A-00016887.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a total loss of CIDS.

Flight Phase Inhibition:



Ident.: PRO-ABN-COM-A-00010033.0001001 / 25 FEB 14

L2 Passenger address, cabin and service interphone, and passenger signs are inoperative.

L1 Crew awareness.

Ident.: PRO-ABN-COM-A-00010034.0001001 / 05 AUG 10

STATUS

	INOP SYS
	CIDS

COM HF 1(2) DATA FAULT

Applicable to: ALL

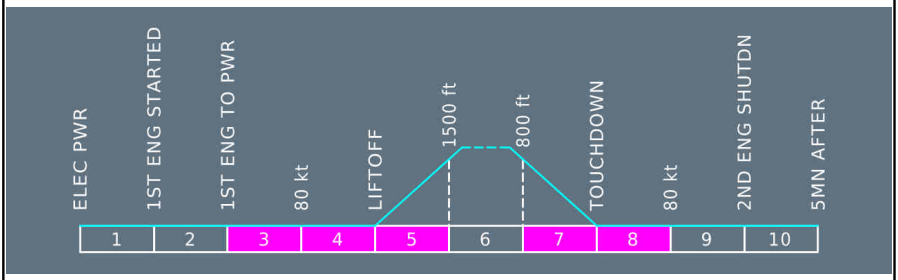
Ident.: PRO-ABN-COM-F-00016896.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when data communications via HF 1(2) are inoperative.

Flight Phase Inhibition:



Ident.: PRO-ABN-COM-F-00017499.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-COM-F-00010045.0001001 / 17 MAR 11

STATUS

INOP SYS
HF 1(2) DATA

COM SATCOM DATA FAULT

Applicable to: ALL

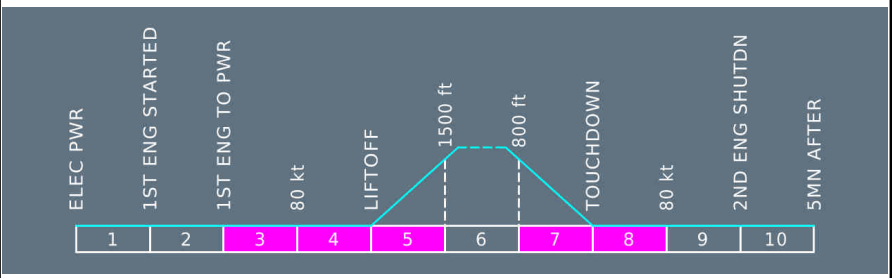
Ident.: PRO-ABN-COM-D-00016899.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the ACARS transmissions via SATCOM are lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-COM-D-00017548.0001001 / 21 MAR 16

L2 Telephone transmissions are still available. ACARS communications are inoperative.

L1 Crew awareness.

Ident.: PRO-ABN-COM-D-00010041.0001001 / 21 MAR 16

STATUS

	INOP SYS
	SATCOM DATA

COM SATCOM FAULT

Applicable to: ALL

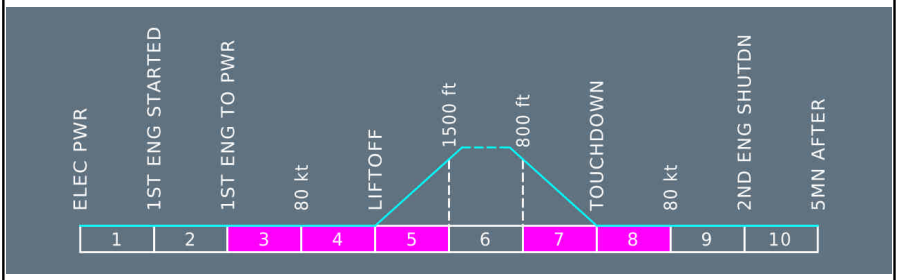
Ident.: PRO-ABN-COM-C-00016894.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the telephone and the ACARS transmission are lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-COM-C-00017500.0001001 / 21 MAR 16

L2 ACARS and telephone communications are inoperative.

L1 Crew awareness.

Ident.: PRO-ABN-COM-C-00017502.0001001 / 21 MAR 16

STATUS

INOP SYS
SATCOM

COM SINGLE PTT STUCK

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

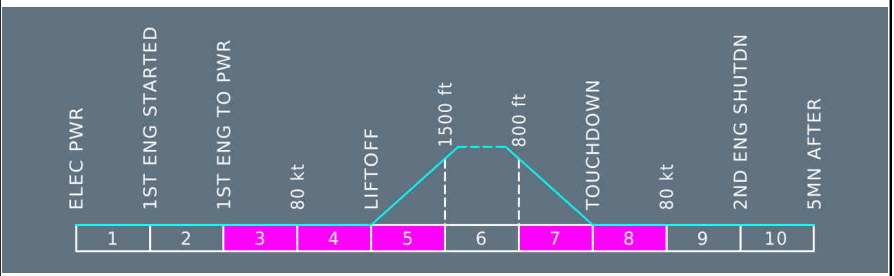
Ident.: PRO-ABN-COM-G-00016902.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when any PTT transmission selector is jammed in the transmit position for more than 40 s (VHF) or for more than 180 s (HF).

Flight Phase Inhibition:



Continued on the following page

COM SINGLE PTT STUCK ◁ (Cont'd)

Ident.: PRO-ABN-COM-G-00017503.0001001 / 21 MAR 16

1

ACP1 VHF 1(2)(3) TX..... DESELECT
ACP1 HF 1(2) TX..... DESELECT

- **IF UNSUCCESSFUL:**
  ACP2 VHF 1(2)(3) TX..... DESELECT
  ACP2 HF 1(2) TX..... DESELECT

- **IF UNSUCCESSFUL:**
  ACP3 VHF 1(2)(3) TX..... DESELECT
  ACP3 HF 1(2) TX..... DESELECT

When the ACP linked to the faulty PTT is detected, the previous ECAM actions are replaced by the following ones:

AUDIO SWTG..... DO NOT USE

- **ON AFFECTED ACP:**
  ALL TX KEYS..... DO NOT USE

- **ON ALL OTHER ACP:**
  VHF 1(2)(3) TX..... RESELECT
  HF 1(2) TX..... RESELECT

Ident.: PRO-ABN-COM-G-00014765.0001001 / 26 NOV 12

STATUS

	INOP SYS
AUDIO SWTG..... DO NOT USE	SINGLE PTT

COM SINGLE PTT STUCK

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

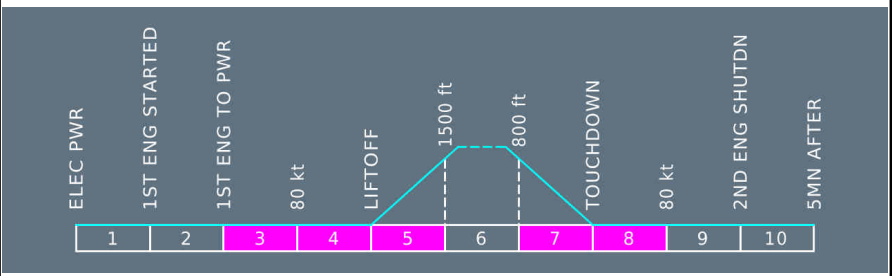
Ident.: PRO-ABN-COM-G-00016902.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when any PTT transmission selector is jammed in the transmit position for more than 40 s (VHF) or for more than 180 s (HF).

Flight Phase Inhibition:



Continued on the following page

COM SINGLE PTT STUCK ◁ (Cont'd)

Ident.: PRO-ABN-COM-G-00017503.0003001 / 03 APR 18

2

- **WITHIN 20 s:**
  ALL PTT.....CHECK RELEASED

ACP1 VHF 1(2)(3) TX.....DESELECT
ACP1 HF 1(2) TX.....DESELECT

- **IF UNSUCCESSFUL:**
  ACP2 VHF 1(2)(3) TX.....DESELECT
  ACP2 HF 1(2) TX.....DESELECT

- **IF UNSUCCESSFUL:**
  ACP3 VHF 1(2)(3) TX.....DESELECT
  ACP3 HF 1(2) TX.....DESELECT

When the ACP linked to the faulty PTT is detected, the previous ECAM actions are replaced by the following ones:

AUDIO SWTG.....DO NOT USE

- **ON AFFECTED ACP:**
  ALL TX KEYS.....DO NOT USE

- **ON ALL OTHER ACP:**
  ALL TX KEYS.....AS RQRD

Ident.: PRO-ABN-COM-G-00014765.0001001 / 26 NOV 12

STATUS

	INOP SYS
AUDIO SWTG.....DO NOT USE	SINGLE PTT

COM VHF 1(2)(3) /HF 1(2) EMITTING

Applicable to: ALL

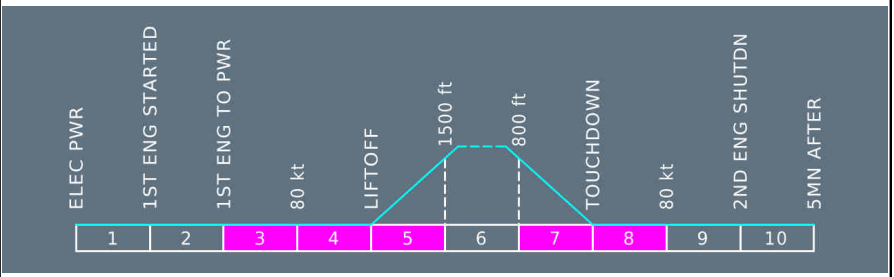
Ident.: PRO-ABN-COM-I-00016892.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 For VHF 1(2)(3) EMITTING, the alert triggers when the transmitter emits more than 30 s or 60 s depending on aircraft configuration.
For HF 1(2) EMITTING, the alert triggers when the transmitter emits more than 60 s.

Flight Phase Inhibition:



Ident.: PRO-ABN-COM-I-00017549.0001001 / 21 MAR 16

L2 1. If any Push To Talk (PTT) transmission selector (sidestick PTT, hand mike PTT, or ACP PTT switch) is jammed in the transmit position, try to release it in order to remove the caution.

2. If unsuccessful, deselect the identified failed VHF/HF transmission keys on the associated Audio Control Panel (ACP) to remove the caution. This ACP should only be used in reception mode. The associated PTT transmission selectors must not be used.

   Note: *In this case, the ACP of the unaffected side may be used to recover the deselected VHF/HF channel.*

3. If no transmission key on the ACP is found in the "transmit" position, pull the affected VHF/HF C/B associated to the ECAM message : COM\HF1 C/B HA 14 on 49 VU, COM NAV\HF2 C/B L13 on 121 VU, COM\VHF\1 C/B G09 on 49 VU, COM NAV\VHF\2 C/B L04 on 121 VU, COM \VHF\3 C/B L05 on 121 VU.

COM VHF 3 DATA FAULT

Applicable to: ALL

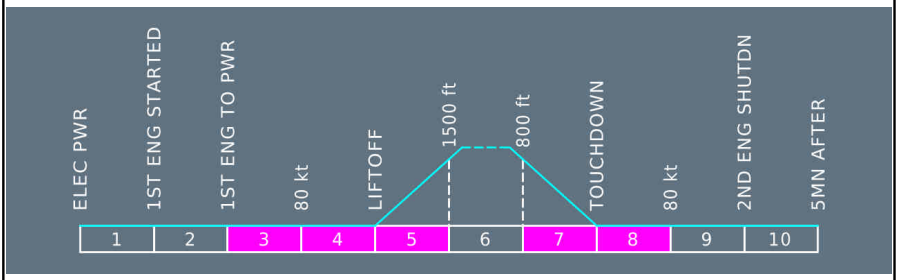
Ident.: PRO-ABN-COM-E-00016897.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when data communication via VHF 3 are inoperative.

Flight Phase Inhibition:



Ident.: PRO-ABN-COM-E-00017550.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-COM-E-00010043.0001001 / 17 MAR 11

STATUS

INOP SYS
VHF 3 DATA

Intentionally left blank

COND FWD CAB/AFT CAB/CKPT DUCT OVHT

Applicable to: MSN 01767-02388, 02482

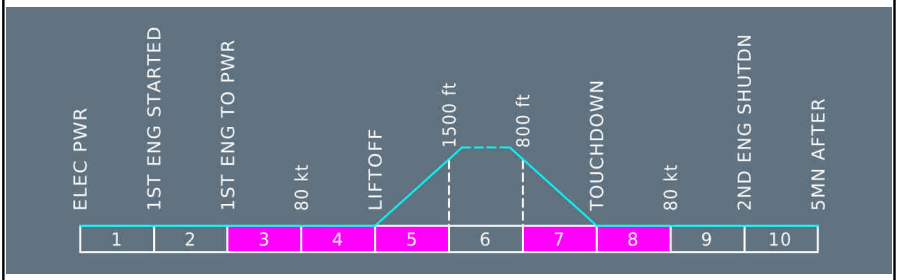
Ident.: PRO-ABN-COND-F-00017295.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the duct temperature rises above 88 °C.

Flight Phase Inhibition:



Ident.: PRO-ABN-COND-F-00010720.0002001 / 22 APR 16

1

- **WHEN DUCT TEMP < 70 DEG C (158 DEG F):**
  HOT AIR.....OFF THEN ON

L2 *Hot air pressure regulating valve reopens.*

Ident.: PRO-ABN-COND-F-00018037.0001001 / 21 MAR 16

L12

STATUS

INOP SYS

- **If system not recovered:**
  CAB TEMP BY PACK ONLY
  Basic temperature regulation is by packs only (remains automatic).

HOT AIR
FWD CRG HEAT

COND FWD CAB/AFT CAB/CKPT DUCT OVHT

Applicable to: MSN 02405

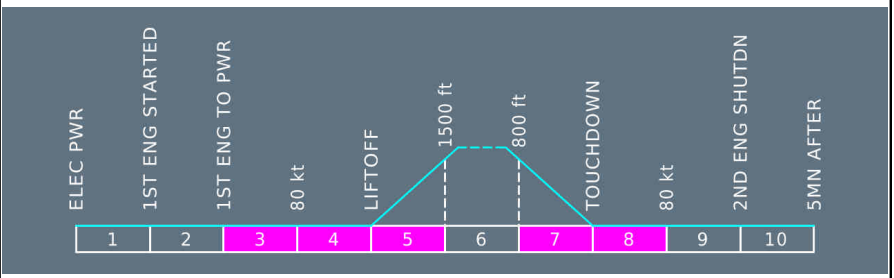
Ident.: PRO-ABN-COND-F-00017295.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the duct temperature rises above 88 °C.

Flight Phase Inhibition:



Ident.: PRO-ABN-COND-F-00010720.0001001 / 05 AUG 10

- **WHEN DUCT TEMP < 70 DEG C:**
  HOT AIR.....OFF THEN ON

L2 *Hot air pressure regulating valve reopens.*

Ident.: PRO-ABN-COND-F-00018037.0001001 / 21 MAR 16

L12

STATUS

INOP SYS

- **If system not recovered:**
  CAB TEMP BY PACK ONLY
  Basic temperature regulation is by packs only (remains automatic).

HOT AIR
FWD CRG HEAT

COND FWD CAB/AFT CAB/CKPT DUCT OVHT

Applicable to: MSN 02443-02457, 02584-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

Ident.: PRO-ABN-COND-F-00017295.0002001 / 21 MAR 16

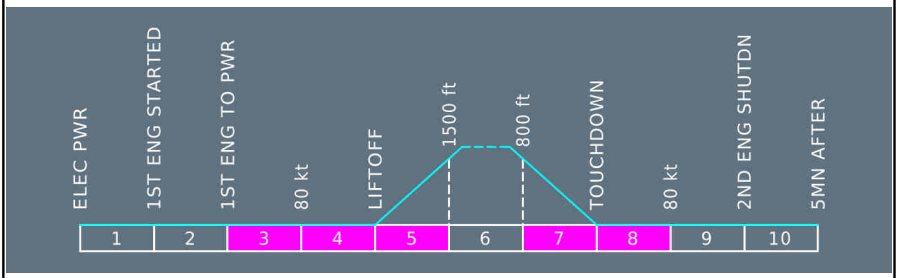
2

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- The duct temperature rises above 88 °C, or
- The duct temperature rises above 80 °C four times during the same flight.

Flight Phase Inhibition:



Ident.: PRO-ABN-COND-F-00010720.0002001 / 22 APR 16

3

- **WHEN DUCT TEMP < 70 DEG C (158 DEG F):**
  HOT AIR.....OFF THEN ON

L2 *Hot air pressure regulating valve reopens.*

Continued on the following page

COND FWD CAB/AFT CAB/CKPT DUCT OVHT (Cont'd)

Ident.: PRO-ABN-COND-F-00018037.0001001 / 21 MAR 16

L12

STATUS	INOP SYS
● **If system not recovered:** CAB TEMP BY PACK ONLY *Basic temperature regulation is by packs only (remains automatic).*	HOT AIR FWD CRG HEAT

COND FWD CAB/AFT CAB/CKPT DUCT OVHT

Applicable to: MSN 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

Ident.: PRO-ABN-COND-F-00017295.0002001 / 21 MAR 16

4

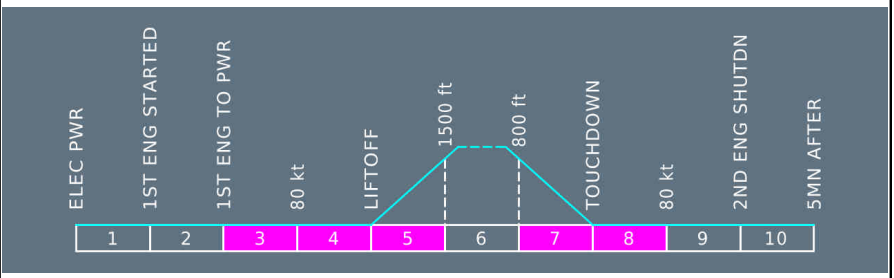
ANNUNCIATIONS

Triggering Conditions:

L2

This alert triggers when:
- The duct temperature rises above 88 °C, or
- The duct temperature rises above 80 °C four times during the same flight.

Flight Phase Inhibition:



Continued on the following page

COND FWD CAB/AFT CAB/CKPT DUCT OVHT (Cont'd)

Ident.: PRO-ABN-COND-F-00010720.0001001 / 05 AUG 10

- **WHEN DUCT TEMP < 70 DEG C:**
  HOT AIR.....OFF THEN ON

L2 *Hot air pressure regulating valve reopens.*

Ident.: PRO-ABN-COND-F-00018037.0001001 / 21 MAR 16

L12

	STATUS INOP SYS
● **If system not recovered:** CAB TEMP BY PACK ONLY *Basic temperature regulation is by packs only (remains automatic).*	HOT AIR FWD CRG HEAT

COND FWD(AFT) CARGO DUCT OVHT

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

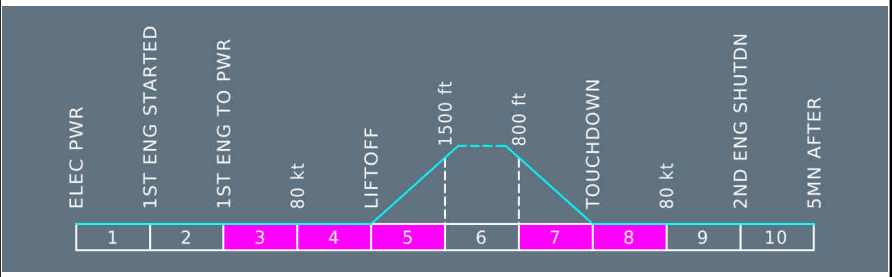
Ident.: PRO-ABN-COND-G-00017339.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the duct temperature in the forward(aft) cargo compartment rises above 88 °C.

Flight Phase Inhibition:



Ident.: PRO-ABN-COND-G-00018038.0002001 / 22 APR 16

5

- **WHEN DUCT TEMP < 70 DEG C (158 DEG F):**
  HOT AIR.....OFF THEN ON

L2 *Hot air pressure regulating valve reopens.*

Ident.: PRO-ABN-COND-G-00018039.0001001 / 21 MAR 16

L12

STATUS

INOP SYS

- **If system not recovered:**
  CAB TEMP BY PACK ONLY
  Basic temperature regulation is by packs only (remains automatic).

FWD(AFT) CRG HEAT

COND FWD(AFT) CARGO DUCT OVHT

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

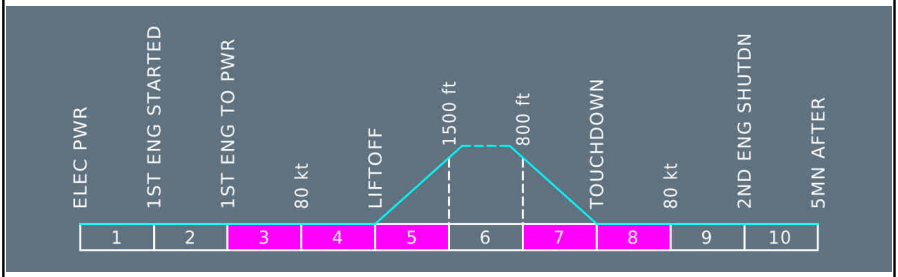
Ident.: PRO-ABN-COND-G-00017339.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the duct temperature in the forward(aft) cargo compartment rises above 88 °C.

Flight Phase Inhibition:



Ident.: PRO-ABN-COND-G-00018038.0001001 / 21 MAR 16

- **WHEN DUCT TEMP < 70 DEG C:**
  HOT AIR.....OFF THEN ON

L2 *Hot air pressure regulating valve reopens.*

Ident.: PRO-ABN-COND-G-00018039.0001001 / 21 MAR 16

L12

STATUS

INOP SYS

FWD(AFT) CRG HEAT

- **If system not recovered:**
  CAB TEMP BY PACK ONLY
  Basic temperature regulation is by packs only (remains automatic).

COND FWD(AFT) CRG HEAT FAULT

Applicable to: ALL

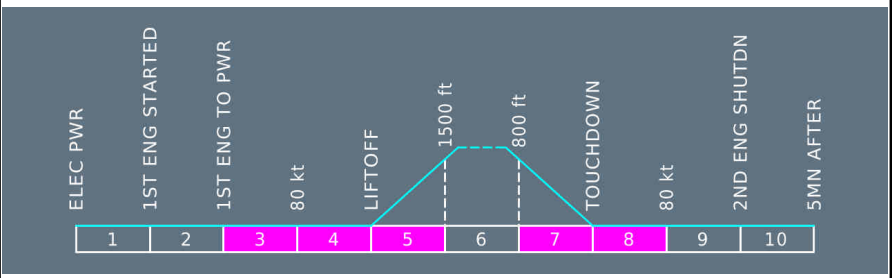
Ident.: PRO-ABN-COND-N-00017341.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers if the heating controller of the forward(aft) cargo compartment is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-COND-N-00018040.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-COND-N-00018041.0001001 / 21 MAR 16

STATUS

INOP SYS

FWD(AFT) CRG HEAT

COND FWD(AFT) CRG ISOL VALVE

Applicable to: ALL

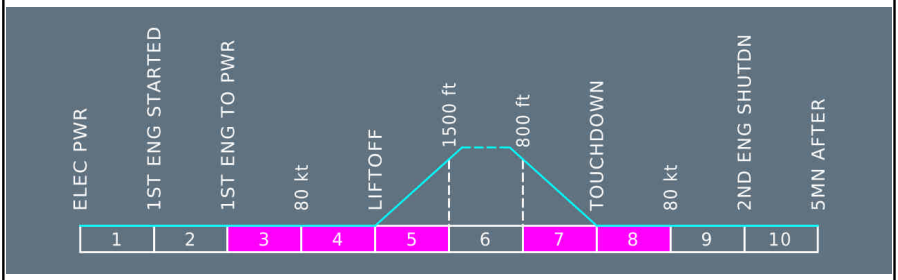
Ident.: PRO-ABN-COND-M-00017335.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers if the forward(aft) cargo isolation valve disagrees with the selected position.

Flight Phase Inhibition:



Ident.: PRO-ABN-COND-M-00018042.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-COND-M-00018043.0001001 / 21 MAR 16

STATUS

INOP SYS

FWD(AFT) CRG HEAT
FWD(AFT) CRG VENT

COND HOT AIR FAULT

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

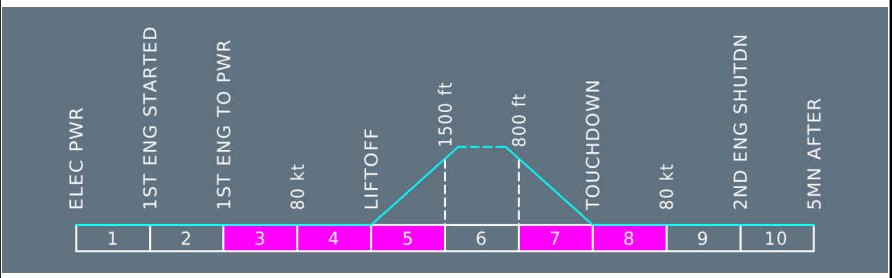
Ident.: PRO-ABN-COND-I-00017296.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the position of the hot air pressure regulating valve disagrees with the commanded position.

Flight Phase Inhibition:



Ident.: PRO-ABN-COND-I-00018940.0002001 / 21 MAR 16

6

HOT AIR (IF NOT CLOSED)..... OFF

- **IF HOT AIR STILL OPEN and DUCT OVHT persists:**

  PACK 1..... OFF
  PACK 2..... OFF
  DESCENT TO FL 100/MEA-MORA

L2 *Descend to FL 100, or MEA-MORA, whichever is higher.*

L1 - **WHEN DIFF PR < 1 PSI AND FL BELOW 100:**

  RAM AIR.....ON
  MAX FL.....100/MEA-MORA

Continued on the following page

COND HOT AIR FAULT (Cont'd)

Ident.: PRO-ABN-COND-I-00018044.0001001 / 21 MAR 16

L12

STATUS

	INOP SYS
● **If HOT AIR closed only:** CAB TEMP BY PACK ONLY *Basic temperature regulation by packs only (remains automatic).*	PACK 1+2 (If PACKS OFF) HOT AIR FWD CRG HEAT

COND HOT AIR FAULT

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

Ident.: PRO-ABN-COND-I-00017296.0001001 / 21 MAR 16

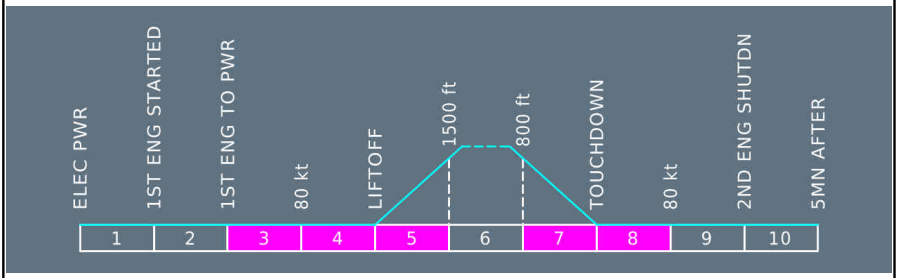
ANNUNCIATIONS

Triggering Conditions:

L2

This alert triggers when the position of the hot air pressure regulating valve disagrees with the commanded position.

Flight Phase Inhibition:



Continued on the following page

COND HOT AIR FAULT (Cont'd)

Ident.: PRO-ABN-COND-I-00018940.0001001 / 21 MAR 16

HOT AIR (IF NOT CLOSED)..... OFF

- **IF HOT AIR STILL OPEN and DUCT OVHT persists:**

  PACK 1..... OFF
  PACK 2..... OFF
  DESCENT TO FL 100/MEA

L2 *Descend to FL 100, or MEA, whichever is higher.*

L1 - **WHEN DIFF PR < 1 PSI AND FL BELOW 100:**

  RAM AIR..... ON
  MAX FL..... 100/MEA

Ident.: PRO-ABN-COND-I-00018044.0001001 / 21 MAR 16

L12

	STATUS INOP SYS
- **If HOT AIR closed only:** CAB TEMP BY PACK ONLY *Basic temperature regulation by packs only (remains automatic).*	PACK 1+2 (If PACKS OFF) HOT AIR FWD CRG HEAT

COND L+R CAB FAN FAULT

Applicable to: ALL

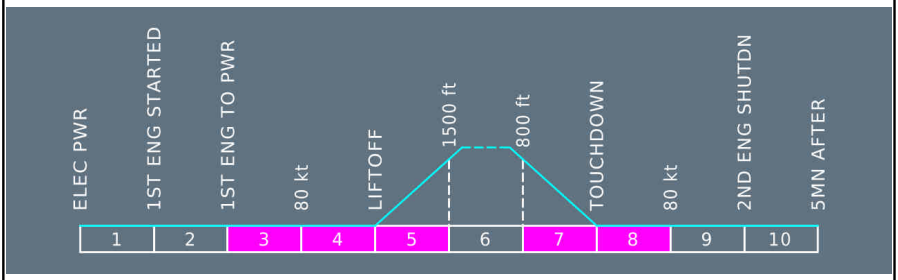
Ident.: PRO-ABN-COND-R-00017297.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers if both recirculation fans are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-COND-R-00018045.0001001 / 22 MAR 17

PACK FLOW.....HI

Ident.: PRO-ABN-COND-R-00018046.0001001 / 21 MAR 16

STATUS

INOP SYS
L+R CAB FAN

COND LAV + GALLEY FAN FAULT

Applicable to: MSN 01767-02405, 02482

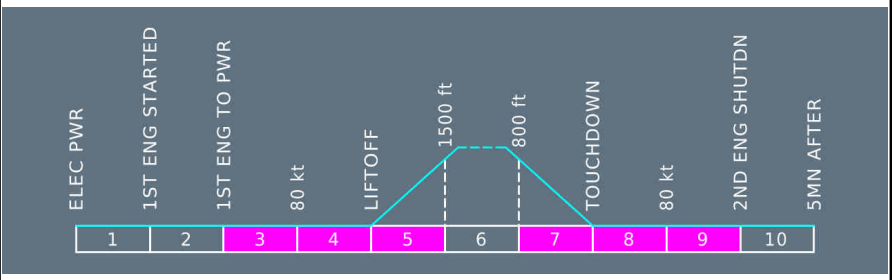
Ident.: PRO-ABN-COND-S-00017300.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers if the extraction fan of the lavatory and galley is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-COND-S-00010751.0002001 / 25 FEB 14

L2 Cabin zone temperature sensors are normally ventilated by the air extracted by the fan. Therefore, cabin zone temperature regulation is lost.

L1 Crew awareness.

Ident.: PRO-ABN-COND-S-00010752.0002001 / 05 AUG 10

L12

STATUS	INOP SYS
CAB ZONE AT FIXED TEMP *See* (1)	GALLEY FAN

(1)
- *Cabin zone inlet duct temperature is constant (15 °C or 59 °F).*
- *Cockpit temperature regulation is normal.*

COND LAV + GALLEY FAN FAULT

Applicable to: MSN 02443-02457, 02584-09063

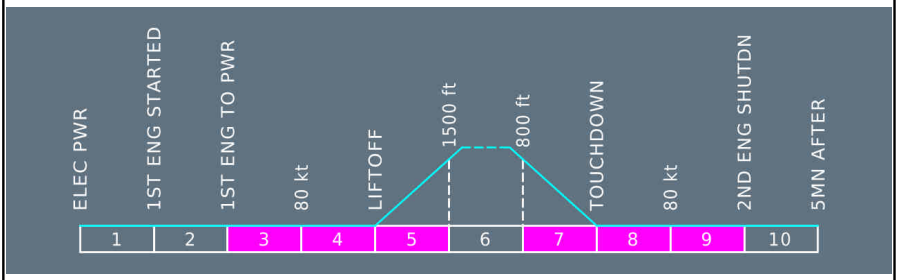
Ident.: PRO-ABN-COND-S-00017300.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers if the extraction fan of the lavatory and galley is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-COND-S-00010751.0002001 / 25 FEB 14

L2 Cabin zone temperature sensors are normally ventilated by the air extracted by the fan. Therefore, cabin zone temperature regulation is lost.

L1 Crew awareness.

Continued on the following page

COND LAV + GALLEY FAN FAULT (Cont'd)

Ident.: PRO-ABN-COND-S-00010752.0011001 / 05 AUG 10

7

L12

STATUS

INOP SYS

- **If ACSC 2 is operative:**
  CAB TEMP CKPT CTL ONLY

- *To adjust the cabin zone temperature, use the FWD CABIN and AFT CABIN zone temperature selectors (overhead panel). The selectors control the cabin duct temperature directly.*
- *Cockpit temperature regulation is normal.*

- **If ACSC 2 is inoperative:**
  CAB AT FIXED TEMP

- *FWD CABIN and AFT CABIN zone temperature selectors are inoperative.*
- *To adjust the cabin zone temperature, use the COCKPIT zone temperature selector (overhead panel). Cabin duct temperature is the same as cockpit duct temperature.*
- *Cockpit temperature regulation is normal.*

GALLEY FAN
PACK 2 (1)
COND CTL 2 (1)

(1) *(If ACSC 2 is inoperative)*

COND TRIM AIR SYS FAULT

Applicable to: ALL

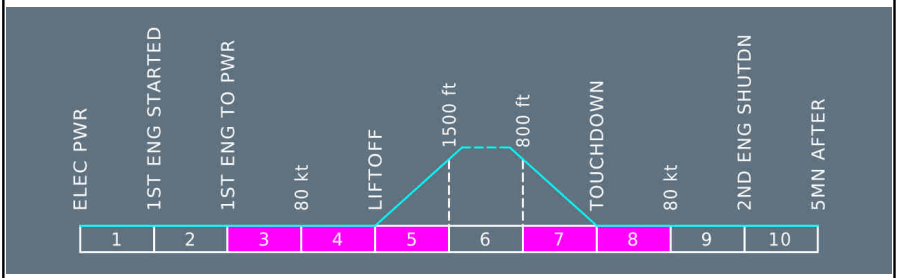
Ident.: PRO-ABN-COND-AI-00017305.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- One trim air valve is failed, or
- There is an overpressure downstream of the hot air valve.

Flight Phase Inhibition:



Ident.: PRO-ABN-COND-AI-00010730.0001001 / 05 AUG 10

■ **One trim valve failed:**

A message corresponding to the affected valve is displayed:

AFT CAB TRIM VALVE
FWD CAB TRIM VALVE
CKPT TRIM VALVE

■ **High pressure detected downstream of the hot air pressure regulating valve:**
TRIM AIR HI PR

L2 Note: *If the warning and the TRIM AIR HI PR message are triggered when all trim air valves are closed (during the first 30 s after the packs are selected on, or in flight, if all zone heating demands are fulfilled), disregard them.*

COND ZONE REGUL FAULT
(PRIMARY CHANNEL FAILED)

Applicable to: MSN 01767-02405, 02482

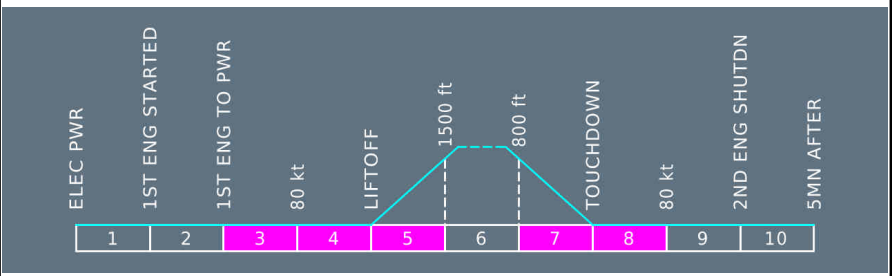
Ident.: PRO-ABN-COND-P-00017309.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the primary channel of the zone controller is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-COND-P-00010744.0001001 / 25 FEB 14

L2 The hot air pressure regulating valve and trim air valves close.

L1 Crew awareness.

Continued on the following page

COND ZONE REGUL FAULT (Cont'd)
(PRIMARY CHANNEL FAILED)

Ident.: PRO-ABN-COND-P-00018078.0001001 / 21 MAR 16

L12

STATUS	INOP SYS
CAB ZONE AT FIXED TEMP *See* (1)	FWD CRG HEAT

(1) *The packs control zones to 24 °C (75 °F) via the zone controller secondary channel:*
- *Pack 1 controls the cockpit*
- *Pack 2 controls the cabin.*

COND ZONE REGUL FAULT
(PRIMARY AND SECONDARY CHANNELS FAILED)

Applicable to: MSN 01767-02405, 02482

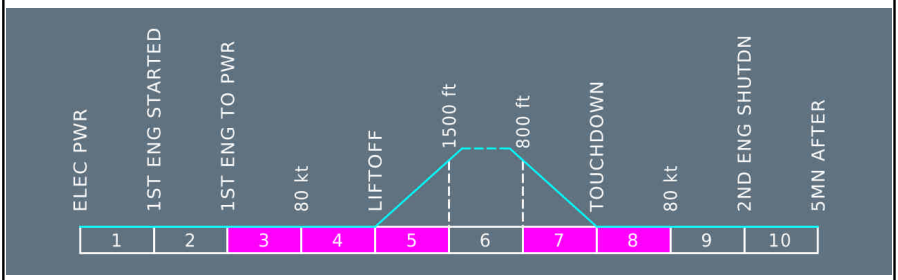
Ident.: PRO-ABN-COND-Q-00018304.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the primary and secondary channels of the zone controller are failed.

Flight Phase Inhibition:



Continued on the following page

COND ZONE REGUL FAULT (Cont'd)
(PRIMARY AND SECONDARY CHANNELS FAILED)

Ident.: PRO-ABN-COND-Q-00010746.0001001 / 25 FEB 14

L2 The hot air pressure regulating valve and trim air valves close.

L1 Crew awareness.

Ident.: PRO-ABN-COND-Q-00018081.0001001 / 21 MAR 16

L12

STATUS	INOP SYS
ENG 1 APPR IDLE ONLY ENG 2 APPR IDLE ONLY *See* (1) PACKS AT FIXED TEMP *See* (2)	ZONE REGUL FWD CRG HEAT

(1) *As the FADEC no longer receives a bleed demand correction, only approach idle can be selected.*

(2) *The packs are controlled to deliver a fixed temperature of 20 °C (68 °F) for pack 1, and 10 °C (50 °F) for pack 2.*

CONFIG L(R) SIDESTICK FAULT
(BY TAKE OVER)

Applicable to: ALL

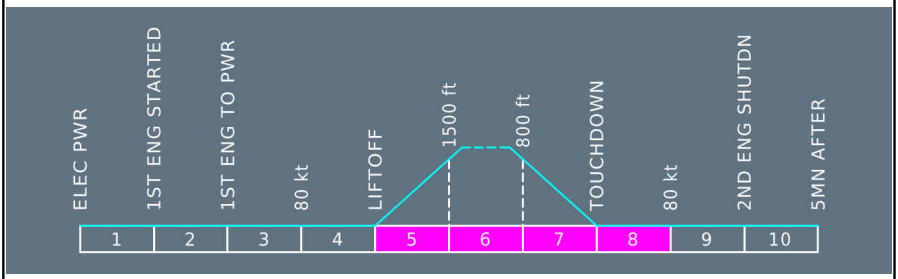
Ident.: PRO-ABN-CONFIG-AA-00018894.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the L or R sidestick is inoperative (takeover pb pressed more than 30 s) and when thrust levers are set at TO, or Flex TO, or when pressing T.O CONFIG pb.

Flight Phase Inhibition:



Ident.: PRO-ABN-CONFIG-AA-00018411.0001001 / 21 MAR 16

L(R) TAKEOVER .....DEPRESS

L2 *The affected stick becomes operative.*

CONFIG PARK BRK ON

Applicable to: ALL

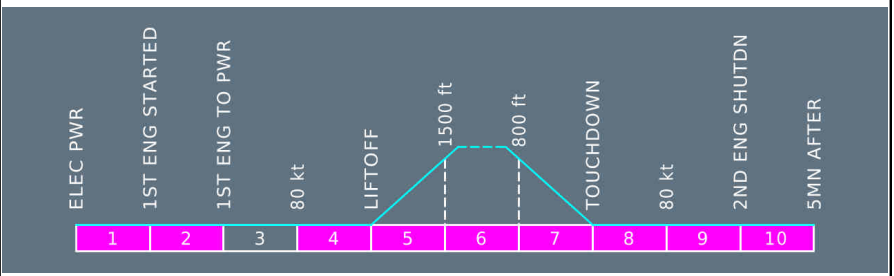
Ident.: PRO-ABN-CONFIG-Z-00017858.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the parking brake is on and thrust levers are set at TO or FLXTO power position.

Flight Phase Inhibition:



Ident.: PRO-ABN-CONFIG-Z-00011302.0001001 / 05 AUG 10

L2 Check that the parking brake handle is in the OFF position. If warning stays on, check that the brake pressure is at zero on the BRAKES PRESSURE indicator.

CONFIG PITCH TRIM NOT IN T.O RANGE

Applicable to: ALL

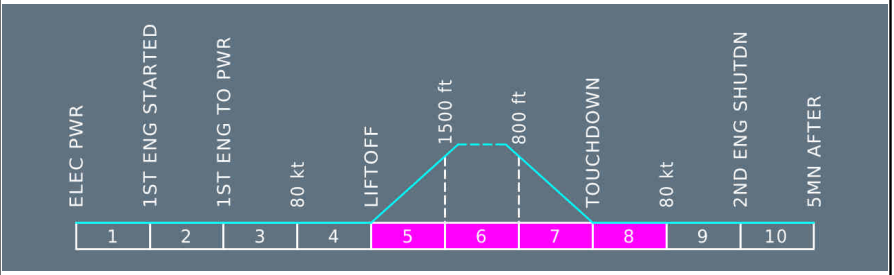
Ident.: PRO-ABN-CONFIG-AB-00018895.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 If the PITCH TRIM is not in TO configuration, this alert triggers:
- when thrust levers are set at TO, or Flex TO, or
- when pressing T.O CONFIG pb.

Flight Phase Inhibition:



Ident.: PRO-ABN-CONFIG-AB-00011773.0001001 / 25 FEB 14

Crew awareness.

CONFIG RUD TRIM NOT IN T.O RANGE

Applicable to: ALL

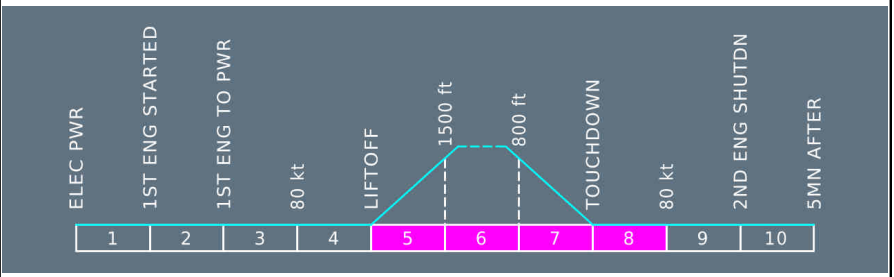
Ident.: PRO-ABN-CONFIG-AC-00018896.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 If the RUD TRIM is not in TO configuration, this alert triggers:
- when thrust levers are set at TO, or Flex TO, or
- when pressing T.O CONFIG pb.

Flight Phase Inhibition:



Ident.: PRO-ABN-CONFIG-AC-00011776.0001001 / 25 FEB 14

Crew awareness.

CONFIG SLATS (FLAPS) NOT IN T.O CONFIG

Applicable to: ALL

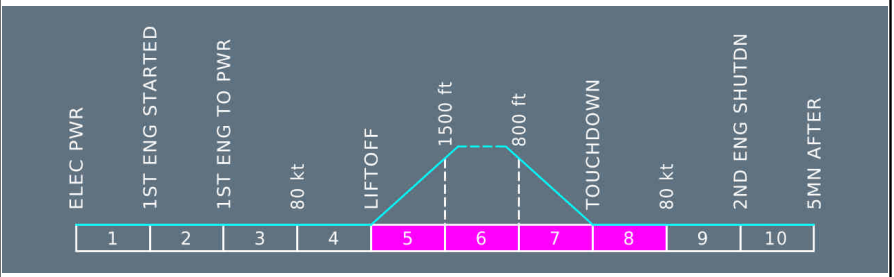
Ident.: PRO-ABN-CONFIG-AD-00018897.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 If the slats or flaps are not in TO configuration, this alert triggers:
- when thrust levers are set at TO, or Flex TO, or
- when pressing T.O CONFIG pb.

Flight Phase Inhibition:



Ident.: PRO-ABN-CONFIG-AD-00011758.0001001 / 25 FEB 14

Crew awareness.

CONFIG SPD BRK NOT RETRACTED

Applicable to: ALL

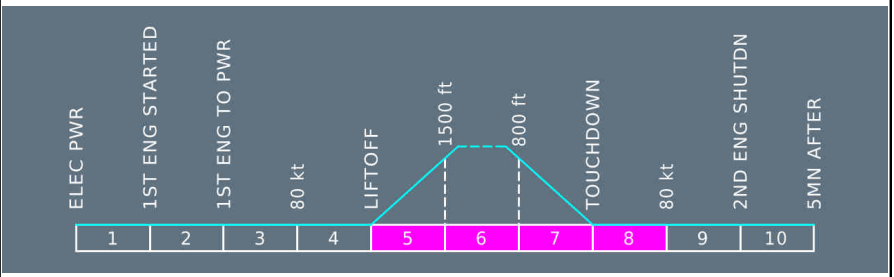
Ident.: PRO-ABN-CONFIG-AE-00018898.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 If the speed brakes are not retracted, this alert triggers:
- when thrust levers are set at TO, or Flex TO, or
- when pressing T.O CONFIG pb.

Flight Phase Inhibition:



Ident.: PRO-ABN-CONFIG-AE-00011766.0001001 / 09 FEB 16

Crew awareness.

DATALINK ATC FAULT

Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

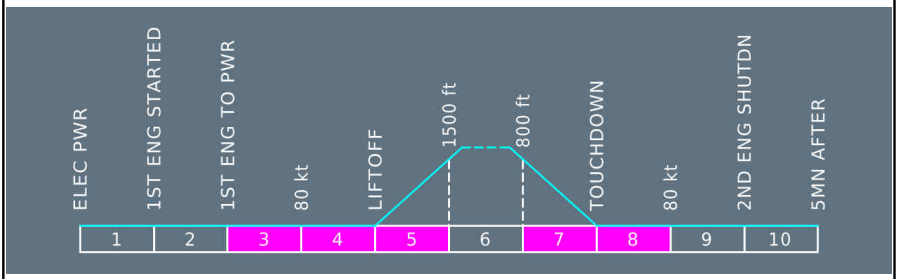
Ident.: PRO-ABN-DATALINK-B-00017149.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- The ATC datalink communications is failed, or
- The ATC datalink application is lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-DATALINK-B-00018460.0001001 / 21 MAR 16

Crew awareness.

ATC COM VOICE ONLY

Ident.: PRO-ABN-DATALINK-B-00018461.0001001 / 21 MAR 16

STATUS

	INOP SYS
ATC COM VOICE ONLY	DATALINK ATC

DATALINK ATSU FAULT

Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

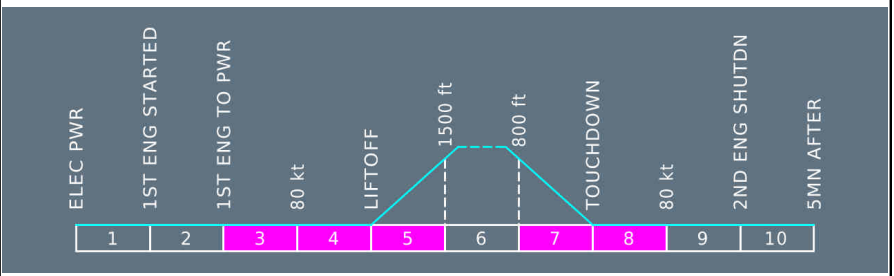
Ident.: PRO-ABN-DATALINK-A-00017150.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a failure in ATSU initialization associated with ATSU INIT FAULT ECAM message.

Flight Phase Inhibition:



Ident.: PRO-ABN-DATALINK-A-00018462.0001001 / 21 MAR 17

Crew awareness.

ATSU INIT FAULT

L2 *Displayed, in case of failure upon ATSU initialization.* *Refer to DSC-46-10-50 How to Initialize.*

Ident.: PRO-ABN-DATALINK-A-00018463.0002001 / 21 MAR 16

STATUS

ATC COM VOICE ONLY

INOP SYS

ATSU
DATALINK ATC
DATA COMPANY

DATALINK ATSU FAULT

Applicable to: MSN 01920, 02108, 02135, 02139-02204, 02334, 02405-02584, 02670-02737, 02908-03071, 03264, 03330-04216, 04312-04399, 04438-04506, 04518-05155, 05190-09063

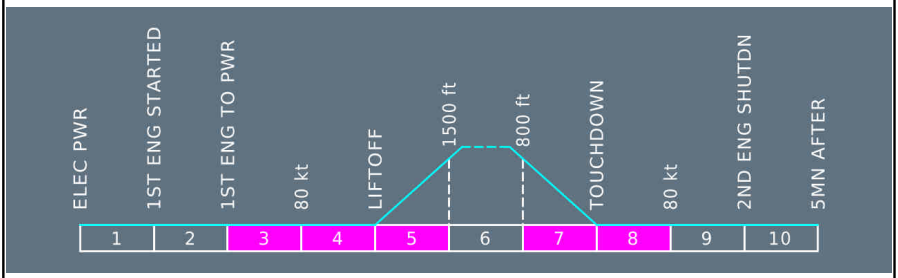
Ident.: PRO-ABN-DATALINK-A-00017150.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a failure in ATSU initialization associated with ATSU INIT FAULT ECAM message.

Flight Phase Inhibition:



Ident.: PRO-ABN-DATALINK-A-00018462.0001001 / 21 MAR 17

Crew awareness.

ATSU INIT FAULT

L2 *Displayed, in case of failure upon ATSU initialization.* *Refer to DSC-46-10-50 How to Initialize.*

Ident.: PRO-ABN-DATALINK-A-00018463.0001001 / 21 MAR 16

1

STATUS

INOP SYS

ATSU
DATA COMPANY

DATALINK COMPANY FAULT

Applicable to: ALL

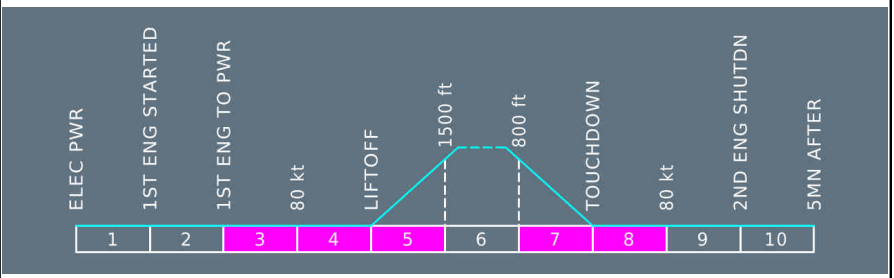
Ident.: PRO-ABN-DATALINK-C-00017151.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a failure in the AOC datalink communications.

Flight Phase Inhibition:



Ident.: PRO-ABN-DATALINK-C-00018458.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-DATALINK-C-00018459.0001001 / 21 MAR 16

STATUS

INOP SYS

DATA COMPANY

[QRH] COCKPIT DOOR FAULT

Ident.: PRO-ABN-DOOR-00009968.0003001 / 17 MAR 17
1 **Applicable to: MSN 01767-01920, 02108, 02135, 02139-02584, 02649-02914, 03138-09063**

CKPT DOOR CONT [OVHD PANEL] ..... CHECK

- **If one or more STRIKE status light on:**
  COCKPIT DOOR..... OPEN
  COCKPIT DOOR sw ..... UNLOCK 10 s THEN NORM
  - **If two or more STRIKE status lights on:**

    COCKPIT DOOR NOT INTRUSION PROOF.
- **If two CHAN status lights on:**

  Automatic latch release is not available, in case of cockpit decompression.
- **If no status light on:**

  TO UNLOCK THE DOOR: COCKPIT DOOR HANDLE AVAIL

[QRH] COCKPIT DOOR FAULT

Ident.: PRO-ABN-DOOR-00009968.0009001 / 17 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138, 02609-02626, 03071

CKPT DOOR CONT NORMAL [OVHD PANEL]..... CHECK

- **If one or more STRIKE status light on:**
  COCKPIT DOOR..... OPEN
  COCKPIT DOOR sw ..... UNLOCK 10 s THEN NORM
  - **If two or more STRIKE status lights on:**

    COCKPIT DOOR NOT INTRUSION PROOF.
- **If no status light on, or if two CHAN status lights on:**
  [CKPT DOOR BK UP PANEL] LKG SYS sw ..... BK UP
  - **To unlock the cockpit door:**
    [CKPT DOOR BK UP PANEL] CTL pb .....PRESS and MAINTAIN

    Note: *As emergency access to the cockpit is not available when the BCU controls the CDLS, it is recommended that at least two crewmembers remain in the cockpit during that time.*

DOOR L(R)(FWD)(AFT) AVIONICS
(IN FLIGHT)

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

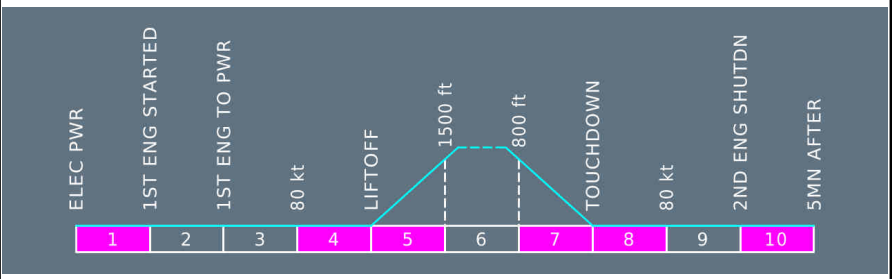
Ident.: PRO-ABN-DOOR-A-00016888.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the L(R)(FWD)(AFT) avionics door is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Ident.: PRO-ABN-DOOR-A-00018945.0004001 / 21 MAR 16

2

L2 No crew action required as long as cabin pressure is normal.

L1 ● **IF ABN CAB V/S:**
MAX FL.....100/MEA-MORA

L2 *Limit maximum flight level to FL 100, MEA-MORA, or minimum obstacle clearance altitude. Avionics doors are of plug type. Therefore full depressurization is not recommended.*

Ident.: PRO-ABN-DOOR-A-00018944.0003001 / 21 MAR 16

3

STATUS

● **IF ABN CAB V/S:**
MAX FL..... 100/MEA-MORA

DOOR L(R)(FWD)(AFT) AVIONICS
(IN FLIGHT)

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

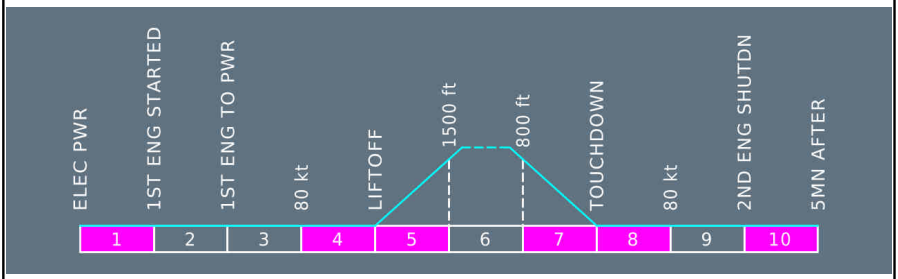
Ident.: PRO-ABN-DOOR-A-00016888.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the L(R)(FWD)(AFT) avionics door is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Ident.: PRO-ABN-DOOR-A-00018945.0001001 / 21 MAR 16

L2 No crew action required as long as cabin pressure is normal.

L1 ● **IF ABN CAB V/S:**
MAX FL..... 100/MEA

L2 *Limit maximum flight level to FL 100, or MEA, or minimum obstacle clearance altitude. Avionics doors are of plug type. Therefore full depressurization is not recommended.*

Ident.: PRO-ABN-DOOR-A-00018944.0002001 / 21 MAR 16

STATUS

● **IF ABN CAB V/S:**
MAX FL..... 100/MEA

DOOR L(R)(FWD)(AFT) AVIONICS
(ON GROUND)

Applicable to: ALL

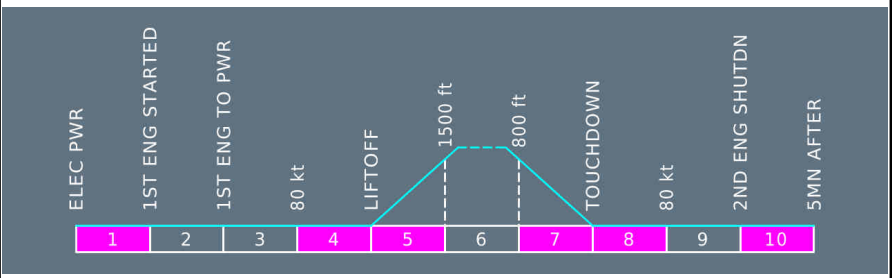
Ident.: PRO-ABN-DOOR-C-00019100.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the L(R)(FWD)(AFT) avionics door is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Ident.: PRO-ABN-DOOR-C-00019096.0001001 / 21 MAR 16

Crew awareness.

DOOR L(R) FWD(AFT) CABIN
(IN FLIGHT)

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

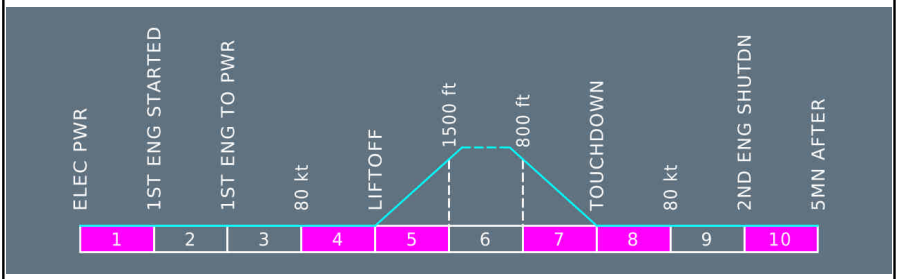
Ident.: PRO-ABN-DOOR-D-00019103.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the L(R) FWD(AFT) cabin door is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Ident.: PRO-ABN-DOOR-D-00019101.0002001 / 21 MAR 16

4

No crew action required as long as cabin pressure is normal.

- **IF ABN CAB V/S:**
  MAX FL.....100/MEA-MORA

L2 *Limit maximum flight level to FL 100, MEA-MORA, or minimum obstacle clearance altitude. If door warning is accompanied by abnormal increase of cabin altitude, flight crew must reduce cabin ΔP and altitude by descending.*

Ident.: PRO-ABN-DOOR-D-00019104.0003001 / 21 MAR 16

5

STATUS

- **IF ABN CAB V/S:**
  MAX FL..... 100/MEA-MORA

DOOR L(R) FWD(AFT) CABIN
(IN FLIGHT)

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

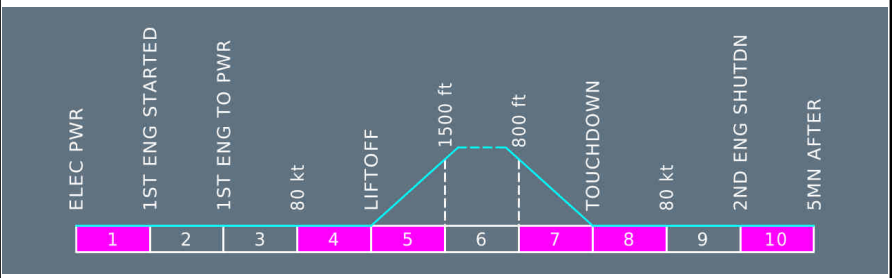
Ident.: PRO-ABN-DOOR-D-00019103.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the L(R) FWD(AFT) cabin door is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Ident.: PRO-ABN-DOOR-D-00019101.0001001 / 21 MAR 16

No crew action required as long as cabin pressure is normal.

- **IF ABN CAB V/S:**
  MAX FL..... 100/MEA

L2 *Limit maximum flight level to FL 100, or MEA, or minimum obstacle clearance altitude.*
If door warning is accompanied by abnormal increase of cabin altitude, flight crew must reduce cabin ΔP and altitude by descending.

Ident.: PRO-ABN-DOOR-D-00019104.0002001 / 21 MAR 16

STATUS

- **IF ABN CAB V/S:**
  MAX FL..... 100/MEA

DOOR L(R) FWD(AFT) CABIN
(ON GROUND)

Applicable to: ALL

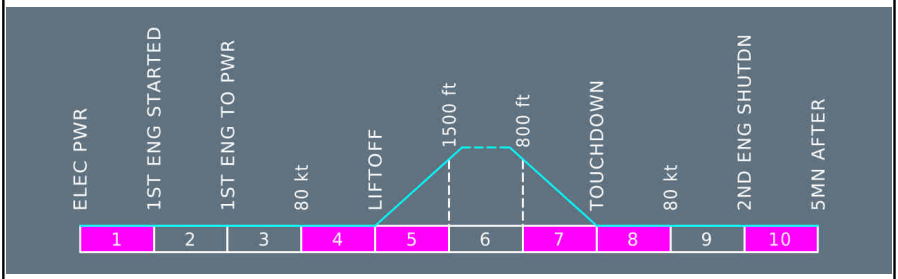
Ident.: PRO-ABN-DOOR-E-00019106.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the L(R) FWD(AFT) cabin door is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Ident.: PRO-ABN-DOOR-E-00019102.0001001 / 21 MAR 16

L2 The crew may confirm a cabin door warning by checking the visual indicator on the door.

L1 Crew awareness.

DOOR L(R) FWD(AFT) EMER EXIT
(IN FLIGHT)

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-DOOR-F-00019121.0001001 / 21 MAR 16

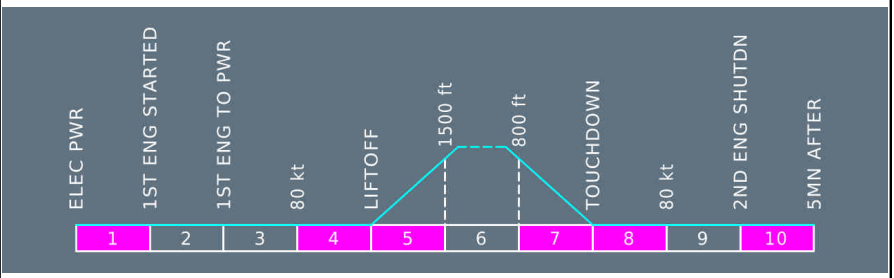
6

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the L(R) FWD(AFT) emergency exit door is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Ident.: PRO-ABN-DOOR-F-00019120.0003001 / 21 MAR 16

7

No crew action required as long as cabin pressure is normal.

- **IF ABN CAB V/S:**

  MAX FL.....100/MEA-MORA

L2 *Limit maximum flight level to FL 100, MEA-MORA, or minimum obstacle clearance altitude. If door warning is accompanied by abnormal increase of cabin altitude, flight crew must reduce cabin ΔP and altitude by descending.*

Continued on the following page

DOOR L(R) FWD(AFT) EMER EXIT (Cont'd)
(IN FLIGHT)

Ident.: PRO-ABN-DOOR-F-00019122.0009001 / 21 MAR 16

8

STATUS

- **IF ABN CAB V/S:**
  MAX FL..... 100/MEA-MORA

DOOR L(R) FWD(AFT) EMER EXIT
(IN FLIGHT)

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

Ident.: PRO-ABN-DOOR-F-00019121.0001001 / 21 MAR 16

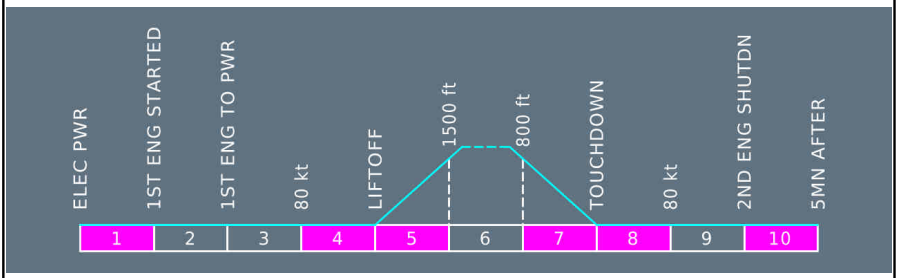
9

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the L(R) FWD(AFT) emergency exit door is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Continued on the following page

DOOR L(R) FWD(AFT) EMER EXIT (Cont'd)
(IN FLIGHT)

Ident.: PRO-ABN-DOOR-F-00019120.0001001 / 21 MAR 16

No crew action required as long as cabin pressure is normal.

- **IF ABN CAB V/S:**
  MAX FL..... 100/MEA

L2 *Limit maximum flight level to FL 100, or MEA, or minimum obstacle clearance altitude.*
If door warning is accompanied by abnormal increase of cabin altitude, flight crew must reduce cabin ΔP and altitude by descending.

Ident.: PRO-ABN-DOOR-F-00019122.0004001 / 21 MAR 16

STATUS

- **IF ABN CAB V/S:**
  MAX FL..... 100/MEA

DOOR L(R) AFT EMER EXIT
(IN FLIGHT)

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-DOOR-F-00022239.0001001 / 12 MAR 18

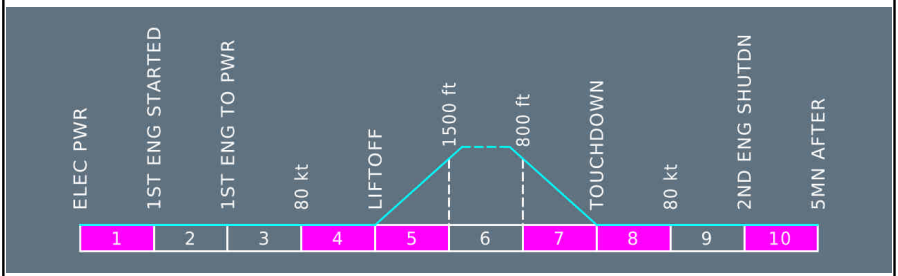
10

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the L(R) AFT emergency exit door is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Ident.: PRO-ABN-DOOR-F-00022240.0001001 / 27 FEB 18

11

No crew action required as long as cabin pressure is normal.

- **IF ABN CAB V/S:**
  MAX FL.....100/MEA-MORA

L2 *Limit maximum flight level to FL 100, MEA-MORA, or minimum obstacle clearance altitude. If door warning is accompanied by abnormal increase of cabin altitude, flight crew must reduce cabin ΔP and altitude by descending.*

Ident.: PRO-ABN-DOOR-F-00022241.0001001 / 27 FEB 18

12

STATUS

- **IF ABN CAB V/S:**
  MAX FL..... 100/MEA-MORA

DOOR L(R) FWD(AFT) EMER EXIT
(ON GROUND)

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-DOOR-G-00019125.0001001 / 21 MAR 16

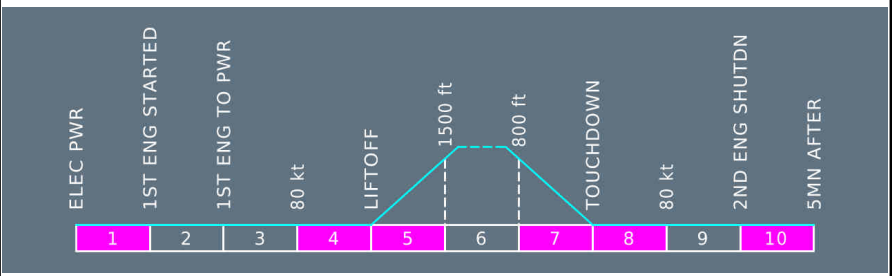
13

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the L(R) FWD(AFT) emergency exit door is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Ident.: PRO-ABN-DOOR-G-00019124.0001001 / 21 MAR 16

14

L2 The crew may confirm an emergency exit door warning by checking the visual indicator on the door.

L1 Crew awareness.

DOOR L(R) AFT EMER EXIT
(ON GROUND)

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-DOOR-G-00022242.0001001 / 12 MAR 18

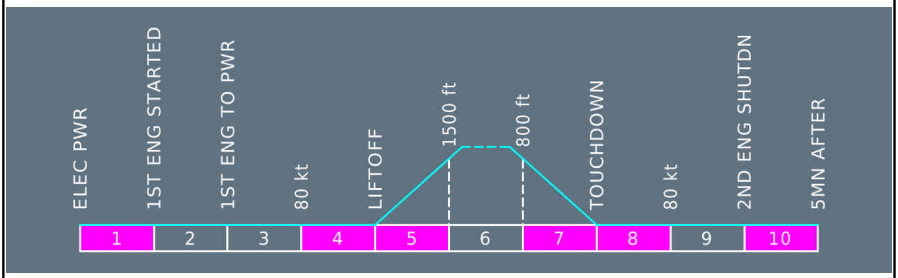
15

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the L(R) AFT emergency exit door is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Ident.: PRO-ABN-DOOR-G-00022243.0001001 / 27 FEB 18

16

L2 The crew may confirm an emergency exit door warning by checking the visual indicator on the door.

L1 Crew awareness.

DOOR L(R) FWD(AFT) OVERWNG EXIT
(IN FLIGHT)

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-DOOR-I-00022215.0001001 / 27 FEB 18

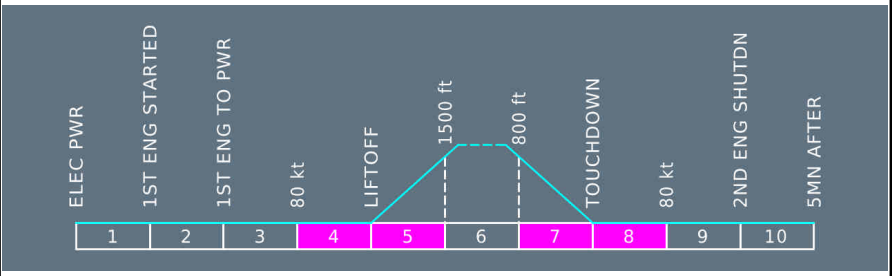
17

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the L(R) FWD(AFT) overwing exit is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Ident.: PRO-ABN-DOOR-I-00022216.0001001 / 27 FEB 18

18

No crew action required as long as cabin pressure is normal.

- **IF ABN CAB V/S:**
  MAX FL.....100/MEA-MORA

L2 *Limit maximum flight level to FL 100, MEA-MORA, or minimum obstacle clearance altitude. If door warning is accompanied by abnormal increase of cabin altitude, flight crew must reduce cabin ΔP and altitude by descending.*

Ident.: PRO-ABN-DOOR-I-00022217.0001001 / 27 FEB 18

19

STATUS

- **IF ABN CAB V/S:**
  MAX FL..... 100/MEA-MORA

DOOR L(R) FWD(AFT) OVERWNG EXIT
(ON GROUND)

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-DOOR-J-00022221.0001001 / 27 FEB 18

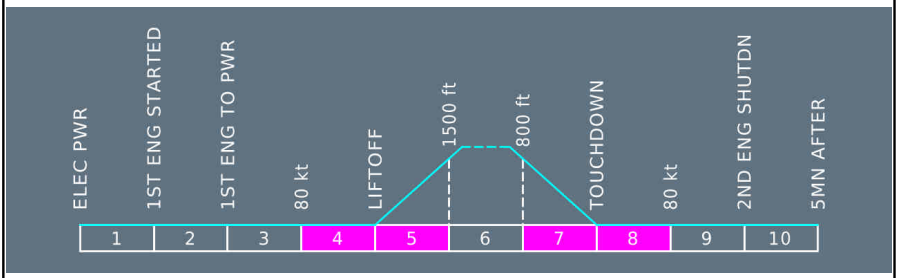
20

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the L(R) FWD(AFT) overwing exit is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Ident.: PRO-ABN-DOOR-J-00022222.0001001 / 27 FEB 18

21

L2 The crew may confirm an overwing exit warning by checking the visual indicator on the door.

L1 Crew awareness.

DOOR L(R) FWD(AFT) OVERWNG FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-DOOR-K-00022225.0001001 / 27 FEB 18

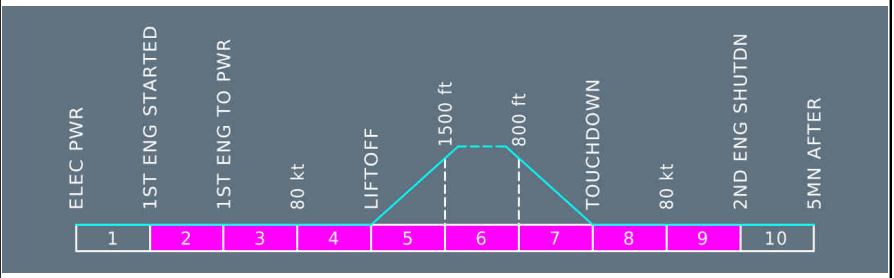
22

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the flight lock actuator of the L(R) FWD(AFT) overwing exit is failed, or detected in the wrong position.

Flight Phase Inhibition:



Ident.: PRO-ABN-DOOR-K-00022226.0001001 / 27 FEB 18

23

- **If the flight lock actuator is detected failed in locked position:**
  FLIGHT LOCK ENGAGED

L2 The affected overwing exit is not usable for evacuation.

L1 - **If the flight lock actuator is detected failed in unlocked position:**
  FLIGHT LOCK NOT AVAIL

- **If the flight lock actuator is not commanded active in flight:**
  FLIGHT LOCK CTL FAULT

CABIN CREW.....ADVISE

Continued on the following page

DOOR L(R) FWD(AFT) OVERWNG FAULT (Cont'd)

Ident.: PRO-ABN-DOOR-K-00022227.0001001 / 27 FEB 18

24

STATUS

INOP SYS
OVERWNG DOOR (1)
OVERWNG LOCK (2)

(1) *(If the flight lock actuator is failed locked)*
(2) *(If the flight lock actuator is failed unlocked or cannot be activated)*

DOOR FWD(AFT)(BULK) CARGO
(IN FLIGHT)

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

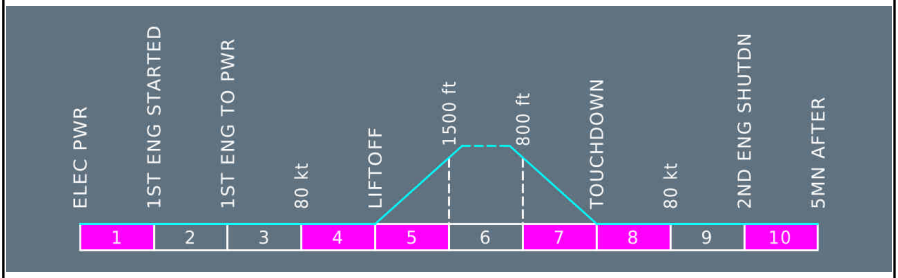
Ident.: PRO-ABN-DOOR-B-00016890.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FWD(AFT)(BULK) cargo door is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Continued on the following page

DOOR FWD(AFT)(BULK) CARGO (Cont'd)
(IN FLIGHT)

Ident.: PRO-ABN-DOOR-B-00019126.0002001 / 21 MAR 16

25

No crew action required as long as cabin pressure is normal.

- **IF ABN CAB V/S:**
  MAX FL.....100/MEA-MORA

L2 *Limit maximum flight level to FL 100, MEA-MORA, or minimum obstacle clearance altitude. If door warning is accompanied by abnormal increase of cabin altitude, flight crew must reduce cabin ΔP and altitude by descending.*

Ident.: PRO-ABN-DOOR-B-00018946.0003001 / 21 MAR 16

26

	STATUS
● **IF ABN CAB V/S:** MAX FL.....100/MEA-MORA	

DOOR FWD(AFT)(BULK) CARGO
(IN FLIGHT)

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

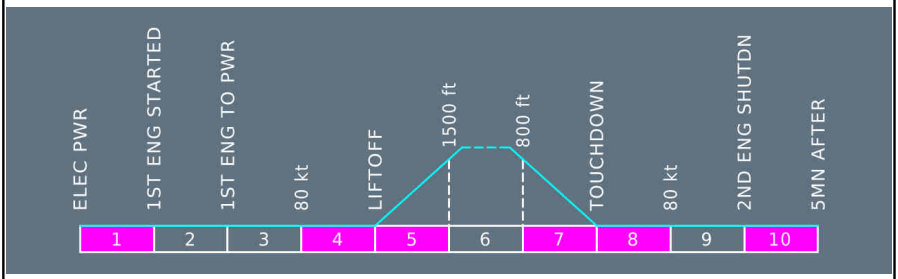
Ident.: PRO-ABN-DOOR-B-00016890.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FWD(AFT)(BULK) cargo door is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Ident.: PRO-ABN-DOOR-B-00019126.0001001 / 21 MAR 16

No crew action required as long as cabin pressure is normal.

- **IF ABN CAB V/S:**
  MAX FL..... 100/MEA

L2 *Limit maximum flight level to FL 100, or MEA, or minimum obstacle clearance altitude.*
If door warning is accompanied by abnormal increase of cabin altitude, flight crew must reduce cabin ΔP and altitude by descending.

Ident.: PRO-ABN-DOOR-B-00018946.0002001 / 21 MAR 16

STATUS

- **IF ABN CAB V/S:**
  MAX FL.....100/MEA

DOOR FWD(AFT)(BULK) CARGO
(ON GROUND)

Applicable to: ALL

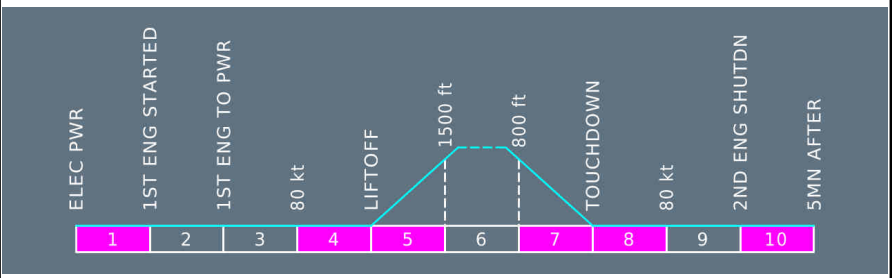
Ident.: PRO-ABN-DOOR-H-00019129.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FWD(AFT)(BULK) cargo door is not detected closed by the proximity sensors.

Flight Phase Inhibition:



Ident.: PRO-ABN-DOOR-H-00018947.0002001 / 21 MAR 16

L2 The crew may confirm a cargo door warning by checking the indication on the cargo door.
L1 Crew awareness.

[QRH] DISPLAY UNIT FAILURE

Ident.: PRO-ABN-EIS-00021170.0005001 / 21 NOV 17

1 **Applicable to: MSN 05158, 05473-09063**

■ **If DU flashes:**

This phenomenon may be due to Intermittent Electrical Power Supply Interruptions. One or a combination of the following occurs:

- Flashing of PFD, ND, ECAM DUs (blank screen or INVALID DATA message),
- Flashing of MCDU,
- Intermittent flight control law reversion.

■ **If captain PFD, ND, ECAM DUs or MCDU 1 affected:**

GEN 1.....OFF

■ **If DUs flash continues :**

GEN 1.....ON

■ **If DUs flash stops :**

KEEP GEN 1 OFF

Keep the generator OFF for the rest of the flight.

RUD TRIM.....CHECK/RESET

Use the sideslip indication to reset the rudder trim if necessary. Intermittent Electrical Power Supply Interruptions may cause offset in the rudder trim.

APU START.....CONSIDER

■ **If first officer PFD, ND, lower ECAM or MCDU 2 affected:**

GEN 2.....OFF

■ **If DUs flash continues:**

GEN 2.....ON

■ **If DUs flash stops:**

KEEP GEN 2 OFF

Keep the generator OFF for the rest of the flight.

RUD TRIM.....CHECK/RESET

Use the sideslip indication to reset the rudder trim if necessary. Intermittent Electrical Power Supply Interruptions may cause offset in the rudder trim.

APU START.....CONSIDER

Continued on the following page

[QRH] DISPLAY UNIT FAILURE (Cont'd)

■ **If DU blank (with or without large amber "F"), or distorted, or brightness reduced to minimum:**

DU brightness knob (affected DU).....OFF THEN ON

Display recovers after 10 s.

● **If unsuccessful:**

DU brightness knob (affected DU)..... AS RQRD

The DU can be switched off.

CONSIDER ECAM/ND XFR
CONSIDER PFD/ND XFR

■ **If INVALID DISPLAY UNIT message displayed:**

This may be caused by a DU failure.

WAIT AT LEAST 40 s FOR AUTOMATIC DU RECOVERY

● **If DU not recovered:**

DU brightness knob (affected DU)..... AS RQRD

The DU can be switched off.

■ **If INVALID DATA message displayed (not on all DUs):**

CONSIDER EIS DMC SWITHCHING

● **If unsuccessful:**

DU brightness knob (affected DU)..... OFF THEN ON

Note: The ND display may disappear if too many waypoints and associated information are displayed. Reduce ND range, or deselect WPT or CSTR, and the ND display may automatically recover, after about 30 s.

■ **If INVALID DATA message displayed on all DUs:**

AP, A/THR AND MCDU NAVIGATION DATA AVAILABLE

WAIT AT LEAST 40 s FOR AUTOMATIC DU RECOVERY

● **If one or more DUs not recovered:**

DUs brightness knob (all affected DUs)..... OFF
WAIT AT LEAST 40 s
DUs brightness knob (one by one).....ON

● **If INVALID DATA message displayed on all DUs, when switching a given DU back ON:**

FAULTY DU brightness knob..... OFF AND KEEP OFF

Continued on the following page

[QRH] DISPLAY UNIT FAILURE (Cont'd)

REPEAT PROCEDURE

Repeat the procedure starting at: If INVALID DATA message displayed on all DUs.

■ **If inversion of E/WD and SD:**

ECAM UPPER DISPLAY brightness knob.....OFF THEN ON

The same action on the EIS DMC SWITCHING selector produces the same effect.

[QRH] DISPLAY UNIT FAILURE

Ident.: PRO-ABN-EIS-00021170.0002001 / 21 NOV 17

2 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-05155, 05190-05460**

■ **If DU flashes:**

This phenomenon may be due to Intermittent Electrical Power Supply Interruptions. One or a combination of the following occurs:
- Flashing of PFD, ND, ECAM DUs (blank screen or INVALID DATA message),
- Flashing of MCDU,
- Intermittent flight control law reversion.

■ **If captain PFD, ND, ECAM DUs or MCDU 1 affected:**

GEN 1.....OFF

■ **If DUs flash continues :**

GEN 1.....ON

■ **If DUs flash stops :**

KEEP GEN 1 OFF

Keep the generator OFF for the rest of the flight.

RUD TRIM.....CHECK/RESET

Use the sideslip indication to reset the rudder trim if necessary. Intermittent Electrical Power Supply Interruptions may cause offset in the rudder trim.

APU START.....CONSIDER

■ **If first officer PFD, ND, lower ECAM or MCDU 2 affected:**

GEN 2.....OFF

■ **If DUs flash continues:**

GEN 2.....ON

■ **If DUs flash stops:**

KEEP GEN 2 OFF

Keep the generator OFF for the rest of the flight.

RUD TRIM.....CHECK/RESET

Use the sideslip indication to reset the rudder trim if necessary. Intermittent Electrical Power Supply Interruptions may cause offset in the rudder trim.

APU START.....CONSIDER

■ **If DU blank (with or without large amber "F"), or distorted:**

DU brightness knob (affected DU).....AS RQRD

Continued on the following page

[QRH] DISPLAY UNIT FAILURE (Cont'd)

The DU can be switched off.

CONSIDER ECAM/ND XFR
CONSIDER PFD/ND XFR

■ **If INVALID DISPLAY UNIT message displayed:**
This may be caused by a DU failure.

WAIT AT LEAST 40 s FOR AUTOMATIC DU RECOVERY

- **If DU not recovered:**
  DU brightness knob..... AS RQRD
  The DU can be switched off.

■ **If INVALID DATA message displayed (not on all DUs):**
CONSIDER EIS DMC SWITCHING

- **If unsuccessful:**
  DU brightness knob (affected DU)..... OFF THEN ON

  Note: *The ND display may disappear if too many waypoints and associated information are displayed. Reduce ND range, or deselect WPT or CSTR, and the ND display may automatically recover, after about 30 s.*

■ **If INVALID DATA message displayed on all DUs:**

AP, A/THR AND MCDU NAVIGATION DATA AVAILABLE

WAIT AT LEAST 40 s FOR AUTOMATIC DU RECOVERY

- **If one or more DUs not recovered:**
  DUs brightness knob (all affected DUs)..... OFF
  WAIT AT LEAST 40 s
  DUs brightness knob (one by one).....ON
  - **If INVALID DATA message displayed on all DUs, when switching a given DU back ON:**
    FAULTY DU brightness knob..... OFF AND KEEP OFF
    REPEAT PROCEDURE
    Repeat the procedure starting at: If INVALID DATA message displayed on all DUs.

■ **If inversion of E/WD and SD:**
ECAM UPPER DISPLAY brightness knob.....OFF THEN ON
The same action on the EIS DMC SWITCHING selector produces the same effect.

[QRH] DISPLAY UNIT FAILURE

Ident.: PRO-ABN-EIS-00021170.0001001 / 21 NOV 17
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

■ **If DU flashes:**

This phenomenon may be due to Intermittent Electrical Power Supply Interruptions. One or a combination of the following occurs:
- Flashing of PFD, ND, ECAM DUs (blank screen or diagonal line),
- Flashing of MCDU,
- Intermittent flight control law reversion.

■ **If captain PFD, ND, Upper ECAM or MCDU 1 affected:**
GEN 1.....OFF

■ **If DUs flash continues :**
GEN 1.....ON

■ **If DUs flash stops :**
KEEP GEN 1 OFF

Keep the generator OFF for the rest of the flight.

RUD TRIM.....CHECK/RESET

Use the sideslip indication to reset the rudder trim if necessary. Intermittent Electrical Power Supply Interruptions may cause offset in the rudder trim.

APU START.....CONSIDER

■ **If first officer PFD, ND, lower ECAM or MCDU 2 affected:**
GEN 2.....OFF

■ **If DUs flash continues :**
GEN 2.....ON

■ **If DUs flash stops :**
KEEP GEN 2 OFF

Keep the generator OFF for the rest of the flight.

RUD TRIM.....CHECK/RESET

Use the sideslip indication to reset the rudder trim if necessary. Intermittent Electrical Power Supply Interruptions may cause offset in the rudder trim.

APU START.....CONSIDER

■ **If DU blank or distorted:**
DU brightness knob (affected DU).....AS RQRD

Continued on the following page

[QRH] DISPLAY UNIT FAILURE (Cont'd)

The DU can be switched off.

CONSIDER ECAM/ND XFR
CONSIDER PFD/ND XFR

■ **If diagonal line on affected DU:**
This failure may be caused by a DMC FAULT, or a communication interruption between the DMC and DU.

CONSIDER EIS DMC SWITCHING

● **If unsuccessful:**
DU brightness knob (affected DU)..... OFF THEN ON

Note: The ND display may disappear if too many waypoints and associated information are displayed. Reduce ND range, or deselect WPT or CSTR, and the ND display may automatically recover, after about 30 s.

■ **If inversion of E/WD and SD:**
ECAM UPPER DISPLAY brightness knob.....OFF THEN ON
The same action on the EIS DMC SWITCHING selector produces the same effect.

EIS DMC 1(2)(3) FAULT

Applicable to: ALL

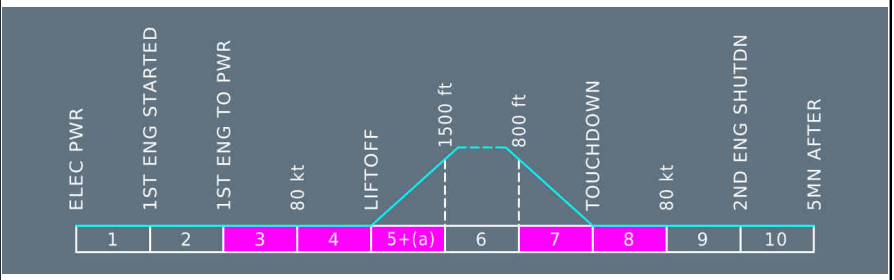
Ident.: PRO-ABN-EIS-F-00017307.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when DMC 1, or DMC 2, or DMC 3 is failed.

Flight Phase Inhibition:



L1 *Note: (a) Inhibited only during first 15 s of Flight Phase 5.*

Ident.: PRO-ABN-EIS-F-00010057.0002001 / 10 AUG 10

■ **DMC 1**

EIS DMC SWITCH ..... CAPT 3

L2 *DMC 3 replaces DMC 1.*

L1 ■ **DMC 2**

EIS DMC SWITCH..... F/O 3

L2 *DMC 3 replaces DMC 2.*

L1 ■ **DMC 3**

Crew awareness.

Continued on the following page

EIS DMC 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-EIS-F-00010058.0001001 / 10 AUG 10

STATUS

INOP SYS
DMC 1(2)(3)

EIS DMC/FWC COM FAULT

Applicable to: ALL

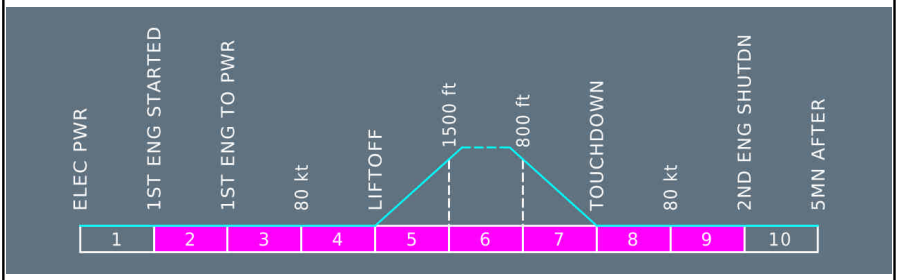
Ident.: PRO-ABN-EIS-I-00017317.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when at least one of the FWC detects the loss of both DMC1/3 and DMC2/3 busses.

Flight Phase Inhibition:



Ident.: PRO-ABN-EIS-I-00014308.0001001 / 25 FEB 14

Crew awareness.

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[QRH] C/B TRIPPED

Ident.: PRO-ABN-ELEC-00012643.0001001 / 17 MAR 17
Applicable to: ALL

- **On ground:**
  Do not reengage the circuit breaker (C/B) of the fuel pump(s) of any tank. For all other C/B, if the flight crew coordinates the action with maintenance, the flight crew may reengage a tripped C/B, provided that the cause is identified.
- **In flight:**
  Do not reengage a circuit breaker (C/B), unless the captain judges it necessary to do so for the safe continuation of the flight. Only one reengagement should be attempted.

[QRH] ELEC EMER CONFIG SYS REMAINING

Applicable to: MSN 01767, 02135, 02139, 02388

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018562.0008001 / 17 MAR 17				
AIR COND PRESS	PRESS AUTO SYS 1	NORM	NORM	NORM
	MAN PRESS CTL	INOP	INOP	INOP[(a)]
	RAM AIR	NORM	NORM	NORM
	PACK VALVE 1	NORM	Closure Inop	Closure Inop
	PACK VALVE 2	Closure Inop	Closure Inop	Closure Inop[(a)]
	AVIONIC VENT	NORM	NORM	Partial
	AFT CRG ISOL VALVES	NORM	INOP	INOP
	AFT CRG HEAT	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012522.0001001 / 17 MAR 17				
FMGS	FMGC (NAV FUNCTION)	N°1 only	Inop	Inop
	MCDU	N°1 only	Inop	Inop
	FAC	N°1 only	Inop	Inop
	FCU	ch 1 only	ch 1 only	ch 1 only
Ident.: PRO-ABN-ELEC-S-00018533.0002001 / 17 MAR 17				
1 COM	VHF 1	NORM	NORM	NORM
	HF 1	NORM	INOP	INOP
	RMP 1	NORM	NORM	NORM
	ACP (CAPT, F/O)	NORM	NORM	NORM
	CIDS	NORM	NORM	NORM
	INTERPHONE	NORM	NORM	NORM
	CVR	NORM	INOP	INOP
	LOUDSPEAKER 1	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012524.0001001 / 17 MAR 17				
EMER EQPT	CREW OXY	NORM	NORM [(b)]	NORM [(b)]
	PAX OXY mask release (auto + man)	NORM	INOP	INOP
	SLIDES ARM/WARN	NORM	NORM	NORM

Continued on the following page

Continued from the previous page

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00012525.0002001 / 17 MAR 17				
FIRE	ENG 1 LOOP	A only	A only	A only
	ENG 2 LOOP	B only	B only	B only
	APU LOOP	INOP	INOP	INOP(a)
	CARGO SMOKE DET	ch 1 only	INOP	INOP
	ENG FIRE EXT.	Bottle 1 only	Bottle 1 only	Bottle 1 only
	APU FIRE EXT.	Squib A only	Squib A only	Squib A only
	CARGO FIRE EXT.	INOP	INOP	INOP(a)
	APU AUTO EXT.	INOP	INOP	INOP(a)
Ident.: PRO-ABN-ELEC-S-00018017.0001001 / 17 MAR 17				
FLT CTL	ELAC	N°1 only	N°1 + N°2	N°1 + N°2 (d)
	SEC	N°1 only	N°1 only	N°1 only
	FCDC	N°1 only	INOP	INOP
	SFCC	N°1 only	N°1 only	N°1 only
	Flaps pos ind	NORM	NORM	NORM (c)
Ident.: PRO-ABN-ELEC-S-00018018.0001001 / 17 MAR 17				
FUEL	LP VALVE	NORM	NORM	NORM
	FQI channel 1	NORM	INOP	INOP
	X FEED VALVE	NORM	INOP	INOP
	INTERTANK TRANSFER VALVE	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012528.0001001 / 17 MAR 17				
HYD	FIRE VALVES	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018539.0002001 / 17 MAR 17				
ICE-RAIN	WING A.ICE	NORM	INOP	INOP
	ENG A.ICE VALVE	OPEN	OPEN	OPEN
	CAPT PITOT	NORM	NORM	NORM(c)
	CAPT AOA	NORM	INOP	INOP
	RAIN REPELLENT ◁ (CAPT)	NORM	NORM	NORM

Continued on the following page

Continued from the previous page

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018538.0002001 / 17 MAR 17				
EIS	PFD 1	NORM	NORM	NORM (c)
	ND 1	NORM	INOP	INOP
	ECAM upper disp.	NORM	NORM	NORM (c)
	DMC 1 or 3	NORM	NORM	NORM (c)
	SDAC 1, FWC 1	NORM	NORM	NORM (c)
	ECAM CONT. panel	NORM	NORM	NORM
FLT INS	CLOCKS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018537.0001001 / 17 MAR 17				
L/G	LGCIU SYS 1	NORM	NORM	NORM
	BRK PRESS IND	NORM	NORM	NORM
	PARK BRK	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012532.0001001 / 17 MAR 17				
LIGHTS	EMER CKPT	NORM	NORM	NORM
	EMER CAB	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018550.0002001 / 17 MAR 17				
NAV	IR	N°1 only (e)	N°1 only (e)	N°1 only (e)
	ADR	N°1 only	N°1 only	N°1 only
	VOR	N°1 only	N°1 only	N°1 only (c)
	MMR	N°1 only	N°1 only	N°1 only (c)
	DME	N°1 only	INOP	INOP
	DDRMI ◁	NORM	NORM	NORM (c)
	ATC	N°1 only	INOP	INOP
	STBY HORIZON	NORM	NORM	NORM
	STBY COMP (LT)	NORM	NORM	NORM
	STBY ALTI (VIB)	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00018541.0002001 / 17 MAR 17				
PNEU	ENG 1 BLEED	NORM	BMC 1 INOP	BMC 1 INOP
	ENG 2 BLEED	BMC 2 INOP	BMC 2 INOP	BMC 2 INOP
	APU BLEED	INOP	INOP	INOP(a)
	X BLEED (MAN CTL)	NORM	INOP	INOP

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018019.0002001 / 17 MAR 17				
APU	ECB-STARTER	NORM(f)	NORM(g)	INOP(a)
	FUEL LP VALVE	NORM	NORM	NORM
	FUEL PUMP	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018540.0002001 / 17 MAR 17				
PWR PLT	FADEC	A+B (h)	A+B (h)	A+B (h)
	IGNITION	A only	A only	A only
	HP FUEL VALVE closure	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012537.0001001 / 17 MAR 17				
MISC	MECH HORN	NORM	NORM	NORM

(a) *Restored, when speed is below 100 kt.*

(b) *Crew supply solenoid valve inoperative.*

(c) *Lost, when the speed is below 50 kt.*

(d) *Lost, 30 s after the last engine shutdown.*

(e) *IR 2 and IR 3 are lost 5 min after failure of main generators but if IR 3 replaces IR 1 (ATT-HDG selector at CAPT 3), IR 3 remains supplied.*

(f) *For APU start only.*

(g) *Not available for 45 s, after the loss of both engine generators.*

(h) *Channels A and B are self powered above 10 % N2 for IAE or PW engines, 12 % N2 for CFM56 engines, or 8 % N2 for CFM LEAP-1A engines. If N2 is below these values, only Channel A is powered.*

[QRH] ELEC EMER CONFIG SYS REMAINING

Applicable to: MSN 01920

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018562.0003001 / 17 MAR 17				
AIR COND PRESS	PRESS AUTO SYS 1	NORM	NORM	NORM
	MAN PRESS CTL	INOP	INOP	INOP (a)
	RAM AIR	NORM	NORM	NORM
	PACK VALVE 1	NORM	Closure Inop	Closure Inop
	PACK VALVE 2	Closure Inop	Closure Inop	Closure Inop (a)
	AVIONIC VENT	NORM	NORM	Partial
	AFT CRG ISOL VALVES	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012522.0001001 / 17 MAR 17				
FMGS	FMGC (NAV FUNCTION)	N°1 only	Inop	Inop
	MCDU	N°1 only	Inop	Inop
	FAC	N°1 only	Inop	Inop
	FCU	ch 1 only	ch 1 only	ch 1 only
Ident.: PRO-ABN-ELEC-S-00018533.0002001 / 17 MAR 17				
4 COM	VHF 1	NORM	NORM	NORM
	HF 1	NORM	INOP	INOP
	RMP 1	NORM	NORM	NORM
	ACP (CAPT, F/O)	NORM	NORM	NORM
	CIDS	NORM	NORM	NORM
	INTERPHONE	NORM	NORM	NORM
	CVR	NORM	INOP	INOP
	LOUDSPEAKER 1	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012524.0001001 / 17 MAR 17				
EMER EQPT	CREW OXY	NORM	NORM (b)	NORM (b)
	PAX OXY mask release (auto + man)	NORM	INOP	INOP
	SLIDES ARM/WARN	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00012525.0002001 / 17 MAR 17				
5 FIRE	ENG 1 LOOP	A only	A only	A only
	ENG 2 LOOP	B only	B only	B only
	APU LOOP	INOP	INOP	INOP(a)
	CARGO SMOKE DET	ch 1 only	INOP	INOP
	ENG FIRE EXT.	Bottle 1 only	Bottle 1 only	Bottle 1 only
	APU FIRE EXT.	Squib A only	Squib A only	Squib A only
	CARGO FIRE EXT.	INOP	INOP	INOP(a)
	APU AUTO EXT.	INOP	INOP	INOP(a)
Ident.: PRO-ABN-ELEC-S-00018017.0001001 / 17 MAR 17				
FLT CTL	ELAC	N°1 only	N°1 + N°2	N°1 + N°2 (d)
	SEC	N°1 only	N°1 only	N°1 only
	FCDC	N°1 only	INOP	INOP
	SFCC	N°1 only	N°1 only	N°1 only
	Flaps pos ind	NORM	NORM	NORM (c)
Ident.: PRO-ABN-ELEC-S-00018018.0001001 / 17 MAR 17				
6 FUEL	LP VALVE	NORM	NORM	NORM
	FQI channel 1	NORM	INOP	INOP
	X FEED VALVE	NORM	INOP	INOP
	INTERTANK TRANSFER VALVE	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012528.0001001 / 17 MAR 17				
HYD	FIRE VALVES	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018539.0002001 / 17 MAR 17				
ICE-RAIN	WING A.ICE	NORM	INOP	INOP
	ENG A.ICE VALVE	OPEN	OPEN	OPEN
	CAPT PITOT	NORM	NORM	NORM(c)
	CAPT AOA	NORM	INOP	INOP
	RAIN REPELLENT ◁ (CAPT)	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018538.0002001 / 17 MAR 17				
EIS	PFD 1	NORM	NORM	NORM (c)
	ND 1	NORM	INOP	INOP
	ECAM upper disp.	NORM	NORM	NORM (c)
	DMC 1 or 3	NORM	NORM	NORM (c)
	SDAC 1, FWC 1	NORM	NORM	NORM (c)
	ECAM CONT. panel	NORM	NORM	NORM
FLT INS	CLOCKS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018537.0001001 / 17 MAR 17				
L/G	LGCIU SYS 1	NORM	NORM	NORM
	BRK PRESS IND	NORM	NORM	NORM
	PARK BRK	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012532.0001001 / 17 MAR 17				
LIGHTS	EMER CKPT	NORM	NORM	NORM
	EMER CAB	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018550.0002001 / 17 MAR 17				
NAV	IR	N°1 only (e)	N°1 only (e)	N°1 only (e)
	ADR	N°1 only	N°1 only	N°1 only
	VOR	N°1 only	N°1 only	N°1 only (c)
	MMR	N°1 only	N°1 only	N°1 only (c)
	DME	N°1 only	INOP	INOP
	DDRMI ◁	NORM	NORM	NORM (c)
	ATC	N°1 only	INOP	INOP
	STBY HORIZON	NORM	NORM	NORM
	STBY COMP (LT)	NORM	NORM	NORM
	STBY ALTI (VIB)	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00018541.0002001 / 17 MAR 17				
PNEU	ENG 1 BLEED	NORM	BMC 1 INOP	BMC 1 INOP
	ENG 2 BLEED	BMC 2 INOP	BMC 2 INOP	BMC 2 INOP
	APU BLEED	INOP	INOP	INOP (a)
	X BLEED (MAN CTL)	NORM	INOP	INOP

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018019.0002001 / 17 MAR 17				
APU	ECB-STARTER	NORM(f)	NORM(g)	INOP(a)
	FUEL LP VALVE	NORM	NORM	NORM
	FUEL PUMP	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018540.0002001 / 17 MAR 17				
PWR PLT	FADEC	A+B (h)	A+B (h)	A+B (h)
	IGNITION	A only	A only	A only
	HP FUEL VALVE closure	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012537.0001001 / 17 MAR 17				
MISC	MECH HORN	NORM	NORM	NORM

(a) *Restored, when speed is below 100 kt.*

(b) *Crew supply solenoid valve inoperative.*

(c) *Lost, when the speed is below 50 kt.*

(d) *Lost, 30 s after the last engine shutdown.*

(e) *IR 2 and IR 3 are lost 5 min after failure of main generators but if IR 3 replaces IR 1 (ATT-HDG selector at CAPT 3), IR 3 remains supplied.*

(f) *For APU start only.*

(g) *Not available for 45 s, after the loss of both engine generators.*

(h) *Channels A and B are self powered above 10 % N2 for IAE or PW engines, 12 % N2 for CFM56 engines, or 8 % N2 for CFM LEAP-1A engines. If N2 is below these values, only Channel A is powered.*

[QRH] ELEC EMER CONFIG SYS REMAINING

Applicable to: MSN 01957-02097, 02121, 02138, 02275-02334

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018562.0008001 / 17 MAR 17				
AIR COND PRESS	PRESS AUTO SYS 1	NORM	NORM	NORM
	MAN PRESS CTL	INOP	INOP	INOP[(a)]
	RAM AIR	NORM	NORM	NORM
	PACK VALVE 1	NORM	Closure Inop	Closure Inop
	PACK VALVE 2	Closure Inop	Closure Inop	Closure Inop[(a)]
	AVIONIC VENT	NORM	NORM	Partial
	AFT CRG ISOL VALVES	NORM	INOP	INOP
	AFT CRG HEAT	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012522.0001001 / 17 MAR 17				
FMGS	FMGC (NAV FUNCTION)	N°1 only	Inop	Inop
	MCDU	N°1 only	Inop	Inop
	FAC	N°1 only	Inop	Inop
	FCU	ch 1 only	ch 1 only	ch 1 only
Ident.: PRO-ABN-ELEC-S-00018533.0002001 / 17 MAR 17				
7 COM	VHF 1	NORM	NORM	NORM
	HF 1	NORM	INOP	INOP
	RMP 1	NORM	NORM	NORM
	ACP (CAPT, F/O)	NORM	NORM	NORM
	CIDS	NORM	NORM	NORM
	INTERPHONE	NORM	NORM	NORM
	CVR	NORM	INOP	INOP
	LOUDSPEAKER 1	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012524.0001001 / 17 MAR 17				
EMER EQPT	CREW OXY	NORM	NORM [(b)]	NORM [(b)]
	PAX OXY mask release (auto + man)	NORM	INOP	INOP
	SLIDES ARM/WARN	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00012525.0002001 / 17 MAR 17				
8 FIRE	ENG 1 LOOP	A only	A only	A only
	ENG 2 LOOP	B only	B only	B only
	APU LOOP	INOP	INOP	INOP(a)
	CARGO SMOKE DET	ch 1 only	INOP	INOP
	ENG FIRE EXT.	Bottle 1 only	Bottle 1 only	Bottle 1 only
	APU FIRE EXT.	Squib A only	Squib A only	Squib A only
	CARGO FIRE EXT.	INOP	INOP	INOP(a)
	APU AUTO EXT.	INOP	INOP	INOP(a)
Ident.: PRO-ABN-ELEC-S-00018017.0001001 / 17 MAR 17				
FLT CTL	ELAC	N°1 only	N°1 + N°2	N°1 + N°2 (d)
	SEC	N°1 only	N°1 only	N°1 only
	FCDC	N°1 only	INOP	INOP
	SFCC	N°1 only	N°1 only	N°1 only
	Flaps pos ind	NORM	NORM	NORM (c)
Ident.: PRO-ABN-ELEC-S-00018018.0001001 / 17 MAR 17				
9 FUEL	LP VALVE	NORM	NORM	NORM
	FQI channel 1	NORM	INOP	INOP
	X FEED VALVE	NORM	INOP	INOP
	INTERTANK TRANSFER VALVE	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012528.0001001 / 17 MAR 17				
HYD	FIRE VALVES	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018539.0002001 / 17 MAR 17				
ICE-RAIN	WING A.ICE	NORM	INOP	INOP
	ENG A.ICE VALVE	OPEN	OPEN	OPEN
	CAPT PITOT	NORM	NORM	NORM(c)
	CAPT AOA	NORM	INOP	INOP
	RAIN REPELLENT ◁ (CAPT)	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018538.0002001 / 17 MAR 17				
EIS	PFD 1	NORM	NORM	NORM (c)
	ND 1	NORM	INOP	INOP
	ECAM upper disp.	NORM	NORM	NORM (c)
	DMC 1 or 3	NORM	NORM	NORM (c)
	SDAC 1, FWC 1	NORM	NORM	NORM (c)
	ECAM CONT. panel	NORM	NORM	NORM
FLT INS	CLOCKS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018537.0001001 / 17 MAR 17				
L/G	LGCIU SYS 1	NORM	NORM	NORM
	BRK PRESS IND	NORM	NORM	NORM
	PARK BRK	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012532.0001001 / 17 MAR 17				
LIGHTS	EMER CKPT	NORM	NORM	NORM
	EMER CAB	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018550.0005001 / 17 MAR 17				
NAV	IR	N°1 only (e)	N°1 only (e)	N°1 only (e)
	ADR	N°1 only	N°1 only	N°1 only
	ADF ◁	N°1 only	INOP	INOP
	VOR	N°1 only	N°1 only	N°1 only (c)
	MMR	N°1 only	N°1 only	N°1 only (c)
	DME	N°1 only	INOP	INOP
	DDRMI ◁	NORM	NORM	NORM (c)
	ATC	N°1 only	INOP	INOP
	ISIS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018541.0002001 / 17 MAR 17				
PNEU	ENG 1 BLEED	NORM	BMC 1 INOP	BMC 1 INOP
	ENG 2 BLEED	BMC 2 INOP	BMC 2 INOP	BMC 2 INOP
	APU BLEED	INOP	INOP	INOP(a)
	X BLEED (MAN CTL)	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00018019.0002001 / 17 MAR 17				
APU	ECB-STARTER	NORM(f)	NORM(g)	INOP(a)
	FUEL LP VALVE	NORM	NORM	NORM
	FUEL PUMP	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018540.0002001 / 17 MAR 17				
PWR PLT	FADEC	A+B (h)	A+B (h)	A+B (h)
	IGNITION	A only	A only	A only
	HP FUEL VALVE closure	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012537.0001001 / 17 MAR 17				
MISC	MECH HORN	NORM	NORM	NORM

(a) *Restored, when speed is below 100 kt.*

(b) *Crew supply solenoid valve inoperative.*

(c) *Lost, when the speed is below 50 kt.*

(d) *Lost, 30 s after the last engine shutdown.*

(e) *IR 2 and IR 3 are lost 5 min after failure of main generators but if IR 3 replaces IR 1 (ATT-HDG selector at CAPT 3), IR 3 remains supplied.*

(f) *For APU start only.*

(g) *Not available for 45 s, after the loss of both engine generators.*

(h) *Channels A and B are self powered above 10 % N2 for IAE or PW engines, 12 % N2 for CFM56 engines, or 8 % N2 for CFM LEAP-1A engines. If N2 is below these values, only Channel A is powered.*

[QRH] ELEC EMER CONFIG SYS REMAINING

Applicable to: MSN 02108, 02195, 02405, 02482

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND

Ident.: PRO-ABN-ELEC-S-00018562.0002001 / 17 MAR 17

AIR COND PRESS	PRESS AUTO SYS 1	NORM	NORM	NORM
	MAN PRESS CTL	INOP	INOP	INOP[(a)]
	RAM AIR	NORM	NORM	NORM
	PACK VALVE 1	NORM	Closure Inop	Closure Inop
	PACK VALVE 2	Closure Inop	Closure Inop	Closure Inop[(a)]
	AVIONIC VENT	NORM	NORM	Partial

Ident.: PRO-ABN-ELEC-S-00012522.0001001 / 17 MAR 17

FMGS	FMGC (NAV FUNCTION)	N°1 only	Inop	Inop
	MCDU	N°1 only	Inop	Inop
	FAC	N°1 only	Inop	Inop
	FCU	ch 1 only	ch 1 only	ch 1 only

Ident.: PRO-ABN-ELEC-S-00018533.0002001 / 17 MAR 17

COM	VHF 1	NORM	NORM	NORM
	HF 1	NORM	INOP	INOP
	RMP 1	NORM	NORM	NORM
	ACP (CAPT, F/O)	NORM	NORM	NORM
	CIDS	NORM	NORM	NORM
	INTERPHONE	NORM	NORM	NORM
	CVR	NORM	INOP	INOP
	LOUDSPEAKER 1	NORM	NORM	NORM

Ident.: PRO-ABN-ELEC-S-00012524.0001001 / 17 MAR 17

EMER EQPT	CREW OXY	NORM	NORM [(b)]	NORM [(b)]
	PAX OXY mask release (auto + man)	NORM	INOP	INOP
	SLIDES ARM/WARN	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00012525.0002001 / 17 MAR 17				
13 FIRE	ENG 1 LOOP	A only	A only	A only
	ENG 2 LOOP	B only	B only	B only
	APU LOOP	INOP	INOP	INOP(a)
	CARGO SMOKE DET	ch 1 only	INOP	INOP
	ENG FIRE EXT.	Bottle 1 only	Bottle 1 only	Bottle 1 only
	APU FIRE EXT.	Squib A only	Squib A only	Squib A only
	CARGO FIRE EXT.	INOP	INOP	INOP(a)
	APU AUTO EXT.	INOP	INOP	INOP(a)
Ident.: PRO-ABN-ELEC-S-00018017.0001001 / 17 MAR 17				
FLT CTL	ELAC	N°1 only	N°1 + N°2	N°1 + N°2 (d)
	SEC	N°1 only	N°1 only	N°1 only
	FCDC	N°1 only	INOP	INOP
	SFCC	N°1 only	N°1 only	N°1 only
	Flaps pos ind	NORM	NORM	NORM (c)
Ident.: PRO-ABN-ELEC-S-00018018.0001001 / 17 MAR 17				
14 FUEL	LP VALVE	NORM	NORM	NORM
	FQI channel 1	NORM	INOP	INOP
	X FEED VALVE	NORM	INOP	INOP
	INTERTANK TRANSFER VALVE	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012528.0001001 / 17 MAR 17				
HYD	FIRE VALVES	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018539.0002001 / 17 MAR 17				
ICE-RAIN	WING A.ICE	NORM	INOP	INOP
	ENG A.ICE VALVE	OPEN	OPEN	OPEN
	CAPT PITOT	NORM	NORM	NORM(c)
	CAPT AOA	NORM	INOP	INOP
	RAIN REPELLENT ⋘ (CAPT)	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018538.0002001 / 17 MAR 17				
EIS	PFD 1	NORM	NORM	NORM (c)
	ND 1	NORM	INOP	INOP
	ECAM upper disp.	NORM	NORM	NORM (c)
	DMC 1 or 3	NORM	NORM	NORM (c)
	SDAC 1, FWC 1	NORM	NORM	NORM (c)
	ECAM CONT. panel	NORM	NORM	NORM
FLT INS	CLOCKS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018537.0001001 / 17 MAR 17				
L/G	LGCIU SYS 1	NORM	NORM	NORM
	BRK PRESS IND	NORM	NORM	NORM
	PARK BRK	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012532.0001001 / 17 MAR 17				
LIGHTS	EMER CKPT	NORM	NORM	NORM
	EMER CAB	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018550.0002001 / 17 MAR 17				
NAV	IR	N°1 only (e)	N°1 only (e)	N°1 only (e)
	ADR	N°1 only	N°1 only	N°1 only
	VOR	N°1 only	N°1 only	N°1 only (c)
	MMR	N°1 only	N°1 only	N°1 only (c)
	DME	N°1 only	INOP	INOP
	DDRMI ◁	NORM	NORM	NORM (c)
	ATC	N°1 only	INOP	INOP
	STBY HORIZON	NORM	NORM	NORM
	STBY COMP (LT)	NORM	NORM	NORM
	STBY ALTI (VIB)	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00018541.0002001 / 17 MAR 17				
PNEU	ENG 1 BLEED	NORM	BMC 1 INOP	BMC 1 INOP
	ENG 2 BLEED	BMC 2 INOP	BMC 2 INOP	BMC 2 INOP
	APU BLEED	INOP	INOP	INOP(a)
	X BLEED (MAN CTL)	NORM	INOP	INOP

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018019.0002001 / 17 MAR 17				
APU	ECB-STARTER	NORM(f)	NORM(g)	INOP(a)
	FUEL LP VALVE	NORM	NORM	NORM
	FUEL PUMP	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018540.0002001 / 17 MAR 17				
PWR PLT	FADEC	A+B (h)	A+B (h)	A+B (h)
	IGNITION	A only	A only	A only
	HP FUEL VALVE closure	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012537.0001001 / 17 MAR 17				
MISC	MECH HORN	NORM	NORM	NORM

(a) *Restored, when speed is below 100 kt.*

(b) *Crew supply solenoid valve inoperative.*

(c) *Lost, when the speed is below 50 kt.*

(d) *Lost, 30 s after the last engine shutdown.*

(e) *IR 2 and IR 3 are lost 5 min after failure of main generators but if IR 3 replaces IR 1 (ATT-HDG selector at CAPT 3), IR 3 remains supplied.*

(f) *For APU start only.*

(g) *Not available for 45 s, after the loss of both engine generators.*

(h) *Channels A and B are self powered above 10 % N2 for IAE or PW engines, 12 % N2 for CFM56 engines, or 8 % N2 for CFM LEAP-1A engines. If N2 is below these values, only Channel A is powered.*

[QRH] ELEC EMER CONFIG SYS REMAINING

Applicable to: MSN 02204

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018562.0003001 / 17 MAR 17				
AIR COND PRESS	PRESS AUTO SYS 1	NORM	NORM	NORM
	MAN PRESS CTL	INOP	INOP	INOP (a)
	RAM AIR	NORM	NORM	NORM
	PACK VALVE 1	NORM	Closure Inop	Closure Inop
	PACK VALVE 2	Closure Inop	Closure Inop	Closure Inop (a)
	AVIONIC VENT	NORM	NORM	Partial
	AFT CRG ISOL VALVES	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012522.0001001 / 17 MAR 17				
FMGS	FMGC (NAV FUNCTION)	N°1 only	Inop	Inop
	MCDU	N°1 only	Inop	Inop
	FAC	N°1 only	Inop	Inop
	FCU	ch 1 only	ch 1 only	ch 1 only
Ident.: PRO-ABN-ELEC-S-00018533.0002001 / 17 MAR 17				
15 COM	VHF 1	NORM	NORM	NORM
	HF 1	NORM	INOP	INOP
	RMP 1	NORM	NORM	NORM
	ACP (CAPT, F/O)	NORM	NORM	NORM
	CIDS	NORM	NORM	NORM
	INTERPHONE	NORM	NORM	NORM
	CVR	NORM	INOP	INOP
	LOUDSPEAKER 1	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012524.0001001 / 17 MAR 17				
EMER EQPT	CREW OXY	NORM	NORM (b)	NORM (b)
	PAX OXY mask release (auto + man)	NORM	INOP	INOP
	SLIDES ARM/WARN	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00012525.0002001 / 17 MAR 17				
16 FIRE	ENG 1 LOOP	A only	A only	A only
	ENG 2 LOOP	B only	B only	B only
	APU LOOP	INOP	INOP	INOP(a)
	CARGO SMOKE DET	ch 1 only	INOP	INOP
	ENG FIRE EXT.	Bottle 1 only	Bottle 1 only	Bottle 1 only
	APU FIRE EXT.	Squib A only	Squib A only	Squib A only
	CARGO FIRE EXT.	INOP	INOP	INOP(a)
	APU AUTO EXT.	INOP	INOP	INOP(a)
Ident.: PRO-ABN-ELEC-S-00018017.0001001 / 17 MAR 17				
FLT CTL	ELAC	N°1 only	N°1 + N°2	N°1 + N°2 (d)
	SEC	N°1 only	N°1 only	N°1 only
	FCDC	N°1 only	INOP	INOP
	SFCC	N°1 only	N°1 only	N°1 only
	Flaps pos ind	NORM	NORM	NORM (c)
Ident.: PRO-ABN-ELEC-S-00018018.0001001 / 17 MAR 17				
17 FUEL	LP VALVE	NORM	NORM	NORM
	FQI channel 1	NORM	INOP	INOP
	X FEED VALVE	NORM	INOP	INOP
	INTERTANK TRANSFER VALVE	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012528.0001001 / 17 MAR 17				
HYD	FIRE VALVES	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018539.0002001 / 17 MAR 17				
ICE-RAIN	WING A.ICE	NORM	INOP	INOP
	ENG A.ICE VALVE	OPEN	OPEN	OPEN
	CAPT PITOT	NORM	NORM	NORM(c)
	CAPT AOA	NORM	INOP	INOP
	RAIN REPELLENT ◁ (CAPT)	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018538.0002001 / 17 MAR 17				
EIS	PFD 1	NORM	NORM	NORM (c)
	ND 1	NORM	INOP	INOP
	ECAM upper disp.	NORM	NORM	NORM (c)
	DMC 1 or 3	NORM	NORM	NORM (c)
	SDAC 1, FWC 1	NORM	NORM	NORM (c)
	ECAM CONT. panel	NORM	NORM	NORM
FLT INS	CLOCKS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018537.0001001 / 17 MAR 17				
L/G	LGCIU SYS 1	NORM	NORM	NORM
	BRK PRESS IND	NORM	NORM	NORM
	PARK BRK	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012532.0001001 / 17 MAR 17				
LIGHTS	EMER CKPT	NORM	NORM	NORM
	EMER CAB	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018550.0005001 / 17 MAR 17				
18 NAV	IR	N°1 only (e)	N°1 only (e)	N°1 only (e)
	ADR	N°1 only	N°1 only	N°1 only
	ADF ◁	N°1 only	INOP	INOP
	VOR	N°1 only	N°1 only	N°1 only (c)
	MMR	N°1 only	N°1 only	N°1 only (c)
	DME	N°1 only	INOP	INOP
	DDRMI ◁	NORM	NORM	NORM (c)
	ATC	N°1 only	INOP	INOP
	ISIS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018541.0002001 / 17 MAR 17				
PNEU	ENG 1 BLEED	NORM	BMC 1 INOP	BMC 1 INOP
	ENG 2 BLEED	BMC 2 INOP	BMC 2 INOP	BMC 2 INOP
	APU BLEED	INOP	INOP	INOP(a)
	X BLEED (MAN CTL)	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00018019.0002001 / 17 MAR 17				
APU	ECB-STARTER	NORM(f)	NORM(g)	INOP(a)
	FUEL LP VALVE	NORM	NORM	NORM
	FUEL PUMP	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018540.0002001 / 17 MAR 17				
PWR PLT	FADEC	A+B (h)	A+B (h)	A+B (h)
	IGNITION	A only	A only	A only
	HP FUEL VALVE closure	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012537.0001001 / 17 MAR 17				
MISC	MECH HORN	NORM	NORM	NORM

(a) *Restored, when speed is below 100 kt.*

(b) *Crew supply solenoid valve inoperative.*

(c) *Lost, when the speed is below 50 kt.*

(d) *Lost, 30 s after the last engine shutdown.*

(e) *IR 2 and IR 3 are lost 5 min after failure of main generators but if IR 3 replaces IR 1 (ATT-HDG selector at CAPT 3), IR 3 remains supplied.*

(f) *For APU start only.*

(g) *Not available for 45 s, after the loss of both engine generators.*

(h) *Channels A and B are self powered above 10 % N2 for IAE or PW engines, 12 % N2 for CFM56 engines, or 8 % N2 for CFM LEAP-1A engines. If N2 is below these values, only Channel A is powered.*

[QRH] ELEC EMER CONFIG SYS REMAINING

Applicable to: MSN 02359

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018562.0002001 / 17 MAR 17				
19 AIR COND PRESS	PRESS AUTO SYS 1	NORM	NORM	NORM
	MAN PRESS CTL	INOP	INOP	INOP[(a)]
	RAM AIR	NORM	NORM	NORM
	PACK VALVE 1	NORM	Closure Inop	Closure Inop
	PACK VALVE 2	Closure Inop	Closure Inop	Closure Inop[(a)]
	AVIONIC VENT	NORM	NORM	Partial
Ident.: PRO-ABN-ELEC-S-00012522.0001001 / 17 MAR 17				
FMGS	FMGC (NAV FUNCTION)	N°1 only	Inop	Inop
	MCDU	N°1 only	Inop	Inop
	FAC	N°1 only	Inop	Inop
	FCU	ch 1 only	ch 1 only	ch 1 only
Ident.: PRO-ABN-ELEC-S-00018533.0001001 / 17 MAR 17				
COM	VHF 1	NORM	NORM	NORM
	RMP 1	NORM	NORM	NORM
	ACP (CAPT, F/O)	NORM	NORM	NORM
	CIDS	NORM	NORM	NORM
	INTERPHONE	NORM	NORM	NORM
	CVR	NORM	INOP	INOP
	LOUDSPEAKER 1	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012524.0001001 / 17 MAR 17				
EMER EQPT	CREW OXY	NORM	NORM [(b)]	NORM [(b)]
	PAX OXY mask release (auto + man)	NORM	INOP	INOP
	SLIDES ARM/WARN	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00012525.0002001 / 17 MAR 17				
FIRE	ENG 1 LOOP	A only	A only	A only
	ENG 2 LOOP	B only	B only	B only
	APU LOOP	INOP	INOP	INOP(a)
	CARGO SMOKE DET	ch 1 only	INOP	INOP
	ENG FIRE EXT.	Bottle 1 only	Bottle 1 only	Bottle 1 only
	APU FIRE EXT.	Squib A only	Squib A only	Squib A only
	CARGO FIRE EXT.	INOP	INOP	INOP(a)
	APU AUTO EXT.	INOP	INOP	INOP(a)
Ident.: PRO-ABN-ELEC-S-00018017.0001001 / 17 MAR 17				
FLT CTL	ELAC	N°1 only	N°1 + N°2	N°1 + N°2 (d)
	SEC	N°1 only	N°1 only	N°1 only
	FCDC	N°1 only	INOP	INOP
	SFCC	N°1 only	N°1 only	N°1 only
	Flaps pos ind	NORM	NORM	NORM (c)
Ident.: PRO-ABN-ELEC-S-00018018.0001001 / 17 MAR 17				
FUEL	LP VALVE	NORM	NORM	NORM
	FQI channel 1	NORM	INOP	INOP
	X FEED VALVE	NORM	INOP	INOP
	INTERTANK TRANSFER VALVE	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012528.0001001 / 17 MAR 17				
HYD	FIRE VALVES	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018539.0002001 / 17 MAR 17				
ICE-RAIN	WING A.ICE	NORM	INOP	INOP
	ENG A.ICE VALVE	OPEN	OPEN	OPEN
	CAPT PITOT	NORM	NORM	NORM(c)
	CAPT AOA	NORM	INOP	INOP
	RAIN REPELLENT (CAPT)	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018538.0002001 / 17 MAR 17				
EIS	PFD 1	NORM	NORM	NORM (c)
	ND 1	NORM	INOP	INOP
	ECAM upper disp.	NORM	NORM	NORM (c)
	DMC 1 or 3	NORM	NORM	NORM (c)
	SDAC 1, FWC 1	NORM	NORM	NORM (c)
	ECAM CONT. panel	NORM	NORM	NORM
FLT INS	CLOCKS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018537.0001001 / 17 MAR 17				
L/G	LGCIU SYS 1	NORM	NORM	NORM
	BRK PRESS IND	NORM	NORM	NORM
	PARK BRK	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012532.0001001 / 17 MAR 17				
LIGHTS	EMER CKPT	NORM	NORM	NORM
	EMER CAB	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018550.0002001 / 17 MAR 17				
NAV	IR	N°1 only (e)	N°1 only (e)	N°1 only (e)
	ADR	N°1 only	N°1 only	N°1 only
	VOR	N°1 only	N°1 only	N°1 only (c)
	MMR	N°1 only	N°1 only	N°1 only (c)
	DME	N°1 only	INOP	INOP
	DDRMI ◁	NORM	NORM	NORM (c)
	ATC	N°1 only	INOP	INOP
	STBY HORIZON	NORM	NORM	NORM
	STBY COMP (LT)	NORM	NORM	NORM
	STBY ALTI (VIB)	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00018541.0002001 / 17 MAR 17				
PNEU	ENG 1 BLEED	NORM	BMC 1 INOP	BMC 1 INOP
	ENG 2 BLEED	BMC 2 INOP	BMC 2 INOP	BMC 2 INOP
	APU BLEED	INOP	INOP	INOP (a)
	X BLEED (MAN CTL)	NORM	INOP	INOP

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018019.0002001 / 17 MAR 17				
APU	ECB-STARTER	NORM(f)	NORM(g)	INOP(a)
	FUEL LP VALVE	NORM	NORM	NORM
	FUEL PUMP	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018540.0002001 / 17 MAR 17				
PWR PLT	FADEC	A+B (h)	A+B (h)	A+B (h)
	IGNITION	A only	A only	A only
	HP FUEL VALVE closure	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012537.0001001 / 17 MAR 17				
MISC	MECH HORN	NORM	NORM	NORM

(a) *Restored, when speed is below 100 kt.*

(b) *Crew supply solenoid valve inoperative.*

(c) *Lost, when the speed is below 50 kt.*

(d) *Lost, 30 s after the last engine shutdown.*

(e) *IR 2 and IR 3 are lost 5 min after failure of main generators but if IR 3 replaces IR 1 (ATT-HDG selector at CAPT 3), IR 3 remains supplied.*

(f) *For APU start only.*

(g) *Not available for 45 s, after the loss of both engine generators.*

(h) *Channels A and B are self powered above 10 % N2 for IAE or PW engines, 12 % N2 for CFM56 engines, or 8 % N2 for CFM LEAP-1A engines. If N2 is below these values, only Channel A is powered.*

[QRH] ELEC EMER CONFIG SYS REMAINING

Applicable to: MSN 02443, 02649, 03071, 04314, 04393-04397, 05158

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018562.0008001 / 17 MAR 17				
AIR COND PRESS	PRESS AUTO SYS 1	NORM	NORM	NORM
	MAN PRESS CTL	INOP	INOP	INOP[(a)]
	RAM AIR	NORM	NORM	NORM
	PACK VALVE 1	NORM	Closure Inop	Closure Inop
	PACK VALVE 2	Closure Inop	Closure Inop	Closure Inop[(a)]
	AVIONIC VENT	NORM	NORM	Partial
	AFT CRG ISOL VALVES	NORM	INOP	INOP
	AFT CRG HEAT	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012522.0001001 / 17 MAR 17				
FMGS	FMGC (NAV FUNCTION)	N°1 only	Inop	Inop
	MCDU	N°1 only	Inop	Inop
	FAC	N°1 only	Inop	Inop
	FCU	ch 1 only	ch 1 only	ch 1 only
Ident.: PRO-ABN-ELEC-S-00018533.0002001 / 17 MAR 17				
22 COM	VHF 1	NORM	NORM	NORM
	HF 1	NORM	INOP	INOP
	RMP 1	NORM	NORM	NORM
	ACP (CAPT, F/O)	NORM	NORM	NORM
	CIDS	NORM	NORM	NORM
	INTERPHONE	NORM	NORM	NORM
	CVR	NORM	INOP	INOP
	LOUDSPEAKER 1	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012524.0001001 / 17 MAR 17				
EMER EQPT	CREW OXY	NORM	NORM [(b)]	NORM [(b)]
	PAX OXY mask release (auto + man)	NORM	INOP	INOP
	SLIDES ARM/WARN	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00012525.0002001 / 17 MAR 17				
23 FIRE	ENG 1 LOOP	A only	A only	A only
	ENG 2 LOOP	B only	B only	B only
	APU LOOP	INOP	INOP	INOP[(a)]
	CARGO SMOKE DET	ch 1 only	INOP	INOP
	ENG FIRE EXT.	Bottle 1 only	Bottle 1 only	Bottle 1 only
	APU FIRE EXT.	Squib A only	Squib A only	Squib A only
	CARGO FIRE EXT.	INOP	INOP	INOP[(a)]
	APU AUTO EXT.	INOP	INOP	INOP[(a)]
Ident.: PRO-ABN-ELEC-S-00018017.0001001 / 17 MAR 17				
FLT CTL	ELAC	N°1 only	N°1 + N°2	N°1 + N°2 [(d)]
	SEC	N°1 only	N°1 only	N°1 only
	FCDC	N°1 only	INOP	INOP
	SFCC	N°1 only	N°1 only	N°1 only
	Flaps pos ind	NORM	NORM	NORM [(c)]
Ident.: PRO-ABN-ELEC-S-00018018.0001001 / 17 MAR 17				
24 FUEL	LP VALVE	NORM	NORM	NORM
	FQI channel 1	NORM	INOP	INOP
	X FEED VALVE	NORM	INOP	INOP
	INTERTANK TRANSFER VALVE	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012528.0001001 / 17 MAR 17				
HYD	FIRE VALVES	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018539.0002001 / 17 MAR 17				
ICE-RAIN	WING A.ICE	NORM	INOP	INOP
	ENG A.ICE VALVE	OPEN	OPEN	OPEN
	CAPT PITOT	NORM	NORM	NORM[(c)]
	CAPT AOA	NORM	INOP	INOP
	RAIN REPELLENT ◁ (CAPT)	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018538.0002001 / 17 MAR 17				
EIS	PFD 1	NORM	NORM	NORM (c)
	ND 1	NORM	INOP	INOP
	ECAM upper disp.	NORM	NORM	NORM (c)
	DMC 1 or 3	NORM	NORM	NORM (c)
	SDAC 1, FWC 1	NORM	NORM	NORM (c)
	ECAM CONT. panel	NORM	NORM	NORM
FLT INS	CLOCKS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018537.0002001 / 17 MAR 17				
25 L/G	LGCIU SYS 1	NORM	NORM	NORM
	BRK PRESS IND	NORM	NORM	NORM
	PARK BRK	NORM	NORM	NORM
	ABCU	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012532.0001001 / 17 MAR 17				
LIGHTS	EMER CKPT	NORM	NORM	NORM
	EMER CAB	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018550.0005001 / 17 MAR 17				
26 NAV	IR	N°1 only (e)	N°1 only (e)	N°1 only (e)
	ADR	N°1 only	N°1 only	N°1 only
	ADF ◁	N°1 only	INOP	INOP
	VOR	N°1 only	N°1 only	N°1 only (c)
	MMR	N°1 only	N°1 only	N°1 only (c)
	DME	N°1 only	INOP	INOP
	DDRMI ◁	NORM	NORM	NORM (c)
	ATC	N°1 only	INOP	INOP
	ISIS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018541.0002001 / 17 MAR 17				
PNEU	ENG 1 BLEED	NORM	BMC 1 INOP	BMC 1 INOP
	ENG 2 BLEED	BMC 2 INOP	BMC 2 INOP	BMC 2 INOP
	APU BLEED	INOP	INOP	INOP(a)
	X BLEED (MAN CTL)	NORM	INOP	INOP

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018019.0002001 / 17 MAR 17				
APU	ECB-STARTER	NORM(f)	NORM(g)	INOP(a)
	FUEL LP VALVE	NORM	NORM	NORM
	FUEL PUMP	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018540.0002001 / 17 MAR 17				
PWR PLT	FADEC	A+B (h)	A+B (h)	A+B (h)
	IGNITION	A only	A only	A only
	HP FUEL VALVE closure	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012537.0001001 / 17 MAR 17				
MISC	MECH HORN	NORM	NORM	NORM

(a) *Restored, when speed is below 100 kt.*

(b) *Crew supply solenoid valve inoperative.*

(c) *Lost, when the speed is below 50 kt.*

(d) *Lost, 30 s after the last engine shutdown.*

(e) *IR 2 and IR 3 are lost 5 min after failure of main generators but if IR 3 replaces IR 1 (ATT-HDG selector at CAPT 3), IR 3 remains supplied.*

(f) *For APU start only.*

(g) *Not available for 45 s, after the loss of both engine generators.*

(h) *Channels A and B are self powered above 10 % N2 for IAE or PW engines, 12 % N2 for CFM56 engines, or 8 % N2 for CFM LEAP-1A engines. If N2 is below these values, only Channel A is powered.*

[QRH] ELEC EMER CONFIG SYS REMAINING

Applicable to: MSN 02457, 02584, 02670-02737, 02908-02914, 03138-04312, 04328-04384, 04399-05155, 05190-06336

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018562.0002001 / 17 MAR 17				
27 AIR COND PRESS	PRESS AUTO SYS 1	NORM	NORM	NORM
	MAN PRESS CTL	INOP	INOP	INOP(a)
	RAM AIR	NORM	NORM	NORM
	PACK VALVE 1	NORM	Closure Inop	Closure Inop
	PACK VALVE 2	Closure Inop	Closure Inop	Closure Inop(a)
	AVIONIC VENT	NORM	NORM	Partial
Ident.: PRO-ABN-ELEC-S-00012522.0001001 / 17 MAR 17				
FMGS	FMGC (NAV FUNCTION)	N°1 only	Inop	Inop
	MCDU	N°1 only	Inop	Inop
	FAC	N°1 only	Inop	Inop
	FCU	ch 1 only	ch 1 only	ch 1 only
Ident.: PRO-ABN-ELEC-S-00018533.0002001 / 17 MAR 17				
28 COM	VHF 1	NORM	NORM	NORM
	HF 1	NORM	INOP	INOP
	RMP 1	NORM	NORM	NORM
	ACP (CAPT, F/O)	NORM	NORM	NORM
	CIDS	NORM	NORM	NORM
	INTERPHONE	NORM	NORM	NORM
	CVR	NORM	INOP	INOP
	LOUDSPEAKER 1	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012524.0001001 / 17 MAR 17				
EMER EQPT	CREW OXY	NORM	NORM (b)	NORM (b)
	PAX OXY mask release (auto + man)	NORM	INOP	INOP
	SLIDES ARM/WARN	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00012525.0002001 / 17 MAR 17				
29 FIRE	ENG 1 LOOP	A only	A only	A only
	ENG 2 LOOP	B only	B only	B only
	APU LOOP	INOP	INOP	INOP(a)
	CARGO SMOKE DET	ch 1 only	INOP	INOP
	ENG FIRE EXT.	Bottle 1 only	Bottle 1 only	Bottle 1 only
	APU FIRE EXT.	Squib A only	Squib A only	Squib A only
	CARGO FIRE EXT.	INOP	INOP	INOP(a)
	APU AUTO EXT.	INOP	INOP	INOP(a)
Ident.: PRO-ABN-ELEC-S-00018017.0001001 / 17 MAR 17				
FLT CTL	ELAC	N°1 only	N°1 + N°2	N°1 + N°2 (d)
	SEC	N°1 only	N°1 only	N°1 only
	FCDC	N°1 only	INOP	INOP
	SFCC	N°1 only	N°1 only	N°1 only
	Flaps pos ind	NORM	NORM	NORM (c)
Ident.: PRO-ABN-ELEC-S-00018018.0001001 / 17 MAR 17				
30 FUEL	LP VALVE	NORM	NORM	NORM
	FQI channel 1	NORM	INOP	INOP
	X FEED VALVE	NORM	INOP	INOP
	INTERTANK TRANSFER VALVE	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012528.0001001 / 17 MAR 17				
HYD	FIRE VALVES	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018539.0002001 / 17 MAR 17				
ICE-RAIN	WING A.ICE	NORM	INOP	INOP
	ENG A.ICE VALVE	OPEN	OPEN	OPEN
	CAPT PITOT	NORM	NORM	NORM(c)
	CAPT AOA	NORM	INOP	INOP
	RAIN REPELLENT ◁ (CAPT)	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018538.0002001 / 17 MAR 17				
EIS	PFD 1	NORM	NORM	NORM (c)
	ND 1	NORM	INOP	INOP
	ECAM upper disp.	NORM	NORM	NORM (c)
	DMC 1 or 3	NORM	NORM	NORM (c)
	SDAC 1, FWC 1	NORM	NORM	NORM (c)
	ECAM CONT. panel	NORM	NORM	NORM
FLT INS	CLOCKS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018537.0002001 / 17 MAR 17				
31 L/G	LGCIU SYS 1	NORM	NORM	NORM
	BRK PRESS IND	NORM	NORM	NORM
	PARK BRK	NORM	NORM	NORM
	ABCU	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012532.0001001 / 17 MAR 17				
LIGHTS	EMER CKPT	NORM	NORM	NORM
	EMER CAB	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018550.0005001 / 17 MAR 17				
32 NAV	IR	N°1 only (e)	N°1 only (e)	N°1 only (e)
	ADR	N°1 only	N°1 only	N°1 only
	ADF	N°1 only	INOP	INOP
	VOR	N°1 only	N°1 only	N°1 only (c)
	MMR	N°1 only	N°1 only	N°1 only (c)
	DME	N°1 only	INOP	INOP
	DDRMI	NORM	NORM	NORM (c)
	ATC	N°1 only	INOP	INOP
	ISIS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018541.0002001 / 17 MAR 17				
PNEU	ENG 1 BLEED	NORM	BMC 1 INOP	BMC 1 INOP
	ENG 2 BLEED	BMC 2 INOP	BMC 2 INOP	BMC 2 INOP
	APU BLEED	INOP	INOP	INOP(a)
	X BLEED (MAN CTL)	NORM	INOP	INOP

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018019.0002001 / 17 MAR 17				
APU	ECB-STARTER	NORM(f)	NORM(g)	INOP(a)
	FUEL LP VALVE	NORM	NORM	NORM
	FUEL PUMP	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018540.0002001 / 17 MAR 17				
PWR PLT	FADEC	A+B (h)	A+B (h)	A+B (h)
	IGNITION	A only	A only	A only
	HP FUEL VALVE closure	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012537.0001001 / 17 MAR 17				
MISC	MECH HORN	NORM	NORM	NORM

(a) *Restored, when speed is below 100 kt.*

(b) *Crew supply solenoid valve inoperative.*

(c) *Lost, when the speed is below 50 kt.*

(d) *Lost, 30 s after the last engine shutdown.*

(e) *IR 2 and IR 3 are lost 5 min after failure of main generators but if IR 3 replaces IR 1 (ATT-HDG selector at CAPT 3), IR 3 remains supplied.*

(f) *For APU start only.*

(g) *Not available for 45 s, after the loss of both engine generators.*

(h) *Channels A and B are self powered above 10 % N2 for IAE or PW engines, 12 % N2 for CFM56 engines, or 8 % N2 for CFM LEAP-1A engines. If N2 is below these values, only Channel A is powered.*

[QRH] ELEC EMER CONFIG SYS REMAINING

Applicable to: MSN 02609-02626

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018562.0008001 / 17 MAR 17				
AIR COND PRESS	PRESS AUTO SYS 1	NORM	NORM	NORM
	MAN PRESS CTL	INOP	INOP	INOP[(a)]
	RAM AIR	NORM	NORM	NORM
	PACK VALVE 1	NORM	Closure Inop	Closure Inop
	PACK VALVE 2	Closure Inop	Closure Inop	Closure Inop[(a)]
	AVIONIC VENT	NORM	NORM	Partial
	AFT CRG ISOL VALVES	NORM	INOP	INOP
	AFT CRG HEAT	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012522.0001001 / 17 MAR 17				
FMGS	FMGC (NAV FUNCTION)	N°1 only	Inop	Inop
	MCDU	N°1 only	Inop	Inop
	FAC	N°1 only	Inop	Inop
	FCU	ch 1 only	ch 1 only	ch 1 only
Ident.: PRO-ABN-ELEC-S-00018533.0001001 / 17 MAR 17				
COM	VHF 1	NORM	NORM	NORM
	RMP 1	NORM	NORM	NORM
	ACP (CAPT, F/O)	NORM	NORM	NORM
	CIDS	NORM	NORM	NORM
	INTERPHONE	NORM	NORM	NORM
	CVR	NORM	INOP	INOP
	LOUDSPEAKER 1	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012524.0001001 / 17 MAR 17				
EMER EQPT	CREW OXY	NORM	NORM [(b)]	NORM [(b)]
	PAX OXY mask release (auto + man)	NORM	INOP	INOP
	SLIDES ARM/WARN	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00012525.0002001 / 17 MAR 17				
FIRE	ENG 1 LOOP	A only	A only	A only
	ENG 2 LOOP	B only	B only	B only
	APU LOOP	INOP	INOP	INOP(a)
	CARGO SMOKE DET	ch 1 only	INOP	INOP
	ENG FIRE EXT.	Bottle 1 only	Bottle 1 only	Bottle 1 only
	APU FIRE EXT.	Squib A only	Squib A only	Squib A only
	CARGO FIRE EXT.	INOP	INOP	INOP(a)
	APU AUTO EXT.	INOP	INOP	INOP(a)
Ident.: PRO-ABN-ELEC-S-00018017.0001001 / 17 MAR 17				
FLT CTL	ELAC	N°1 only	N°1 + N°2	N°1 + N°2 (d)
	SEC	N°1 only	N°1 only	N°1 only
	FCDC	N°1 only	INOP	INOP
	SFCC	N°1 only	N°1 only	N°1 only
	Flaps pos ind	NORM	NORM	NORM (c)
Ident.: PRO-ABN-ELEC-S-00018018.0001001 / 17 MAR 17				
FUEL	LP VALVE	NORM	NORM	NORM
	FQI channel 1	NORM	INOP	INOP
	X FEED VALVE	NORM	INOP	INOP
	INTERTANK TRANSFER VALVE	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012528.0001001 / 17 MAR 17				
HYD	FIRE VALVES	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018539.0002001 / 17 MAR 17				
ICE-RAIN	WING A.ICE	NORM	INOP	INOP
	ENG A.ICE VALVE	OPEN	OPEN	OPEN
	CAPT PITOT	NORM	NORM	NORM(c)
	CAPT AOA	NORM	INOP	INOP
	RAIN REPELLENT ◁ (CAPT)	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018538.0002001 / 17 MAR 17				
EIS	PFD 1	NORM	NORM	NORM (c)
	ND 1	NORM	INOP	INOP
	ECAM upper disp.	NORM	NORM	NORM (c)
	DMC 1 or 3	NORM	NORM	NORM (c)
	SDAC 1, FWC 1	NORM	NORM	NORM (c)
	ECAM CONT. panel	NORM	NORM	NORM
FLT INS	CLOCKS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018537.0002001 / 17 MAR 17				
35 L/G	LGCIU SYS 1	NORM	NORM	NORM
	BRK PRESS IND	NORM	NORM	NORM
	PARK BRK	NORM	NORM	NORM
	ABCU	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012532.0001001 / 17 MAR 17				
LIGHTS	EMER CKPT	NORM	NORM	NORM
	EMER CAB	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018550.0002001 / 17 MAR 17				
NAV	IR	N°1 only (e)	N°1 only (e)	N°1 only (e)
	ADR	N°1 only	N°1 only	N°1 only
	VOR	N°1 only	N°1 only	N°1 only (c)
	MMR	N°1 only	N°1 only	N°1 only (c)
	DME	N°1 only	INOP	INOP
	DDRMI ◁◁	NORM	NORM	NORM (c)
	ATC	N°1 only	INOP	INOP
	STBY HORIZON	NORM	NORM	NORM
	STBY COMP (LT)	NORM	NORM	NORM
	STBY ALTI (VIB)	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00018541.0002001 / 17 MAR 17				
PNEU	ENG 1 BLEED	NORM	BMC 1 INOP	BMC 1 INOP
	ENG 2 BLEED	BMC 2 INOP	BMC 2 INOP	BMC 2 INOP
	APU BLEED	INOP	INOP	INOP (a)
	X BLEED (MAN CTL)	NORM	INOP	INOP

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018019.0002001 / 17 MAR 17				
APU	ECB-STARTER	NORM(f)	NORM(g)	INOP(a)
	FUEL LP VALVE	NORM	NORM	NORM
	FUEL PUMP	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018540.0002001 / 17 MAR 17				
PWR PLT	FADEC	A+B (h)	A+B (h)	A+B (h)
	IGNITION	A only	A only	A only
	HP FUEL VALVE closure	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012537.0001001 / 17 MAR 17				
MISC	MECH HORN	NORM	NORM	NORM

(a) *Restored, when speed is below 100 kt.*

(b) *Crew supply solenoid valve inoperative.*

(c) *Lost, when the speed is below 50 kt.*

(d) *Lost, 30 s after the last engine shutdown.*

(e) *IR 2 and IR 3 are lost 5 min after failure of main generators but if IR 3 replaces IR 1 (ATT-HDG selector at CAPT 3), IR 3 remains supplied.*

(f) *For APU start only.*

(g) *Not available for 45 s, after the loss of both engine generators.*

(h) *Channels A and B are self powered above 10 % N2 for IAE or PW engines, 12 % N2 for CFM56 engines, or 8 % N2 for CFM LEAP-1A engines. If N2 is below these values, only Channel A is powered.*

[QRH] ELEC EMER CONFIG SYS REMAINING

Applicable to: MSN 02804

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018562.0003001 / 17 MAR 17				
AIR COND PRESS	PRESS AUTO SYS 1	NORM	NORM	NORM
	MAN PRESS CTL	INOP	INOP	INOP (a)
	RAM AIR	NORM	NORM	NORM
	PACK VALVE 1	NORM	Closure Inop	Closure Inop
	PACK VALVE 2	Closure Inop	Closure Inop	Closure Inop (a)
	AVIONIC VENT	NORM	NORM	Partial
	AFT CRG ISOL VALVES	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012522.0001001 / 17 MAR 17				
FMGS	FMGC (NAV FUNCTION)	N°1 only	Inop	Inop
	MCDU	N°1 only	Inop	Inop
	FAC	N°1 only	Inop	Inop
	FCU	ch 1 only	ch 1 only	ch 1 only
Ident.: PRO-ABN-ELEC-S-00018533.0002001 / 17 MAR 17				
36 COM	VHF 1	NORM	NORM	NORM
	HF 1	NORM	INOP	INOP
	RMP 1	NORM	NORM	NORM
	ACP (CAPT, F/O)	NORM	NORM	NORM
	CIDS	NORM	NORM	NORM
	INTERPHONE	NORM	NORM	NORM
	CVR	NORM	INOP	INOP
	LOUDSPEAKER 1	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012524.0001001 / 17 MAR 17				
EMER EQPT	CREW OXY	NORM	NORM (b)	NORM (b)
	PAX OXY mask release (auto + man)	NORM	INOP	INOP
	SLIDES ARM/WARN	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00012525.0002001 / 17 MAR 17				
FIRE	ENG 1 LOOP	A only	A only	A only
	ENG 2 LOOP	B only	B only	B only
	APU LOOP	INOP	INOP	INOP(a)
	CARGO SMOKE DET	ch 1 only	INOP	INOP
	ENG FIRE EXT.	Bottle 1 only	Bottle 1 only	Bottle 1 only
	APU FIRE EXT.	Squib A only	Squib A only	Squib A only
	CARGO FIRE EXT.	INOP	INOP	INOP(a)
	APU AUTO EXT.	INOP	INOP	INOP(a)
Ident.: PRO-ABN-ELEC-S-00018017.0001001 / 17 MAR 17				
FLT CTL	ELAC	N°1 only	N°1 + N°2	N°1 + N°2 (d)
	SEC	N°1 only	N°1 only	N°1 only
	FCDC	N°1 only	INOP	INOP
	SFCC	N°1 only	N°1 only	N°1 only
	Flaps pos ind	NORM	NORM	NORM (c)
Ident.: PRO-ABN-ELEC-S-00018018.0001001 / 17 MAR 17				
FUEL	LP VALVE	NORM	NORM	NORM
	FQI channel 1	NORM	INOP	INOP
	X FEED VALVE	NORM	INOP	INOP
	INTERTANK TRANSFER VALVE	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012528.0001001 / 17 MAR 17				
HYD	FIRE VALVES	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018539.0002001 / 17 MAR 17				
ICE-RAIN	WING A.ICE	NORM	INOP	INOP
	ENG A.ICE VALVE	OPEN	OPEN	OPEN
	CAPT PITOT	NORM	NORM	NORM(c)
	CAPT AOA	NORM	INOP	INOP
	RAIN REPELLENT ◁ (CAPT)	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018538.0002001 / 17 MAR 17				
EIS	PFD 1	NORM	NORM	NORM (c)
	ND 1	NORM	INOP	INOP
	ECAM upper disp.	NORM	NORM	NORM (c)
	DMC 1 or 3	NORM	NORM	NORM (c)
	SDAC 1, FWC 1	NORM	NORM	NORM (c)
	ECAM CONT. panel	NORM	NORM	NORM
FLT INS	CLOCKS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018537.0002001 / 17 MAR 17				
39 L/G	LGCIU SYS 1	NORM	NORM	NORM
	BRK PRESS IND	NORM	NORM	NORM
	PARK BRK	NORM	NORM	NORM
	ABCU	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012532.0001001 / 17 MAR 17				
LIGHTS	EMER CKPT	NORM	NORM	NORM
	EMER CAB	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018550.0005001 / 17 MAR 17				
40 NAV	IR	N°1 only (e)	N°1 only (e)	N°1 only (e)
	ADR	N°1 only	N°1 only	N°1 only
	ADF	N°1 only	INOP	INOP
	VOR	N°1 only	N°1 only	N°1 only (c)
	MMR	N°1 only	N°1 only	N°1 only (c)
	DME	N°1 only	INOP	INOP
	DDRMI	NORM	NORM	NORM (c)
	ATC	N°1 only	INOP	INOP
	ISIS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018541.0002001 / 17 MAR 17				
PNEU	ENG 1 BLEED	NORM	BMC 1 INOP	BMC 1 INOP
	ENG 2 BLEED	BMC 2 INOP	BMC 2 INOP	BMC 2 INOP
	APU BLEED	INOP	INOP	INOP(a)
	X BLEED (MAN CTL)	NORM	INOP	INOP

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018019.0002001 / 17 MAR 17				
APU	ECB-STARTER	NORM(f)	NORM(g)	INOP(a)
	FUEL LP VALVE	NORM	NORM	NORM
	FUEL PUMP	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018540.0002001 / 17 MAR 17				
PWR PLT	FADEC	A+B (h)	A+B (h)	A+B (h)
	IGNITION	A only	A only	A only
	HP FUEL VALVE closure	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012537.0001001 / 17 MAR 17				
MISC	MECH HORN	NORM	NORM	NORM

(a) *Restored, when speed is below 100 kt.*

(b) *Crew supply solenoid valve inoperative.*

(c) *Lost, when the speed is below 50 kt.*

(d) *Lost, 30 s after the last engine shutdown.*

(e) *IR 2 and IR 3 are lost 5 min after failure of main generators but if IR 3 replaces IR 1 (ATT-HDG selector at CAPT 3), IR 3 remains supplied.*

(f) *For APU start only.*

(g) *Not available for 45 s, after the loss of both engine generators.*

(h) *Channels A and B are self powered above 10 % N2 for IAE or PW engines, 12 % N2 for CFM56 engines, or 8 % N2 for CFM LEAP-1A engines. If N2 is below these values, only Channel A is powered.*

[QRH] ELEC EMER CONFIG SYS REMAINING

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018562.0002001 / 17 MAR 17				
41 AIR COND PRESS	PRESS AUTO SYS 1	NORM	NORM	NORM
	MAN PRESS CTL	INOP	INOP	INOP (a)
	RAM AIR	NORM	NORM	NORM
	PACK VALVE 1	NORM	Closure Inop	Closure Inop
	PACK VALVE 2	Closure Inop	Closure Inop	Closure Inop (a)
	AVIONIC VENT	NORM	NORM	Partial
Ident.: PRO-ABN-ELEC-S-00012522.0001001 / 17 MAR 17				
FMGS	FMGC (NAV FUNCTION)	N°1 only	Inop	Inop
	MCDU	N°1 only	Inop	Inop
	FAC	N°1 only	Inop	Inop
	FCU	ch 1 only	ch 1 only	ch 1 only
Ident.: PRO-ABN-ELEC-S-00018533.0002001 / 17 MAR 17				
42 COM	VHF 1	NORM	NORM	NORM
	HF 1	NORM	INOP	INOP
	RMP 1	NORM	NORM	NORM
	ACP (CAPT, F/O)	NORM	NORM	NORM
	CIDS	NORM	NORM	NORM
	INTERPHONE	NORM	NORM	NORM
	CVR	NORM	INOP	INOP
	LOUDSPEAKER 1	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012524.0001001 / 17 MAR 17				
EMER EQPT	CREW OXY	NORM	NORM (b)	NORM (b)
	PAX OXY mask release (auto + man)	NORM	INOP	INOP
	SLIDES ARM/WARN	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00012525.0003001 / 17 MAR 17				
43 FIRE	ENG 1 LOOP	A only	A only	A only
	ENG 2 LOOP	B only	B only	B only
	APU LOOP	INOP	INOP	INOP(a)
	CARGO SMOKE DET	ch 1 only	INOP	INOP
	ENG FIRE EXT.	NORM	NORM	NORM
	APU FIRE EXT.	Squib A only	Squib A only	Squib A only
	CARGO FIRE EXT.	INOP	INOP	INOP(a)
	APU AUTO EXT.	INOP	INOP	INOP(a)
Ident.: PRO-ABN-ELEC-S-00018017.0001001 / 17 MAR 17				
FLT CTL	ELAC	N°1 only	N°1 + N°2	N°1 + N°2 (d)
	SEC	N°1 only	N°1 only	N°1 only
	FCDC	N°1 only	INOP	INOP
	SFCC	N°1 only	N°1 only	N°1 only
	Flaps pos ind	NORM	NORM	NORM (c)
Ident.: PRO-ABN-ELEC-S-00018018.0001001 / 17 MAR 17				
44 FUEL	LP VALVE	NORM	NORM	NORM
	FQI channel 1	NORM	INOP	INOP
	X FEED VALVE	NORM	INOP	INOP
	INTERTANK TRANSFER VALVE	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012528.0001001 / 17 MAR 17				
HYD	FIRE VALVES	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018539.0002001 / 17 MAR 17				
ICE-RAIN	WING A.ICE	NORM	INOP	INOP
	ENG A.ICE VALVE	OPEN	OPEN	OPEN
	CAPT PITOT	NORM	NORM	NORM(c)
	CAPT AOA	NORM	INOP	INOP
	RAIN REPELLENT ◁ (CAPT)	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018538.0002001 / 17 MAR 17				
EIS	PFD 1	NORM	NORM	NORM (c)
	ND 1	NORM	INOP	INOP
	ECAM upper disp.	NORM	NORM	NORM (c)
	DMC 1 or 3	NORM	NORM	NORM (c)
	SDAC 1, FWC 1	NORM	NORM	NORM (c)
	ECAM CONT. panel	NORM	NORM	NORM
FLT INS	CLOCKS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018537.0002001 / 17 MAR 17				
45 L/G	LGCIU SYS 1	NORM	NORM	NORM
	BRK PRESS IND	NORM	NORM	NORM
	PARK BRK	NORM	NORM	NORM
	ABCU	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012532.0001001 / 17 MAR 17				
LIGHTS	EMER CKPT	NORM	NORM	NORM
	EMER CAB	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018550.0005001 / 17 MAR 17				
46 NAV	IR	N°1 only (e)	N°1 only (e)	N°1 only (e)
	ADR	N°1 only	N°1 only	N°1 only
	ADF	N°1 only	INOP	INOP
	VOR	N°1 only	N°1 only	N°1 only (c)
	MMR	N°1 only	N°1 only	N°1 only (c)
	DME	N°1 only	INOP	INOP
	DDRMI	NORM	NORM	NORM (c)
	ATC	N°1 only	INOP	INOP
	ISIS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018541.0002001 / 17 MAR 17				
PNEU	ENG 1 BLEED	NORM	BMC 1 INOP	BMC 1 INOP
	ENG 2 BLEED	BMC 2 INOP	BMC 2 INOP	BMC 2 INOP
	APU BLEED	INOP	INOP	INOP (a)
	X BLEED (MAN CTL)	NORM	INOP	INOP

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018019.0002001 / 17 MAR 17				
APU	ECB-STARTER	NORM(f)	NORM(g)	INOP(a)
	FUEL LP VALVE	NORM	NORM	NORM
	FUEL PUMP	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018540.0002001 / 17 MAR 17				
PWR PLT	FADEC	A+B (h)	A+B (h)	A+B (h)
	IGNITION	A only	A only	A only
	HP FUEL VALVE closure	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012537.0001001 / 17 MAR 17				
MISC	MECH HORN	NORM	NORM	NORM

(a) *Restored, when speed is below 100 kt.*

(b) *Crew supply solenoid valve inoperative.*

(c) *Lost, when the speed is below 50 kt.*

(d) *Lost, 30 s after the last engine shutdown.*

(e) *IR 2 and IR 3 are lost 5 min after failure of main generators but if IR 3 replaces IR 1 (ATT-HDG selector at CAPT 3), IR 3 remains supplied.*

(f) *For APU start only.*

(g) *Not available for 45 s, after the loss of both engine generators.*

(h) *Channels A and B are self powered above 10 % N2 for IAE or PW engines, 12 % N2 for CFM56 engines, or 8 % N2 for CFM LEAP-1A engines. If N2 is below these values, only Channel A is powered.*

[QRH] ELEC EMER CONFIG SYS REMAINING

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018562.0002001 / 17 MAR 17				
47 AIR COND PRESS	PRESS AUTO SYS 1	NORM	NORM	NORM
	MAN PRESS CTL	INOP	INOP	INOP(a)
	RAM AIR	NORM	NORM	NORM
	PACK VALVE 1	NORM	Closure Inop	Closure Inop
	PACK VALVE 2	Closure Inop	Closure Inop	Closure Inop(a)
	AVIONIC VENT	NORM	NORM	Partial
Ident.: PRO-ABN-ELEC-S-00012522.0001001 / 17 MAR 17				
FMGS	FMGC (NAV FUNCTION)	N°1 only	Inop	Inop
	MCDU	N°1 only	Inop	Inop
	FAC	N°1 only	Inop	Inop
	FCU	ch 1 only	ch 1 only	ch 1 only
Ident.: PRO-ABN-ELEC-S-00018533.0002001 / 17 MAR 17				
48 COM	VHF 1	NORM	NORM	NORM
	HF 1	NORM	INOP	INOP
	RMP 1	NORM	NORM	NORM
	ACP (CAPT, F/O)	NORM	NORM	NORM
	CIDS	NORM	NORM	NORM
	INTERPHONE	NORM	NORM	NORM
	CVR	NORM	INOP	INOP
	LOUDSPEAKER 1	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012524.0001001 / 17 MAR 17				
EMER EQPT	CREW OXY	NORM	NORM (b)	NORM (b)
	PAX OXY mask release (auto + man)	NORM	INOP	INOP
	SLIDES ARM/WARN	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00012525.0003001 / 17 MAR 17				
49 FIRE	ENG 1 LOOP	A only	A only	A only
	ENG 2 LOOP	B only	B only	B only
	APU LOOP	INOP	INOP	INOP(a)
	CARGO SMOKE DET	ch 1 only	INOP	INOP
	ENG FIRE EXT.	NORM	NORM	NORM
	APU FIRE EXT.	Squib A only	Squib A only	Squib A only
	CARGO FIRE EXT.	INOP	INOP	INOP(a)
	APU AUTO EXT.	INOP	INOP	INOP(a)
Ident.: PRO-ABN-ELEC-S-00018017.0001001 / 17 MAR 17				
FLT CTL	ELAC	N°1 only	N°1 + N°2	N°1 + N°2 (d)
	SEC	N°1 only	N°1 only	N°1 only
	FCDC	N°1 only	INOP	INOP
	SFCC	N°1 only	N°1 only	N°1 only
	Flaps pos ind	NORM	NORM	NORM (c)
Ident.: PRO-ABN-ELEC-S-00018018.0002001 / 17 MAR 17				
50 FUEL	LP VALVE	NORM	NORM	NORM
	FQI channel 1	NORM	INOP	INOP
	X FEED VALVE	NORM	INOP	INOP
Ident.: PRO-ABN-ELEC-S-00012528.0001001 / 17 MAR 17				
HYD	FIRE VALVES	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018539.0002001 / 17 MAR 17				
ICE-RAIN	WING A.ICE	NORM	INOP	INOP
	ENG A.ICE VALVE	OPEN	OPEN	OPEN
	CAPT PITOT	NORM	NORM	NORM(c)
	CAPT AOA	NORM	INOP	INOP
	RAIN REPELLENT ◁ (CAPT)	NORM	NORM	NORM

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018538.0002001 / 17 MAR 17				
EIS	PFD 1	NORM	NORM	NORM (c)
	ND 1	NORM	INOP	INOP
	ECAM upper disp.	NORM	NORM	NORM (c)
	DMC 1 or 3	NORM	NORM	NORM (c)
	SDAC 1, FWC 1	NORM	NORM	NORM (c)
	ECAM CONT. panel	NORM	NORM	NORM
FLT INS	CLOCKS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018537.0002001 / 17 MAR 17				
51 L/G	LGCIU SYS 1	NORM	NORM	NORM
	BRK PRESS IND	NORM	NORM	NORM
	PARK BRK	NORM	NORM	NORM
	ABCU	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012532.0001001 / 17 MAR 17				
LIGHTS	EMER CKPT	NORM	NORM	NORM
	EMER CAB	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018550.0005001 / 17 MAR 17				
52 NAV	IR	N°1 only (e)	N°1 only (e)	N°1 only (e)
	ADR	N°1 only	N°1 only	N°1 only
	ADF	N°1 only	INOP	INOP
	VOR	N°1 only	N°1 only	N°1 only (c)
	MMR	N°1 only	N°1 only	N°1 only (c)
	DME	N°1 only	INOP	INOP
	DDRMI	NORM	NORM	NORM (c)
	ATC	N°1 only	INOP	INOP
	ISIS	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018541.0002001 / 17 MAR 17				
PNEU	ENG 1 BLEED	NORM	BMC 1 INOP	BMC 1 INOP
	ENG 2 BLEED	BMC 2 INOP	BMC 2 INOP	BMC 2 INOP
	APU BLEED	INOP	INOP	INOP(a)
	X BLEED (MAN CTL)	NORM	INOP	INOP

Continued on the following page

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ELEC EMER CONFIG SYS REMAINING		EMER GEN RUNNING	BAT ONLY	
			IN FLIGHT	ON THE GROUND
Ident.: PRO-ABN-ELEC-S-00018019.0002001 / 17 MAR 17				
APU	ECB-STARTER	NORM(f)	NORM(g)	INOP(a)
	FUEL LP VALVE	NORM	NORM	NORM
	FUEL PUMP	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00018540.0002001 / 17 MAR 17				
PWR PLT	FADEC	A+B (h)	A+B (h)	A+B (h)
	IGNITION	A only	A only	A only
	HP FUEL VALVE closure	NORM	NORM	NORM
Ident.: PRO-ABN-ELEC-S-00012537.0001001 / 17 MAR 17				
MISC	MECH HORN	NORM	NORM	NORM

(a) *Restored, when speed is below 100 kt.*

(b) *Crew supply solenoid valve inoperative.*

(c) *Lost, when the speed is below 50 kt.*

(d) *Lost, 30 s after the last engine shutdown.*

(e) *IR 2 and IR 3 are lost 5 min after failure of main generators but if IR 3 replaces IR 1 (ATT-HDG selector at CAPT 3), IR 3 remains supplied.*

(f) *For APU start only.*

(g) *Not available for 45 s, after the loss of both engine generators.*

(h) *Channels A and B are self powered above 10 % N2 for IAE or PW engines, 12 % N2 for CFM56 engines, or 8 % N2 for CFM LEAP-1A engines. If N2 is below these values, only Channel A is powered.*

ELEC AC BUS 1 FAULT

Applicable to: MSN 01767-02097

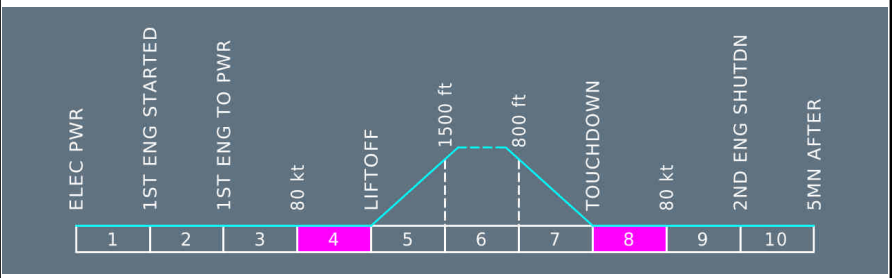
Ident.: PRO-ABN-ELEC-I-00017346.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC 1 busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-I-00017853.0003001 / 01 MAR 18

53

L2 AC BUS 1 normally supplies the AC ESS BUS and, through TR1, the DC ESS BUS. In the case of an AC BUS 1 FAULT, both the AC and DC ESS BUS will be lost and therefore the AC ESS BUS FAULT and the DC ESS BUS FAULT will be displayed on the ECAM.
However, for aircraft equipped with AC ESS FEED Auto Switching ◁ , the AC ESS BUS and the DC ESS BUS will automatically recover, due to the fact that the AC BUS 2 will automatically supply the AC ESS BUS.
The flight crew can manually recover the AC ESS BUS and the DC ESS BUS by setting the AC ESS FEED pb-sw to ALTN, as requested by the AC ESS BUS FAULT ECAM procedure

L1 BLOWER..... OVRD

L2 *The avionics ventilation system is in the closed circuit configuration.*
Air conditioning is added to the ventilation air.

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

WHEEL N.W. STEER FAULT

ASSOCIATED PROCEDURES

ENG 1 EPR MODE FAULT

This associated procedure is only applicable to aircraft equipped with IAE engines.

SECONDARY FAILURES

* AVNCS VENT
* HYD
* FUEL
* F/CTL

Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-I-00017867.0021001 / 22 MAR 17

L12

STATUS

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
CAB ZONE AT FIXED TEMP
See (3)
SLATS SLOW
CAT 2 ONLY

INOP SYS

See below

INOP SYS

BLUE HYD	SPLR 3	ADR 3
RA 1	CAPT TAT	L WSHLD HEAT
L WNDW HEAT	CAT 3	L+R TK PUMP 1
CTR TK PUMP 1 ◁	VENT BLOWER	GALLEY FAN
CRG HEAT (if both FWD and aft crg heat installed) ◁	CRG vent (if both FWD and aft crg heat installed) ◁	AFT CRG HEAT ◁
FWD CRG HEAT ◁	AFT CRG VENT ◁	FWD CRG VENT ◁
GND COOL ◁	N/W STRG	MAIN GALLEY
B ELEC PUMP	BRK SYS 1/BSCU CH 1	DMC 3
GPWS	LAV DET	PACK 1 REGUL
REVERSER 1	GPWS TERR ◁	STEEP APPR ◁

Other INOP SYS

Left cabin fan	Radar 1	Stby Pitot/AOA
ADF 1 ◁	ACARS ◁ /ATSU ◁	Brake fans 5, 6, 7 and 8 ◁
HUD ◁	MCDU 3 ◁	Engine 1 ignition B
EVMU eng 1 and eng 2	Printer	Zone controller prim channel

Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Hydraulic quantity indication	Partial galley	PVI
TCAS		

Note: The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

(3) *Due to the loss of the galley fan, the Pack 1 controller, and the primary zone controller channel. (See associated procedures).*

ELEC AC BUS 1 FAULT

Applicable to: MSN 02108-02334, 02388-02405, 02482

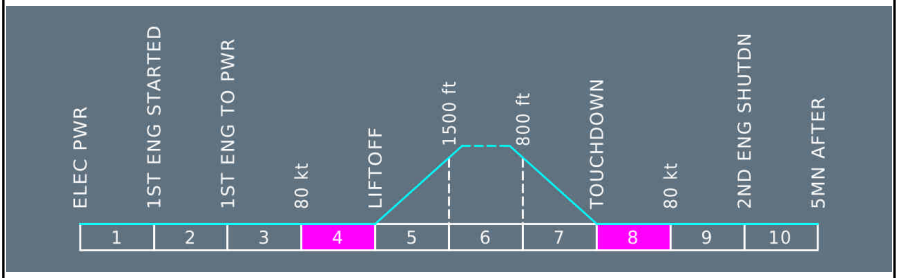
Ident.: PRO-ABN-ELEC-I-00017346.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC 1 busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-I-00017853.0004001 / 01 MAR 18

54

L2 AC BUS 1 normally supplies the AC ESS BUS and, through TR1, the DC ESS BUS. In the case of an AC BUS 1 FAULT, both the AC and DC ESS BUS will be lost and therefore the AC ESS BUS FAULT and the DC ESS BUS FAULT will be displayed on the ECAM.
However, for aircraft equipped with AC ESS FEED Auto Switching ◁ , the AC ESS BUS and the DC ESS BUS will automatically recover, due to the fact that the AC BUS 2 will automatically supply the AC ESS BUS.
The flight crew can manually recover the AC ESS BUS and the DC ESS BUS by setting the AC ESS FEED pb-sw to ALTN, as requested by the AC ESS BUS FAULT ECAM procedure

L1 BLOWER..... OVRD

L2 *The avionics ventilation system is in the closed circuit configuration.*
Air conditioning is added to the ventilation air.

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

ENG 1 EPR MODE FAULT

This associated procedure is only applicable to aircraft equipped with IAE engines.

SECONDARY FAILURES

* AVNCS VENT
* HYD
* FUEL
* F/CTL

Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-I-00017867.0023001 / 22 MAR 17

L12

STATUS

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
CAB ZONE AT FIXED TEMP
See (3)
SLATS SLOW
CAT 2 ONLY

INOP SYS

See below

INOP SYS

BLUE HYD
RA 1
L WNDW HEAT
CTR TK PUMP 1 ✲
CRG HEAT (if both FWD and aft crg heat installed) ✲
FWD CRG HEAT ✲
GND COOL ✲
BRK SYS 1/BSCU CH 1
LAV DET
GPWS TERR ✲

SPLR 3
CAPT TAT
CAT 3
VENT BLOWER
CRG vent (if both FWD and aft crg heat installed) ✲
AFT CRG VENT ✲
MAIN GALLEY
DMC 3
PACK 1 REGUL
STEEP APPR ✲

ADR 3
L WSHLD HEAT
L+R TK PUMP 1
GALLEY FAN
AFT CRG HEAT ✲
FWD CRG VENT ✲
B ELEC PUMP
GPWS
REVERSER 1

Other INOP SYS

Left cabin fan
ADF 1 ✲
HUD ✲
EVMU eng 1 and eng 2

Radar 1
ACARS ✲ /ATSU ✲
MCDU 3 ✲
Printer

Stby Pitot/AOA
Brake fans 5, 6, 7 and 8 ✲
Engine 1 ignition B
Zone controller prim channel

Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Hydraulic quantity indication TCAS	Partial galley	PVI

Note: The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.

(1) This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.

(2) Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

(3) Due to the loss of the galley fan, the Pack 1 controller, and the primary zone controller channel. (See associated procedures).

ELEC AC BUS 1 FAULT

Applicable to: MSN 02359

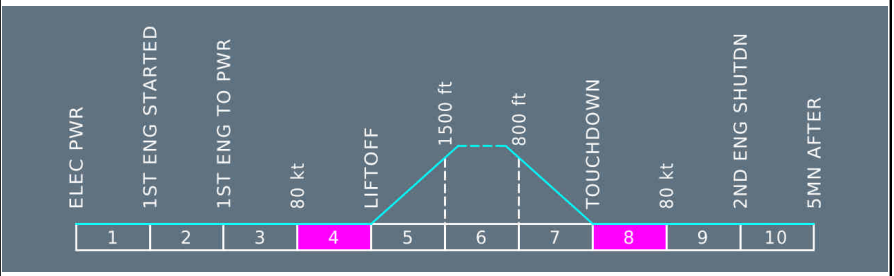
Ident.: PRO-ABN-ELEC-I-00017346.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC 1 busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-I-00017853.0004001 / 01 MAR 18

55

L2 AC BUS 1 normally supplies the AC ESS BUS and, through TR1, the DC ESS BUS. In the case of an AC BUS 1 FAULT, both the AC and DC ESS BUS will be lost and therefore the AC ESS BUS FAULT and the DC ESS BUS FAULT will be displayed on the ECAM.
However, for aircraft equipped with AC ESS FEED Auto Switching ◁ , the AC ESS BUS and the DC ESS BUS will automatically recover, due to the fact that the AC BUS 2 will automatically supply the AC ESS BUS.
The flight crew can manually recover the AC ESS BUS and the DC ESS BUS by setting the AC ESS FEED pb-sw to ALTN, as requested by the AC ESS BUS FAULT ECAM procedure

L1 BLOWER..... OVRD

L2 *The avionics ventilation system is in the closed circuit configuration.*
Air conditioning is added to the ventilation air.

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

ENG 1 EPR MODE FAULT

This associated procedure is only applicable to aircraft equipped with IAE engines.

SECONDARY FAILURES

* AVNCS VENT
* HYD
* FUEL
* F/CTL

Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-I-00017867.0022001 / 22 MAR 17

L12

STATUS

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
CAB ZONE AT FIXED TEMP
See (3)
SLATS SLOW
CAT 2 ONLY

INOP SYS

See below

INOP SYS

BLUE HYD
RA 1
L WNDW HEAT
CTR TK PUMP 1 ◁
CRG HEAT (if both FWD and aft crg heat installed) ◁
FWD CRG HEAT ◁
GND COOL ◁
BRK SYS 1/BSCU CH 1
LAV DET
GPWS TERR ◁

SPLR 3
CAPT TAT
CAT 3
VENT BLOWER
CRG vent (if both FWD and aft crg heat installed) ◁
AFT CRG VENT ◁
MAIN GALLEY
DMC 3
PACK 1 REGUL
STEEP APPR ◁

ADR 3
L WSHLD HEAT
L+R TK PUMP 1
GALLEY FAN
AFT CRG HEAT ◁
FWD CRG VENT ◁
B ELEC PUMP
GPWS
REVERSER 1

Other INOP SYS

Left cabin fan
ADF 1 ◁
HUD ◁
EVMU eng 1 and eng 2

Radar 1
ACARS ◁ /ATSU ◁
MCDU 3 ◁
Printer

Stby Pitot/AOA
Brake fans 5, 6, 7 and 8 ◁
Engine 1 ignition B
HF 1 ◁

Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Zone controller prim channel	Hydraulic quantity indication	Partial galley
PVI ◁✻	TCAS ◁✻	

Note: *The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

(3) *Due to the loss of the galley fan, the Pack 1 controller, and the primary zone controller channel. (See associated procedures).*

ELEC AC BUS 1 FAULT

Applicable to: MSN 02443-02457, 02584, 02649-06036

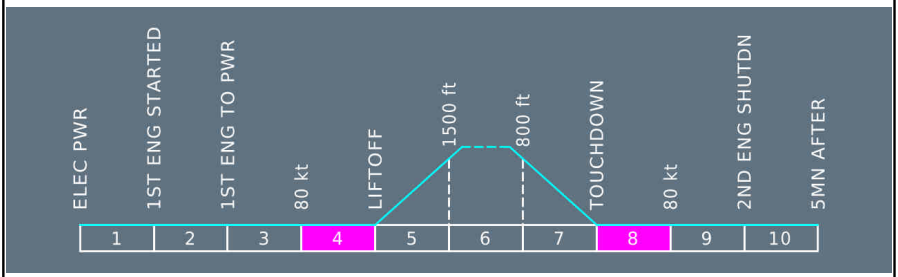
Ident.: PRO-ABN-ELEC-I-00017346.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC 1 busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-I-00017853.0004001 / 01 MAR 18

56

L2 AC BUS 1 normally supplies the AC ESS BUS and, through TR1, the DC ESS BUS. In the case of an AC BUS 1 FAULT, both the AC and DC ESS BUS will be lost and therefore the AC ESS BUS FAULT and the DC ESS BUS FAULT will be displayed on the ECAM.
However, for aircraft equipped with AC ESS FEED Auto Switching ◁ , the AC ESS BUS and the DC ESS BUS will automatically recover, due to the fact that the AC BUS 2 will automatically supply the AC ESS BUS.
The flight crew can manually recover the AC ESS BUS and the DC ESS BUS by setting the AC ESS FEED pb-sw to ALTN, as requested by the AC ESS BUS FAULT ECAM procedure

L1 BLOWER..... OVRD

L2 *The avionics ventilation system is in the closed circuit configuration.*
Air conditioning is added to the ventilation air.

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

ENG 1 EPR MODE FAULT

This associated procedure is only applicable to aircraft equipped with IAE engines.

SECONDARY FAILURES

* AVNCS VENT
* HYD
* FUEL
* F/CTL

Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-I-00017867.0028001 / 22 MAR 17

57

L12

STATUS

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
SLATS SLOW
CAT 2 ONLY

INOP SYS

See below

INOP SYS

BLUE HYD
RA 1
L WNDW HEAT
CTR TK PUMP 1 ✲
CRG HEAT (if both FWD and aft crg heat installed) ✲
FWD CRG HEAT ✲
GND COOL ✲
BRK SYS 1/BSCU CH 1
LAV DET
STEEP APPR ✲

SPLR 3
CAPT TAT
CAT 3
VENT BLOWER
CRG vent (if both FWD and aft crg heat installed) ✲
AFT CRG VENT ✲
MAIN GALLEY
DMC 3
REVERSER 1

ADR 3
L WSHLD HEAT
L+R TK PUMP 1
GALLEY FAN
AFT CRG HEAT ✲
FWD CRG VENT ✲
B ELEC PUMP
GPWS
GPWS TERR ✲

Other INOP SYS

Left cabin fan
ADF 1 ✲
HUD ✲
EVMU eng 1 and eng 2
Hydraulic quantity indication
TCAS ✲

Radar 1
ACARS ✲ /ATSU ✲
MCDU 3 ✲
Printer
Partial galley

Stby Pitot/AOA
Brake fans 5, 6, 7 and 8 ✲
Engine 1 ignition B
COND Controller Lane A
PVI ✲

Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Note: *The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data- Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

ELEC AC BUS 1 FAULT

Applicable to: MSN 02609-02626

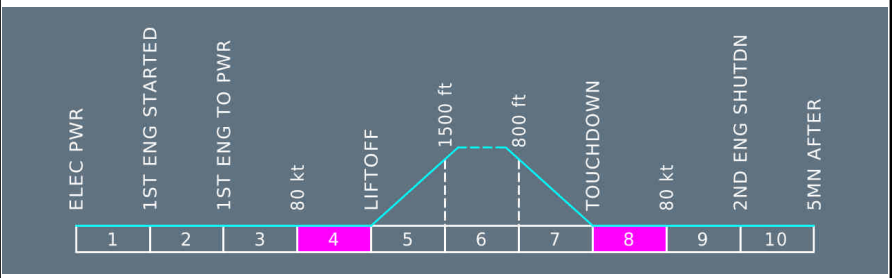
Ident.: PRO-ABN-ELEC-I-00017346.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC 1 busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-I-00017853.0004001 / 01 MAR 18

58

L2 AC BUS 1 normally supplies the AC ESS BUS and, through TR1, the DC ESS BUS. In the case of an AC BUS 1 FAULT, both the AC and DC ESS BUS will be lost and therefore the AC ESS BUS FAULT and the DC ESS BUS FAULT will be displayed on the ECAM.
However, for aircraft equipped with AC ESS FEED Auto Switching ◁ , the AC ESS BUS and the DC ESS BUS will automatically recover, due to the fact that the AC BUS 2 will automatically supply the AC ESS BUS.
The flight crew can manually recover the AC ESS BUS and the DC ESS BUS by setting the AC ESS FEED pb-sw to ALTN, as requested by the AC ESS BUS FAULT ECAM procedure

L1 BLOWER..... OVRD

L2 *The avionics ventilation system is in the closed circuit configuration.*
Air conditioning is added to the ventilation air.

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

ENG 1 EPR MODE FAULT

This associated procedure is only applicable to aircraft equipped with IAE engines.

SECONDARY FAILURES

* AVNCS VENT
* HYD
* FUEL
* F/CTL

Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-I-00017867.0026001 / 22 MAR 17

L12

STATUS

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
SLATS SLOW
CAT 2 ONLY

INOP SYS

See below

INOP SYS

BLUE HYD
RA 1
L WNDW HEAT
CTR TK PUMP 1 ◁
CRG HEAT (if both FWD and aft crg heat installed) ◁
FWD CRG HEAT ◁
GND COOL ◁
BRK SYS 1/BSCU CH 1
LAV DET
STEEP APPR ◁

SPLR 3
CAPT TAT
CAT 3
VENT BLOWER
CRG vent (if both FWD and aft crg heat installed) ◁
AFT CRG VENT ◁
MAIN GALLEY
DMC 3
REVERSER 1

ADR 3
L WSHLD HEAT
L+R TK PUMP 1
GALLEY FAN
AFT CRG HEAT ◁
FWD CRG VENT ◁
B ELEC PUMP
GPWS
GPWS TERR ◁

Other INOP SYS

Left cabin fan
ADF 1 ◁
HUD ◁
EVMU eng 1 and eng 2
COND Controller Lane A
PVI ◁

Radar 1
ACARS ◁ /ATSU ◁
MCDU 3 ◁
Printer
Hydraulic quantity indication
TCAS ◁

Stby Pitot/AOA
Brake fans 5, 6, 7 and 8 ◁
Engine 1 ignition B
HF 1 ◁
Partial galley

Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Note: *The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

ELEC AC BUS 1 FAULT

Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

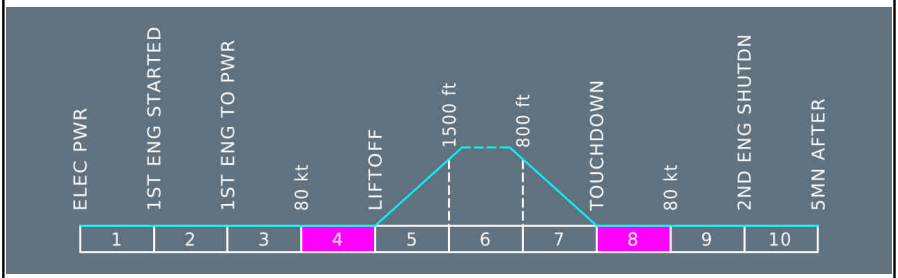
Ident.: PRO-ABN-ELEC-I-00017346.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC 1 busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-I-00017853.0004001 / 01 MAR 18

59

L2 AC BUS 1 normally supplies the AC ESS BUS and, through TR1, the DC ESS BUS. In the case of an AC BUS 1 FAULT, both the AC and DC ESS BUS will be lost and therefore the AC ESS BUS FAULT and the DC ESS BUS FAULT will be displayed on the ECAM.
However, for aircraft equipped with AC ESS FEED Auto Switching ◁ , the AC ESS BUS and the DC ESS BUS will automatically recover, due to the fact that the AC BUS 2 will automatically supply the AC ESS BUS.
The flight crew can manually recover the AC ESS BUS and the DC ESS BUS by setting the AC ESS FEED pb-sw to ALTN, as requested by the AC ESS BUS FAULT ECAM procedure

L1 BLOWER..... OVRD

L2 *The avionics ventilation system is in the closed circuit configuration.*
Air conditioning is added to the ventilation air.

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

ENG 1 EPR MODE FAULT

This associated procedure is only applicable to aircraft equipped with IAE engines.

SECONDARY FAILURES

* AVNCS VENT
* HYD
* FUEL
* F/CTL

Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-I-00017867.0035001 / 21 MAR 17

60

L12

STATUS

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
SLATS SLOW
CAT 2 ONLY

INOP SYS

See below

INOP SYS

BLUE HYD
RA 1
L WNDW HEAT
VENT BLOWER

CRG vent (if both FWD and aft crg heat installed) ✻
AFT CRG VENT ✻
MAIN GALLEY
DMC 3
REVERSER 1

SPLR 3
CAPT TAT
CAT 3
GALLEY FAN

AFT CRG HEAT ✻

FWD CRG VENT ✻
B ELEC PUMP
GPWS
GPWS TERR ✻

ADR 3
L WSHLD HEAT
L+R TK PUMP 1
CRG HEAT (if both FWD and aft crg heat installed) ✻
FWD CRG HEAT ✻

GND COOL ✻
BRK SYS 1/BSCU CH 1
LAV DET
STEEP APPR ✻

Other INOP SYS

Left cabin fan
ADF 1 ✻
HUD ✻
EVMU eng 1 and eng 2
Hydraulic quantity indication
TCAS ✻

Radar 1
ACARS ✻ /ATSU ✻
MCDU 3 ✻
Printer
Partial galley

Stby Pitot/AOA
Brake fans 5, 6, 7 and 8 ✻
Engine 1 ignition B
COND Controller Lane A
PVI ✻

Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Note: The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.

(1) This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.

(2) Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

ELEC AC BUS 1 FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

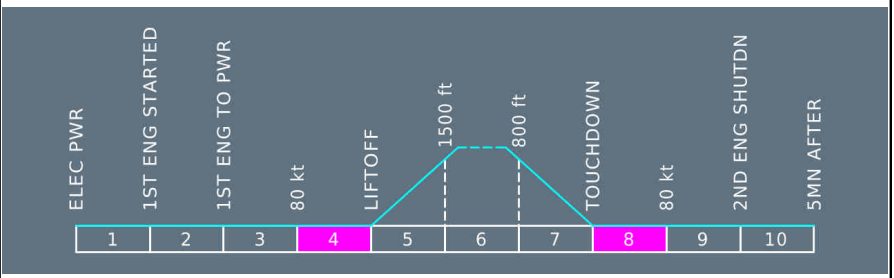
Ident.: PRO-ABN-ELEC-I-00017346.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC 1 busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-I-00017853.0003001 / 01 MAR 18

61

L2 AC BUS 1 normally supplies the AC ESS BUS and, through TR1, the DC ESS BUS. In the case of an AC BUS 1 FAULT, both the AC and DC ESS BUS will be lost and therefore the AC ESS BUS FAULT and the DC ESS BUS FAULT will be displayed on the ECAM.
However, for aircraft equipped with AC ESS FEED Auto Switching ◁ , the AC ESS BUS and the DC ESS BUS will automatically recover, due to the fact that the AC BUS 2 will automatically supply the AC ESS BUS.
The flight crew can manually recover the AC ESS BUS and the DC ESS BUS by setting the AC ESS FEED pb-sw to ALTN, as requested by the AC ESS BUS FAULT ECAM procedure

L1 BLOWER..... OVRD

L2 *The avionics ventilation system is in the closed circuit configuration.*
Air conditioning is added to the ventilation air.

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

WHEEL N.W. STEER FAULT

ASSOCIATED PROCEDURES

ENG 1 EPR MODE FAULT

This associated procedure is only applicable to aircraft equipped with IAE engines.

SECONDARY FAILURES

* AVNCS VENT
* HYD
* FUEL
* F/CTL

Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-I-00017867.0027001 / 22 MAR 17

62

L12

STATUS

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (1)

FMS PRED UNRELIABLE
See (2)

SLATS SLOW
CAT 2 ONLY

INOP SYS

See below

INOP SYS

BLUE HYD
RA 1
L WNDW HEAT
CTR TK PUMP 1 ✻
CRG HEAT (if both FWD and aft crg heat installed) ✻
FWD CRG HEAT ✻
GND COOL ✻
B ELEC PUMP
GPWS
GPWS TERR ✻

SPLR 3
CAPT TAT
CAT 3
VENT BLOWER
CRG vent (if both FWD and aft crg heat installed) ✻
AFT CRG VENT ✻
N/W STRG
BRK SYS 1/BSCU CH 1
LAV DET
STEEP APPR ✻

ADR 3
L WSHLD HEAT
L+R TK PUMP 1
GALLEY FAN
AFT CRG HEAT ✻
FWD CRG VENT ✻
MAIN GALLEY
DMC 3
REVERSER 1

Other INOP SYS

Left cabin fan
ADF ✻
HUD ✻
EVMU eng 1 and eng 2
Hydraulic quantity indication
TCAS ✻

Radar 1
ACARS ✻ /ATSU ✻
MCDU 3 ✻
Printer
Partial galley

Stby Pitot/AOA
Brake fans 5, 6, 7 and 8 ✻
Engine 1 ignition B
COND Controller Lane A
PVI ✻

Continued on the following page

ELEC AC BUS 1 FAULT (Cont'd)

Note: *The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

ELEC AC BUS 2 FAULT

Applicable to: MSN 01767-02405, 02482

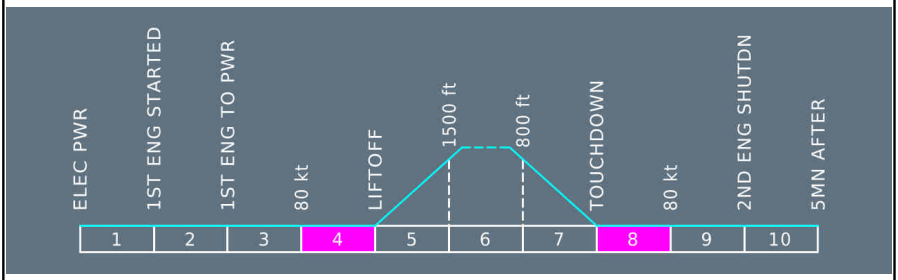
Ident.: PRO-ABN-ELEC-J-00017348.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC 2 busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC AC BUS 2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-J-00017877.0002001 / 01 MAR 18

EXTRACT.....OVRD

L2 *The avionics ventilation system is in the closed circuit configuration.*
Air conditioning is added to the ventilation air.

L1 ATC/XPDR..... SYS 1

ASSOCIATED PROCEDURES

L/G LGCIU 2 FAULT

ASSOCIATED PROCEDURES

ENG 2 EPR MODE FAULT

This associated procedure is only applicable to aircraft equipped with IAE engines.

SECONDARY FAILURES

* AVNCS VENT
* FUEL

Continued on the following page

ELEC AC BUS 2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-J-00017878.0004001 / 22 MAR 17

L12

STATUS

	INOP SYS
ENG 2 APPR IDLE ONLY PACK 2 AT FIXED TEMP *See* (1) FLS ✈ : F-APP+RAW ONLY	*See below*

INOP SYS

ADR 2	Y ELEC PUMP	SDAC 2
FWC 2	DMC 2	RECORDER SYS (OR FDIU)
R WSHLD HEAT	LGCIU 2	RA 2
F/O PITOT	F/O AOA	F/O TAT
R WNDW HEAT	L+R TK PUMP 2	RUD TRV LIM 2
REVERSER 2	VENT EXTRACT	GND COOL ✈
PACK 2 REGUL	MAIN GALLEY	YAW DAMPER 2
RUD TRIM 2	FAC 2	CAT 2
CTR TK PUMP 2 ✈	ACT PUMP ✈	BRK SYS 2 /BSCU CH 2
ILS 2 (OR LS 2 for aircraft equipped with MLS ✈ /GLS ✈ /FLS ✈)	GPS 2 ✈	ATC 2 or ATC/XPDR 2
GLS AUTOLAND ✈	ROW/ROP ✈	

Other INOP SYS

Right cabin fan	Brake fans 1, 2, 3 and 4 ✈	ADF 2 ✈
DME 2	RADAR 2 ✈	WXR 2 ✈
MCDU 2	ENG 2 ignition B	VOR 2
F/O PFD and ND	QAR	ECAM lower DU
HF 2 ✈		

Note: *The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

Continued on the following page

ELEC AC BUS 2 FAULT (Cont'd)

(1) *Due to the loss of Pack 2 controller, the pack outlet temperature is controlled by the pack anti-ice valve and is stabilized to a temperature between 5 °C (41 °F) and 30 °C (86 °F) within a maximum of 6 min.*

ELEC AC BUS 2 FAULT

Applicable to: MSN 02443-02457, 02584-06036, 08557, 08587, 08655, 08710, 08768, 09063

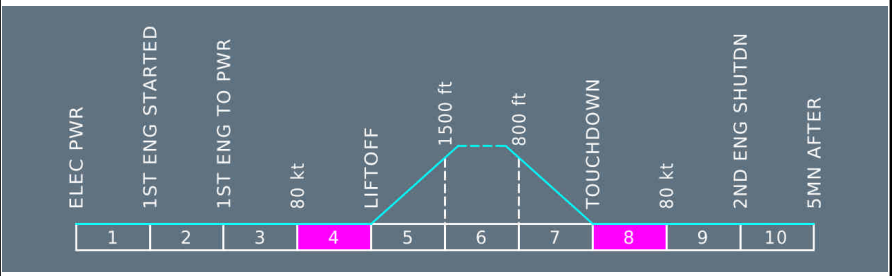
Ident.: PRO-ABN-ELEC-J-00017348.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC 2 busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC AC BUS 2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-J-00017877.0002001 / 01 MAR 18

EXTRACT ..... OVRD

L2 *The avionics ventilation system is in the closed circuit configuration.*
Air conditioning is added to the ventilation air.

L1 ATC/XPDR ..... SYS 1

ASSOCIATED PROCEDURES

L/G LGCIU 2 FAULT

ASSOCIATED PROCEDURES

ENG 2 EPR MODE FAULT

This associated procedure is only applicable to aircraft equipped with IAE engines.

SECONDARY FAILURES

* AVNCS VENT
* FUEL

Continued on the following page

ELEC AC BUS 2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-J-00017878.0005001 / 22 MAR 17

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L12

STATUS

INOP SYS

See below

ENG 2 APPR IDLE ONLY
FLS ◁ : F-APP+RAW ONLY

INOP SYS

ADR 2	Y ELEC PUMP	SDAC 2
FWC 2	DMC 2	RECORDER SYS (OR FDIU)
R WSHLD HEAT	LGCIU 2	RA 2
F/O PITOT	F/O AOA	F/O TAT
R WNDW HEAT	L+R TK PUMP 2	RUD TRV LIM 2
REVERSER 2	VENT EXTRACT	GND COOL ◁
PACK 2 REGUL	MAIN GALLEY	YAW DAMPER 2
RUD TRIM 2	FAC 2	CAT 2
CTR TK PUMP 2 ◁	ACT PUMP ◁	BRK SYS 2 /BSCU CH 2
ILS 2 (OR LS 2 for aircraft equipped with MLS ◁ /GLS ◁ /FLS ◁)	GPS 2 ◁	ATC 2 or ATC/XPDR 2
GLS AUTOLAND ◁	ROW/ROP ◁	

Other INOP SYS

Right cabin fan	Brake fans 1, 2, 3 and 4 ◁	ADF 2 ◁
DME 2	RADAR 2 ◁	WXR 2 ◁
MCDU 2	ENG 2 ignition B	VOR 2
F/O PFD and ND	QAR	ECAM lower DU
HF 2 ◁		

Note: *The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

ELEC AC BUS 2 FAULT

Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

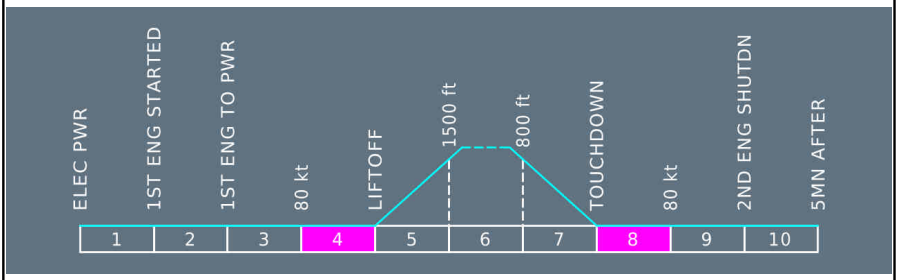
Ident.: PRO-ABN-ELEC-J-00017348.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC 2 busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC AC BUS 2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-J-00017877.0002001 / 01 MAR 18

EXTRACT.....OVRD

L2 *The avionics ventilation system is in the closed circuit configuration.*
Air conditioning is added to the ventilation air.

L1 ATC/XPDR..... SYS 1

ASSOCIATED PROCEDURES

L/G LGCIU 2 FAULT

ASSOCIATED PROCEDURES

ENG 2 EPR MODE FAULT

This associated procedure is only applicable to aircraft equipped with IAE engines.

SECONDARY FAILURES

* AVNCS VENT
* FUEL

Continued on the following page

ELEC AC BUS 2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-J-00017878.0007001 / 01 JUN 16

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L12

STATUS

	INOP SYS
ENG 2 APPR IDLE ONLY FLS ◁ : F-APP+RAW ONLY	*See below*

INOP SYS

ADR 2	Y ELEC PUMP	SDAC 2
FWC 2	DMC 2	RECORDER SYS (OR FDIU)
R WSHLD HEAT	LGCIU 2	RA 2
F/O PITOT	F/O AOA	F/O TAT
R WNDW HEAT	L+R TK PUMP 2	RUD TRV LIM 2
REVERSER 2	VENT EXTRACT	GND COOL ◁
PACK 2 REGUL	MAIN GALLEY	YAW DAMPER 2
RUD TRIM 2	FAC 2	CAT 2
ACT PUMP ◁	BRK SYS 2 /BSCU CH 2	ILS 2 (OR LS 2 for aircraft equipped with MLS ◁ /GLS ◁ /FLS ◁)
GPS 2 ◁	ATC 2 or ATC/XPDR 2	GLS AUTOLAND ◁
ROW/ROP ◁		

Other INOP SYS

Right cabin fan	Brake fans 1, 2, 3 and 4 ◁	ADF 2 ◁
DME 2	RADAR 2 ◁	WXR 2 ◁
MCDU 2	ENG 2 ignition B	VOR 2
F/O PFD and ND	QAR	ECAM lower DU
HF 2 ◁		

Note: *The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

ELEC AC ESS BUS ALTN

Applicable to: ALL

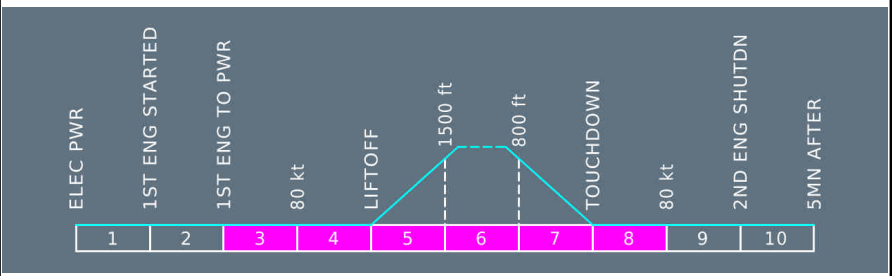
Ident.: PRO-ABN-ELEC-Z-00017356.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC ESS busbar is supplied from the AC 2 busbar although the AC ESS FEED pb-sw is set to normal.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-Z-00017893.0001001 / 21 MAR 16

Crew awareness.

ELEC AC ESS BUS FAULT

Applicable to: MSN 01767-02334, 02388-02584, 02649-09063

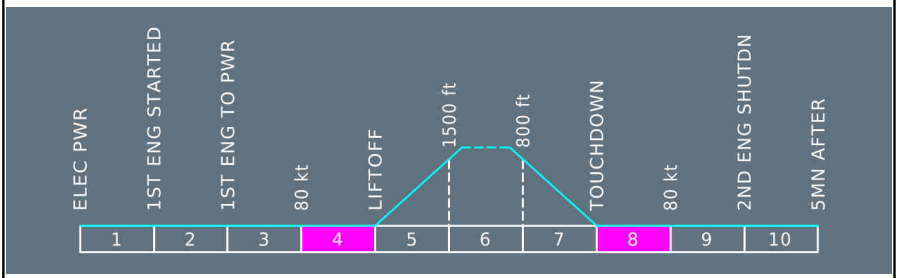
Ident.: PRO-ABN-ELEC-K-00017357.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC ESS busbar is not supplied.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-K-00012502.0002001 / 24 MAR 11

AC ESS FEED..... ALTN

L2 *AC BUS 2 supplies AC ESS BUS.*

L1 ATC/XPDR..... SYS 2

Continued on the following page

ELEC AC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-K-00018552.0014001 / 01 JUN 16

65

L12

STATUS

INOP SYS

See below

INOP SYS

ADR 1	LS 1	GPS 1
CAPT PITOT	CAPT AOA	CAT 2
SDAC 1	FWC 1	DMC 1
GPWS	GPWS terr	YAW DAMPER 1
RUD TRIM 1	RUD TRV LIM 1	GLS AUTOLAND ◁
ATC 1 or ATC/XPDR 1	ROW/ROP ◁	

Other INOP SYS

RMP's lighting (RMP's still operative)	VOR 1	MCDU 1
CVR	ECAM upper display	CAPT ND
CAPT PFD	DME 1	APU fuel pump
DDRMI ◁	HF 1	Passenger oxygen masks (auto + manual)

Note: *The warning may be caused by a sub BUS failure. As a result, only a part of the above-listed systems may be lost.*

ELEC AC ESS BUS FAULT

Applicable to: MSN 02359, 02609-02626

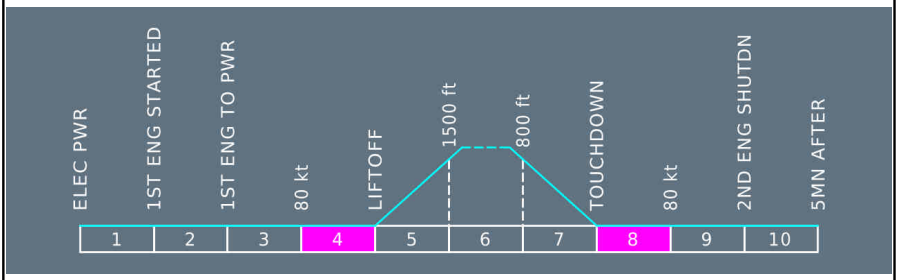
Ident.: PRO-ABN-ELEC-K-00017357.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC ESS busbar is not supplied.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-K-00012502.0002001 / 24 MAR 11

AC ESS FEED..... ALTN

L2 *AC BUS 2 supplies AC ESS BUS.*

L1 ATC/XPDR..... SYS 2

Continued on the following page

ELEC AC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-K-00018552.0011001 / 01 JUN 16

L12

STATUS

INOP SYS

See below

INOP SYS

ADR 1	LS 1	GPS 1
CAPT PITOT	CAPT AOA	CAT 2
SDAC 1	FWC 1	DMC 1
GPWS	GPWS terr	YAW DAMPER 1
RUD TRIM 1	RUD TRV LIM 1	GLS AUTOLAND ◁
ATC 1 or ATC/XPDR 1	ROW/ROP ◁	

Other INOP SYS

RMP's lighting (RMP's still operative)	VOR 1	MCDU 1
CVR	ECAM upper display	CAPT ND
CAPT PFD	DME 1	APU fuel pump
DDRMI ◁	Passenger oxygen masks (auto + manual)	

Note: *The warning may be caused by a sub BUS failure. As a result, only a part of the above-listed systems may be lost.*

ELEC AC ESS BUS SHED

Applicable to: MSN 01767-02334, 02388-02584, 02649-09063

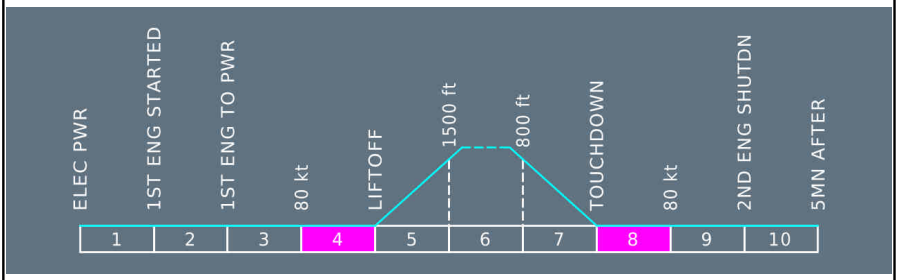
Ident.: PRO-ABN-ELEC-L-00017349.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC SHED ESS busbar is not supplied.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-L-00012504.0002001 / 03 DEC 13

ATC/XPDR..... SYS 2

Continued on the following page

ELEC AC ESS BUS SHED (Cont'd)

Ident.: PRO-ABN-ELEC-L-00018554.0004001 / 21 MAR 16

66

L12

STATUS

INOP SYS

CAPT AOA
ATC 1 or ATC/XPDR 1
See below

Other INOP SYS

MCDU 1
CVR
Passenger oxygen masks (auto + manual)
DME 1
CAPT AOA heat
APU fuel pump
CAPT ND
HF 1

Note: *The warning may be caused by a failure in a sub BUS. Consequently only a part of the systems listed above may be lost.*

ELEC AC ESS BUS SHED

Applicable to: MSN 02359, 02609-02626

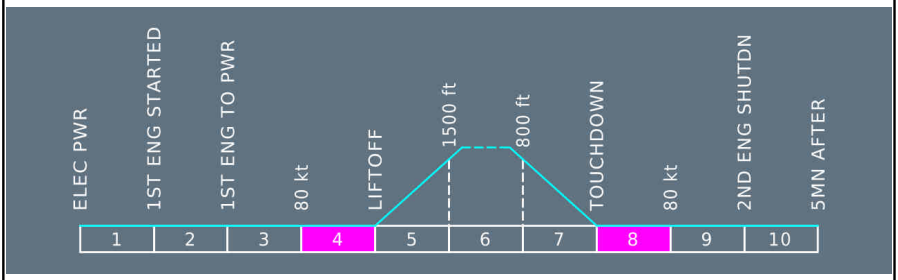
Ident.: PRO-ABN-ELEC-L-00017349.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC SHED ESS busbar is not supplied.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-L-00012504.0002001 / 03 DEC 13

ATC/XPDR..... SYS 2

Continued on the following page

ELEC AC ESS BUS SHED (Cont'd)

Ident.: PRO-ABN-ELEC-L-00018554.0002001 / 21 MAR 16

L12

STATUS

INOP SYS

CAPT AOA
ATC 1 or ATC/XPDR 1
See below

Other INOP SYS

MCDU 1
CVR
Passenger oxygen masks (auto + manual)
DME 1
CAPT AOA heat
APU fuel pump
CAPT ND

Note: The warning may be caused by a failure in a sub BUS. Consequently only a part of the systems listed above may be lost.

ELEC APU GEN FAULT

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ELEC-E-00017362.0001001 / 21 MAR 16

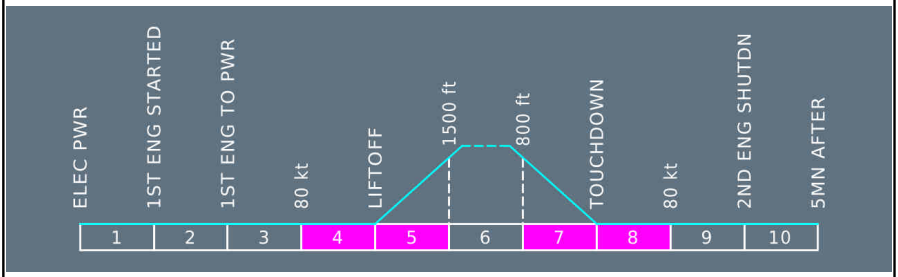
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- The protection trip is initiated by the associated GCU, or
- The line contactor is open with APU GEN pb-sw set to ON.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-E-00012490.0002001 / 18 MAR 11

APU GEN..... OFF THEN ON

- **IF UNSUCCESSFUL:**
  APU GEN.....OFF

Continued on the following page

ELEC APU GEN FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-E-00012491.0001001 / 18 MAR 11

67

STATUS

	INOP SYS
	MAIN GALLEY (1) APU GEN

(1) *(When only one GEN operating)*

ELEC APU GEN FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ELEC-E-00017362.0001001 / 21 MAR 16

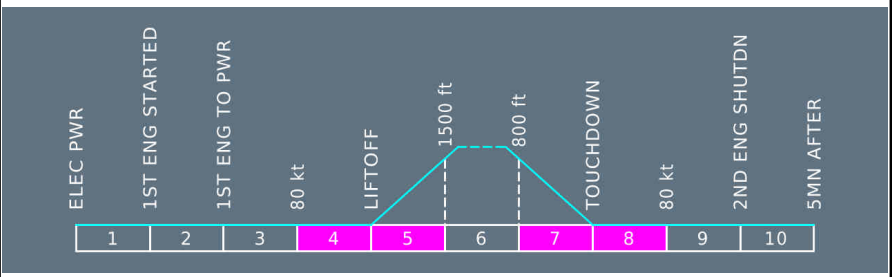
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- The protection trip is initiated by the associated GCU, or
- The line contactor is open with APU GEN pb-sw set to ON.

Flight Phase Inhibition:



Continued on the following page

ELEC APU GEN FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-E-00012490.0002001 / 18 MAR 11

APU GEN..... OFF THEN ON

- **IF UNSUCCESSFUL:**
  APU GEN.....OFF

Ident.: PRO-ABN-ELEC-E-00012491.0008001 / 18 MAR 11

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STATUS

	INOP SYS
	MAIN GALLEY (1) APU GEN

(1) *(when only one GEN operating, all the galleys are shed)*

ELEC BAT 1(2) FAULT

Applicable to: ALL

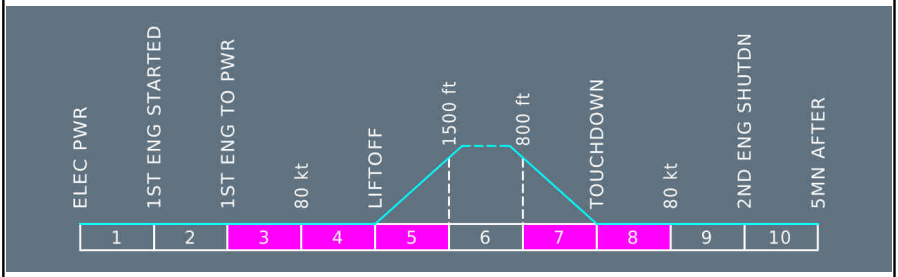
Ident.: PRO-ABN-ELEC-F-00017367.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the charging current increases at an abnormal rate.

Flight Phase Inhibition:



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ELEC BAT 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-F-00017894.0001001 / 21 MAR 16

L2 Battery contactor is opened automatically by the battery charge limiter.

L1 Crew awareness.

Ident.: PRO-ABN-ELEC-F-00017895.0001001 / 21 MAR 16

STATUS	INOP SYS
APU BAT START NOT AVAIL	BAT 1(2)

ELEC BAT 1(2) OFF

Applicable to: ALL

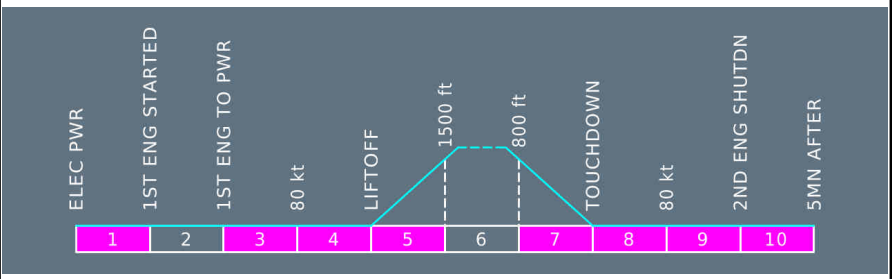
Ident.: PRO-ABN-ELEC-G-00017371.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the BAT 1(2) pb-sw is set to OFF and no failure is detected.

Flight Phase Inhibition:



Continued on the following page

ELEC BAT 1(2) OFF (Cont'd)

Ident.: PRO-ABN-ELEC-G-00018943.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-ELEC-G-00012495.0001001 / 19 AUG 10

	STATUS
APU BAT START NOT AVAIL	

ELEC BCL 1(2) FAULT

Applicable to: ALL

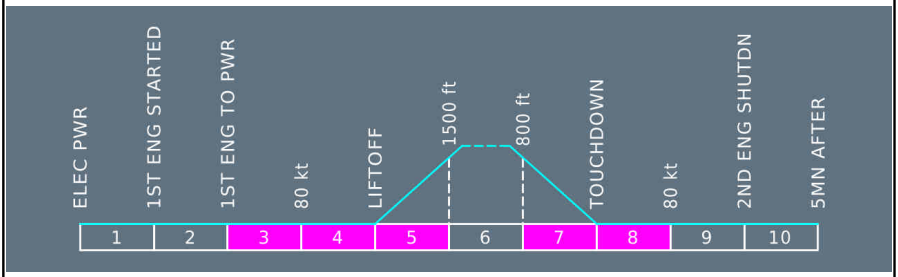
Ident.: PRO-ABN-ELEC-H-00017377.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the battery charge limiter 1(2) is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-H-00012496.0001001 / 25 FEB 14

Crew awareness.

Continued on the following page

ELEC BCL 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-H-00012497.0001001 / 19 AUG 10

STATUS	INOP SYS
APU BAT START NOT AVAIL	BCL 1(2)

ELEC DC BAT BUS FAULT

Applicable to: MSN 01767, 01957-02097, 02121-02139, 02275-02334, 02388, 02443, 02609-02649, 03071, 04314, 04393-04397, 05158

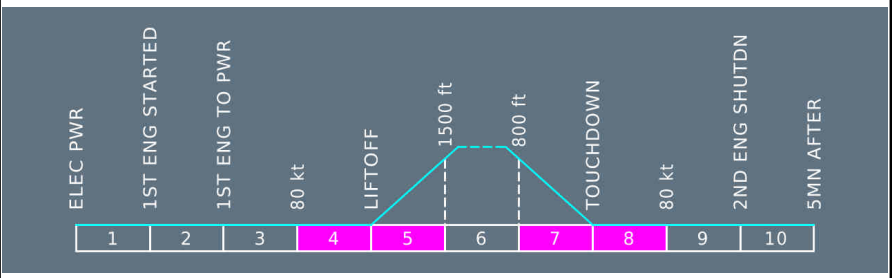
Ident.: PRO-ABN-ELEC-W-00017358.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC BAT busbar is not supplied.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-W-00012545.0001001 / 22 MAR 16

Crew awareness.

Continued on the following page

ELEC DC BAT BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-W-00012546.0009001 / 21 MAR 16

L12

STATUS

APU BAT START NOT AVAIL

ECB is no longer supplied

INOP SYS

APU FIRE DET

Other INOP SYS

APU ECB
Stick and rudder pedals lock
(by AP)
Forward (aft) cargo fire extinguishing
Fwd cargo heat controller
Fwd cargo isol valves
APU fuel LP valve
Manual pressure control

Note: The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.

ELEC DC BAT BUS FAULT

Applicable to: MSN 01920, 02204, 02804

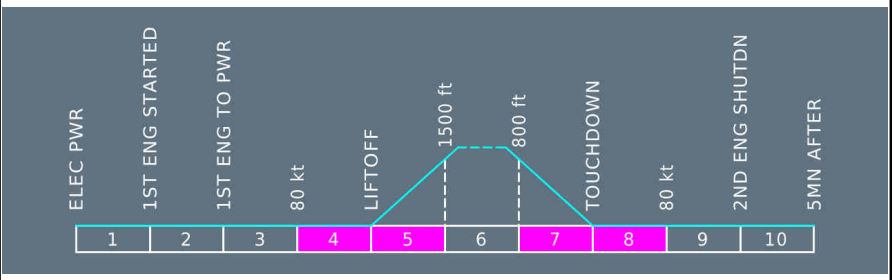
Ident.: PRO-ABN-ELEC-W-00017358.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC BAT busbar is not supplied.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-W-00012545.0001001 / 22 MAR 16

Crew awareness.

Continued on the following page

ELEC DC BAT BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-W-00012546.0006001 / 21 MAR 16

L12

STATUS

APU BAT START NOT AVAIL

ECB is no longer supplied

INOP SYS

APU FIRE DET

Other INOP SYS

APU ECB
Stick and rudder pedals lock *(by AP)*
Forward (aft) cargo fire extinguishing
Forward (aft) cargo heat controller
Fwd cargo isol valves
APU fuel LP valve
Manual pressure control

Note: The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.

ELEC DC BAT BUS FAULT

Applicable to: MSN 02108, 02195, 02359, 02405, 02457-02584, 02670-02737, 02908-02914, 03138-04312, 04328-04384, 04399-05155, 05190-09063

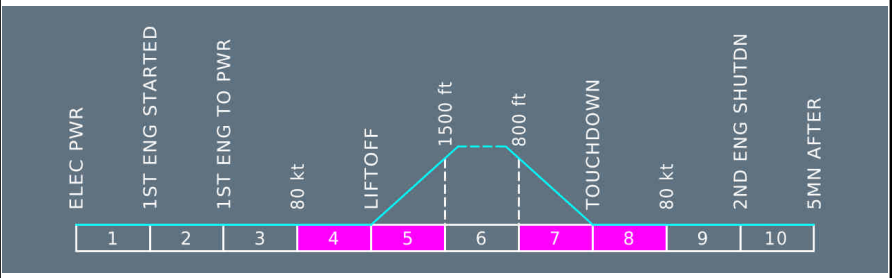
Ident.: PRO-ABN-ELEC-W-00017358.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC BAT busbar is not supplied.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-W-00012545.0001001 / 22 MAR 16

Crew awareness.

Continued on the following page

ELEC DC BAT BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-W-00012546.0002001 / 21 MAR 16

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L12

STATUS

APU BAT START NOT AVAIL

ECB is no longer supplied

INOP SYS

APU FIRE DET

Other INOP SYS

APU ECB
Stick and rudder pedals lock
(by AP)
Forward (aft) cargo fire extinguishing
Forward (aft) cargo heat controller
Forward (aft) cargo isolation valves
APU fuel LP valve
Manual pressure control

Note: The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.

ELEC DC BUS 1 FAULT

Applicable to: MSN 01767-02405, 02482

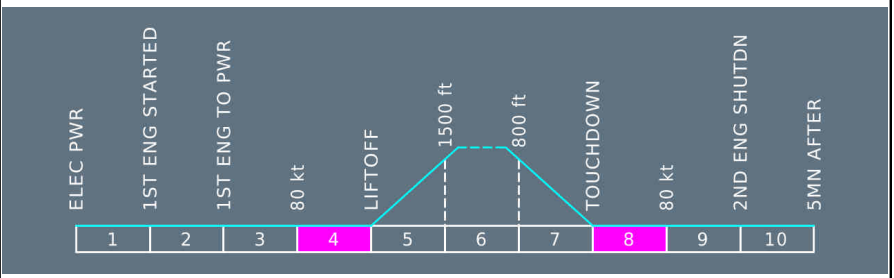
Ident.: PRO-ABN-ELEC-M-00017350.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC 1 busbar is not supplied.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-M-00012507.0001001 / 15 DEC 15

BLOWER..... OVRD
EXTRACT..... OVRD

L2 *The Air conditioning system provides ventilation to the avionics. This ventilation air is exhausted overboard.*

L1

SECONDARY FAILURES

*AVNCS VENT

Continued on the following page

ELEC DC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-M-00018555.0011001 / 22 MAR 17

L12

STATUS

	INOP SYS
CAB ZONE AT FIXED TEMP *See* (1) CAT 3 SINGLE ONLY	*See below*

INOP SYS

ACP 3	CAPT STAT heat	STBY STAT heat
L. WSHLD HEAT	L. WNDW HEAT	CTR TK PUMP 1 ◁
AVNCS VENT	GALLEY FAN	GND COOL ◁
REVERSER 1	BRAKES SYS 1	LAV DET
PACK 1 REGUL	CAT 3 DUAL	

Other INOP SYS

Left cab fan	Zone controller primary channel	Sel cal
CFDIU	VHF 3 ◁	RMP 3 ◁
L CTR TK XFR valve ◁	Hot air	Capt wiper
Eng 1 oil press and qty ind.	TPIS ◁	Brake temps ind.

Note: *The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

(1) *Due to the loss of the galley fan, the Pack 1 controller, and the primary zone controller channel. (See associated procedures).*

ELEC DC BUS 1 FAULT

Applicable to: MSN 02443-02457, 02584-06036, 08557, 08587, 08655, 08710, 08768, 09063

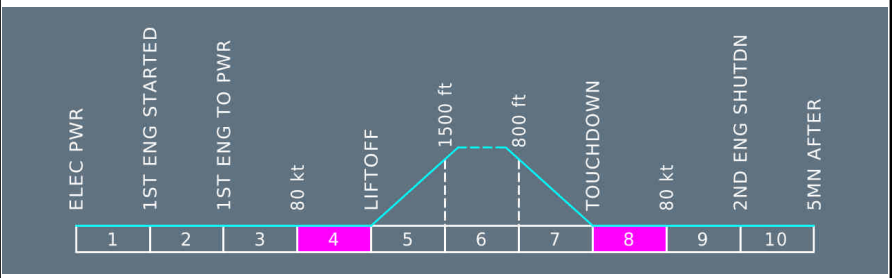
Ident.: PRO-ABN-ELEC-M-00017350.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC 1 busbar is not supplied.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-M-00012507.0001001 / 15 DEC 15

BLOWER..... OVRD
EXTRACT..... OVRD

L2 *The Air conditioning system provides ventilation to the avionics. This ventilation air is exhausted overboard.*

L1

SECONDARY FAILURES

*AVNCS VENT

Continued on the following page

ELEC DC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-M-00018555.0012001 / 22 MAR 17

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L12

STATUS

CAT 3 SINGLE ONLY

INOP SYS

See below

INOP SYS

- ACP 3
- L. WSHLD HEAT
- AVNCS VENT
- REVERSER 1
- CAT 3 DUAL
- CAPT STAT heat
- L. WNDW HEAT
- GALLEY FAN
- BRAKES SYS 1
- STBY STAT heat
- CTR TK PUMP 1 ◁✻
- GND COOL ◁✻
- LAV DET

Other INOP SYS

- Left cab fan
- CFDIU
- L CTR TK XFR valve ◁✻
- Eng 1 oil press and qty ind.
- COND controller lane A
- VHF 3 ◁✻
- Hot air
- TPIS ◁✻
- Sel cal
- RMP 3 ◁✻
- Capt wiper
- Brake temps ind.

Note: *The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

ELEC DC BUS 1 FAULT

Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

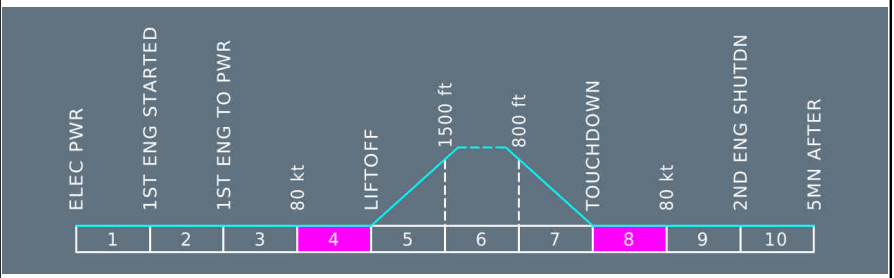
Ident.: PRO-ABN-ELEC-M-00017350.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC 1 busbar is not supplied.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-M-00012507.0001001 / 15 DEC 15

BLOWER..... OVRD
EXTRACT..... OVRD

L2 *The Air conditioning system provides ventilation to the avionics. This ventilation air is exhausted overboard.*

L1

SECONDARY FAILURES

*AVNCS VENT

Continued on the following page

ELEC DC BUS 1 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-M-00018555.0014001 / 21 MAR 16

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L12

STATUS

CAT 3 SINGLE ONLY

INOP SYS

See below

INOP SYS

ACP 3	CAPT STAT heat	STBY STAT heat
L. WSHLD HEAT	L. WNDW HEAT	AVNCS VENT
GALLEY FAN	GND COOL ❄	REVERSER 1
BRAKES SYS 1	LAV DET	CAT 3 DUAL

Other INOP SYS

Left cab fan	COND controller lane A	Sel cal
CFDIU	VHF 3 ❄	RMP 3 ❄
L CTR TK XFR valve	Hot air	Capt wiper
Eng 1 oil press and qty ind.	TPIS ❄	Brake temps ind.

Note: *The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

ELEC DC BUS 2 FAULT

Applicable to: MSN 01767-02405, 02482

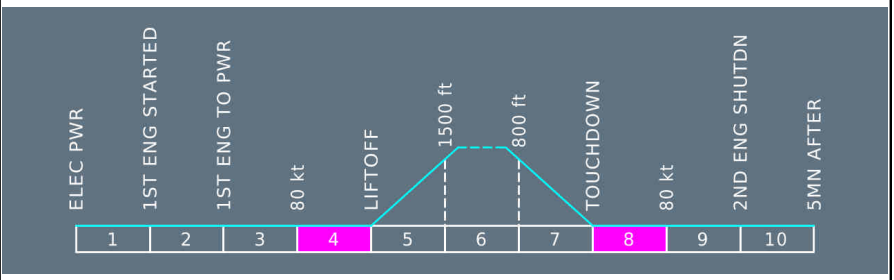
Ident.: PRO-ABN-ELEC-N-00017352.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC 2 busbar is not supplied.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-N-00017898.0004001 / 21 MAR 16

AIR DATA SWTG.....F/O3
BARO REF.....CHECK

L2 *Since one FCU channel is lost, crosscheck the barometer reference settings on the FCU and PFD.*

L1 ● **If DC ESS BUS is failed:**

L/G.....GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

* CAB PRESS
* FUEL
* WHEEL
* F/CTL

Continued on the following page

ELEC DC BUS 2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-N-00017899.0012001 / 22 MAR 17

L12

STATUS

- **IF ABN CAB V/S:**
  MAX FL..... 100/MEA
- **If DC ESS BUS is failed:**
  L/G.....GRVTY EXTN

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (3)
FMS PRED UNRELIABLE
See (4)
ENG 2 APPR IDLE ONLY
BOTH PFD ON SAME FAC
PACK 2 AT FIXED TEMP

- **If DC ESS BUS is failed:**
  L/G CONTROL NOT AVAIL

SLATS/FLAPS SLOW
CAT 3 SINGLE ONLY

INOP SYS

See below

INOP SYS

SPLR 1+2+5
VHF 2
R WNDW HEAT
CAT 3 DUAL
R TK PUMP 2
REVERSER 2
Y ELEC PUMP (if selected ON)
ENG 2 LOOP A
LGCIU 1 (2)

ELAC 2 (1)
F/O STAT
AP 2
FAC 2
CTR TK PUMP 2
CAB PR 2
BRK SYS 2
PACK 2 REGUL
ROW/ROP

SEC 2+3
R WSLHD HEAT
FCU 2
L TK PUMP 2
LGCIU 2
MAIN GALLEY
ENG 1 LOOP B
FCDC 2

Other INOP SYS

Continued on the following page

ELEC DC BUS 2 FAULT (Cont'd)

SFCC 2	R cabin fan	F/O wiper
F/O rain rplnt	Eng 1 and 2 fire ext btl 2	Autobrake (due to loss of 2 SECs)
BMC 2	Bleed X feed auto control	RMP 2
FQI channel 2	zone controller sec channel	CTR TK XFR valve R ◁
SDCU 2 or CIDS ◁ 2 SMOKE DETECT	Brake fan ◁	Eng 2 oil low press and qty ind
R loudspeaker	rudder trim ind	FMGC 2
CDLS ◁		

Note: - *The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*
- *The flight crew must monitor the CAB V/S, because the proximity sensor of the bulk cargo door ◁ is no longer electrically supplied.*

(1) *Lost after 30 s, but recovered at landing gear extension.*
(2) *(If DC ESS BUS is failed)*
(3) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(4) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

ELEC DC BUS 2 FAULT

Applicable to: MSN 02443-02457, 02584-06036, 08557, 08587, 08655, 08710, 08768, 09063

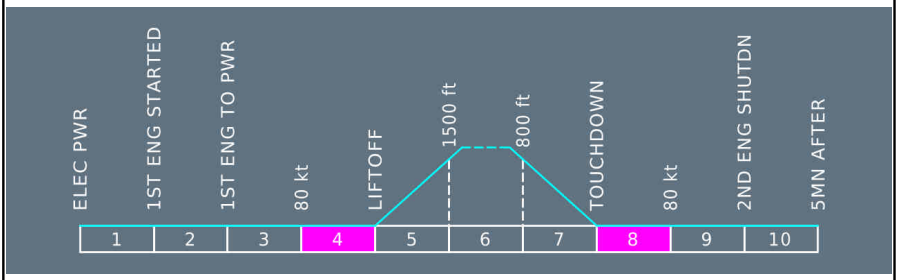
Ident.: PRO-ABN-ELEC-N-00017352.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC 2 busbar is not supplied.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-N-00017898.0004001 / 21 MAR 16

AIR DATA SWTG.....F/O3
BARO REF.....CHECK

L2 *Since one FCU channel is lost, crosscheck the barometer reference settings on the FCU and PFD.*

L1 ● **If DC ESS BUS is failed:**

L/G..... GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

* CAB PRESS
* FUEL
* WHEEL
* F/CTL

Continued on the following page

ELEC DC BUS 2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-N-00017899.0013001 / 22 MAR 17

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L12

STATUS

- **IF ABN CAB V/S:**
  MAX FL..... 100/MEA
- **If DC ESS BUS is failed:**
  L/G.....GRVTY EXTN

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (3)
FMS PRED UNRELIABLE
See (4)
ENG 2 APPR IDLE ONLY
BOTH PFD ON SAME FAC

- **If DC ESS BUS is failed:**
  L/G CONTROL NOT AVAIL

SLATS/FLAPS SLOW
CAT 3 SINGLE ONLY

INOP SYS

See below

INOP SYS

SPLR 1+2+5
VHF 2
R WNDW HEAT
CAT 3 DUAL
R TK PUMP 2
REVERSER 2
Y ELEC PUMP (if selected ON)
ENG 2 LOOP A
ROW/ROP

ELAC 2 (1)
F/O STAT
AP 2
FAC 2
CTR TK PUMP 2
CAB PR 2
BRK SYS 2
FCDC 2

SEC 2+3
R WSLHD HEAT
FCU 2
L TK PUMP 2
LGCIU 2
MAIN GALLEY
ENG 1 LOOP B
LGCIU 1 (2)

Other INOP SYS

Continued on the following page

ELEC DC BUS 2 FAULT (Cont'd)

SFCC 2	R cabin fan	F/O wiper
F/O rain rplnt	Eng 1 and 2 fire ext btl 2	Autobrake (due to loss of 2 SECs)
BMC 2	Bleed X feed auto control	RMP 2
FQI channel 2	CTR TK XFR valve R ◁	SDCU 2 or CIDS ◁ 2 SMOKE DETECT
Brake fan ◁	Eng 2 oil low press and qty ind	R loudspeaker
rudder trim ind	FMGC 2	CDLS ◁

Note: - *The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*
- *The flight crew must monitor the CAB V/S, because the proximity sensor of the bulk cargo door ◁ is no longer electrically supplied.*

(1) *Lost after 30 s, but recovered at landing gear extension.*
(2) *(If DC ESS BUS is failed)*
(3) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(4) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

ELEC DC BUS 2 FAULT

Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

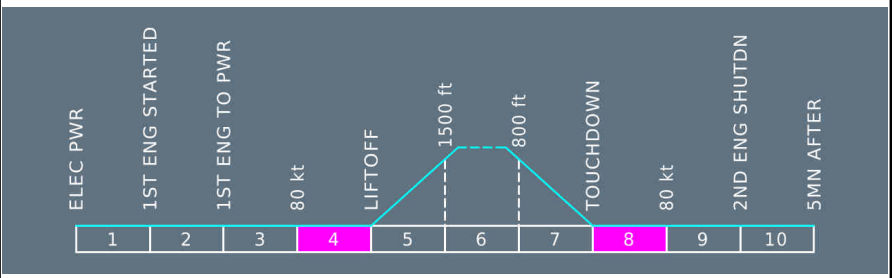
Ident.: PRO-ABN-ELEC-N-00017352.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC 2 busbar is not supplied.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-N-00017898.0004001 / 21 MAR 16

AIR DATA SWTG.....F/O3
BARO REF.....CHECK

L2 *Since one FCU channel is lost, crosscheck the barometer reference settings on the FCU and PFD.*

L1 ● **If DC ESS BUS is failed:**

L/G.....GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

* CAB PRESS
* FUEL
* WHEEL
* F/CTL

Continued on the following page

ELEC DC BUS 2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-N-00017899.0015001 / 21 MAR 17

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L12

STATUS

- **IF ABN CAB V/S:**
  MAX FL..... 100/MEA
- **If DC ESS BUS is failed:**
  L/G.....GRVTY EXTN

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (3)
FMS PRED UNRELIABLE
See (4)
ENG 2 APPR IDLE ONLY
BOTH PFD ON SAME FAC

- **If DC ESS BUS is failed:**
  L/G CONTROL NOT AVAIL

SLATS/FLAPS SLOW
CAT 3 SINGLE ONLY

INOP SYS

See below

INOP SYS

SPLR 1+2+5	ELAC 2 (1)	SEC 2+3
VHF 2	F/O STAT	R WSLHD HEAT
R WNDW HEAT	AP 2	FCU 2
CAT 3 DUAL	FAC 2	L TK PUMP 2
R TK PUMP 2	LGCIU 2	REVERSER 2
CAB PR 2	MAIN GALLEY	Y ELEC PUMP (if selected ON)
BRK SYS 2	ENG 1 LOOP B	ENG 2 LOOP A
FCDC 2	LGCIU 1 (2)	ROW/ROP

Other INOP SYS

SFCC 2	R cabin fan	F/O wiper
F/O rain rplnt	Eng 1 and 2 fire ext btl 2	Autobrake (due to loss of 2 SECs)

Continued on the following page

ELEC DC BUS 2 FAULT (Cont'd)

BMC 2	Bleed X feed auto control	RMP 2
FQI channel 2	CTR TK XFR valve R	SDCU 2 or CIDS ◁ 2 SMOKE DETECT
Brake fan ◁	Eng 2 oil low press and qty ind	R loudspeaker
rudder trim ind	FMGC 2	CDLS ◁

Note: - *The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*
- *The flight crew must monitor the CAB V/S, because the proximity sensor of the bulk cargo door ◁ is no longer electrically supplied.*

(1) *Lost after 30 s, but recovered at landing gear extension.*
(2) *(If DC ESS BUS is failed)*
(3) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(4) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

ELEC DC BUS 1+2 FAULT

Applicable to: MSN 01767-02405, 02482

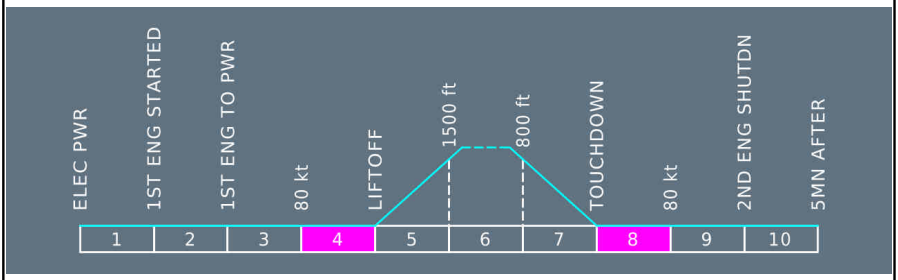
Ident.: PRO-ABN-ELEC-Q-00017353.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC 1 and DC 2 busbars are not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC DC BUS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-Q-00018565.0004001 / 21 MAR 16

BLOWER..... OVRD
EXTRACT..... OVRD
BARO REF.....CHECK

L2 *Crosscheck the barometer reference settings on the FCU and PFDs.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE
MAX BRK PR.....1 000 PSI

L2 *Brake pressure must be limited to approximately 1 000 PSI, since antiskid is lost.*

L1

ASSOCIATED PROCEDURES

ELEC DC BAT BUS FAULT

SECONDARY FAILURES

* CAB PRESS
* FUEL
* AIR COND
* BRAKES
* F/CTL

Continued on the following page

ELEC DC BUS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-Q-00018566.0017001 / 27 FEB 18

L12

STATUS

MAX BRK PR.....1000 PSI

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)
ENG 2 APPR IDLE ONLY
BOTH PFD ON SAME FAC
CTR TK FUEL UNUSABLE
APU BAT START NOT AVAIL
CAB ZONE AT FIXED TEMP
PACKS AT FIXED TEMP
SLATS/FLAPS SLOW
CAT 3 SINGLE ONLY
FLS ◁ LIMITED TO F-APP+RAW

INOP SYS

See below

INOP SYS

SPLR 1+2+5
VHF 2
F/O STAT heat
WNDW HEAT
CAT 3 DUAL
ANTI SKID
REVERSER 1+2
L+R CAB FAN
GND COOL ◁
Brk sys 1+2
ENG 1 LOOP B
PACK 2 REGUL
L TK PUMP 2

ELAC 2(1)
ACP 3
STBY STAT heat
AP 2
FAC 2
N/W STRG
CAB PRESS 2
GALLEY FAN
MAIN GALLEY
APU FIRE DET
ENG 2 LOOP A
FCDC 2
R TK PUMP 2

SEC 2+3
CAPT STAT heat
WSHLD HEAT
FCU 2
SDCU
LGCIU 2
AVNCS VENT
CRG HEAT ◁
Y ELEC PUMP
LAV DET
PACK 1 REGUL
CTR TK PUMPS

Continued on the following page

ELEC DC BUS 1+2 FAULT (Cont'd)

Other INOP SYS

Selcal	Brake temp indication	Brake fans ◁✻
TPIS ◁✻	Capt and F/O wipers	Eng 1 and 2 oil pressure and quantity indication
AUTO BRK	Forward (aft) cargo isolation valves ◁✻	Manual pressure control
VHF 3 ◁✻	RMP 2	RMP 3 ◁✻
CFDIU	Right loudspeakers	SFCC 2
APU ECB	Forward (aft) cargo heat controller ◁✻	CDLS ◁✻
FMGC 2	Rudder trim indication	BMC 2
FQI channel 2	Eng 1 and 2 fire ext btl 2	X Bleed auto and manual control
Stick and rudder pedals lock (by AP)	Forward (aft) cargo fire extinguishing ◁✻	SDCU 2 or CIDS ◁✻ 2 SMOKE DETECT

Note: *The warning may be caused by a failure in a sub BUS. Consequently, only a part of the above-listed systems may be lost.*

(1) *Lost after 30 s, but is recovered at landing gear extension.*

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

ELEC DC BUS 1+2 FAULT

Applicable to: MSN 02443-02457, 02584-06036

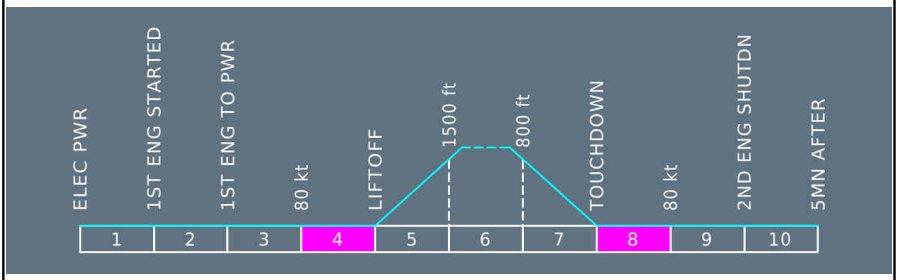
Ident.: PRO-ABN-ELEC-Q-00017353.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC 1 and DC 2 busbars are not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC DC BUS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-Q-00018565.0004001 / 21 MAR 16

BLOWER..... OVRD
EXTRACT..... OVRD
BARO REF.....CHECK

L2 *Crosscheck the barometer reference settings on the FCU and PFDs.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE
MAX BRK PR.....1 000 PSI

L2 *Brake pressure must be limited to approximately 1 000 PSI, since antiskid is lost.*

L1

ASSOCIATED PROCEDURES

ELEC DC BAT BUS FAULT

SECONDARY FAILURES

* CAB PRESS
* FUEL
* AIR COND
* BRAKES
* F/CTL

Continued on the following page

ELEC DC BUS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-Q-00018566.0018001 / 27 FEB 18

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L12

STATUS

MAX BRK PR.....1000 PSI

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)
ENG 2 APPR IDLE ONLY
BOTH PFD ON SAME FAC
CTR TK FUEL UNUSABLE
APU BAT START NOT AVAIL
SLATS/FLAPS SLOW
CAT 3 SINGLE ONLY
FLS ◁ LIMITED TO F-APP+RAW

INOP SYS

See below

INOP SYS

SPLR 1+2+5
VHF 2
F/O STAT heat
WNDW HEAT
CAT 3 DUAL
ANTI SKID
REVERSER 1+2
L+R CAB FAN
GND COOL ◁
Brk sys 1+2
ENG 1 LOOP B
FCDC 2
R TK PUMP 2

ELAC 2(1)
ACP 3
STBY STAT heat
AP 2
FAC 2
N/W STRG
CAB PRESS 2
GALLEY FAN
MAIN GALLEY
APU FIRE DET
ENG 2 LOOP A
CTR TK PUMPS

SEC 2+3
CAPT STAT heat
WSHLD HEAT
FCU 2
SDCU
LGCIU 2
AVNCS VENT
CRG HEAT ◁
Y ELEC PUMP
LAV DET
PACK 2
L TK PUMP 2

Continued on the following page

ELEC DC BUS 1+2 FAULT (Cont'd)

Other INOP SYS

Selcal	Brake temp indication	Brake fans ◁✻
TPIS ◁✻	Capt and F/O wipers	Eng 1 and 2 oil pressure and quantity indication
AUTO BRK	Forward (aft) cargo isolation valves ◁✻	Manual pressure control
VHF 3 ◁✻	RMP 2	RMP 3 ◁✻
CFDIU	Right loudspeakers	SFCC 2
APU ECB	Forward (aft) cargo heat controller ◁✻	CDLS ◁✻
FMGC 2	Rudder trim indication	BMC 2
FQI channel 2	Eng 1 and 2 fire ext btl 2	X Bleed auto and manual control
Stick and rudder pedals lock (by AP)	Forward (aft) cargo fire extinguishing ◁✻	SDCU 2 or CIDS ◁✻ 2 SMOKE DETECT

Note: The warning may be caused by a failure in a sub BUS. Consequently, only a part of the above-listed systems may be lost.

(1) Lost after 30 s, but is recovered at landing gear extension.

(2) This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.

(3) Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

ELEC DC BUS 1+2 FAULT

Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

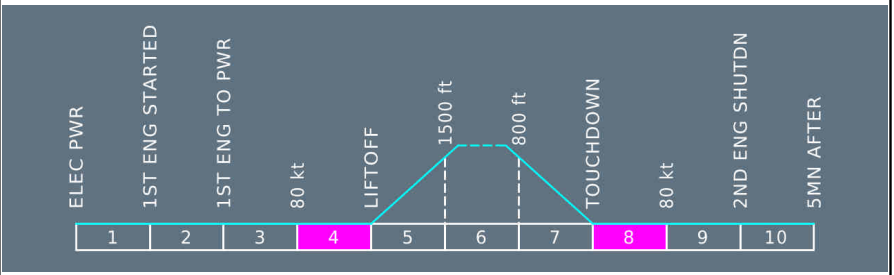
Ident.: PRO-ABN-ELEC-Q-00017353.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC 1 and DC 2 busbars are not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC DC BUS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-Q-00018565.0004001 / 21 MAR 16

BLOWER..... OVRD
EXTRACT..... OVRD
BARO REF.....CHECK

L2 *Crosscheck the barometer reference settings on the FCU and PFDs.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE
MAX BRK PR.....1 000 PSI

L2 *Brake pressure must be limited to approximately 1 000 PSI, since antiskid is lost.*

L1

ASSOCIATED PROCEDURES

ELEC DC BAT BUS FAULT

SECONDARY FAILURES

* CAB PRESS
* FUEL
* AIR COND
* BRAKES
* F/CTL

Continued on the following page

ELEC DC BUS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-Q-00018566.0020001 / 27 FEB 18

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L12

STATUS

MAX BRK PR.....1000 PSI

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)
ENG 2 APPR IDLE ONLY
BOTH PFD ON SAME FAC
CTR TK FUEL USABLE BY GRAVITY
CTR TK FUEL: 2 T UNUSABLE
APU BAT START NOT AVAIL
SLATS/FLAPS SLOW
CAT 3 SINGLE ONLY
FLS ◁ LIMITED TO F-APP+RAW

INOP SYS

See below

INOP SYS

SPLR 1+2+5
VHF 2
F/O STAT heat
WNDW HEAT
CAT 3 DUAL
ANTI SKID
REVERSER 1+2
L+R CAB FAN
GND COOL ◁
Brk sys 1+2
ENG 1 LOOP B
FCDC 2

ELAC 2(1)
ACP 3
STBY STAT heat
AP 2
FAC 2
N/W STRG
CAB PRESS 2
GALLEY FAN
MAIN GALLEY
APU FIRE DET
ENG 2 LOOP A
L TK PUMP 2

SEC 2+3
CAPT STAT heat
WSHLD HEAT
FCU 2
SDCU
LGCIU 2
AVNCS VENT
CRG HEAT ◁
Y ELEC PUMP
LAV DET
PACK 2
R TK PUMP 2

Continued on the following page

ELEC DC BUS 1+2 FAULT (Cont'd)

Other INOP SYS

Selcal	Brake temp indication	Brake fans ◁✻
TPIS ◁✻	Capt and F/O wipers	Eng 1 and 2 oil pressure and quantity indication
AUTO BRK	Forward (aft) cargo isolation valves ◁✻	Manual pressure control
VHF 3 ◁✻	RMP 2	RMP 3 ◁✻
CFDIU	Right loudspeakers	SFCC 2
CTR TK XFR valves	APU ECB	Forward (aft) cargo heat controller ◁✻
CDLS ◁✻	FMGC 2	Rudder trim indication
BMC 2	FQI channel 2	Eng 1 and 2 fire ext btl 2
X Bleed auto and manual control	Stick and rudder pedals lock (by AP)	Forward (aft) cargo fire extinguishing ◁✻
SDCU 2 or CIDS ◁✻ 2 SMOKE DETECT		

Note: The warning may be caused by a failure in a sub BUS. Consequently, only a part of the above-listed systems may be lost.

(1) Lost after 30 s, but is recovered at landing gear extension.

(2) This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.

(3) Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

ELEC DC BUS 1+2 FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

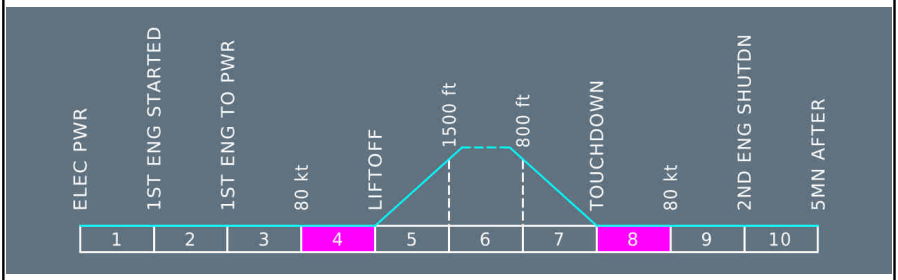
Ident.: PRO-ABN-ELEC-Q-00017353.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC 1 and DC 2 busbars are not supplied.

Flight Phase Inhibition:



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ELEC DC BUS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-Q-00018565.0004001 / 21 MAR 16

BLOWER..... OVRD
EXTRACT..... OVRD
BARO REF.....CHECK

L2 *Crosscheck the barometer reference settings on the FCU and PFDs.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE
MAX BRK PR.....1 000 PSI

L2 *Brake pressure must be limited to approximately 1 000 PSI, since antiskid is lost.*

L1

ASSOCIATED PROCEDURES

ELEC DC BAT BUS FAULT

SECONDARY FAILURES

* CAB PRESS
* FUEL
* AIR COND
* BRAKES
* F/CTL

Continued on the following page

ELEC DC BUS 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-Q-00018566.0030001 / 27 FEB 18

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L12

STATUS

MAX BRK PR.....1000 PSI

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)
ENG 2 APPR IDLE ONLY
BOTH PFD ON SAME FAC
CTR TK FUEL USABLE BY GRAVITY
CTR TK FUEL: 2 T UNUSABLE
APU BAT START NOT AVAIL
SLATS/FLAPS SLOW
CAT 3 SINGLE ONLY
FLS ◁ LIMITED TO F-APP+RAW

INOP SYS

See below

INOP SYS

SPLR 1+2+5
VHF 2
F/O STAT heat
WNDW HEAT
CAT 3 DUAL
ANTI SKID
REVERSER 1+2
L+R CAB FAN
GND COOL ◁
Brk sys 1+2
ENG 1 LOOP B
FCDC 2

ELAC 2(1)
ACP 3
STBY STAT heat
AP 2
FAC 2
N/W STRG
CAB PRESS 2
GALLEY FAN
MAIN GALLEY
APU FIRE DET
ENG 2 LOOP A
L TK PUMP 2

SEC 2+3
CAPT STAT heat
WSHLD HEAT
FCU 2
SDCU
LGCIU 2
AVNCS VENT
CRG HEAT ◁
Y ELEC PUMP
LAV DET
PACK 2
R TK PUMP 2

Continued on the following page

ELEC DC BUS 1+2 FAULT (Cont'd)

Other INOP SYS

Selcal	Brake temp indication	Brake fans ◁✻
TPIS ◁✻	Capt and F/O wipers	Eng 1 and 2 oil pressure and quantity indication
AUTO BRK	Forward (aft) cargo isolation valves ◁✻	Manual pressure control
VHF 3 ◁✻	RMP 2	RMP 3 ◁✻
CFDIU	Right loudspeakers	SFCC 2
CTR TK XFR valves	APU ECB	Forward (aft) cargo heat controller ◁✻
CDLS ◁✻	FMGC 2	Rudder trim indication
BMC 2	FQI channel 2	Eng 1 and 2 fire ext btl 2
X Bleed auto and manual control	Stick and rudder pedals lock (by AP)	Forward (aft) cargo fire extinguishing ◁✻
SDCU 2 or CIDS ◁✻ 2 SMOKE DETECT		

Note: The warning may be caused by a failure in a sub BUS. Consequently, only a part of the above-listed systems may be lost.

(1) Lost after 30 s, but is recovered at landing gear extension.

(2) This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.

(3) Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

ELEC DC EMER CONFIG

Applicable to: ALL

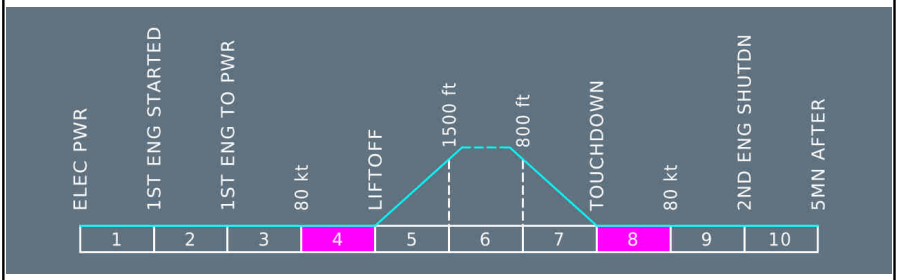
Ident.: PRO-ABN-ELEC-X-00017359.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC 1, DC 2 and DC ESS busbars are not supplied.

Flight Phase Inhibition:



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ELEC DC EMER CONFIG (Cont'd)

Ident.: PRO-ABN-ELEC-X-00018557.0006001 / 21 MAR 16

LAND ASAP

EMER ELEC PWR.....MAN ON

L2 *The emergency generator supplies DC ESS BUS.*
But, DC BUS 1, DC BUS 2, and DC BAT BUS are still not supplied.

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

ELEC **DC BUS 1 + 2 FAULT**

BLOWER.....OVRD
EXTRACT.....OVRD
BARO REF.....CHECK

L2 *Crosscheck the barometer reference settings on the FCU and PFDs.*

L1 MAX BRK PR.....1 000 PSI

L2 *Brake pressure must be limited to approximately 1 000 PSI, since antiskid is lost.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

ELEC **DC BAT BUS FAULT**

SECONDARY FAILURES

* CAB PRESS
* HYD
* FUEL
* AIR COND
* BRAKES
* WHEEL
* F/CTL

Continued on the following page

ELEC DC EMER CONFIG (Cont'd)

Ident.: PRO-ABN-ELEC-X-00018558.0004001 / 22 MAR 18

L12

STATUS

MIN RAT SPEED..... 140 KT
PROC: GRVTY FUEL FEEDING
MAX BRK PR..... 1 000 PSI
FUEL GRVTY FEED

LDG DIST PROC..... APPLY

Refer to the list of STATUS INFO of the ELEC DC BUS 1+2 BUS FAULT ECAM alert
See (1)

INOP SYS

Refer to the list of INOP SYS ON ECAM of the ELEC DC BUS 1+2 FAULT ECAM alert

Note: To verify the other INOP SYS not displayed on the ECAM, Refer to PRO-ABN-ELEC ELEC DC BUS 1+2 FAULT - FWSPAGE and Refer to PRO-ABN-ELEC ELEC DC BAT BUS FAULT - FWSPAGE.

(1)

Note: DC ESS BUS is lost when speed is below 100 kt.
Therefore, all means of communication are lost because all ACPs are lost.
To verify the list of STATUS INFO, Refer to PRO-ABN-ELEC ELEC DC BUS 1+2 FAULT - FWSPAGE.

ELEC DC ESS BUS FAULT

Applicable to: MSN 01767-01920

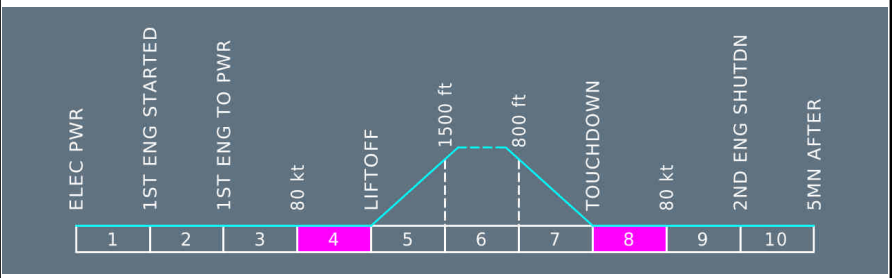
Ident.: PRO-ABN-ELEC-O-00017354.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC ESS busbar is not supplied.

Flight Phase Inhibition:



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ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00012511.0005001 / 05 MAR 13

77

VHF 2 OR 3.....USE
AUDIO SWTG.....SELECT

L2 *ACP 1 and 2 are lost. Therefore, set the AUDIO SWTG rotary selector to CAPT 3 or F/O 3 to recover communications.*

L1 BARO REF.....CHECK

L2 *Crosscheck the barometer reference settings on the FCU and the PFD.*

L1 GPWS SYS.....OFF

- **If DC BUS 2 is failed:**

  L/G.....GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE
AVOID ICING CONDITIONS

ASSOCIATED PROCEDURES

NAV GPWS FAULT

GPWS.....OFF

L2 *Note:* *To shut down the engines on ground, use the ENG FIRE pb-sw.*

L1

SECONDARY FAILURES

* CAB PRESS
* HYD
* F/CTL

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00018671.0010001 / 25 JUL 17

L12

STATUS	INOP SYS
● **If DC BUS 2 is failed:** L/G.....GRVTY EXTN LDG DIST PROC..... APPLY FUEL CONSUMPT INCRSD *See* (3) FMS PRED UNRELIABLE *See* (4) ENG 1 APPR IDLE ONLY ENG 2 APPR IDLE ONLY BOTH PFD ON SAME FAC ● **If DC BUS 2 is failed:** L/G CONTROL NOT AVAIL SLATS/FLAPS SLOW CAT 3 SINGLE ONLY	*See below*

INOP SYS

B HYD	SPLR 3	VHF 1
ACP 1+2	WING A. ICE	AP 1
A/THR	FCU 1	FAC 1
L TK PUMP 1	R TK PUMP 1	REV 2
ENG 2 START	CAB PR 1	STEEP APPR ◁
VENT EXTRACT	B ELEC PUMP	GPWS
ENG 1 LOOP A	ENG 2 LOOP B	FCDC 1
LGCIU 1	LGCIU 2 (1)	ROW/ROP ◁

Other INOP SYS

BRK PRESS indicator	Flight interphone	EIU 2 (2)
Capt rain repellent ◁	Avionics air cond valve	Standby compass light

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

HP fuel shutoff valves	SFCC 1	RMP 1
Hyd fire valves Eng 1 and 2	Ram air inlet	ECAM Control Panel
Left loudspeaker	DC SHED ESS BUS	

Note: *1. The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

(1) (If DC BUS 2 is failed)
(2) Autothrust, eng start and reverser inop.
(3) This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.
(4) Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

ELEC DC ESS BUS FAULT

Applicable to: MSN 01957-02097, 02121, 02138

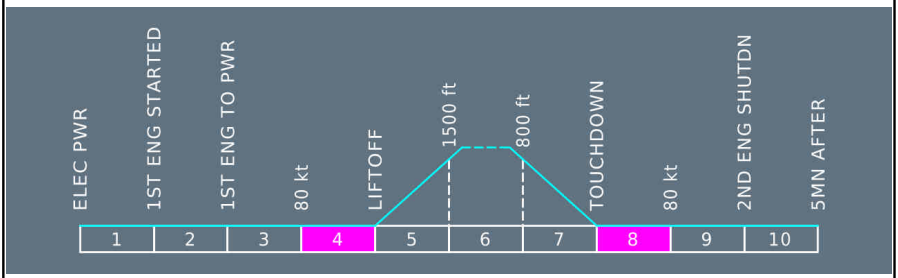
Ident.: PRO-ABN-ELEC-O-00017354.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC ESS busbar is not supplied.

Flight Phase Inhibition:



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ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00012511.0005001 / 05 MAR 13

78

VHF 2 OR 3.....USE
AUDIO SWTG.....SELECT

L2 *ACP 1 and 2 are lost. Therefore, set the AUDIO SWTG rotary selector to CAPT 3 or F/O 3 to recover communications.*

L1 BARO REF.....CHECK

L2 *Crosscheck the barometer reference settings on the FCU and the PFD.*

L1 GPWS SYS.....OFF

- **If DC BUS 2 is failed:**

  L/G.....GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE
AVOID ICING CONDITIONS

ASSOCIATED PROCEDURES

NAV GPWS FAULT
GPWS.....OFF

L2 Note: *To shut down the engines on ground, use the ENG FIRE pb-sw.*

L1

SECONDARY FAILURES

* CAB PRESS
* HYD
* F/CTL

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00018671.0021001 / 25 JUL 17

L12

STATUS

INOP SYS

- **If DC BUS 2 is failed:**
  L/G.....GRVTY EXTN

LDG DIST PROC..... APPLY

See below

FUEL CONSUMPT INCRSD
See (3)
FMS PRED UNRELIABLE
See (4)
ENG 1 APPR IDLE ONLY
ENG 2 APPR IDLE ONLY
BOTH PFD ON SAME FAC

- **If DC BUS 2 is failed:**
  L/G CONTROL NOT AVAIL

SLATS/FLAPS SLOW
CAT 2 ONLY

INOP SYS

B HYD
ACP 1+2
A/THR
L TK PUMP 1
ENG 2 START
VENT EXTRACT
ENG 1 LOOP A
CAT 3
ROW/ROP

SPLR 3
WING A. ICE
FCU 1
R TK PUMP 1
CAB PR 1
B ELEC PUMP
ENG 2 LOOP B
LGCIU 1

VHF 1
AP 1
FAC 1
REV 2
STEEP APPR
GPWS
FCDC 1
LGCIU 2 (1)

Other INOP SYS

BRK PRESS indicator

Flight interphone

EIU 2 (2)

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Capt rain repellent	Avionics air cond valve	Standby compass light
HP fuel shutoff valves	SFCC 1	RMP 1
Hyd fire valves Eng 1 and 2	Ram air inlet	ECAM Control Panel
Left loudspeaker	DC SHED ESS BUS	

Note: *1. The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

(1) (If DC BUS 2 is failed)
(2) Autothrust, eng start and reverser inop.
(3) This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.
(4) Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

ELEC DC ESS BUS FAULT

Applicable to: MSN 02108, 02135, 02139, 02204-02359, 02405, 02482

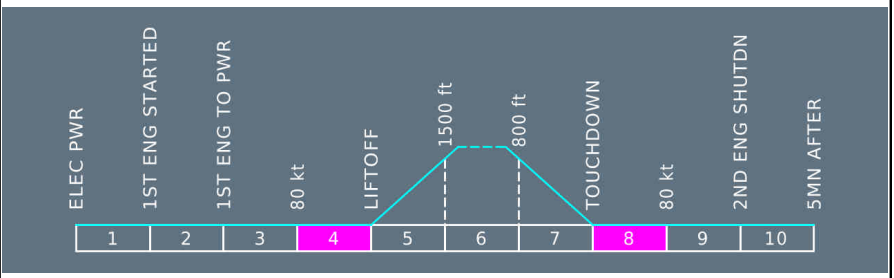
Ident.: PRO-ABN-ELEC-O-00017354.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC ESS busbar is not supplied.

Flight Phase Inhibition:



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ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00012511.0005001 / 05 MAR 13
79 Impacted by TDU: 00013704 ELEC DC ESS BUS FAULT

VHF 2 OR 3 ..... USE
AUDIO SWTG ..... SELECT

L2 *ACP 1 and 2 are lost. Therefore, set the AUDIO SWTG rotary selector to CAPT 3 or F/O 3 to recover communications.*

L1 BARO REF ..... CHECK

L2 *Crosscheck the barometer reference settings on the FCU and the PFD.*

L1 GPWS SYS ..... OFF

- **If DC BUS 2 is failed:**

  L/G ..... GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE
AVOID ICING CONDITIONS

ASSOCIATED PROCEDURES

NAV GPWS FAULT

GPWS ..... OFF

L2 *Note: To shut down the engines on ground, use the ENG FIRE pb-sw.*

L1

SECONDARY FAILURES

* CAB PRESS
* HYD
* F/CTL

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: TDU / PRO-ABN-ELEC-O-00013704.0004001 / 23 JUN 15
Impacted DU: 00012511 ELEC DC ESS BUS FAULT

VHF 2 OR 3.....USE

L2 *In the case of an ELEC DC ESS BUS FAULT, the audio cards of the AMU are lost. Since all cockpit mikes and headsets are connected to the AMU, all audio means of communication (VHF, HF and SATCOM)are lost.*
The use of VHF 2 or 3 do not allow to recover communications.

L1 AUDIO SWTG.....SELECT
BARO REF.....CHECK

L2 *Crosscheck the barometer reference settings on the FCU and the PFD.*

L1 GPWS.....OFF

- **If DC BUS 2 is failed:**

  L/G..... GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 AVOID ICING CONDITIONS

ASSOCIATED PROCEDURES

NAV GPWS FAULT
GPWS.....OFF

ASSOCIATED PROCEDURES

FUEL L TANK PUMP 1 LO PR

FUEL R TANK PUMP 1 LO PR

L2 *Note:* *To shut down the engines on ground, use the ENG FIRE pb-sw.*

L1

SECONDARY FAILURES

* CAB PRESS
* HYD
* F/CTL

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00018671.0021001 / 25 JUL 17

L12

STATUS

INOP SYS

- **If DC BUS 2 is failed:**
  L/G.....GRVTY EXTN

See below

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (3)
FMS PRED UNRELIABLE
See (4)
ENG 1 APPR IDLE ONLY
ENG 2 APPR IDLE ONLY
BOTH PFD ON SAME FAC

- **If DC BUS 2 is failed:**
  L/G CONTROL NOT AVAIL

SLATS/FLAPS SLOW
CAT 2 ONLY

INOP SYS

B HYD
ACP 1+2
A/THR
L TK PUMP 1
ENG 2 START
VENT EXTRACT
ENG 1 LOOP A
CAT 3
ROW/ROP

SPLR 3
WING A. ICE
FCU 1
R TK PUMP 1
CAB PR 1
B ELEC PUMP
ENG 2 LOOP B
LGCIU 1

VHF 1
AP 1
FAC 1
REV 2
STEEP APPR
GPWS
FCDC 1
LGCIU 2 (1)

Other INOP SYS

BRK PRESS indicator

Flight interphone

EIU 2 (2)

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Capt rain repellent	Avionics air cond valve	Standby compass light
HP fuel shutoff valves	SFCC 1	RMP 1
Hyd fire valves Eng 1 and 2	Ram air inlet	ECAM Control Panel
Left loudspeaker	DC SHED ESS BUS	

Note: *1. The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

(1) (If DC BUS 2 is failed)
(2) Autothrust, eng start and reverser inop.
(3) This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.
(4) Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

ELEC DC ESS BUS FAULT

Applicable to: MSN 02195

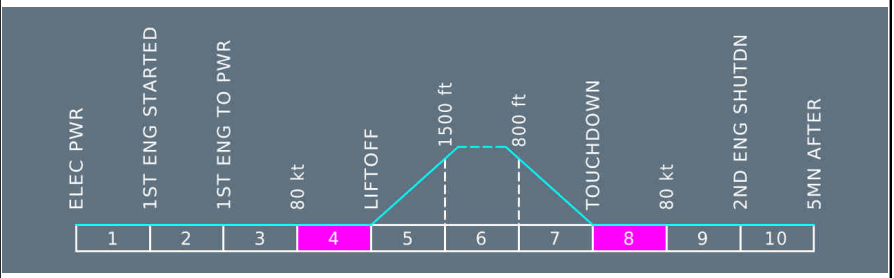
Ident.: PRO-ABN-ELEC-O-00017354.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC ESS busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00012511.0005001 / 05 MAR 13
80 Impacted by TDU: 00013704 ELEC DC ESS BUS FAULT

VHF 2 OR 3 ..... USE
AUDIO SWTG ..... SELECT

L2 *ACP 1 and 2 are lost. Therefore, set the AUDIO SWTG rotary selector to CAPT 3 or F/O 3 to recover communications.*

L1 BARO REF ..... CHECK

L2 *Crosscheck the barometer reference settings on the FCU and the PFD.*

L1 GPWS SYS ..... OFF

- **If DC BUS 2 is failed:**

  L/G ..... GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE
AVOID ICING CONDITIONS

ASSOCIATED PROCEDURES

NAV GPWS FAULT

GPWS ..... OFF

L2 *Note: To shut down the engines on ground, use the ENG FIRE pb-sw.*

L1

SECONDARY FAILURES

* CAB PRESS
* HYD
* F/CTL

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: TDU / PRO-ABN-ELEC-O-00013704.0004001 / 23 JUN 15
Impacted DU: 00012511 ELEC DC ESS BUS FAULT

VHF 2 OR 3.....USE

L2 *In the case of an ELEC DC ESS BUS FAULT, the audio cards of the AMU are lost. Since all cockpit mikes and headsets are connected to the AMU, all audio means of communication (VHF, HF and SATCOM)are lost.*
The use of VHF 2 or 3 do not allow to recover communications.

L1 AUDIO SWTG.....SELECT
BARO REF.....CHECK

L2 *Crosscheck the barometer reference settings on the FCU and the PFD.*

L1 GPWS.....OFF

- **If DC BUS 2 is failed:**

  L/G..... GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 AVOID ICING CONDITIONS

ASSOCIATED PROCEDURES

NAV GPWS FAULT
GPWS.....OFF

ASSOCIATED PROCEDURES

FUEL L TANK PUMP 1 LO PR

FUEL R TANK PUMP 1 LO PR

L2 *Note:* *To shut down the engines on ground, use the ENG FIRE pb-sw.*

L1

SECONDARY FAILURES

* CAB PRESS
* HYD
* F/CTL

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00018671.0019001 / 25 JUL 17

L12

STATUS

INOP SYS

- **If DC BUS 2 is failed:**
  L/G.....GRVTY EXTN

LDG DIST PROC..... APPLY

See below

FUEL CONSUMPT INCRSD
See (3)
FMS PRED UNRELIABLE
See (4)
ENG 1 APPR IDLE ONLY
ENG 2 APPR IDLE ONLY
BOTH PFD ON SAME FAC

- **If DC BUS 2 is failed:**
  L/G CONTROL NOT AVAIL

SLATS/FLAPS SLOW
CAT 2 ONLY

INOP SYS

B HYD
ACP 1+2
A/THR
L TK PUMP 1
ENG 2 START
VENT EXTRACT
ENG 1 LOOP A
CAT 3
ROW/ROP

SPLR 3
WING A. ICE
FCU 1
R TK PUMP 1
CAB PR 1
B ELEC PUMP
ENG 2 LOOP B
LGCIU 1

VHF 1
AP 1
FAC 1
REV 2
STEEP APPR
GPWS
FCDC 1
LGCIU 2 (1)

Other INOP SYS

BRK PRESS indicator

Flight interphone

EIU 2 (2)

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Capt rain repellent	Avionics air cond valve	Standby Horizon
Standby compass light	HP fuel shutoff valves	SFCC 1
RMP 1	Hyd fire valves Eng 1 and 2	Ram air inlet
ECAM Control Panel	Left loudspeaker	DC SHED ESS BUS

Note: *1. The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

(1) *(If DC BUS 2 is failed)*
(2) *Autothrust, eng start and reverser inop.*
(3) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(4) *Disregard FMS fuel predictions and refer to QRH/OPS Operational data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

ELEC DC ESS BUS FAULT

Applicable to: MSN 02388

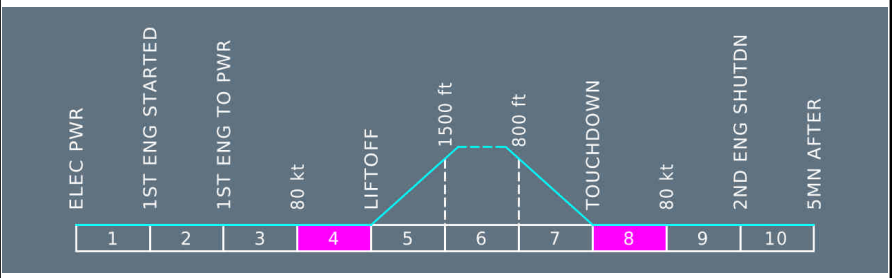
Ident.: PRO-ABN-ELEC-O-00017354.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC ESS busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00012511.0005001 / 05 MAR 13
81 Impacted by TDU: 00013704 ELEC DC ESS BUS FAULT

VHF 2 OR 3 ..... USE
AUDIO SWTG ..... SELECT

L2 *ACP 1 and 2 are lost. Therefore, set the AUDIO SWTG rotary selector to CAPT 3 or F/O 3 to recover communications.*

L1 BARO REF ..... CHECK

L2 *Crosscheck the barometer reference settings on the FCU and the PFD.*

L1 GPWS SYS ..... OFF

- **If DC BUS 2 is failed:**

  L/G ..... GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE
AVOID ICING CONDITIONS

ASSOCIATED PROCEDURES

NAV GPWS FAULT

GPWS ..... OFF

L2 *Note: To shut down the engines on ground, use the ENG FIRE pb-sw.*

L1

SECONDARY FAILURES

* CAB PRESS
* HYD
* F/CTL

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: TDU / PRO-ABN-ELEC-O-00013704.0004001 / 23 JUN 15
Impacted DU: 00012511 ELEC DC ESS BUS FAULT

VHF 2 OR 3.....USE

L2 *In the case of an ELEC DC ESS BUS FAULT, the audio cards of the AMU are lost. Since all cockpit mikes and headsets are connected to the AMU, all audio means of communication (VHF, HF and SATCOM)are lost.*
The use of VHF 2 or 3 do not allow to recover communications.

L1 AUDIO SWTG.....SELECT
BARO REF.....CHECK

L2 *Crosscheck the barometer reference settings on the FCU and the PFD.*

L1 GPWS.....OFF

- **If DC BUS 2 is failed:**

  L/G..... GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 AVOID ICING CONDITIONS

ASSOCIATED PROCEDURES

NAV GPWS FAULT
GPWS.....OFF

ASSOCIATED PROCEDURES

FUEL L TANK PUMP 1 LO PR

FUEL R TANK PUMP 1 LO PR

L2 *Note:* *To shut down the engines on ground, use the ENG FIRE pb-sw.*

L1

SECONDARY FAILURES

* CAB PRESS
* HYD
* F/CTL

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00018671.0010001 / 25 JUL 17

L12

STATUS

INOP SYS

- **If DC BUS 2 is failed:**
  L/G.....GRVTY EXTN

LDG DIST PROC..... APPLY

See below

FUEL CONSUMPT INCRSD
See (3)
FMS PRED UNRELIABLE
See (4)
ENG 1 APPR IDLE ONLY
ENG 2 APPR IDLE ONLY
BOTH PFD ON SAME FAC

- **If DC BUS 2 is failed:**
  L/G CONTROL NOT AVAIL

SLATS/FLAPS SLOW
CAT 3 SINGLE ONLY

INOP SYS

B HYD
ACP 1+2
A/THR
L TK PUMP 1
ENG 2 START
VENT EXTRACT
ENG 1 LOOP A
LGCIU 1

SPLR 3
WING A. ICE
FCU 1
R TK PUMP 1
CAB PR 1
B ELEC PUMP
ENG 2 LOOP B
LGCIU 2 (1)

VHF 1
AP 1
FAC 1
REV 2
STEEP APPR ◁✻
GPWS
FCDC 1
ROW/ROP ◁✻

Other INOP SYS

BRK PRESS indicator
Capt rain repellent ◁✻

Flight interphone
Avionics air cond valve

EIU 2 (2)
Standby compass light

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

HP fuel shutoff valves	SFCC 1	RMP 1
Hyd fire valves Eng 1 and 2	Ram air inlet	ECAM Control Panel
Left loudspeaker	DC SHED ESS BUS	

Note: *1. The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

(1) *(If DC BUS 2 is failed)*
(2) *Autothrust, eng start and reverser inop.*
(3) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(4) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

ELEC DC ESS BUS FAULT

Applicable to: MSN 02443-02457, 02609-02626, 02670, 02737-02914

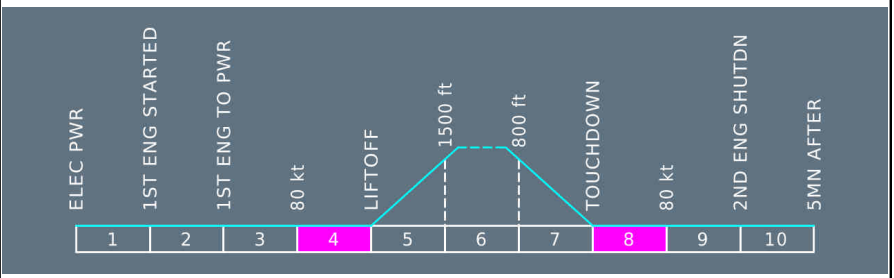
Ident.: PRO-ABN-ELEC-O-00017354.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC ESS busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00012511.0005001 / 05 MAR 13
82 Impacted by TDU: 00013704 ELEC DC ESS BUS FAULT

VHF 2 OR 3 ..... USE
AUDIO SWTG ..... SELECT

L2 *ACP 1 and 2 are lost. Therefore, set the AUDIO SWTG rotary selector to CAPT 3 or F/O 3 to recover communications.*

L1 BARO REF ..... CHECK

L2 *Crosscheck the barometer reference settings on the FCU and the PFD.*

L1 GPWS SYS ..... OFF

- **If DC BUS 2 is failed:**

  L/G ..... GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE
AVOID ICING CONDITIONS

ASSOCIATED PROCEDURES

NAV GPWS FAULT

GPWS ..... OFF

L2 *Note: To shut down the engines on ground, use the ENG FIRE pb-sw.*

L1

SECONDARY FAILURES

* CAB PRESS
* HYD
* F/CTL

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: TDU / PRO-ABN-ELEC-O-00013704.0004001 / 23 JUN 15
Impacted DU: 00012511 ELEC DC ESS BUS FAULT

VHF 2 OR 3.....USE

L2 *In the case of an ELEC DC ESS BUS FAULT, the audio cards of the AMU are lost. Since all cockpit mikes and headsets are connected to the AMU, all audio means of communication (VHF, HF and SATCOM)are lost.*
The use of VHF 2 or 3 do not allow to recover communications.

L1 AUDIO SWTG.....SELECT
BARO REF.....CHECK

L2 *Crosscheck the barometer reference settings on the FCU and the PFD.*

L1 GPWS.....OFF

- **If DC BUS 2 is failed:**

  L/G..... GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 AVOID ICING CONDITIONS

ASSOCIATED PROCEDURES

NAV GPWS FAULT
GPWS.....OFF

ASSOCIATED PROCEDURES

FUEL L TANK PUMP 1 LO PR

FUEL R TANK PUMP 1 LO PR

L2 *Note:* *To shut down the engines on ground, use the ENG FIRE pb-sw.*

L1

SECONDARY FAILURES

* CAB PRESS
* HYD
* F/CTL

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00018671.0023001 / 25 JUL 17

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L12

STATUS	INOP SYS
● **If DC BUS 2 is failed:** L/G.....GRVTY EXTN	*See below*
LDG DIST PROC..... APPLY	
FUEL CONSUMPT INCRSD	
See (3)	
FMS PRED UNRELIABLE	
See (4)	
ENG 1 APPR IDLE ONLY	
ENG 2 APPR IDLE ONLY	
BOTH PFD ON SAME FAC	
● **If DC BUS 2 is failed:** L/G CONTROL NOT AVAIL	
SLATS/FLAPS SLOW	
CAT 2 ONLY	

INOP SYS

B HYD	SPLR 3	VHF 1
ACP 1+2	WING A. ICE	AP 1
A/THR	FCU 1	FAC 1
L TK PUMP 1	R TK PUMP 1	REV 2
ENG 2 START	CAB PR 1	STEEP APPR ◁
VENT EXTRACT	B ELEC PUMP	GPWS
ENG 1 LOOP A	ENG 2 LOOP B	FCDC 1
CAT 3	LGCIU 1	LGCIU 2 (1)
ALTN BRK	ROW/ROP ◁	

Other INOP SYS

BRK PRESS indicator	Flight interphone	EIU 2 (2)

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Capt rain repellent	Avionics air cond valve	Standby compass light
HP fuel shutoff valves	SFCC 1	RMP 1
Hyd fire valves Eng 1 and 2	Ram air inlet	ECAM Control Panel
Left loudspeaker	DC SHED ESS BUS	

Note: *1. The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

(1) *(If DC BUS 2 is failed)*
(2) *Autothrust, eng start and reverser inop.*
(3) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(4) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

ELEC DC ESS BUS FAULT

Applicable to: MSN 02584, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

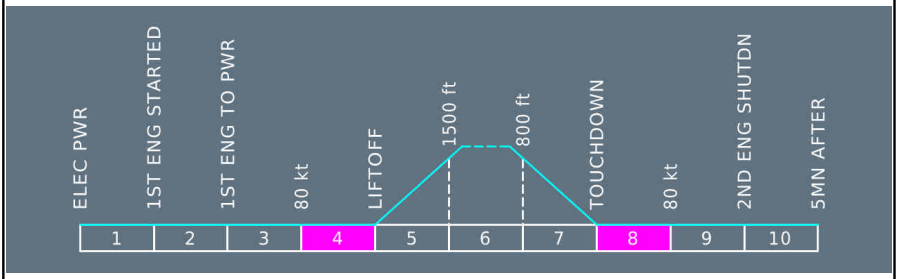
Ident.: PRO-ABN-ELEC-O-00017354.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC ESS busbar is not supplied.

Flight Phase Inhibition:



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ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00012511.0005001 / 05 MAR 13

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VHF 2 OR 3.....USE
AUDIO SWTG.....SELECT

L2 *ACP 1 and 2 are lost. Therefore, set the AUDIO SWTG rotary selector to CAPT 3 or F/O 3 to recover communications.*

L1 BARO REF.....CHECK

L2 *Crosscheck the barometer reference settings on the FCU and the PFD.*

L1 GPWS SYS.....OFF

- **If DC BUS 2 is failed:**

  L/G.....GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE
AVOID ICING CONDITIONS

ASSOCIATED PROCEDURES

NAV GPWS FAULT
GPWS.....OFF

L2 *Note: To shut down the engines on ground, use the ENG FIRE pb-sw.*

L1

SECONDARY FAILURES

* CAB PRESS
* HYD
* F/CTL

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00018671.0011001 / 25 JUL 17

85

L12

STATUS	INOP SYS
● **If DC BUS 2 is failed:** L/G.....GRVTY EXTN LDG DIST PROC..... APPLY FUEL CONSUMPT INCRSD *See* (3) FMS PRED UNRELIABLE *See* (4) ENG 1 APPR IDLE ONLY ENG 2 APPR IDLE ONLY BOTH PFD ON SAME FAC ● **If DC BUS 2 is failed:** L/G CONTROL NOT AVAIL SLATS/FLAPS SLOW CAT 3 SINGLE ONLY	*See below*

INOP SYS

B HYD	SPLR 3	VHF 1
ACP 1+2	WING A. ICE	AP 1
A/THR	FCU 1	FAC 1
L TK PUMP 1	R TK PUMP 1	REV 2
ENG 2 START	CAB PR 1	STEEP APPR ◁
VENT EXTRACT	B ELEC PUMP	GPWS
ENG 1 LOOP A	ENG 2 LOOP B	FCDC 1
LGCIU 1	LGCIU 2 (1)	ALTN BRK
ROW/ROP ◁		

Other INOP SYS

BRK PRESS indicator	Flight interphone	EIU 2 (2)

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Capt rain repellent	Avionics air cond valve	Standby compass light
HP fuel shutoff valves	SFCC 1	RMP 1
Hyd fire valves Eng 1 and 2	Ram air inlet	ECAM Control Panel
Left loudspeaker	DC SHED ESS BUS	

Note: *1. The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

(1) *(If DC BUS 2 is failed)*
(2) *Autothrust, eng start and reverser inop.*
(3) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(4) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

ELEC DC ESS BUS FAULT

Applicable to: MSN 02649, 03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

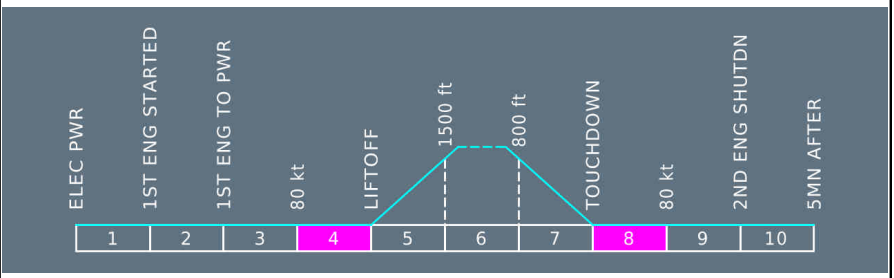
Ident.: PRO-ABN-ELEC-O-00017354.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC ESS busbar is not supplied.

Flight Phase Inhibition:



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ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00012511.0005001 / 05 MAR 13

86

VHF 2 OR 3.....USE
AUDIO SWTG.....SELECT

L2 *ACP 1 and 2 are lost. Therefore, set the AUDIO SWTG rotary selector to CAPT 3 or F/O 3 to recover communications.*

L1 BARO REF.....CHECK

L2 *Crosscheck the barometer reference settings on the FCU and the PFD.*

L1 GPWS SYS.....OFF

- **If DC BUS 2 is failed:**

  L/G.....GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE
AVOID ICING CONDITIONS

ASSOCIATED PROCEDURES

NAV GPWS FAULT

GPWS.....OFF

L2 *Note: To shut down the engines on ground, use the ENG FIRE pb-sw.*

L1

SECONDARY FAILURES

* CAB PRESS
* HYD
* F/CTL

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00018671.0023001 / 25 JUL 17

87

L12

STATUS	INOP SYS
● **If DC BUS 2 is failed:** L/G.....GRVTY EXTN	*See below*
LDG DIST PROC..... APPLY	
FUEL CONSUMPT INCRSD	
See (3)	
FMS PRED UNRELIABLE	
See (4)	
ENG 1 APPR IDLE ONLY	
ENG 2 APPR IDLE ONLY	
BOTH PFD ON SAME FAC	
● **If DC BUS 2 is failed:** L/G CONTROL NOT AVAIL	
SLATS/FLAPS SLOW	
CAT 2 ONLY	

INOP SYS

B HYD	SPLR 3	VHF 1
ACP 1+2	WING A. ICE	AP 1
A/THR	FCU 1	FAC 1
L TK PUMP 1	R TK PUMP 1	REV 2
ENG 2 START	CAB PR 1	STEEP APPR ◁
VENT EXTRACT	B ELEC PUMP	GPWS
ENG 1 LOOP A	ENG 2 LOOP B	FCDC 1
CAT 3	LGCIU 1	LGCIU 2 (1)
ALTN BRK	ROW/ROP ◁	

Other INOP SYS

BRK PRESS indicator	Flight interphone	EIU 2 (2)

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Capt rain repellent	Avionics air cond valve	Standby compass light
HP fuel shutoff valves	SFCC 1	RMP 1
Hyd fire valves Eng 1 and 2	Ram air inlet	ECAM Control Panel
Left loudspeaker	DC SHED ESS BUS	

Note: *1. The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

(1) *(If DC BUS 2 is failed)*
(2) *Autothrust, eng start and reverser inop.*
(3) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(4) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

ELEC DC ESS BUS FAULT

Applicable to: MSN 02712

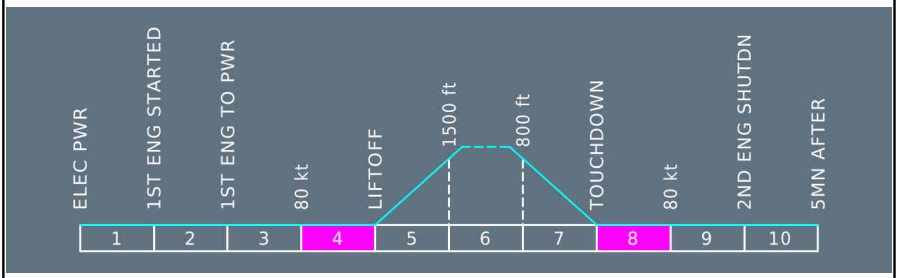
Ident.: PRO-ABN-ELEC-O-00017354.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC ESS busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00012511.0005001 / 05 MAR 13
88 Impacted by TDU: 00013704 ELEC DC ESS BUS FAULT

VHF 2 OR 3 ..... USE
AUDIO SWTG ..... SELECT

L2 *ACP 1 and 2 are lost. Therefore, set the AUDIO SWTG rotary selector to CAPT 3 or F/O 3 to recover communications.*

L1 BARO REF ..... CHECK

L2 *Crosscheck the barometer reference settings on the FCU and the PFD.*

L1 GPWS SYS ..... OFF

- **If DC BUS 2 is failed:**

  LG ..... GRVTY EXTN

L2 *Refer to PRO-ABN-LG [ORH] L/G GRAVITY EXTENSION.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE
AVOID ICING CONDITIONS

ASSOCIATED PROCEDURES

NAV GPWS FAULT
GPWS ..... OFF

L2 *Note: To shut down the engines on ground, use the ENG FIRE pb-sw.*

L1

SECONDARY FAILURES

* CAB PRESS
* HYD
* F/CTL

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: TDU / PRO-ABN-ELEC-O-00013704.0004001 / 23 JUN 15
Impacted DU: 00012511 ELEC DC ESS BUS FAULT

VHF 2 OR 3.....USE

L2 *In the case of an ELEC DC ESS BUS FAULT, the audio cards of the AMU are lost. Since all cockpit mikes and headsets are connected to the AMU, all audio means of communication (VHF, HF ◁ and SATCOM ◁)are lost.*
The use of VHF 2 or 3 do not allow to recover communications.

L1 AUDIO SWTG.....SELECT
BARO REF.....CHECK

L2 *Crosscheck the barometer reference settings on the FCU and the PFD.*

L1 GPWS.....OFF

- **If DC BUS 2 is failed:**
  L/G.....GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 AVOID ICING CONDITIONS

ASSOCIATED PROCEDURES

NAV GPWS FAULT
GPWS.....OFF

ASSOCIATED PROCEDURES

FUEL L TANK PUMP 1 LO PR

FUEL R TANK PUMP 1 LO PR

L2 *Note:* *To shut down the engines on ground, use the ENG FIRE pb-sw.*

L1

SECONDARY FAILURES

* CAB PRESS
* HYD
* F/CTL

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00018671.0011001 / 25 JUL 17

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L12

STATUS	INOP SYS
● **If DC BUS 2 is failed:** L/G.....GRVTY EXTN	*See below*
LDG DIST PROC..... APPLY	
FUEL CONSUMPT INCRSD	
See (3)	
FMS PRED UNRELIABLE	
See (4)	
ENG 1 APPR IDLE ONLY	
ENG 2 APPR IDLE ONLY	
BOTH PFD ON SAME FAC	
● **If DC BUS 2 is failed:** L/G CONTROL NOT AVAIL	
SLATS/FLAPS SLOW	
CAT 3 SINGLE ONLY	

INOP SYS

B HYD	SPLR 3	VHF 1
ACP 1+2	WING A. ICE	AP 1
A/THR	FCU 1	FAC 1
L TK PUMP 1	R TK PUMP 1	REV 2
ENG 2 START	CAB PR 1	STEEP APPR ◁
VENT EXTRACT	B ELEC PUMP	GPWS
ENG 1 LOOP A	ENG 2 LOOP B	FCDC 1
LGCIU 1	LGCIU 2 (1)	ALTN BRK
ROW/ROP ◁		

Other INOP SYS

BRK PRESS indicator	Flight interphone	EIU 2 (2)

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Capt rain repellent	Avionics air cond valve	Standby compass light
HP fuel shutoff valves	SFCC 1	RMP 1
Hyd fire valves Eng 1 and 2	Ram air inlet	ECAM Control Panel
Left loudspeaker	DC SHED ESS BUS	

Note: *1. The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

(1) *(If DC BUS 2 is failed)*
(2) *Autothrust, eng start and reverser inop.*
(3) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(4) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

ELEC DC ESS BUS FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

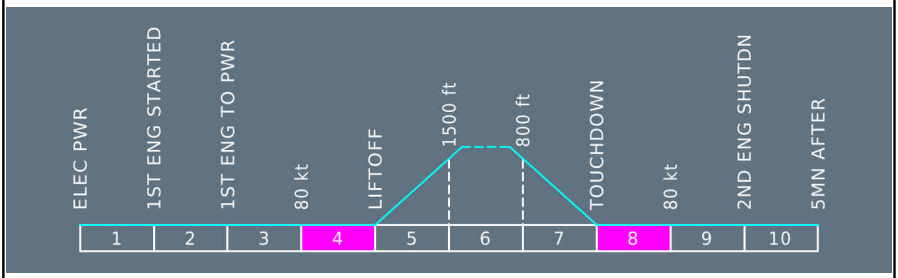
Ident.: PRO-ABN-ELEC-O-00017354.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC ESS busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00012511.0010001 / 09 APR 18

90

VHF 2 OR 3.....USE
AUDIO SWTG.....SELECT

L2 *ACP 1 and 2 are lost. Therefore, set the AUDIO SWTG rotary selector to CAPT 3 or F/O 3 to recover communications.*

L1 BARO REF.....CHECK

L2 *Crosscheck the barometer reference settings on the FCU and the PFD.*

L1 ● **If DC BUS 2 is failed:**

L/G..... GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 GPWS.....OFF
GALY & CAB.....OFF
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE
AVOID ICING CONDITIONS

ASSOCIATED PROCEDURES

NAV GPWS FAULT
GPWS.....OFF

L2 *Note:* *To shut down the engines on ground, use the ENG FIRE pb-sw.*

L1

SECONDARY FAILURES

* CAB PRESS
* HYD
* F/CTL

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-O-00018671.0011001 / 25 JUL 17

91

L12

STATUS

INOP SYS

- **If DC BUS 2 is failed:**
  L/G.....GRVTY EXTN

See below

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (3)
FMS PRED UNRELIABLE
See (4)
ENG 1 APPR IDLE ONLY
ENG 2 APPR IDLE ONLY
BOTH PFD ON SAME FAC

- **If DC BUS 2 is failed:**
  L/G CONTROL NOT AVAIL

SLATS/FLAPS SLOW
CAT 3 SINGLE ONLY

INOP SYS

B HYD	SPLR 3	VHF 1
ACP 1+2	WING A. ICE	AP 1
A/THR	FCU 1	FAC 1
L TK PUMP 1	R TK PUMP 1	REV 2
ENG 2 START	CAB PR 1	STEEP APPR ◁
VENT EXTRACT	B ELEC PUMP	GPWS
ENG 1 LOOP A	ENG 2 LOOP B	FCDC 1
LGCIU 1	LGCIU 2 (1)	ALTN BRK
ROW/ROP ◁		

Other INOP SYS

BRK PRESS indicator	Flight interphone	EIU 2 (2)

Continued on the following page

ELEC DC ESS BUS FAULT (Cont'd)

Capt rain repellent	Avionics air cond valve	Standby compass light
HP fuel shutoff valves	SFCC 1	RMP 1
Hyd fire valves Eng 1 and 2	Ram air inlet	ECAM Control Panel
Left loudspeaker	DC SHED ESS BUS	

Note: *1. The warning may be caused by a sub BUS failure. Consequently, only a part of the above-listed systems may be lost.*

(1) *(If DC BUS 2 is failed)*
(2) *Autothrust, eng start and reverser inop.*
(3) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(4) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

ELEC DC ESS BUS SHED

Applicable to: ALL

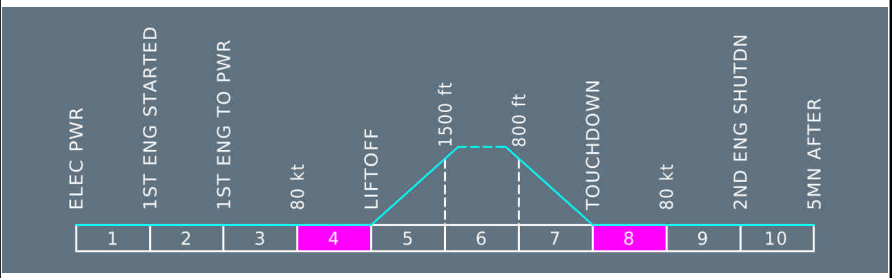
Ident.: PRO-ABN-ELEC-P-00017355.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC SHED ESS busbar is not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC DC ESS BUS SHED (Cont'd)

Ident.: PRO-ABN-ELEC-P-00012513.0001001 / 30 MAR 12

EXTRACT.....OVRD

L2 *Cooling air is supplied by the air conditioning system, without overboard extraction.*

L1 AVOID ICING CONDITIONS

SECONDARY FAILURES

*AVNCS VENT

Continued on the following page

ELEC DC ESS BUS SHED (Cont'd)

Ident.: PRO-ABN-ELEC-P-00018561.0005001 / 17 MAR 17

L12

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION**
  MIN SPD.....VLS + 10/G DOT
  MANEUVER WITH CARE
  LDG DIST PROC.....APPLY

BOTH PFD ON SAME FAC
CAT 3 SINGLE ONLY

INOP SYS

WING A. ICE
AP 1
CAT 3 DUAL
FAC 1
VENT EXTRACT
AFT CRG HEAT
FWD CRG HEAT
AFT CRG VENT
FWD CRG VENT
FCDC 1
ROW/ROP

See below

Other INOP SYS

Passenger oxygen mask (auto drop out)
X BLEED valve man ctl
FMGC 1
STBY ALTI vib
FQ1 channel 1
BMC 1
SDCU 1 or CIDS 1 SMOKE DETECT

Note: *The warning may be caused by a failure in a sub BUS. Consequently only a part of the systems listed above may be lost.*

Continued on the following page

ELEC DC ESS BUS SHED (Cont'd)

ELEC EMER CONFIG

Applicable to: MSN 01767-06036

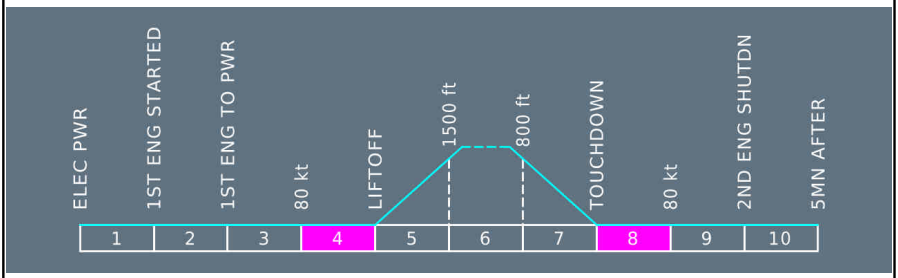
Ident.: PRO-ABN-ELEC-R-00018283.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC 1 and AC 2 busbars are not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC EMER CONFIG (Cont'd)

Ident.: PRO-ABN-ELEC-R-00018642.0006001 / 22 MAR 17

LAND ASAP

MIN RAT SPEED.....140 KT

CAUTION	*The RAT is capable of supplying the EMER GEN down to 125 kt, except during flare.*

GEN 1 + 2.....OFF THEN ON

- **IF UNSUCCESSFUL:**

BUS TIE.....OFF

L2 *Setting BUS TIE pb-sw to OFF segregates both generator channels.*

L1 GEN 1 + 2.....OFF THEN ON

L2 *Note: If any generator reset is successful, reset both FAC's.*

L1 EMER ELEC PWR (IF EMER GEN NOT IN LINE).....MAN ON
ENG MODE SEL.....IGN

L2 *Engines are fed by gravity only.*

L1 VHF1/HF1 ◁ /ATC1.....USE

L2 *Only VHF 1, HF 1 and ATC 1 are supplied in the electrical emergency configuration.*

Note: FMGC 1, which is lost temporarily, can be regained by flight crew passing through the MCDU MENU page.

L1 FUEL GRVTY FEED

L2 *Engines are fed by gravity only. Avoid negative Gs.*

L1 PROC: GRVTY FUEL FEEDING

L2 *Apply GRVTY FUEL FEEDING procedure (Refer to PRO-ABN-FUEL [QRH] GRAVITY FUEL FEEDING).*

L1 FAC 1.....OFF THEN ON

L2 *The rudder trim is recovered, although no indication is available.*

L1 BUS TIE.....AUTO

L2 *Setting BUS TIE pb-sw to AUTO enables the APU to take an available electrical channel.*

L1 APU (IF AVAIL).....START

L2 *APU start is not available for 45 s after the loss of both engine generators. This 45 s delay prevents any interference with emergency generator coupling.*

Continued on the following page

ELEC EMER CONFIG (Cont'd)

If the APU is available, the APU may be started when below FL 250.

L1 BLOWER + EXTRACT.....OVRD

L2 *Cooling air is supplied by the air conditioning system and exhausted overboard through the extract valve.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

L2 *Note: On IAE powered aircraft, the warning "EPR MODE FAULT N1 DEGRADED MODE" is displayed.*

L1

ASSOCIATED PROCEDURES

FLT CTL ALTN LAW
(PROT LOST)
MAX SPEED.....320 KT

L2 *Speed limited due to loss of flight control normal laws.*

Continued on the following page

ELEC EMER CONFIG (Cont'd)

Ident.: PRO-ABN-ELEC-R-00018643.0023001 / 22 MAR 17

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L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED..... 320 KT
MAX BRK PR..... 1 000 PSI
FUEL GRVTY FEED
AVOID NEGATIVE G FACTOR

Note: If there are discrepancies between airspeed indications on the Captain's PFD and on the STBY indicator, disregard the STBY indication (probe not deiced).

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

APPR SPD..... VREF +10/140 KT

The approach speed must be at least minimum RAT speed (140 kt).

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
SLATS/FLAPS SLOW
FLS ❄ LIMITED TO F-APP + RAW
See (4)

INOP SYS

F/CTL PROT
REVERSER 1+2
ADR 2+3
IR 2
RA 1+2
SPLR 1+2+5
ELAC 2
SEC 2+3
A/CALL OUT
AP 1+2
A/THR
FUEL PUMPS
ANTI SKID
N/W STRG
CAT 2
STEEP APPR ❄
See (1)

(1) *For other systems' status: Refer to the "ELEC EMER CONFIG SYS REMAINING" table.*

Continued on the following page

ELEC EMER CONFIG (Cont'd)

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/PER-B Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

(4) *Note: In ELEC EMER configuration, the center tank fuel is unusable.*

ELEC EMER CONFIG

Applicable to: MSN 06208-06336

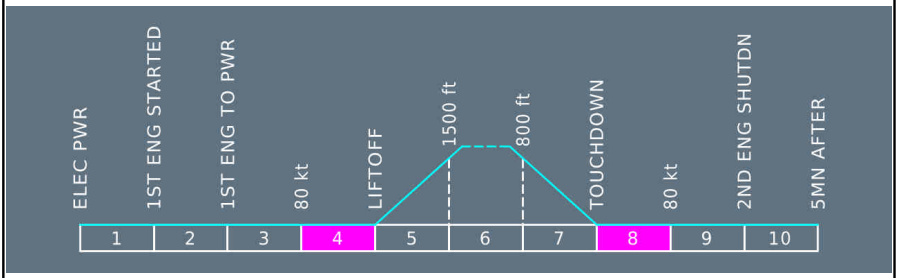
Ident.: PRO-ABN-ELEC-R-00018283.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC 1 and AC 2 busbars are not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC EMER CONFIG (Cont'd)

Ident.: PRO-ABN-ELEC-R-00018642.0006001 / 22 MAR 17

LAND ASAP

MIN RAT SPEED.....140 KT

CAUTION	*The RAT is capable of supplying the EMER GEN down to 125 kt, except during flare.*

GEN 1 + 2.....OFF THEN ON

- **IF UNSUCCESSFUL:**

BUS TIE.....OFF

L2 *Setting BUS TIE pb-sw to OFF segregates both generator channels.*

L1 GEN 1 + 2.....OFF THEN ON

L2 *Note: If any generator reset is successful, reset both FAC's.*

L1 EMER ELEC PWR (IF EMER GEN NOT IN LINE).....MAN ON
ENG MODE SEL.....IGN

L2 *Engines are fed by gravity only.*

L1 VHF1/HF1 ◁ /ATC1.....USE

L2 *Only VHF 1, HF 1 and ATC 1 are supplied in the electrical emergency configuration.*

Note: FMGC 1, which is lost temporarily, can be regained by flight crew passing through the MCDU MENU page.

L1 FUEL GRVTY FEED

L2 *Engines are fed by gravity only. Avoid negative Gs.*

L1 PROC: GRVTY FUEL FEEDING

L2 *Apply GRVTY FUEL FEEDING procedure (Refer to PRO-ABN-FUEL [QRH] GRAVITY FUEL FEEDING).*

L1 FAC 1.....OFF THEN ON

L2 *The rudder trim is recovered, although no indication is available.*

L1 BUS TIE.....AUTO

L2 *Setting BUS TIE pb-sw to AUTO enables the APU to take an available electrical channel.*

L1 APU (IF AVAIL).....START

L2 *APU start is not available for 45 s after the loss of both engine generators. This 45 s delay prevents any interference with emergency generator coupling.*

Continued on the following page

ELEC EMER CONFIG (Cont'd)

If the APU is available, the APU may be started when below FL 250.

L1 BLOWER + EXTRACT.....OVRD

L2 *Cooling air is supplied by the air conditioning system and exhausted overboard through the extract valve.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

L2 *Note: On IAE powered aircraft, the warning "EPR MODE FAULT N1 DEGRADED MODE" is displayed.*

L1

ASSOCIATED PROCEDURES

FLT CTL ALTN LAW
(PROT LOST)
MAX SPEED.....320 KT

L2 *Speed limited due to loss of flight control normal laws.*

Continued on the following page

ELEC EMER CONFIG (Cont'd)

Ident.: PRO-ABN-ELEC-R-00018643.0025001 / 21 MAR 16

L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED..... 320 KT
MAX BRK PR..... 1 000 PSI
FUEL GRVTY FEED
AVOID NEGATIVE G FACTOR

Note: If there are discrepancies between airspeed indications on the Captain's PFD and on the STBY indicator, disregard the STBY indication (probe not deiced).

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

APPR SPD..... VREF +10/140 KT

The approach speed must be at least minimum RAT speed (140 kt).

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
SLATS/FLAPS SLOW
FLS ◁ LIMITED TO F-APP + RAW
See (4)

INOP SYS

F/CTL PROT
REVERSER 1+2
ADR 2+3
IR 2
RA 1+2
SPLR 1+2+5
ELAC 2
SEC 2+3
A/CALL OUT
AP 1+2
A/THR
FUEL PUMPS
ANTI SKID
N/W STRG
CAT 2
See (1)

(1) *For other systems' status: Refer to the "ELEC EMER CONFIG SYS REMAINING" table.*

Continued on the following page

ELEC EMER CONFIG (Cont'd)

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/PER-B Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

(4) *Note: In ELEC EMER configuration, the center tank fuel can be transferred to the wing tanks through the jet pumps by gravity, except the last two tons.*

ELEC EMER CONFIG

Applicable to: MSN 06720-09063

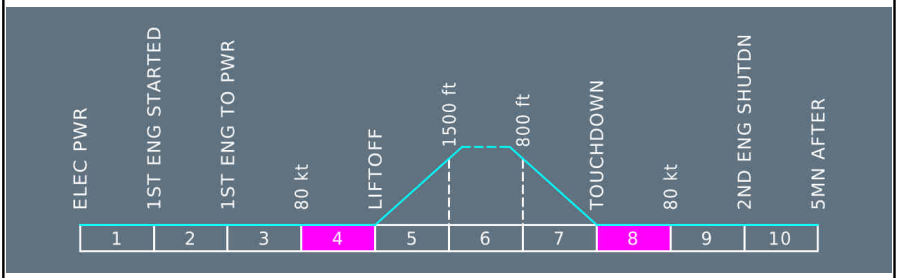
Ident.: PRO-ABN-ELEC-R-00018283.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AC 1 and AC 2 busbars are not supplied.

Flight Phase Inhibition:



Continued on the following page

ELEC EMER CONFIG (Cont'd)

Ident.: PRO-ABN-ELEC-R-00018642.0006001 / 22 MAR 17

LAND ASAP

MIN RAT SPEED.....140 KT

CAUTION	*The RAT is capable of supplying the EMER GEN down to 125 kt, except during flare.*

GEN 1 + 2.....OFF THEN ON

- **IF UNSUCCESSFUL:**

BUS TIE.....OFF

L2 *Setting BUS TIE pb-sw to OFF segregates both generator channels.*

L1 GEN 1 + 2.....OFF THEN ON

L2 *Note: If any generator reset is successful, reset both FAC's.*

L1 EMER ELEC PWR (IF EMER GEN NOT IN LINE).....MAN ON
ENG MODE SEL.....IGN

L2 *Engines are fed by gravity only.*

L1 VHF1/HF1 ◁ /ATC1.....USE

L2 *Only VHF 1, HF 1 and ATC 1 are supplied in the electrical emergency configuration.*

Note: FMGC 1, which is lost temporarily, can be regained by flight crew passing through the MCDU MENU page.

L1 FUEL GRVTY FEED

L2 *Engines are fed by gravity only. Avoid negative Gs.*

L1 PROC: GRVTY FUEL FEEDING

L2 *Apply GRVTY FUEL FEEDING procedure (Refer to PRO-ABN-FUEL [QRH] GRAVITY FUEL FEEDING).*

L1 FAC 1.....OFF THEN ON

L2 *The rudder trim is recovered, although no indication is available.*

L1 BUS TIE.....AUTO

L2 *Setting BUS TIE pb-sw to AUTO enables the APU to take an available electrical channel.*

L1 APU (IF AVAIL).....START

L2 *APU start is not available for 45 s after the loss of both engine generators. This 45 s delay prevents any interference with emergency generator coupling.*

Continued on the following page

ELEC EMER CONFIG (Cont'd)

If the APU is available, the APU may be started when below FL 250.

L1 BLOWER + EXTRACT.....OVRD

L2 *Cooling air is supplied by the air conditioning system and exhausted overboard through the extract valve.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

L2 *Note: On IAE powered aircraft, the warning "EPR MODE FAULT N1 DEGRADED MODE" is displayed.*

L1

ASSOCIATED PROCEDURES

FLT CTL ALTN LAW
(PROT LOST)
MAX SPEED.....320 KT

L2 *Speed limited due to loss of flight control normal laws.*

Continued on the following page

ELEC EMER CONFIG (Cont'd)

Ident.: PRO-ABN-ELEC-R-00018643.0027001 / 06 SEP 16

93

L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED..... 320 KT
MAX BRK PR..... 1 000 PSI
FUEL GRVTY FEED
AVOID NEGATIVE G FACTOR

Note: If there are discrepancies between airspeed indications on the Captain's PFD and on the STBY indicator, disregard the STBY indication (probe not deiced).

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

APPR SPD..... VREF +15/140 KT

The approach speed must be at least minimum RAT speed (140 kt).

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
SLATS/FLAPS SLOW
FLS ❄ LIMITED TO F-APP + RAW
See (4)

INOP SYS

F/CTL PROT
REVERSER 1+2
ADR 2+3
IR 2
RA 1+2
SPLR 1+2+5
ELAC 2
SEC 2+3
A/CALL OUT
AP 1+2
A/THR
FUEL PUMPS
ANTI SKID
N/W STRG
CAT 2
See (1)

(1) *For other systems' status: Refer to the "ELEC EMER CONFIG SYS REMAINING" table.*

Continued on the following page

ELEC EMER CONFIG (Cont'd)

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/PER-B Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

(4) *Note: In ELEC EMER configuration, the center tank fuel can be transferred to the wing tanks through the jet pumps by gravity, except the last two tons.*

ELEC EMER GEN 1 LINE OFF

Applicable to: ALL

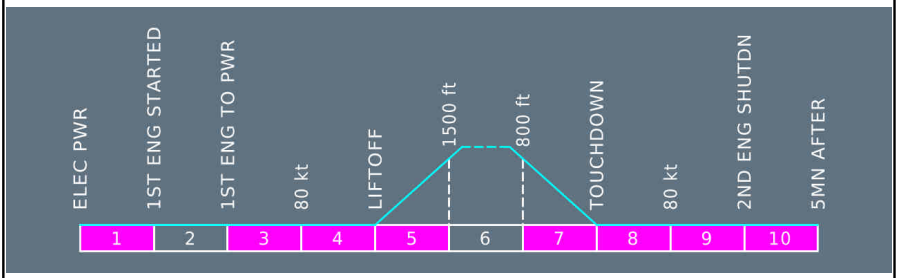
Ident.: PRO-ABN-ELEC-AB-00017382.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the GEN 1 LINE pb-sw is abnormally set to OFF position.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-AB-00012550.0001001 / 25 FEB 14

L2 With the GEN 1 LINE pb-sw (on the EMER ELEC PWR panel) in the OFF position, the GEN 1 line contactor is open and GEN 2 supplies the AC BUS 1 channel.

L1 Crew awareness.

L2 Set the GEN 1 LINE pb-sw to ON.

ELEC ESS BUSES ON BAT

Applicable to: ALL

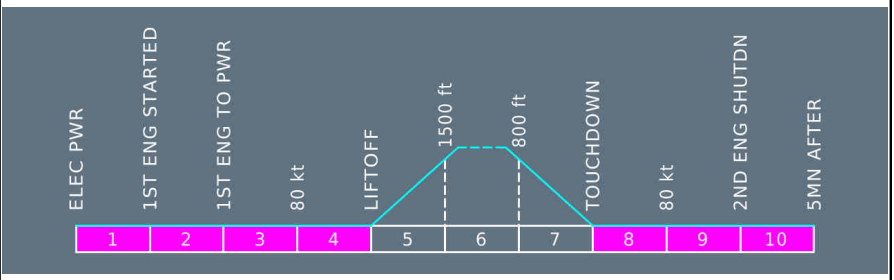
Ident.: PRO-ABN-ELEC-AA-00018284.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DC ESS and AC ESS busbars are supplied by the batteries.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-AA-00018021.0002001 / 21 MAR 16

L2 AC ESS BUS is supplied via the static inverter.

L1 **LAND ASAP**

MIN RAT SPEED.....140 KT

L2 *Displayed, if the RAT is extended.*

L1 EMER ELEC PWR.....MAN ON

L2 *ESS BUSES are supplied by the emergency generator*

ELEC GEN 1(2) OR APU GEN OVERLOAD

Applicable to: ALL

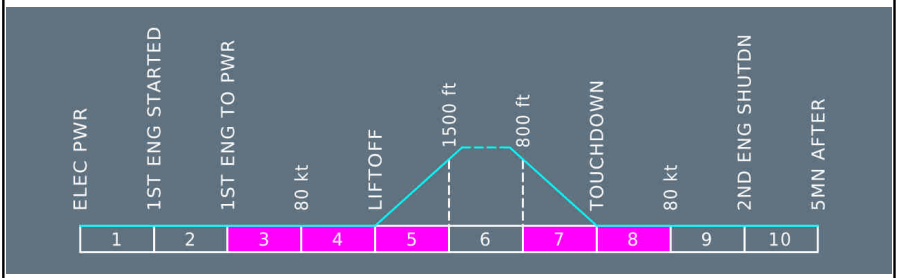
Ident.: PRO-ABN-ELEC-T-00017363.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the load of one generator is above 100% of rated output.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-T-00018023.0002001 / 21 MAR 16

GALY/CAB.....OFF

Ident.: PRO-ABN-ELEC-T-00018024.0002001 / 21 MAR 16

STATUS

	INOP SYS
	GALY/CAB

ELEC GEN 1(2) FAULT

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ELEC-B-00017360.0001001 / 21 MAR 16

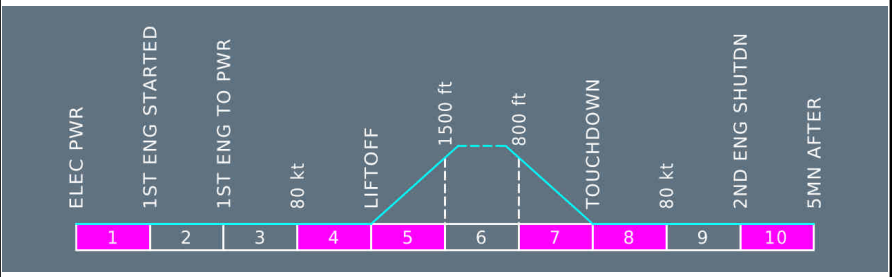
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:.

- The protection trip is initiated by the associated GCU, or
- The line contactor is open with the associated GEN pb-sw set to ON.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-B-00018025.0001001 / 21 MAR 16

GEN (AFFECTED).....OFF THEN ON

- **IF UNSUCCESSFUL:**
  GEN (AFFECTED).....OFF

Continued on the following page

ELEC GEN 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-B-00018026.0001001 / 21 MAR 16

94

L12

STATUS

Note: *If available, the APU may be started, and the APU GEN used.*

CAT 3 SINGLE ONLY

INOP SYS

MAIN GALLEY (1)
GEN 1(2)
CAT 3 DUAL

(1) *(only if APU GEN is not online)*

ELEC GEN 1(2) FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ELEC-B-00017360.0001001 / 21 MAR 16

ANNUNCIATIONS

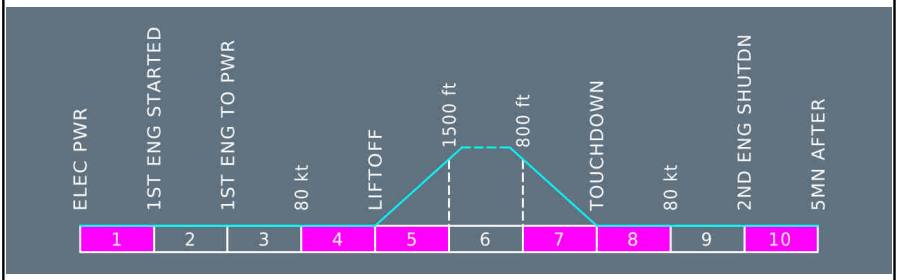
Triggering Conditions:

L2

This alert triggers when:.

- The protection trip is initiated by the associated GCU, or
- The line contactor is open with the associated GEN pb-sw set to ON.

Flight Phase Inhibition:



Continued on the following page

ELEC GEN 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-ELEC-B-00018025.0001001 / 21 MAR 16

GEN (AFFECTED).....OFF THEN ON

- **IF UNSUCCESSFUL:**
  GEN (AFFECTED).....OFF

Ident.: PRO-ABN-ELEC-B-00018026.0002001 / 21 MAR 16

95

L12

	STATUS
	INOP SYS
Note: *If available, the APU may be started, and the APU GEN used.*	MAIN GALLEY (1) GEN 1(2) CAT 3 DUAL
CAT 3 SINGLE ONLY	

(1) *(only if APU GEN is not online: In this case, all the galleys are shed)*

ELEC GEN 1(2) OFF

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ELEC-C-00017361.0002001 / 22 APR 16

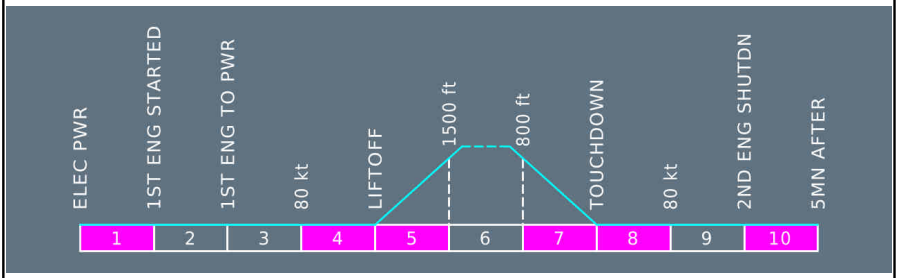
96

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the GEN 1(2) pb-sw is set to OFF and no failure is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-C-00018027.0001001 / 21 MAR 16

L2 Turn the affected GEN ON.

L1 Crew awareness.

Ident.: PRO-ABN-ELEC-C-00018028.0001001 / 21 MAR 16

97

STATUS

	INOP SYS
CAT 3 SINGLE ONLY	MAIN GALLEY (1) GEN 1(2) CAT 3 DUAL

(1) *(only if APU GEN is not online)*

ELEC GEN 1(2) OFF

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

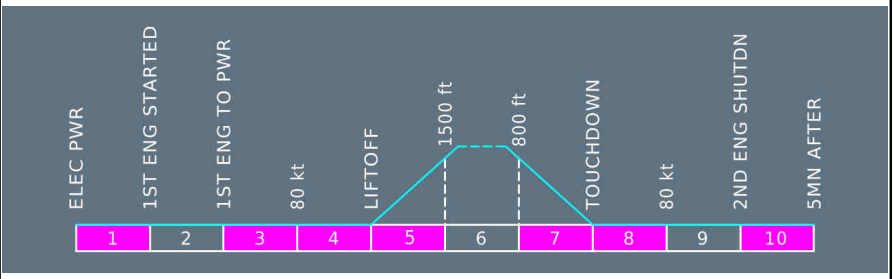
Ident.: PRO-ABN-ELEC-C-00017361.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the GEN 1(2) pb-sw is set to OFF and no failure is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-C-00018027.0001001 / 21 MAR 16

L2 Turn the affected GEN ON.

L1 Crew awareness.

Ident.: PRO-ABN-ELEC-C-00018028.0001001 / 21 MAR 16

98

STATUS

	INOP SYS
CAT 3 SINGLE ONLY	MAIN GALLEY (1) GEN 1(2) CAT 3 DUAL

(1) *(only if APU GEN is not online)*

ELEC GEN 1(2) OFF

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ELEC-C-00017361.0002001 / 22 APR 16

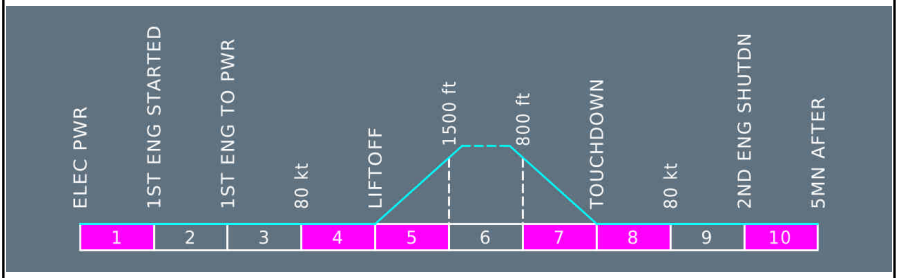
99

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the GEN 1(2) pb-sw is set to OFF and no failure is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-C-00018027.0001001 / 21 MAR 16

L2 Turn the affected GEN ON.

L1 Crew awareness.

Ident.: PRO-ABN-ELEC-C-00018028.0003001 / 21 MAR 16

100

STATUS

CAT 3 SINGLE ONLY

INOP SYS

MAIN GALLEY (1)
GEN 1(2)
CAT 3 DUAL

(1) *(only if APU GEN is not online: In this case, all the galleys are shed)*

ELEC IDG 1(2) DISCONNECTED

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

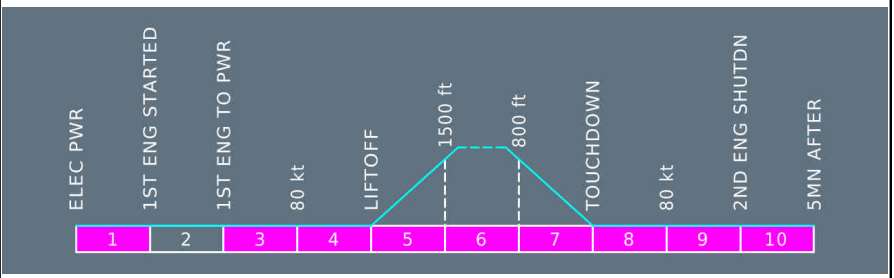
Ident.: PRO-ABN-ELEC-D-00017366.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the IDG 1(2) is disconnected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-D-00018029.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-ELEC-D-00018030.0001001 / 21 MAR 16

101 L12

STATUS

Note: *If available, the APU may be started, and the APU GEN used.*

CAT 3 SINGLE ONLY

INOP SYS

MAIN GALLEY (1)
GEN 1(2)
CAT 3 DUAL

(1) *(only if APU GEN is not online)*

ELEC IDG 1(2) DISCONNECTED

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

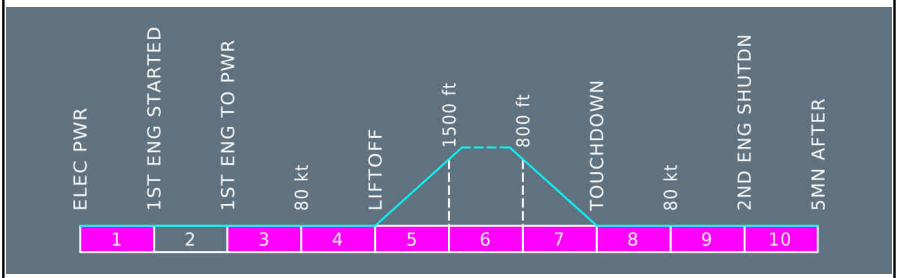
Ident.: PRO-ABN-ELEC-D-00017366.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the IDG 1(2) is disconnected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-D-00018029.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-ELEC-D-00018030.0003001 / 21 MAR 16

102

L12

STATUS

Note: *If available, the APU may be started, and the APU GEN used.*

CAT 3 SINGLE ONLY

INOP SYS

MAIN GALLEY (1)
GEN 1(2)
CAT 3 DUAL

(1) *(only if APU GEN is not online: in this case, all the galleys are shed)*

ELEC IDG 1(2) FILTER CLOG

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ELEC-AD-00018937.0001001 / 21 MAR 16

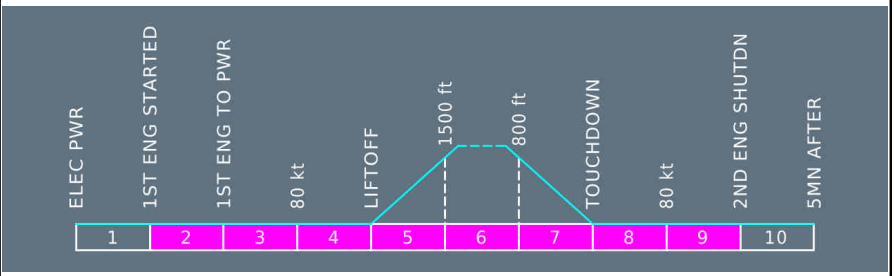
103

ANNUNCIATIONS

Triggering Conditions:

L2 The alert triggers when the IDG 1(2) oil filter is clogged.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-AD-00015561.0001001 / 05 NOV 15

104

Crew awareness.

ELEC IDG 1(2) OIL LO LVL

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ELEC-AE-00018939.0001001 / 21 MAR 16

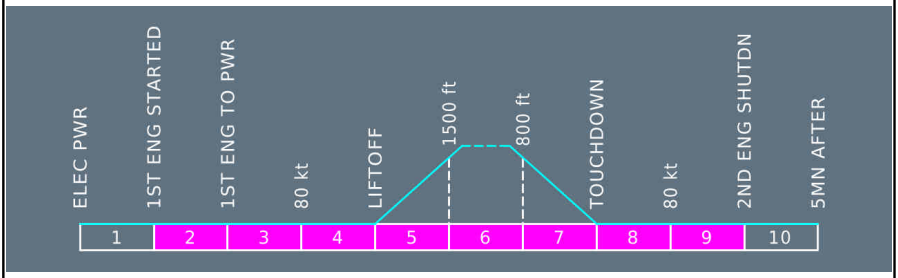
105

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the IDG 1(2) oil level is low.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-AE-00015560.0001001 / 05 NOV 15

106

Crew awareness.

ELEC IDG 1(2) OIL LO PR/OVHT

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

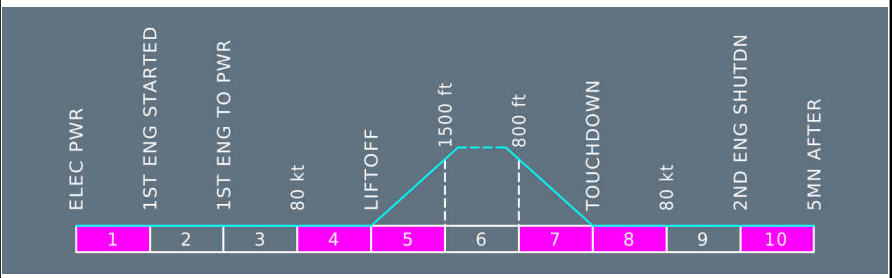
Ident.: PRO-ABN-ELEC-A-00018285.0001001 / 25 SEP 17

ANNUNCIATIONS

Triggering Conditions:

L2 The alert ELEC IDG 1(2) OIL LO PR triggers when the IDG 1(2) oil pressure is low.
The alert ELEC IDG 1(2) OIL OVHT triggers when the IDG 1(2) outlet oil temperature rises above 180 °C.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-A-00018031.0001001 / 21 MAR 16

IDG (AFFECTED).....OFF

L2 *If the associated engine is running, the IDG (integrated drive generator) must be disconnected from the engine at, or above, idle to prevent damage to the disconnect mechanism.*
Press the IDG pb-sw until the GEN FAULT light comes on. However, do not press for more than 3 s, to avoid damage to the disengage solenoid
The IDG FAULT light goes off, when the IDG is disconnected.

Continued on the following page

ELEC IDG 1(2) OIL LO PR/OVHT (Cont'd)

Ident.: PRO-ABN-ELEC-A-00018032.0001001 / 21 MAR 16

107

L12

STATUS

Note: *If available, the APU may be started and the APU GEN used.*

CAT 3 SINGLE ONLY

INOP SYS

MAIN GALLEY (1)
GEN 1(2)
CAT 3 DUAL

(1) *(only if APU GEN is not online)*

ELEC IDG 1(2) OIL LO PR/OVHT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ELEC-A-00018285.0001001 / 25 SEP 17

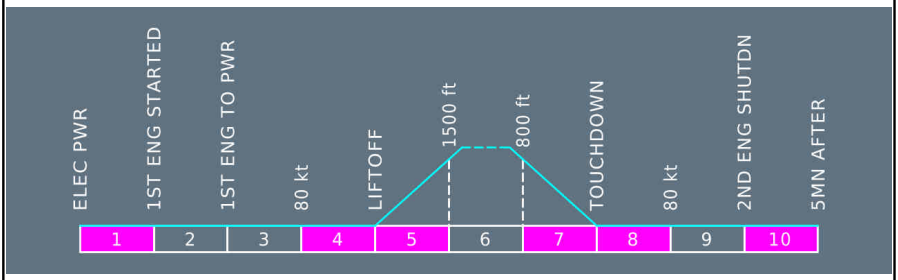
ANNUNCIATIONS

Triggering Conditions:

L2

The alert ELEC IDG 1(2) OIL LO PR triggers when the IDG 1(2) oil pressure is low.
The alert ELEC IDG 1(2) OIL OVHT triggers when the IDG 1(2) outlet oil temperature rises above 180 °C.

Flight Phase Inhibition:



Continued on the following page

ELEC IDG 1(2) OIL LO PR/OVHT (Cont'd)

Ident.: PRO-ABN-ELEC-A-00018031.0001001 / 21 MAR 16

IDG (AFFECTED).....OFF

L2 *If the associated engine is running, the IDG (integrated drive generator) must be disconnected from the engine at, or above, idle to prevent damage to the disconnect mechanism.*
Press the IDG pb-sw until the GEN FAULT light comes on. However, do not press for more than 3 s, to avoid damage to the disengage solenoid
The IDG FAULT light goes off, when the IDG is disconnected.

Ident.: PRO-ABN-ELEC-A-00018032.0002001 / 21 MAR 16

108

L12

STATUS

	INOP SYS
Note: If available, the APU may be started and the APU GEN used.	MAIN GALLEY (1) GEN 1(2)
CAT 3 SINGLE ONLY	CAT 3 DUAL

(1) *(only if APU GEN is not online: In this case, all the galleys are shed)*

ELEC STATIC INV FAULT

Applicable to: ALL

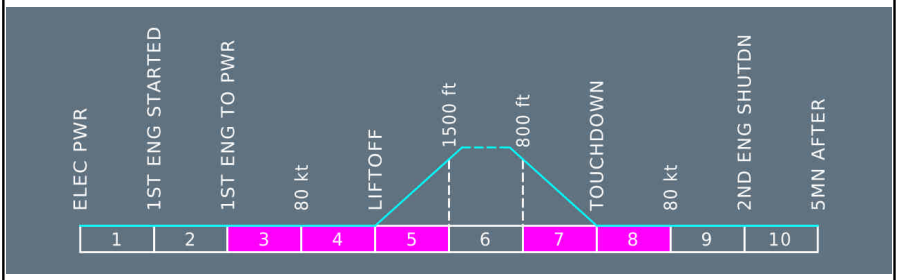
Ident.: PRO-ABN-ELEC-AC-00017380.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 The alert triggers when the static inverter is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-AC-00012549.0001001 / 25 FEB 14

Crew awareness.

ELEC TR 1(2) FAULT

Applicable to: ALL

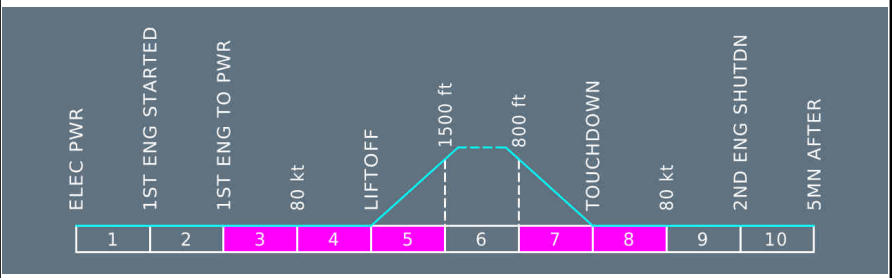
Ident.: PRO-ABN-ELEC-U-00017373.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the TR 1(2) is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ELEC-U-00012541.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-ELEC-U-00018531.0001001 / 21 MAR 16

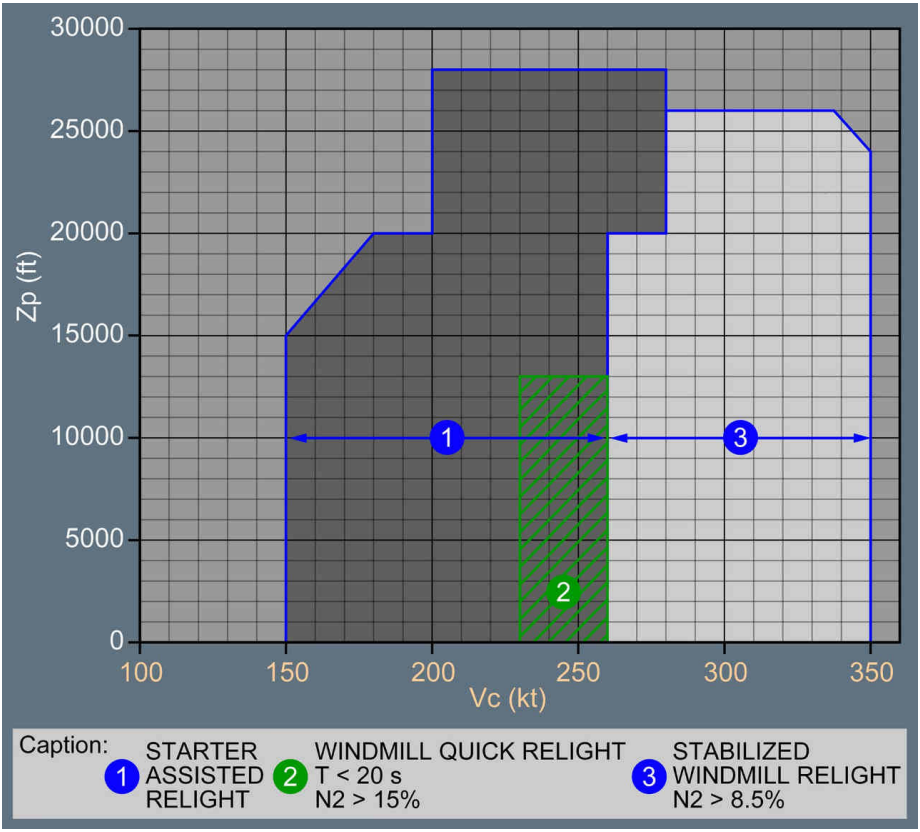
STATUS

	INOP SYS
CAT 3 SINGLE ONLY	TR 1(2) CAT 3 DUAL

[QRH] ENG RELIGHT
IN FLIGHT

Ident.: PRO-ABN-ENG-00012594.0040001 / 13 DEC 17

1 **Applicable to: MSN 06720-09063**



No attempt should be made to restart an engine, if there are indications of engine damage, if the engine had been shut down because of an engine fire, or if there is a recognizable possibility that an attempted relight may result in fire.

ENG MASTER (affected engine)..... OFF
THR LEVER (affected engine).....Check IDLE

Continued on the following page

[QRH] ENG RELIGHT (Cont'd)
IN FLIGHT

ENG MODE sel.....IGN
X BLEED..... OPEN

If outside the windmilling start envelope, the FADEC will open the starter valve.

WING ANTI ICE (for starter assist).....OFF
ENG MASTER (affected engine).....ON
ENG PARAMETERS (N2, EGT)..... MONITOR

Engine light up should be achieved within 30 s after fuel flow increases.

AUTOMATIC START ABORT NOT AVAIL

Be aware that, contrary to an autostart on ground, the flight crew must take appropriate action in case of an abnormal start.
During engine relight, a rapid EGT increase below the EGT limit may occur. In this case, do not abort the engine relight unless the EGT exceeds the red line indication.

- **If ENG 1(2) START FAULT - ENG STALL triggers, and ENG parameters normal:**
  DISREGARD ECAM ALERT

- **When idle reached (ENG AVAIL):**
  ENG MODE sel.....NORM
  TCAS MODE sel..... TA/RA

  Check that the selector is at TA/RA since, if the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN) has been applied, the TCAS mode selector may have been set to the TA position.

  X BLEED.....AUTO
  Affected SYS..... RESTORE

- **If no relight:**
  ENG MASTER (affected engine).....OFF

  Wait 30 s before attempting a new start (to drain the engine).
  During the relight attempt, if the N2 did not increase, consider increasing speed for windmill relight.

Note: *For an in-flight restart, the FADEC decides whether the rotor speed is sufficient to perform a windmill relight or needs assistance from the starter in view of the current engine parameters and the flight environment parameters. Within the windmill quick relight envelope, if the crew is using the Quick Windmill Relight procedure, the FADEC will restart*

Continued on the following page

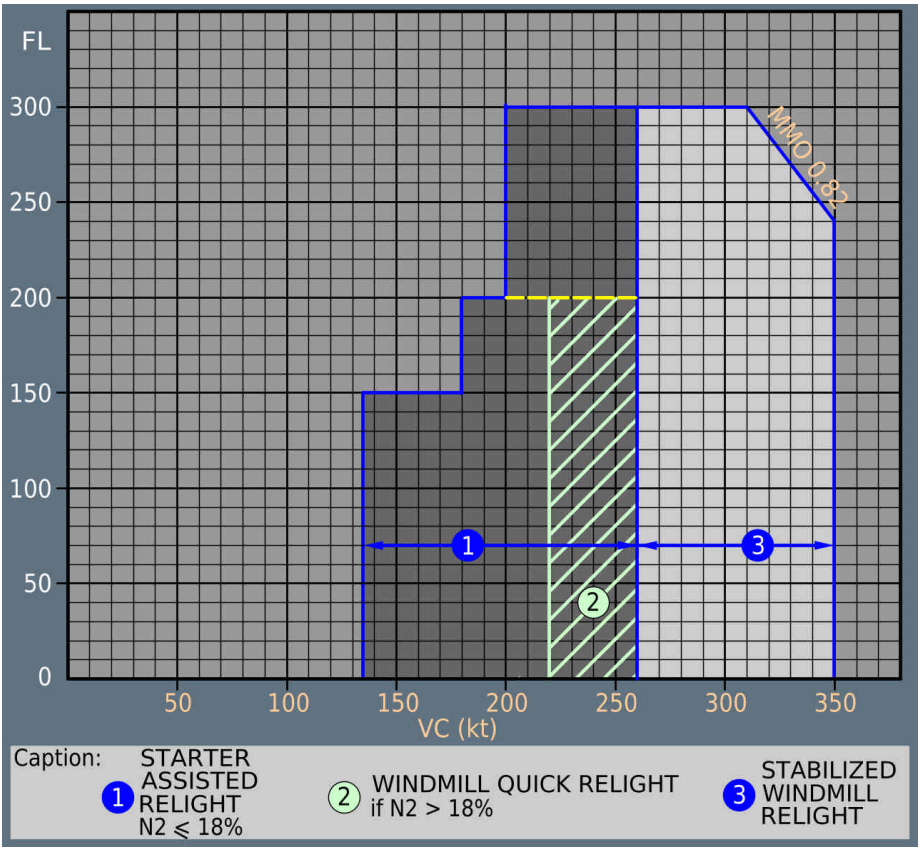
[QRH] ENG RELIGHT (Cont'd)
IN FLIGHT

the engine after the flight crew cycles the ENG MASTER lever from "ON" to "OFF" then back to "ON".

[QRH] ENG RELIGHT
IN FLIGHT

Ident.: PRO-ABN-ENG-00012594.0002001 / 17 MAR 17
Applicable to: MSN 02108, 02135, 02139-02359, 02405-02482, 02609-02670, 02804-02914, 03264-03618

Engine Relight Envelope



No attempt should be made to restart an engine, if there are indications of engine damage, if the engine had been shut down because of an engine fire, or if there is a recognizable possibility that an attempted relight may result in fire.

ENG MASTER (affected engine)..... OFF

Continued on the following page

[QRH] ENG RELIGHT (Cont'd)
IN FLIGHT

THR LEVER (affected engine).....Check IDLE
ENG MODE sel.....IGN
X BLEED..... OPEN

If outside the windmilling start envelope, the FADEC will open the starter valve.

WING ANTI ICE (for starter assist).....OFF
ENG MASTER (affected engine)..... ON
ENG PARAMETERS (N2, EGT)..... MONITOR

Engine light up should be achieved within 30 s after fuel flow increases.

AUTOMATIC START ABORT NOT AVAIL

Be aware that, unlike the procedure for auto start on ground, the crew must take appropriate action in case of an abnormal start.
Monitor N2. If uncertain about successful relight, move the thrust lever forward and check engine response.

- **When idle reached:**
  ENG MODE sel.....NORM
  TCAS MODE sel ..... TA/RA

  Check that the selector is at TA/RA since, if the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN) has been applied, the TCAS mode selector may have been set to the TA position.

  X BLEED.....AUTO
  Affected SYS..... RESTORE

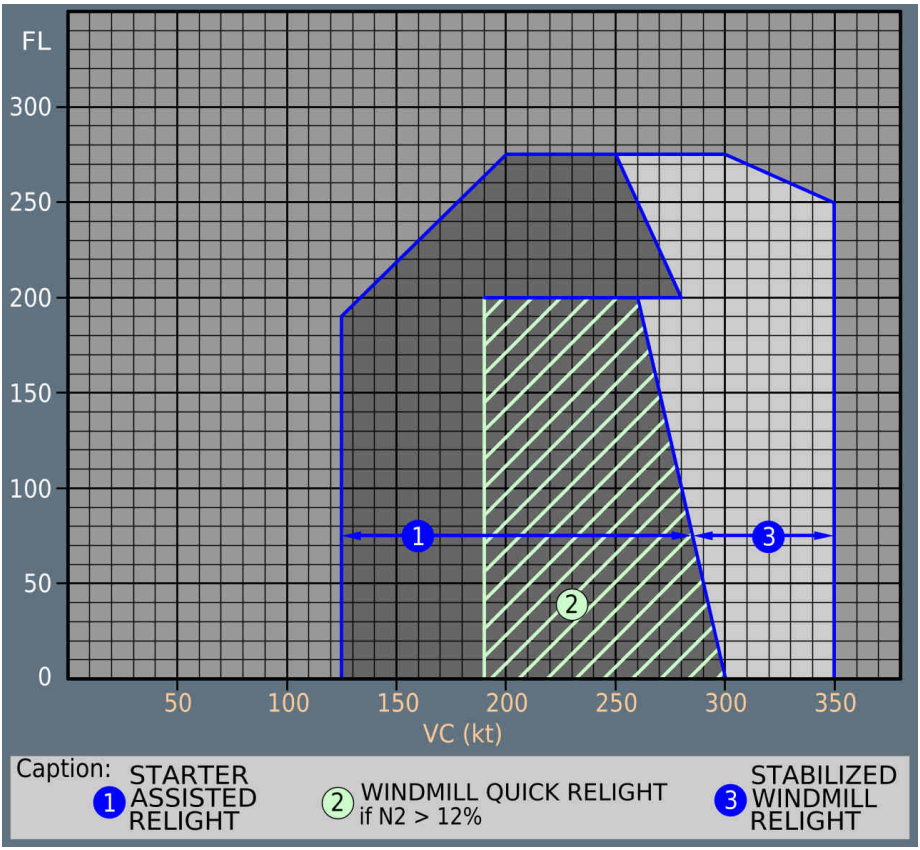
- **If no relight:**
  ENG MASTER (engine affected).....OFF

  Wait 30 s before attempting a new start (to drain the engine).

[QRH] ENG RELIGHT
IN FLIGHT

Ident.: PRO-ABN-ENG-00012594.0001001 / 17 MAR 17
Applicable to: MSN 01920, 02712, 03138

Engine Relight Envelope



ENG MASTER (affected engine)..... OFF
THR LEVER (affected engine).....Check IDLE
ENG MODE sel.....IGN
X BLEED..... OPEN

Continued on the following page

[QRH] ENG RELIGHT (Cont'd)
IN FLIGHT

If outside the windmilling start envelope, the FADEC will open the starter valve.

WING ANTI ICE (for starter assist).....OFF
ENG MASTER (affected engine).....ON
ENG PARAMETERS (N2, EGT).....MONITOR

Engine light up should be achieved within 30 s after fuel flow increases.

AUTOMATIC START ABORT NOT AVAIL

Be aware that, unlike the procedure for auto start on ground, the crew must take appropriate action in case of an abnormal start.
Monitor N2. If uncertain about successful relight, move the thrust lever forward and check engine response.

- **If ENG 1(2) START FAULT - ENG STALL triggers, and ENG parameters normal:**
  DISREGARD ECAM ALERT

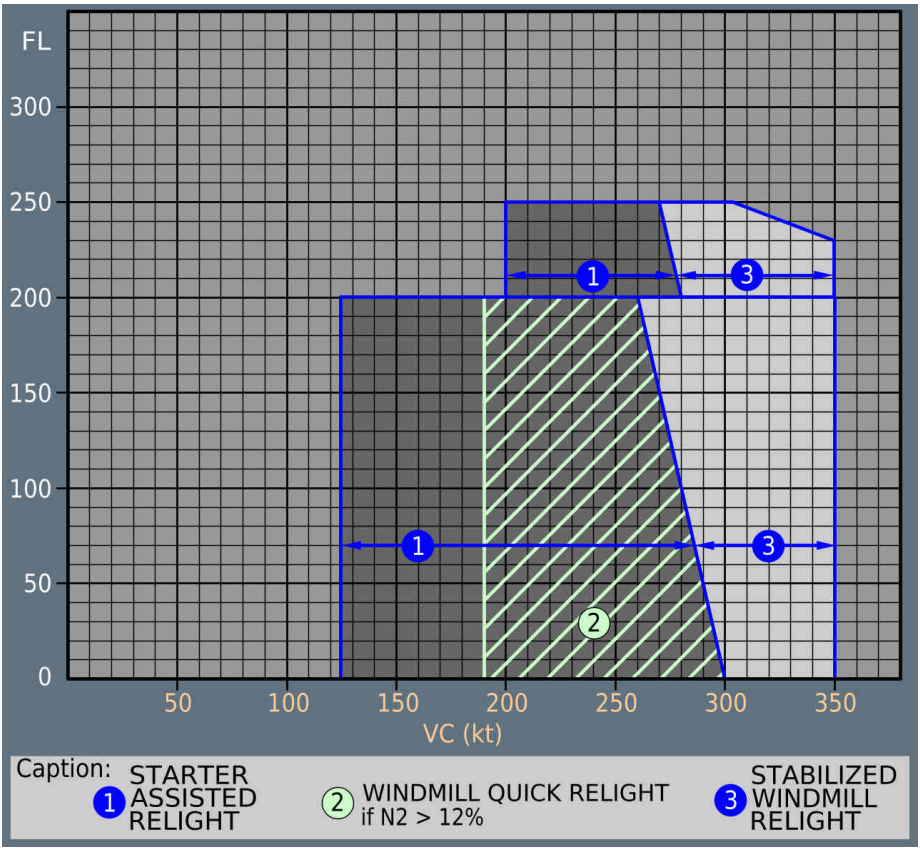
- **When idle reached:**
  ENG MODE sel.....NORM
  TCAS MODE sel .....TA/RA
  Check that the selector is at TA/RA since, if the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN) has been applied, the TCAS mode selector may have been set to the TA position.
  X BLEED.....AUTO
  Affected SYS.....RESTORE

- **If no relight:**
  ENG MASTER (affected engine).....OFF
  Wait 30 s before attempting a new start (to drain the engine).

[QRH] ENG RELIGHT
IN FLIGHT

Ident.: PRO-ABN-ENG-00012594.0012001 / 17 MAR 17
Applicable to: MSN 02388

Engine Relight Envelope



ENG MASTER (affected engine)..... OFF
THR LEVER (affected engine).....Check IDLE
ENG MODE sel.....IGN
X BLEED..... OPEN

Continued on the following page

[QRH] ENG RELIGHT (Cont'd)
IN FLIGHT

If outside the windmilling start envelope, the FADEC will open the starter valve.

WING ANTI ICE (for starter assist).....OFF
ENG MASTER (affected engine).....ON
ENG PARAMETERS (N2, EGT).....MONITOR

Engine light up should be achieved within 30 s after fuel flow increases.

AUTOMATIC START ABORT NOT AVAIL

Be aware that, unlike the procedure for auto start on ground, the crew must take appropriate action in case of an abnormal start.
Monitor N2. If uncertain about successful relight, move the thrust lever forward and check engine response.

■ **When idle reached:**

ENG MODE sel.....NORM
TCAS MODE sel ⏿ .....TA/RA

Check that the selector is at TA/RA since, if the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN) has been applied, the TCAS mode selector may have been set to the TA position.

X BLEED.....AUTO
Affected SYS.....RESTORE

■ **If no relight:**

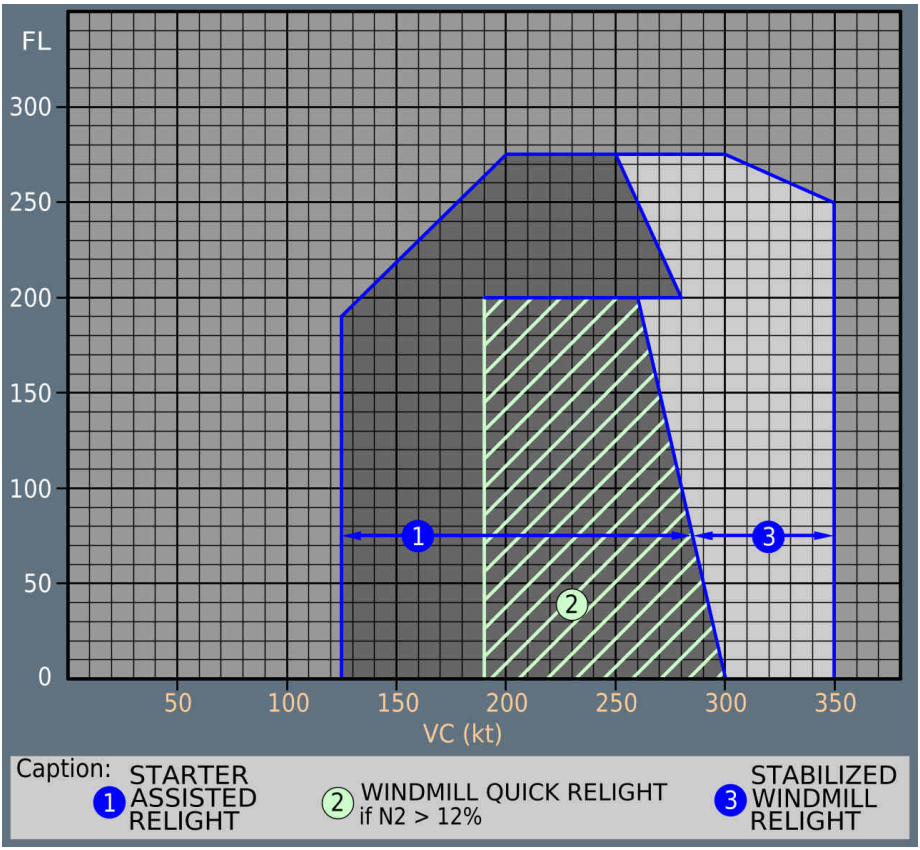
ENG MASTER (affected engine).....OFF

Wait 30 s before attempting a new start (to drain the engine).

[QRH] ENG RELIGHT
IN FLIGHT

Ident.: PRO-ABN-ENG-00012594.0015001 / 17 MAR 17
Applicable to: MSN 02584

Engine Relight Envelope



ENG MASTER (affected engine)..... OFF
THR LEVER (affected engine).....Check IDLE
ENG MODE sel.....IGN
X BLEED..... OPEN

Continued on the following page

[QRH] ENG RELIGHT (Cont'd)
IN FLIGHT

If outside the windmilling start envelope, the FADEC will open the starter valve.

WING ANTI. ICE (for starter assist).....OFF
ENG MASTER (affected engine).....ON
ENG PARAMETERS (N2, EGT).....MONITOR

Engine light up should be achieved within 30 s after fuel flow increases.

AUTOMATIC START ABORT NOT AVAIL

Be aware that, unlike the procedure for auto start on ground, the crew must take appropriate action in case of an abnormal start.
Monitor N2. If uncertain about successful relight, move the thrust lever forward and check engine response.

- **If ENG 1(2) START FAULT - ENG STALL triggers, and ENG parameters normal:**
  DISREGARD ECAM ALERT

- **When idle reached (ENG AVAIL):**
  ENG MODE sel.....NORM
  TCAS MODE sel ◁ .....TA/RA
  Check that the selector is at TA/RA since, if the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN) has been applied, the TCAS mode selector may have been set to the TA position.
  X BLEED.....AUTO
  Affected SYS.....RESTORE

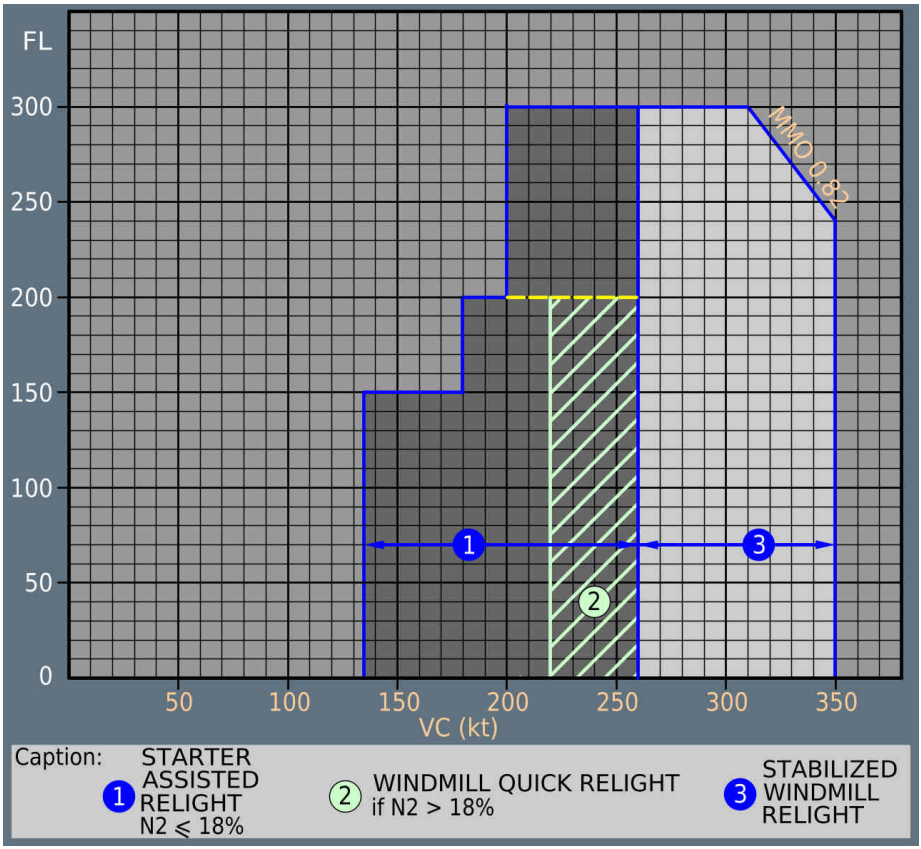
- **If no relight:**
  ENG MASTER (affected engine).....OFF
  Wait 30 s before attempting a new start (to drain the engine).

[QRH] ENG RELIGHT
IN FLIGHT

Ident.: PRO-ABN-ENG-00012594.0014001 / 17 MAR 17

2 **Applicable to: MSN 01957-02097, 02121, 02138, 02737, 03071, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

Engine Relight Envelope



No attempt should be made to restart an engine, if there are indications of engine damage, if the engine had been shut down because of an engine fire, or if there is a recognizable possibility that an attempted relight may result in fire.

ENG MASTER (affected engine)..... OFF

Continued on the following page

[QRH] ENG RELIGHT (Cont'd)
IN FLIGHT

THR LEVER (affected engine).....Check IDLE
ENG MODE sel.....IGN
X BLEED..... OPEN

If outside the windmilling start envelope, the FADEC will open the starter valve.

WING ANTI ICE (for starter assist).....OFF
ENG MASTER (affected engine)..... ON
ENG PARAMETERS (N2, EGT)..... MONITOR

Engine light up should be achieved within 30 s after fuel flow increases.

AUTOMATIC START ABORT NOT AVAIL

Be aware that, unlike the procedure for auto start on ground, the crew must take appropriate action in case of an abnormal start.
Monitor N2. If uncertain about successful relight, move the thrust lever forward and check engine response.

■ **When idle reached (ENG AVAIL):**

ENG MODE sel.....NORM
TCAS MODE sel ..... TA/RA

Check that the selector is at TA/RA since, if the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN) has been applied, the TCAS mode selector may have been set to the TA position.

X BLEED.....AUTO
Affected SYS..... RESTORE

■ **If no relight:**

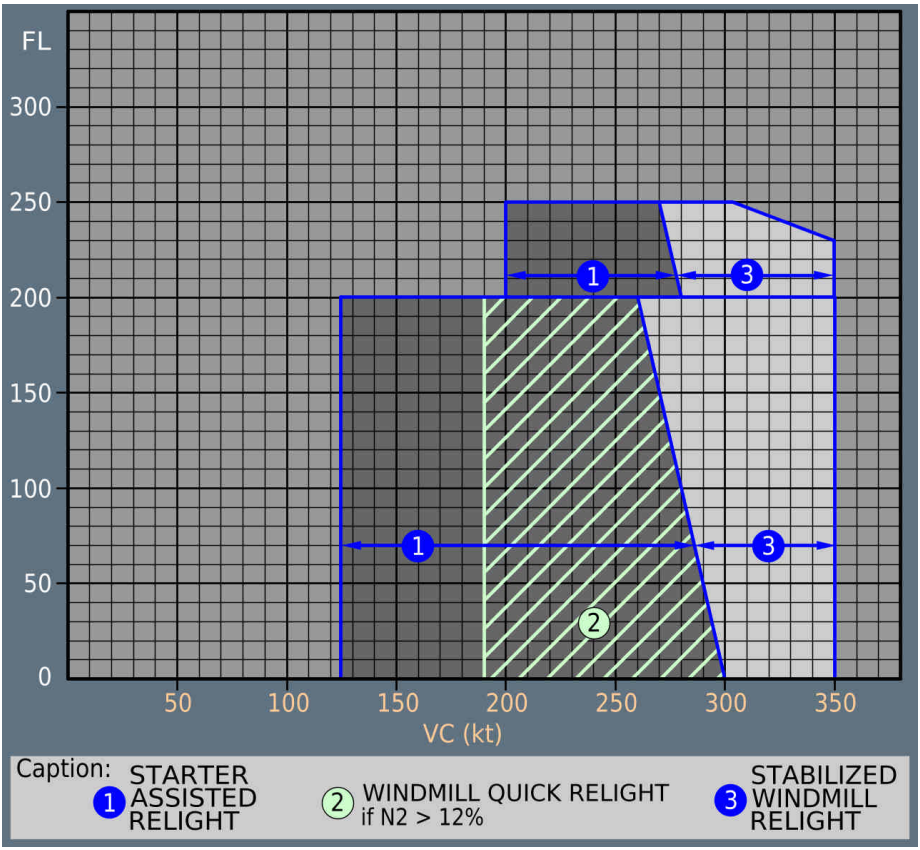
ENG MASTER (affected engine).....OFF

Wait 30 s before attempting a new start (to drain the engine).

[QRH] ENG RELIGHT
IN FLIGHT

Ident.: PRO-ABN-ENG-00012594.0026001 / 17 MAR 17
Applicable to: MSN 01767, 03750, 04294, 04314, 04393-04438, 04510

Engine Relight Envelope



ENG MASTER (affected engine)..... OFF
THR LEVER (affected engine).....Check IDLE
ENG MODE sel.....IGN
X BLEED..... OPEN

Continued on the following page

[QRH] ENG RELIGHT (Cont'd)
IN FLIGHT

If outside the windmilling start envelope, the FADEC will open the starter valve.

WING ANTI ICE (for starter assist).....OFF
ENG MASTER (affected engine).....ON
ENG PARAMETERS (N2, EGT)..... MONITOR

Engine light up should be achieved within 30 s after fuel flow increases.

AUTOMATIC START ABORT NOT AVAIL

Be aware that, unlike the procedure for auto start on ground, the crew must take appropriate action in case of an abnormal start.
Monitor N2. If uncertain about successful relight, move the thrust lever forward and check engine response.

- **When idle reached (ENG AVAIL):**
  ENG MODE sel.....NORM
  TCAS MODE sel ..... TA/RA

  Check that the selector is at TA/RA since, if the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN) has been applied, the TCAS mode selector may have been set to the TA position.

  X BLEED.....AUTO
  Affected SYS..... RESTORE

- **If no relight:**
  ENG MASTER (affected engine).....OFF

  Wait 30 s before attempting a new start (to drain the engine).

[QRH] HIGH ENGINE VIBRATION

Ident.: TDU / PRO-ABN-ENG-00022408.0001001 / 12 JUN 18

3 **Applicable to: MSN 06720-09063**

Impacted DU: 00012294 [QRH] HIGH ENGINE VIBRATION

The flight crew must apply this procedure when instructed by ECAM, or if they detect high engine vibration.
The triggering of the ENG 1(2) HIGH VIB alert is mainly a guideline for the flight crew to monitor engine parameters more closely: The triggering of the ECAM alert alone does not require engine shut down

Note: *1. High engine vibration may be accompanied by cockpit and cabin smoke and/or the smell of burning. This may be due only to compressor blade tip contact with associated abradable seals.*
2. High N1 vibration are generally accompanied by perceivable airframe vibrations. High N2 vibration can occur without perceivable airframe vibrations.

■ **On ground, during ENG start if N2 VIB > 5:**
ENG MASTER (affected engine).....OFF
REQUEST MAINTENANCE ACTION

Report in log book any N2 vibration above 5.

■ **In all other cases of high N1 or N2 vibrations:**
ENG PARAMETERS .....CHECK
Check engine parameters and especially EGT; crosscheck with other engine. Report in maintenance log.

■ **If icing suspected:**

An increase of engine vibration in icing conditions with or without engine anti-ice may be due to fan blades and/or spinner icing. Icing may be suspected if N1 vibration occurs without other engine parameters variation.

A/THR .....OFF
THRUST (one engine at a time).....IDLE THEN INCREASE N1 > 80 %
Reduce thrust to idle if flight conditions permit.
*If ENG ANTI ICE is off, switch it ON **at idle fan speed,** one engine after the other with approximately 30 s interval.*
To shed ice, it may be necessary to perform several thrust variations between idle and a thrust compatible with the flight phase. For efficient ice shedding, thrust should be increased to at least 80% N1 if flight conditions permit.

Continued on the following page

[QRH] HIGH ENGINE VIBRATION (Cont'd)

After each thrust variation, vibrations should decrease, indicating the progress of the ice shedding.
When the ice is shed, vibrations should return to normal and the flight crew can resume normal engine operation.

■ **If icing not suspected:**

- **If VIB indication(s) amber:**
  THRUST (affected engine)..... REDUCE
  If flight conditions permit, reduce thrust to maintain vibration level below the amber threshold. If the VIB indication does not decrease following thrust reduction, this may indicate other problems on the engine.
  Transient high N2 vibrations have been reported, mostly in climb with all other engine parameters normal.
- **After landing, if vibrations continue :**
  SHUT DOWN ENGINE WHEN POSSIBLE

[QRH] ALL ENG FAIL

Applicable to: MSN 01767, 02388, 03750, 04294, 04314, 04399, 04438, 04510

Ident.: PRO-ABN-ENG-AT-00017524.0005001 / 17 MAR 17

L2 The flight crew must apply this paper procedure when required by the ENG ALL ENGINES FAILURE ECAM alert.

During the application of the ALL ENGINES FAILURE paper procedure:
- If one or more engines relight, apply the corresponding ECAM procedure instead, or
- If none of the engines relights, continue to apply the ALL ENGINES FAILURE paper procedure. If there is sufficient time, clear both the ECAM alerts and the ECAM STATUS page.

The purpose of the ENG ALL ENGINES FAILURE ECAM procedure is to secure both the automatic extension of the RAT and the automatic connection of the emergency generator.

The ALL ENGINES FAILURE paper procedure includes a fuel quantity check to determine if either of the following applies:
- Engine relight can be attempted, or
- Engine relight cannot be attempted.

If engine relight can be attempted, the flight crew can attempt successive engine relights. First without the APU bleed (windmill start), then with the APU bleed, if available.
If engine relight cannot be attempted, the flight crew must apply the procedure for forced landing or ditching.

L1 First apply the following actions of the ENG ALL ENGINES FAILURE ECAM procedure (if not already applied):

LAND ASAP

EMER ELEC PWR MAN ON pb.....PRESS

L2 *Set the EMER ELEC PWR pb to MAN ON to enable both the RAT extension and the emergency generator connection.*

L1 OPT RELIGHT SPD.....300/0.77

Ident.: PRO-ABN-ENG-AT-00017541.0005001 / 17 MAR 17

L2

PITCH TARGET IN CASE OF SPEED INDICATION FAILURE	
Gross Weight	**Pitch (°)**
At or below 50 000 kg / 110 000 lb	-4.5
60 000 kg / 132 000 lb	-3.5
70 000 kg / 154 000 lb	-2.5

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017543.0005001 / 21 MAR 17

APU (below FL 250).....START
THR LEVERS.....IDLE
FAC 1.....OFF THEN ON

L2 *FAC 1 reset enables the recovery of characteristics speed displayed on the PFD. FAC 1 reset enables also rudder trim recovery, even if no indication is available.*

L1 GLIDING DISTANCE : 2 NM / 1000 FT

AT 300 KT: 2 NM / 1000 FT (500 FT/NM) NO WIND			
Flight Level	***FL 200***	***FL 300***	***FL 400***
Distance (NM)	*40*	*60*	*80*

DIVERSION.....INITIATE

L2 *Check if there is an accessible runway, or determine the most appropriate area for a forced landing or ditching.*

L1 Then, as long as none of the engines relights, apply the following paper procedure. If there is sufficient time, clear all ECAM alerts, and clear the ECAM STATUS page.

VHF1/HF1 ◁ /ATC1.....USE
ATC.....NOTIFY
CABIN CREW.....NOTIFY
SIGNS.....ON
CREW OXY MASK (FL > 100).....USE
FUEL QUANTITY.....CHECK

Ident.: PRO-ABN-ENG-AT-00021154.0001001 / 17 MAR 17

4

- **If engine relight can be attempted:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight can be attempted.

- **If engine relight cannot be attempted:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight cannot be attempted.

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017544.0012001 / 31 AUG 17

- **If engine relight can be attempted:**

ENG MODE sel..... IGN

- **Approaching or below FL 250: Windmill Relight**

APU..... START
ALL ENG MASTERS..... OFF 30 S THEN ON
ENGs RELIGHT..... TRY REGULARLY

L2 *Windmill relight attempts can be repeated until successful, or until the APU bleed is available.*

L1

- **If APU available and windmill relight unsuccessful : Starter Assisted Relight below FL 200**

ALL ENG MASTERS..... OFF

OPTIMUM SPEED: GREEN DOT (*Refer to QRH/OPS Operating Speeds*)

L2 *Green dot speed is the optimum speed for starter-assisted relight with the APU bleed.*

L1 WING ANTI ICE..... OFF
APU BLEED..... ON
ENG MASTER (one at a time)..... ON

L2 *Between each attempt to relight the same engine, wait at least 30 s with the associated ENG MASTER lever set to OFF.*

L1 SPEED BRAKES AVAILABLE

L2 *Speed brakes remain available. If necessary, extend the speed brakes to increase the descent rate.*

L1

- **When below 10 000 ft AGL:**

PREPARE CABIN AND COCKPIT

L2
- *Secure loose equipment*
- *Prepare survival equipment*
- *Fasten belts and shoulder harnesses.*

L1 RAM AIR..... ON

L2 *Switch the RAM AIR on, in order to ensure entire depressurization of the aircraft and to provide fresh air to the cabin. There is fresh air ventilation in the cockpit and cabin only when the differential pressure is below 1 PSI.*

L1 BARO REF (if avail)..... SET

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

COMMERCIAL ⋖ .....OFF
GALLEY ⋖ .....OFF
GALY & CAB ⋖ .....OFF
ELT ⋖ (when conditions permit)..... ON
ENGs RELIGHT..... TRY REGULARLY

USE RUDDER WITH CARE

- **If ditching anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated.

- **If forced landing anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated.

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00021158.0001001 / 31 AUG 17

5

- **If engine relight cannot be attempted:**

(It includes the cases of no fuel remaining or engine damage)

OPTIMUM SPEED: GREEN DOT (*Refer to QRH/OPS Operating Speeds*)

L2 *Green dot speed is the optimum speed to glide as far as possible, in the event of an all engines failure.*

L1 GLIDING DISTANCE : 2.5 NM / 1000 FT

GLIDING DISTANCE AT GREEN DOT: 2.5 NM / 1000 FT (400 FT/NM) NO WIND			
Flight Level	***FL 200***	***FL 300***	***FL 400***
Distance (NM)	*50*	*75*	*100*

APU (below FL 250)..... START
WING ANTI ICE.....OFF
APU BLEED (below FL 200).....ON

SPEED BRAKES AVAILABLE

L2 *Speed brakes remain available. If necessary, extend the speed brakes to increase the descent rate.*

L1 - **When below 10 000 ft AGL:**

PREPARE CABIN AND COCKPIT

L2
- *Secure loose equipment*
- *Prepare survival equipment*
- *Fasten belts and shoulder harnesses.*

L1 RAM AIR..... ON

L2 *Switch the RAM AIR on, in order to ensure entire depressurization of the aircraft and to provide fresh air to the cabin. There is fresh air ventilation in the cockpit and cabin only when the differential pressure is below 1 PSI.*

L1 BARO REF (if avail).....SET
COMMERCIAL ◁ .....OFF
GALLEY ◁ .....OFF
GALY & CAB ◁ .....OFF
ELT ◁ (when conditions permit)..... ON

USE RUDDER WITH CARE

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

- **If ditching anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated.

- **If forced landing anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated.

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017529.0002001 / 31 AUG 17

6

- **If ditching anticipated:**

MIN RAT SPEED: 140 KT
GPWS SYS.....OFF
GPWS TERR.....OFF

L2 *Set the SYS pb-sw and the TERR pb-sw to off in order to avoid nuisance warnings.*

L1

- **At appropriate altitude (above 3 000 ft AGL), configure aircraft for ditching.**

FOR LANDING : USE FLAP 2

L2 *Only slats extend, and slowly.*

L1 KEEP LANDING GEAR UP
VAPP..... DETERMINE

Gross Weight	*40 t / 90 klb*	*50 t / 110 klb*	*60 t / 130 klb*	*70 t / 155 klb*	*80 t / 175 klb*	*90 t / 200 klb*	*95 t / 210 klb*
VAPP (kt)	*150 kt*	*150 kt*	*163 kt*	*173 kt*	*183 kt*	*193 kt*	*198 kt*

- **At 2 000 ft AGL:**

CABIN CREW.....NOTIFY FOR DITCHING
DITCHING pb.....ON

L2 *Ditch the aircraft parallel to the swell. If that causes a strong crosswind, ditch the aircraft into the wind.*

L1

- **At 500 ft AGL:**

BRACE FOR IMPACT.....ORDER
TOUCH DOWN AT MIN V/S
TARGET PITCH ATT 11 °

- **At touchdown:**

ALL ENG MASTERS.....OFF
APU MASTER SW.....OFF

- **After ditching:**

ATC (VHF 1)..... NOTIFY
ALL FIRE pb (ENGs & APU)..... PUSH
ALL AGENT (ENGs & APU)..... DISCH

L2 *Engine agent 2 is not available.*

L1 EVACUATION.....INITIATE

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

L2 *Make a short and precise announcement to order the emergency evacuation.*
Press the EVAC COMMAND pb .

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017530.0002001 / 31 AUG 17

7

- **If forced landing anticipated:**

DESCENT SLOPE (CONF 2, L/G DOWN) : 1.6 NM / 1000 FT (600 FT/NM)

MIN RAT SPEED: 140 KT

GPWS SYS.....OFF

GPWS TERR.....OFF

L2 *Set the SYS pb-sw and the TERR pb-sw to off in order to avoid nuisance warnings.*

L1

- **At appropriate altitude (above 3 000 ft AGL), configure aircraft for landing:**

FOR LANDING : USE FLAP 2

L2 *Only slats extend, and slowly.*

L1 VAPP..... DETERMINE

Gross Weight	*40 t / 90 klb*	*50 t / 110 klb*	*60 t / 130 klb*	*70 t / 155 klb*	*80 t / 175 klb*	*90 t / 200 klb*	*95 t / 210 klb*
VAPP (kt)	*150 kt*	*150 kt*	*163 kt*	*173 kt*	*183 kt*	*193 kt*	*198 kt*

- **When in CONF 2 and VAPP:**

GRAVITY GEAR EXTN handcrank.....PULL AND TURN

L2 *Flight controls revert to direct law at landing gear extension. To ensure correct aircraft trimming for approach, extend the landing gear only when the aircraft is in CONF 2 and at VAPP.*

L1 MAN PITCH TRIM NOT AVAILABLE

L2 *Disregard the "USE MAN PITCH TRIM" message on the PFD.*

L1

- **When L/G downlocked:**

L/G lever.....DOWN

APPROACH SPEED..... ADJUST

L2 *Adjust the speed to the above-mentioned VAPP. However, to reach the landing field or runway, it is possible to increase the approach speed.*

L1 SPLRs.....ARM

MAX BRK PR : 1 000 PSI

- **At 2 000 ft AGL:**

CABIN CREW..... NOTIFY FOR LANDING

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

- **At 500 ft AGL:**
  BRACE FOR IMPACT.....ORDER

- **At touchdown:**
  ALL ENG MASTERS.....OFF
  APU MASTER SW.....OFF
  BRAKES ON ACCU ONLY

- **When aircraft stopped:**
  PARKING BRK.....ON
  ATC (VHF 1).....NOTIFY
  ALL FIRE pb (ENGs & APU).....PUSH
  ALL AGENT (ENGs & APU).....DISCH

L2 *Engine agent 2 is not available.*

L1 ■ **If evacuation required:**
  EVACUATION.....INITIATE

L2 *Make a short and precise announcement to order the emergency evacuation.*
Press the EVAC COMMAND pb .

L1 ■ **If evacuation not required:**
  CABIN CREW and PASSENGERS (PA).....NOTIFY

[QRH] ALL ENG FAIL

Applicable to: MSN 01920, 02584, 02712, 03138

Ident.: PRO-ABN-ENG-AT-00017524.0005001 / 17 MAR 17

L2 The flight crew must apply this paper procedure when required by the ENG ALL ENGINES FAILURE ECAM alert.

During the application of the ALL ENGINES FAILURE paper procedure:
- If one or more engines relight, apply the corresponding ECAM procedure instead, or
- If none of the engines relights, continue to apply the ALL ENGINES FAILURE paper procedure. If there is sufficient time, clear both the ECAM alerts and the ECAM STATUS page.

The purpose of the ENG ALL ENGINES FAILURE ECAM procedure is to secure both the automatic extension of the RAT and the automatic connection of the emergency generator.

The ALL ENGINES FAILURE paper procedure includes a fuel quantity check to determine if either of the following applies:
- Engine relight can be attempted, or
- Engine relight cannot be attempted.

If engine relight can be attempted, the flight crew can attempt successive engine relights. First without the APU bleed (windmill start), then with the APU bleed, if available.
If engine relight cannot be attempted, the flight crew must apply the procedure for forced landing or ditching.

L1 First apply the following actions of the ENG ALL ENGINES FAILURE ECAM procedure (if not already applied):

LAND ASAP

EMER ELEC PWR MAN ON pb.....PRESS

L2 *Set the EMER ELEC PWR pb to MAN ON to enable both the RAT extension and the emergency generator connection.*

L1 OPT RELIGHT SPD.....300/0.77

Ident.: PRO-ABN-ENG-AT-00017541.0005001 / 17 MAR 17

L2

PITCH TARGET IN CASE OF SPEED INDICATION FAILURE	
Gross Weight	**Pitch (°)**
At or below 50 000 kg / 110 000 lb	-4.5
60 000 kg / 132 000 lb	-3.5
70 000 kg / 154 000 lb	-2.5

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017543.0005001 / 21 MAR 17

APU (below FL 250).....START
THR LEVERS.....IDLE
FAC 1.....OFF THEN ON

L2 *FAC 1 reset enables the recovery of characteristics speed displayed on the PFD. FAC 1 reset enables also rudder trim recovery, even if no indication is available.*

L1 GLIDING DISTANCE : 2 NM / 1000 FT

AT 300 KT: 2 NM / 1000 FT (500 FT/NM) NO WIND			
Flight Level	***FL 200***	***FL 300***	***FL 400***
Distance (NM)	*40*	*60*	*80*

DIVERSION.....INITIATE

L2 *Check if there is an accessible runway, or determine the most appropriate area for a forced landing or ditching.*

L1 Then, as long as none of the engines relights, apply the following paper procedure. If there is sufficient time, clear all ECAM alerts, and clear the ECAM STATUS page.

VHF1/HF1 ◁ /ATC1.....USE
ATC.....NOTIFY
CABIN CREW.....NOTIFY
SIGNS.....ON
CREW OXY MASK (FL > 100).....USE
FUEL QUANTITY.....CHECK

Ident.: PRO-ABN-ENG-AT-00021154.0001001 / 17 MAR 17

8

- **If engine relight can be attempted:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight can be attempted.

- **If engine relight cannot be attempted:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight cannot be attempted.

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017544.0010001 / 31 AUG 17

- **If engine relight can be attempted:**

ENG MODE sel..... IGN

- **Approaching or below FL 270: Windmill Relight**

ALL ENG MASTERS..... OFF 30 S THEN ON
ENGs RELIGHT..... TRY REGULARLY

L2 *Windmill relight attempts can be repeated until successful, or until the APU bleed is available.*

L1 APU (below FL 250)..... START

- **If APU available and windmill relight unsuccessful : Starter Assisted Relight below FL 200**

ALL ENG MASTERS..... OFF

OPTIMUM SPEED: GREEN DOT (*Refer to QRH/OPS Operating Speeds*)

L2 *Green dot speed is the optimum speed for starter-assisted relight with the APU bleed.*

L1 WING ANTI ICE..... OFF
APU BLEED..... ON
ENG MASTER (one at a time)..... ON

L2 *Between each attempt to relight the same engine, wait at least 30 s with the associated ENG MASTER lever set to OFF.*

L1 SPEED BRAKES AVAILABLE

L2 *Speed brakes remain available. If necessary, extend the speed brakes to increase the descent rate.*

L1

- **When below 10 000 ft AGL:**

PREPARE CABIN AND COCKPIT

L2
- *Secure loose equipment*
- *Prepare survival equipment*
- *Fasten belts and shoulder harnesses.*

L1 RAM AIR..... ON

L2 *Switch the RAM AIR on, in order to ensure entire depressurization of the aircraft and to provide fresh air to the cabin. There is fresh air ventilation in the cockpit and cabin only when the differential pressure is below 1 PSI.*

L1 BARO REF (if avail)..... SET

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

COMMERCIAL ⋖ .....OFF
GALLEY ⋖ .....OFF
GALY & CAB ⋖ .....OFF
ELT ⋖ (when conditions permit)..... ON
ENGs RELIGHT..... TRY REGULARLY

USE RUDDER WITH CARE

- **If ditching anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated.

- **If forced landing anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated.

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00021158.0001001 / 31 AUG 17

9

- **If engine relight cannot be attempted:**

(It includes the cases of no fuel remaining or engine damage)

OPTIMUM SPEED: GREEN DOT (*Refer to QRH/OPS Operating Speeds*)

L2 *Green dot speed is the optimum speed to glide as far as possible, in the event of an all engines failure.*

L1 GLIDING DISTANCE : 2.5 NM / 1000 FT

GLIDING DISTANCE AT GREEN DOT: 2.5 NM / 1000 FT (400 FT/NM) NO WIND			
Flight Level	***FL 200***	***FL 300***	***FL 400***
Distance (NM)	*50*	*75*	*100*

APU (below FL 250)..... START
WING ANTI ICE.....OFF
APU BLEED (below FL 200).....ON

SPEED BRAKES AVAILABLE

L2 *Speed brakes remain available. If necessary, extend the speed brakes to increase the descent rate.*

L1 - **When below 10 000 ft AGL:**

PREPARE CABIN AND COCKPIT

L2
- *Secure loose equipment*
- *Prepare survival equipment*
- *Fasten belts and shoulder harnesses.*

L1 RAM AIR..... ON

L2 *Switch the RAM AIR on, in order to ensure entire depressurization of the aircraft and to provide fresh air to the cabin. There is fresh air ventilation in the cockpit and cabin only when the differential pressure is below 1 PSI.*

L1 BARO REF (if avail).....SET
COMMERCIAL ◁ .....OFF
GALLEY ◁ .....OFF
GALY & CAB ◁ .....OFF
ELT ◁ (when conditions permit)..... ON

USE RUDDER WITH CARE

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

- **If ditching anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated.

- **If forced landing anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated.

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017529.0002001 / 31 AUG 17

10

- **If ditching anticipated:**

MIN RAT SPEED: 140 KT
GPWS SYS.....OFF
GPWS TERR.....OFF

L2 *Set the SYS pb-sw and the TERR pb-sw to off in order to avoid nuisance warnings.*

L1

- **At appropriate altitude (above 3 000 ft AGL), configure aircraft for ditching.**

FOR LANDING : USE FLAP 2

L2 *Only slats extend, and slowly.*

L1 KEEP LANDING GEAR UP
VAPP..... DETERMINE

Gross Weight	*40 t / 90 klb*	*50 t / 110 klb*	*60 t / 130 klb*	*70 t / 155 klb*	*80 t / 175 klb*	*90 t / 200 klb*	*95 t / 210 klb*
VAPP (kt)	*150 kt*	*150 kt*	*163 kt*	*173 kt*	*183 kt*	*193 kt*	*198 kt*

- **At 2 000 ft AGL:**

CABIN CREW.....NOTIFY FOR DITCHING
DITCHING pb.....ON

L2 *Ditch the aircraft parallel to the swell. If that causes a strong crosswind, ditch the aircraft into the wind.*

L1

- **At 500 ft AGL:**

BRACE FOR IMPACT.....ORDER
TOUCH DOWN AT MIN V/S
TARGET PITCH ATT 11 °

- **At touchdown:**

ALL ENG MASTERS.....OFF
APU MASTER SW.....OFF

- **After ditching:**

ATC (VHF 1)..... NOTIFY
ALL FIRE pb (ENGs & APU)..... PUSH
ALL AGENT (ENGs & APU)..... DISCH

L2 *Engine agent 2 is not available.*

L1 EVACUATION.....INITIATE

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

L2 *Make a short and precise announcement to order the emergency evacuation.*
Press the EVAC COMMAND pb .

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017530.0002001 / 31 AUG 17

11

- **If forced landing anticipated:**

DESCENT SLOPE (CONF 2, L/G DOWN) : 1.6 NM / 1000 FT (600 FT/NM)

MIN RAT SPEED: 140 KT

GPWS SYS.....OFF

GPWS TERR.....OFF

L2 *Set the SYS pb-sw and the TERR pb-sw to off in order to avoid nuisance warnings.*

L1

- **At appropriate altitude (above 3 000 ft AGL), configure aircraft for landing:**

FOR LANDING : USE FLAP 2

L2 *Only slats extend, and slowly.*

L1 VAPP..... DETERMINE

Gross Weight	*40 t / 90 klb*	*50 t / 110 klb*	*60 t / 130 klb*	*70 t / 155 klb*	*80 t / 175 klb*	*90 t / 200 klb*	*95 t / 210 klb*
VAPP (kt)	*150 kt*	*150 kt*	*163 kt*	*173 kt*	*183 kt*	*193 kt*	*198 kt*

- **When in CONF 2 and VAPP:**

GRAVITY GEAR EXTN handcrank.....PULL AND TURN

L2 *Flight controls revert to direct law at landing gear extension. To ensure correct aircraft trimming for approach, extend the landing gear only when the aircraft is in CONF 2 and at VAPP.*

L1 MAN PITCH TRIM NOT AVAILABLE

L2 *Disregard the "USE MAN PITCH TRIM" message on the PFD.*

L1

- **When L/G downlocked:**

L/G lever.....DOWN

APPROACH SPEED..... ADJUST

L2 *Adjust the speed to the above-mentioned VAPP. However, to reach the landing field or runway, it is possible to increase the approach speed.*

L1 SPLRs.....ARM

MAX BRK PR : 1 000 PSI

- **At 2 000 ft AGL:**

CABIN CREW..... NOTIFY FOR LANDING

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

- **At 500 ft AGL:**
  BRACE FOR IMPACT.....ORDER

- **At touchdown:**
  ALL ENG MASTERS.....OFF
  APU MASTER SW.....OFF
  BRAKES ON ACCU ONLY

- **When aircraft stopped:**
  PARKING BRK.....ON
  ATC (VHF 1).....NOTIFY
  ALL FIRE pb (ENGs & APU).....PUSH
  ALL AGENT (ENGs & APU).....DISCH

L2 *Engine agent 2 is not available.*

L1 ■ **If evacuation required:**
  EVACUATION.....INITIATE

L2 *Make a short and precise announcement to order the emergency evacuation.*
Press the EVAC COMMAND pb .

L1 ■ **If evacuation not required:**
  CABIN CREW and PASSENGERS (PA).....NOTIFY

[QRH] ALL ENG FAIL

Applicable to: MSN 01957-02359, 02443-02482, 02609-02626, 02670, 02737-03071, 03264-03330, 03414-03453, 03541-03618, 03782-04216, 04312, 04384, 04488-04506, 04518-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336

Ident.: PRO-ABN-ENG-AT-00017524.0004001 / 17 MAR 17

12

L2 The flight crew must apply this paper procedure when required by the ENG ALL ENGINES FAILURE ECAM alert.

During the application of the ALL ENGINES FAILURE paper procedure:
- If one or more engines relight, apply the corresponding ECAM procedure instead, or
- If none of the engines relights, continue to apply the ALL ENGINES FAILURE paper procedure. If there is sufficient time, clear both the ECAM alerts and the ECAM STATUS page.

The purpose of the ENG ALL ENGINES FAILURE ECAM procedure is to secure both the automatic extension of the RAT and the automatic connection of the emergency generator.

The ALL ENGINES FAILURE paper procedure includes a fuel quantity check to determine if either of the following applies:
- Engine relight can be attempted, or
- Engine relight cannot be attempted.

If engine relight can be attempted, the flight crew can attempt successive engine relights. First without the APU bleed (windmill start), then with the APU bleed, if available.
If engine relight cannot be attempted, the flight crew must apply the procedure for forced landing or ditching.

L1 First apply the following actions of the ENG ALL ENGINES FAILURE ECAM procedure (if not already applied):

LAND ASAP

EMER ELEC PWR MAN ON pb.....PRESS

L2 *Set the EMER ELEC PWR pb to MAN ON to enable both the RAT extension and the emergency generator connection.*

L1 OPT RELIGHT SPD.....280/0.77

Ident.: PRO-ABN-ENG-AT-00017540.0002001 / 04 NOV 15

13

L2 *Note: In the case of an "ENG ALL ENGINES FAILURE" during high power operations (i.e. climb, cruise), it is mandatory to fly at or above the optimum relight speed in order to prevent engine core lock.*

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017541.0003001 / 17 MAR 17

14

L2

PITCH TARGET IN CASE OF SPEED INDICATION FAILURE	
Gross Weight	**Pitch (°)**
At or below 50 000 kg / 110 000 lb	-2.5
60 000 kg / 132 000 lb	-1.5
70 000 kg / 154 000 lb	-0.5

Ident.: PRO-ABN-ENG-AT-00017543.0004001 / 21 MAR 17

15

APU (below FL 250)..... START
THR LEVERS..... IDLE
FAC 1..... OFF THEN ON

L2 *FAC 1 reset enables the recovery of characteristics speed displayed on the PFD. FAC 1 reset enables also rudder trim recovery, even if no indication is available.*

L1 GLIDING DISTANCE : 2 NM / 1000 FT

AT 280 KT: 2 NM / 1000 FT (500 FT/NM) NO WIND			
Flight Level	***FL 200***	***FL 300***	***FL 400***
Distance (NM)	*40*	*60*	*80*

DIVERSION..... INITIATE

L2 *Check if there is an accessible runway, or determine the most appropriate area for a forced landing or ditching.*

L1 Then, as long as none of the engines relights, apply the following paper procedure. If there is sufficient time, clear all ECAM alerts, and clear the ECAM STATUS page.

VHF1/HF1 ◁ /ATC1..... USE
ATC..... NOTIFY
CABIN CREW..... NOTIFY
SIGNS..... ON
CREW OXY MASK (FL > 100)..... USE
FUEL QUANTITY..... CHECK

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00021154.0001001 / 17 MAR 17

16

- **If engine relight can be attempted:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight can be attempted.

- **If engine relight cannot be attempted:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight cannot be attempted.

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017544.0001001 / 31 AUG 17

17

- **If engine relight can be attempted:**

ENG MODE sel..... IGN

- **Approaching or below FL 300: Windmill Relight**

ALL ENG MASTERS..... OFF 30 S THEN ON
ENGs RELIGHT..... TRY REGULARLY

L2 *Windmill relight attempts can be repeated until successful, or until the APU bleed is available.*

L1 APU (below FL 250)..... START

- **If APU available and windmill relight unsuccessful : Starter Assisted Relight below FL 200**

ALL ENG MASTERS..... OFF

OPTIMUM SPEED: GREEN DOT (*Refer to QRH/OPS Operating Speeds*)

L2 *Green dot speed is the optimum speed for starter-assisted relight with the APU bleed.*

L1 WING ANTI ICE..... OFF
APU BLEED..... ON
ENG MASTER (one at a time)..... ON

L2 *Between each attempt to relight the same engine, wait at least 30 s with the associated ENG MASTER lever set to OFF.*

L1 SPEED BRAKES AVAILABLE

L2 *Speed brakes remain available. If necessary, extend the speed brakes to increase the descent rate.*

L1

- **When below 10 000 ft AGL:**

PREPARE CABIN AND COCKPIT

L2
- *Secure loose equipment*
- *Prepare survival equipment*
- *Fasten belts and shoulder harnesses.*

L1 RAM AIR..... ON

L2 *Switch the RAM AIR on, in order to ensure entire depressurization of the aircraft and to provide fresh air to the cabin. There is fresh air ventilation in the cockpit and cabin only when the differential pressure is below 1 PSI.*

L1 BARO REF (if avail)..... SET

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

COMMERCIAL ..... OFF
GALLEY ..... OFF
GALY & CAB ..... OFF
ELT (when conditions permit) ..... ON
ENGs RELIGHT ..... TRY REGULARLY

USE RUDDER WITH CARE

- **If ditching anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated.

- **If forced landing anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated.

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00021158.0001001 / 31 AUG 17

18

● **If engine relight cannot be attempted:**

(It includes the cases of no fuel remaining or engine damage)

OPTIMUM SPEED: GREEN DOT (*Refer to QRH/OPS Operating Speeds*)

L2 *Green dot speed is the optimum speed to glide as far as possible, in the event of an all engines failure.*

L1 GLIDING DISTANCE : 2.5 NM / 1000 FT

GLIDING DISTANCE AT GREEN DOT: 2.5 NM / 1000 FT (400 FT/NM) NO WIND			
Flight Level	***FL 200***	***FL 300***	***FL 400***
Distance (NM)	*50*	*75*	*100*

APU (below FL 250)..... START
WING ANTI ICE.....OFF
APU BLEED (below FL 200).....ON

SPEED BRAKES AVAILABLE

L2 *Speed brakes remain available. If necessary, extend the speed brakes to increase the descent rate.*

L1 ● **When below 10 000 ft AGL:**
PREPARE CABIN AND COCKPIT

L2
- *Secure loose equipment*
- *Prepare survival equipment*
- *Fasten belts and shoulder harnesses.*

L1 RAM AIR..... ON

L2 *Switch the RAM AIR on, in order to ensure entire depressurization of the aircraft and to provide fresh air to the cabin. There is fresh air ventilation in the cockpit and cabin only when the differential pressure is below 1 PSI.*

L1 BARO REF (if avail).....SET
COMMERCIAL ◁ .....OFF
GALLEY ◁ .....OFF
GALY & CAB ◁ .....OFF
ELT ◁ (when conditions permit)..... ON

USE RUDDER WITH CARE

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

- **If ditching anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated.

- **If forced landing anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated.

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017529.0002001 / 31 AUG 17

19

- **If ditching anticipated:**

MIN RAT SPEED: 140 KT
GPWS SYS.....OFF
GPWS TERR.....OFF

L2 *Set the SYS pb-sw and the TERR pb-sw to off in order to avoid nuisance warnings.*

L1

- **At appropriate altitude (above 3 000 ft AGL), configure aircraft for ditching.**

FOR LANDING : USE FLAP 2

L2 *Only slats extend, and slowly.*

L1 KEEP LANDING GEAR UP
VAPP..... DETERMINE

Gross Weight	*40 t / 90 klb*	*50 t / 110 klb*	*60 t / 130 klb*	*70 t / 155 klb*	*80 t / 175 klb*	*90 t / 200 klb*	*95 t / 210 klb*
VAPP (kt)	*150 kt*	*150 kt*	*163 kt*	*173 kt*	*183 kt*	*193 kt*	*198 kt*

- **At 2 000 ft AGL:**

CABIN CREW.....NOTIFY FOR DITCHING
DITCHING pb.....ON

L2 *Ditch the aircraft parallel to the swell. If that causes a strong crosswind, ditch the aircraft into the wind.*

L1

- **At 500 ft AGL:**

BRACE FOR IMPACT.....ORDER
TOUCH DOWN AT MIN V/S
TARGET PITCH ATT 11 °

- **At touchdown:**

ALL ENG MASTERS.....OFF
APU MASTER SW.....OFF

- **After ditching:**

ATC (VHF 1)..... NOTIFY
ALL FIRE pb (ENGs & APU)..... PUSH
ALL AGENT (ENGs & APU).....DISCH

L2 *Engine agent 2 is not available.*

L1 EVACUATION.....INITIATE

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

L2 *Make a short and precise announcement to order the emergency evacuation.*
Press the EVAC COMMAND pb .

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017530.0002001 / 31 AUG 17

20

- **If forced landing anticipated:**

DESCENT SLOPE (CONF 2, L/G DOWN) : 1.6 NM / 1000 FT (600 FT/NM)

MIN RAT SPEED: 140 KT

GPWS SYS.....OFF

GPWS TERR.....OFF

L2 *Set the SYS pb-sw and the TERR pb-sw to off in order to avoid nuisance warnings.*

L1

- **At appropriate altitude (above 3 000 ft AGL), configure aircraft for landing:**

FOR LANDING : USE FLAP 2

L2 *Only slats extend, and slowly.*

L1 VAPP..... DETERMINE

Gross Weight	*40 t / 90 klb*	*50 t / 110 klb*	*60 t / 130 klb*	*70 t / 155 klb*	*80 t / 175 klb*	*90 t / 200 klb*	*95 t / 210 klb*
VAPP (kt)	*150 kt*	*150 kt*	*163 kt*	*173 kt*	*183 kt*	*193 kt*	*198 kt*

- **When in CONF 2 and VAPP:**

GRAVITY GEAR EXTN handcrank.....PULL AND TURN

L2 *Flight controls revert to direct law at landing gear extension. To ensure correct aircraft trimming for approach, extend the landing gear only when the aircraft is in CONF 2 and at VAPP.*

L1 MAN PITCH TRIM NOT AVAILABLE

L2 *Disregard the ″USE MAN PITCH TRIM″ message on the PFD.*

L1

- **When L/G downlocked:**

L/G lever.....DOWN

APPROACH SPEED..... ADJUST

L2 *Adjust the speed to the above-mentioned VAPP. However, to reach the landing field or runway, it is possible to increase the approach speed.*

L1 SPLRs.....ARM

MAX BRK PR : 1 000 PSI

- **At 2 000 ft AGL:**

CABIN CREW..... NOTIFY FOR LANDING

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

- **At 500 ft AGL:**
  BRACE FOR IMPACT.....ORDER
- **At touchdown:**
  ALL ENG MASTERS.....OFF
  APU MASTER SW.....OFF
  BRAKES ON ACCU ONLY
- **When aircraft stopped:**
  PARKING BRK.....ON
  ATC (VHF 1).....NOTIFY
  ALL FIRE pb (ENGs & APU).....PUSH
  ALL AGENT (ENGs & APU).....DISCH

L2 *Engine agent 2 is not available.*

L1 ■ **If evacuation required:**
EVACUATION.....INITIATE

L2 *Make a short and precise announcement to order the emergency evacuation.*
Press the EVAC COMMAND pb .

L1 ■ **If evacuation not required:**
CABIN CREW and PASSENGERS (PA).....NOTIFY

[QRH] ALL ENG FAIL

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-AT-00017524.0004001 / 17 MAR 17

21

L2 The flight crew must apply this paper procedure when required by the ENG ALL ENGINES FAILURE ECAM alert.

During the application of the ALL ENGINES FAILURE paper procedure:
- If one or more engines relight, apply the corresponding ECAM procedure instead, or
- If none of the engines relights, continue to apply the ALL ENGINES FAILURE paper procedure. If there is sufficient time, clear both the ECAM alerts and the ECAM STATUS page.

The purpose of the ENG ALL ENGINES FAILURE ECAM procedure is to secure both the automatic extension of the RAT and the automatic connection of the emergency generator.

The ALL ENGINES FAILURE paper procedure includes a fuel quantity check to determine if either of the following applies:
- Engine relight can be attempted, or
- Engine relight cannot be attempted.

If engine relight can be attempted, the flight crew can attempt successive engine relights. First without the APU bleed (windmill start), then with the APU bleed, if available.
If engine relight cannot be attempted, the flight crew must apply the procedure for forced landing or ditching.

L1 First apply the following actions of the ENG ALL ENGINES FAILURE ECAM procedure (if not already applied):

LAND ASAP

EMER ELEC PWR MAN ON pb.....PRESS

L2 *Set the EMER ELEC PWR pb to MAN ON to enable both the RAT extension and the emergency generator connection.*

L1 OPT RELIGHT SPD.....280/0.77

Ident.: PRO-ABN-ENG-AT-00017541.0003001 / 17 MAR 17

22

L2

PITCH TARGET IN CASE OF SPEED INDICATION FAILURE	
Gross Weight	**Pitch (°)**
At or below 50 000 kg / 110 000 lb	-2.5
60 000 kg / 132 000 lb	-1.5
70 000 kg / 154 000 lb	-0.5

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017543.0007001 / 17 MAR 17

23

APU (below FL 250).....START
THR LEVERS.....IDLE
GLIDING DISTANCE : 2 NM / 1000 FT

AT 280 KT: 2 NM / 1000 FT (500 FT/NM) NO WIND			
Flight Level	***FL 200***	***FL 300***	***FL 400***
Distance (NM)	*40*	*60*	*80*

DIVERSION.....INITIATE

L2 *Check if there is an accessible runway, or determine the most appropriate area for a forced landing or ditching.*

L1 Then, as long as none of the engines relights, apply the following paper procedure. If there is sufficient time, clear all ECAM alerts, and clear the ECAM STATUS page.

VHF1/HF1 /ATC1.....USE
ATC.....NOTIFY
CABIN CREW.....NOTIFY
SIGNS.....ON
CREW OXY MASK (FL > 100).....USE
FUEL QUANTITY.....CHECK

Ident.: PRO-ABN-ENG-AT-00021154.0001001 / 17 MAR 17

24

- **If engine relight can be attempted:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight can be attempted.

- **If engine relight cannot be attempted:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight cannot be attempted.

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017544.0015001 / 07 DEC 17

25

- **If engine relight can be attempted:**

ENG MODE sel..... IGN

- **Approaching or below FL 260 : Windmill Relight**

ALL ENG MASTERS..... OFF 30 S THEN ON
ENGs RELIGHT..... TRY REGULARLY

L2 *Windmill relight attempts can be repeated until successful, or until the APU bleed is available.*

L1 APU (below FL 250)..... START

- **If APU available and windmill relight unsuccessful : Starter Assisted Relight below FL 200**

ALL ENG MASTERS..... OFF

OPTIMUM SPEED: GREEN DOT (*Refer to QRH/OPS Operating Speeds*)

L2 *Green dot speed is the optimum speed for starter-assisted relight with the APU bleed.*

L1 WING ANTI ICE..... OFF
APU BLEED..... ON
ENG MASTER (one at a time)..... ON

L2 *Between each attempt to relight the same engine, wait at least 30 s with the associated ENG MASTER lever set to OFF.*

L1 SPEED BRAKES AVAILABLE

L2 *Speed brakes remain available. If necessary, extend the speed brakes to increase the descent rate.*

L1

- **When below 10 000 ft AGL:**

PREPARE CABIN AND COCKPIT

L2
- *Secure loose equipment*
- *Prepare survival equipment*
- *Fasten belts and shoulder harnesses.*

L1 RAM AIR..... ON

L2 *Switch the RAM AIR on, in order to ensure entire depressurization of the aircraft and to provide fresh air to the cabin. There is fresh air ventilation in the cockpit and cabin only when the differential pressure is below 1 PSI.*

L1 BARO REF (if avail)..... SET

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

COMMERCIAL ..... OFF
GALLEY ..... OFF
GALY & CAB ..... OFF
ELT (when conditions permit) ..... ON
ENGs RELIGHT ..... TRY REGULARLY

USE RUDDER WITH CARE

- **If ditching anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated.

- **If forced landing anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated.

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00021158.0001001 / 31 AUG 17

26

● **If engine relight cannot be attempted:**

(It includes the cases of no fuel remaining or engine damage)

OPTIMUM SPEED: GREEN DOT (*Refer to QRH/OPS Operating Speeds*)

L2 *Green dot speed is the optimum speed to glide as far as possible, in the event of an all engines failure.*

L1 GLIDING DISTANCE : 2.5 NM / 1000 FT

GLIDING DISTANCE AT GREEN DOT: 2.5 NM / 1000 FT (400 FT/NM) NO WIND			
Flight Level	***FL 200***	***FL 300***	***FL 400***
Distance (NM)	*50*	*75*	*100*

APU (below FL 250)..... START
WING ANTI ICE.....OFF
APU BLEED (below FL 200).....ON

SPEED BRAKES AVAILABLE

L2 *Speed brakes remain available. If necessary, extend the speed brakes to increase the descent rate.*

L1 ● **When below 10 000 ft AGL:**
PREPARE CABIN AND COCKPIT

L2
- *Secure loose equipment*
- *Prepare survival equipment*
- *Fasten belts and shoulder harnesses.*

L1 RAM AIR..... ON

L2 *Switch the RAM AIR on, in order to ensure entire depressurization of the aircraft and to provide fresh air to the cabin. There is fresh air ventilation in the cockpit and cabin only when the differential pressure is below 1 PSI.*

L1 BARO REF (if avail).....SET
COMMERCIAL ⋘ .....OFF
GALLEY ⋘ .....OFF
GALY & CAB ⋘ .....OFF
ELT ⋘ (when conditions permit)..... ON

USE RUDDER WITH CARE

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

- **If ditching anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated.

- **If forced landing anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated.

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017529.0002001 / 31 AUG 17

27

- **If ditching anticipated:**

MIN RAT SPEED: 140 KT
GPWS SYS.....OFF
GPWS TERR.....OFF

L2 *Set the SYS pb-sw and the TERR pb-sw to off in order to avoid nuisance warnings.*

L1

- **At appropriate altitude (above 3 000 ft AGL), configure aircraft for ditching.**

FOR LANDING : USE FLAP 2

L2 *Only slats extend, and slowly.*

L1 KEEP LANDING GEAR UP
VAPP..... DETERMINE

Gross Weight	*40 t / 90 klb*	*50 t / 110 klb*	*60 t / 130 klb*	*70 t / 155 klb*	*80 t / 175 klb*	*90 t / 200 klb*	*95 t / 210 klb*
VAPP (kt)	*150 kt*	*150 kt*	*163 kt*	*173 kt*	*183 kt*	*193 kt*	*198 kt*

- **At 2 000 ft AGL:**

CABIN CREW.....NOTIFY FOR DITCHING
DITCHING pb.....ON

L2 *Ditch the aircraft parallel to the swell. If that causes a strong crosswind, ditch the aircraft into the wind.*

L1

- **At 500 ft AGL:**

BRACE FOR IMPACT.....ORDER
TOUCH DOWN AT MIN V/S
TARGET PITCH ATT 11 °

- **At touchdown:**

ALL ENG MASTERS.....OFF
APU MASTER SW.....OFF

- **After ditching:**

ATC (VHF 1)..... NOTIFY
ALL FIRE pb (ENGs & APU)..... PUSH
ALL AGENT (ENGs & APU).....DISCH

L2 *Engine agent 2 is not available.*

L1 EVACUATION.....INITIATE

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

L2 *Make a short and precise announcement to order the emergency evacuation.*
Press the EVAC COMMAND pb .

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017530.0002001 / 31 AUG 17

28

- **If forced landing anticipated:**

DESCENT SLOPE (CONF 2, L/G DOWN) : 1.6 NM / 1000 FT (600 FT/NM)

MIN RAT SPEED: 140 KT

GPWS SYS.....OFF

GPWS TERR.....OFF

L2 *Set the SYS pb-sw and the TERR pb-sw to off in order to avoid nuisance warnings.*

L1

- **At appropriate altitude (above 3 000 ft AGL), configure aircraft for landing:**

FOR LANDING : USE FLAP 2

L2 *Only slats extend, and slowly.*

L1 VAPP..... DETERMINE

Gross Weight	*40 t / 90 klb*	*50 t / 110 klb*	*60 t / 130 klb*	*70 t / 155 klb*	*80 t / 175 klb*	*90 t / 200 klb*	*95 t / 210 klb*
VAPP (kt)	*150 kt*	*150 kt*	*163 kt*	*173 kt*	*183 kt*	*193 kt*	*198 kt*

- **When in CONF 2 and VAPP:**

GRAVITY GEAR EXTN handcrank.....PULL AND TURN

L2 *Flight controls revert to direct law at landing gear extension. To ensure correct aircraft trimming for approach, extend the landing gear only when the aircraft is in CONF 2 and at VAPP.*

L1 MAN PITCH TRIM NOT AVAILABLE

L2 *Disregard the ″USE MAN PITCH TRIM″ message on the PFD.*

L1

- **When L/G downlocked:**

L/G lever.....DOWN

APPROACH SPEED..... ADJUST

L2 *Adjust the speed to the above-mentioned VAPP. However, to reach the landing field or runway, it is possible to increase the approach speed.*

L1 SPLRs.....ARM

MAX BRK PR : 1 000 PSI

- **At 2 000 ft AGL:**

CABIN CREW..... NOTIFY FOR LANDING

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

- **At 500 ft AGL:**
  BRACE FOR IMPACT.....ORDER
- **At touchdown:**
  ALL ENG MASTERS.....OFF
  APU MASTER SW.....OFF
  BRAKES ON ACCU ONLY
- **When aircraft stopped:**
  PARKING BRK.....ON
  ATC (VHF 1).....NOTIFY
  ALL FIRE pb (ENGs & APU).....PUSH
  ALL AGENT (ENGs & APU).....DISCH

L2 *Engine agent 2 is not available.*

L1 ■ **If evacuation required:**
EVACUATION.....INITIATE

L2 *Make a short and precise announcement to order the emergency evacuation.*
Press the EVAC COMMAND pb .

L1 ■ **If evacuation not required:**
CABIN CREW and PASSENGERS (PA).....NOTIFY

[QRH] ALL ENG FAIL

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-AT-00017524.0004001 / 17 MAR 17

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L2 The flight crew must apply this paper procedure when required by the ENG ALL ENGINES FAILURE ECAM alert.

During the application of the ALL ENGINES FAILURE paper procedure:
- If one or more engines relight, apply the corresponding ECAM procedure instead, or
- If none of the engines relights, continue to apply the ALL ENGINES FAILURE paper procedure. If there is sufficient time, clear both the ECAM alerts and the ECAM STATUS page.

The purpose of the ENG ALL ENGINES FAILURE ECAM procedure is to secure both the automatic extension of the RAT and the automatic connection of the emergency generator.

The ALL ENGINES FAILURE paper procedure includes a fuel quantity check to determine if either of the following applies:
- Engine relight can be attempted, or
- Engine relight cannot be attempted.

If engine relight can be attempted, the flight crew can attempt successive engine relights. First without the APU bleed (windmill start), then with the APU bleed, if available.
If engine relight cannot be attempted, the flight crew must apply the procedure for forced landing or ditching.

L1 First apply the following actions of the ENG ALL ENGINES FAILURE ECAM procedure (if not already applied):

LAND ASAP

EMER ELEC PWR MAN ON pb.....PRESS

L2 *Set the EMER ELEC PWR pb to MAN ON to enable both the RAT extension and the emergency generator connection.*

L1 OPT RELIGHT SPD.....280/0.77

Ident.: PRO-ABN-ENG-AT-00017541.0004001 / 17 MAR 17

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L2

PITCH TARGET IN CASE OF SPEED INDICATION FAILURE	
Gross Weight	**Pitch (°)**
At or below 60 000 kg / 132 000 lb	-2.5
70 000 kg / 154 000 lb	-1.5
80 000 kg / 176 000 lb	-0.5

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017543.0007001 / 17 MAR 17

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APU (below FL 250).....START
THR LEVERS.....IDLE
GLIDING DISTANCE : 2 NM / 1000 FT

AT 280 KT: 2 NM / 1000 FT (500 FT/NM) NO WIND			
Flight Level	***FL 200***	***FL 300***	***FL 400***
Distance (NM)	*40*	*60*	*80*

DIVERSION.....INITIATE

L2 *Check if there is an accessible runway, or determine the most appropriate area for a forced landing or ditching.*

L1 Then, as long as none of the engines relights, apply the following paper procedure. If there is sufficient time, clear all ECAM alerts, and clear the ECAM STATUS page.

VHF1/HF1 /ATC1.....USE
ATC.....NOTIFY
CABIN CREW.....NOTIFY
SIGNS.....ON
CREW OXY MASK (FL > 100).....USE
FUEL QUANTITY.....CHECK

Ident.: PRO-ABN-ENG-AT-00021154.0001001 / 17 MAR 17

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- **If engine relight can be attempted:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight can be attempted.

- **If engine relight cannot be attempted:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If engine relight cannot be attempted.

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017544.0015001 / 07 DEC 17

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- **If engine relight can be attempted:**

ENG MODE sel..... IGN

- **Approaching or below FL 260 : Windmill Relight**

ALL ENG MASTERS..... OFF 30 S THEN ON
ENGs RELIGHT..... TRY REGULARLY

L2 *Windmill relight attempts can be repeated until successful, or until the APU bleed is available.*

L1 APU (below FL 250)..... START

- **If APU available and windmill relight unsuccessful : Starter Assisted Relight below FL 200**

ALL ENG MASTERS..... OFF

OPTIMUM SPEED: GREEN DOT (*Refer to QRH/OPS Operating Speeds*)

L2 *Green dot speed is the optimum speed for starter-assisted relight with the APU bleed.*

L1 WING ANTI ICE..... OFF
APU BLEED..... ON
ENG MASTER (one at a time)..... ON

L2 *Between each attempt to relight the same engine, wait at least 30 s with the associated ENG MASTER lever set to OFF.*

L1 SPEED BRAKES AVAILABLE

L2 *Speed brakes remain available. If necessary, extend the speed brakes to increase the descent rate.*

L1

- **When below 10 000 ft AGL:**

PREPARE CABIN AND COCKPIT

L2
- *Secure loose equipment*
- *Prepare survival equipment*
- *Fasten belts and shoulder harnesses.*

L1 RAM AIR..... ON

L2 *Switch the RAM AIR on, in order to ensure entire depressurization of the aircraft and to provide fresh air to the cabin. There is fresh air ventilation in the cockpit and cabin only when the differential pressure is below 1 PSI.*

L1 BARO REF (if avail)..... SET

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

COMMERCIAL ..... OFF
GALLEY ..... OFF
GALY & CAB ..... OFF
ELT (when conditions permit) ..... ON
ENGs RELIGHT ..... TRY REGULARLY

USE RUDDER WITH CARE

- **If ditching anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated.

- **If forced landing anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated.

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00021158.0001001 / 31 AUG 17

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● **If engine relight cannot be attempted:**

(It includes the cases of no fuel remaining or engine damage)

OPTIMUM SPEED: GREEN DOT (*Refer to QRH/OPS Operating Speeds*)

L2 *Green dot speed is the optimum speed to glide as far as possible, in the event of an all engines failure.*

L1 GLIDING DISTANCE : 2.5 NM / 1000 FT

GLIDING DISTANCE AT GREEN DOT: 2.5 NM / 1000 FT (400 FT/NM) NO WIND			
Flight Level	***FL 200***	***FL 300***	***FL 400***
Distance (NM)	*50*	*75*	*100*

APU (below FL 250)..... START
WING ANTI ICE.....OFF
APU BLEED (below FL 200).....ON

SPEED BRAKES AVAILABLE

L2 *Speed brakes remain available. If necessary, extend the speed brakes to increase the descent rate.*

L1 ● **When below 10 000 ft AGL:**
PREPARE CABIN AND COCKPIT

L2
- *Secure loose equipment*
- *Prepare survival equipment*
- *Fasten belts and shoulder harnesses.*

L1 RAM AIR..... ON

L2 *Switch the RAM AIR on, in order to ensure entire depressurization of the aircraft and to provide fresh air to the cabin. There is fresh air ventilation in the cockpit and cabin only when the differential pressure is below 1 PSI.*

L1 BARO REF (if avail).....SET
COMMERCIAL ⋘ .....OFF
GALLEY ⋘ .....OFF
GALY & CAB ⋘ .....OFF
ELT ⋘ (when conditions permit)..... ON

USE RUDDER WITH CARE

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

- **If ditching anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated.

- **If forced landing anticipated:**

  Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated.

Continued on the following page

Ident.: PRO-ABN-ENG-AT-00017529.0002001 / 31 AUG 17

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- **If ditching anticipated:**

MIN RAT SPEED: 140 KT
GPWS SYS.....OFF
GPWS TERR.....OFF

L2 *Set the SYS pb-sw and the TERR pb-sw to off in order to avoid nuisance warnings.*

L1 - **At appropriate altitude (above 3 000 ft AGL), configure aircraft for ditching.**

FOR LANDING : USE FLAP 2

L2 *Only slats extend, and slowly.*

L1 KEEP LANDING GEAR UP
VAPP.....DETERMINE

Gross Weight	*40 t / 90 klb*	*50 t / 110 klb*	*60 t / 130 klb*	*70 t / 155 klb*	*80 t / 175 klb*	*90 t / 200 klb*	*95 t / 210 klb*
VAPP (kt)	*150 kt*	*150 kt*	*163 kt*	*173 kt*	*183 kt*	*193 kt*	*198 kt*

- **At 2 000 ft AGL:**

CABIN CREW.....NOTIFY FOR DITCHING
DITCHING pb.....ON

L2 *Ditch the aircraft parallel to the swell. If that causes a strong crosswind, ditch the aircraft into the wind.*

L1 - **At 500 ft AGL:**

BRACE FOR IMPACT.....ORDER
TOUCH DOWN AT MIN V/S
TARGET PITCH ATT 11 °

- **At touchdown:**

ALL ENG MASTERS.....OFF
APU MASTER SW.....OFF

- **After ditching:**

ATC (VHF 1).....NOTIFY
ALL FIRE pb (ENGs & APU).....PUSH
ALL AGENT (ENGs & APU).....DISCH

L2 *Engine agent 2 is not available.*

L1 EVACUATION.....INITIATE

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

L2 *Make a short and precise announcement to order the emergency evacuation.*
Press the EVAC COMMAND pb .

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

Ident.: PRO-ABN-ENG-AT-00017530.0003001 / 31 AUG 17

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- **If forced landing anticipated:**

DESCENT SLOPE (CONF 2, L/G DOWN) : 1.5 NM / 1000 FT (650 FT/NM)

MIN RAT SPEED: 140 KT

GPWS SYS.....OFF

GPWS TERR.....OFF

L2 *Set the SYS pb-sw and the TERR pb-sw to off in order to avoid nuisance warnings.*

L1

- **At appropriate altitude (above 3 000 ft AGL), configure aircraft for landing:**

FOR LANDING : USE FLAP 2

L2 *Only slats extend, and slowly.*

L1 VAPP..... DETERMINE

Gross Weight	*40 t / 90 klb*	*50 t / 110 klb*	*60 t / 130 klb*	*70 t / 155 klb*	*80 t / 175 klb*	*90 t / 200 klb*	*95 t / 210 klb*
VAPP (kt)	*150 kt*	*150 kt*	*163 kt*	*173 kt*	*183 kt*	*193 kt*	*198 kt*

- **When in CONF 2 and VAPP:**

GRAVITY GEAR EXTN handcrank.....PULL AND TURN

L2 *Flight controls revert to direct law at landing gear extension. To ensure correct aircraft trimming for approach, extend the landing gear only when the aircraft is in CONF 2 and at VAPP.*

L1 MAN PITCH TRIM NOT AVAILABLE

L2 *Disregard the ″USE MAN PITCH TRIM″ message on the PFD.*

L1

- **When L/G downlocked:**

L/G lever.....DOWN

APPROACH SPEED..... ADJUST

L2 *Adjust the speed to the above-mentioned VAPP. However, to reach the landing field or runway, it is possible to increase the approach speed.*

L1 SPLRs.....ARM

MAX BRK PR : 1 000 PSI

- **At 2 000 ft AGL:**

CABIN CREW..... NOTIFY FOR LANDING

Continued on the following page

[QRH] ALL ENG FAIL (Cont'd)

- **At 500 ft AGL:**
  BRACE FOR IMPACT.....ORDER
- **At touchdown:**
  ALL ENG MASTERS.....OFF
  APU MASTER SW.....OFF
  BRAKES ON ACCU ONLY
- **When aircraft stopped:**
  PARKING BRK.....ON
  ATC (VHF 1).....NOTIFY
  ALL FIRE pb (ENGs & APU).....PUSH
  ALL AGENT (ENGs & APU).....DISCH

L2 *Engine agent 2 is not available.*

L1 ■ **If evacuation required:**
EVACUATION.....INITIATE

L2 *Make a short and precise announcement to order the emergency evacuation.*
Press the EVAC COMMAND pb .

L1 ■ **If evacuation not required:**
CABIN CREW and PASSENGERS (PA).....NOTIFY

[QRH] ENG DUAL FAILURE - FUEL REMAINING

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

Ident.: PRO-ABN-ENG-X-00012309.0159001 / 17 MAR 17

As long as none of the engines recover, the flight crew must apply this paper procedure when required by the ECAM ENG DUAL FAILURE procedure. If time permits, clear ECAM alerts, and check the ECAM STATUS page.

LAND ASAP

OPTIMUM RELIGHT SPD..... 280 kt

PITCH TARGET In case of speed indication failure:	
Gross Weight	***Pitch (°)***
At or below 50 000 kg/110 000 lb	*-2.5*
60 000 kg/132 000 lb	*-1.5*
70 000 kg/154 000 lb	*-0.5*

AVERAGE GLIDING DISTANCE : 2.2 NM / 1000 FT (280kt NO WIND)

DETERMINE LANDING STRATEGY

VHF1/HF1 ◁ /ATC1.....USE

ATC.....NOTIFY

Notify air traffic control of the nature of the emergency, and state intentions. Switch to code A7700, or transmit a distress message on one of the following frequencies: VHF frequency 121.5 MHz, HF 2 182 kHz or 8 364 kHz.

- **If no relight after 30 s:**

  ENG MASTERS.....OFF 30 S / ON

  Unassisted start attempts can be repeated until successful, or until APU bleed is available.

- **If unsuccessful:**

  CREW OXY MASKS (above FL 100)..... ON

  Cabin altitude will increase, due to the lack of engine bleed: The EXCESS CAB ALT warning could be triggered. Depending on the situation, to gain gliding distance, the flight crew may disregard the ECAM emergency descent requirement, because passengers will be provided with oxygen for a sufficient period of time.

  APU (IF AVAIL).....START

  If APU is available, APU may be started when below FL 250 and APU BLEED may be used for engine start below FL 200.

  WING ANTI ICE.....OFF

Continued on the following page

[QRH] ENG DUAL FAILURE - FUEL REMAINING (Cont'd)

APU BLEED.....ON

- **In sequence:**
  ENG MASTERS (all non running engines).....OFF

  After 30 s

  ENG MASTERS (one at a time).....ON

  Between each attempt to relight the same engine, wait at least 30 s with the associated ENG MASTER lever set to OFF.

Continued on the following page

[QRH] ENG DUAL FAILURE - FUEL REMAINING (Cont'd)

Ident.: PRO-ABN-ENG-X-00012310.0131001 / 17 MAR 17

- **When APU bleed is available or if engine restart is definitively considered impossible:**

OPTIMUM SPEED WITH ALL ENGINES INOPERATIVE (KNOTS)			
Gross Weight (1 000 kg)	**At or below FL 200**	**FL 300**	**FL 400**
78	236	246	256
76	232	242	252
72	224	234	244
68	216	226	236
64	208	218	228
60	200	210	220
56	192	202	212
52	184	194	204
48	176	186	196
44	168	178	188
40	160	170	180

AVERAGE GLIDING DISTANCE: 2.5 NM / 1000 FT (NO WIND)

AVERAGE RATE OF DESCENT: 1 600 FT/MIN

PREPARE CABIN AND COCKPIT

- *Loose equipment secured.*
- *Survival equipments prepared.*
- *Belts and shoulder harnesses locked.*

SIGNS.....ON
COMMERCIAL.....OFF

USE RUDDER WITH CARE

As hydraulic power is only available from the RAT, avoid large and rapid rudder deflection.

- **When below FL 150:**

RAM AIR.....ON

Ident.: PRO-ABN-ENG-X-00012311.0001001 / 17 MAR 17

BARO REF.....SET
CREW MASKS/OXY SUPPLY (below FL 100).....OFF
ELT ◁ (when conditions permit).....ON

Continued on the following page

[QRH] ENG DUAL FAILURE - FUEL REMAINING (Cont'd)

Ident.: PRO-ABN-ENG-X-00012312.0090001 / 09 MAY 17

- **If forced landing anticipated:**

AVERAGE GLIDING DISTANCE 1.2NM / 1000FT (CONF3, L/G DOWN, NO WIND)

- **For approach:**

FOR LANDING : USE FLAP 3

SLATS AVAIL ONLY

MIN APPR SPEED : 150 kt

VAPP..... DETERMINE

Gross Weight (1 000 kg)	*40*	*44*	*48*	*52*	*56*	*60*	*64*	*68*	*72*	*76*	*78*
VAPP	*150*	*150*	*150*	*150*	*150*	*154*	*159*	*163*	*167*	*171*	*172*

- **At a suitable altitude (not below 3 000 ft AGL):**
  - **When in CONF 3 and VAPP:**

GRAVITY GEAR EXTN handcrank..... PULL AND TURN

FLT CTL DIRECT LAW

MAN PITCH TRIM NOT AVAILABLE

  - **When L/G downlocked:**

L/G lever.....DOWN
APPROACH SPEED..... ADJUST
MAX SPEED : 200 kt
ADJUST SPEED TO REACH LANDING FIELD
SPLRs.....ARM
MAX BRK PR : 1 000 PSI

- **At 2 000 ft AGL:**

CABIN CREW..... NOTIFY FOR LANDING

- **At 500 ft AGL:**

BRACE FOR IMPACT.....ORDER

- **At touchdown:**

ENG MASTERS..... OFF
APU MASTER SW.....OFF
BRAKES ON ACCU ONLY

Continued on the following page

[QRH] ENG DUAL FAILURE - FUEL REMAINING (Cont'd)

- **When aircraft stopped:**

  PARKING BRK.....ON
  ATC.....NOTIFY
  FIRE pb (ENGs & APU).....PUSH
  AGENT (ENGs & APU).....DISCH

  - **If evacuation required:**

    EVACUATION..... INITIATE

    Make a short and precise announcement to order the emergency evacuation.
    Press the EVAC COMMAND pb .

    ELT .....CHECK EMITTING

    If not, switch on the transmitter.

  - **If evacuation not required:**

    CABIN CREW and PASSENGERS (PA).....NOTIFY

Continued on the following page

[QRH] ENG DUAL FAILURE - FUEL REMAINING (Cont'd)

Ident.: PRO-ABN-ENG-X-00012313.0090001 / 17 MAR 17

- **If ditching anticipated:**
  - **For approach:**
    FOR LANDING : USE FLAP 3
    SLATS AVAIL ONLY
    MIN APPR SPEED : 150 kt
    VAPP..... DETERMINE

Gross Weight (1 000 kg)	*40*	*44*	*48*	*52*	*56*	*60*	*64*	*68*	*72*	*76*	*78*
VAPP	*150*	*150*	*150*	*150*	*150*	*154*	*159*	*163*	*167*	*171*	*172*

  - **At a suitable altitude (not below 3 000 ft AGL):**
    KEEP LANDING GEAR UP
    FOR FLARE: TARGET PITCH 11 ° & MIN V/S

    Note: Prefer ditching parallel to the swell. If that causes a strong crosswind, ditch into the wind.

  - **At 2 000 ft AGL:**
    CABIN CREW..... NOTIFY FOR DITCHING
    DITCHING pb..... ON
  - **At 500 ft AGL:**
    BRACE FOR IMPACT..... ORDER
  - **At touchdown:**
    ENG MASTERS..... OFF
    APU MASTER SW..... OFF
  - **After ditching:**
    ATC (VHF 1)..... NOTIFY
    FIRE pb (ENGs & APU)..... PUSH
    AGENTs (ENGs & APU)..... DISCH
    EVACUATION..... INITIATE
    ELT ..... CHECK EMITTING
    If not, switch on the transmitter.

[QRH] ENG DUAL FAILURE - FUEL REMAINING

Applicable to: MSN 04393-04397, 04433

Ident.: PRO-ABN-ENG-X-00012309.0061001 / 17 MAR 17

As long as none of the engines recover, the flight crew must apply this paper procedure when required by the ECAM ENG DUAL FAILURE procedure. If time permits, clear ECAM alerts, and check the ECAM STATUS page.

LAND ASAP

OPTIMUM RELIGHT SPD..... 300 kt

PITCH TARGET In case of speed indication failure:	
Gross Weight	***Pitch (°)***
At or below 50 000 kg/110 000 lb	*-4.5*
60 000 kg/132 000 lb	*-3.5*
70 000 kg/154 000 lb	*-2.5*

AVERAGE GLIDING DISTANCE : 2 NM / 1000 FT (300kt NO WIND)

DETERMINE LANDING STRATEGY

VHF1/HF1 ◁ /ATC1.....USE

ATC.....NOTIFY

TRANSPONDER.....SELECT A7700

Notify air traffic control of the nature of the emergency, and state intentions. If there is no contact with air traffic control Switch to code A7700, or transmit a distress message on one of the following frequencies: VHF frequency 121.5 MHz, HF 2 182 kHz or 8 364 kHz.

- **If no relight after 30 s:**

  ENG MASTERS.....OFF 30 S / ON

  Unassisted start attempts can be repeated until successful, or until APU bleed is available.

- **If unsuccessful:**

  CREW OXY MASKS (above FL 100)..... ON

  Cabin altitude will increase, due to the lack of engine bleed: The EXCESS CAB ALT warning could be triggered. Depending on the situation, to gain gliding distance, the flight crew may disregard the ECAM emergency descent requirement, because passengers will be provided with oxygen for a sufficient period of time.

  APU (IF AVAIL).....START

  If the APU is available, it may be started when below FL 250 and the APU BLEED may be used for engine start below FL 200.

  WING ANTI ICE.....OFF

Continued on the following page

[QRH] ENG DUAL FAILURE - FUEL REMAINING (Cont'd)

APU BLEED.....ON

- **In sequence:**
  ENG MASTERS (all non running engines).....OFF

  After 30 s

  ENG MASTERS (one at a time).....ON

  Between each attempt to relight the same engine, wait at least 30 s with the associated ENG MASTER lever set to OFF.

Continued on the following page

[QRH] ENG DUAL FAILURE - FUEL REMAINING (Cont'd)

Ident.: PRO-ABN-ENG-X-00012310.0041001 / 17 MAR 17

- **When APU bleed is available or if engine restart is definitively considered impossible:**

OPTIMUM SPEED WITH ALL ENGINES INOPERATIVE (KNOTS)			
Gross Weight (1 000 kg)	**At or below FL 200**	**FL 300**	**FL 400**
78	241	251	261
76	237	247	257
72	229	239	249
68	221	231	241
64	213	223	233
60	205	215	225
56	197	207	217
52	189	199	209
48	181	191	201
44	173	183	193
40	165	175	185

AVERAGE GLIDING DISTANCE: 2.5 NM / 1000 FT (NO WIND)

AVERAGE RATE OF DESCENT: 1 600 FT/MIN

PREPARE CABIN AND COCKPIT

- *Loose equipment secured.*
- *Survival equipments prepared.*
- *Belts and shoulder harnesses locked.*

SIGNS.....ON
COMMERCIAL.....OFF
USE RUDDER WITH CARE

As hydraulic power is only available from the RAT, avoid large and rapid rudder deflection.

- **When below FL 150:**

RAM AIR.....ON

Ident.: PRO-ABN-ENG-X-00012311.0001001 / 17 MAR 17

BARO REF.....SET
CREW MASKS/OXY SUPPLY (below FL 100).....OFF
ELT ◁ (when conditions permit).....ON

Continued on the following page

[QRH] ENG DUAL FAILURE - FUEL REMAINING (Cont'd)

Ident.: PRO-ABN-ENG-X-00012312.0065001 / 09 MAY 17

- **If forced landing anticipated:**

AVERAGE GLIDING DISTANCE 1.2NM / 1000FT (CONF3, L/G DOWN, NO WIND)

- **For approach:**

FOR LANDING : USE FLAP 3

SLATS AVAIL ONLY

MIN APPR SPEED : 150 kt

VAPP..... DETERMINE

Gross Weight (1 000 kg)	*40*	*44*	*48*	*52*	*56*	*60*	*64*	*68*	*72*	*76*	*78*
VAPP	*150*	*150*	*150*	*150*	*150*	*155*	*159*	*163*	*167*	*171*	*173*

- **At a suitable altitude (not below 3 000 ft AGL):**
  - **When in CONF 3 and VAPP:**

GRAVITY GEAR EXTN handcrank..... PULL AND TURN

FLT CTL DIRECT LAW

MAN PITCH TRIM NOT AVAILABLE

  - **When L/G downlocked:**

L/G lever.....DOWN
APPROACH SPEED..... ADJUST
MAX SPEED : 200 kt
ADJUST SPEED TO REACH LANDING FIELD
SPLRs.....ARM
MAX BRK PR : 1 000 PSI

- **At 2 000 ft AGL:**

CABIN CREW..... NOTIFY FOR LANDING

- **At 500 ft AGL:**

BRACE FOR IMPACT.....ORDER

- **At touchdown:**

ENG MASTERS..... OFF
APU MASTER SW.....OFF
BRAKES ON ACCU ONLY

Continued on the following page

[QRH] ENG DUAL FAILURE - FUEL REMAINING (Cont'd)

- **When aircraft stopped:**

  PARKING BRK.....ON
  ATC.....NOTIFY
  FIRE pb (ENGs & APU).....PUSH
  AGENT (ENGs & APU).....DISCH

  - **If evacuation required:**

    EVACUATION..... INITIATE

    Make a short and precise announcement to order the emergency evacuation.
    Press the EVAC COMMAND pb .

    ELT .....CHECK EMITTING

    If not, switch on the transmitter.

  - **If evacuation not required:**

    CABIN CREW and PASSENGERS (PA).....NOTIFY

Continued on the following page

[QRH] ENG DUAL FAILURE - FUEL REMAINING (Cont'd)

Ident.: PRO-ABN-ENG-X-00012313.0065001 / 17 MAR 17

- **If ditching anticipated:**
  - **For approach:**
    FOR LANDING : USE FLAP 3
    SLATS AVAIL ONLY
    MIN APPR SPEED : 150 kt
    VAPP..... DETERMINE

Gross Weight (1 000 kg)	*40*	*44*	*48*	*52*	*56*	*60*	*64*	*68*	*72*	*76*	*78*
VAPP	*150*	*150*	*150*	*150*	*150*	*155*	*159*	*163*	*167*	*171*	*173*

  - **At a suitable altitude (not below 3 000 ft AGL):**
    KEEP LANDING GEAR UP
    FOR FLARE: TARGET PITCH 11 ° & MIN V/S

    Note: Prefer ditching parallel to the swell. If that causes a strong crosswind, ditch into the wind.

  - **At 2 000 ft AGL:**
    CABIN CREW..... NOTIFY FOR DITCHING
    DITCHING pb..... ON
  - **At 500 ft AGL:**
    BRACE FOR IMPACT..... ORDER
  - **At touchdown:**
    ENG MASTERS..... OFF
    APU MASTER SW..... OFF
  - **After ditching:**
    ATC (VHF 1)..... NOTIFY
    FIRE pb (ENGs & APU)..... PUSH
    AGENTs (ENGs & APU)..... DISCH
    EVACUATION..... INITIATE
    ELT ◁ ..... CHECK EMITTING
    If not, switch on the transmitter.

[QRH] ENG DUAL FAILURE - NO FUEL REMAINING

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

Ident.: PRO-ABN-ENG-Y-00012602.0132001 / 17 MAR 17

The flight crew must apply this paper procedure when required by the ENG DUAL FAILURE procedure. If time permits, clear ECAM alerts, and check the ECAM STATUS page.

OPTIMUM SPEED..... 220 kt / GREEN DOT

Initially, fly 220 kt, because the PFD may not display the correct green dot speed. Then fly the green dot speed according to the following table:

GREEN DOT SPEED WITH ALL ENGINES INOPERATIVE (KNOTS)			
Gross Weight (1000 kg)	***At or below FL 200***	***FL 300***	***FL 400***
68	*216*	*226*	*236*
64	*208*	*218*	*228*
60	*200*	*210*	*220*
56	*192*	*202*	*212*
52	*184*	*194*	*204*
48	*176*	*186*	*196*
44	*168*	*178*	*188*
40	*160*	*170*	*180*

AVERAGE GLIDING DISTANCE: 2.5 NM / 1000 FT (GREEN DOT NO WIND)
AVERAGE RATE OF DESCENT: 1600 FT/MIN

DETERMINE LANDING STRATEGY

VHF1/HF1 /ATC1.....USE

ATC.....NOTIFY

TRANSPONDER.....SELECT A7700

Notify air traffic control of the nature of the emergency, and state intentions. Switch to code A7700, or transmit a distress message on one of the following frequencies: VHF frequency 121.5 MHz, HF 2 182 kHz or 8 364 kHz.

CREW OXY MASKS (above FL 100).....ON

Cabin altitude will increase due to the lack of engine bleed: The EXCESS CAB ALT warning could be triggered. Depending on the situation, to gain gliding distance, the flight crew may disregard the ECAM emergency descent requirement, because passengers will be provided with oxygen for a sufficient period of time.

PREPARE CABIN AND COCKPIT

- *Loose equipment secured.*

Continued on the following page

[QRH] ENG DUAL FAILURE - NO FUEL REMAINING (Cont'd)

- *Survival equipments prepared.*
- *Belts and shoulder harnesses locked.*

SIGNS.....ON
COMMERCIAL.....OFF
USE RUDDER WITH CARE

As hydraulic power is only available from the RAT, avoid large and rapid rudder deflection.

- **When below FL 150:**

  RAM AIR.....ON

  Switch ON the RAM AIR to ensure complete depressurization.

Ident.: PRO-ABN-ENG-Y-00012317.0001001 / 17 MAR 17

BARO REF.....SET
CREW MASKS/OXY SUPPLY (below FL 100).....OFF
ELT ◁ (when conditions permit).....ON

Continued on the following page

[QRH] ENG DUAL FAILURE - NO FUEL REMAINING (Cont'd)

Ident.: PRO-ABN-ENG-Y-00012318.0089001 / 09 MAY 17

- **If forced landing anticipated:**

  AVERAGE GLIDING DISTANCE 1.2NM / 1000FT (CONF3, L/G DOWN, NO WIND)

  - **For approach:**
    FOR LANDING : USE FLAP 3

    SLATS AVAIL ONLY

    MIN APPR SPEED : 150 kt
    VAPP..... DETERMINE

Gross Weight (1000 kg)	*40*	*44*	*48*	*52*	*56*	*60*	*64*	*68*	*72*	*76*	*78*
VAPP	*150*	*150*	*150*	*150*	*150*	*154*	*159*	*163*	*167*	*171*	*172*

    - **At a suitable altitude (not below 3 000 ft AGL):**
      - **When in CONF 3 and VAPP :**
        GRAVITY GEAR EXTN handcrank..... PULL AND TURN
        FLT CTL DIRECT LAW

        MAN PITCH TRIM NOT AVAILABLE

      - **When L/G downlocked :**
        L/G lever.....DOWN
        APPROACH SPEED..... ADJUST
        ADJUST SPEED TO REACH LANDING FIELD
        MAX SPEED : 200 kt
        SPLRs.....ARM
        MAX BRK PR : 1 000 PSI

  - **At 2 000 ft AGL:**
    CABIN CREW..... NOTIFY FOR LANDING

  - **At 500 ft AGL:**
    BRACE FOR IMPACT.....ORDER

  - **At touchdown:**
    ENG MASTERS..... OFF
    BRAKES ON ACCU ONLY

  - **When aircraft stopped:**
    PARKING BRK.....ON

Continued on the following page

[QRH] ENG DUAL FAILURE - NO FUEL REMAINING (Cont'd)

ATC.....NOTIFY

■ **If evacuation required:**

EVACUATION..... INITIATE

Make a short and precise announcement to order the emergency evacuation.
Press the EVAC COMMAND pb .

ELT .....CHECK EMITTING

If not, switch on the transmitter

■ **If evacuation not required:**

CABIN CREW and PASSENGERS (PA).....NOTIFY

Continued on the following page

[QRH] ENG DUAL FAILURE - NO FUEL REMAINING (Cont'd)

Ident.: PRO-ABN-ENG-Y-00012319.0092001 / 17 MAR 17

- **If ditching anticipated:**
  - **For approach:**
    FOR LANDING : USE FLAP 3

    SLATS AVAIL ONLY

    MIN APPR SPEED : 150 kt
    VAPP..... DETERMINE

Gross Weight (1 000 kg)	*40*	*44*	*48*	*52*	*56*	*60*	*64*	*68*	*72*	*76*	*78*
VAPP	*150*	*150*	*150*	*150*	*150*	*154*	*159*	*163*	*167*	*171*	*172*

  - **At a suitable altitude (not below 3 000 ft AGL):**
    KEEP LANDING GEAR UP
    FOR FLARE: TARGET PITCH 11 ° & MIN V/S

    Note: *Prefer ditching parallel to the swell. If that causes a strong crosswind, ditch into the wind.*
  - **At 2 000 ft AGL:**
    CABIN CREW..... NOTIFY FOR DITCHING
    DITCHING pb..... ON
  - **At 500 ft AGL:**
    BRACE FOR IMPACT..... ORDER
  - **At touchdown:**
    ENG MASTERS..... OFF
  - **After ditching:**
    ATC (VHF 1)..... NOTIFY
    EVACUATION..... INITIATE
    ELT ..... CHECK EMITTING

    If not, switch on the transmitter.

[QRH] ENG DUAL FAILURE - NO FUEL REMAINING

Applicable to: MSN 04393-04397, 04433

Ident.: PRO-ABN-ENG-Y-00012602.0108001 / 17 MAR 17

The flight crew must apply this paper procedure when required by the ENG DUAL FAILURE procedure. If time permits, clear ECAM alerts, and check the ECAM STATUS page.

OPTIMUM SPEED..... 220 kt / GREEN DOT

Initially, fly 220 kt, because the PFD may not display the correct green dot speed. Then fly the green dot speed according to the following table:

GREEN DOT SPEED WITH ALL ENGINES INOPERATIVE (KNOTS)			
Gross Weight (1000 kg)	***At or below FL 200***	***FL 300***	***FL 400***
68	*221*	*231*	*241*
64	*213*	*223*	*233*
60	*205*	*215*	*225*
56	*197*	*207*	*217*
52	*189*	*199*	*209*
48	*181*	*191*	*201*
44	*173*	*183*	*193*
40	*165*	*175*	*185*

AVERAGE GLIDING DISTANCE: 2.5 NM / 1000 FT (GREEN DOT NO WIND)
AVERAGE RATE OF DESCENT: 1600 FT/MIN

DETERMINE LANDING STRATEGY
VHF1/HF1 ◁ /ATC1.....USE
ATC.....NOTIFY
TRANSPONDER.....SELECT A7700

Notify air traffic control of the nature of the emergency, and state intentions. Switch to code A7700, or transmit a distress message on one of the following frequencies: VHF frequency 121.5 MHz, HF 2 182 kHz or 8 364 kHz.

CREW OXY MASKS (above FL 100).....ON

Cabin altitude will increase due to the lack of engine bleed: The EXCESS CAB ALT warning could be triggered. Depending on the situation, to gain gliding distance, the flight crew may disregard the ECAM emergency descent requirement, because passengers will be provided with oxygen for a sufficient period of time.

PREPARE CABIN AND COCKPIT

- *Loose equipment secured.*

Continued on the following page

[QRH] ENG DUAL FAILURE - NO FUEL REMAINING (Cont'd)

- *Survival equipments prepared.*
- *Belts and shoulder harnesses locked.*

SIGNS.....ON
COMMERCIAL.....OFF
USE RUDDER WITH CARE

As hydraulic power is only available from the RAT, avoid large and rapid rudder deflection.

- **When below FL 150:**
  RAM AIR.....ON
  Switch ON the RAM AIR to ensure complete depressurization.

Ident.: PRO-ABN-ENG-Y-00012317.0001001 / 17 MAR 17

BARO REF..... SET
CREW MASKS/OXY SUPPLY (below FL 100)..... OFF
ELT ◁ (when conditions permit)..... ON

Continued on the following page

[QRH] ENG DUAL FAILURE - NO FUEL REMAINING (Cont'd)

Ident.: PRO-ABN-ENG-Y-00012318.0065001 / 09 MAY 17

- **If forced landing anticipated:**

  AVERAGE GLIDING DISTANCE 1.2NM / 1000FT (CONF3, L/G DOWN, NO WIND)

  - **For approach:**
    FOR LANDING : USE FLAP 3

    SLATS AVAIL ONLY

    MIN APPR SPEED : 150 kt
    VAPP..... DETERMINE

Gross Weight (1000 kg)	*40*	*44*	*48*	*52*	*56*	*60*	*64*	*68*	*72*	*76*	*78*
VAPP	*150*	*150*	*150*	*150*	*150*	*155*	*159*	*163*	*167*	*171*	*173*

  - **At a suitable altitude (not below 3 000 ft AGL):**
    - **When in CONF 3 and VAPP :**
      GRAVITY GEAR EXTN handcrank..... PULL AND TURN
      FLT CTL DIRECT LAW

      MAN PITCH TRIM NOT AVAILABLE
    - **When L/G downlocked :**
      L/G lever.....DOWN
      APPROACH SPEED..... ADJUST
      ADJUST SPEED TO REACH LANDING FIELD

      MAX SPEED : 200 kt
      SPLRs.....ARM

      MAX BRK PR : 1 000 PSI
  - **At 2 000 ft AGL:**
    CABIN CREW..... NOTIFY FOR LANDING
  - **At 500 ft AGL:**
    BRACE FOR IMPACT.....ORDER
  - **At touchdown:**
    ENG MASTERS..... OFF
    BRAKES ON ACCU ONLY

Continued on the following page

[QRH] ENG DUAL FAILURE - NO FUEL REMAINING (Cont'd)

- **When aircraft stopped:**

  PARKING BRK.....ON

  ATC.....NOTIFY

  - **If evacuation required:**

    EVACUATION..... INITIATE

    Make a short and precise announcement to order the emergency evacuation.
    Press the EVAC COMMAND pb .

    ELT .....CHECK EMITTING

    If not, switch on the transmitter

  - **If evacuation not required:**

    CABIN CREW and PASSENGERS (PA).....NOTIFY

Continued on the following page

[QRH] ENG DUAL FAILURE - NO FUEL REMAINING (Cont'd)

Ident.: PRO-ABN-ENG-Y-00012319.0065001 / 17 MAR 17

- **If ditching anticipated:**
  - **For approach:**
    FOR LANDING : USE FLAP 3

    SLATS AVAIL ONLY

    MIN APPR SPEED : 150 kt
    VAPP..... DETERMINE

Gross Weight (1 000 kg)	*40*	*44*	*48*	*52*	*56*	*60*	*64*	*68*	*72*	*76*	*78*
VAPP	*150*	*150*	*150*	*150*	*150*	*155*	*159*	*163*	*167*	*171*	*173*

  - **At a suitable altitude (not below 3 000 ft AGL):**
    KEEP LANDING GEAR UP
    FOR FLARE: TARGET PITCH 11 ° & MIN V/S

    Note: Prefer ditching parallel to the swell. If that causes a strong crosswind, ditch into the wind.

  - **At 2 000 ft AGL:**
    CABIN CREW..... NOTIFY FOR DITCHING
    DITCHING pb..... ON
  - **At 500 ft AGL:**
    BRACE FOR IMPACT..... ORDER
  - **At touchdown:**
    ENG MASTERS..... OFF
  - **After ditching:**
    ATC (VHF 1)..... NOTIFY
    EVACUATION..... INITIATE
    ELT ..... CHECK EMITTING

    If not, switch on the transmitter.

[QRH] ENG STALL

Ident.: PRO-ABN-ENG-00015730.0002001 / 17 MAR 17

37 **Applicable to: MSN 06720-09063**

This crew must apply this procedure when instructed by ECAM, or if they detect an engine stall before FADEC:

■ **On Ground:**
THR LEVER (affected engine).....IDLE
ENG MASTER (effected engine).....OFF

■ **In Flight:**
THR LEVER (affected engine).....IDLE
ENG PARAMETERS (affected engine).....CHECK

■ **If abnormal ENG parameters:**
ENG MASTER (affected engine)..... OFF
ENG 1(2) SHUT DOWN
Apply the ENG SHUT DOWN ECAM procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN). Engine restart at crew discretion.

■ **If normal ENG parameters:**
WING ANTI ICE.....ON
Operation of ENG and WING ANTI ICE will increase the stall margin but EGT increases accordingly.
THR LEVER (affected engine).....SLOWLY MOVE FORWARD

● **If stall recurs:**
THR LEVER (affected engine)..... MOVE BACKWARD
Reduce thrust and operate below the thrust threshold where stall recurs.

● **If stall does not recur:**
CONTINUE NORMAL ENGINE OPERATION

[QRH] ENG STALL

Ident.: PRO-ABN-ENG-00015730.0001001 / 17 MAR 17

38 **Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336**

This crew must apply this procedure when instructed by ECAM, or if they detect an engine stall before FADEC:

■ **On Ground:**
THR LEVER (affected engine).....IDLE
ENG MASTER (affected engine).....OFF

■ **In Flight:**
THR LEVER (affected engine).....IDLE
ENG PARAMETERS (affected engine).....CHECK

■ **If abnormal ENG parameters:**
ENG MASTER (AFFECTED ENGINE).....OFF
ENG 1(2) SHUT DOWN
Apply the ENG SHUT DOWN ECAM procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN). Engine restart at crew discretion.

■ **If normal ENG parameters:**
ENG ANTI ICE (affected engine).....ON
Operation of ENG and WING ANTI ICE will increase the stall margin but EGT increases accordingly.
THR LEVER (affected engine).....SLOWLY MOVE FORWARD

● **If stall recurs:**
THR LEVER (affected engine).....MOVE BACKWARD
Reduce thrust and operate below the thrust threshold where stall recurs.

● **If stall does not recur:**
CONTINUE NORMAL ENGINE OPERATION

[QRH] ENGINE TAILPIPE FIRE

Ident.: PRO-ABN-ENG-00017781.0001001 / 17 MAR 17

39 **Applicable to: MSN 01767-06336**

Internal engine fire may be encountered during engine start or engine shutdown.
Internal engine fire may be seen by the ground crew, or the EGT may fail to decrease after the ENG MASTER lever is set to OFF.

CAUTION	External fire agents can cause severe corrosive damage. Consider the use of external fire agents only if the following procedure does not stop engine tailpipe fire.

ENG MASTER (affected engine) ..... OFF

Note: *Do not press the engine fire pushbutton, since this would cut off the FADEC power supply, which would prevent motoring sequence.*

ENG MAN START pb (affected engine)..... OFF
ESTABLISH AIR BLEED PRESS

Select the APU, or opposite BLEED, to motor the engine.
If APU BLEED is not available, and the opposite engine is shut down, connect external pneumatic power (if readily available).

BEACON ..... ON
ENG MODE sel..... CRANK
ENG MAN START pb (affected engine)..... ON

For aircraft equipped with IAE or PW6000 engines, the start valve automatically reopens, when N2 is below 10 %.
For aircraft equipped with CFM 56-5A/5B engines, the start valve automatically reopens, when N2 is below 20 %
For aircraft equipped with CFM LEAP-1A engines, the start valve automatically reopens, when N2 is below approximately 60 %

- **When fire stopped:**
  ENG MAN START pb (affected engine)..... OFF
  ENG MODE sel..... NORM

  Maintenance action is due.

[QRH] ENGINE TAILPIPE FIRE

Ident.: PRO-ABN-ENG-00017781.0002001 / 17 MAR 17

40 **Applicable to: MSN 06720-09063**

Internal engine fire may be encountered during engine start or engine shutdown.
Internal engine fire may be seen by the ground crew, or the EGT may fail to decrease after the ENG MASTER lever is set to OFF.

CAUTION	External fire agents can cause severe corrosive damage. Consider the use of external fire agents only if the following procedure does not stop engine tailpipe fire.

ENG MASTER (affected engine) ..... OFF

Note: *Do not press the engine fire pushbutton, since this would cut off the FADEC power supply, which would prevent motoring sequence.*

ENG MAN START pb (affected engine)..... OFF
ESTABLISH AIR BLEED PRESS

Select the APU, or opposite BLEED, to motor the engine.
If APU BLEED is not available, and the opposite engine is shut down, connect external pneumatic power (if readily available).

BEACON ..... ON
ENG MODE sel..... CRANK
ENG MAN START pb (affected engine)..... ON

The start valve automatically reopens, when N2 is below 15 %.

- **When fire stopped:**
  ENG MAN START pb (affected engine)..... OFF
  ENG MODE sel..... NORM

  Maintenance action is due.

[QRH] HIGH ENGINE VIBRATION

Ident.: PRO-ABN-ENG-00012294.0006001 / 19 SEP 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The VIB advisory on ECAM (N1 ≥ 6 units, N2 ≥ 4.3 units) is mainly a guideline for the flight crew to monitor engine parameters more closely.
The ECAM vibration advisory alone does not require engine shut down.

Note: *1. High engine vibration may be accompanied by cockpit and cabin smoke and/or the smell of burning. This may be due only to compressor blade tip contact with associated abradable seals.*
2. High N1 vibration are generally accompanied by perceivable airframe vibrations. High N2 vibration can occur without perceivable airframe vibrations.

ENG PARAMETERS ..... CHECK

Check engine parameters and especially EGT; crosscheck with other engine. Report in maintenance log.

■ **If icing suspected:**

An increase of engine vibration in icing conditions with or without engine anti-ice may be due to fan blades and/or spinner icing. Icing may be suspected if N1 vibration occurs without other engine parameters variation.

A/THR ..... OFF
THRUST (one engine at a time)..... IDLE THEN INCREASE N1 > 80 %

Reduce thrust to idle if flight conditions permit.
*If ENG ANTI ICE is off, switch it ON **at idle fan speed,** one engine after the other with approximately 30 s interval.*
To shed ice, it may be necessary to perform several thrust variations between idle and a thrust compatible with the flight phase. For efficient ice shedding, thrust should be increased to at least 80% N1 if flight conditions permit.
After each thrust variation, vibrations should decrease, indicating the progress of the ice shedding.
When the ice is shed, vibrations should return to normal and the flight crew can resume normal engine operation.

■ **If icing not suspected:**

● **If above vibration advisory and flight conditions permit:**
THRUST (affected engine)..... REDUCE BELOW ADVISORY THRESHOLD

Continued on the following page

[QRH] HIGH ENGINE VIBRATION (Cont'd)

- **After landing, if vibrations continue :**
  SHUT DOWN ENGINE WHEN POSSIBLE

[QRH] HIGH ENGINE VIBRATION

Ident.: PRO-ABN-ENG-00012294.0001001 / 19 SEP 17

41 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

The VIB advisory on ECAM (N1 ≥ 5 units, N2 ≥ 5 units) is mainly a guideline for the flight crew to monitor engine parameters more closely.

■ **On ground, during ENG start if N2 VIB > 6.5:**

ENG MASTER (affected engine).....OFF

A maximum of three new start attempts can be performed. Each start attempt must be initiated after the engine has completely spooled down.

● **If still N2 VIB after third new start attempt:**

REQUEST MAINTENANCE ACTION

Report in log book any N2 vibration above 5.

■ **In all other cases of high N1 or N2 vibrations:**

The ECAM vibration advisory alone does not require engine shut down.

Note: *1. High engine vibration may be accompanied by cockpit and cabin smoke and/or the smell of burning. This may be due only to compressor blade tip contact with associated abradable seals.*

2. High N1 vibration are generally accompanied by perceivable airframe vibrations. High N2 vibration can occur without perceivable airframe vibrations.

ENG PARAMETERS .....CHECK

Check engine parameters and especially EGT; crosscheck with other engine. Report in maintenance log.

■ **If icing suspected:**

An increase of engine vibration in icing conditions with or without engine anti-ice may be due to fan blades and/or spinner icing. Icing may be suspected if N1 vibration occurs without other engine parameters variation.

A/THR ..... OFF

THRUST (one engine at a time)..... IDLE THEN INCREASE N1 > 90 %

Reduce thrust to idle if flight conditions permit.

*If ENG ANTI ICE is off, switch it ON **at idle fan speed,** one engine after the other with approximately 30 s interval.*

Continued on the following page

[QRH] HIGH ENGINE VIBRATION (Cont'd)

To shed ice, it may be necessary to perform several thrust variations between idle and a thrust compatible with the flight phase. If VIB are still above the advisory at idle, set thrust temporarily to 90% N1 if flight conditions permit.
After each thrust variation, vibrations should decrease, indicating the progress of the ice shedding.
When the ice is shed, vibrations should return to normal and the flight crew can resume normal engine operation.

■ **If icing not suspected:**

- **If above vibration advisory and flight conditions permit:**
  THRUST (affected engine)..... REDUCE BELOW ADVISORY THRESHOLD

- **After landing, if vibrations continue :**
  SHUT DOWN ENGINE WHEN POSSIBLE

[QRH] HIGH ENGINE VIBRATION

Ident.: PRO-ABN-ENG-00012294.0010001 / 19 SEP 17

42 **Applicable to: MSN 06720-09063**

Impacted by TDU: 00022408 [QRH] HIGH ENGINE VIBRATION

The flight crew must apply this procedure when instructed by ECAM, or if they detect high engine vibration.

The triggering of the ENG 1(2) HIGH VIB alert is mainly a guideline for the flight crew to monitor engine parameters more closely. The triggering of the ECAM alert alone does not require engine shut down

Note:
1. *High engine vibration may be accompanied by cockpit and cabin smoke and/or the smell of burning. This may be due only to compressor blade tip contact with associated abradable seals.*
2. *High N1 vibration are generally accompanied by perceivable airframe vibrations. High N2 vibration can occur without perceivable airframe vibrations.*

■ **On ground, during ENG start if N2 VIB > 5:**

ENG MASTER (affected engine).....OFF

REQUEST MAINTENANCE ACTION

Report in log book any N2 vibration above 5.

■ **In all other cases of high N1 or N2 vibrations:**

ENG PARAMETERS .....CHECK

Check engine parameters and especially EGT, crosscheck with other engine. Report in maintenance log.

■ **If icing suspected:**

An increase of engine vibration in icing conditions with or without engine anti-ice may be due to fan blades and/or spinner icing. Icing may be suspected if N1 vibration occurs without other engine parameters variation.

A/THR .....OFF

THRUST (one engine at a time).....IDLE THEN INCREASE N1 > 80 %

Reduce thrust to idle if flight conditions permit.

*If ENG ANTI ICE is off, switch it ON **at idle fan speed,** one engine after the other with approximately 30 s interval.*

To shed ice, it may be necessary to perform several thrust variations between idle and a thrust compatible with the flight phase. For efficient ice shedding, thrust should be increased to at least 80% N1 if flight conditions permit.

Continued on the following page

[QRH] HIGH ENGINE VIBRATION (Cont'd)

After each thrust variation, vibrations should decrease, indicating the progress of the ice shedding.
When the ice is shed, vibrations should return to normal and the flight crew can resume normal engine operation.

■ **If icing not suspected:**

● **If VIB indication(s) amber:**
THRUST (affected engine)..... REDUCE
If flight conditions permit, reduce thrust to maintain vibration level below the amber threshold. If the VIB indication does not decrease following thrust reduction, this may indicate other problems on the engine.

● **After landing, if vibrations continue :**
SHUT DOWN ENGINE WHEN POSSIBLE

[QRH] ON GROUND - NON ENG SHUTDOWN AFTER ENG MASTER OFF

Ident.: PRO-ABN-ENG-00020795.0001001 / 30 MAR 18
Applicable to: ALL

The normal procedure to shut down an engine is to set the ENG MASTER lever to OFF. In the case where the engine does not shut down as expected, use the following procedure:

ECAM FUEL PAGE..... SELECT
LP FUEL VALVE POSITION (affected engine)..... CHECK

■ **If LP fuel valve closed (cross line amber):**
NO CREW ACTION

■ **If LP fuel valve open:**
ENG FIRE pb-sw (affected engine)..... PRESS
Using the ENG FIRE pb-sw will force the LP fuel valve to close. The engine will shut down after a time delay.

GROUND CREW..... NOTIFY

IN BOTH CASES, ENGINE WILL SHUT DOWN AFTER A TIME DELAY UP TO 2 MIN 30 S
The engine shuts down when the remaining fuel between the LP fuel valve and the nozzles is burned. The time delay for engine shutdown depends on airport altitude and fuel recirculation system operation.

[QRH] ONE ENGINE INOPERATIVE - CIRCLING APPROACH

Ident.: PRO-ABN-ENG-00010682.0091001 / 21 MAR 17

43 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

MAXIMUM WEIGHT FOR CIRCLING IN CONF 3 WITH GEAR DOWN (1000 kg)								
OAT (°C)	AIRPORT ELEVATION (feet)							
	0	2 000	4 000	6 000	8 000	10 000	12 000	15 000
0	95	92	87	82	76	72	68	58
5	95	92	87	82	76	72	66	56
10	95	92	87	82	76	69	64	54
15	95	92	87	80	73	67	61	52
20	95	92	85	77	70	64	59	
25	95	89	81	74	67	61	56	
30	93	86	78	71	64	58	53	
35	90	82	75	68	61	55		
40	86	79	72	65				
45	82	75	68					
50	78	71						
55	74							

- **If aircraft weight above maximum weight for circling in CONF 3 with gear down:**
  DELAY GEAR EXTENSION TO MAINTAIN LEVEL FLIGHT
  The aircraft cannot maintain level flight, in CONF 3 and with the landing gear down.
  FOR LANDING: USE FLAP 3
  CONF 3 is preferred, to minimize a configuration change in short final.
  GPWS LDG FLAP 3.....ON

  Note: - *If circling below 750 ft RA, "L/G GEAR NOT DOWN" alert will trigger. The pilot can cancel the aural warning by pressing the EMER CANC pb.*
  - *If the landing gear is not downlocked at 500 ft RA, GPWS "TOO LOW GEAR" aural alert will trigger.*

[QRH] ONE ENGINE INOPERATIVE - CIRCLING APPROACH

Ident.: PRO-ABN-ENG-00010682.0086001 / 17 MAR 17

44 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

MAXIMUM WEIGHT FOR CIRCLING IN CONF 3 WITH GEAR DOWN (1000 KG)								
OAT (°C)	AIRPORT ELEVATION (feet)							
	0	2 000	4 000	6 000	8 000	10 000	12 000	14 000
0	80.0	80.0	79.0	77.0	74.0	72.0	69.0	63.0
5	80.0	80.0	79.0	77.0	75.0	72.0	67.0	61.0
10	80.0	80.0	79.0	77.0	74.0	69.0	64.0	59.0
15	80.0	80.0	79.0	75.0	71.0	66.0	61.0	56.0
20	80.0	80.0	77.0	72.0	67.0	63.0	59.0	53.0
25	80.0	78.0	73.0	68.0	64.0	60.0	56.0	51.0
30	79.0	74.0	69.0	65.0	61.0	56.0	52.0	
35	75.0	70.0	66.0	61.0	57.0	53.0		
40	72.0	67.0	63.0	58.0				
45	68.0	63.0	59.0					
50	65.0	60.0						
55	62.0							

- **If aircraft weight above maximum weight for circling in CONF 3 with gear down:**

  DELAY GEAR EXTENSION TO MAINTAIN LEVEL FLIGHT

  The aircraft cannot maintain level flight, in CONF 3 and with the landing gear down.

  FOR LANDING: USE FLAP 3

  CONF 3 is preferred, to minimize a configuration change in short final.

  GPWS LDG FLAP 3.....ON

  Note: - *If circling below 750 ft RA, "L/G GEAR NOT DOWN" alert will trigger. The pilot can cancel the aural warning by pressing the EMER CANC pb.*
  - *If the landing gear is not downlocked at 500 ft RA, GPWS "TOO LOW GEAR" aural alert will trigger.*

[QRH] ONE ENGINE INOPERATIVE - CIRCLING APPROACH

Ident.: PRO-ABN-ENG-00010682.0068001 / 17 MAR 17
Applicable to: MSN 05437-06336

MAXIMUM WEIGHT FOR CIRCLING IN CONF 3 WITH GEAR DOWN (1000 KG)								
OAT (°C)	AIRPORT ELEVATION (feet)							
	0	2 000	4 000	6 000	8 000	10 000	12 000	14 000
0	72.0	70.0	69.0	74.0	73.0	69.0	65.0	60.0
5	72.0	70.0	69.0	74.0	73.0	69.0	64.0	57.0
10	72.0	70.0	69.0	74.0	72.0	67.0	61.0	56.0
15	72.0	70.0	69.0	73.0	70.0	64.0	59.0	
20	72.0	70.0	68.0	70.0	67.0	61.0	56.0	
25	72.0	69.0	66.0	67.0	64.0	58.0		
30	69.0	66.0	64.0	64.0	60.0			
35	66.0	64.0	62.0	61.0	57.0			
40	64.0	62.0	60.0	58.0				
45	62.0	60.0	58.0					
50	59.0	57.0						
55	57.0							

- **If aircraft weight above maximum weight for circling in CONF 3 with gear down:**
  DELAY GEAR EXTENSION TO MAINTAIN LEVEL FLIGHT
  The aircraft cannot maintain level flight, in CONF 3 and with the landing gear down.
  FOR LANDING: USE FLAP 3
  CONF 3 is preferred, to minimize a configuration change in short final.
  GPWS LDG FLAP 3.....ON

  Note: - *If circling below 750 ft RA, "L/G GEAR NOT DOWN" alert will trigger. The pilot can cancel the aural warning by pressing the EMER CANC pb.*
  - *If the landing gear is not downlocked at 500 ft RA, GPWS "TOO LOW GEAR" aural alert will trigger.*

[QRH] ONE ENGINE INOPERATIVE - CIRCLING APPROACH

Ident.: PRO-ABN-ENG-00010682.0004001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

MAXIMUM WEIGHT FOR CIRCLING IN CONF 3 WITH GEAR DOWN (1000 KG)								
OAT (°C)	AIRPORT ELEVATION (feet)							
	0	2 000	4 000	6 000	8 000	10 000	12 000	14 000
0	77	76	69	63	58	53	48	45
5	77	76	69	63	58	53	48	45
10	77	76	69	63	58	53	48	45
15	77	76	69	63	58	53	48	45
20	77	76	69	63	58	53	48	45
25	77	75	69	63	58	53	48	45
30	77	72	68	63	58	53	48	
35	74	70	66	63	56	51		
40	71	67	63	59				
45	69	65	61					
50	67	63						
55	64							

- **If aircraft weight above maximum weight for circling in CONF 3 with gear down:**
  DELAY GEAR EXTENSION TO MAINTAIN LEVEL FLIGHT
  The aircraft cannot maintain level flight, in CONF 3 and with the landing gear down.
  FOR LANDING: USE FLAP 3
  CONF 3 is preferred, to minimize a configuration change in short final.
  GPWS LDG FLAP 3.....ON

  Note: - *If circling below 750 ft RA, "L/G GEAR NOT DOWN" alert will trigger. The pilot can cancel the aural warning by pressing the EMER CANC pb.*
  - *If the landing gear is not downlocked at 500 ft RA, GPWS "TOO LOW GEAR" aural alert will trigger.*

[QRH] ONE ENGINE INOPERATIVE - CIRCLING APPROACH

Ident.: PRO-ABN-ENG-00010682.0011001 / 17 MAR 17

45 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

MAXIMUM WEIGHT FOR CIRCLING IN CONF 3 WITH GEAR DOWN (1000 KG)								
OAT (°C)	AIRPORT ELEVATION (feet)							
	0	2 000	4 000	6 000	8 000	10 000	12 000	14 000
0	70	69	68	67	65	64	62	57
5	70	69	68	67	65	64	60	55
10	70	69	68	67	65	61	57	52
15	70	69	68	66	63	59	54	50
20	70	69	66	64	61	56	52	48
25	70	67	64	62	58	54	50	46
30	67	65	63	60	56	51	47	
35	65	62	60	57	53	49		
40	62	60	58	54				
45	59	57	55					
50	56	54						
55	53							

- **If aircraft weight above maximum weight for circling in CONF 3 with gear down:**
  DELAY GEAR EXTENSION TO MAINTAIN LEVEL FLIGHT
  The aircraft cannot maintain level flight, in CONF 3 and with the landing gear down.
  FOR LANDING: USE FLAP 3
  CONF 3 is preferred, to minimize a configuration change in short final.
  GPWS LDG FLAP 3.....ON

  Note: - *If circling below 750 ft RA, "L/G GEAR NOT DOWN" alert will trigger. The pilot can cancel the aural warning by pressing the EMER CANC pb.*
  - *If the landing gear is not downlocked at 500 ft RA, GPWS "TOO LOW GEAR" aural alert will trigger.*

[QRH] ONE ENGINE INOPERATIVE - STRAIGHT-IN APPROACH

Ident.: PRO-ABN-ENG-00010681.0001001 / 17 MAR 17
Applicable to: ALL

- **If NO level off expected during final approach:**
  DELAY CONF FULL UNTILL ESTABLISHED ON FINAL DESCENT
- **If level off expected during final approach:**
  FOR LANDING: USE CONF 3

ENG ALL ENGINES FAILURE

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04399, 04438, 04510

Ident.: PRO-ABN-ENG-AS-00017096.0001001 / 29 JUN 16

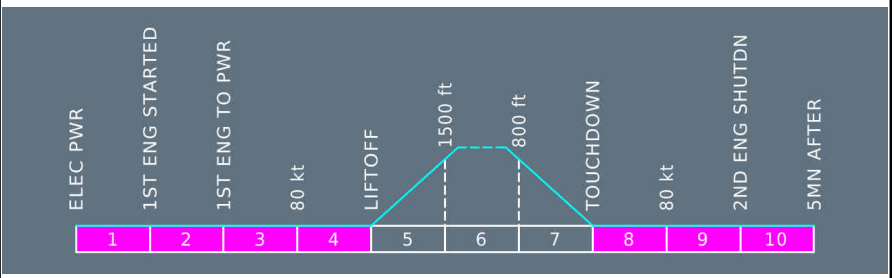
46

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when all engines are failed in flight.

Flight Phase Inhibition:



Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

Ident.: PRO-ABN-ENG-AS-00015739.0005001 / 21 MAR 17

L2 The ENG ALL ENGINES FAILURE ECAM alert inhibits the ELEC EMER CONFIG ECAM alert, and provides the flight crew with an associated procedure to immediately apply in the case of a failure of all engines. The purpose of the ENG ALL ENGINES FAILURE ECAM procedure is to secure both the automatic extension of the RAT and the automatic connection of the emergency generator. Then, the ENG ALL ENGINES FAILURE ECAM procedure specifies that the flight crew must apply the ALL ENGINES FAILURE QRH procedure.

L1 **LAND ASAP**

EMER ELEC PWR MAN ON PB..... PRESS

L2 *Set the EMER ELEC PWR pb to MAN ON to enable both the RAT extension and the emergency generator connection.*

L1 OPT RELIGHT SPD..... 300/0.77

L2 *In the case of a speed indication failure due to volcanic ash, the pitch altitude for optimum relight is provided in the QRH procedure.*

Ident.: PRO-ABN-ENG-AS-00017523.0004001 / 21 MAR 17

47

APU (BELOW FL 250)..... START
THR LEVERS..... IDLE
FAC 1..... OFF THEN ON

L2 *FAC 1 reset enables the recovery of characteristics speed displayed on the PFD. FAC 1 reset enables also rudder trim recovery, even if no indication is available.*

L1 GLDG DIST: 2NM/1000FT
DIVERSION.....INITIATE

L2 *Check if there is an accessible runway, or determine the most appropriate area for a forced landing or ditching.*

L1 ALL ENG FAIL PROC..... APPLY

L2 *Refer to PRO-ABN-ENG [QRH] ECAM - OPT Relight SPD.*
The QRH procedure provides the landing configuration and the approach speed for a ditching and a forced landing.

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

Ident.: PRO-ABN-ENG-AS-00019673.0022001 / 19 APR 17

48

L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED 320/0.77
MAX BRK PR..... 1000 PSI
MANEUVER WITH CARE
FUEL GRVTY FEED
AVOID NEGATIVE G FACTOR

INOP SYS

See below

APPR PROC

FOR LDG..... USE FLAP 2

- **WHEN CONF 2 AND VAPP:**
  L/G GRVTY EXTN..... AS RQRD
  (Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION). Being stabilized at VAPP before selecting the gear down enables the aircraft to be trimmed for approach.

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)
BRK Y ACCU PR ONLY
See (2)
SLATS SLOW
FLS ⋖❄ LIMITED TO F-APP + RAW

INOP SYS

G+Y HYD	F/CTL PROT	STABILIZER
R AIL	REVERSER 1+2	ADR 2+3
IR 2+3	RA 1+2	SPLR 1+2+4+5
ELAC 2	SEC 2+3	FLAPS
YAW DAMPER	A/CALL OUT	AP 1+2
A/THR	FUEL PUMPS	ANTI SKID

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

N/W. STEER	AUTO BRK	CAT 2
L/G RETRACT	CAB PR 1+2	PACK 1+2

(1) *At landing gear extension, control reverts to direct law in pitch as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

(2) *7 full brake applications are available.*

ENG ALL ENGINES FAILURE

Applicable to: MSN 01957-02359, 02443-02482, 02609-02626, 02670, 02737-03071, 03264-03330, 03414-03453, 03541-03618, 03782-04216, 04312, 04384, 04488-04506, 04518-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336

Ident.: PRO-ABN-ENG-AS-00017096.0001001 / 29 JUN 16

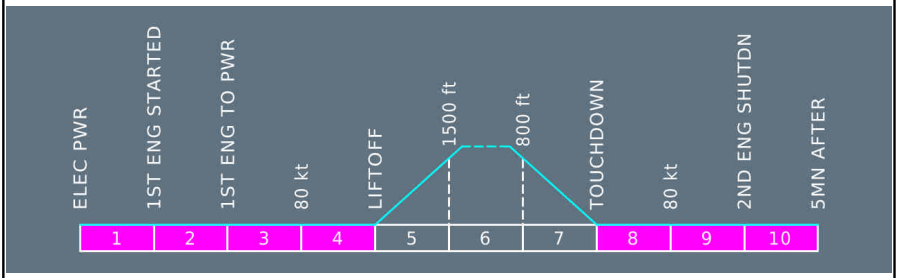
49

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when all engines are failed in flight.

Flight Phase Inhibition:



Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

Ident.: PRO-ABN-ENG-AS-00015739.0004001 / 21 MAR 17

50

L2 The ENG ALL ENGINES FAILURE ECAM alert inhibits the ELEC EMER CONFIG ECAM alert, and provides the flight crew with an associated procedure to immediately apply in the case of a failure of all engines. The purpose of the ENG ALL ENGINES FAILURE ECAM procedure is to secure both the automatic extension of the RAT and the automatic connection of the emergency generator. Then, the ENG ALL ENGINES FAILURE ECAM procedure specifies that the flight crew must apply the ALL ENGINES FAILURE QRH procedure.

L1 **LAND ASAP**

EMER ELEC PWR MAN ON PB.....PRESS

L2 *Set the EMER ELEC PWR pb to MAN ON to enable both the RAT extension and the emergency generator connection.*

L1 OPT RELIGHT SPD.....280/0.77

L2 *In the case of a speed indication failure due to volcanic ash, the pitch altitude for optimum relight is provided in the QRH procedure.*

Ident.: PRO-ABN-ENG-AS-00017522.0002001 / 04 NOV 15

51

L2 *Note: In the case of an "ENG ALL ENGINES FAILURE" during high power operations (i.e. climb, cruise), it is mandatory to fly at or above the optimum relight speed in order to prevent engine core lock.*

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

Ident.: PRO-ABN-ENG-AS-00017523.0004001 / 21 MAR 17

52

APU (BELOW FL 250)..... START
THR LEVERS..... IDLE
FAC 1..... OFF THEN ON

L2 *FAC 1 reset enables the recovery of characteristics speed displayed on the PFD. FAC 1 reset enables also rudder trim recovery, even if no indication is available.*

L1 GLDG DIST: 2NM/1000FT
DIVERSION.....INITIATE

L2 *Check if there is an accessible runway, or determine the most appropriate area for a forced landing or ditching.*

L1 ALL ENG FAIL PROC..... APPLY

L2 *Refer to PRO-ABN-ENG [QRH] ECAM - OPT Relight SPD.*
The QRH procedure provides the landing configuration and the approach speed for a ditching and a forced landing.

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

Ident.: PRO-ABN-ENG-AS-00019673.0022001 / 19 APR 17

53

L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED 320/0.77
MAX BRK PR..... 1000 PSI
MANEUVER WITH CARE
FUEL GRVTY FEED
AVOID NEGATIVE G FACTOR

APPR PROC

FOR LDG..... USE FLAP 2

- **WHEN CONF 2 AND VAPP:**
  L/G GRVTY EXTN..... AS RQRD
  (Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION). Being stabilized at VAPP before selecting the gear down enables the aircraft to be trimmed for approach.

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)
BRK Y ACCU PR ONLY
See (2)
SLATS SLOW
FLS ⋖❄ LIMITED TO F-APP + RAW

INOP SYS

See below

INOP SYS

G+Y HYD	F/CTL PROT	STABILIZER
R AIL	REVERSER 1+2	ADR 2+3
IR 2+3	RA 1+2	SPLR 1+2+4+5
ELAC 2	SEC 2+3	FLAPS
YAW DAMPER	A/CALL OUT	AP 1+2
A/THR	FUEL PUMPS	ANTI SKID

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

N/W. STEER	AUTO BRK	CAT 2
L/G RETRACT	CAB PR 1+2	PACK 1+2

(1) *At landing gear extension, control reverts to direct law in pitch as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

(2) *7 full brake applications are available.*

ENG ALL ENGINES FAILURE

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-AS-00017096.0001001 / 29 JUN 16

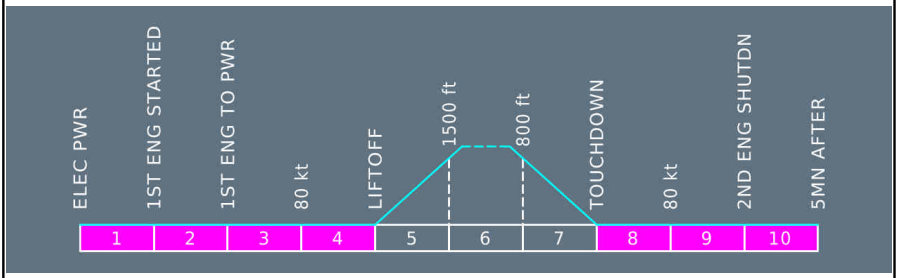
54

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when all engines are failed in flight.

Flight Phase Inhibition:



Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

Ident.: PRO-ABN-ENG-AS-00015739.0004001 / 21 MAR 17

55

L2 The ENG ALL ENGINES FAILURE ECAM alert inhibits the ELEC EMER CONFIG ECAM alert, and provides the flight crew with an associated procedure to immediately apply in the case of a failure of all engines. The purpose of the ENG ALL ENGINES FAILURE ECAM procedure is to secure both the automatic extension of the RAT and the automatic connection of the emergency generator. Then, the ENG ALL ENGINES FAILURE ECAM procedure specifies that the flight crew must apply the ALL ENGINES FAILURE QRH procedure.

L1 **LAND ASAP**

EMER ELEC PWR MAN ON PB.....PRESS

L2 *Set the EMER ELEC PWR pb to MAN ON to enable both the RAT extension and the emergency generator connection.*

L1 OPT RELIGHT SPD.....280/0.77

L2 *In the case of a speed indication failure due to volcanic ash, the pitch altitude for optimum relight is provided in the QRH procedure.*

Ident.: PRO-ABN-ENG-AS-00017523.0003001 / 21 MAR 17

56

APU (BELOW FL 250).....START
THR LEVERS.....IDLE
GLDG DIST: 2NM/1000FT
DIVERSION.....INITIATE

L2 *Check if there is an accessible runway, or determine the most appropriate area for a forced landing or ditching.*

L1 ALL ENG FAIL PROC.....APPLY

L2 *Refer to PRO-ABN-ENG [QRH] ECAM - OPT Relight SPD.*
The QRH procedure provides the landing configuration and the approach speed for a ditching and a forced landing.

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

Ident.: PRO-ABN-ENG-AS-00019673.0022001 / 19 APR 17

57

L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED 320/0.77
MAX BRK PR..... 1000 PSI
MANEUVER WITH CARE
FUEL GRVTY FEED
AVOID NEGATIVE G FACTOR

INOP SYS

See below

APPR PROC

FOR LDG..... USE FLAP 2

- **WHEN CONF 2 AND VAPP:**
  L/G GRVTY EXTN..... AS RQRD
  (Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION). Being stabilized at VAPP before selecting the gear down enables the aircraft to be trimmed for approach.

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)
BRK Y ACCU PR ONLY
See (2)
SLATS SLOW
FLS LIMITED TO F-APP + RAW

INOP SYS

G+Y HYD	F/CTL PROT	STABILIZER
R AIL	REVERSER 1+2	ADR 2+3
IR 2+3	RA 1+2	SPLR 1+2+4+5
ELAC 2	SEC 2+3	FLAPS
YAW DAMPER	A/CALL OUT	AP 1+2
A/THR	FUEL PUMPS	ANTI SKID

Continued on the following page

ENG ALL ENGINES FAILURE (Cont'd)

N/W. STEER	AUTO BRK	CAT 2
L/G RETRACT	CAB PR 1+2	PACK 1+2

(1) *At landing gear extension, control reverts to direct law in pitch as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

(2) *7 full brake applications are available.*

ENG 1(2) A/C FADEC SUPPLY

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-U-00017960.0001001 / 21 MAR 16

58

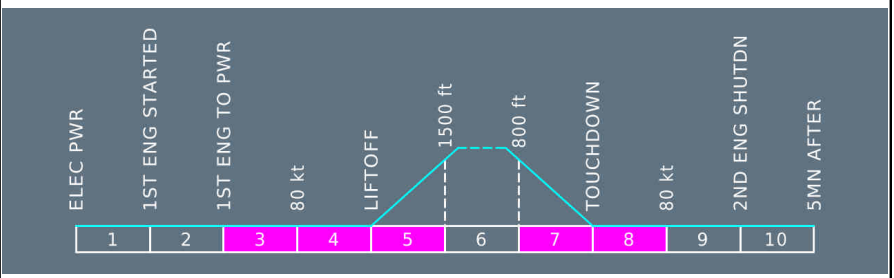
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- On ground, the aircraft 28 V supply of either EEC channel is lost, or
- In flight, the aircraft 28 V supply is lost for:
  - Both EEC channels, or
  - One EEC channel without switching to the other channel.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) A/C FADEC SUPPLY (Cont'd)

Ident.: PRO-ABN-ENG-U-00018706.0001001 / 21 MAR 16

59

Crew Awareness.

Ident.: PRO-ABN-ENG-U-00012297.0002001 / 17 AUG 10

60

L12

STATUS

	INOP SYS
The ECAM only displays these inoperative systems, if there is: - A loss of aircraft 28 V supply of both EEC channels, or - A loss of aircraft 28 V supply of one EEC channel without switching to the other channel.	REVERSER 1(2) ENG 1(2) START

ENG 1(2) A/C FADEC SUPPLY

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-U-00017960.0002001 / 21 MAR 16

61

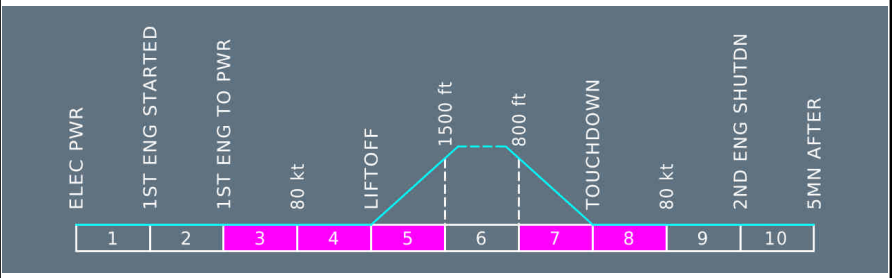
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the aircraft 28 V supply is lost for:

- Both EEC channels, or
- One EEC channel without switching to the other channel.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-U-00018706.0001001 / 21 MAR 16

62

Crew Awareness.

Ident.: PRO-ABN-ENG-U-00012297.0001001 / 17 AUG 10

63

STATUS

INOP SYS

REVERSER 1(2)
ENG 1(2) START

ENG 1(2) AIR EXCHGR FAULT

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-AU-00017961.0001001 / 21 MAR 16

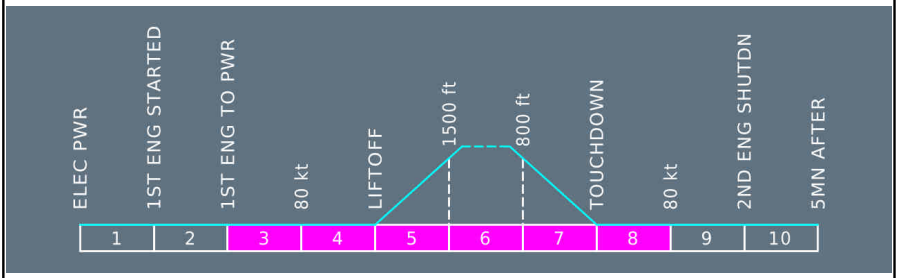
64

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when air/oil heat exchanger valve is failed on ground.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-AU-00017654.0001001 / 21 MAR 16

65

L2 Depending of the failure one of the following messages is displayed:

L1 AIR VALVE OPEN

L2 *Refer to MMEL/ME-70 ENG 1(2) AIR EXCHANGR FAULT [AIR VALVE OPEN].*

L1 AIR VALVE CLOSED

ENG 1(2) AIR MINOR FAULT

Applicable to: MSN 06720, 06772, 06829-06849, 06868-08932, 08967-08978, 09063

Ident.: PRO-ABN-ENG-AE-00018154.0001001 / 21 MAR 16

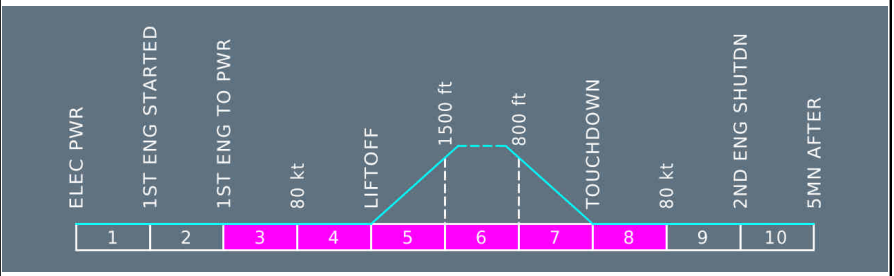
66

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the buffer air check valve is failed (in open position).

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-AE-00015741.0001001 / 18 AUG 14

67

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION**
  - MIN SPD.....VLS + 10/G DOT
  - MANEUVER WITH CARE

LDG DIST PROC..... APPLY

INOP SYS

WING A.ICE

ENG 1(2) AIR MINOR FAULT

Applicable to: MSN 06744, 06799-06819, 06860, 08961, 09031-09045

Ident.: PRO-ABN-ENG-AE-00018154.0001001 / 21 MAR 16

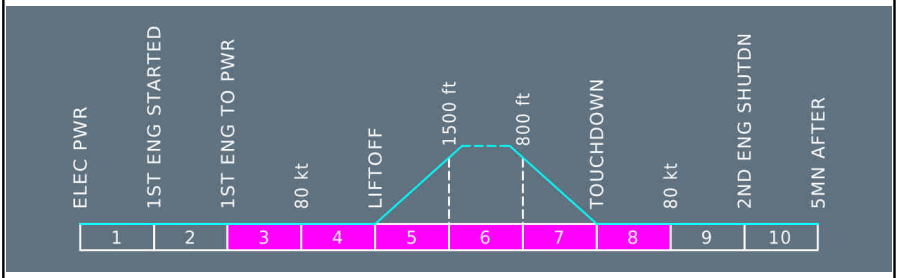
68

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the buffer air check valve is failed (in open position).

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-AE-00015569.0001001 / 05 NOV 15

69

ENG 1(2) BLEED..... OFF
PACK 1(2)..... OFF
X BLEED..... OPEN
AVOID ICING CONDITIONS

Ident.: PRO-ABN-ENG-AE-00015741.0001001 / 18 AUG 14

70

STATUS

AVOID ICING CONDITIONS
- **IF SEVERE ICE ACCRETION**
  MIN SPD.....VLS + 10/G DOT
  MANEUVER WITH CARE

LDG DIST PROC..... APPLY

INOP SYS

WING A.ICE

ENG 1(2) AIR SYS FAULT

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-AC-00018155.0001001 / 22 MAR 18

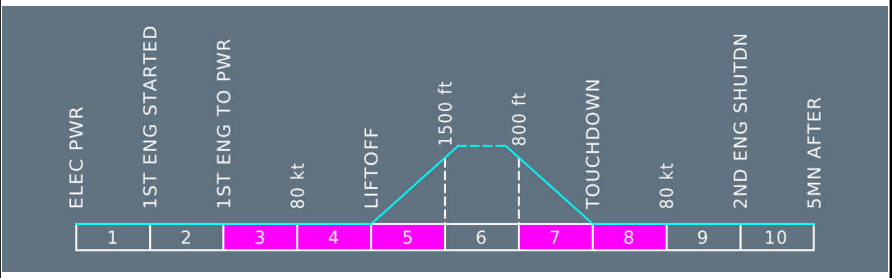
71

ANNUNCIATIONS

Triggering Conditions:

L2 The buffer air system (Buffer Air Shut Off Valve (BASOV) or Buffer Air Check Valve (BACV)) ensures engine bearing cooling, sealing, and pressurization. This alert triggers when the BASOV is detected failed open or failed closed, or when the BACV is detected failed closed. This alert also triggers when the active High Pressure Compressor (HPC) bleed valve is failed closed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-AC-00015563.0005001 / 22 MAR 18

72

■ **If the BASOV is detected failed open or the HPC bleed valve is detected failed closed:**

● **On ground:**

THR LVR 1(2) NOT ABOVE IDLE

■ **If the BASOV or the BACV is detected failed closed:**

L2

The purpose of the following actions is to prevent potential engine oil smell from entering into the air conditioning system.

L1 ENG 1(2) BLEED.....OFF
PACK 1(2).....OFF
X BLEED.....OPEN

Continued on the following page

ENG 1(2) AIR SYS FAULT (Cont'd)

Ident.: PRO-ABN-ENG-AC-00015630.0002001 / 10 MAY 16

73

STATUS

- **On ground:**
  THR LVR 1(2) NOT ABOVE IDLE

ENG 1(2) AIR SYS FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-AC-00018155.0001001 / 22 MAR 18

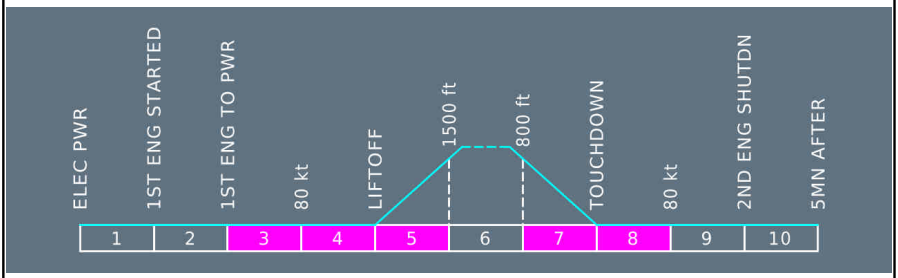
74

ANNUNCIATIONS

Triggering Conditions:

L2 The buffer air system (Buffer Air Shut Off Valve (BASOV) or Buffer Air Check Valve (BACV)) ensures engine bearing cooling, sealing, and pressurization. This alert triggers when the BASOV is detected failed open or failed closed, or when the BACV is detected failed closed. This alert also triggers when the active High Pressure Compressor (HPC) bleed valve is failed closed.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) AIR SYS FAULT (Cont'd)

Ident.: PRO-ABN-ENG-AC-00015563.0007001 / 30 MAR 18

75

■ **If the BASOV is detected failed open or the HPC bleed valve is detected failed closed:**

- **On ground:**
  THR LEVER 1(2).....IDLE

■ **If the BASOV or the BACV is detected failed closed:**

L2 The purpose of the following actions is to prevent potential engine oil smell from entering into the air conditioning system.

L1 ENG 1(2) BLEED.....OFF
PACK 1(2).....OFF
X BLEED.....OPEN

ENG 1(2) AIR VALVE

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-AV-00018156.0001001 / 21 MAR 16

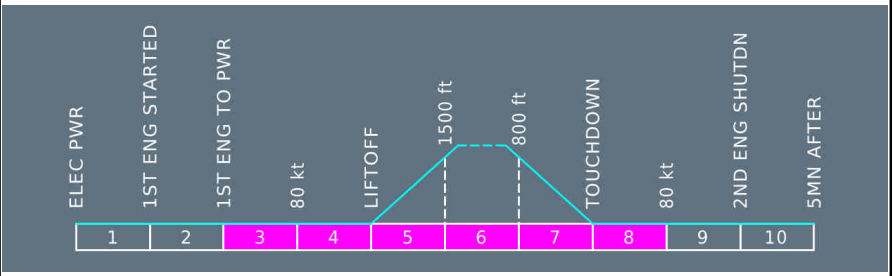
76

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the air system corresponding to start bleed valve is failed.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) AIR VALVE (Cont'd)

Ident.: PRO-ABN-ENG-AV-00015566.0001001 / 18 AUG 14

77

Crew awareness.

L2 Maintenance action is due.

ENG 1(2) BEARING 4 OIL SYS

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-AW-00017962.0001001 / 21 MAR 16

78

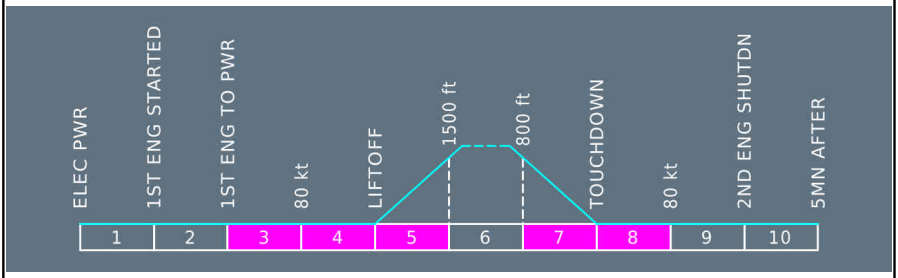
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- A discrepancy of the scavenge valve position is detected, or
- A high pressure is detected.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) BEARING 4 OIL SYS (Cont'd)

Ident.: PRO-ABN-ENG-AW-00012298.0002001 / 12 JAN 11

79

L2 One of the two following messages is displayed:

L1 SCAVENGE VALVE FAULT

L2 N° 4 bearing scavenge valve stuck open.

L1 HI PRESS

L2 N° 4 bearing carbon seal is failed or due to scavenge valve stuck closed or due to a clogged scavenge valve restrictor.
Maintenance action is due.

ENG 1(2) BLEED STATUS FAULT
(IN FLIGHT)

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Ident.: PRO-ABN-ENG-W-00017963.0001001 / 21 MAR 16

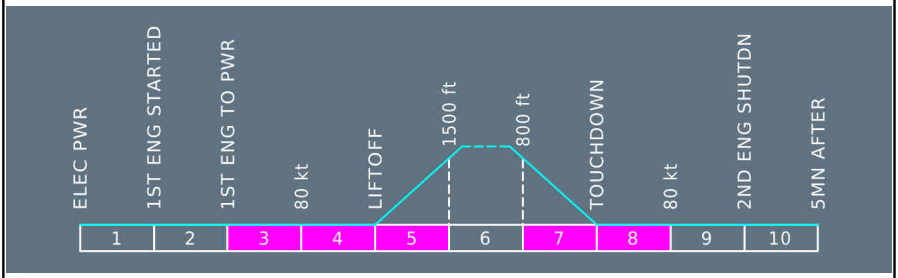
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the status of one of the following valves is not received by the FADEC active channel:

- Bleed valves, or
- Pack valves, or
- Wing and engine anti ice valves, or
- Cross-bleed valve.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-W-00018707.0001001 / 21 MAR 16

- **If ENG ANTI ICE on:**
  ENG MODE SEL.....IGN

Ident.: PRO-ABN-ENG-W-00012303.0001001 / 17 AUG 10

	STATUS
ENG 1(2) HI GND IDLE	

ENG 1(2) BLEED STATUS FAULT
(ON GROUND)

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Ident.: PRO-ABN-ENG-V-00017965.0001001 / 21 MAR 16

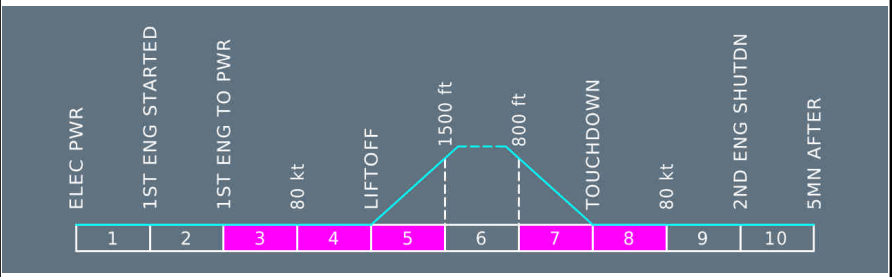
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the status of one of the following valves is not received by the FADEC active channel:

- Bleed valves, or
- Pack valves, or
- Wing and engine anti ice valves, or
- Cross-bleed valve.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) BLEED STATUS FAULT (Cont'd)
(ON GROUND)

Ident.: PRO-ABN-ENG-V-00018708.0001001 / 21 MAR 16

L2 HI GND IDLE

FADEC increases minimum idle as if valves were opened.

L1 ● **If ENG ANTI ICE on:**

ENG MODE SEL.....IGN

L2 *When ENG anti ice is on, there is no automatic selection of continuous relight since FADEC does not know position of engine anti ice valves position.*

L1 ● **BEFORE T.O.:**

PACK (ASSOCIATED SIDE).....OFF

L2 *Associated pack must be closed to reduce risk of excessive EGT.*

Ident.: PRO-ABN-ENG-V-00012301.0001001 / 17 AUG 10

	STATUS
ENG 1(2) HI GND IDLE	

ENG 1(2) BOWED ROTOR
PROTECTION FAULT

Applicable to: MSN 06720-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252

Ident.: PRO-ABN-ENG-DL-00020041.0001001 / 21 OCT 16

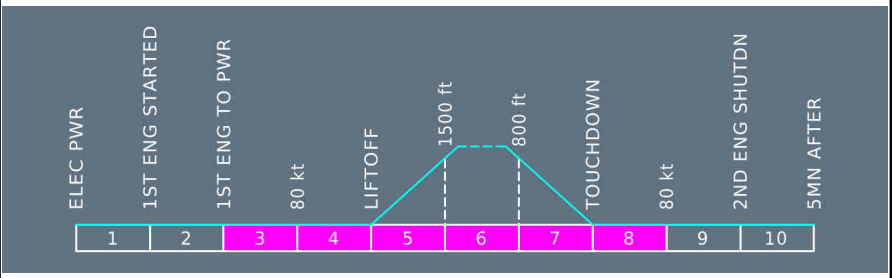
80

ANNUNCIATIONS

Triggering Conditions:

L2 This alert is triggered when the bowed rotor protection (engine cooling) fails.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DL-00020042.0001001 / 10 JAN 17

ENG MASTER (AFFECTED)..... OFF
MAN START (IF MAN START PERFORMED)..... OFF

Do not attempt a new engine start. Maintenance action is due.

ENG 1(2) BOWED ROTOR
PROTECTION FAULT

Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192, 07329-09063

Ident.: PRO-ABN-ENG-DL-00020041.0001001 / 21 OCT 16

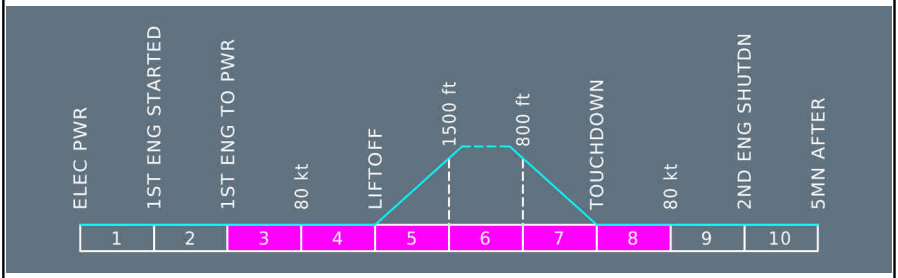
81

ANNUNCIATIONS

Triggering Conditions:

L2 This alert is triggered when the bowed rotor protection (engine cooling) fails.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DL-00020042.0003001 / 10 JAN 17

82

ENG MASTER (AFFECTED)..... OFF

L2 *This action line is only displayed if the affected engine is commanded to start (ENG MASTER lever set to ON).*

L1 MAN START (IF MAN START PERFORMED).....OFF

DUAL COOLING..... OFF

Do not attempt a new engine start. Maintenance action is due.

ENG 1(2) COLD FUEL

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-DI-00019521.0002001 / 13 MAY 16

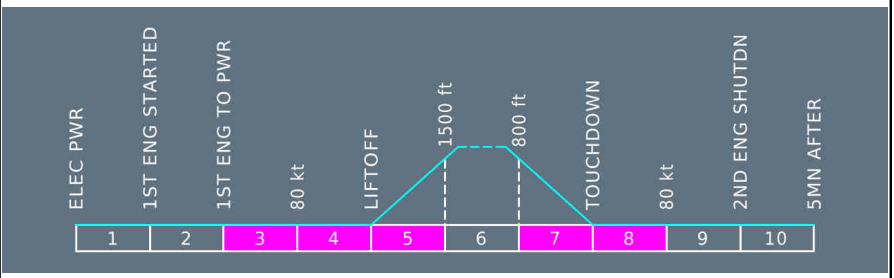
83

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FADEC detects a fuel temperature lower than:
- 0 °C, if IDG 1(2) is connected, or
- 1 °C, if IDG 1(2) is disconnected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DI-00019523.0002001 / 13 MAY 16

84

- **On ground:**
  DELAY T.O
- **In flight:**
  TAT..... INCREASE

ENG 1+2 COMPRESSOR VANE

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

Ident.: PRO-ABN-ENG-CY-00017907.0003001 / 31 AUG 17

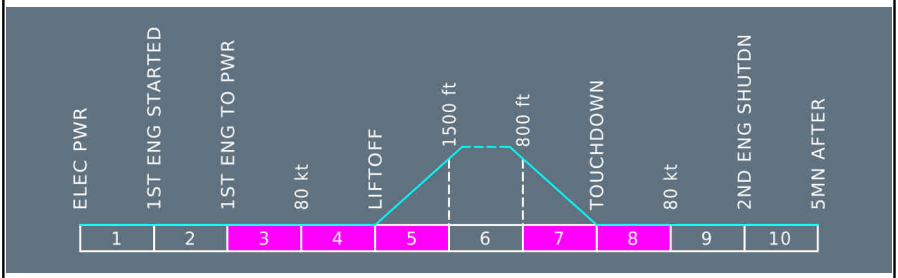
85

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a loss of the redundancy (i.e. one channel is detected faulty) of the compressor vane (i.e. VBV, VSV) control system on both engines. The control of the compressor vane is still fully operative on both engines.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CY-00017757.0002001 / 31 AUG 17

86

Crew awareness.

ENG COMPRESSOR VANE

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

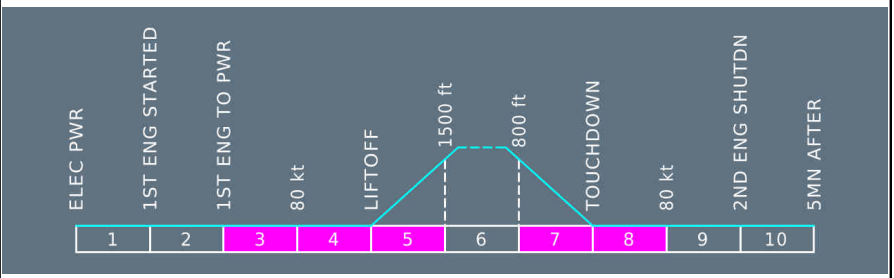
Ident.: PRO-ABN-ENG-CY-00017907.0001001 / 31 AUG 17

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a loss of the redundancy (i.e. one channel is detected faulty) of the compressor vane (i.e. VBV, VSV) control system on both engines. The control of the compressor vane is still fully operative on both engines.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CY-00017757.0001001 / 21 MAR 16

Crew awareness.

ENG 1(2) COMPRESSOR VANE

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

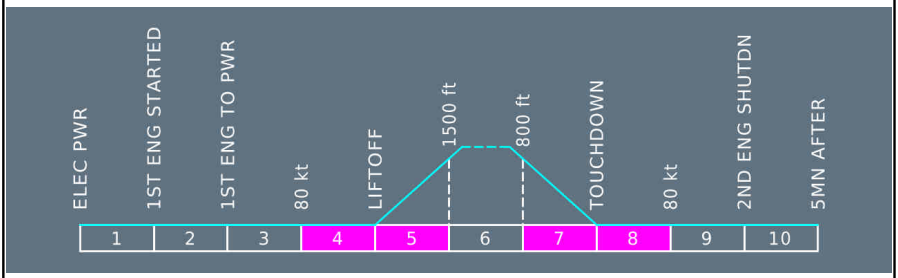
Ident.: PRO-ABN-ENG-N-00017966.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when either Variable Bleed Valve (VBV) or Variable Stator Vane (VSV) is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-N-00017655.0003001 / 21 MAR 17

- **On ground:**
  THR LEVERS (AFFECTED)..... IDLE
  ENG MASTER (AFFECTED)..... OFF

Depending on the type of failure, one of the following two messages is displayed:

AVOID RAPID THR CHANGES or

If the A/THR is engaged, adjust the thrust levers to align the thrust lever commands with actual N1 and disconnect A/THR.

ENG (AFFECTED) SLOW RESPONSE

Continued on the following page

ENG 1(2) COMPRESSOR VANE (Cont'd)

Ident.: PRO-ABN-ENG-N-00012155.0001001 / 17 AUG 10

STATUS

AVOID RAPID THR CHANGES

ENG (affected) SLOW RESPONSE

ENG 1(2) COMPRESSOR VANE

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-N-00017966.0002001 / 21 MAR 16

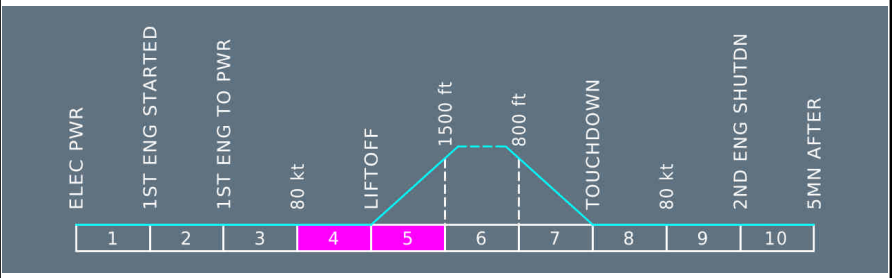
87

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the Low Pressure Compressor Bleed Valve (LPCBV) or Variable Stator Vane (VSV) is failed.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) COMPRESSOR VANE (Cont'd)

Ident.: PRO-ABN-ENG-N-00017655.0005001 / 21 MAR 16

88

- **On ground:**
  THR LEVER (AFFECTED)..... IDLE
  ENG MASTER (AFFECTED).....OFF

AVOID THR CHANGES (not displayed if LPCBV goes to open position).

L2 *If A/THR engaged, adjust the thrust levers to align thrust lever commands with actual EPR and disconnect A/THR.*

L1 AVOID RAPID THRUST CHANGES (displayed when the VSV position disagrees with the command).

L2 *Engine stall may occur at any rapid thrust change.*

Ident.: PRO-ABN-ENG-N-00012155.0002001 / 17 AUG 10

89

	STATUS
AVOID THR CHANGES	

ENG 1(2) COMPRESSOR VANE

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-N-00017966.0004001 / 21 MAR 16

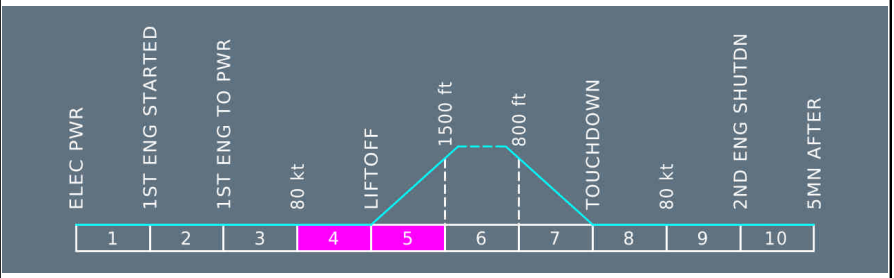
90

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the LPC Stator Actuator, HPC Stator Actuator or LPC 2.5 Valve is partially or fully lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-N-00017655.0006001 / 21 MAR 17

91

- **On ground:**

  THR LEVER (AFFECTED)..... IDLE
  ENG MASTER (AFFECTED).....OFF

AVOID RAPID THR CHANGES

L2 *If A/THR is engaged, adjust the thrust levers to align the thrust lever commands with actual N1 and disconnect A/THR.*

L1 Depending on the type of failure, one of the following ECAM messages is displayed:

THRUST LIMITED
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

Continued on the following page

ENG 1(2) COMPRESSOR VANE (Cont'd)

Ident.: PRO-ABN-ENG-N-00012155.0005001 / 17 MAR 17

92

L12

	STATUS
AVOID RAPID THR CHANGES	
THRUST LIMITED *See* (1)	
FUEL CONSUMPT INCRSD *See* (2)	
FMS PRED UNRELIABLE *See* (3)	

(1) *This message is triggered depending on the type of failure.*

(2) *This message is triggered in the case of failure of the LPC 2.5 bleed valve open.*

(3) *This message is triggered in the case of failure of the LPC 2.5 bleed valve open. Disregard FMS fuel predictions and Refer to QRH/OPS Fuel Penalty Factors/ECAM Alert Table in order to find the applicable Fuel Penalty Factor.*

ENG 1(2) CTL SYS FAULT

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-AX-00018157.0001001 / 21 MAR 16

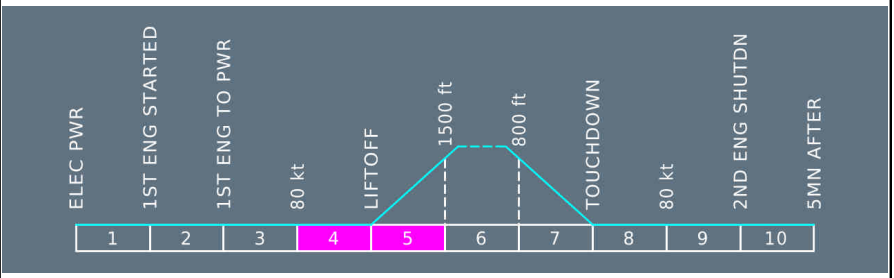
93

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a failure preventing the EEC from satisfactorily controlling the engine is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-AX-00015571.0001001 / 21 MAR 17

94

THR LEVER 1(2).....IDLE
ENG 1(2) MASTER.....OFF

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

ENG 1(2) CTL SYS FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-AX-00018157.0003001 / 09 APR 18

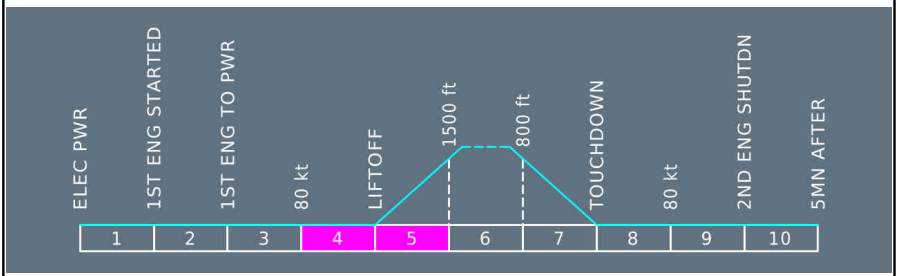
95

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- A failure preventing the EEC from satisfactorily controlling the engine is detected, or
- TCM is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-AX-00015571.0003001 / 09 APR 18

96

■ **On the ground:**

THR LEVER 1(2)..... IDLE
ENG MASTER 1(2).....OFF

■ **In flight:**

● **In case of TCM:**

L2 If takeoff power is applied or in go-around or if AUTOLAND warning is triggered the following procedures would not be displayed.

L1 ENG 1(2) THRUST FROZEN
ENG 1(2) N1 PARAM.....CHECK

● **FOR APPR & LDG:**

THR LEVER 1(2)..... IDLE
ENG MASTER 1(2)..... OFF

Continued on the following page

ENG 1(2) CTL SYS FAULT (Cont'd)

Ident.: PRO-ABN-ENG-AX-00022268.0003001 / 09 APR 18

97

STATUS

- **In case of TCM:**
  ENG 1(2) THRUST FROZEN

APPR PROC

THR LEVER 1(2)..... IDLE
ENG MASTER 1(2).....OFF

ENG 1(2) CTL VALVE FAULT

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Ident.: PRO-ABN-ENG-Q-00017967.0001001 / 21 MAR 16

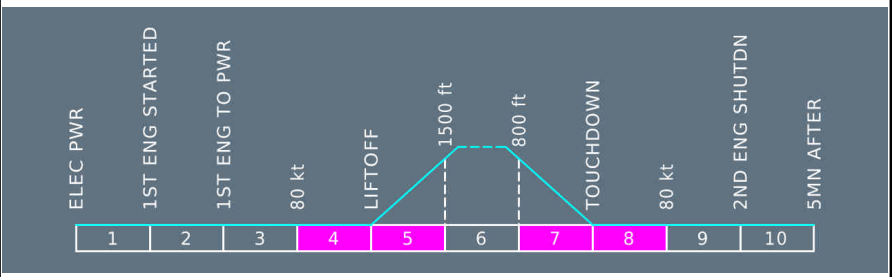
ANNUNCIATIONS

Triggering Conditions:

L2

This alert triggers when:
- The Burner Staging Valve (BSV) is failed, or
- The HP Turbine Clearance (HPTC) system is failed, or
- The Rotor Active Clearance Control (RACC) system is failed.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) CTL VALVE FAULT (Cont'd)

Ident.: PRO-ABN-ENG-Q-00018709.0001001 / 21 MAR 16

MAX N2.....96 %

L2 *Retard associated thrust lever to limit N2 to 96 %.*

Ident.: PRO-ABN-ENG-Q-00012233.0001001 / 17 AUG 10

STATUS

MAX ENG (AFFECTED) N2.....96 %

ENG DUAL COOLING
NOT AVAIL

Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192, 07329-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-DK-00020038.0001001 / 21 OCT 16

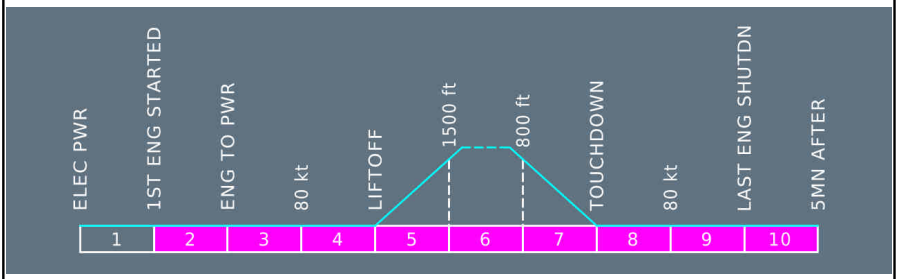
98

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers on ground with the dual cooling function armed but not available, i.e. when out of the dual cooling envelope.*Refer to DSC-70-80-40 Automatic Engine Start with Dual Cooling - Envelope*

Flight Phase Inhibition:



Continued on the following page

ENG DUAL COOLING (Cont'd)
NOT AVAIL

Ident.: PRO-ABN-ENG-DK-00020039.0001001 / 21 OCT 16

99

DUAL COOLING..... OFF

ENG DUAL COOLING
NOT AVAIL

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-DK-00020038.0003001 / 09 APR 18

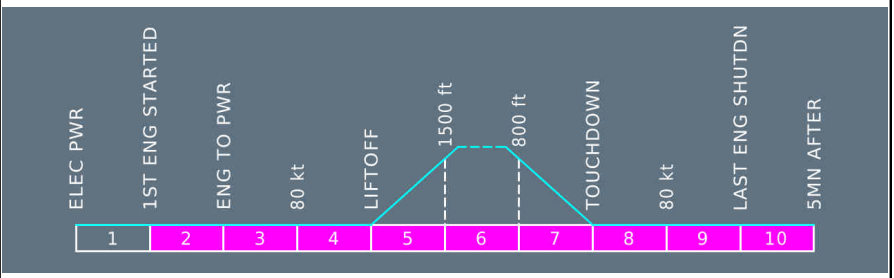
100

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers on ground with the dual cooling function armed but not available, i.e. when out of the dual cooling envelope or with low starter air pressure. *Refer to DSC-70-80-40 Automatic Engine Start with Dual Cooling - Envelope*

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DK-00020039.0003001 / 09 APR 18

101

NOT AVAIL
DUAL COOLING..... OFF

ENG DUAL FAILURE

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

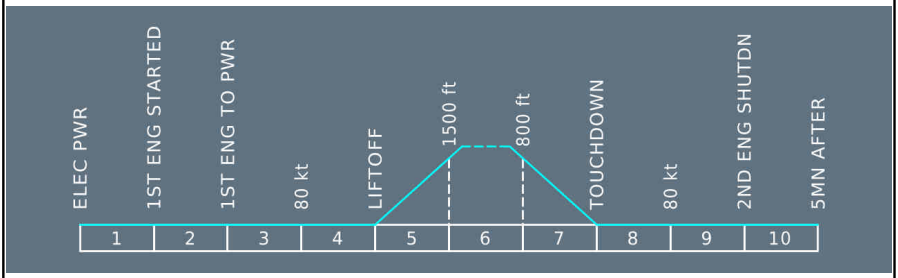
Ident.: PRO-ABN-ENG-S-00017909.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the two engines are failed.

Flight Phase Inhibition:



Continued on the following page

ENG DUAL FAILURE (Cont'd)

Ident.: PRO-ABN-ENG-S-00012282.0380001 / 21 MAR 17

L2 This warning inhibits the ELEC EMER CONFIG warning, and provides the flight crew with the immediate actions to take in the case of a dual engine failure. This procedure then directs the flight crew to apply the applicable QRH procedure, depending on if there is fuel or not.

When applying the ENG DUAL FAILURE QRH procedure:
- If one or more engines are recovered, apply the corresponding ECAM procedure instead
- If no engines are recovered, continue to apply the ENG DUAL FAILURE QRH procedure. If time permits, clear ECAM alerts, and check the ECAM STATUS page.

L1 **LAND ASAP**

EMER ELEC PWR (IF EMER GEN NOT IN LINE).....MAN ON

L2 *Pressing EMER ELEC PWR MAN ON pb allows extension of RAT and emergency generator coupling.*

L1 THR LEVERS.....IDLE
FAC 1.....OFF THEN ON

L2 *Resetting FAC 1 enables the recovery of characteristics speed displayed on the PFD.*
Resetting FAC 1 also enables rudder trim recovery, even if no indication is available.
When the hydraulic power is lost, the right aileron is lost, and is in the upfloat position.
Rudder trim may be used to compensate for this upfloating aileron.

L1 ■ **IF NO FUEL:**

OPT SPD.....220 KT/GREEN DOT

L2 *If there is no fuel remaining, the optimum speed is the green dot speed.*
Initially fly 220 kt then refer to the QRH procedure to get the accurate green dot speed.

L1 ENG/NO FUEL PROC.....APPLY

L2 *Refer to procedure.*

L1 ■ **IF FUEL REMAINS:**

ENG MODE SEL.....IGN
OPT RELIGHT SPD.....280 KT

L2 *If there is fuel remaining, the optimum speed is the optimum relight speed.*

Note: *In the case of an "ENG DUAL FAILURE" during high power operations (i.e. climb, cruise), it is mandatory to fly at or above the optimum relight speed in order to prevent engine core lock.*

Continued on the following page

ENG DUAL FAILURE (Cont'd)

The ECAM provides reference to an envelope speed. In case of speed indication failure (volcanic ash), pitch attitude for optimum relight is provided in the QRH procedure.

L1 ENG/FUEL PROC..... APPLY

L2 *Refer to procedure.*

Continued on the following page

ENG DUAL FAILURE (Cont'd)

Ident.: PRO-ABN-ENG-S-00012283.0044001 / 21 MAR 16

L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED 320/0.77
MAX BRK PR..... 1000 PSI
MANEUVER WITH CARE
FUEL GRVTY FEED
AVOID NEGATIVE G FACTOR

INOP SYS

See below

APPR PROC

- **IF HYD NOT RECOVERED:**
  FOR LDG.....USE FLAP 3
- **WHEN CONF 3 AND VAPP:**
  L/G .....GRVTY EXTN
  (Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION). Being stabilized at VAPP before selecting the gear down enables the aircraft to be trimmed for approach.
  APPR SPD.....VREF +25 KT
  Approach speed must be increased, due to the loss of flaps.

LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)
BRK Y ACCU PR ONLY
See (2)
SLATS SLOW

INOP SYS

G+Y HYD | F/CTL PROT | STABILIZER

Continued on the following page

ENG DUAL FAILURE (Cont'd)

R AIL	REVERSER 1+2	ADR 2+3
IR 2+3	RA 1+2	SPLR 1+2+4+5
ELAC 2	SEC 2+3	FLAPS
YAW DAMPER	A/CALL OUT	AP 1+2
A/THR	FUEL PUMPS	ANTI SKID
N/W. STEER	AUTO BRK	CAT 2
L/G RETRACT	CAB PR 1+2	PACK 1+2

(1) *At landing gear extension, control reverts to direct law in pitch as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

(2) *7 full brake applications are available.*

ENG DUAL FAILURE

Applicable to: MSN 04393-04397, 04433

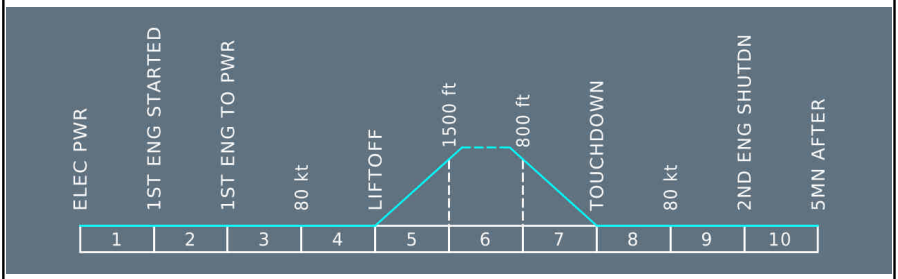
Ident.: PRO-ABN-ENG-S-00017909.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the two engines are failed.

Flight Phase Inhibition:



Continued on the following page

ENG DUAL FAILURE (Cont'd)

Ident.: PRO-ABN-ENG-S-00012282.0370001 / 21 MAR 17

L2 This warning inhibits the ELEC EMER CONFIG warning, and provides the flight crew with the immediate actions to take in the case of a dual engine failure. This procedure then directs the flight crew to apply the applicable QRH procedure, depending on if there is fuel or not.

When applying the ENG DUAL FAILURE QRH procedure:
- If one or more engines are recovered, apply the corresponding ECAM procedure instead
- If no engines are recovered, continue to apply the ENG DUAL FAILURE QRH procedure. If time permits, clear ECAM alerts, and check the ECAM STATUS page.

L1 **LAND ASAP**

EMER ELEC PWR (IF EMER GEN NOT IN LINE).....MAN ON

L2 *Pressing EMER ELEC PWR MAN ON pb allows extension of RAT and emergency generator coupling.*

L1 THR LEVERS.....IDLE
FAC 1.....OFF THEN ON

L2 *Resetting FAC 1 enables the recovery of characteristics speed displayed on the PFD.*
Resetting FAC 1 also enables rudder trim recovery, even if no indication is available.
When the hydraulic power is lost, the right aileron is lost, and is in the upfloat position.
Rudder trim may be used to compensate for this upfloating aileron.

L1 ■ **IF NO FUEL:**

OPT SPD.....220 KT/GREEN DOT

L2 *If there is no fuel remaining, the optimum speed is the green dot speed.*
Initially fly 220 kt then refer to the QRH procedure to get the accurate green dot speed.

L1 ENG/NO FUEL PROC.....APPLY

L2 *Refer to procedure.*

L1 ■ **IF FUEL REMAINS:**

ENG MODE SEL.....IGN
OPT RELIGHT SPD.....300 KT

L2 *If there is fuel remaining, the optimum speed is the optimum relight speed.*
The ECAM provides reference to an envelope speed. In case of speed indication failure (volcanic ash), pitch attitude for optimum relight is provided in the QRH procedure.

L1 ENG/FUEL PROC.....APPLY

L2 *Refer to procedure.*

Continued on the following page

ENG DUAL FAILURE (Cont'd)

Ident.: PRO-ABN-ENG-S-00012283.0044001 / 21 MAR 16

L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED 320/0.77
MAX BRK PR..... 1000 PSI
MANEUVER WITH CARE
FUEL GRVTY FEED
AVOID NEGATIVE G FACTOR

INOP SYS

See below

APPR PROC

- **IF HYD NOT RECOVERED:**
  FOR LDG.....USE FLAP 3
- **WHEN CONF 3 AND VAPP:**
  L/G .....GRVTY EXTN
  (Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION). Being stabilized at VAPP before selecting the gear down enables the aircraft to be trimmed for approach.
  APPR SPD.....VREF +25 KT
  Approach speed must be increased, due to the loss of flaps.

LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)
BRK Y ACCU PR ONLY
See (2)
SLATS SLOW

INOP SYS

G+Y HYD | F/CTL PROT | STABILIZER

Continued on the following page

ENG DUAL FAILURE (Cont'd)

R AIL	REVERSER 1+2	ADR 2+3
IR 2+3	RA 1+2	SPLR 1+2+4+5
ELAC 2	SEC 2+3	FLAPS
YAW DAMPER	A/CALL OUT	AP 1+2
A/THR	FUEL PUMPS	ANTI SKID
N/W. STEER	AUTO BRK	CAT 2
L/G RETRACT	CAB PR 1+2	PACK 1+2

(1) *At landing gear extension, control reverts to direct law in pitch as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

(2) *7 full brake applications are available.*

ENG 1(2) EGT EXCEEDED DURING AIR START

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063

Ident.: PRO-ABN-ENG-AY-00017968.0001001 / 21 MAR 16

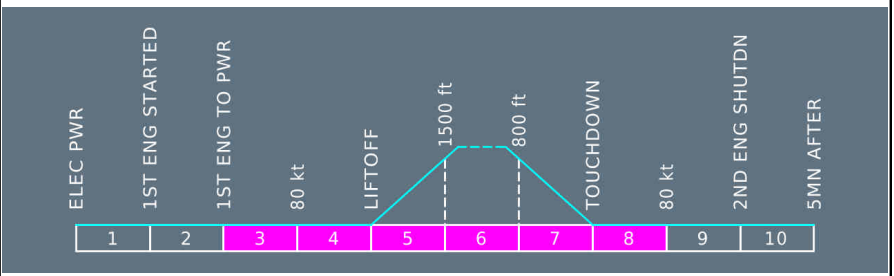
102

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the EGT limit is exceeded during engine relight in flight.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) EGT EXCEEDED DURING AIR START (Cont'd)

Ident.: PRO-ABN-ENG-AY-00012124.0001001 / 21 MAR 16

103

L2 Report in maintenance log.

L1 Crew awareness.

ENG 1(2) EIU FAULT

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04399, 04438, 04510

Ident.: PRO-ABN-ENG-B-00017970.0001001 / 21 MAR 16

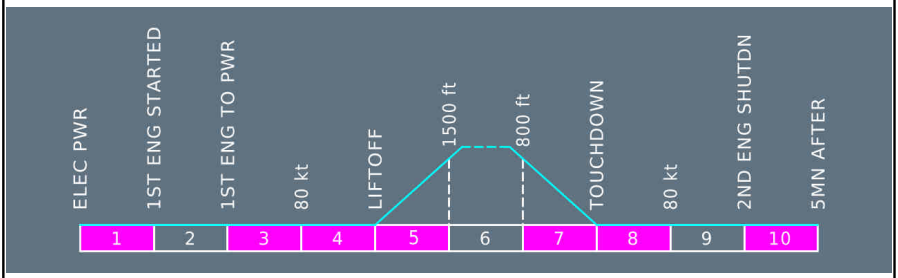
104

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the data bus between the EIU and ECU is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-B-00017658.0002001 / 01 MAR 18

Crew awareness.

L2 The following consequences affect the aircraft when this alert is triggered:

- Affected engine start is lost
- Autothrust control is lost
- Thrust reverser on the affected engine is lost
- When idle is selected, only approach idle is available
- Bleed corrections on N1 limit are lost.

Continued on the following page

ENG 1(2) EIU FAULT (Cont'd)

Ident.: PRO-ABN-ENG-B-00017659.0002001 / 13 MAY 16

105

L12

STATUS

ENG 1(2) APPR IDLE ONLY

Minimum idle is lost.

CAT 2 ONLY

INOP SYS

A/THR
CAT 3
REVERSER 1(2)
ENG 1(2) START

ENG 1(2) EIU FAULT

Applicable to: MSN 01957-02359, 02443-02482, 02609-02626, 02670, 02737-03071, 03264-03330, 03414-03453, 03541-03618, 03782-04216, 04312, 04384, 04488-04506, 04518-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336

Ident.: PRO-ABN-ENG-B-00017970.0001001 / 21 MAR 16

106

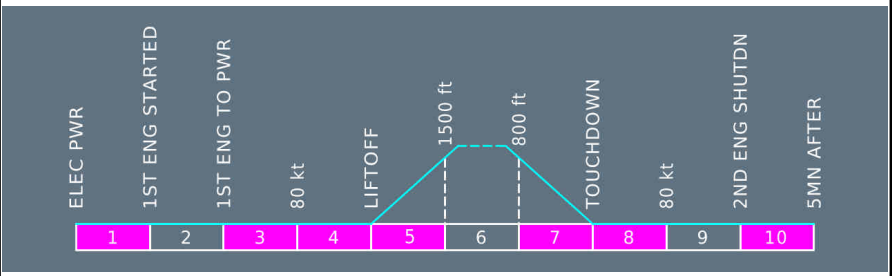
ANNUNCIATIONS

Triggering Conditions:

L2

This alert triggers when the data bus between the EIU and ECU is failed.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) EIU FAULT (Cont'd)

Ident.: PRO-ABN-ENG-B-00017658.0003001 / 21 MAR 16

107

Crew awareness.

L2 The following consequences affect the aircraft when this alert is triggered:

- Affected engine start is lost
- Autothrust control is lost
- Thrust reverser on the affected engine is lost
- When idle is selected, only approach idle is available
- Bleed corrections on EPR limit are lost
- Continuous ignition is on.

Ident.: PRO-ABN-ENG-B-00017659.0002001 / 13 MAY 16

108

L12

STATUS	INOP SYS
ENG 1(2) APPR IDLE ONLY *Minimum idle is lost.* CAT 2 ONLY	A/THR CAT 3 REVERSER 1(2) ENG 1(2) START

ENG 1(2) EIU FAULT

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

Ident.: PRO-ABN-ENG-B-00017970.0001001 / 21 MAR 16

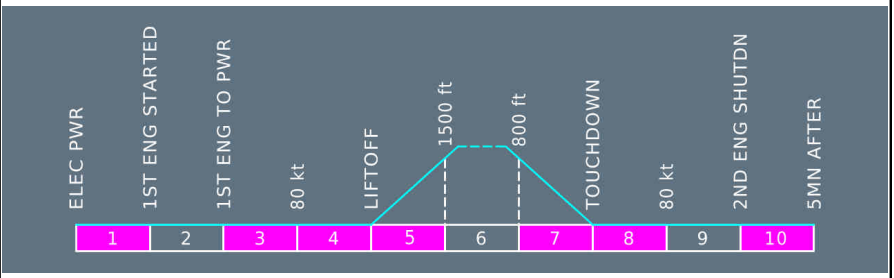
109

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the data bus between the EIU and ECU is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-B-00017658.0003001 / 21 MAR 16

110

Crew awareness.

L2 The following consequences affect the aircraft when this alert is triggered:

- Affected engine start is lost
- Autothrust control is lost
- Thrust reverser on the affected engine is lost
- When idle is selected, only approach idle is available
- Bleed corrections on EPR limit are lost
- Continuous ignition is on.

Continued on the following page

ENG 1(2) EIU FAULT (Cont'd)

Ident.: PRO-ABN-ENG-B-00017659.0001001 / 21 MAR 16

L12

STATUS

	INOP SYS
ENG 1(2) APPR IDLE ONLY *Minimum idle is lost.*	A/THR REVERSER 1(2) ENG 1(2) START

ENG 1(2) EIU FAULT

Applicable to: MSN 04393-04397, 04433

Ident.: PRO-ABN-ENG-B-00017970.0001001 / 21 MAR 16

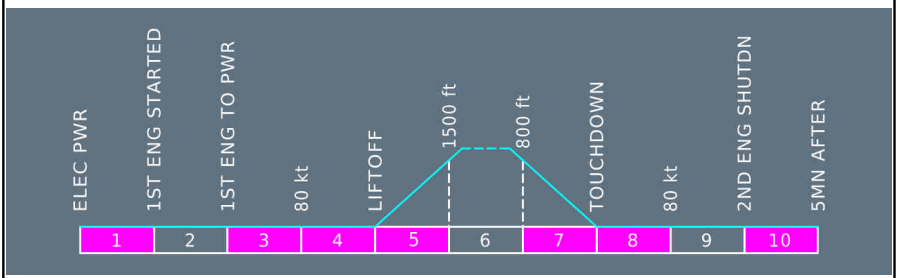
111

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the data bus between the EIU and ECU is failed.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) EIU FAULT (Cont'd)

Ident.: PRO-ABN-ENG-B-00017658.0002001 / 01 MAR 18

Crew awareness.

L2 The following consequences affect the aircraft when this alert is triggered:

- Affected engine start is lost
- Autothrust control is lost
- Thrust reverser on the affected engine is lost
- When idle is selected, only approach idle is available
- Bleed corrections on N1 limit are lost.

Ident.: PRO-ABN-ENG-B-00017659.0001001 / 21 MAR 16

L12

STATUS	INOP SYS
ENG 1(2) APPR IDLE ONLY *Minimum idle is lost.*	A/THR REVERSER 1(2) ENG 1(2) START

ENG 1(2) EIU FAULT

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-B-00017970.0001001 / 21 MAR 16

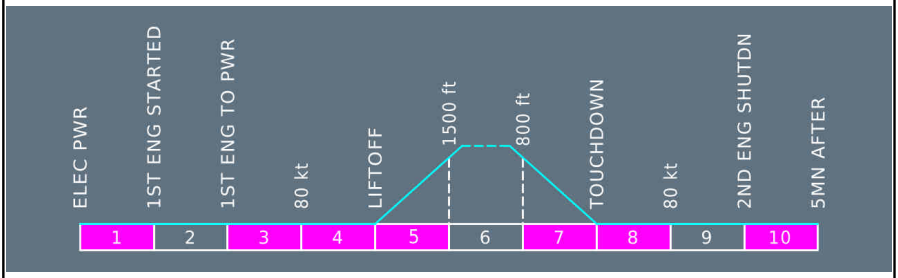
112

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the data bus between the EIU and ECU is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-B-00017658.0001001 / 21 MAR 16

113

Crew awareness.

L2 The following consequences affect the aircraft when this alert is triggered:

- Affected engine start is lost
- Autothrust control is lost
- Thrust reverser on the affected engine is lost
- When idle is selected, only approach idle is available
- Bleed corrections on N1 limit are lost
- Continuous ignition is on (in flight).

Continued on the following page

ENG 1(2) EIU FAULT (Cont'd)

Ident.: PRO-ABN-ENG-B-00017659.0003001 / 04 DEC 17

114

L12

STATUS

GA THR: TOGA ONLY

ENG 1(2) APPR IDLE ONLY
Minimum idle is lost.
CAT 2 ONLY

INOP SYS

A/THR
CAT 3
REVERSER 1(2)
ENG1(2) START
GA SOFT

ENG 1(2) EIU FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-B-00017970.0002001 / 30 MAR 18

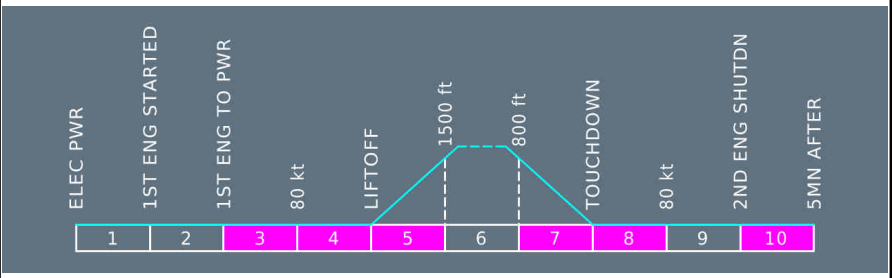
115

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the data bus between the EIU and ECU is failed.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) EIU FAULT (Cont'd)

Ident.: PRO-ABN-ENG-B-00017658.0001001 / 21 MAR 16

116

Crew awareness.

L2 The following consequences affect the aircraft when this alert is triggered:

- Affected engine start is lost
- Autothrust control is lost
- Thrust reverser on the affected engine is lost
- When idle is selected, only approach idle is available
- Bleed corrections on N1 limit are lost
- Continuous ignition is on (in flight).

Ident.: PRO-ABN-ENG-B-00017659.0003001 / 04 DEC 17

117

L12

STATUS

GA THR: TOGA ONLY

ENG 1(2) APPR IDLE ONLY

Minimum idle is lost.

CAT 2 ONLY

INOP SYS

A/THR
CAT 3
REVERSER 1(2)
ENG1(2) START
GA SOFT

ENG 1(2) EPR MODE FAULT

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-H-00017971.0001001 / 21 MAR 16

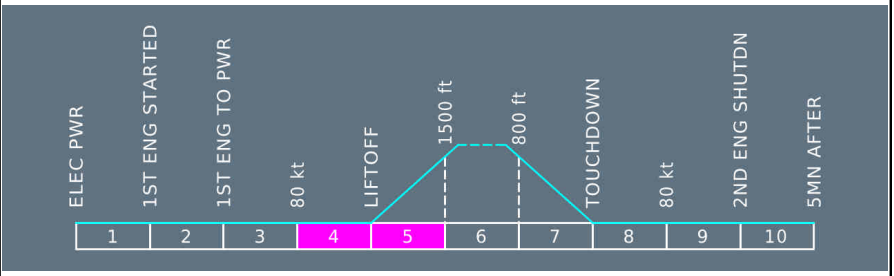
118

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the EEC is reverted to N1 MODE.
The Autothrust control is lost.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) EPR MODE FAULT (Cont'd)

Ident.: PRO-ABN-ENG-H-00017728.0004001 / 24 AUG 18

119

- **On ground if degraded N1 MODE is active:**
  N1 DEGRADED MODE.
  THR LVR 1(2) NOT ABOVE IDLE.

- **In flight if degraded N1 MODE is active:**

L2 Loss of these upper ECAM indications: Max N1, N1 mode, N1 rating limit.

L1 N1 DEGRADED MODE.
ENG 1 N1 MODE .....ON
ENG 2 N1 MODE .....ON

L2 *N1 mode is confirmed on the affected engine.*
The other engine must be reverted to the rated N1 mode to ease thrust setting.

L1 NOT EXCEED N1 LIMIT.

L2 *As there is no N1 limit, an overboost can occur at full forward thrust lever position.*

L1 MAN THR.....ADJUST

L2 *Align the N1 of the affected engine on the N1 of the other engine. Refer to PER-THR-N1 N1 MODE THRUST CONTROL, for power management tables.*

L1 - **In flight if rated N1 MODE is active:**
T.O THRUST LIMITED (ON GROUND)

L2 *When dispatching in rated N1 mode, apply thrust penalties provided in the MMEL.*

L1 ENG 1 N1 MODE.....ON
ENG 2 N1 MODE.....ON
MAN THR.....ADJUST

L2 *Refer to PER-THR-N1 N1 MODE THRUST CONTROL, for power management tables.*

Ident.: PRO-ABN-ENG-H-00017729.0003001 / 21 MAR 16

120

L2 *Note:* *Recovery of EPR MODE on both engines may be attempted by switching off both ENG N1 MODE pb-sw.*

Continued on the following page

ENG 1(2) EPR MODE FAULT (Cont'd)

Ident.: PRO-ABN-ENG-H-00017660.0003001 / 21 MAR 16

121

STATUS

	INOP SYS
■ **On ground, if rated N1 MODE is active:** T.O THRUST LIMITED	A/THR CAT 3
■ **If degraded N1 MODE is active:** ENG 1(2) N1 DEGRADED MODE CAT 2 ONLY	

ENG 1(2) FADEC A(B) FAULT

Applicable to: MSN 01767-06336

Ident.: PRO-ABN-ENG-AZ-00017972.0002001 / 21 MAR 16

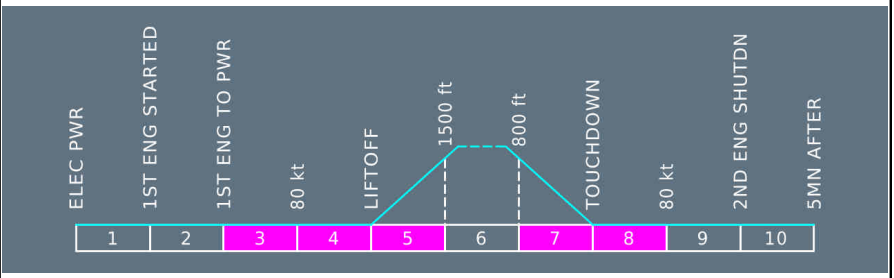
122

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the associated FADEC channel is lost.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FADEC A(B) FAULT (Cont'd)

Ident.: PRO-ABN-ENG-AZ-00017661.0001001 / 31 AUG 17

123

Crew awareness.

- **For aircraft equipped with CFM engines:**

L2 *Note:* *Some cases of spurious FADEC fault have been experienced at engine start on ground.*

The caution can be considered as spurious, if it disappears after application of the following procedure:

- *Set the master sw to OFF, and wait until N2 speed goes below 5 % (If N2 indication is not available, wait 2 minutes before going to next step).*
- *Pull and reset the C/B's of the affected ECU electrical supply (A04 or A05 on 49 VU or R41 or Q40 on 121 VU).*
- *Wait 10 s for the ECU power-up sequence, and restart the engine.*

ENG 1(2) FADEC ALTERNATOR

Applicable to: ALL

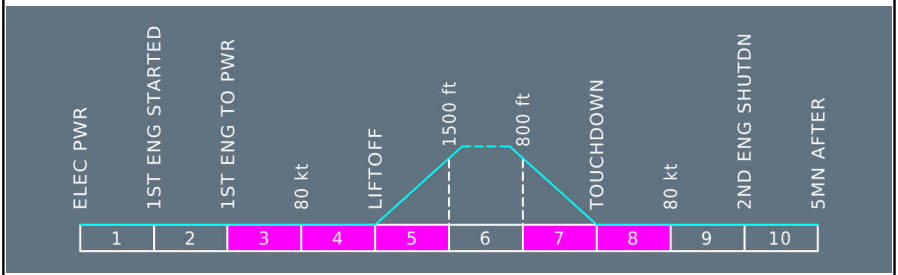
Ident.: PRO-ABN-ENG-BA-00017974.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the electrical auto supply for the FADEC system is lost.

Flight Phase Inhibition:



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ENG 1(2) FADEC ALTERNATOR (Cont'd)

Ident.: PRO-ABN-ENG-BA-00017662.0001001 / 21 MAR 16

Crew awareness.

ENG 1(2) FADEC FAULT

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

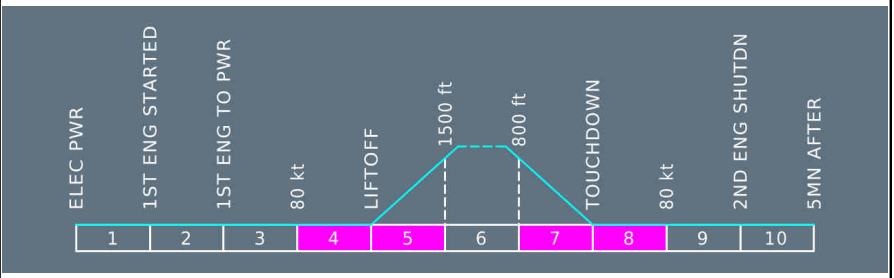
Ident.: PRO-ABN-ENG-BC-00017975.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both FADEC channels are lost.

Flight Phase Inhibition:



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ENG 1(2) FADEC FAULT (Cont'd)

Ident.: PRO-ABN-ENG-BC-00017663.0005001 / 21 MAR 17

■ **On ground:**

THR LVR (AFFECTED) NOT ABOVE IDLE

ENG (AFFECTED) PARAMETERS.....CHECK

L2 *Due to the fact that engine indications are lost, other system pages such as HYD SD page, ELEC SD page or BLEED SD page must be used to check engine status.*

L1 ● **IF ABN ENG OPERATION:**

ENG MASTER (AFFECTED).....OFF

■ **In flight:**

THR LEVER (AFFECTED).....IDLE

ENG (AFFECTED) PARAMETERS.....CHECK

L2 *Due to the fact that engine indications are lost, other system pages such as HYD SD page, ELEC SD page or BLEED SD page must be used to check engine status.*

L1 ● **IF ABN ENG OPERATION:**

ENG MASTER (AFFECTED).....OFF

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

(Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

Ident.: PRO-ABN-ENG-BC-00019553.0001001 / 13 MAY 16

124

STATUS

● **On ground:**

THR LVR 1(2) NOT ABOVE IDLE

ENG 1(2) FADEC FAULT

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

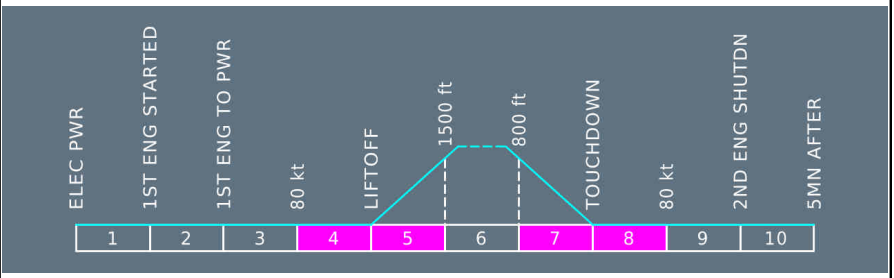
Ident.: PRO-ABN-ENG-BC-00017975.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both FADEC channels are lost.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FADEC FAULT (Cont'd)

Ident.: PRO-ABN-ENG-BC-00017663.0006001 / 21 MAR 17

125

■ **On ground:**

THR LVR (AFFECTED) NOT ABOVE IDLE

ENG (AFFECTED) PARAMETERS.....CHECK

L2 *Due to the fact that engine indications are lost, other system pages such as HYD SD page, ELEC SD page or BLEED SD page must be used to check engine status.*

L1 ● **IF ABNORMAL:**

ENG MASTER (AFFECTED).....OFF

■ **In flight:**

ENG (AFFECTED) PARAMETERS.....CHECK

L2 *Due to the fact that engine indications are lost, other system pages such as HYD SD page, ELEC SD page or BLEED SD page must be used to check engine status.*

L1 ● **IF ABNORMAL:**

THR LEVER (AFFECTED).....IDLE

ENG MASTER (AFFECTED).....OFF

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

(Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

Ident.: PRO-ABN-ENG-BC-00019553.0001001 / 13 MAY 16

126

STATUS

● **On ground:**

THR LVR 1(2) NOT ABOVE IDLE

ENG 1(2) FADEC FAULT

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

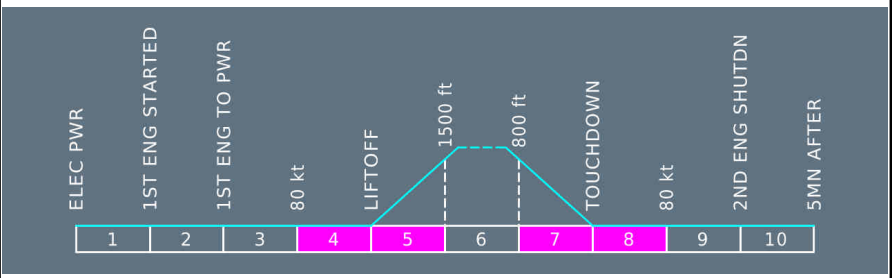
Ident.: PRO-ABN-ENG-BC-00017975.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both FADEC channels are lost.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FADEC FAULT (Cont'd)

Ident.: PRO-ABN-ENG-BC-00017663.0004001 / 21 MAR 17

127

■ **On ground:**

THR LVR (AFFECTED ENGINE) NOT ABOVE IDLE

ENG (AFFECTED ENGINE) PARAMETERS.....CHECK

● **IF ABN ENG OPERATION:**

ENG MASTER (AFFECTED ENGINE)..... OFF

■ **In flight:**

ENG (AFFECTED) PARAMETERS.....CHECK

L2 *Due to the fact that engine indications are lost, other system pages such as HYD SD page, ELEC SD page or BLEED SD page must be used to check engine status.*

L1 ● **IF ABN ENG OPERATION:**

THR LEVER (AFFECTED ENGINE).....IDLE

ENG MASTER (AFFECTED ENGINE)..... OFF

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

(Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

Ident.: PRO-ABN-ENG-BC-00019553.0001001 / 13 MAY 16

128

STATUS

● **On ground:**

THR LVR 1(2) NOT ABOVE IDLE

ENG 1(2) FADEC FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

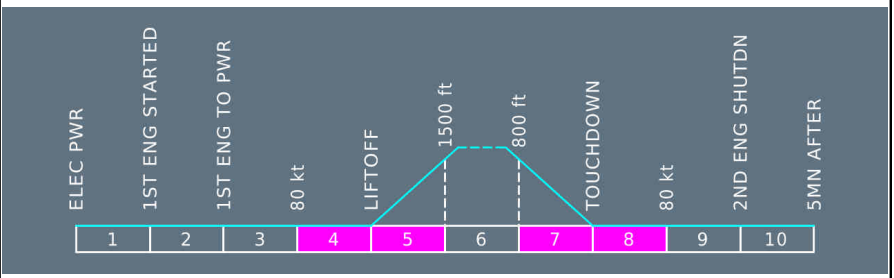
Ident.: PRO-ABN-ENG-BC-00017975.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both FADEC channels are lost.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FADEC FAULT (Cont'd)

Ident.: PRO-ABN-ENG-BC-00017663.0007001 / 30 MAR 18

129

■ **On ground:**

THR LEVER (AFFECTED)..... IDLE
ENG (AFFECTED) PARAMETERS.....CHECK

L2 *Due to the fact that engine indications are lost, other system pages such as HYD SD page, ELEC SD page or BLEED SD page must be used to check engine status.*

L1 ● **IF ABN ENG OPERATION:**

ENG MASTER (AFFECTED)..... OFF

■ **In flight:**

ENG (AFFECTED) PARAMETERS.....CHECK

L2 *Due to the fact that engine indications are lost, other system pages such as HYD SD page, ELEC SD page or BLEED SD page must be used to check engine status.*

L1 ● **IF ABN ENG OPERATION:**

THR LEVER (AFFECTED).....IDLE
ENG MASTER (AFFECTED)..... OFF

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

(Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

ENG 1(2) FADEC HI TEMP

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

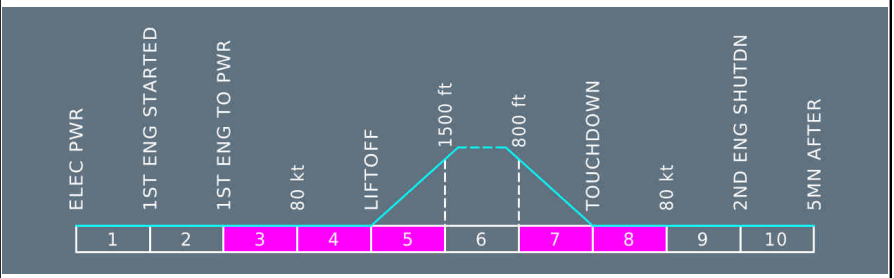
Ident.: PRO-ABN-ENG-BD-00017976.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when high temperature is detected by one or both channels.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FADEC HI TEMP (Cont'd)

Ident.: PRO-ABN-ENG-BD-00017664.0004001 / 21 MAR 17

- **If the ECU TEMP is above 105 °C:**
  FADEC OVHT

L2 *Reducing engine power should decrease temperature in the ECU area.*
If overheating is severe enough, ECU failure could result in a significant loss of engine functions.

L1 ■ **On the ground:**
THR LEVER (AFFECTED)..... IDLE
ENG MASTER (ASSOCIATED ENGINE).....OFF
ENG MODE SEL.....NORM
FADEC GND PWR..... CHECK OFF

■ **In flight:**
ENG (AFFECTED) PARAMETERS.....CHECK

- **IF ABN ENG OPERATION:**
  THR LEVER (AFFECTED).....IDLE
  ENG MASTER (ASSOCIATED ENGINE).....OFF

L12

ASSOCIATED PROCEDURES

ENG 1(2) **SHUT DOWN**
(Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

ENG 1(2) FADEC IDENT FAULT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-BE-00018158.0001001 / 21 MAR 16

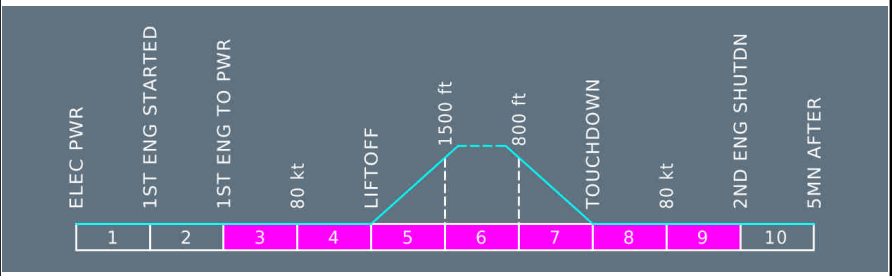
130

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the engine Data Storage Unit (DSU) is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BE-00015573.0001001 / 18 AUG 14

131

Crew awareness.

L2 Maintenance action is due.

ENG 1(2) FADEC OVHT

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-BF-00017978.0001001 / 21 MAR 16

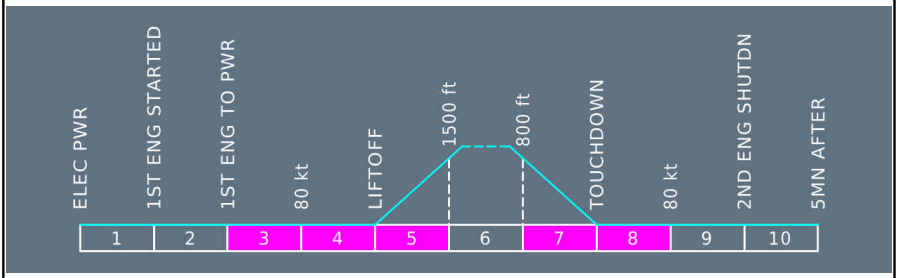
132

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FADEC is in overheat condition.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FADEC OVHT (Cont'd)

Ident.: PRO-ABN-ENG-BF-00017665.0005001 / 21 MAR 17

133

■ **On the ground:**

THR LEVER (AFFECTED)..... IDLE
ENG MASTER (AFFECTED).....OFF

■ **In flight**

L2 Reducing engine power should decrease temperature in the area of the ECU.
If overheating is severe enough, an EEC failure could result with the subsequent loss of engine function.

L1 ENG (AFFECTED) PARAMETERS.....CHECK

● **IF ABN ENG OPERATION:**

THR LEVER (AFFECTED).....IDLE
ENG MASTER (AFFECTED)..... OFF

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

(Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

ENG 1(2) FADEC OVHT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-BF-00017978.0001001 / 21 MAR 16

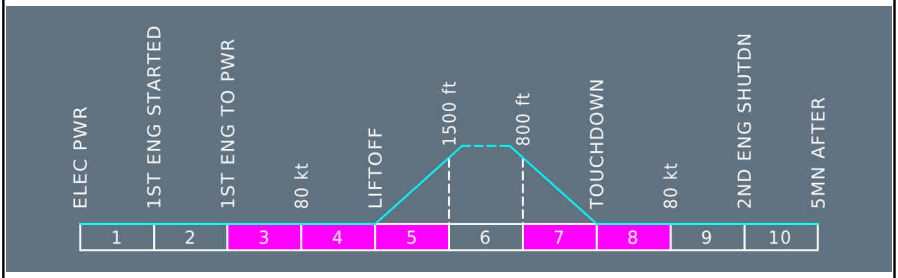
134

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FADEC is in overheat condition.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FADEC OVHT (Cont'd)

Ident.: PRO-ABN-ENG-BF-00017665.0006001 / 21 MAR 17

135

■ **On the ground:**

THR LEVER (AFFECTED)..... IDLE
ENG MASTER (AFFECTED).....OFF

■ **In flight**

ENG (AFFECTED) PARAMETERS.....CHECK

L2 *Due to the fact that engine indications are lost, other system pages such as HYD SD page, ELEC SD page or BLEED SD page must be used to confirm engine status.*

L1 ● **IF ABN ENG OPERATION:**

THR LEVER (AFFECTED).....IDLE
ENG MASTER (AFFECTED).....OFF

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

(Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

ENG 1(2) FADEC PLUG FAULT

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-BG-00017979.0001001 / 21 MAR 16

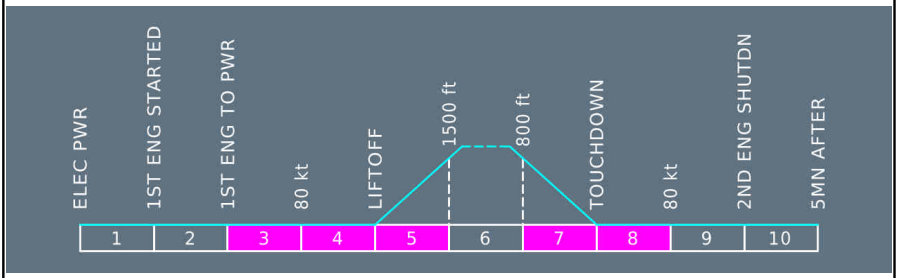
136

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FADEC plug is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BG-00012295.0001001 / 25 FEB 14

137

Crew awareness.

L2 Maintenance action is due.

ENG 1(2) FADEC SYS FAULT

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-BH-00018159.0001001 / 21 MAR 16

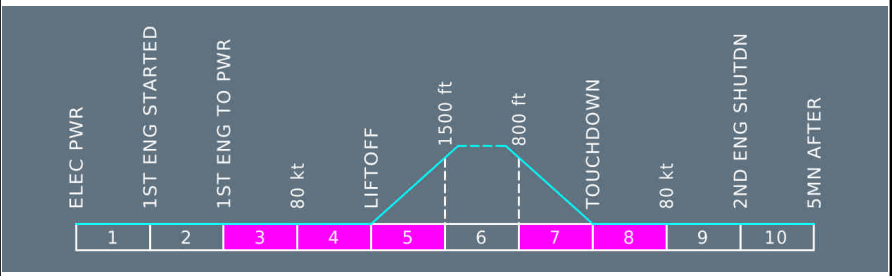
138

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FADEC system is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BH-00015570.0001001 / 18 AUG 14

139

- **On ground:**
  THR LVR 1(2) NOT ABOVE IDLE

ENG 1(2) FADEC SYS FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-BH-00018159.0001001 / 21 MAR 16

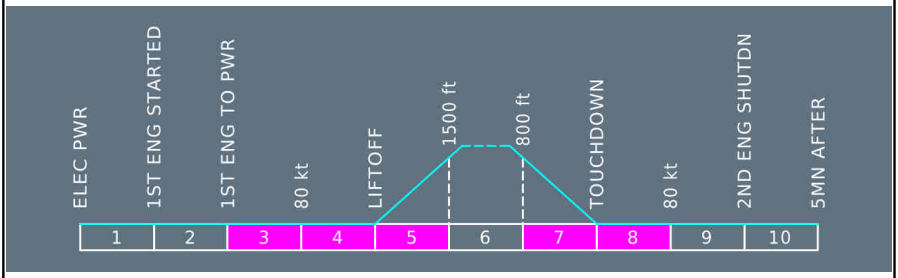
140

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FADEC system is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BH-00015570.0002001 / 30 MAR 18

141

- **On ground:**
  THR LEVER 1(2)..... IDLE

ENG 1(2) FAN COWL NOT CLSD

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-BI-00018160.0001001 / 21 MAR 16

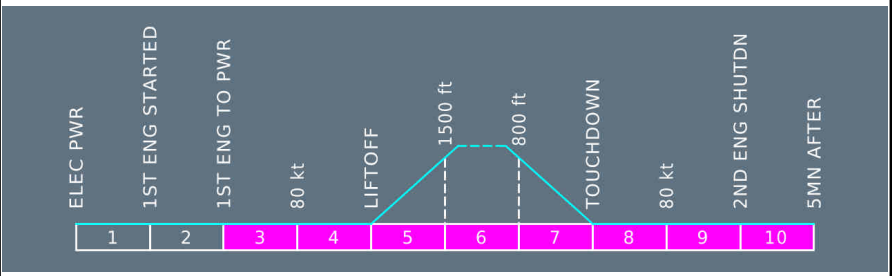
142

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the engine fan cowl is not closed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BI-00015580.0001001 / 18 AUG 14

143

Crew awareness.

ENG 1(2) FAIL

Applicable to: MSN 01767-06336

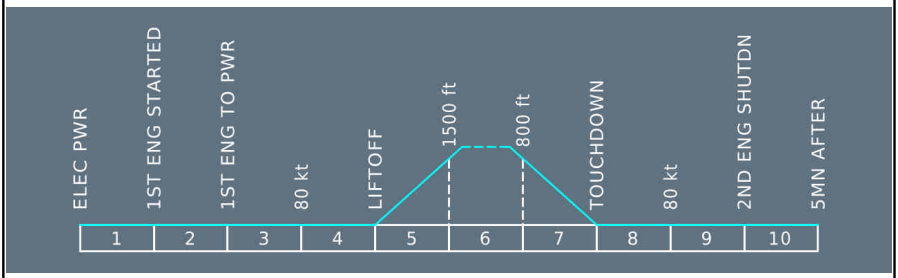
Ident.: PRO-ABN-ENG-BJ-00017982.0002001 / 06 JUN 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the engine core speed is below idle, with the ENG MASTER lever set to ON, and ENG FIRE pb not pushed.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FAIL (Cont'd)

Ident.: PRO-ABN-ENG-BJ-00017667.0003001 / 21 MAR 17

144

L2 An engine flame-out may be recognized by a rapid decrease in EGT, N2, FF, followed by decrease in N1 for CFM engines, or EPR for IAE engines.

Engine damage may be accompanied by:
- Loud noise,
- Significant increase in aircraft vibrations and/or buffeting,
- Repeated or uncontrollable engine stalls,
- Associated abnormal indications such as hydraulic fluid loss, or no N2 indication.

L1 **LAND ASAP**

■ **Before takeoff or after landing:**

THR LEVER (AFFECTED ENGINE)..... IDLE
ENG MASTER (AFFECTED ENGINE).....OFF

■ **IF DAMAGE:**

ENG FIRE P/B (AFFECTED ENGINE)..... PUSH
AGENT 1..... DISCH

■ **IF NO DAMAGE:**

L2 For CFM engines, if conditions permit, do not restart the engine. A new engine start would erase FADEC troubleshooting data.

L1 ENG (AFFECTED) RELIGHT.....CONSIDER

L2 *If no damage, a new start sequence may be initiated.*

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN), if damage or if engine relight is unsuccessful.

L1 ■ **In flight:**

ENG MODE SEL..... IGN

L2 *Selection of continuous ignition confirms the immediate relight attempt made by the FADEC.*

L1 THR LEVER (AFFECTED ENGINE)..... IDLE

Continued on the following page

ENG 1(2) FAIL (Cont'd)

L2 *Note: In case of GPWS (EGPWS) alerts, reduce speed with care below VLS with flaps extended (at light weights VMCA may be reached before αMax) when applying the GPWS (EGPWS) procedure.*

L1 ● **IF NO ENG RELIGHT AFTER 30 S:**

L2 The 30 s countdown starts as soon as the ENG 1(2) FAIL alert is triggered.

L1 ENG MASTER (AFFECTED ENGINE)..... OFF

■ **IF DAMAGE:**

ENG FIRE P/B (AFFECTED ENGINE).....PUSH
AGENT 1 (AFTER 10 SECONDS IN FLIGHT)..... DISCH

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

L2 *Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN), if damage or if engine relight is unsuccessful.*
If high vibration occurs and continues after engine shutdown, reduce airspeed and descent to a safe altitude.
Attempt to determine and use a practical airspeed and altitude for minimum vibrations.

L1 ■ **IF NO DAMAGE:**

ENG (AFFECTED) RELIGHT..... CONSIDER

L2 *Apply ENG RELIGHT (in flight) procedure (Refer to PRO-ABN-ENG [QRH] ENG RELIGHT IN FLIGHT).*

ENG 1(2) FAIL

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

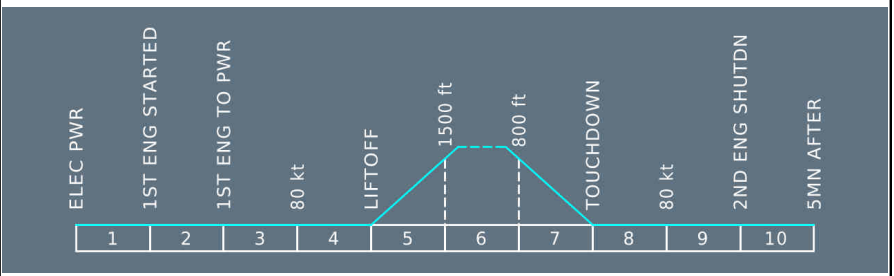
Ident.: PRO-ABN-ENG-BJ-00017982.0002001 / 06 JUN 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the engine core speed is below idle, with the ENG MASTER lever set to ON, and ENG FIRE pb not pushed.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FAIL (Cont'd)

Ident.: PRO-ABN-ENG-BJ-00017667.0004001 / 21 MAR 17

145

L2 An engine flame-out may be recognized by a rapid decrease in EGT, N2, FF, followed by decrease in N1.

Engine damage may be accompanied by:
- Loud noise,
- Significant increase in aircraft vibrations and/or buffeting,
- Repeated or uncontrollable engine stalls,
- Associated abnormal indications such as hydraulic fluid loss, or no N2 indication.

L1 **LAND ASAP**

■ **If shaft shear detected:**
SHAFT FAILURE

■ **In case of a thrust malfunction:**
THRUST MALFUNCTION

L2 *On ground, an overthrust condition is detected by the FADEC, which automatically shuts down the engine.*

L1 ENG MASTER (AFFECTED ENGINE).....OFF

■ **Before takeoff or after landing:**
THR LEVER (AFFECTED ENGINE)..... IDLE
ENG MASTER (AFFECTED ENGINE).....OFF

■ **IF DAMAGE:**
ENG FIRE P/B (AFFECTED ENGINE)..... PUSH
AGENT 1..... DISCH

■ **IF NO DAMAGE:**
ENG (AFFECTED) RELIGHT.....CONSIDER

L2 *If no damage, a new start sequence may be initiated.*

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN), if damage or if engine relight is unsuccessful.

Continued on the following page

ENG 1(2) FAIL (Cont'd)

L1 ■ **In flight:**

ENG MODE SEL.....IGN

L2 *Selection of continuous ignition confirms the immediate relight attempt made by the FADEC.*

L1 THR LEVER (AFFECTED ENGINE).....IDLE

L2 *Note: In case of GPWS (EGPWS ◁) alerts, reduce speed with care below VLS with flaps extended (at light weights VMCA may be reached before αMax) when applying the GPWS (EGPWS ◁) procedure.*

L1 ● **IF NO ENG RELIGHT AFTER 30 S:**

L2 The 30 s countdown starts as soon as the ENG 1(2) FAIL alert is triggered.

L1 ENG MASTER (AFFECTED ENGINE).....OFF

■ **IF DAMAGE:**

ENG FIRE P/B (AFFECTED ENGINE).....PUSH

AGENT 1 (AFTER 10 SECONDS IN FLIGHT).....DISCH

L12

ASSOCIATED PROCEDURES

ENG 1(2) **SHUT DOWN**

L2 *Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN), if damage or if engine relight is unsuccessful.*
If high vibration occurs and continues after engine shutdown, reduce airspeed and descent to a safe altitude.
Attempt to determine and use a practical airspeed and altitude for minimum vibrations.

L1 ■ **IF NO DAMAGE:**

ENG (AFFECTED) RELIGHT.....CONSIDER

L2 *Apply ENG RELIGHT (in flight) procedure (Refer to PRO-ABN-ENG [QRH] ENG RELIGHT IN FLIGHT).*

ENG 1(2) FAIL

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

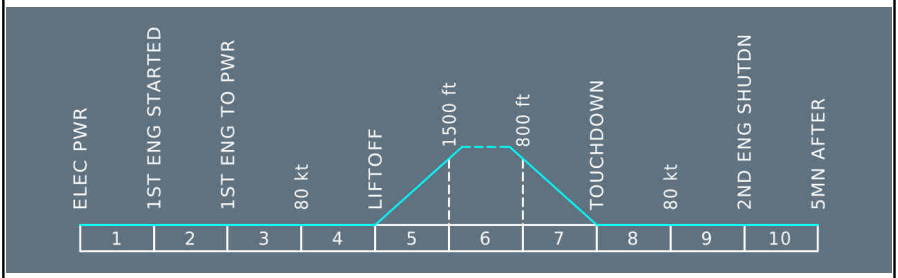
Ident.: PRO-ABN-ENG-BJ-00017982.0002001 / 06 JUN 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the engine core speed is below idle, with the ENG MASTER lever set to ON, and ENG FIRE pb not pushed.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FAIL (Cont'd)

Ident.: PRO-ABN-ENG-BJ-00017667.0007001 / 09 APR 18

146

L2 An engine flame-out may be recognized by a rapid decrease in EGT, N2, FF, followed by decrease in N1.

Engine damage may be accompanied by:
- Loud noise,
- Significant increase in aircraft vibrations and/or buffeting,
- Repeated or uncontrollable engine stalls,
- Associated abnormal indications such as hydraulic fluid loss, or no N2 indication.

L1 **LAND ASAP**

■ **In case of shaft failure:**

SHAFT FAILURE

L2 *The FADEC automatically shuts down the engine.*

L1 THR LEVER (AFFECTED ENGINE)..... IDLE
ENG MASTER (AFFECTED ENGINE).....OFF
ENG FIRE P/B (AFFECTED ENGINE).....PUSH
AGENT 1 (AFTER 10 SECONDS).....DISCH

■ **In case of a thrust malfunction:**

THRUST MALFUNCTION

L2 *On ground, an overthrust condition is detected by the FADEC, which automatically shuts down the engine.*

L1 ENG MASTER (AFFECTED ENGINE).....OFF

■ **Before takeoff or after landing:**

THR LEVER (AFFECTED ENGINE)..... IDLE
ENG MASTER (AFFECTED ENGINE).....OFF

■ **IF DAMAGE:**

ENG FIRE P/B (AFFECTED ENGINE).....PUSH
AGENT 1.....DISCH

■ **IF NO DAMAGE:**

ENG (AFFECTED) RELIGHT.....CONSIDER

L2 *If no damage, a new start sequence may be initiated.*

Continued on the following page

ENG 1(2) FAIL (Cont'd)

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN), if damage or if engine relight is unsuccessful.

L1 ■ **In flight:**

ENG MODE SEL.....IGN

L2 *Selection of continuous ignition confirms the immediate relight attempt made by the FADEC.*

L1 THR LEVER (AFFECTED ENGINE).....IDLE

L2 Note: *In case of GPWS (EGPWS ◁) alerts, reduce speed with care below VLS with flaps extended (at light weights VMCA may be reached before αMax) when applying the GPWS (EGPWS ◁) procedure.*

L1 ● **IF NO ENG RELIGHT AFTER 30 S:**

L2 The 30 s countdown starts as soon as the ENG 1(2) FAIL alert is triggered.

L1 ● **IF NO RELIGHT:**

ENG MASTER (AFFECTED ENGINE).....OFF

■ **IF DAMAGE:**

ENG FIRE P/B (AFFECTED ENGINE).....PUSH
AGENT 1 (AFTER 10 SECONDS IN FLIGHT).....DISCH

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

L2 *Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN), if damage or if engine relight is unsuccessful.*
If high vibration occurs and continues after engine shutdown, reduce airspeed and descent to a safe altitude.
Attempt to determine and use a practical airspeed and altitude for minimum vibrations.

L1 ■ **IF NO DAMAGE:**

ENG (AFFECTED) RELIGHT.....CONSIDER

Continued on the following page

ENG 1(2) FAIL (Cont'd)

L2 *Apply ENG RELIGHT (in flight) procedure (Refer to PRO-ABN-ENG [QRH] ENG RELIGHT IN FLIGHT).*

ENG 1(2) FIRE
(IN FLIGHT)

Applicable to: ALL

Ident.: PRO-ABN-ENG-DQ-00017401.0001001 / 21 MAR 16

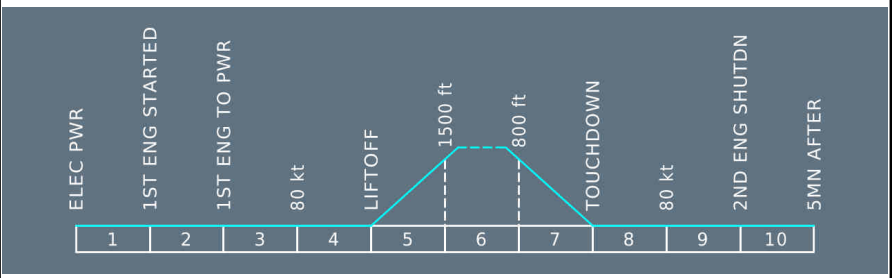
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- Fire is detected by both loops, or
- Fire is detected by one loop when the other loop is faulty, or
- A rupture occurs in both loops within 5 s.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FIRE (Cont'd)
(IN FLIGHT)

Ident.: PRO-ABN-ENG-DQ-00018190.0002001 / 21 MAR 17

LAND ASAP

THR LEVER (AFFECTED)..... IDLE
ENG MASTER (AFFECTED)..... OFF

L2 *LP and HP valves close.*

L1 ENG FIRE P/B (AFFECTED)..... PUSH

L2 *When pushed:*
- *Aural warning stops*
- *The light remains on, until the fire is extinguished, regardless of the position of the ENG FIRE pb-sw*
- *FADEC is no longer supplied.*

L1 AGENT 1 AFTER 10 S..... DISCH

L2 *The 10 s delay allows N1 to decrease, reducing nacelle ventilation, and thereby increasing the effect of the agent.*
Automatic countdown on the ECAM.

L1 ATC..... NOTIFY

L2 *Notify ATC of the nature of the emergency, and state intentions*

L1 ● **IF FIRE AFTER 30 S:**
AGENT 2..... DISCH

L2 *Discharge the second agent, if the fire warning remains 30 s after the discharge of the first agent.*

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUTDOWN

Do not attempt to restart the engine.
For the ENG SHUTDOWN procedure, see the ENG section (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

ENG 1(2) FIRE
(ON GROUND)

Applicable to: ALL

Ident.: PRO-ABN-ENG-DR-00018553.0001001 / 21 MAR 16

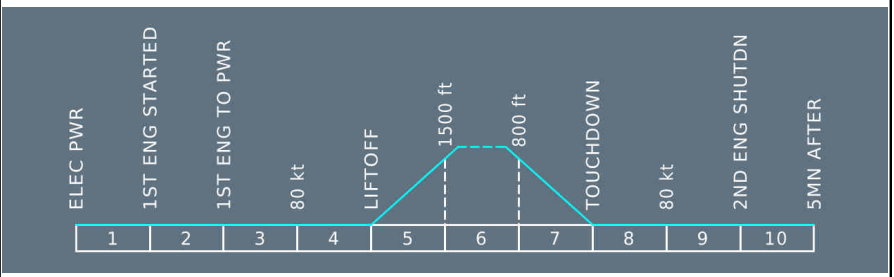
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- Fire is detected by both loops, or
- Fire is detected by one loop when the other loop is faulty, or
- A rupture occurs in both loops within 5 s.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FIRE (Cont'd)
(ON GROUND)

Ident.: PRO-ABN-ENG-DR-00018192.0004001 / 14 FEB 17

THR LEVERS..... IDLE

L2 *Full reverse may be used to stop the aircraft.*

L1 ● **WHEN A/C IS STOPPED:**

PARKING BRK..... ON

ATC (VHF 1)..... NOTIFY

L2 *Notify ATC of the nature of the emergency, and state intensions.*
Only VHF 1 is available on batteries.

L1 CABIN CREW (PA)..... ALERT

ENG MASTER (AFFECTED)..... OFF

L2 *Associated LP and HP valves close.*

L1 ENG FIRE P/B (AFFECTED)..... PUSH

L2 *When pushed:*
- *Aural warning stops*
- *The light remains on, until the fire is extinguished, regardless of the position of the ENG FIRE pb-sw*
- *FADEC is no longer supplied.*

L1 AGENT 1+2..... DISCH

EMER EVAC PROC..... APPLY

L2 *Refer to PRO-ABN-MISC [QRH] EMER EVAC or Refer to QRH/ABN-25 EMER EVAC*

ENG 1(2) FIRE DET FAULT

Applicable to: ALL

Ident.: PRO-ABN-ENG-DO-00020838.0001001 / 17 MAR 17

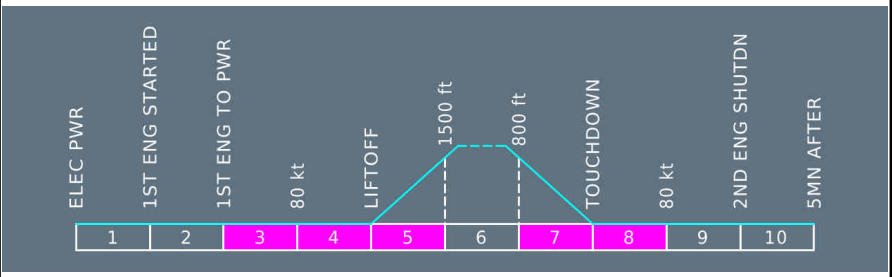
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- Both loops are inoperative, or
- Fire Detector Unit is inoperative.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DO-00020837.0001001 / 17 MAR 17

Crew awareness.

Ident.: PRO-ABN-ENG-DO-00020839.0001001 / 17 MAR 17

STATUS

	INOP SYS
	FIRE DET 1(2)

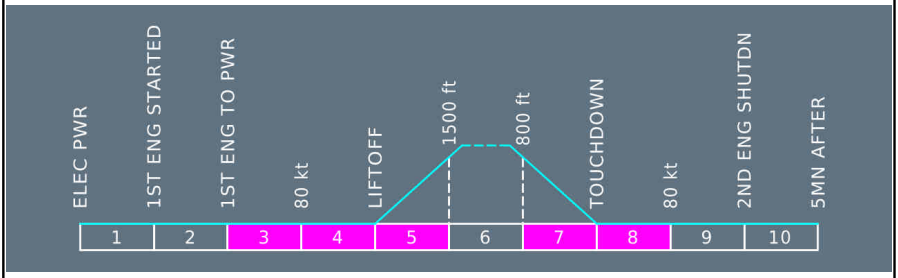
ENG 1(2) FIRE LOOP A(B) FAULT

Applicable to: ALL

Ident.: PRO-ABN-ENG-DP-00020841.0001001 / 17 MAR 17

ANNUNCIATIONS

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DP-00020840.0001001 / 17 MAR 17

L2 Crew awareness.

Ident.: PRO-ABN-ENG-DP-00020842.0001001 / 17 MAR 17

STATUS

INOP SYS

ENG 1(2) LOOP A(B)

ENG 1(2) FUEL CTL FAULT

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Ident.: PRO-ABN-ENG-O-00017983.0001001 / 21 MAR 16

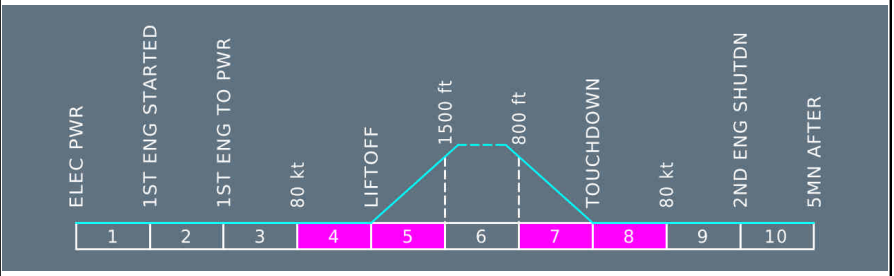
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- The Fuel Metering Valve (FMV) position is failed, or
- The FMV command is failed, or
- The FMV position feedback is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-O-00017679.0003001 / 05 JUN 18

- **On ground:**
  THR LEVER (AFFECTED)..... IDLE
  ENG MASTER (AFFECTED).....OFF

AVOID RAPID THR CHANGES, or

L2 *If the A/THR is engaged, adjust the thrust levers to align the thrust lever commands with actual N1 and disconnect A/THR.*

L1 ENG (AFFECTED) SLOW RESPONSE

L2 Depending on the type of failure, one of the above two messages is displayed.

Continued on the following page

ENG 1(2) FUEL CTL FAULT (Cont'd)

Ident.: PRO-ABN-ENG-O-00017681.0001001 / 21 MAR 16

	STATUS
AVOID RAPID THR CHANGES or	
ENG (affected) SLOW RESPONSE	

ENG 1(2) FUEL CTL FAULT

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-O-00017983.0001001 / 21 MAR 16

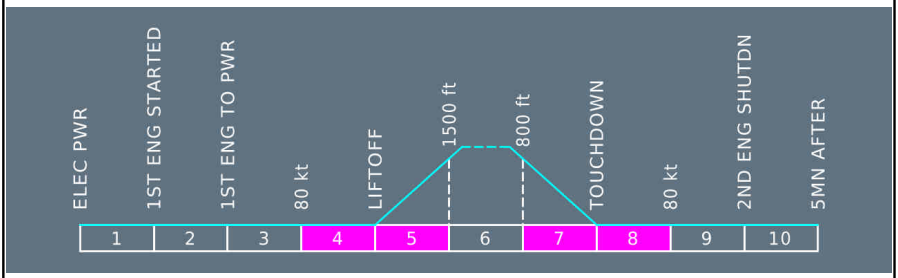
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- The Fuel Metering Valve (FMV) position is failed, or
- The FMV command is failed, or
- The FMV position feedback is failed.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FUEL CTL FAULT (Cont'd)

Ident.: PRO-ABN-ENG-O-00017679.0004001 / 21 MAR 16

147

L2 ■ **FMV position disagreement:**

Crew awareness.

Fuel Metering Valve position disagreement between the commanded position and the real one.

L1 ■ **Failure of FMV command or FMV position feedback:**

ENG 1(2) MIN FUEL FLOW.

L2 *FADEC is no longer able to control the fuel flow. It automatically sets a fail safe minimum fuel flow corresponding to idle or sub-idle fuel flow which may result in an engine shut-down.*

L1 THR LEVER (AFFECTED)..... IDLE

■ **In flight:**

● **IF ENG (affected) NOT AT IDLE:**

ENG MASTER (AFFECTED).....OFF

■ **On the ground:**

ENG MASTER (AFFECTED).....OFF

Ident.: PRO-ABN-ENG-O-00017681.0003001 / 21 MAR 16

148

STATUS

APPR PROC

REV (AFFECTED)..... DO NOT USE

● **AFTER TOUCH DOWN:**

THR LEVER (AFFECTED).....IDLE

ENG MASTER (AFFECTED) .....OFF

ENG (affected) MIN FUEL FLOW.

ENG 1(2) FUEL CTL FAULT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-O-00017983.0001001 / 21 MAR 16

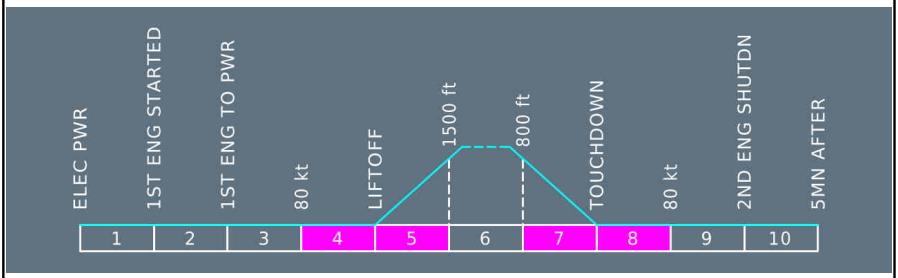
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- The Fuel Metering Valve (FMV) position is failed, or
- The FMV command is failed, or
- The FMV position feedback is failed.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FUEL CTL FAULT (Cont'd)

Ident.: PRO-ABN-ENG-O-00017679.0005001 / 05 JUN 18

149

L2 The Fuel Metering Valve (FMV) position cannot be controlled.

L1 THR LEVERS (AFFECTED).....IDLE

- **For aircraft equipped with PW1100G engines:**
  AVOID RAPID THR CHANGES

L2 *If the A/THR is engaged, adjust the thrust levers to align the thrust lever commands with actual N1 and disconnect A/THR.*

L1 ■ **On ground:**
ENG MASTER (AFFECTED).....OFF

■ **In flight:**

- **IF ENG (affected) NOT AT IDLE:**
  ENG MASTER (AFFECTED).....OFF

Ident.: PRO-ABN-ENG-O-00017681.0004001 / 21 MAR 16

150

STATUS

- **For aircraft equipped with PW1100G engines:**
  AVOID RAPID THR CHANGES

APPR PROC

REV (AFFECTED)..... DO NOT USE

- **AFTER TOUCH DOWN:**
  THR LEVER (AFFECTED).....IDLE
  ENG MASTER (AFFECTED) .....OFF

ENG (affected) MIN FUEL FLOW.

ENG 1(2) FUEL FILTER CLOG

Applicable to: ALL

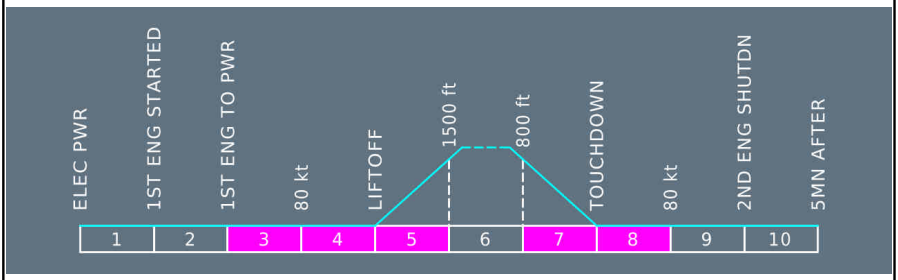
Ident.: PRO-ABN-ENG-BK-00017984.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fuel filter is clogged.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BK-00012068.0001001 / 16 JAN 18

Crew awareness.

L2 Maintenance action is due. The fuel filter is bypassed and short term engine operation is not affected. Dual fuel filter clog is likely an indication of Fuel contamination.

ENG 1(2) FUEL FILTER - PARTLY CLOGGED

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-DV-00022281.0003001 / 09 APR 18

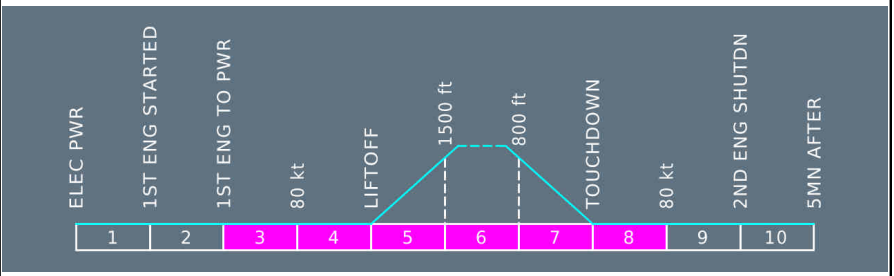
151

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when an impeding bypass is detected on the fuel filter.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DV-00022282.0003001 / 09 APR 18

152

PARTLY CLOGGED

ENG 1+2 FUEL FILTER CLOG

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-BL-00018173.0001001 / 21 MAR 16

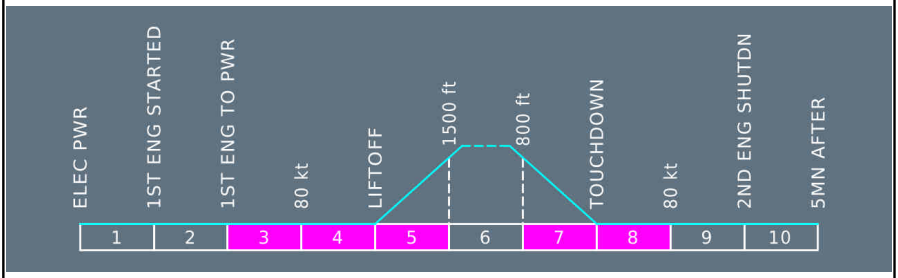
153

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when actual bypass is detected on both fuel filters.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BL-00015600.0001001 / 05 NOV 15

154

LAND ASAP

- **On ground:**
  THR LVR 1 NOT ABOVE IDLE
  THR LVR 2 NOT ABOVE IDLE

ENG 1+2 FUEL FILTER CLOG

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-BL-00018173.0001001 / 21 MAR 16

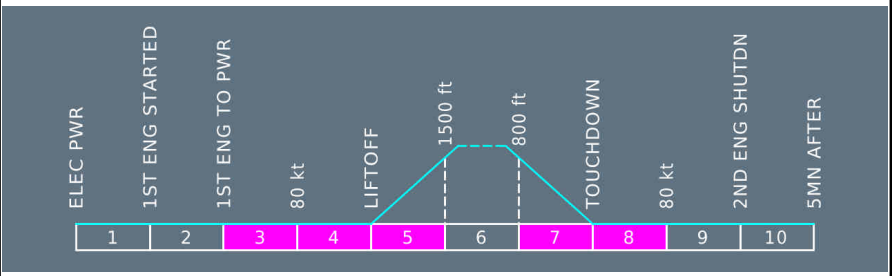
155

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when actual bypass is detected on both fuel filters.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BL-00015600.0002001 / 30 MAR 18

156

LAND ASAP

- **On ground:**
  - THR LEVER 1 ..... IDLE
  - THR LEVER 2 ..... IDLE

ENG 1(2) FUEL FILTER DEGRAD

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-BM-00018161.0001001 / 21 MAR 16

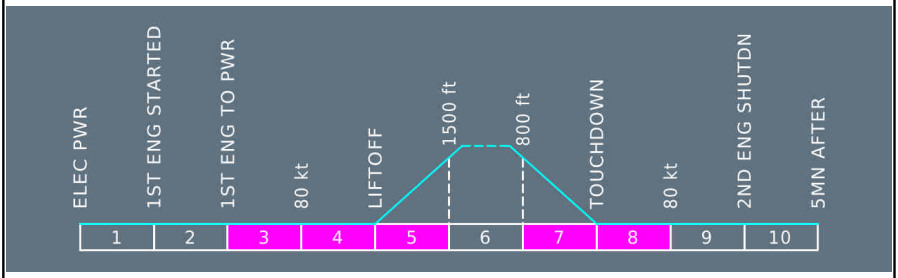
157

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when an impeding bypass is detected on the fuel filter.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BM-00015592.0001001 / 05 NOV 15

158

Crew awareness.

ENG 1(2) FUEL HEAT SYS

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063

Ident.: PRO-ABN-ENG-BN-00017985.0001001 / 21 MAR 16

159

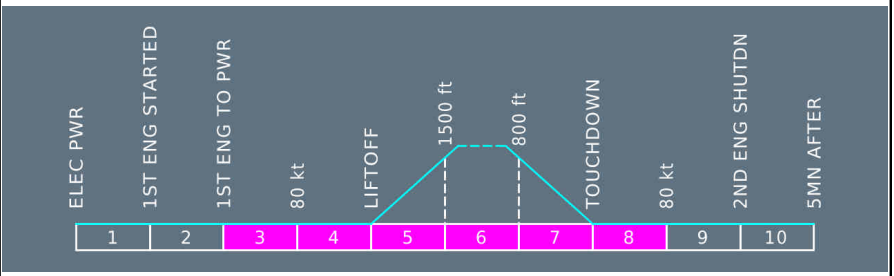
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- The Fuel Diverter Valve is failed, or
- The Fuel or Oil temperature sensors are failed, or
- The Fuel Return Valve is failed in open position.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BN-00017684.0001001 / 13 MAY 16

160

FUEL RETURN VALVE OPEN.

- **For aircraft equipped with IAE engines:**
  FUEL DIVERTER VALVE.
- **For aircraft equipped with IAE, or PW6000 engines:**
  TEMP SENSORS

L2 *Maintenance action is due.*

ENG 1(2) FUEL LEAK

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-BO-00018162.0001001 / 21 MAR 16

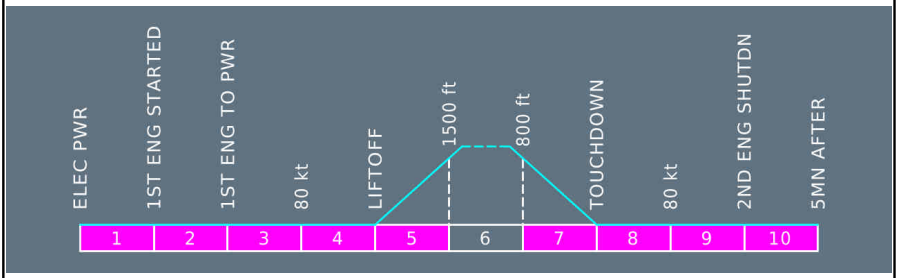
161

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when an abnormal difference among the engines is detected, either in fuel flow or in fuel used.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BO-00018720.0001001 / 21 MAR 16

162

L2 This caution could be indicative of a fuel leak downstream of the Fuel Metering Valve (FMV). In such a case, the ECAM message FUEL F. USED/FOB DISAGREE will not be triggered. Confirm if there is a fuel leak via other indications: Fuel quantity, excessive fuel used.

L1 ● **IF LEAK CONFIRMED:**

THR LEVER (AFFECTED ENGINE)..... IDLE
ENG MASTER (AFFECTED ENGINE).....OFF

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

L2 *Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN*

ENG 1(2) FUEL RETURN VALVE

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

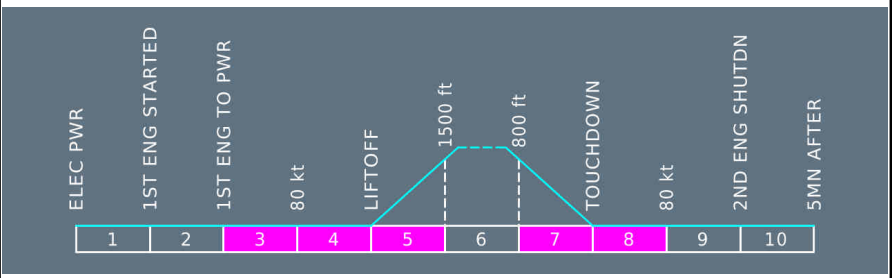
Ident.: PRO-ABN-ENG-BP-00017986.0001001 / 13 MAY 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fuel return valve is failed in closed, or in open position.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BP-00012277.0001001 / 25 FEB 14

■ **VALVE NOT OPEN**

L2 The valve is failed closed.

L1 Crew awareness.

■ **VALVE NOT CLOSED**

L2 The valve is failed open.

L1 Crew awareness.

ENG 1(2) FUEL SENSOR FAULT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-BQ-00018163.0001001 / 13 MAY 16

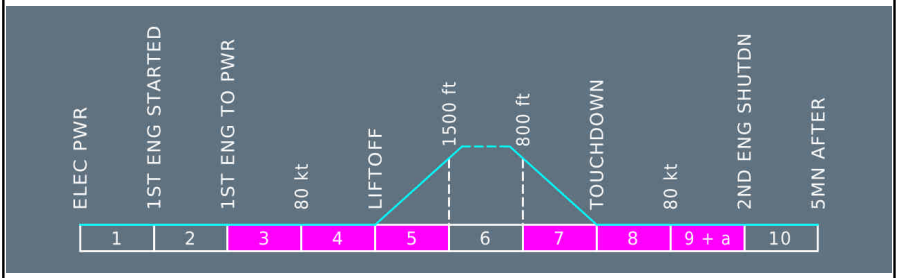
163

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fuel system monitoring and the fuel filter of IDG Fuel/Oil cooler sensing are failed.

Flight Phase Inhibition:



Note: *(a) Alert inhibited during the first 60 seconds of the flight phase 9.*

Ident.: PRO-ABN-ENG-BQ-00017687.0001001 / 21 MAR 16

164

FUEL FILTER SENSOR

- **For aircraft equipped with PW1100G engines:**
  IDG FOC SENSOR
- **For aircraft equipped with CFM LEAP engines:**
  TEMP SENSORS
  FUEL STRAINER SENSOR

Crew awareness.

L2 Maintenance action is due.

ENG 1(2) FUEL VALVE FAULT

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-BS-00017988.0001001 / 21 MAR 16

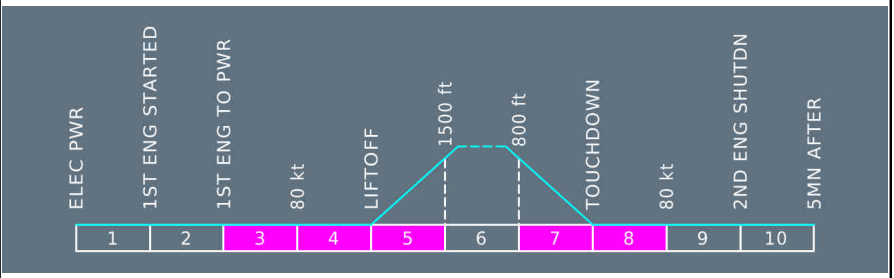
165

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the HP fuel valve is failed in closed, or in open position.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FUEL VALVE FAULT (Cont'd)

Ident.: PRO-ABN-ENG-BS-00012102.0004001 / 29 MAR 12

166

■ **Associated engine at or below idle:**
FUEL VALVE NOT OPEN.

- **On ground:**
  - **IF NO ENG LIGHT UP (fuel valve is failed in the closed position):**
    - **If the EGT does not increase, the warning is confirmed:**
      MAN START (IF MANUAL START PERFORMED).....OFF
      ENG MASTER (AFFECTED).....OFF

■ **Associated engine above idle:**

- **Failure of fuel valve position feedback:**
  FUEL SWITCH FAULT.
- **Failure of fuel valve in open position:**
  FUEL VALVE NOT CLOSED.

L2 *Due to the fuel quantity between the LP valve and nozzles, the engine shuts down after approximately 2 min and 30 s.*

ENG 1(2) FUEL VALVE FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-BS-00017988.0001001 / 21 MAR 16

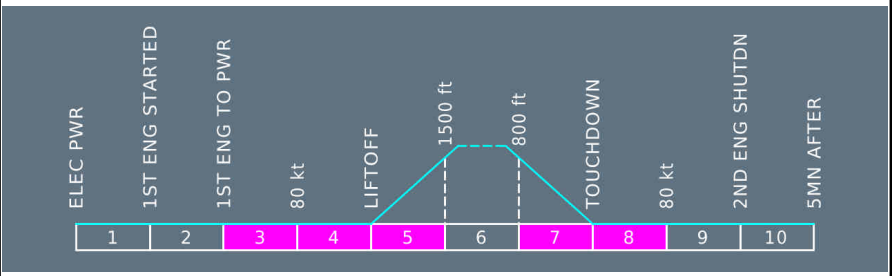
167

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the HP fuel valve is failed in closed, or in open position.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) FUEL VALVE FAULT (Cont'd)

Ident.: PRO-ABN-ENG-BS-00012102.0007001 / 30 MAR 18

168

■ **Failure of fuel valve position feedback:**
FUEL SWITCH FAULT

- **On ground**
  - **IF NO ENG LIGHT UP:**
    MAN START (IF MANUAL START PERFORMED)..... OFF
    ENG MASTER (AFFECTED).....OFF

■ **Failure of fuel valve in the closed position**
FUEL VALVE NOT OPEN

- **On ground**
  - **IF NO ENG LIGHT UP:**
    MAN START (IF MANUAL START PERFORMED)..... OFF
    ENG MASTER (AFFECTED).....OFF

■ **Failure of fuel valve in open position:**
FUEL VALVE NOT CLOSED

L2 *Due to the fuel quantity between the LP valve and nozzles, the engine shuts down after approximately 2 min and 30 s.*

L1 ■ **Failure of Fuel Metering Valve**
FUEL METERING VALVE

- **On ground**
  - **IF NO ENG LIGHT UP:**
    MAN START (IF MANUAL START PERFORMED)..... OFF
    ENG MASTER (AFFECTED).....OFF

ENG GA SOFT FAULT - ANNUNCIATION

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-DJ-00019563.0001001 / 04 DEC 17

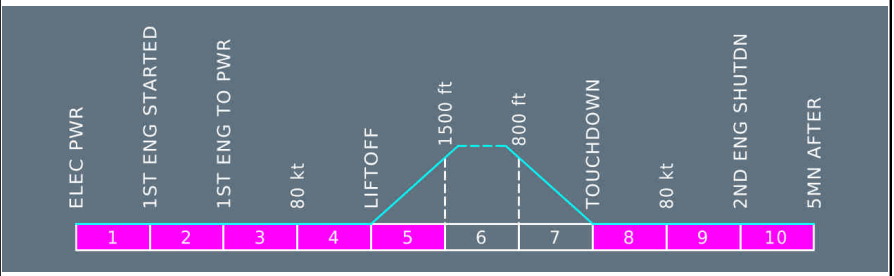
169

ANNUNCIATIONS

Triggering Conditions:

L2 The soft go-around function is lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DJ-00019564.0001001 / 04 DEC 17

170

L2 The flight crew must set the thrust levers to the TOGA detent during the go-around to ensure the airport missed approach gradient.

L1 Crew awareness.

Ident.: PRO-ABN-ENG-DJ-00019565.0001001 / 04 DEC 17

171

STATUS

GA THR: TOGA ONLY	**INOP SYS**
	GA SOFT

ENG 1(2) HEAT EXCHGR CLOG

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-BT-00018164.0001001 / 21 MAR 16

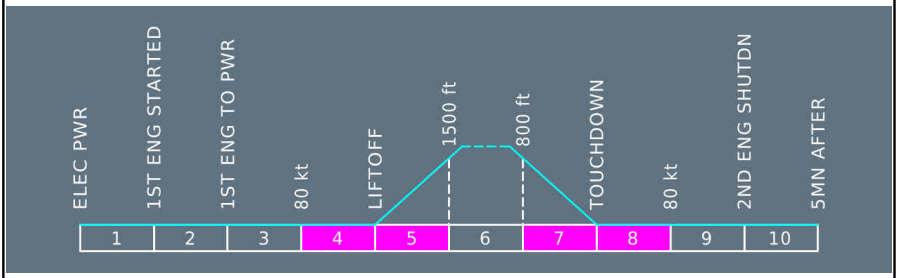
172

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the Integrated Drive Generator (IDG) oil/fuel exchanger is detected clogged.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BT-00015590.0001001 / 18 AUG 14

173

- **On ground:**
  THR LVR 1(2) NOT ABOVE IDLE

ENG 1(2) HEAT EXCHGR CLOG

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-BT-00018164.0001001 / 21 MAR 16

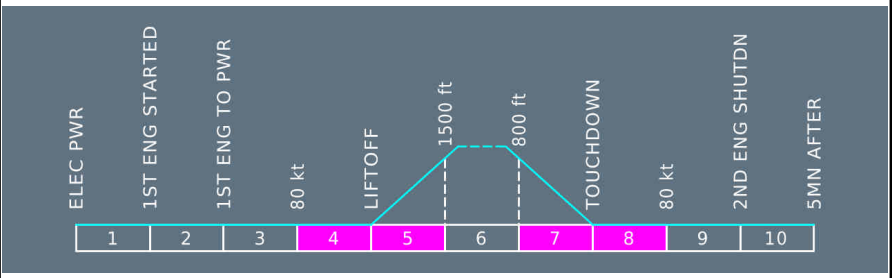
174

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the Integrated Drive Generator (IDG) oil/fuel exchanger is detected clogged.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BT-00015590.0003001 / 30 MAR 18

175

- **On ground:**
  THR LEVER 1(2)..... IDLE

ENG 1+2 HEAT EXCHGR CLOG

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-AG-00018174.0001001 / 21 MAR 16

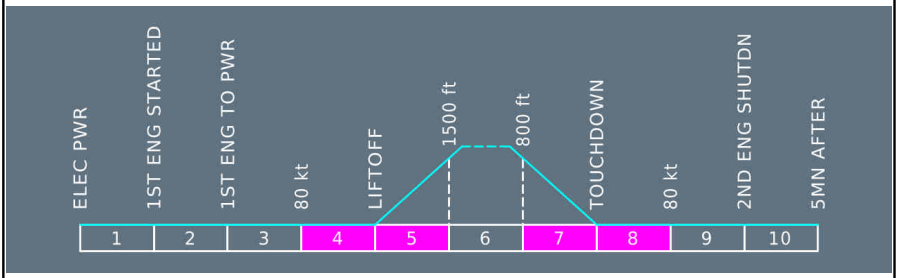
176

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both Integrated Drive Generator (IDG) oil/fuel exchangers are detected clogged.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-AG-00015591.0001001 / 18 AUG 14

177

LAND ASAP

- **On ground:**
  THR LVR 1 NOT ABOVE IDLE
  THR LVR 2 NOT ABOVE IDLE
- **In flight:**
  A/THR.....OFF
  AVOID RAPID THR CHANGES

Continued on the following page

ENG 1+2 HEAT EXCHGR CLOG (Cont'd)

Ident.: PRO-ABN-ENG-AG-00015747.0001001 / 18 AUG 14

178

STATUS

THR LVR 1 NOT ABOVE IDLE
THR LVR 2 NOT ABOVE IDLE
AVOID RAPID THR CHANGES

ENG 1+2 HEAT EXCHGR CLOG

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-AG-00018174.0001001 / 21 MAR 16

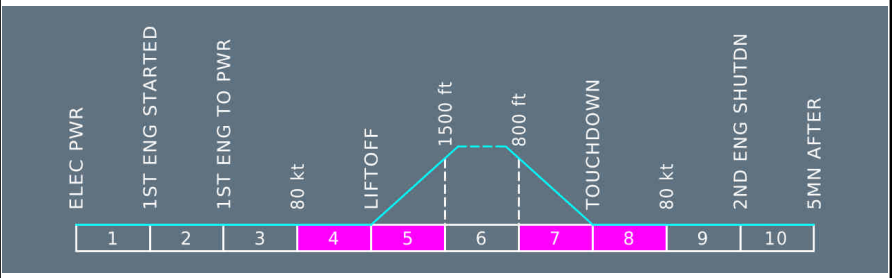
179

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both Integrated Drive Generator (IDG) oil/fuel exchangers are detected clogged.

Flight Phase Inhibition:



Continued on the following page

ENG 1+2 HEAT EXCHGR CLOG (Cont'd)

Ident.: PRO-ABN-ENG-AG-00015591.0003001 / 30 MAR 18

180

LAND ASAP

■ **On ground:**

THR LEVER 1.....IDLE
THR LEVER 2.....IDLE

■ **In flight:**

A/THR.....OFF
AVOID RAPID THR CHANGES

Ident.: PRO-ABN-ENG-AG-00015747.0003001 / 30 MAR 18

181

	STATUS
AVOID RAPID THR CHANGES	

ENG 1(2) HEAT SYS DEGRADED

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-BU-00018165.0001001 / 21 MAR 16

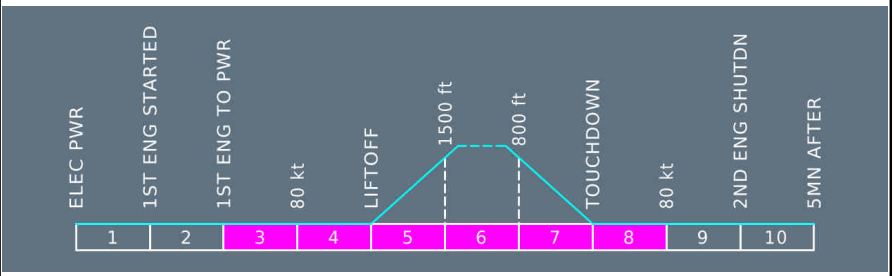
182

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a minor failure of the heat management system is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BU-00018721.0001001 / 21 MAR 16

183

Crew awareness.

ENG 1(2) HEAT SYS FAULT

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-BV-00018166.0001001 / 21 MAR 16

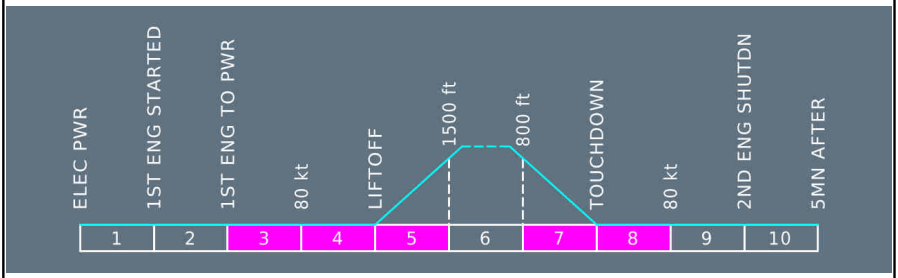
184

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heat management system is failed (fuel/oil cooling bypass valve is failed, FMV fuel or oil temperature sensor is lost).

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BV-00015557.0001001 / 18 AUG 14

185

- **On ground:**
  THR LVR 1(2) NOT ABOVE IDLE

ENG 1(2) HEAT SYS FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-BV-00018166.0001001 / 21 MAR 16

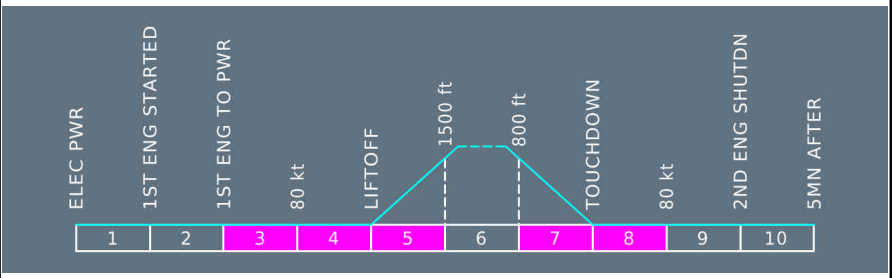
186

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the heat management system is failed (fuel/oil cooling bypass valve is failed, FMV fuel or oil temperature sensor is lost).

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BV-00015557.0002001 / 30 MAR 18

187

- **On ground**
  THR LVR 1(2)..... IDLE

ENG 1(2) HIGH VIBRATION

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-BW-00018167.0001001 / 14 MAR 17

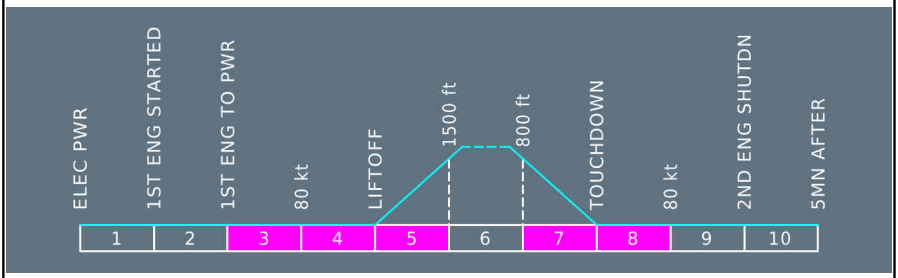
188

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- N1 vibrations are above 5 units, or
- N2 vibrations are above 5 units.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BW-00018722.0001001 / 21 MAR 16

189

HI ENG VIB PROC.....APPLY

ENG 1(2) HOT AIR DET FAULT

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-BX-00018168.0001001 / 21 MAR 16

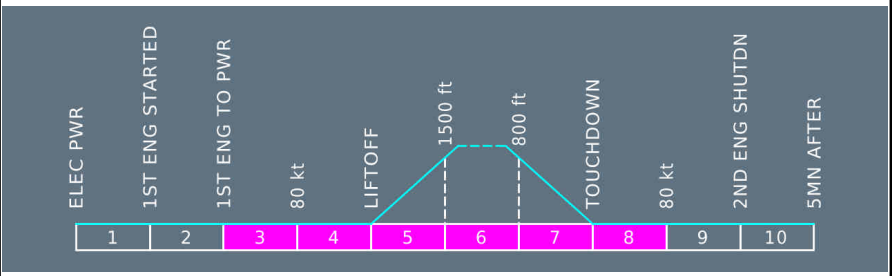
190

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the hot air leak detection is failed (burst duct).

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BX-00015581.0001001 / 18 AUG 14

191

- **On ground:**
  THR LVR 1(2) NOT ABOVE IDLE

ENG 1(2) HOT AIR DET FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-BX-00018168.0001001 / 21 MAR 16

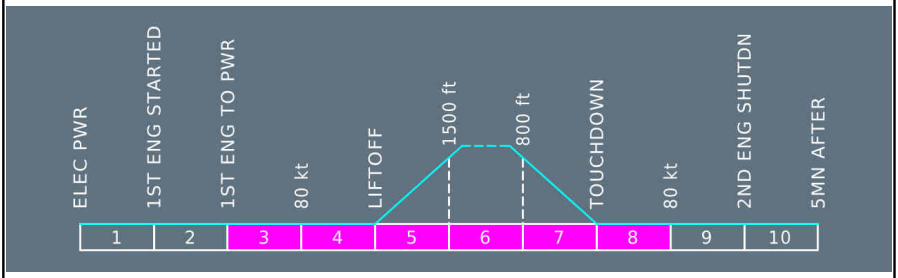
192

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the hot air leak detection is failed (burst duct).

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BX-00015581.0002001 / 30 MAR 18

193

- **On ground:**
  THR LEVER 1(2)..... IDLE

ENG 1(2) HOT AIR LEAK

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-AB-00018169.0001001 / 21 MAR 16

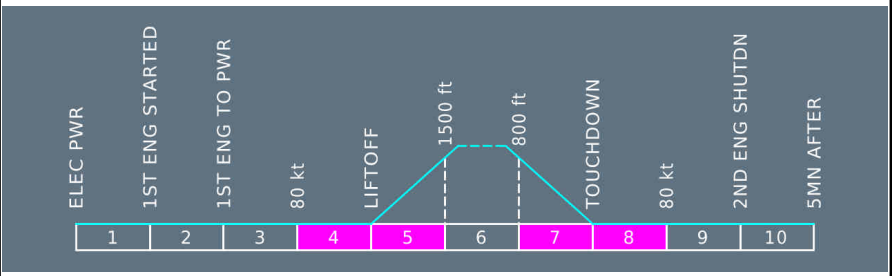
194

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a hot air leak (burst duct) is detected in engine compartment.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-AB-00015584.0001001 / 05 NOV 15

195

- **If the NAI valves are detected closed:**
  ENG 1(2) A.ICE VALVE CLOSED
  ENG 1(2) ANTI ICE.....OFF
  AVOID ICING CONDITIONS
  - **On ground:**
    THR LVR 1(2) NOT ABOVE IDLE

Continued on the following page

ENG 1(2) HOT AIR LEAK (Cont'd)

Ident.: PRO-ABN-ENG-AB-00015585.0001001 / 18 AUG 14

196

STATUS

AVOID ICING CONDITIONS
- **IF SEVERE ICE ACCRETION**
  MIN SPD.....VLS + 10/G DOT
  MANEUVER WITH CARE
  THR LVR 1(2) NOT ABOVE IDLE

INOP SYS

ENG 1(2) A.ICE

ENG 1(2) HOT AIR LEAK

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-AB-00018169.0001001 / 21 MAR 16

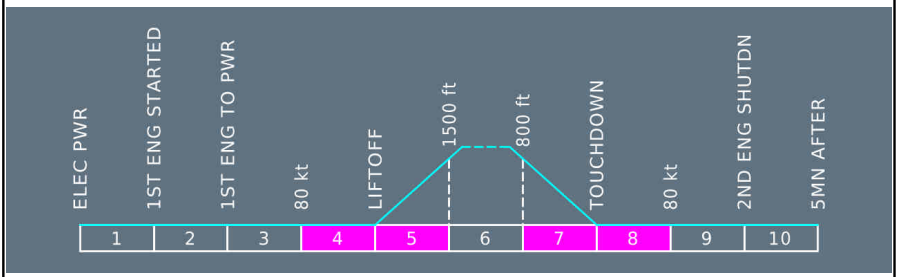
197

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a hot air leak (burst duct) is detected in engine compartment.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) HOT AIR LEAK (Cont'd)

Ident.: PRO-ABN-ENG-AB-00015584.0004001 / 30 MAR 18

198

- **If the NAI valves are detected closed:**

  ENG 1(2) A.ICE VALVE CLOSED

  ENG 1(2) ANTI ICE.....OFF

  AVOID ICING CONDITIONS

  - **On ground:**

    THR LEVER 1(2).....IDLE

Ident.: PRO-ABN-ENG-AB-00015585.0004001 / 30 MAR 18

199

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION**

  MIN SPD.....VLS + 10/G DOT

  MANEUVER WITH CARE

INOP SYS

ENG 1(2) A.ICE

ENG 1(2) HOT FUEL

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-09063

Ident.: PRO-ABN-ENG-P-00017953.0001001 / 21 MAR 16

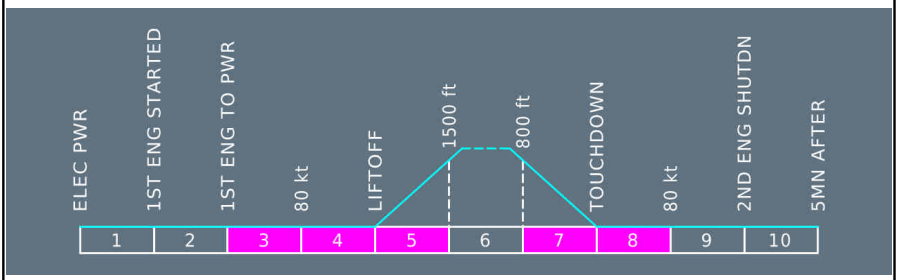
200

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when hot fuel is detected by the FADEC.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-P-00012173.0001001 / 17 AUG 10

201

GEN 1(2)..... OFF

Ident.: PRO-ABN-ENG-P-00017693.0001001 / 21 MAR 16

202

STATUS

CAT 3 SINGLE ONLY.

INOP SYS

GEN 1(2)
MAIN GALLEY (1)
CAT 3 DUAL

(1) *(Only if APU GEN not in line)*

ENG 1(2) HP FUEL VALVE

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

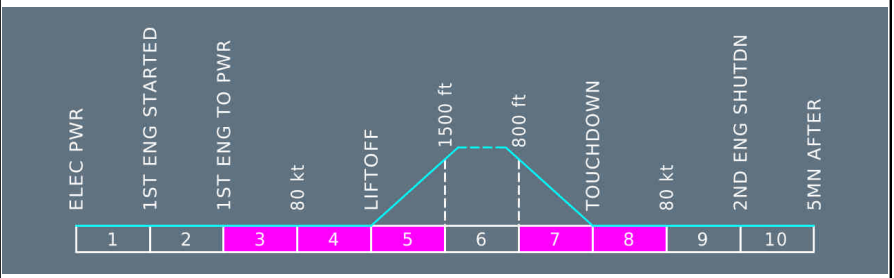
Ident.: PRO-ABN-ENG-BY-00017955.0001001 / 13 MAY 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when HP fuel valve is failed in closed or open position.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-BY-00012096.0001001 / 13 MAY 16

- **HP fuel valve failed closed, and associated engine below idle:**
  HP FUEL VALVE NOT OPEN
  - **On the ground:**
    MAN START (IF MAN START PERFORMED).....OFF
    ENG MASTER (AFFECTED).....OFF
- **HP fuel valve failed open, and associated engine below idle**
  or
  HP fuel valve failed closed, and associated engine at or above idle:
  HP FUEL POS SWT FAULT

ENG 1(2) IGN FAULT (IGN A OR B FAULT)

Applicable to: ALL

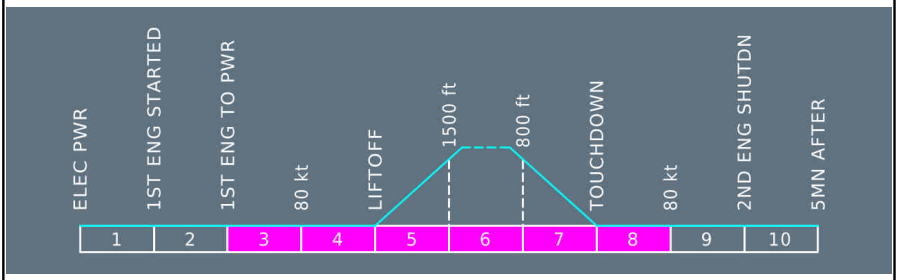
Ident.: PRO-ABN-ENG-J-00017956.0002001 / 20 APR 17

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when ignition circuit A or B is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-J-00012134.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-ENG-J-00012136.0001001 / 17 AUG 10

STATUS

INOP SYS
ENG 1(2) IGN A (B)

ENG 1(2) IGN FAULT (IGN A+B FAULT)

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063

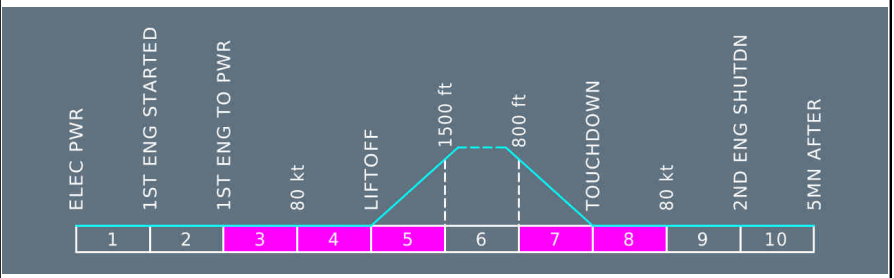
Ident.: PRO-ABN-ENG-K-00017957.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both ignition circuits are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-K-00012139.0001001 / 12 JAN 11

AVOID ADVERSE CONDITIONS

Ident.: PRO-ABN-ENG-K-00012141.0001001 / 12 JAN 11

203

STATUS

INOP SYS

ENG 1(2) IGN

ENG 1(2) IGN FAULT (IGN A+B FAULT)

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

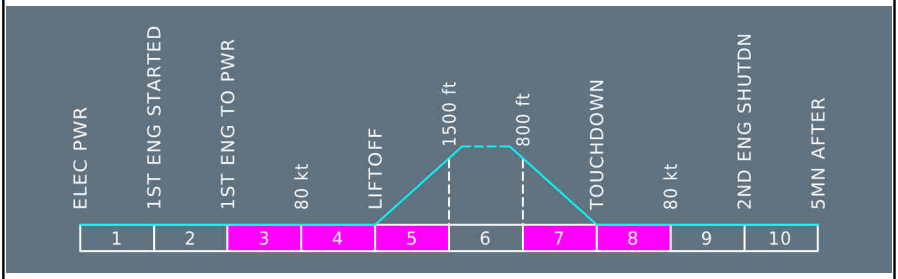
Ident.: PRO-ABN-ENG-K-00017957.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both ignition circuits are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-K-00012139.0001001 / 12 JAN 11

AVOID ADVERSE CONDITIONS

Ident.: PRO-ABN-ENG-K-00012141.0002001 / 12 JAN 11

204

STATUS

INOP SYS

ENG 1(2) IGN (If EIU is failed)
ENG 1(2) START (If EIU is failed)

ENG 1(2) LO START AIR PRESS

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-DH-00019230.0003001 / 13 MAY 16

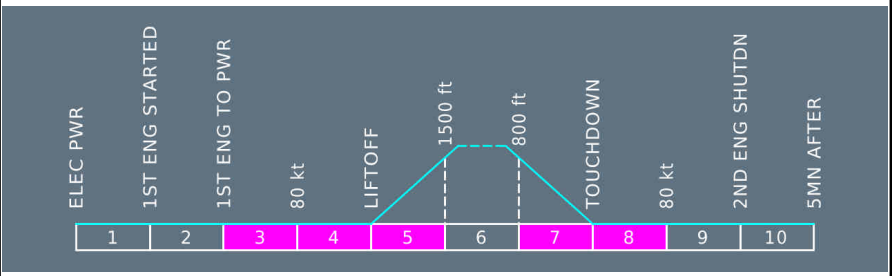
205

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when engine start is failed due to low start air pressure.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DH-00019232.0003001 / 13 MAY 16

206

BLEED AIR SUPPLY.....CHECK

- **In flight:**
  - **IF UNSUCCESSFUL:**
    WINDMILL START ONLY

ENG 1(2) LO START AIR PRESS

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-DH-00019230.0005001 / 09 APR 18

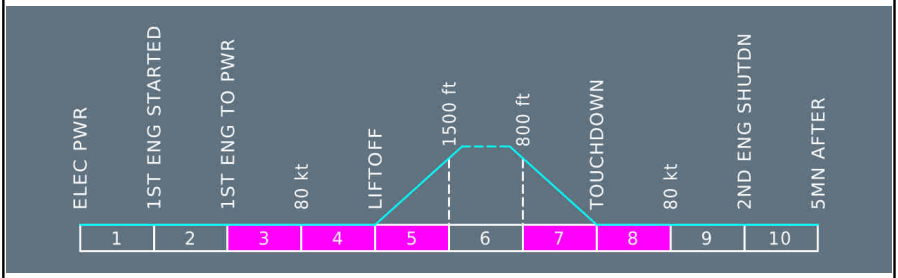
207

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is low bleed air pressure during engine start or during engine cooling.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DH-00019232.0003001 / 13 MAY 16

208

BLEED AIR SUPPLY.....CHECK

- **In flight:**
  - **IF UNSUCCESSFUL:**
    WINDMILL START ONLY

ENG 1(2) LOW N1 (ON GROUND)

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04399, 04438, 04510

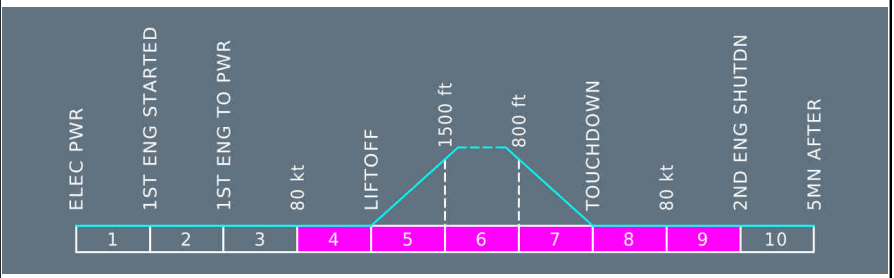
Ident.: PRO-ABN-ENG-CA-00017958.0003001 / 13 MAY 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when N1 rotation is failed during start.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CA-00012101.0004001 / 16 NOV 11

L2 No N1 rotation during start.

L1 ● **IF CONFIRMED:**

THR LEVER (AFFECTED)..... IDLE
ENG MASTER (AFFECTED).....OFF

ENG 1(2) LOW N1 (ON GROUND)

Applicable to: MSN 04393-04397, 04433

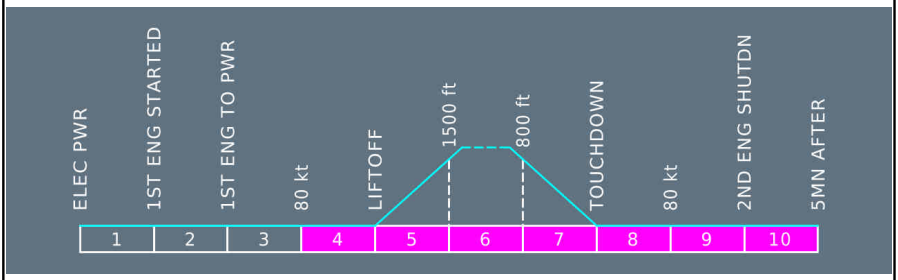
Ident.: PRO-ABN-ENG-CA-00017958.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when N1 rotation is failed during start.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CA-00012101.0004001 / 16 NOV 11

L2 No N1 rotation during start.

L1 ● **IF CONFIRMED:**

THR LEVER (AFFECTED)..... IDLE
ENG MASTER (AFFECTED).....OFF

ENG 1(2) MINOR FAULT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-CB-00018170.0001001 / 21 MAR 16

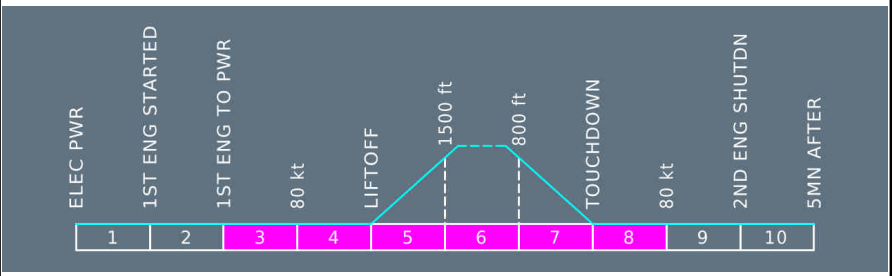
209

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a minor engine failure is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CB-00015572.0001001 / 22 FEB 16

210

Crew awareness.

ENG 1(2) N1 OR N2 OR EGT OR FF DISCREPANCY

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063

Ident.: PRO-ABN-ENG-CC-00017959.0001001 / 21 MAR 16

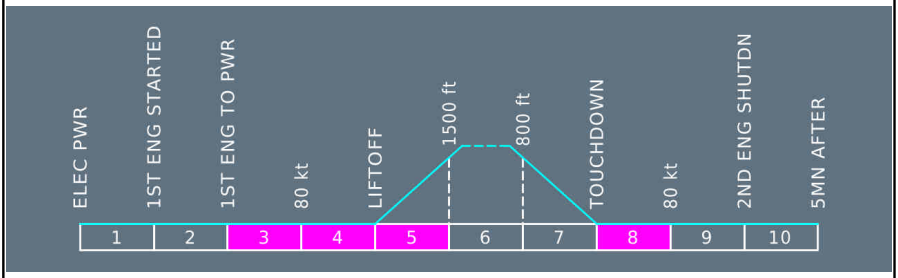
211

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a discrepancy between real and displayed values is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CC-00017696.0001001 / 21 MAR 16

L2 The upper ECAM upper displays a CHECK (or CHK) message below the affected indication.
Normal indication may be recovered by switching from DMC 1 to DMC 3.
If unsuccessful, and if both thrust levers are at the same position, crosscheck with the opposite parameter.

L1 Crew awareness.

ENG 1(2) EPR OR N1 OR N2 OR EGT OR FF DISCREPANCY

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-CC-00017959.0002001 / 21 MAR 16

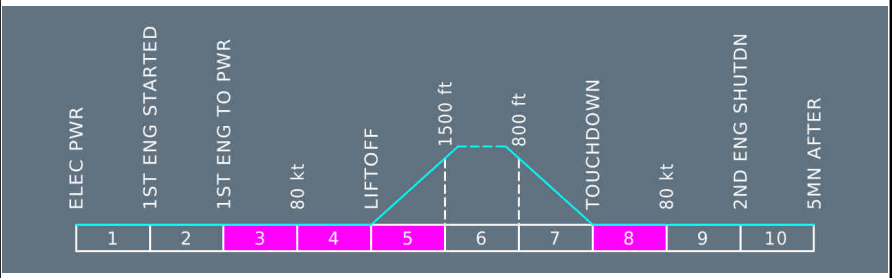
212

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a discrepancy between real and displayed values is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CC-00017696.0001001 / 21 MAR 16

L2 The upper ECAM upper displays a CHECK (or CHK) message below the affected indication.
Normal indication may be recovered by switching from DMC 1 to DMC 3.
If unsuccessful, and if both thrust levers are at the same position, crosscheck with the opposite parameter.

L1 Crew awareness.

ENG 1(2) N1/N2/EGT OVER LIMIT

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Ident.: PRO-ABN-ENG-CD-00018006.0002001 / 21 MAR 16

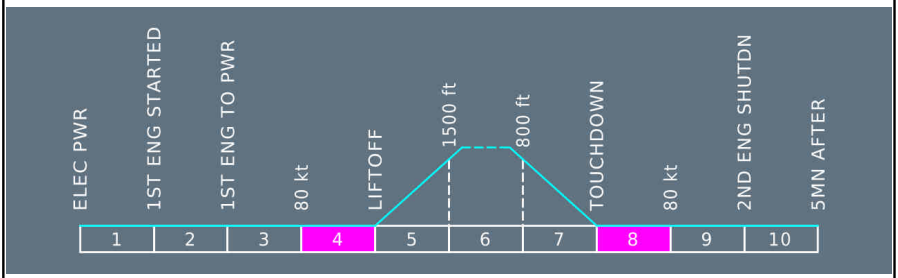
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- N1 is above 104 %, or
- N2 is above 105 %, or
- EGT is above 725 °C during start, or above 950 °C when the thrust levers are at TOGA or FLX/MCT position, or 915 °C in the other cases.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) N1/N2/EGT OVER LIMIT (Cont'd)

Ident.: PRO-ABN-ENG-CD-00012079.0013001 / 21 MAR 17

■ **Max pointer indication:**

L2 EGT between 915 °C and 950 °C (except during takeoff, alpha floor activation, or reverse selected), or EGT between 950 °C and 970 °C, or
N1 between 104.0 % and 105.8 % or
N2 between 105.0 % and 105.8 %

L1 THR LEVER (OF AFFECTED ENGINE)..... BELOW LIMIT

L2 *Normal operation may be resumed and maintained until next landing. Report in maintenance log.*

L1 ■ **Max pointer indication:**

L2 EGT above 970 °C or
N1 above 105.8 % or
N2 above 105.8 %

L1 THR LEVER (OF AFFECTED ENGINE)..... IDLE
ENG MASTER (OF AFFECTED ENGINE)..... OFF

L2 *If conditions do not permit engine shutdown land ASAP using the minimum thrust required to sustain safe flight.*

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

ENG 1(2) N1/N2/EGT OVER LIMIT

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-CD-00018006.0003001 / 21 MAR 16

213

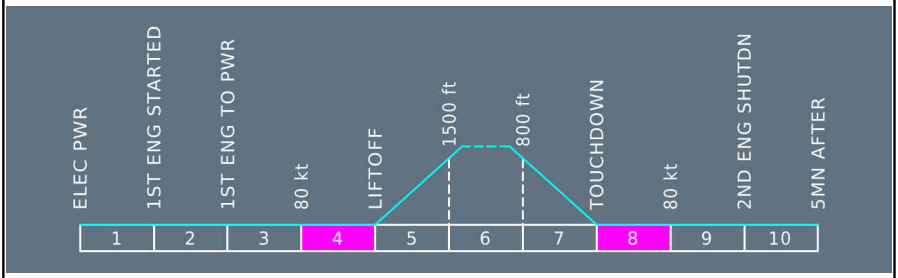
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- N1 is above 100 %, or
- N2 is above 100 %, or
- EGT is above 635 °C during start, or above 635 °C when the thrust levers are at TOGA or FLX/MCT position, or 610 °C in the other cases.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) N1/N2/EGT OVER LIMIT (Cont'd)

Ident.: PRO-ABN-ENG-CD-00012079.0014001 / 21 MAR 17

214

■ **Max pointer indication:**

L2 EGT 635 °C or above, or EGT between 610 °C and 635 °C (except during takeoff, alpha floor protection, or reverse selected), or

N1 between 100 % and 109.4 %, or

N2 between 100 % and 105.7 %

L1 THR LEVER (OF AFFECTED ENGINE)..... BELOW LIMIT

L2 *Normal operation may be resumed and maintained until next landing.*
Report the observed maximum value and time spent above limit in the logbook.
If EGT OVER LIMIT caution persists after the thrust lever is in IDLE position, CONSIDER ENGINE SHUTDOWN.
If conditions do not permit to shutdown the engine, land ASAP using the minimum required thrust to ensure the safe flight.

L1 ■ **Max pointer indication:**

L2 N1 109.4 % or above, or

N2 105.7 % or above

FADEC automatically reduces the engine power below idle.

Engine shutdown must be performed.

L1 THR LEVER (OF AFFECTED ENGINE)..... IDLE
ENG MASTER (OF AFFECTED ENGINE)..... OFF

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

ENG 1(2) N1/N2/EGT OVER LIMIT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-CD-00018006.0018001 / 16 MAY 18

215

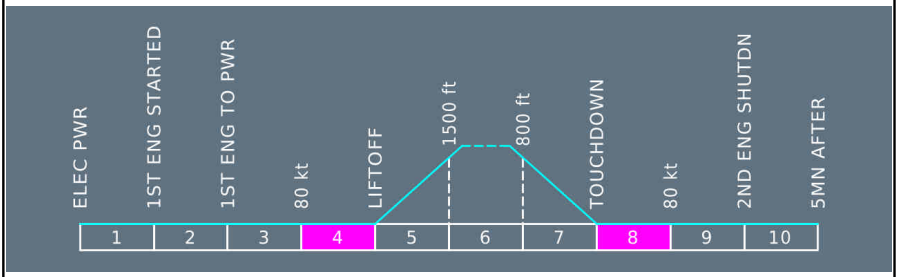
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- N1 is above 100 %, or
- N2 is above 100 %, or
- EGT is above 1 083 °C during engine start, engine relight, takeoff, go around, or above 1 043 °C in the other cases.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CD-00012079.0025001 / 21 MAR 17

216

THR LEVER (OF AFFECTED ENGINE).....BELOW LIMIT

- **IF UNSUCCESSFUL:**
  ENG MASTER (OF AFFECTED ENGINE)..... OFF

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

ENG 1(2) OIL CHIP DETECTED

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-CE-00018171.0001001 / 21 MAR 16

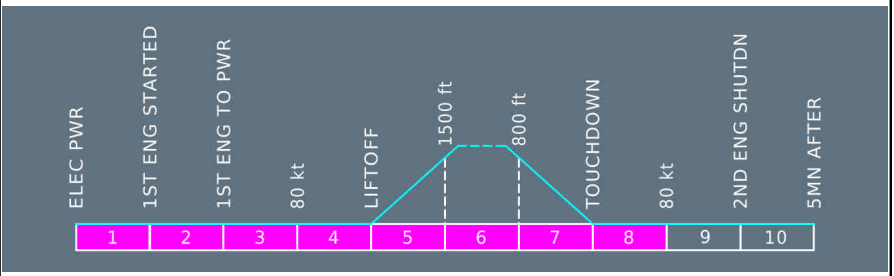
217

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a chip is detected by the EEC in the engine oil system.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CE-00015577.0001001 / 18 AUG 14

218

Crew awareness.

ENG 1(2) OIL FILTER CLOG

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

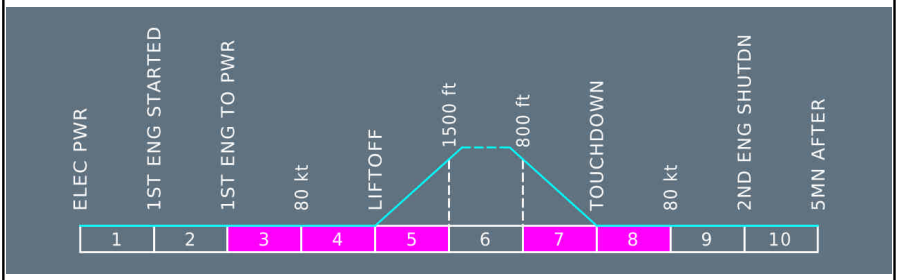
Ident.: PRO-ABN-ENG-CF-00017964.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the oil filter is clogged.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CF-00012078.0003001 / 18 AUG 14

Crew awareness.

L2 Maintenance action is due, except if the caution is temporarily displayed during cold engine start with engine oil temperature lower than 40 °C.

ENG 1(2) OIL FILTER CLOG

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

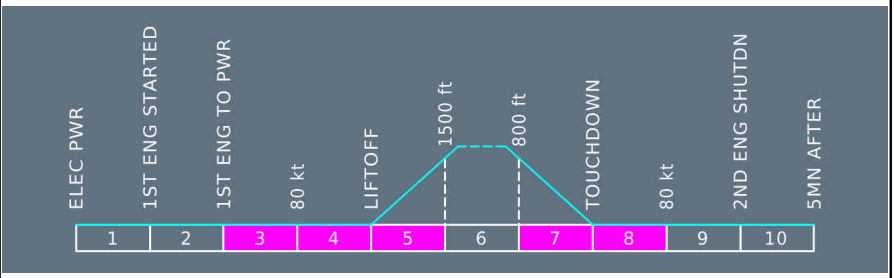
Ident.: PRO-ABN-ENG-CF-00017964.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the oil filter is clogged.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CF-00012078.0001001 / 18 AUG 14

219

Crew awareness.

L2 If message appears during cold engine start with low engine oil temp, temporarily run engine at idle for 5 min. If message disappears, no maintenance is required.

ENG 1(2) OIL FILTER CLOG

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

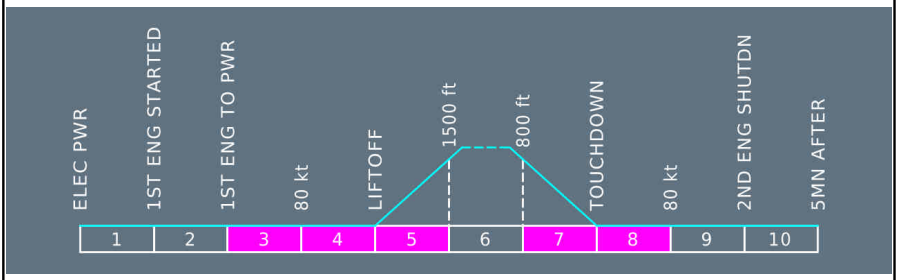
Ident.: PRO-ABN-ENG-CF-00017964.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the oil filter is clogged.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CF-00012078.0004001 / 18 AUG 14

220

Crew awareness.

L2 If the caution appears during or shortly after engine start, and disappears when the oil temperature rises, maintenance action is required within one day.

ENG 1(2) OIL FILTER CLOG

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

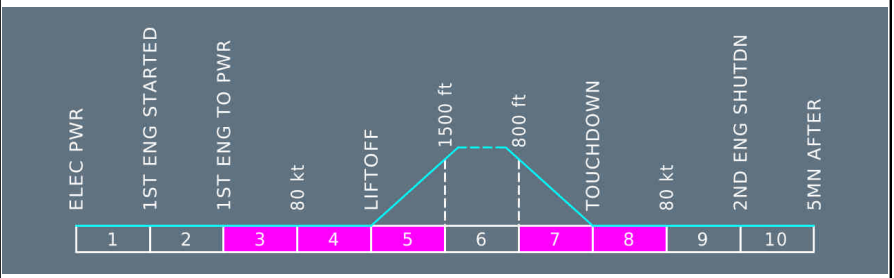
Ident.: PRO-ABN-ENG-CF-00017964.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the oil filter is clogged.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CF-00012078.0006001 / 30 MAR 18

221

OIL PARAMETERS..... MONITOR

L2 If the caution appears during or shortly after engine start, and disappears when the oil temperature rises, maintenance action is required within one day.

ENG 1(2) OIL FILTER - PARTLY CLOGGED

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-DW-00022283.0003001 / 09 APR 18

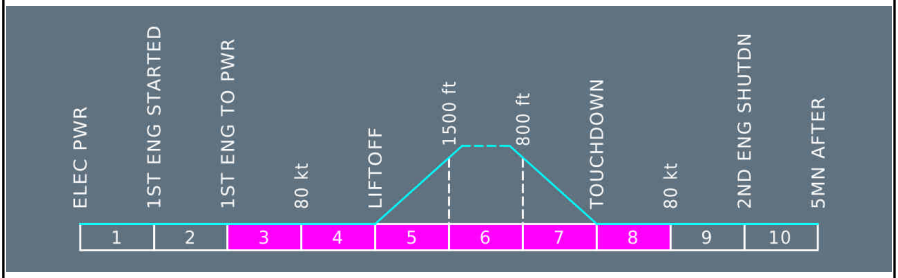
222

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when an impeding bypass is detected on the oil filter.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DW-00022284.0003001 / 09 APR 18

223

PARTLY CLOGGED

ENG 1(2) OIL FILTER DEGRAD

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-CG-00018176.0001001 / 21 MAR 16

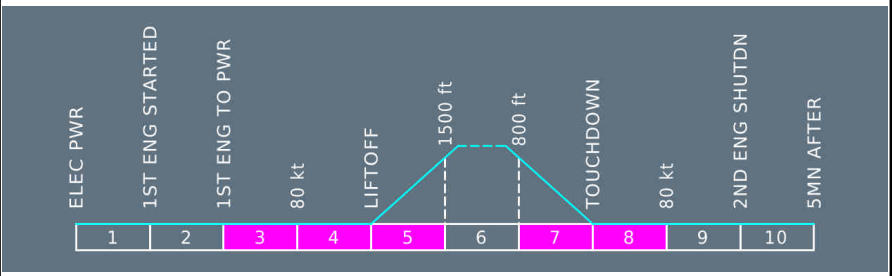
224

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when an impending bypass is detected on the oil filter.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CG-00015593.0001001 / 05 NOV 15

225

Crew awareness.

ENG 1(2) OIL HI TEMP

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

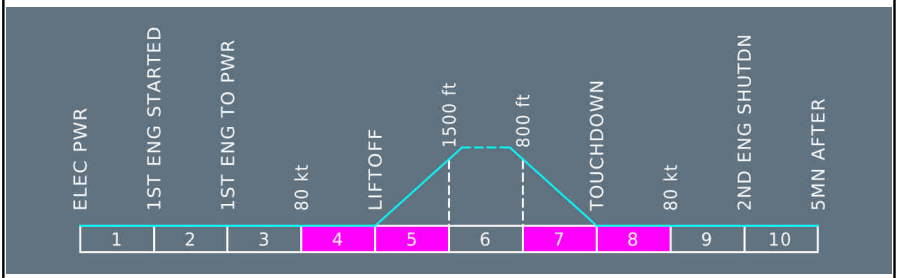
Ident.: PRO-ABN-ENG-CH-00017969.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the oil temperature is:
- Between 140 °C and 155 °C for more than 15 min, or
- Above 155 °C.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CH-00017822.0002001 / 21 MAR 17

226

THR LEVER (AFFECTED ENGINE)..... IDLE
ENG MASTER (AFFECTED ENGINE)..... OFF

L2 *For aircraft equipped with IAE or PW6000 engines, operation above the maximum temperature require engine shutdown.*

L12

ASSOCIATED PROCEDURES

ENG 1 (2) SHUT DOWN

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

ENG 1(2) OIL HI TEMP

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-CH-00017969.0002001 / 21 MAR 16

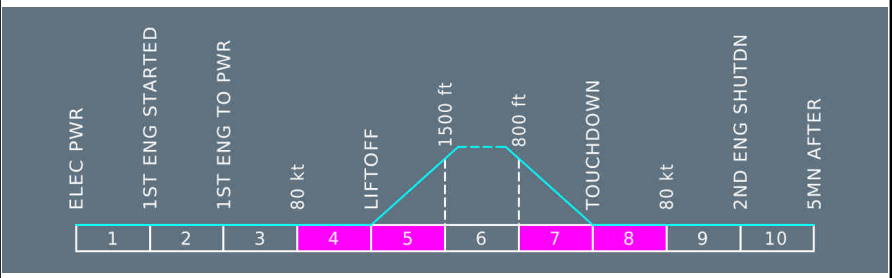
227

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the oil temperature is:
- Between 155 °C and 165 °C for more than 15 min, or
- Above 165 °C.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CH-00017822.0002001 / 21 MAR 17

228

THR LEVER (AFFECTED ENGINE)..... IDLE
ENG MASTER (AFFECTED ENGINE)..... OFF

L2 *For aircraft equipped with IAE or PW6000 engines, operation above the maximum temperature require engine shutdown.*

L12

ASSOCIATED PROCEDURES

ENG 1 (2) SHUT DOWN

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

ENG 1(2) OIL HI TEMP

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-CH-00017969.0004001 / 21 MAR 16

229

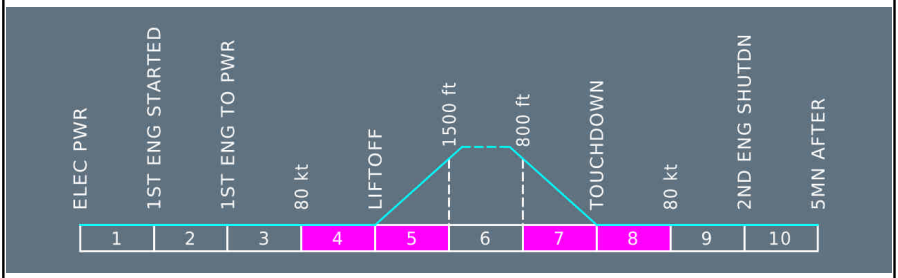
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the oil temperature is above the caution threshold.

Note: *Engine main oil temperature caution threshold varies with engine power level. The caution threshold decreases from 152 °C at idle, to 146 °C at cruise thrust, to 141 °C at high thrust.*

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CH-00017822.0004001 / 21 MAR 17

230

THR LEVER (AFFECTED ENGINE).....BELOW LIMIT

- **IF UNSUCCESSFUL:**

  ENG MASTER (AFFECTED ENGINE).....OFF

L2 *Operation above the maximum temperature require engine shutdown.*

L12

ASSOCIATED PROCEDURES

ENG 1 (2) SHUT DOWN

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

ENG 1(2) OIL LO PR

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

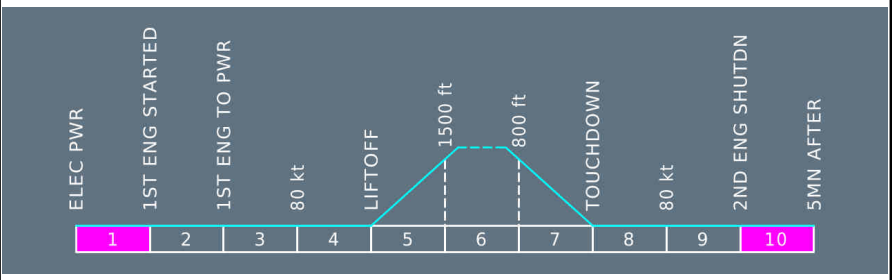
Ident.: PRO-ABN-ENG-CI-00018002.0006001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when oil pressure is below 13 PSI.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CI-00018796.0001001 / 21 MAR 17

L2 Check oil pressure indication on ENG SD page.

L1 THR LEVER (OF AFFECTED ENGINE).....IDLE
ENG MASTER (OF AFFECTED ENGINE).....OFF
L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

Carry out ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

Note: If oil pressure is low (< 13 PSI) is indicated only on ENG SD page (red indication) without the ENG OIL LO PR warning, it can be assumed, that the oil pressure transducer is faulty. Flight crew may continue engine operation while monitoring other engine parameters.

ENG 1(2) OIL LO PR

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-CI-00018002.0007001 / 21 MAR 16

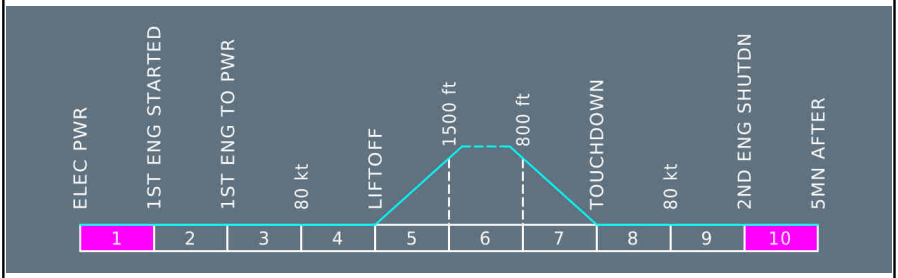
231

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when oil pressure is below 60 PSI.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CI-00018796.0002001 / 21 MAR 17

232

L2 Check oil pressure indication on ENG SD page.

L1 THR LEVER (OF AFFECTED ENGINE).....IDLE
ENG MASTER (OF AFFECTED ENGINE).....OFF
L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

Note: If oil pressure is low (< 60 PSI) is indicated only on ENG SD page (red indication) without the ENG OIL LO PR red warning, it can be assumed, that the oil pressure transducer is faulty. Flight crew may continue engine operation while monitoring other engine parameters.

ENG 1(2) OIL LO PR

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-CI-00018002.0004001 / 21 MAR 16

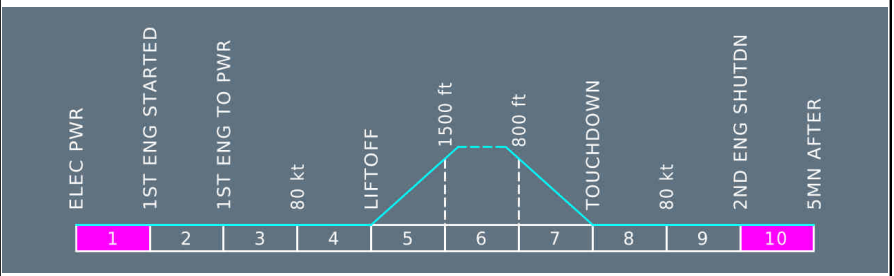
233

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when oil pressure is below the upper red threshold.
The upper red threshold varies with N2, and increases from 65 PSI at idle, to 176 PSI at high thrust.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CI-00018796.0004001 / 21 MAR 17

234

THR LEVER (OF AFFECTED ENGINE).....IDLE
ENG MASTER (OF AFFECTED ENGINE).....OFF

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

Note: If oil pressure is indicated red only on ENG SD page without the ENG OIL LO PR red warning, flight crew may continue normal engine operation while monitoring other engine parameters.

ENG 1(2) OIL LO PR

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-CV-00018004.0004001 / 21 MAR 16

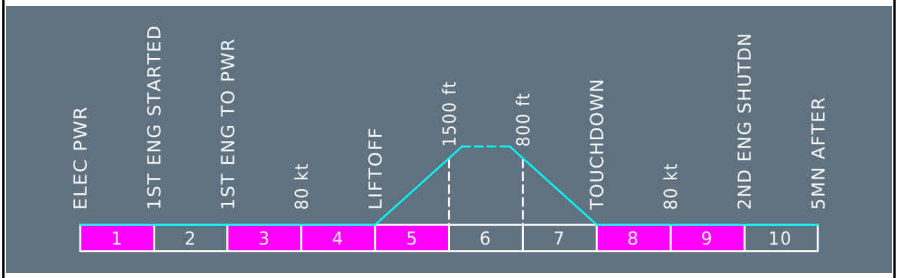
235

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when oil pressure is between 60 PSI and 80 PSI.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CV-00018795.0001001 / 21 MAR 16

236

L2 Only the ECAM amber caution title is displayed.
L1 Crew awareness.

ENG 1(2) OIL LO PR

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-CV-00018004.0003001 / 21 MAR 16

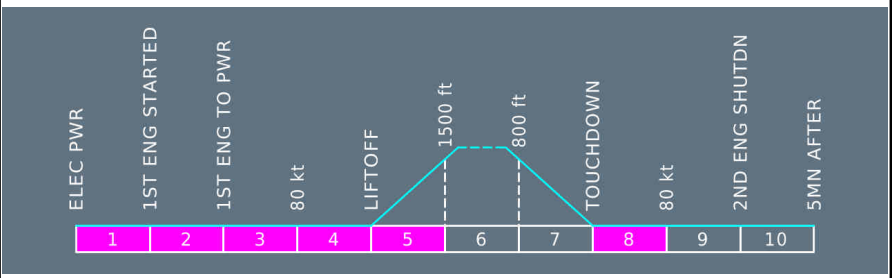
237

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when oil pressure is between the upper red threshold and the upper amber threshold.
The upper amber threshold varies with N2, and increases from 75 PSI at idle, to 186 PSI at high thrust.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CV-00018795.0001001 / 21 MAR 16

238

L2 Only the ECAM amber caution title is displayed.
L1 Crew awareness.

ENG 1(2) OIL LO TEMP

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-CJ-00017973.0001001 / 22 MAR 17

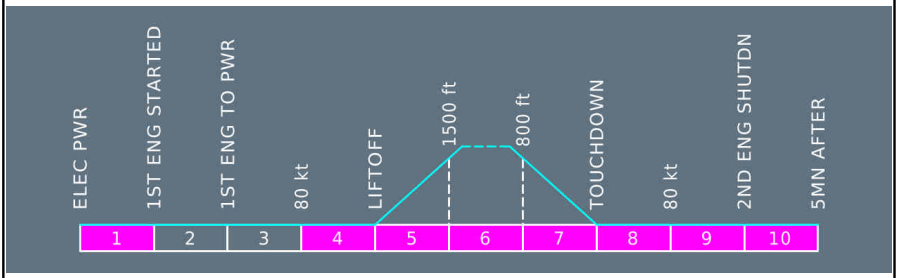
239

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the oil temperature is low.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CJ-00012077.0001001 / 12 JAN 11

240

DELAY T.O

L2 *The engine should be warmed up until oil temp is at, or above, 50 °C prior to takeoff.*

L1 ● **If temperature is below -10 °C:**
AVOID HI POWER

L2 *The engine should be warmed up until oil temp is at, or above, -10 °C prior to accelerating the engine above idle.*

ENG 1(2) OIL LO TEMP

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-CJ-00017973.0001001 / 22 MAR 17

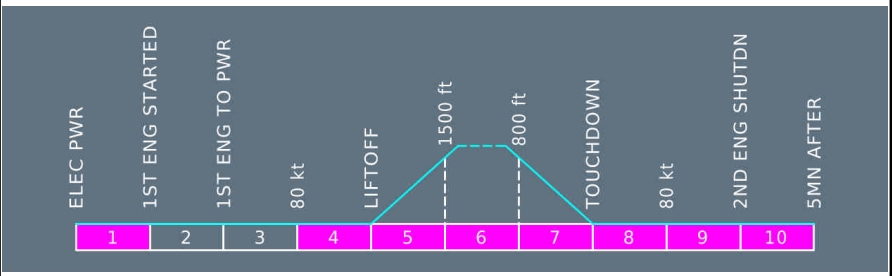
241

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the oil temperature is low.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CJ-00012077.0003001 / 15 DEC 15

242

DELAY T.O

L2 *The engine should be warmed up until oil temp is at, or above, 52 °C prior to takeoff.*

L1 ● **If temperature is below -8 °C:**

AVOID HI POWER

L2 *The engine should be warmed up until oil temp is at, or above, -8 °C prior to accelerating the engine above idle.*

ENG 1(2) OIL SENSOR FAULT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-CK-00018177.0001001 / 21 MAR 16

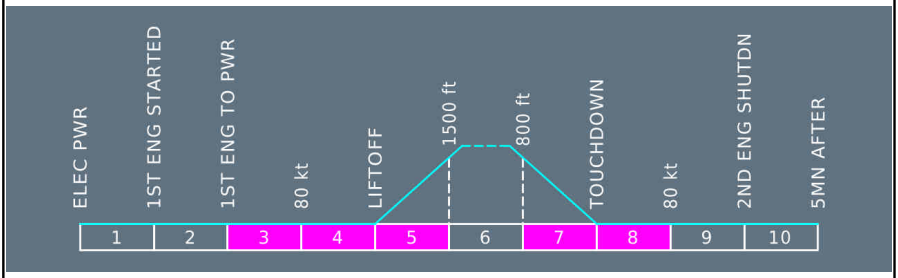
243

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the oil system monitoring is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CK-00015576.0001001 / 18 AUG 14

244

Crew awareness.

L2 Maintenance action is due.

ENG 1(2) OIL SYS FAULT

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-CL-00018178.0001001 / 21 MAR 16

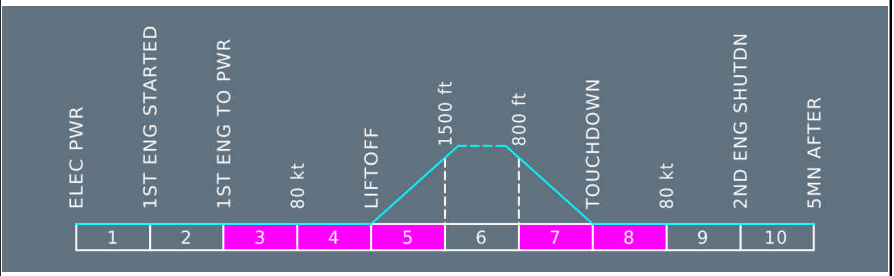
245

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the oil system is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CL-00015567.0001001 / 18 AUG 14

246

- **On ground:**
  THR LVR 1(2) NOT ABOVE IDLE

ENG 1(2) OIL SYS FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-CL-00018178.0001001 / 21 MAR 16

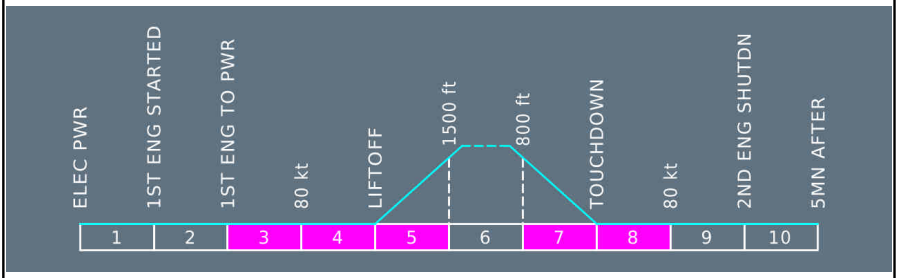
247

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the oil system is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CL-00015567.0003001 / 30 MAR 18

248

- **On ground:**
  THR LEVER 1(2)..... IDLE

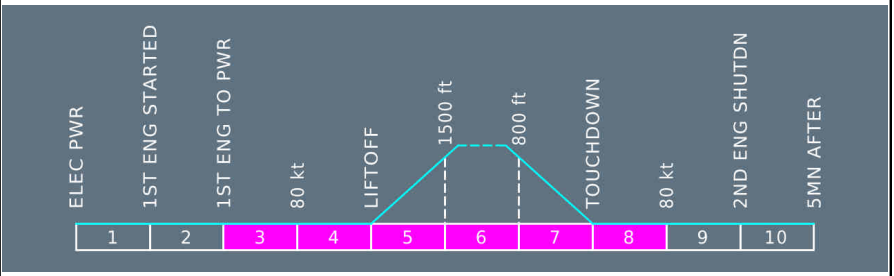
ENG 1(2) ONE TLA FAULT

Applicable to: ALL

Ident.: PRO-ABN-ENG-CM-00017977.0001001 / 21 MAR 16

ANNUNCIATIONS

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CM-00012144.0001001 / 25 FEB 14

Crew awareness.

ENG 1(2) OVSPD PROT FAULT

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Ident.: PRO-ABN-ENG-CN-00017980.0003001 / 21 MAR 16

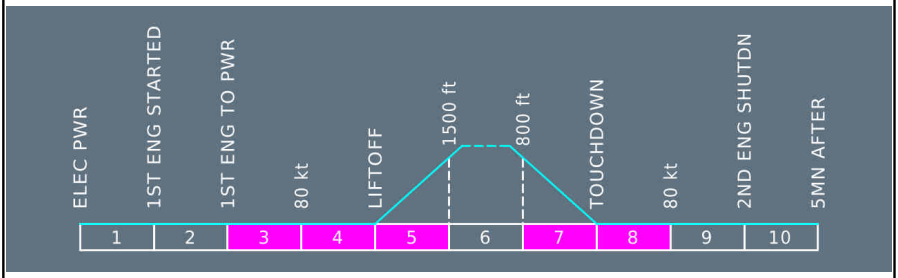
249

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the overspeed protection is lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CN-00012166.0001001 / 25 FEB 14

Crew awareness.

L12

Note: *If the warning appears during engine start, shut down the engine. Restart the engine. If the warning still appears, maintenance action is due.*

ENG 1(2) OVSPD PROT FAULT

Applicable to: MSN 01957-02121, 02138, 02275-02359, 02405, 02457-02482, 02609-02670, 02737, 03308, 03618, 03863-04008, 04156, 04312, 04328-04384, 04481-04506, 04518-04868, 04947-06336

Ident.: PRO-ABN-ENG-CN-00017980.0003001 / 21 MAR 16

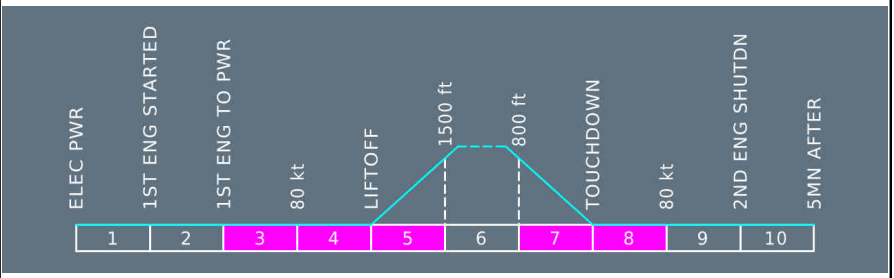
250

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the overspeed protection is lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CN-00012166.0006001 / 06 JUN 17

251

Crew awareness.

ENG 1(2) OVSPD PROT FAULT

Applicable to: MSN 02135, 02139-02204, 02443, 02804-03071, 03264, 03330-03541, 03782, 04113, 04216, 04888

Ident.: PRO-ABN-ENG-CN-00017980.0003001 / 21 MAR 16

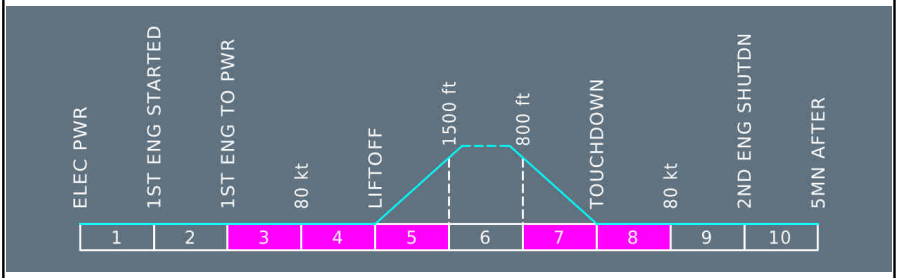
252

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the overspeed protection is lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CN-00012166.0002001 / 25 FEB 14

L2 The automatic fuel flow restriction in case of engine N1 or N2 overspeed may not be available.
Fault was detected during last engine shut down.
Some cases of spurious fault detection have been experienced.

The caution can be considered as spurious if it disappears after application of the following procedure:

- Enter a new FLT NBR on INIT page on MCDU (to change the maintenance phase)
- Start the affected engine and wait for 4 min at idle
- Then switch off the affected ENG GEN and shutdown the engine.

L1 Crew awareness.

ENG 1(2) OVTHR PROT FAULT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-C-00018005.0001001 / 21 MAR 16

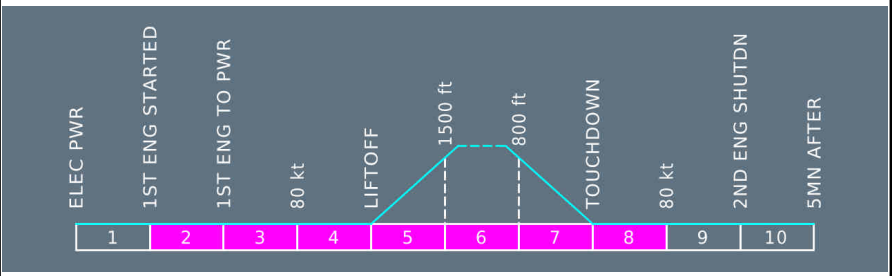
253

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the Thrust Control Malfunction (TCM) is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-C-00017700.0001001 / 21 MAR 16

254

Crew awareness.

Ident.: PRO-ABN-ENG-C-00017701.0001001 / 21 MAR 16

255

STATUS

INOP SYS

OVTHR PROT (affected side)

ENG 1(2) PROBES FAULT

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04399, 04438, 04510

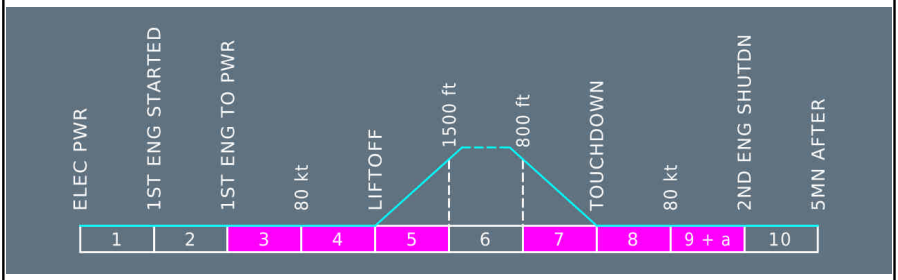
Ident.: PRO-ABN-ENG-CO-00017981.0003001 / 06 JUN 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when T12, P0, or PT2 data are unavailable on both channels.

Flight Phase Inhibition:



Note: *(a) Alert inhibited during the first 60 seconds of the flight phase 9.*

Ident.: PRO-ABN-ENG-CO-00018734.0001001 / 21 MAR 16

Crew awareness.

ENG 1(2) PROBES FAULT

Applicable to: MSN 04393-04397, 04433

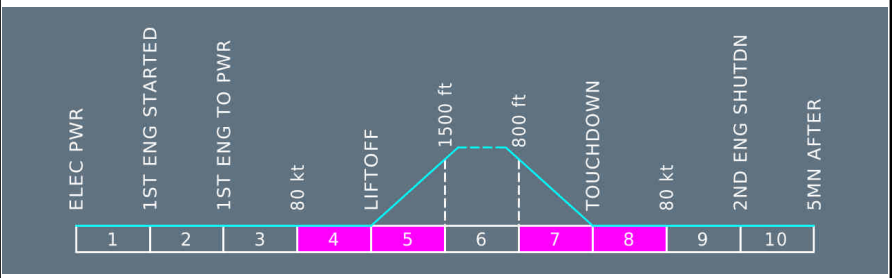
Ident.: PRO-ABN-ENG-CO-00017981.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when T12, PO or PT2 data are unavailable on both channels.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CO-00018734.0001001 / 21 MAR 16

Crew awareness.

ENG 1(2) REV INHIBITED

Applicable to: MSN 01767-02121, 02138, 02275-02405, 02457-02737, 03138, 03308, 03618-03750, 03863-04008, 04156, 04312-04868, 04947-09063

Ident.: PRO-ABN-ENG-G-00017987.0004001 / 21 MAR 16

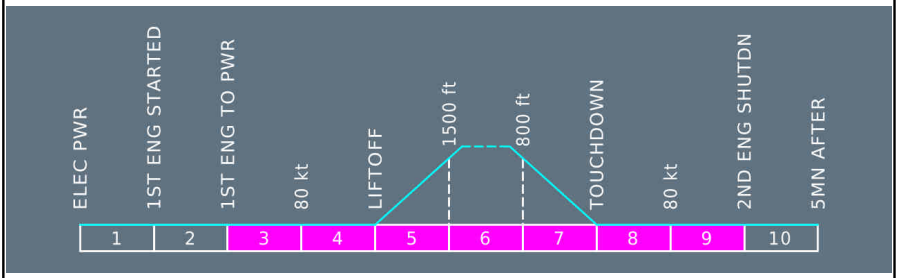
256

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the reverser is inhibited by maintenance action.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-G-00012111.0001001 / 25 FEB 14

257

L2 Reverse is inhibited by maintenance action.

L1 Crew awareness.

Ident.: PRO-ABN-ENG-G-00012113.0001001 / 30 MAR 12

258

STATUS

INOP SYS
REVERSER 1(2)

ENG 1(2) REV ISOL FAULT

Applicable to: MSN 01767-06336

Ident.: PRO-ABN-ENG-CP-00017989.0001001 / 21 MAR 16

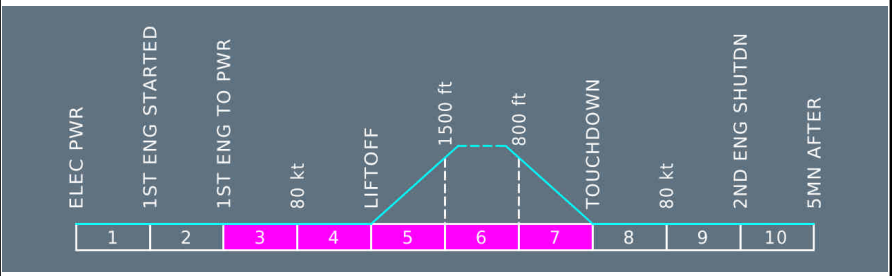
259

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the thrust reverser shut off valve is failed in open position.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CP-00018735.0001001 / 21 MAR 16

260

Crew awareness.

ENG 1(2) REV LOCKED (ON GROUND)

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-F-00017990.0001001 / 21 MAR 16

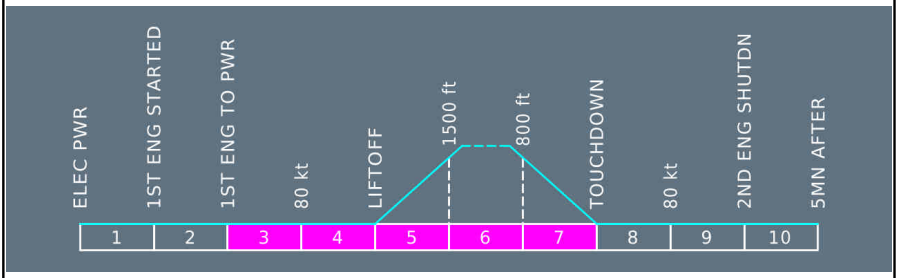
261

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the reverser system is failed in stowed position..

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-F-00018736.0001001 / 21 MAR 16

262

Crew awareness.

Ident.: PRO-ABN-ENG-F-00012110.0001001 / 12 JAN 11

263

STATUS

INOP SYS

REVERSER 1(2)

ENG 1(2) REV MINOR FAULT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-CQ-00017991.0002001 / 13 MAY 16

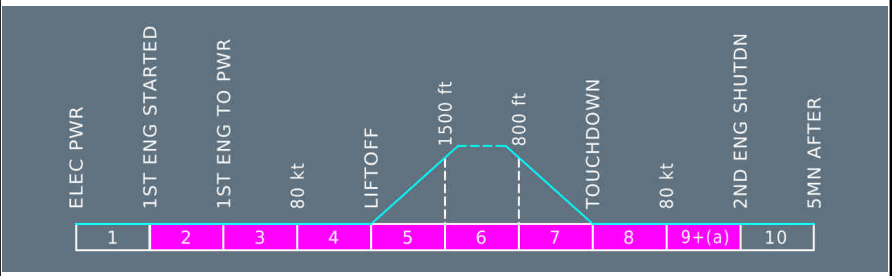
264

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a failure is detected and the reverser is not unlocked and not inhibited.

Flight Phase Inhibition:



Note: *(a) Alert inhibited during the first 60 seconds of the flight phase 9.*

Ident.: PRO-ABN-ENG-CQ-00012085.0001001 / 25 FEB 14

265

Crew awareness.

ENG 1(2) REV PRESSURIZED

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384-04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336

Ident.: PRO-ABN-ENG-CR-00017992.0001001 / 13 MAY 16

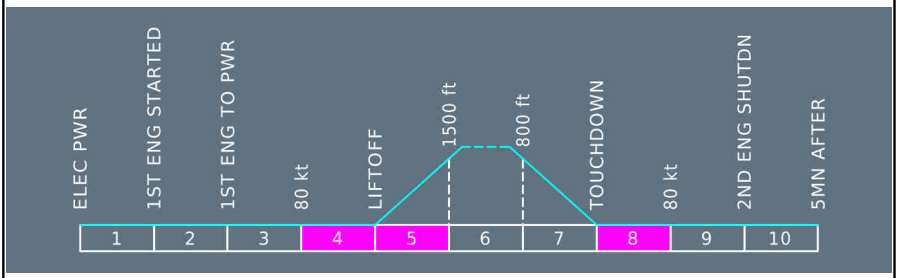
266

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when thrust reverser system is pressurized while:
- For CFM engines: The reverser doors are stowed and locked, or
- For IAE and PW engines: There is no reverse deployment order.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CR-00017702.0002001 / 21 MAR 16

267

■ **In flight:**

THR LEVER 1(2)..... IDLE

L2 *If flight conditions permit, reduce the thrust of the affected engine to IDLE as a precautionary measure.*

L1 ■ **On ground:**

THR LVR 1(2) NOT ABOVE IDLE

ENG 1(2) REV PRESSURIZED

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

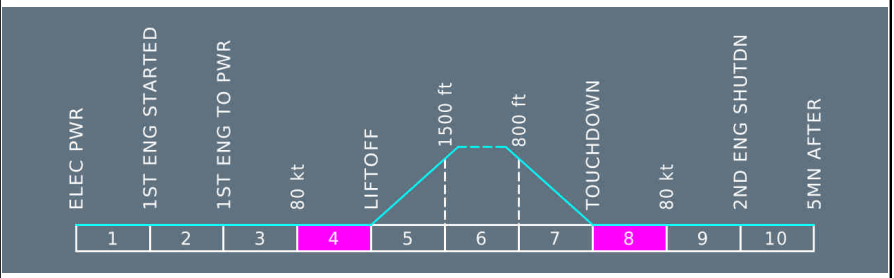
Ident.: PRO-ABN-ENG-CR-00017992.0003001 / 02 AUG 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when thrust reverser system is pressurized while there is no reverse deployment order.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CR-00017702.0002001 / 21 MAR 16

268

■ **In flight:**
THR LEVER 1(2)..... IDLE

L2 *If flight conditions permit, reduce the thrust of the affected engine to IDLE as a precautionary measure.*

L1 ■ **On ground:**
THR LVR 1(2) NOT ABOVE IDLE

ENG 1(2) REV PRESSURIZED

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-CR-00017992.0004001 / 13 MAY 16

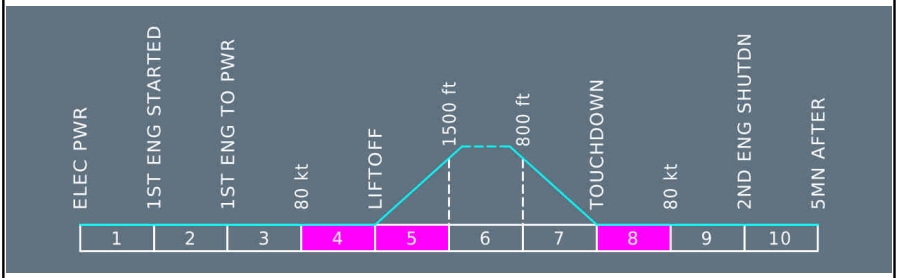
269

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the EEC detects that the thrust reverser system is pressurized while the thrust reverser is not selected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CR-00017702.0002001 / 21 MAR 16

270

■ **In flight:**

THR LEVER 1(2)..... IDLE

L2 *If flight conditions permit, reduce the thrust of the affected engine to IDLE as a precautionary measure.*

L1 ■ **On ground:**

THR LVR 1(2) NOT ABOVE IDLE

ENG 1(2) REV PRESSURIZED

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-CR-00017992.0004001 / 13 MAY 16

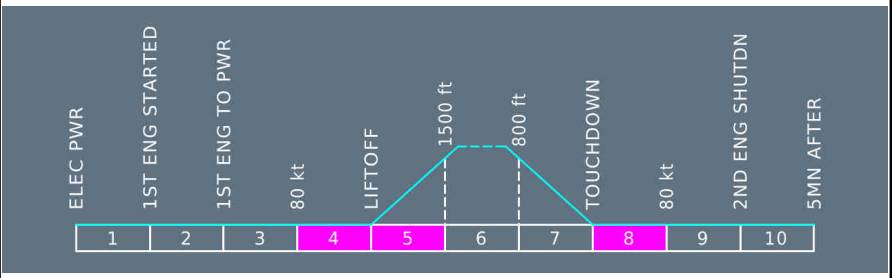
271

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the EEC detects that the thrust reverser system is pressurized while the thrust reverser is not selected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CR-00017702.0003001 / 30 MAR 18

272

THR LEVER 1(2).....IDLE

L2 *If flight conditions permit, reduce the thrust of the affected engine to IDLE as a precautionary measure.*

ENG REV SET

Applicable to: ALL

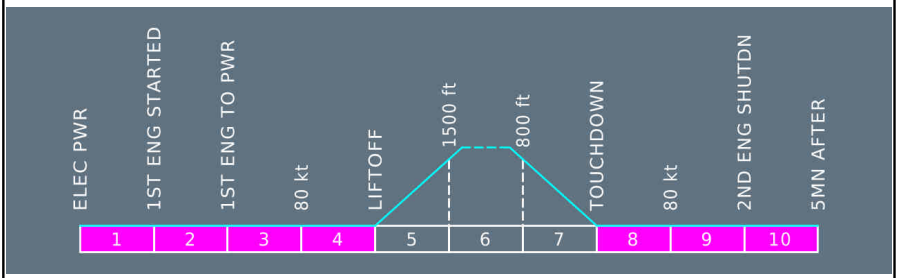
Ident.: PRO-ABN-ENG-DA-00017905.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the reverse thrust is selected in flight.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DA-00017776.0001001 / 21 MAR 16

THR LEVER (AFFECTED ENGINE)..... FWD THR

ENG 1(2) REV SWITCH FAULT

Applicable to: MSN 01767-06336

Ident.: PRO-ABN-ENG-CS-00017870.0001001 / 21 MAR 16

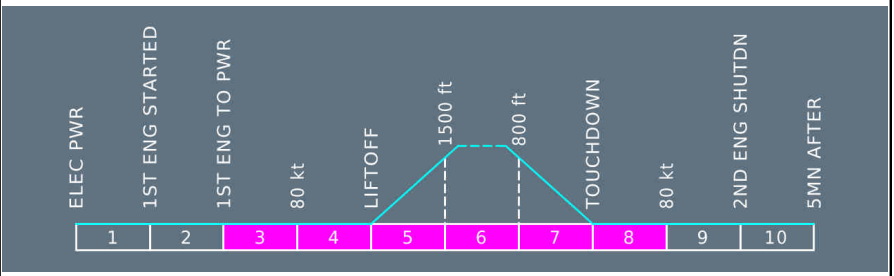
273

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the reverser permission switch is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CS-00012098.0001001 / 25 FEB 14

274

Crew awareness.

ENG 1(2) REVERSE UNLOCKED

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

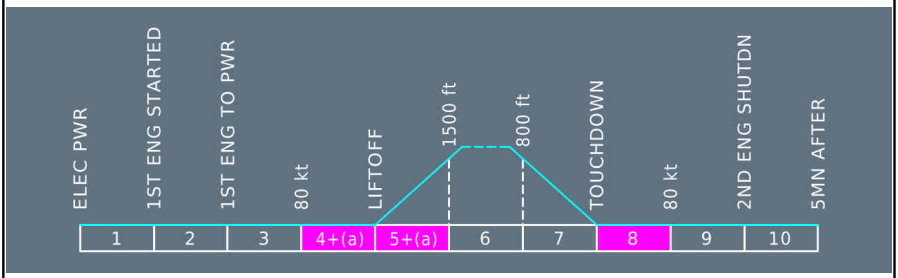
Ident.: PRO-ABN-ENG-CT-00017871.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one or more reverser doors are not locked in stowed position in flight, or on ground with no deploy order.

Flight Phase Inhibition:



Note: *(a) Alert not inhibited in the flight phases 4 and 5, if the engine thrust is automatically set to idle.*

Continued on the following page

ENG 1(2) REVERSE UNLOCKED (Cont'd)

Ident.: PRO-ABN-ENG-CT-00012084.0007001 / 09 JAN 18

L2 One or more reverser doors are not stowed.
If N1 is above 70 %, the auto-restow function is inhibited in flight and on ground.

L1 ■ **On ground:**

ENG 1(2) AT IDLE

L2 *Only displayed, if the FADEC automatically sets the engine at idle (i.e. when 4 reverser doors are not stowed, or 1, 2, or 3 reverser doors are not stowed with the reverser pressurized).*

L1 THR LEVER (AFFECTED ENGINE)..... IDLE
ENG MASTER (AFFECTED ENGINE).....OFF

■ **In flight:**

LAND ASAP

ENG 1(2) AT IDLE

L2 *Only displayed, if the engine is automatically set at idle.*

L1 THR LEVER (AFFECTED ENGINE)..... IDLE
MAX SPEED..... 300/.78

● **IF BUFFET:**

MAX SPEED ..... 240 KT
ENG MASTER (AFFECTED ENGINE)..... OFF

● **If reverser is actually deployed:**

RUD TRIM .....FULL R (L)
CONTROL HDG WITH ROLL

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

ENG 1(2) REVERSE UNLOCKED

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

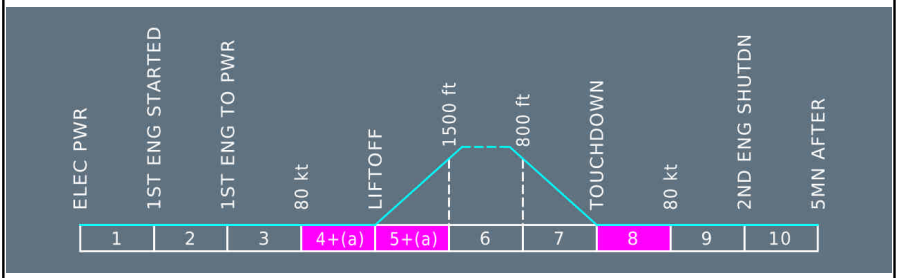
Ident.: PRO-ABN-ENG-CT-00017871.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one or more reverser doors are not locked in stowed position in flight, or on ground with no deploy order.

Flight Phase Inhibition:



Note: *(a) Alert not inhibited in the flight phases 4 and 5, if the engine thrust is automatically set to idle.*

Continued on the following page

ENG 1(2) REVERSE UNLOCKED (Cont'd)

Ident.: PRO-ABN-ENG-CT-00012084.0009001 / 09 JAN 18

275

L2 The FADEC may automatically set the engine at idle.

L1 ■ **On ground:**

L2 *Note: On V2527 or V2530 engines, disregard the warning at landing, if momentarily displayed during reverser stowing.*

L1 ENG 1(2) AT IDLE

L2 *Only displayed, if engine is automatically set at idle.*

L1 THR LEVER (AFFECTED ENGINE IF IDLE NOT AUTOMATICALLY SELECTED)..... IDLE
ENG MASTER (AFFECTED ENGINE).....OFF

■ **In flight:**

LAND ASAP

ENG 1(2) AT IDLE

L2 *Only displayed, if the engine is automatically set at idle.*

L1 THR LEVER (AFFECTED ENGINE)..... IDLE
MAX SPEED..... 300/.78

● **IF BUFFET:**
MAX SPEED ..... 240 KT
ENG MASTER (AFFECTED ENGINE)..... OFF

● **If reverser is actually deployed:**
RUD TRIM .....FULL R (L)
CONTROL HDG WITH ROLL

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

ENG 1(2) REVERSE UNLOCKED

Applicable to: MSN 06720-09063

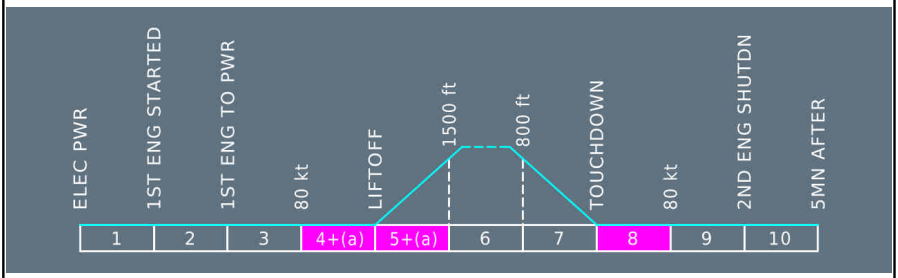
Ident.: PRO-ABN-ENG-CT-00017871.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one or more reverser doors are not locked in stowed position in flight, or on ground with no deploy order.

Flight Phase Inhibition:



Note: *(a) Alert not inhibited in the flight phases 4 and 5, if the engine thrust is automatically set to idle.*

Continued on the following page

ENG 1(2) REVERSE UNLOCKED (Cont'd)

Ident.: PRO-ABN-ENG-CT-00012084.0010001 / 21 MAR 17

276

L2 The FADEC may automatically set the engine at idle.

L1 ■ **On ground:**

ENG 1(2) AT IDLE
THR LEVER (AFFECTED ENGINE)..... IDLE
ENG MASTER (AFFECTED ENGINE).....OFF

■ **In flight:**

LAND ASAP

ENG 1(2) AT IDLE
THR LEVER (AFFECTED ENGINE)..... IDLE
MAX SPEED..... 300/.78

● **IF BUFFET:**

MAX SPEED ..... 240 KT
ENG MASTER (AFFECTED ENGINE)..... OFF

● **If reverser is actually deployed:**

RUD TRIM .....FULL R (L)
CONTROL HDG WITH ROLL

L12

ASSOCIATED PROCEDURES

ENG 1(2) SHUT DOWN

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

ENG 1(2) REVERSER CTL FAULT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-AA-00018179.0001001 / 21 MAR 16

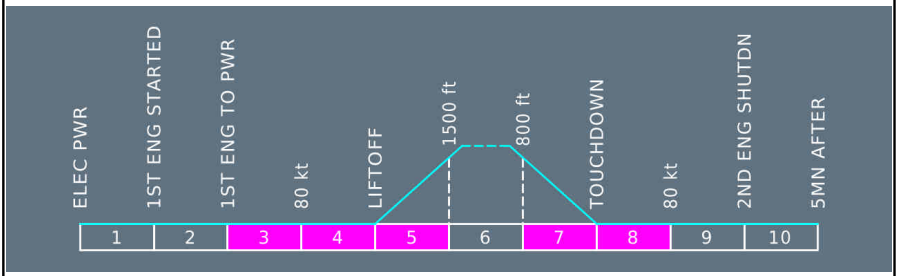
277

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the thrust reverser system is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-AA-00015578.0001001 / 18 AUG 14

278

Crew awareness.

Ident.: PRO-ABN-ENG-AA-00015579.0001001 / 18 AUG 14

279

STATUS

INOP SYS
REVERSER 1(2)

ENG 1(2) REVERSER FAULT

Applicable to: MSN 01767-06336

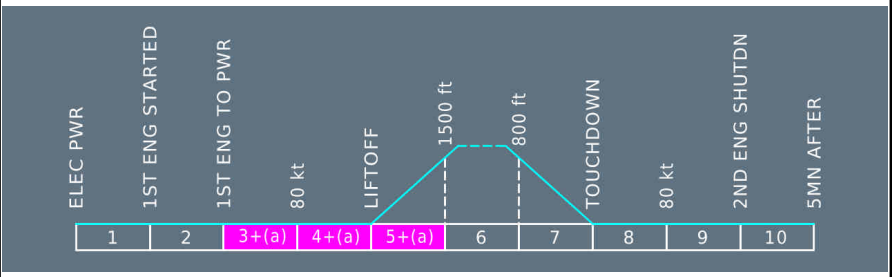
Ident.: PRO-ABN-ENG-A-00017872.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the thrust reverser on one engine is failed (due to system components or inputs).

Flight Phase Inhibition:



Note: *(a) Alert not inhibited in the flight phases 3, 4, 5, if engine thrust is automatically set to idle.*

Ident.: PRO-ABN-ENG-A-00017703.0003001 / 21 MAR 16

- **If reverser position fault with reverser pressurized:**

LAND ASAP

ENG 1(2) AT IDLE

L2 *Thrust of the affected engine is locked at idle.*

L1 THR LEVER 1(2)..... IDLE

L2 *Set thrust lever of affected engine at idle.*

Continued on the following page

ENG 1(2) REVERSER FAULT (Cont'd)

Ident.: PRO-ABN-ENG-A-00012070.0001001 / 17 AUG 10

280

STATUS

INOP SYS
REVERSER 1(2)

ENG 1(2) REVERSER FAULT

Applicable to: MSN 06720-09063

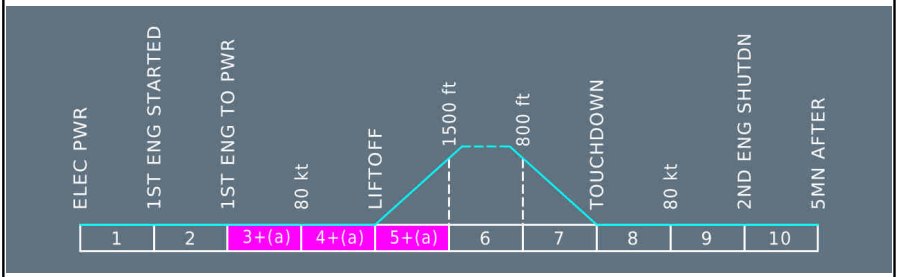
Ident.: PRO-ABN-ENG-A-00017872.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the thrust reverser on one engine is failed (due to system components or inputs).

Flight Phase Inhibition:



Note: *(a) Alert not inhibited in the flight phases 3, 4, 5, if engine thrust is automatically set to idle.*

Continued on the following page

ENG 1(2) REVERSER FAULT (Cont'd)

Ident.: PRO-ABN-ENG-A-00017703.0003001 / 21 MAR 16

- **If reverser position fault with reverser pressurized:**

LAND ASAP

ENG 1(2) AT IDLE

L2 *Thrust of the affected engine is locked at idle.*

L1 THR LEVER 1(2)..... IDLE

L2 *Set thrust lever of affected engine at idle.*

Ident.: PRO-ABN-ENG-A-00012070.0002001 / 04 DEC 17

281

STATUS

GA THR: TOGA ONLY	**INOP SYS** REVERSER 1(2) GA SOFT

ENG SAT ABOVE FLEX TEMP

Applicable to: MSN 01767-02097, 02121, 02138, 02388, 02457, 02584, 02712, 03138, 03750, 04314, 04393-04438, 04491, 04510, 04532-04535, 04603, 04645, 04757, 04813, 05027, 05076, 05090, 05259, 05411, 05683, 05807, 06036-06289, 06720-09063

Ident.: PRO-ABN-ENG-DB-00017904.0001001 / 21 MAR 16

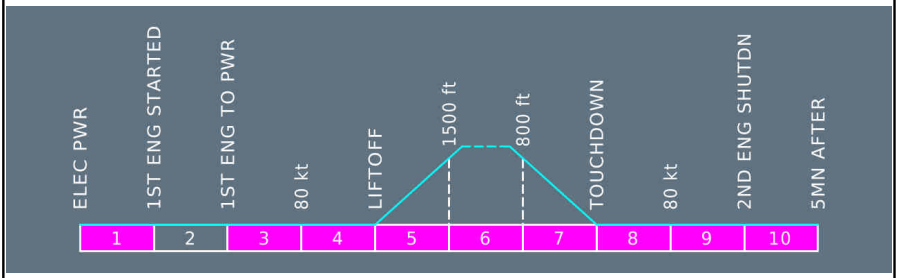
282

ANNUNCIATIONS

Triggering Conditions:

L2 This alert is triggered when the SAT is above the FLEX TEMP.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DB-00014243.0004001 / 30 MAR 12

283

T.O DATA.....CHECK

ENG 1(2) SENSOR FAULT

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

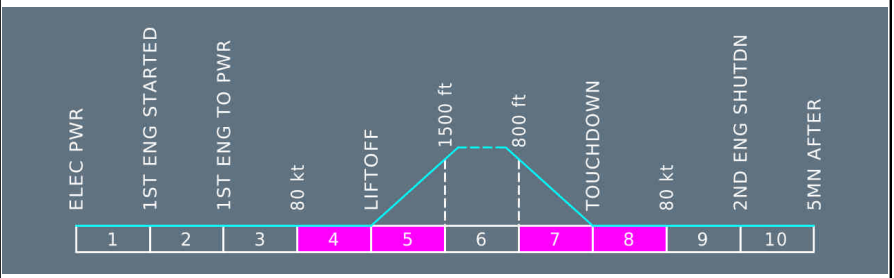
Ident.: PRO-ABN-ENG-R-00017873.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when PS3 or T25 or T3 or N1 or N2 data is unavailable on both channels.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-R-00012235.0003001 / 05 JUN 18

L2 PS3, T25, T3, N1, N2 data not available on both ECU channels.

L1 ■ **On ground:**

THR LEVER (AFFECTED)..... IDLE
ENG MASTER (AFFECTED).....OFF

■ **In flight:**

AVOID RAPID THR CHANGES.

L2 *If the A/THR is engaged, adjust the thrust levers to align the thrust lever commands with actual N1 and disconnect A/THR.*

Ident.: PRO-ABN-ENG-R-00017707.0001001 / 21 MAR 16

STATUS

AVOID RAPID THR CHANGES.

ENG 1(2) SENSOR FAULT

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-R-00017873.0002001 / 21 MAR 16

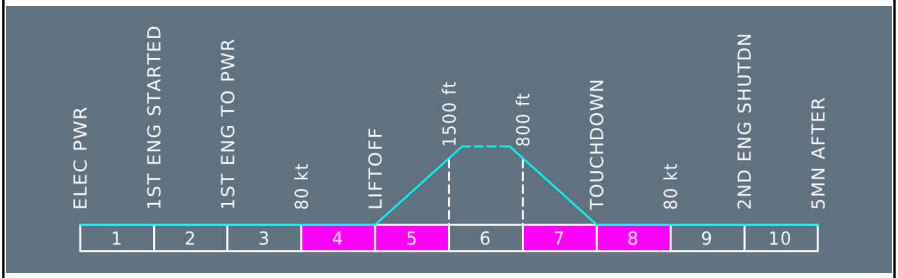
284

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the engine parameters sensor is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-R-00012235.0004001 / 05 JUN 18

285

L2 N1 or N2 or fuel metering valve position disagree between both EEC channels or Loss of N1 or N2 sensors.

L1 AVOID RAPID THR CHANGES

L2 *If the A/THR is engaged, adjust the thrust levers to align the thrust lever commands with actual EPR and disconnect A/THR.*

L1 ● **On ground:**

THR LEVER (AFFECTED)..... IDLE
ENG MASTER (AFFECTED).....OFF

Ident.: PRO-ABN-ENG-R-00017707.0001001 / 21 MAR 16

STATUS

AVOID RAPID THR CHANGES.

ENG 1(2) SENSOR FAULT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-R-00017873.0003001 / 21 MAR 16

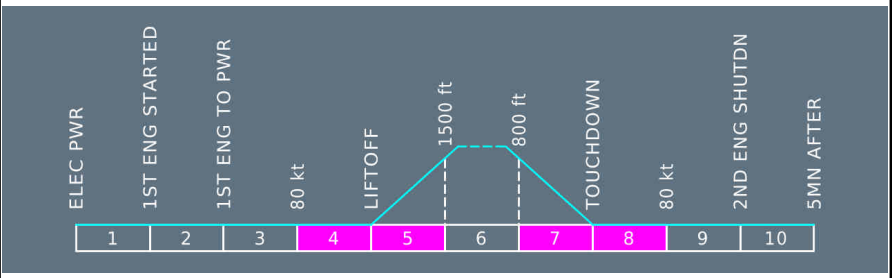
286

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when N1 or N2 or T2 or P2 or burner pressure or ambient pressure engine sensors is lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-R-00012235.0009001 / 16 NOV 11

287

L2 Loss of engine control sensors (N1 or N2 or T2 or P2, etc).

L1 N1 DEGRADED MODE
NOT EXCEED N1 LIMIT.

L2 *There is no N1 limit. Therefore an overboost can occur if the thrust lever is moved fully forward.*

L1 MAN THR..... ADJUST

L2 *Align the N1 of the affected engine with the N1 of the other engine.* *Refer to PER-THR-GEN GENERAL, for power management tables.*

L1 ■ **On ground:**
THR LEVER (AFFECTED)..... IDLE
ENG MASTER (AFFECTED).....OFF

■ **In flight:**
AVOID RAPID THR CHANGES.

Continued on the following page

ENG 1(2) SENSOR FAULT (Cont'd)

Ident.: PRO-ABN-ENG-R-00017707.0001001 / 21 MAR 16

STATUS

AVOID RAPID THR CHANGES.

ENG 1(2) SHUT DOWN

Applicable to: MSN 01767-06336

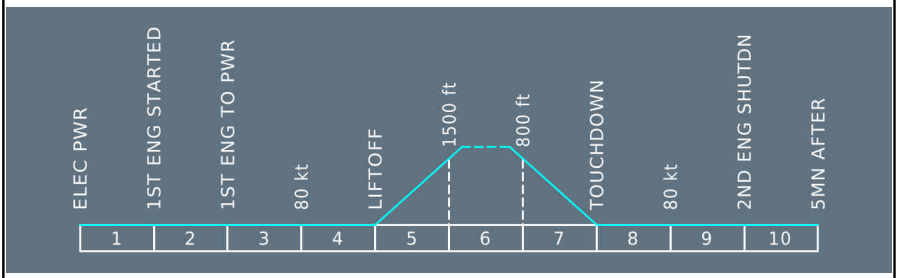
Ident.: PRO-ABN-ENG-I-00017874.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when ENG master is at off in phases 3 to 8, or ENG FIRE pb is pushed in phases 1, 2, 9 and 10.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) SHUT DOWN (Cont'd)

Ident.: PRO-ABN-ENG-I-00017837.0006001 / 20 MAR 17

288

LAND ASAP

- **If wing anti-ice ON:**
  - **If Elec Emer Config:**
    PACK 1 ..... OFF

    L2 *In Elec Emer config, only Pack 1 pb-sw can be set to off.*

    L1
  - **If not Elec Emer Config:**
    PACK (AFFECTED SIDE) ..... OFF

    L2 *One pack must be closed when wing anti-ice is in use due to precooler performance.*

    L1
    - **If ENG FIRE pb not pushed:**
      X BLEED (IF ENG FIRE PB NOT PUSHED) ..... OPEN

      L2 *X BLEED selector must be opened to have symmetrical wing anti-icing.*

L1 ENG MODE SEL ..... IGN

L2 *Continuous ignition is selected, in order to protect the remaining engine.*

L1
- **IF NO FUEL LEAK:**
  IMBALANCE ..... MONITOR

TCAS MODE SEL ..... TA

- **If REV unlocked:**
  - **IF BUFFET:**
    MAX SPEED ..... 240 KT
- **If ENG FIRE pb-sw pushed:**
  X BLEED ..... SHUT
  WING ANTI ICE ..... OFF
  AVOID ICING CONDITIONS

SECONDARY FAILURES

* HYD
* ELEC
* AIR BLEED

Continued on the following page

ENG 1(2) SHUT DOWN (Cont'd)

L2 *Note:* *In some conditions, with full asymmetric power, the aircraft may be control-limited before reaching the protection system limit. Therefore, in extreme conditions, where low speed may be advantageous (GPWS, WINDSHEAR, etc.), reduce speed with care below VLS and respect the minimum control speed.*

Continued on the following page

ENG 1(2) SHUT DOWN (Cont'd)

Ident.: PRO-ABN-ENG-I-00017852.0005001 / 22 MAR 17

289

L12

STATUS

INOP SYS

- **If ENG 1(2) FIRE pb-sw pushed:**

  AVOID ICING CONDITIONS

  - **IF SEVERE ICE ACCRETION:**

    MIN SPD..... VLS + 10/G DOT

    MANEUVER WITH CARE

    LDG DIST PROC..... APPLY

- **If REV unlocked:**

  MAX SPEED.....300/0.78

CAT 3 DUAL
ENG 1(2) BLEED
PACK 1(2)
MAIN GALLEY
GEN 1(2)
G ENG 1 PUMP or
Y ENG 2 PUMP
WING A. ICE (1)
AFT CRG HEAT
STEEP APPR

APPR PROC

- **If REV unlocked:**
  - **4 doors not stowed (CFM) or reverser deployed (IAE/PW):**
    - **IF BUFFET:**

      FOR LDG.....USE FLAP 1

      This line is replaced by "FOR LDG : USE FLAP 1" when CONF 1 is selected, as a reminder.

      APPR SPD.....VREF + 55 KT

      RUD TRIM.....5 DEG R(L)

      When committed to land, set 5 ° rudder trim towards live engine.

      A/THR.....OFF

      GPWS FLAP MODE..... OFF

    - **WHEN LDG ASSURED:**

      L/G.....DOWN

    - **AT 800 FT AGL:**

      TARGET SPD.....VREF + 40 KT

      LDG DIST PROC.....APPLY

Continued on the following page

ENG 1(2) SHUT DOWN (Cont'd)

- **1, 2, or 3 doors not stowed (CFM), or reverse detected unlocked (IAE/PW):**
  - **IF BUFFET:**
    FOR LDG.....USE FLAP 3
    This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.
    GPWS LDG FLAP 3..... ON
    APPR SPD.....VREF + 10 KT
    LDG DIST PROC.....APPLY

- **If WING A/ICE off and ENG 1(2) FIRE pb-sw not pressed:**
  - **IF PERF PERMITS:**
    X BLEED.....OPEN
    If no obstacle constraint exists, open the XBLEED. To determine the single engine gross ceiling, decrease by1 200 ft the result provided by the QRH table (Refer to QRH/PER-L Ceilings (Paper Only)) or by the performance application of FlySmart with Airbus.
  - **For A321 aircraft:**
    ECON FLOW.....ON
    AFT CRG HOT AIR ◁ .....OFF
    The ECON FLOW must be selected ON, and the aft cargo heat ◁ must be selected OFF, due to precooler performance.

- **IF NO ENG 1(2) DAMAGE:**
  CONSIDER ENG 1(2) RELIGHT

CAT 3 SINGLE ONLY
ONE PACK ONLY IF WAI ON
See (2)

(1) *(if affected ENG FIRE pb-sw pushed)*

(2) Note: - *If available, the APU may be started and the APU GEN used*
- *If the ENG 1 FIRE pb-sw is pushed, APU bleed must not be used.*

Continued on the following page

ENG 1(2) SHUT DOWN (Cont'd)

If ENG 2 FIRE pb-sw is pushed, APU bleed may be used, provided the X BLEED rotary selector is set at SHUT.

- *After landing, the Fuel Used value of the engine, shutdown in flight, becomes incorrect.*

ENG 1(2) SHUT DOWN

Applicable to: MSN 06720-09063

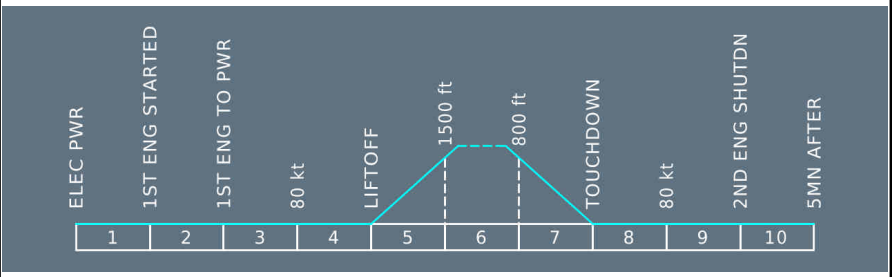
Ident.: PRO-ABN-ENG-I-00017874.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when ENG master is at off in phases 3 to 8, or ENG FIRE pb is pushed in phases 1, 2, 9 and 10.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) SHUT DOWN (Cont'd)

Ident.: PRO-ABN-ENG-I-00017837.0009001 / 21 MAR 16

290

LAND ASAP

■ **If Elec Emer Config:**

PACK 1 ..... OFF

L2 *In Elec Emer config, only Pack 1 pb-sw can be controlled off.*

L1 ■ **If not Elec Emer Config:**

PACK (AFFECTED SIDE) ..... OFF

● **If wing anti-ice ON:**

● **If ENG FIRE pb not pushed:**

X BLEED (IF ENG FIRE PB NOT PUSHED) ..... OPEN

L2 *X BLEED selector must be opened to have symmetrical wing anti-icing.*

L1 ENG MODE SEL ..... IGN

L2 *Continuous ignition is selected, in order to protect the remaining engine.*

L1 ● **IF NO FUEL LEAK:**

IMBALANCE ..... MONITOR

TCAS MODE SEL ..... TA

● **If REV unlocked:**

● **IF BUFFET:**

MAX SPEED ..... 240 KT

● **If ENG FIRE pb-sw pushed:**

X BLEED ..... SHUT

WING ANTI ICE ..... OFF

AVOID ICING CONDITIONS

SECONDARY FAILURES

* HYD
* ELEC
* AIR BLEED

L2 *Note:* *In some conditions, with full asymmetric power, the aircraft may be control-limited before reaching the protection system limit. Therefore, in extreme conditions, where low speed*

Continued on the following page

ENG 1(2) SHUT DOWN (Cont'd)

may be advantageous (GPWS, WINDSHEAR, etc.), reduce speed with care below VLS and respect the minimum control speed.

Continued on the following page

ENG 1(2) SHUT DOWN (Cont'd)

191 Ident.: PRO-ABN-ENG-I-00017852.0019001 / 18 JAN 19

L12

STATUS

- **If ENG 1(2) FIRE pb-sw pushed:**
  AVOID ICING CONDITIONS
  - **IF SEVERE ICE ACCRETION:**
    MIN SPD..... VLS + 10/G DOT
    MANEUVER WITH CARE
    LDG DIST PROC..... APPLY
- **If REV unlocked:**
  MAX SPEED.....300/0.78

GA THR: TOGA ONLY

INOP SYS

CAT 3 DUAL
ENG 1(2) BLEED
PACK 1(2)
MAIN GALLEY
GEN 1(2)
G ENG 1 PUMP or
Y ENG 2 PUMP
WING A. ICE (1)
GA SOFT
AFT CRG HEAT

APPR PROC

- **If REV unlocked:**
  - **Reverser deployed:**
    - **IF BUFFET:**
      FOR LDG.....USE FLAP 1
      This line is replaced by "FOR LDG : USE FLAP 1" when CONF 1 is selected, as a reminder.
      APPR SPD.....VREF + 55 KT
      RUD TRIM.....5 DEG R(L)
      When committed to land, set 5 ° rudder trim towards live engine.
      A/THR.....OFF
      GPWS FLAP MODE..... OFF
    - **WHEN LDG ASSURED:**
      L/G.....DOWN
    - **AT 800 FT AGL:**
      TARGET SPD.....VREF + 40 KT

Continued on the following page

ENG 1(2) SHUT DOWN (Cont'd)

LDG DIST PROC.....APPLY

■ **Reverse detected unlocked:**

● **IF BUFFET:**

FOR LDG.....USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3..... ON
APPR SPD.....VREF + 15 KT
LDG DIST PROC.....APPLY

● **If WING A/ICE off and ENG 1(2) FIRE pb-sw not pressed:**

● **IF PERF PERMITS:**

X BLEED.....OPEN

If no obstacle constraint exists, open the XBLEED. To determine the single engine gross ceiling, decrease by1 200 ft the result provided by the QRH table (Refer to QRH/PER-L Ceilings (Paper Only)) or by the performance application of FlySmart with Airbus.

● **For A321 aircraft:**

PACK FLOW.....LO

The PACK FLOW selector must be set to LO, due to precooler performance.

AFT CRG HOT AIR ◁ .....OFF

The aft cargo heat ◁ must be selected off, due to precooler performance.

● **IF NO ENG 1(2) DAMAGE:**

CONSIDER ENG 1(2) RELIGHT

CAT 3 SINGLE ONLY

See (2)

(1) *(if affected ENG FIRE pb-sw pushed)*

(2) Note: - *If available, the APU may be started and the APU GEN used.*

Continued on the following page

ENG 1(2) SHUT DOWN (Cont'd)

- *If the ENG 1 FIRE pb-sw is pushed, the APU bleed must not be used.*
  If the ENG 2 FIRE pb-sw is pushed, the APU bleed may be used, provided the X BLEED rotary selector is set at SHUT.
- *After landing, the Fuel Used value of the engine shutdown in flight becomes incorrect.*

ENG 1(2) STALL

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

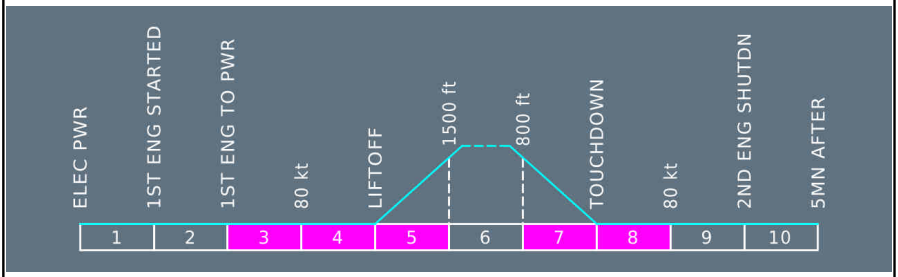
Ident.: PRO-ABN-ENG-Z-00017876.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when an engine stall is detected.

Flight Phase Inhibition:



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ENG 1(2) STALL (Cont'd)

Ident.: PRO-ABN-ENG-Z-00017749.0005001 / 17 MAR 17

292

This alert is triggered when FADEC detects an engine stall. Indications of an engine stall include varying degrees of abnormal engine noises/bangs, accompanied by flame from the engine exhaust (and possibly from the engine inlet in severe case), fluctuating performance parameters, vibration, sluggish or no thrust lever response, high EGT and/or a rapid EGT rise when thrust lever is advanced. Engine stalls must be reported for maintenance action.

■ **On Ground:**

THR LEVER (AFFECTED ENGINE)..... IDLE
ENG MASTER (AFFECTED ENGINE).....OFF

■ **In Flight:**

THR LEVER (AFFECTED ENGINE)..... IDLE
ENG PARAMETERS (AFFECTED ENGINE).....CHECK
ENG 1(2) STALL PROC..... APPLY

Ident.: PRO-ABN-ENG-Z-00017748.0001001 / 21 MAR 16

STATUS

CONSIDER ENG 1(2) RELIGHT

ENG 1(2) STALL

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

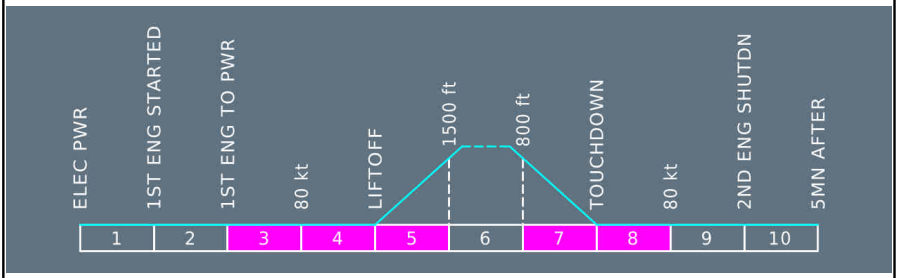
Ident.: PRO-ABN-ENG-Z-00017876.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when an engine stall is detected.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) STALL (Cont'd)

Ident.: PRO-ABN-ENG-Z-00017749.0004001 / 17 MAR 17

L2 A stall may be indicated by varying degrees of abnormal engine noises, accompanied by flame from the engine exhaust (and possibly from the engine inlet in severe case), fluctuating performance parameters, sluggish or no thrust lever response, high EGT and/or a rapid EGT rise when thrust lever is advanced.

L1 ■ **On ground:**

THR LEVER (AFFECTED ENGINE)..... IDLE
ENG MASTER (AFFECTED ENGINE).....OFF

■ **In flight:**

THR LEVER (AFFECTED ENGINE)..... IDLE
ENG PARAMETERS (AFFECTED ENGINE).....CHECK

■ **If abnormal ENG parameters:**

ENG MASTER (AFFECTED ENGINE).....OFF

L12

ASSOCIATED PROCEDURES

ENG 1(2) **SHUT DOWN**

Apply the ENG SHUT DOWN procedure (Refer to PRO-ABN-ENG ENG 1(2) SHUT DOWN).

■ **If normal ENG parameters:**

ENG ANTI ICE (AFFECTED ENGINE)..... ON
WING ANTI ICE.....ON

L2 *Operation of ENG and WING ANTI ICE will increase the stall margin but EGT increases accordingly.*

L1 THR LEVER (AFFECTED ENGINE).....SLOWLY MOVE FORWARD

● **If stall recurs:**

THR LEVER (AFFECTED ENGINE)..... MOVE BACKWARD

L2 *Reduce thrust and operate below the stall threshold where stall recurs.*

L1 ● **If stall does not recur:**

CONTINUE NORMAL ENGINE OPERATION

Continued on the following page

ENG 1(2) STALL (Cont'd)

Ident.: PRO-ABN-ENG-Z-00017748.0001001 / 21 MAR 16

	STATUS
CONSIDER ENG 1(2) RELIGHT	

ENG 1(2) START FAULT

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

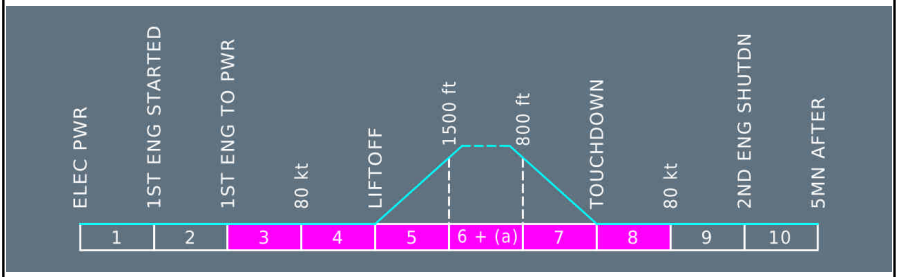
Ident.: PRO-ABN-ENG-AD-00017995.0001001 / 13 MAY 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when start fault due to:
- No light up, or
- Engine stall, or
- Engine overtemperature (above 725 °C), or
- Starter time exceeded, or
- Low start air pressure, or
- Thrust lever not at idle.

Flight Phase Inhibition:



Note: *Alert inhibited in the flight phase 6, only if it is due to thrust lever not at idle.*

Continued on the following page

ENG 1(2) START FAULT (Cont'd)

Ident.: PRO-ABN-ENG-AD-00012100.0005001 / 13 MAY 16

■ ENG 1(2) IGNITION FAULT:

L2 The engine does not start within the 18 s that follow the ignition start.

L1 ● **In flight:**

ENG MASTER (AFFECTED)..... OFF

L2 *Wait 30 s before attempting a new start (to drain the engine).*

L1 ● **On the ground (auto start) :**

L2 If the engine does not start, the FADEC can attempt an additional engine restart. After any start attempt that is not successful, a dry crank phase automatically occurs. The ECAM displays the following messages:

L1 AUTO CRANK IN PROGRESS
NEW START IN PROGRESS

● **When the final dry cranking process is finished:**

ENG MASTER (AFFECTED)..... OFF

L2 *Following starter cooldown, the pilot must decide whether to attempt auto or manual start, or to report the no start condition for appropriate maintenance action.*

L1 ● **On the ground (manual start):**

ENG MASTER (AFFECTED)..... OFF
MAN START (AFFECTED)..... OFF
MODE SEL..... CRANK
MAN START (AFFECTED)..... ON

L2 *Note: ECAM does not display the last two lines of the above procedure.*
Dry crank the engine for 30 s. The start valve automatically reopens when N2 is below 20 %.
After the starter cools, and for any subsequent attempt to start the engine, the flight crew must perform a manual start, or must report the "no start condition" to maintenance for appropriate action.

L1 ■ **ENG 1(2) STALL, ENG 1(2) EGT OVERLIMIT:**

● **In flight:**

ENG MASTER (AFFECTED)..... OFF

L2 *Wait 30 s before attempting a new start (to drain the engine).*

Continued on the following page

ENG 1(2) START FAULT (Cont'd)

L1 ● **On ground (auto start):**

L2 If the FADEC detects a stall or a potential EGT overheat, the FADEC will reduce the fuel schedule in stages, if necessary, to achieve a normal condition. The following message will be displayed on the ECAM:

L1 NEW START IN PROGRESS

● **If restart not possible:**

L2 If normal conditions cannot be achieved, the FADEC shuts off fuel and turn off ignition. Then a dry crank phase automatically occurs. The ECAM displays the following message:

L1 AUTO CRANK IN PROGRESS
ENG MASTER (AFFECTED).....OFF

L2
- *The fuel metering valve and starter air valve are automatically closed. Both igniters are turned off*
- *Setting ENG MASTER to OFF confirms automatic start abort*
- *In case of ENG STALL, consider making a XBLEED start, if pressure is low.*

L1 ● **On ground (manual start):**
ENG MASTER (AFFECTED)..... OFF
MAN START (AFFECTED)..... OFF
MODE SEL.....CRANK
MAN START (AFFECTED).....ON

L2 *Note:* *ECAM does not display the last two lines of the above procedure.*
Dry crank the engine for 30 s. The start valve automatically reopens when N2 is below 20 %.
After the starter cools, and for any subsequent attempt to start the engine, the flight crew must perform a manual start, or must report the "no start condition" to maintenance for appropriate action.

L1 ■ **STARTER TIME EXCEEDED:**
MAN START (IF MANUAL START IS PERFORMED).....OFF
ENG MASTER (AFFECTED).....OFF

■ **LO START AIR PRESS:**
BLEED AIR SUPPLY..... CHECK

Continued on the following page

ENG 1(2) START FAULT (Cont'd)

■ **THR LEVER NOT AT IDLE:**

THR LEVER..... IDLE

ENG 1(2) START FAULT

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-AD-00017995.0002001 / 13 MAY 16

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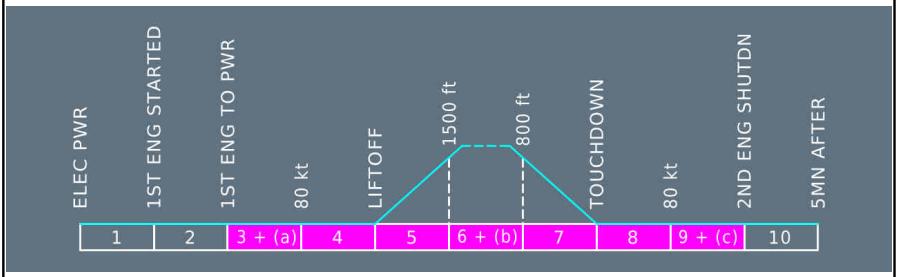
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when start fault due to:
- No light up, or
- Engine stall, or
- Engine overtemperature, or
- Hung start, or
- No N1 rotation, or
- Low start air pressure, or
- Thrust lever not at idle.

Flight Phase Inhibition:



Note: *(a) Alert inhibited in the flight phase 3, only if it is due to:*
- *No light up, or*
- *Engine stall, or*
- *Engine overtemperature, or*
- *Hung start, or*
- *Low start air pressure.*

(b) Alert inhibited in the flight phase 6, only if it is due to thrust lever not at idle.
(c) Alert inhibited in the flight phase 9, only if it is due to no N1 rotation.

Continued on the following page

ENG 1(2) START FAULT (Cont'd)

Ident.: PRO-ABN-ENG-AD-00012100.0006001 / 19 MAY 14

294

■ ENG 1(2) IGNITION FAULT:

L2 The engine does not start within the 20 s (30 s in flight) that follow the ignition start.

L1 ■ **NO N1 ROTATION:**
or
STALL
or
EGT OVERLIMIT
or
HUNG START:

- **In flight:**
  ENG MASTER (AFFECTED).....OFF

L2 *Wait 30 s before attempting a new start (to drain the engine).*

L1 - **On ground (auto start):**

L2 If the engine does not start or in case of detected stall, potential EGT overheat or hung start, the FADEC will immediately shut off fuel and turn off ignition. After any start attempt that is not successful, a dry crank automatically occurs. At the end of the dry crank sequence, the start valve is closed. The ECAM displays the following message:

L1 AUTO CRANK IN PROGRESS.

- **When dry crank process is completed:**
  ENG MASTER (AFFECTED).....OFF

L2 *Setting ENG MASTER to OFF confirms automatic start abort.*
After the starter cools, and for any subsequent attempt to start the engine, the flight crew must perform a manual start, or must report the "no start condition" to maintenance for appropriate action.

Note: With engine above idle, if EGT limit is exceeded ECAM requires to set engine master lever at OFF.

L1 - **On ground (manual start):**
  ENG MASTER (AFFECTED).....OFF
  MAN START (AFFECTED).....OFF
  MODE SEL.....CRANK
  MAN START (AFFECTED).....ON

Continued on the following page

ENG 1(2) START FAULT (Cont'd)

L2 *Note: ECAM does not display the last two lines of the above procedure.*
Dry crank the engine for 30 s. The start valve automatically reopens when N2 is below 10 %.
After the starter cools, and for any subsequent attempt to start the engine, the flight crew must perform a manual start, or must report the "no start condition" to maintenance for appropriate action.

L1 ■ **LO START AIR PRESS:**
BLEED AIR SUPPLY..... CHECK

■ **THR LEVER NOT AT IDLE:**
THR LEVER..... IDLE

ENG 1(2) START FAULT

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-AD-00017995.0007001 / 21 OCT 16

295

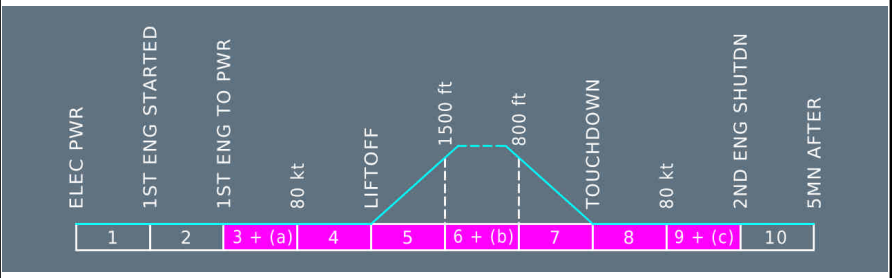
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when engine start is failed due to the following conditions:

- No light up, or
- Engine stall, or
- Engine overtemperature, or
- Hung start, or
- No N1 rotation, or
- Starter time exceeded, or
- Thrust lever not at idle, or
- Hot start, or
- Starter shaft shear.

Flight Phase Inhibition:



Note: *(a) Alert inhibited in the flight phase 3, only if it is due to:*

- *No light up, or*
- *Engine stall, or*
- *Engine overtemperature, or*
- *Hung start, or*
- *Starter time exceeded.*

(b) Alert inhibited in the flight phase 6, only if it is due to Thrust lever not at idle.

(c) Alert inhibited in the flight phase 9, only if it is due to no N1 rotation.

Continued on the following page

ENG 1(2) START FAULT (Cont'd)

Ident.: PRO-ABN-ENG-AD-00012100.0013001 / 10 JAN 17

296

■ **ENG (AFFECTED) IGNITION FAULT**
or
ENG (AFFECTED) STALL
or
ENG (AFFECTED) EGT OVERLIMIT
or
HUNG START:

- **In flight:**
  ENG MASTER (AFFECTED)..... OFF

L2 *Wait 30 s before attempting a new start (to drain the engine).*

L1

- **On ground (auto start):**

L2 If the FADEC detects no engine light up, stall, hung start, or EGT overlimit, the FADEC will immediately shut off fuel and turn off ignition. Then a dry crank phase is automatically performed. The ECAM displays the following messages:

L1 AUTOCRANK IN PROGRESS
NEW START IN PROGRESS

  - **If restart not possible:**
    ENG MASTER (AFFECTED).....OFF

L2 *The Fuel Metering Valve (FMV) and the starter air valve close automatically. Both igniters automatically go off.*
Following starter cooldown, the flight crew must decide whether to attempt a manual start or must report the start failure to maintenance for appropriate action.

L1

- **On the ground (manual start):**
  ENG MASTER (AFFECTED)..... OFF
  MAN START (AFFECTED)..... OFF

L2 *Following starter cooldown, the flight crew must decide whether to attempt a manual start or must report the start failure to maintenance for appropriate action.*

L1 ■ **STARTER TIME EXCEEDED:**
ENG MASTER (AFFECTED).....OFF

L2 *The engine starter time limit is exceeded.*

L1 MAN START (AFFECTED).....OFF

Continued on the following page

ENG 1(2) START FAULT (Cont'd)

■ **NO N1 ROTATION:**
AUTOCRANK IN PROGRESS
ENG MASTER (AFFECTED)..... OFF
MAN START (AFFECTED)..... OFF

■ **THR LEVER NOT AT IDLE:**
THR LEVER..... IDLE

■ **HOT START:**
NEW START IN PROGRESS

■ **STARTER SHAFT SHEAR:**

■ **On ground:**
ENG MASTER (AFFECTED)..... OFF
MAN START (AFFECTED)..... OFF

Do not attempt a new engine start. Maintenance action is due.

■ **In flight:**
WINDMILL START ONLY

Ident.: PRO-ABN-ENG-AD-00015583.0001001 / 05 NOV 15

297

STATUS

● **STARTER SHAFT SHEAR**
ENG (AFFECTED) WINDMILL START ONLY

ENG 1(2) START FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-AD-00017995.0010001 / 09 APR 18

298

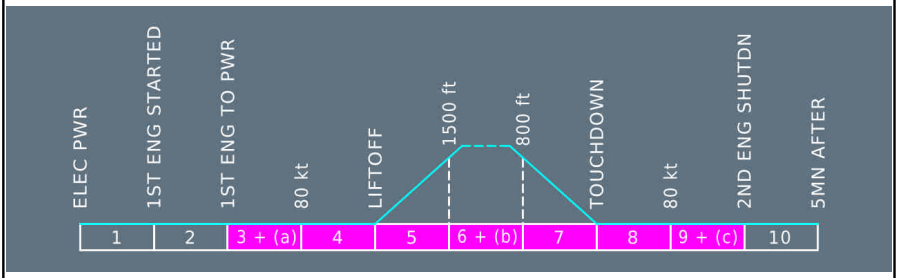
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when engine start is failed due to the following conditions:

- No light up, or
- Engine stall, or
- Engine overtemperature, or
- Hung start, or
- No N1 rotation, or
- Starter time exceeded, or
- Thrust lever not at idle, or
- Hot start, or
- Starter shaft shear.

Flight Phase Inhibition:



Note: *(a) Alert inhibited in the flight phase 3, only if it is due to:*

- *No light up, or*
- *Engine stall, or*
- *Engine overtemperature, or*
- *Hung start, or*
- *Starter time exceeded.*

(b) Alert inhibited in the flight phase 6, only if it is due to:

- *Thrust lever not at idle, or*

Continued on the following page

ENG 1(2) START FAULT (Cont'd)

- *Fuel depulse.*

(c) Alert inhibited in the flight phase 9, only if it is due to no N1 rotation.

Continued on the following page

ENG 1(2) START FAULT (Cont'd)

Ident.: PRO-ABN-ENG-AD-00012100.0013001 / 10 JAN 17

299

■ **ENG (AFFECTED) IGNITION FAULT**
or
ENG (AFFECTED) STALL
or
ENG (AFFECTED) EGT OVERLIMIT
or
HUNG START:

- **In flight:**
  ENG MASTER (AFFECTED)..... OFF

L2 *Wait 30 s before attempting a new start (to drain the engine).*

L1

- **On ground (auto start):**

L2 If the FADEC detects no engine light up, stall, hung start, or EGT overlimit, the FADEC will immediately shut off fuel and turn off ignition. Then a dry crank phase is automatically performed. The ECAM displays the following messages:

L1 AUTOCRANK IN PROGRESS
NEW START IN PROGRESS

  - **If restart not possible:**
    ENG MASTER (AFFECTED).....OFF

L2 *The Fuel Metering Valve (FMV) and the starter air valve close automatically. Both igniters automatically go off.*
Following starter cooldown, the flight crew must decide whether to attempt a manual start or must report the start failure to maintenance for appropriate action.

L1

- **On the ground (manual start):**
  ENG MASTER (AFFECTED)..... OFF
  MAN START (AFFECTED)..... OFF

L2 *Following starter cooldown, the flight crew must decide whether to attempt a manual start or must report the start failure to maintenance for appropriate action.*

L1 ■ **STARTER TIME EXCEEDED:**
ENG MASTER (AFFECTED).....OFF

L2 *The engine starter time limit is exceeded.*

L1 MAN START (AFFECTED).....OFF

Continued on the following page

ENG 1(2) START FAULT (Cont'd)

■ **NO N1 ROTATION:**
AUTOCRANK IN PROGRESS
ENG MASTER (AFFECTED)..... OFF
MAN START (AFFECTED)..... OFF

■ **THR LEVER NOT AT IDLE:**
THR LEVER..... IDLE

■ **HOT START:**
NEW START IN PROGRESS

■ **STARTER SHAFT SHEAR:**

■ **On ground:**
ENG MASTER (AFFECTED)..... OFF
MAN START (AFFECTED)..... OFF

Do not attempt a new engine start. Maintenance action is due.

■ **In flight:**
WINDMILL START ONLY

Ident.: PRO-ABN-ENG-AD-00015583.0001001 / 05 NOV 15

300

STATUS

● **STARTER SHAFT SHEAR**
ENG (AFFECTED) WINDMILL START ONLY

ENG 1(2) START VALVE FAULT

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04399, 04438, 04510

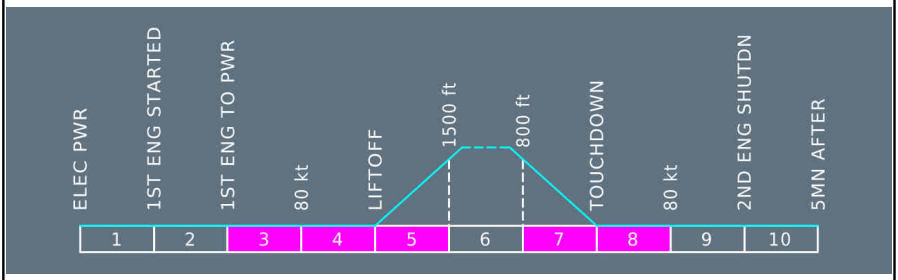
Ident.: PRO-ABN-ENG-D-00017932.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the start valve is stuck in closed or open position.

Flight Phase Inhibition:



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ENG 1(2) START VALVE FAULT (Cont'd)

Ident.: PRO-ABN-ENG-D-00018010.0003001 / 13 MAY 16

301

■ START VALVE NOT CLOSED

L2 Remove all bleed sources supplying the faulty start valve.

L1 APU BLEED (IF ENG 1 AFFECTED)..... OFF
X BLEED..... SHUT

L2 *If opposite engine is supplying, X BLEED must be closed.*

L1
- **In flight:**
  ENG BLEED (AFFECTED)..... OFF
  MAN START (IF MAN START PERFORMED)..... OFF
  WING ANTI ICE..... OFF
  AVOID ICING CONDITIONS
- **On ground:**
  MAN START (IF MAN START PERFORMED)..... OFF
  ENG MASTER (AFFECTED)..... OFF

■ START VALVE NOT OPEN

- **If opposite engine running:**
  X BLEED..... OPEN
- **If APU AVAIL below FL 200:**
  APU BLEED..... ON
- **IF UNSUCCESSFUL:**
  MAN START (IF MAN START PERFORMED)..... OFF
  ENG MASTER (AFFECTED) (IF AUTO START PERFORMED)..... OFF

L2 *MAN START procedure is useless since in both cases, the start valve is controlled by FADEC.*

L1 ■ **EEC control of start valve failed (for IAE or PW engines):**

- **On ground:**
  START VALVE MAN ONLY
- **In flight:**
  WINDMILL START ONLY.

L2 *Windmilling start only is available since EEC cannot control the start valve.*

Continued on the following page

ENG 1(2) START VALVE FAULT (Cont'd)

Ident.: PRO-ABN-ENG-D-00012091.0002001 / 17 MAR 17

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION**
  MIN SPD.....VLS + 10/G DOT
  MANEUVER WITH CARE
  - **In flight:**
    LDG DIST PROC..... APPLY

INOP SYS

WING A.ICE (In flight)

ENG 1(2) START VALVE FAULT

Applicable to: MSN 01957-02359, 02443-02482, 02609-02626, 02670, 02737-03071, 03264-03330, 03414-03453, 03541-03618, 03782-04216, 04312, 04384, 04488-04506, 04518-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252

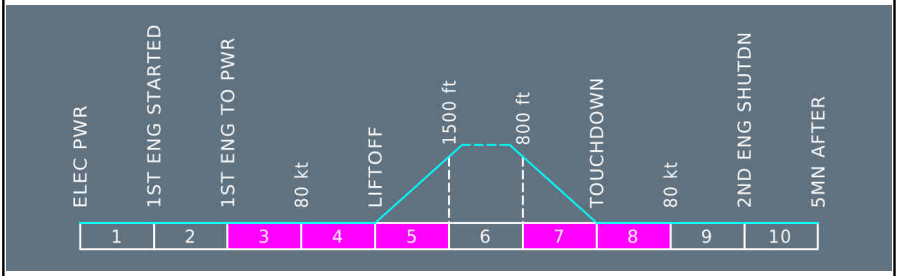
Ident.: PRO-ABN-ENG-D-00017932.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the start valve is stuck in closed or open position.

Flight Phase Inhibition:



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ENG 1(2) START VALVE FAULT (Cont'd)

Ident.: PRO-ABN-ENG-D-00018010.0003001 / 13 MAY 16

302

START VALVE NOT CLOSED

L2 Remove all bleed sources supplying the faulty start valve.

L1 APU BLEED (IF ENG 1 AFFECTED)..... OFF
X BLEED..... SHUT

L2 *If opposite engine is supplying, X BLEED must be closed.*

L1
- **In flight:**
  ENG BLEED (AFFECTED)..... OFF
  MAN START (IF MAN START PERFORMED)..... OFF
  WING ANTI ICE..... OFF
  AVOID ICING CONDITIONS
- **On ground:**
  MAN START (IF MAN START PERFORMED)..... OFF
  ENG MASTER (AFFECTED)..... OFF

START VALVE NOT OPEN

- **If opposite engine running:**
  X BLEED..... OPEN
- **If APU AVAIL below FL 200:**
  APU BLEED..... ON
- **IF UNSUCCESSFUL:**
  MAN START (IF MAN START PERFORMED)..... OFF
  ENG MASTER (AFFECTED) (IF AUTO START PERFORMED)..... OFF

L2 *MAN START procedure is useless since in both cases, the start valve is controlled by FADEC.*

L1 **EEC control of start valve failed (for IAE or PW engines):**

- **On ground:**
  START VALVE MAN ONLY
- **In flight:**
  WINDMILL START ONLY.

L2 *Windmilling start only is available since EEC cannot control the start valve.*

Continued on the following page

ENG 1(2) START VALVE FAULT (Cont'd)

Ident.: PRO-ABN-ENG-D-00012091.0003001 / 17 MAR 17

303

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION**
  MIN SPD.....VLS + 10/G DOT
  MANEUVER WITH CARE
  - **In flight:**
    LDG DIST PROC..... APPLY
- **If EEC control of start valve failed:**
  ENG 1(2) WINDMILL START ONLY.

INOP SYS

WING A.ICE (In flight)

ENG 1(2) START VALVE FAULT

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

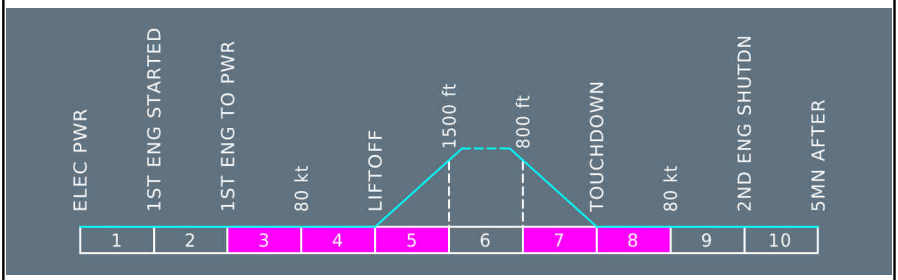
Ident.: PRO-ABN-ENG-D-00017932.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the start valve is stuck in closed or open position.

Flight Phase Inhibition:



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ENG 1(2) START VALVE FAULT (Cont'd)

Ident.: PRO-ABN-ENG-D-00018010.0002001 / 21 MAR 17

START VALVE NOT CLOSED

L2 Remove all bleed sources supplying the faulty start valve.

L1 APU BLEED (IF ENG 1 AFFECTED)..... OFF
X BLEED..... SHUT

- **In flight:**
  ENG BLEED (AFFECTED SIDE).....OFF
- **On the ground:**
  MAN START (IF MAN START PERFORMED).....OFF
  ENG MASTER (AFFECTED SIDE)..... OFF

L2 *On the ground, consider application of "START VALVE MANUAL OPERATION" procedure.*

L1 ### START VALVE NOT OPEN

- **If opposite engine running:**
  X BLEED..... OPEN
- **If APU AVAIL below FL 200:**
  APU BLEED..... ON
- **If UNSUCCESSFUL:**
  MAN START (IF MAN START PERFORMED).....OFF
  ENG MASTER (AFFECTED) (IF AUTO START PERFORMED).....OFF

L2 *MAN START procedure is useless since in both cases, the start valve is controlled by FADEC.*
On the ground, consider application of "START VALVE MANUAL OPERATION" procedure.

L1 ● **EEC control of start valve failed (for IAE or PW 6000 engines):**

- **On the ground:**
  START VALVE MAN ONLY

L2 *Start valve must be manually opened (Refer to PRO-NOR-SUP-ENG Engine Start Valve Manual Operation).*

L1
- **In flight:**
  WINDMILL START ONLY.

L2 *Windmilling start only is available since EEC cannot control the start valve.*

Continued on the following page

ENG 1(2) START VALVE FAULT (Cont'd)

Ident.: PRO-ABN-ENG-D-00012091.0001001 / 17 AUG 10

STATUS

ENG 1(2) WINDMILL START ONLY.

ENG 1(2) START VALVE FAULT

Applicable to: MSN 04393-04397, 04433

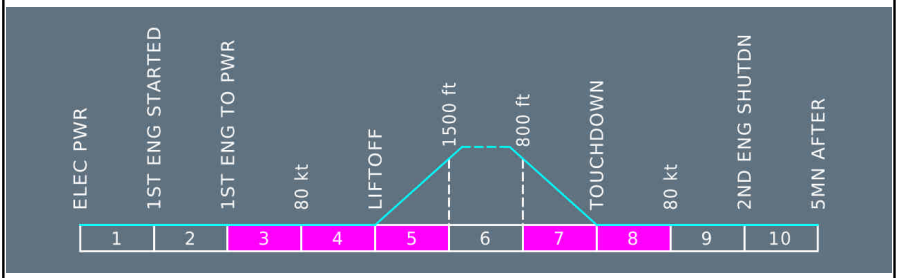
Ident.: PRO-ABN-ENG-D-00017932.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the start valve is stuck in closed or open position.

Flight Phase Inhibition:



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ENG 1(2) START VALVE FAULT (Cont'd)

Ident.: PRO-ABN-ENG-D-00018010.0002001 / 21 MAR 17

■ START VALVE NOT CLOSED

L2 Remove all bleed sources supplying the faulty start valve.

L1 APU BLEED (IF ENG 1 AFFECTED)..... OFF
X BLEED..... SHUT

- **In flight:**
  ENG BLEED (AFFECTED SIDE).....OFF
- **On the ground:**
  MAN START (IF MAN START PERFORMED).....OFF
  ENG MASTER (AFFECTED SIDE)..... OFF

L2 *On the ground, consider application of "START VALVE MANUAL OPERATION" procedure.*

L1 ### ■ START VALVE NOT OPEN

- **If opposite engine running:**
  X BLEED..... OPEN
- **If APU AVAIL below FL 200:**
  APU BLEED..... ON
- **If UNSUCCESSFUL:**
  MAN START (IF MAN START PERFORMED).....OFF
  ENG MASTER (AFFECTED) (IF AUTO START PERFORMED).....OFF

L2 *MAN START procedure is useless since in both cases, the start valve is controlled by FADEC.*
On the ground, consider application of "START VALVE MANUAL OPERATION" procedure.

L1 ● **EEC control of start valve failed (for IAE or PW 6000 engines):**

- **On the ground:**
  START VALVE MAN ONLY

L2 *Start valve must be manually opened (Refer to PRO-NOR-SUP-ENG Engine Start Valve Manual Operation).*

L1
- **In flight:**
  WINDMILL START ONLY.

L2 *Windmilling start only is available since EEC cannot control the start valve.*

ENG 1(2) START VALVE FAULT

Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192, 07329-09063

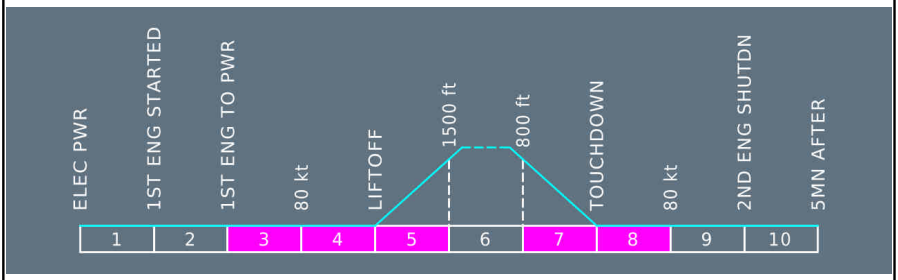
Ident.: PRO-ABN-ENG-D-00017932.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the start valve is stuck in closed or open position.

Flight Phase Inhibition:



Continued on the following page

ENG 1(2) START VALVE FAULT (Cont'd)

Ident.: PRO-ABN-ENG-D-00018010.0005001 / 21 OCT 16

304

START VALVE NOT CLOSED

L2 Remove all bleed sources supplying the faulty start valve.

L1 APU BLEED (IF ENG 1 AFFECTED)..... OFF
X BLEED..... SHUT

L2 *If opposite engine is supplying, X BLEED must be closed.*

L1
- **In flight:**
  ENG BLEED (AFFECTED)..... OFF
  MAN START (IF MAN START PERFORMED)..... OFF
  WING ANTI ICE..... OFF
  AVOID ICING CONDITIONS
- **On ground:**
  MAN START (IF MAN START PERFORMED)..... OFF
  ENG MASTER (AFFECTED)..... OFF

L2 *This action line is only displayed if the affected engine is commanded to start (ENG MASTER lever set to ON).*

L1 DUAL COOLING..... OFF

START VALVE NOT OPEN

- **If opposite engine running:**
  X BLEED..... OPEN
- **If APU AVAIL below FL 200:**
  APU BLEED..... ON
- **IF UNSUCCESSFUL:**
  MAN START (IF MAN START PERFORMED)..... OFF
  ENG MASTER (AFFECTED) (IF AUTO START PERFORMED)..... OFF

L2 *This action line is only displayed if the affected engine is commanded to start (ENG MASTER lever set to ON).*
MAN START procedure is useless since in both cases, the start valve is controlled by FADEC.

L1
- **On ground:**
  DUAL COOLING..... OFF

Continued on the following page

ENG 1(2) START VALVE FAULT (Cont'd)

■ **EEC control of start valve failed (for IAE or PW engines):**

- **On ground:**
  START VALVE MAN ONLY
- **In flight:**
  WINDMILL START ONLY.

L2 *Windmilling start only is available since EEC cannot control the start valve.*

Ident.: PRO-ABN-ENG-D-00012091.0003001 / 17 MAR 17

305

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION**
  MIN SPD.....VLS + 10/G DOT
  MANEUVER WITH CARE
  - **In flight:**
    LDG DIST PROC..... APPLY
- **If EEC control of start valve failed:**
  ENG 1(2) WINDMILL START ONLY.

INOP SYS

WING A.ICE (In flight)

ENG 1(2) SYSTEM FAULT

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-E-00017915.0001001 / 21 MAR 16

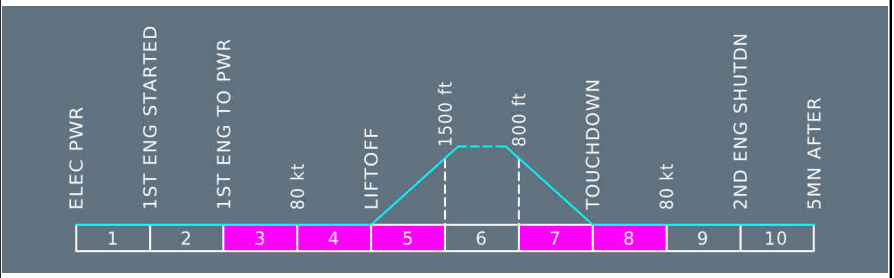
306

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the internal engine bleed or the engine probe heat is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-E-00017753.0003001 / 21 MAR 16

307

- **On ground:**
  THR LEVER 1(2)..... IDLE
  ENG MASTER 1(2).....OFF
- **In flight:**
  RISK OF HI EGT.

L2 *Continue normal operation.*

ENG 1(2) SYSTEM FAULT

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-ENG-E-00017915.0003001 / 17 JAN 18

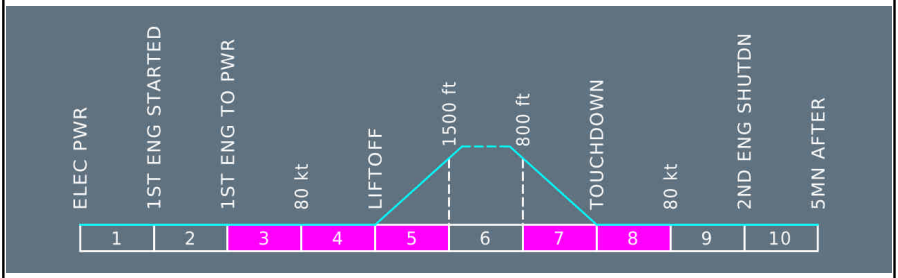
308

ANNUNCIATIONS

Triggering Conditions:

This alert triggers when the closure of the 6th stage bleed valves or Turbine Case Cooling (TCC) is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-E-00017753.0005001 / 13 DEC 17

309

- **On ground:**
  THR LVR (AFFECTED ENGINE) NOT ABOVE IDLE
- **In flight:**
  RISK OF HI EGT.

L2 *Continue normal operation.*

Ident.: PRO-ABN-ENG-E-00012105.0001001 / 17 AUG 10

310

STATUS

RISK OF ENG (affected) HI EGT

ENG 1(2) SYSTEM FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-ENG-E-00017915.0003001 / 17 JAN 18

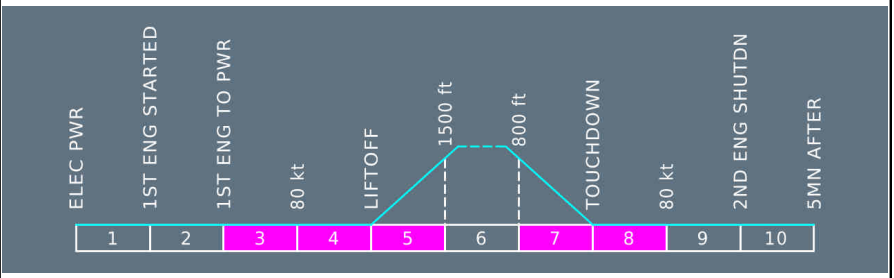
311

ANNUNCIATIONS

Triggering Conditions:

This alert triggers when the closure of the 6th stage bleed valves or Turbine Case Cooling (TCC) is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-E-00017753.0007001 / 30 MAR 18

312

- **On ground:**
  THR LEVER 1(2)..... IDLE
- **In flight:**
  RISK OF HI EGT.

L2 *Continue normal operation.*

Ident.: PRO-ABN-ENG-E-00012105.0001001 / 17 AUG 10

313

STATUS

RISK OF ENG (affected) HI EGT

ENG 1(2) THR LEVER ABV IDLE

Applicable to: ALL

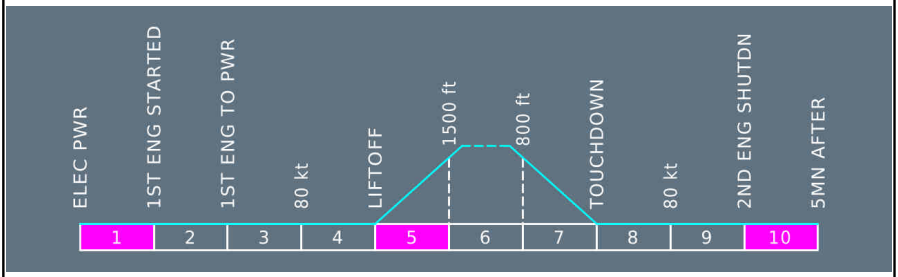
Ident.: PRO-ABN-ENG-CW-00017922.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- One thrust lever is above idle while the other thrust lever is in the reverse detent at landing.
- One thrust lever is above idle while the other thrust lever is at idle, at reverser deselection during landing roll.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-CW-00018748.0002001 / 21 MAR 16

L2 The repetitive "RETARD-RETARD" synthetic voice is triggered at landing.

L1 THR LEVER (AFFECTED ENGINE)..... IDLE

ENG 1(2) THR LEVER DISAGREE

Applicable to: MSN 01767-06336

Ident.: PRO-ABN-ENG-L-00017999.0004001 / 06 SEP 16

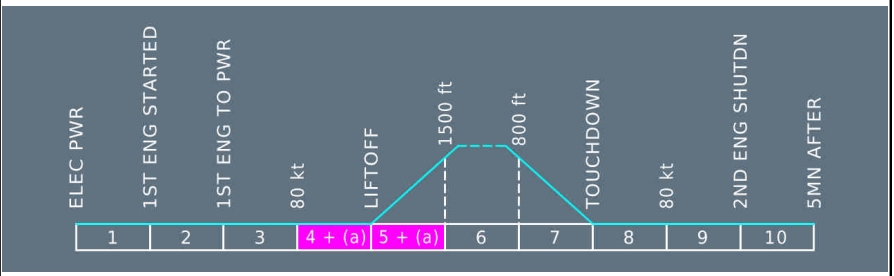
314

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a discrepancy between both resolvers of a thrust lever is detected.

Flight Phase Inhibition:



Note: *(a) Alert not inhibited in the flight phases 4 and 5, if the FADEC automatically selects IDLE thrust.*

Continued on the following page

ENG 1(2) THR LEVER DISAGREE (Cont'd)

Ident.: PRO-ABN-ENG-L-00012146.0017001 / 02 MAY 17

315

L2 Both Thrust Lever Angle (TLA) sensors not in agreement on one engine.

L1 **LAND ASAP**

■ **On ground (if both TLA not at TOGA or FLX/MCT or if only one TLA is at TOGA or FLX/MCT and the other is below IDLE):**
ENG (AFFECTED) IDLE POWER ONLY.

L2 *In that situation, the FADEC automatically selects IDLE.*

L1 THR LEVER (AFFECTED)..... IDLE

■ **During take-off (if both TLA are above IDLE):**
ENG (AFFECTED) TO, FLX, OR DRT TO ◁

L2 *If both TLA are above IDLE, the FADEC automatically selects TO, FLX TO, or DRT TO ◁ thrust until thrust reduction, after which the maximum available thrust is CLB.*

L1 ■ **In cruise (with slats retracted):**
AVAIL MAX POWER : CLB

L2 *In flight, if the failure occurs while the thrust lever is between idle and MCT, and if the slats are not extended, (or when MN > 0.55, if the onside EIU is failed) the FADEC selects the larger TLA power limited to CLB.*

L1 A/THR (IF ENGAGED) ..... KEEP ON
A/THR (IF NOT ENGAGED AND IF SLATS ARE NOT EXTENDED) ..... ON

L2 *With A/THR engaged, thrust is automatically managed between IDLE and higher TLA position.*

L1 ■ **In approach (with slats extended):**
ENG (AFFECTED) AT IDLE (WHEN SLATS ARE EXTENDED FOR APPROACH)..

L2 *If TLA at, or below, MCT and if the slats are extended for approach, (or when MN < 0.47, if the onside EIU is failed).*

L1 THR LEVER (AFFECTED)..... IDLE

Continued on the following page

ENG 1(2) THR LEVER DISAGREE (Cont'd)

Ident.: PRO-ABN-ENG-L-00018067.0013001 / 21 MAR 16

316

L12

STATUS

INOP SYS

- **If TLA at, or below, MCT**
  - **WHEN SLATS OUT:**

    (Displayed, if slats not extended), or
  - **WHEN MN < 0.47:**

    (Displayed, if the onside EIU is failed)

    ENG (AFFECTED) AT IDLE

    For any case of thrust lever disagree (TO, FLEX, or between Idle and MCT), the FADEC will command idle thrust for the approach when slats are extended (or when the Mach number is less than 0.47, if associated EIU is failed). It is independent of the autothrust condition. The affected engine's thrust remains definitively at idle, even for go-around.

ENG 1(2) THR

ENG (affected) AVAIL MAX PWR: CLB
ON GND ENG (affected) MAX PWR: IDLE.

ENG 1(2) THR LEVER DISAGREE

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-L-00017999.0001001 / 21 MAR 16

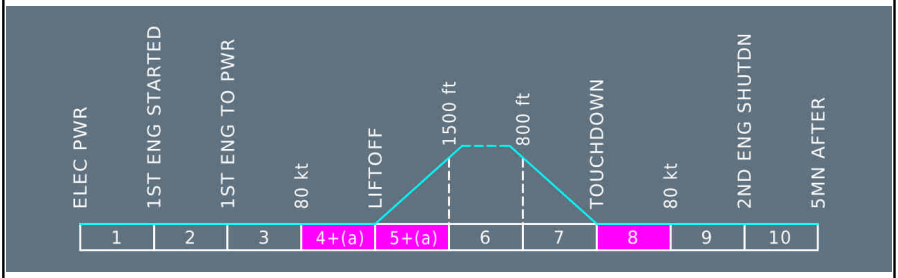
317

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a discrepancy between both resolvers of a thrust lever is detected.

Flight Phase Inhibition:



Note: *(a) Alert not inhibited in the flight phases 4 and 5, if the FADEC automatically selects IDLE thrust.*

Continued on the following page

ENG 1(2) THR LEVER DISAGREE (Cont'd)

Ident.: PRO-ABN-ENG-L-00012146.0018001 / 12 JAN 11

318

L2 Both Thrust Lever Angle (TLA) sensors are not in agreement on one engine.

L1 **LAND ASAP**

■ **On ground, if TLA at, or above IDLE position:**

ENG (AFFECTED) AT IDLE

L2 *The FADEC automatically selects IDLE thrust (even after liftoff).*

L1 THR LEVER (AFFECTED)..... IDLE

■ **In flight, if TLA at, or above FLEX:**

The FADEC maintains the takeoff thrust (TO, FLEX TO, or DRT TO) until thrust reduction, after which the maximum available thrust is CLB.

■ **In flight, if TLA at, or below MCT:**

■ **If approach phase not selected:**

AVAIL MAX POWER : CLB

L2 *The FADEC selects the thrust that corresponds to the highest TLA sensors position, limited to CLB.*

L1 A/THR (IF ENGAGED).....KEEP ON
A/THR (IF NOT ENGAGED).....ON

L2 *If the A/THR is engaged, the thrust is automatically managed between IDLE and the highest TLS sensors position.*

L1 ■ **If approach phase selected:**

ENG (AFFECTED) AT IDLE

L2 *The FADEC automatically selects IDLE thrust.*

L1 THR LEVER (AFFECTED) .....IDLE

L2 *The approach phase is selected:*
- *If the slats/flaps are extended, or*
- *If the associated EIU is failed, and MN is below 0.47.*

Continued on the following page

ENG 1(2) THR LEVER DISAGREE (Cont'd)

Ident.: PRO-ABN-ENG-L-00018067.0023001 / 04 DEC 17

319

L12

STATUS

GA THR: TOGA ONLY

ENG (AFFECTED) AT IDLE

Displayed when TLA at or below MCT, and
- *The slats are extended, or*
- *The onside EIU is failed, and MN is below 0.47.*

ENG (AFFECTED) AVAIL MAX PWR: CLB (IN FLIGHT).
ON GND ENG (AFFECTED) MAX PWR: IDLE.

INOP SYS

ENG 1(2) THR
GA SOFT

ENG 1(2) THR LEVER FAULT

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Ident.: PRO-ABN-ENG-M-00018000.0003001 / 01 JUN 16

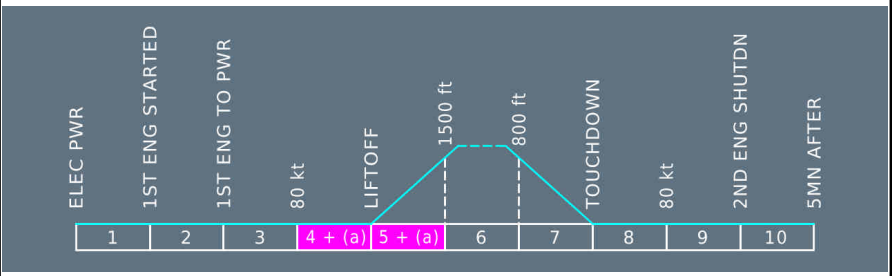
320

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both resolvers on one thrust lever are failed.

Flight Phase Inhibition:



Note: *(a) Alert not inhibited in flight phases 4 and 5 if the FADEC automatically selects IDLE thrust.*

Continued on the following page

ENG 1(2) THR LEVER FAULT (Cont'd)

Ident.: PRO-ABN-ENG-M-00018069.0009001 / 21 MAR 16

LAND ASAP

■ **On the ground:**

ENG (AFFECTED) IDLE POWER ONLY.

L2 *Idle power is automatically selected by FADEC.*
If associated thrust reverser is already deployed, FADEC commands restow.

L1 THR LEVER (AFFECTED)..... IDLE

■ **In flight:**

L2 If the selected thrust lever position at the time of fault detection is:
TO or FLEX: FADEC freezes TO or FLEX TO thrust until slat retraction. At slat retraction it selects CLB thrust.
Between IDLE and MCT: in manual thrust setting mode, engine rating freezes at CLB, or IDLE with slats extended (or MN < 0.47 if the FADEC no longer receives the slats position due to EIU failure). It is possible to activate autothrust. If selected, autothrust mode manages thrust between idle and CLB.

L1 ENG (AFFECTED) AT IDLE

L2 *For any case of thrust lever fault (TO, FLEX or between IDLE and MCT) the FADEC will command idle thrust for the approach when slats are extended (or when MN < 0.47 if associated EIU is failed). It is independant of the autothrust condition. Thrust of affected engine remains definitively at idle even for go around.*

L1 THR LEVER (AFFECTED) ..... IDLE

L2 *When slats are extended or MN < 0.47, if on side EIU is failed.*

L1 ■ **A/THR engaged:**

A/THR..... KEEP ON

■ **A/THR not engaged:**

ENG (AFFECTED) HI PWR IN MAN THR.

L2 *Inhibited when the FADEC commands the affected engine at IDLE.*

L1 ● **BEFORE SLATS IN:**

A/THR ..... ON
HI PWR ONLY

L2 *If thrust lever angle failed in TO or flex position.*

Continued on the following page

ENG 1(2) THR LEVER FAULT (Cont'd)

Ident.: PRO-ABN-ENG-M-00012152.0002001 / 14 NOV 11

321

L12

STATUS

- **WHEN SLATS OUT:**

  (Displayed if slats not extended) or,

- **WHEN MN < 0.47:**

  (Displayed if the onside EIU is failed).

ENG 1(2) AT IDLE

INOP SYS

REVERSER 1(2)
ENG 1(2) THR

ENG 1(2) THR LEVER FAULT

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-ENG-M-00018000.0003001 / 01 JUN 16

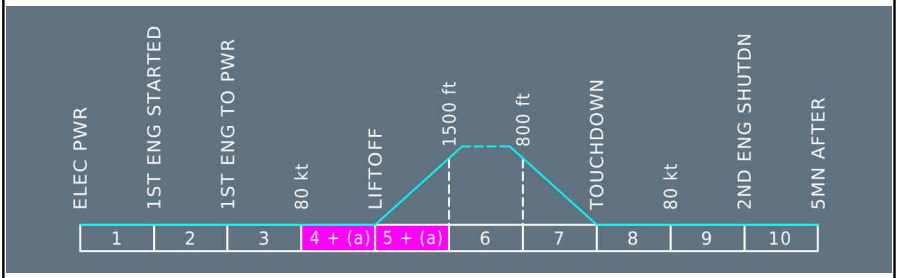
322

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both resolvers on one thrust lever are failed.

Flight Phase Inhibition:



Note: *(a) Alert not inhibited in flight phases 4 and 5 if the FADEC automatically selects IDLE thrust.*

Continued on the following page

ENG 1(2) THR LEVER FAULT (Cont'd)

Ident.: PRO-ABN-ENG-M-00018069.0006001 / 21 MAR 16

323

LAND ASAP

■ **On the ground:**

ENG (AFFECTED) IDLE POWER ONLY.

L2 *Idle power is automatically selected by FADEC.*
If associated thrust reverser is already deployed, FADEC commands restow.

L1 THR LEVER (AFFECTED)..... IDLE

■ **In flight:**

L2 If the selected thrust lever position at the time of fault detection is:
TO or FLEX: FADEC freezes TO or FLEX TO thrust until slat retraction. At slat retraction it selects MCT thrust.
Between IDLE and MCT: in manual thrust setting mode, engine rating freezes at MCT, or IDLE with slats extended (or MN < 0.47 if the FADEC no longer receives the slats position due to EIU failure). It is possible to activate autothrust. If selected, autothrust mode manages thrust between idle and MCT.

L1 ENG (AFFECTED) AT IDLE

L2 *For any case of thrust lever fault (TO, FLEX or between IDLE and MCT) the FADEC will command idle thrust for the approach when slats are extended (or when MN < 0.47 if associated EIU is failed). It is independant of the autothrust condition. Thrust of affected engine remains definitively at idle even for go around.*

L1 THR LEVER (AFFECTED) ..... IDLE

L2 *When slats are extended or MN < 0.47, if on side EIU is failed.*

L1 ■ **A/THR engaged:**

A/THR.....KEEP ON

■ **A/THR not engaged:**

ENG (AFFECTED) HI PWR IN MAN THR.

L2 *Inhibited when the FADEC commands the affected engine at IDLE*

L1 ● **BEFORE SLATS IN:**

A/THR ..... ON
HI PWR ONLY

L2 *If thrust lever angle failed in TO or flex position.*

Continued on the following page

ENG 1(2) THR LEVER FAULT (Cont'd)

Ident.: PRO-ABN-ENG-M-00012152.0002001 / 14 NOV 11

324

L12

STATUS

	INOP SYS
● **WHEN SLATS OUT:** (Displayed if slats not extended) or, ● **WHEN MN < 0.47:** (Displayed if the onside EIU is failed). ENG 1(2) AT IDLE	REVERSER 1(2) ENG 1(2) THR

ENG 1(2) THR LEVER FAULT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-M-00018000.0001001 / 21 MAR 16

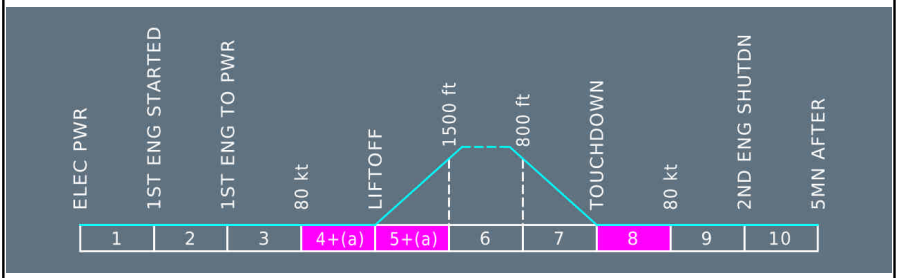
325

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both resolvers on one thrust lever are failed.

Flight Phase Inhibition:



Note: *(a) Alert not inhibited in flight phases 4 and 5 if the FADEC automatically selects IDLE thrust.*

Continued on the following page

ENG 1(2) THR LEVER FAULT (Cont'd)

Ident.: PRO-ABN-ENG-M-00018069.0007001 / 21 MAR 16

326

L2 Both Thrust Lever Angle (TLA) sensors are not valid on one engine. If automatically commanded by the FADEC, IDLE thrust is frozen until next FADEC reset.

L1 **LAND ASAP**

■ **On ground, if TLA at, or above IDLE position:**

ENG (AFFECTED) AT IDLE

L2 *The FADEC automatically selects IDLE thrust (even after liftoff). Reversers are inhibited.*

L1 THR LEVER (AFFECTED)..... IDLE

■ **In flight, if TLA at, or above FLEX:**

ENG (AFFECTED) HI PWR IN MAN THR

L2 *The FADEC maintains the takeoff thrust (TO, FLEX TO, or DRT TO) until slats/flaps retraction, after which the maximum available thrust is CLB. Disappears at the next slats/flaps extension, when the FADEC automatically selects IDLE thrust.*

L1 HI PWR ONLY

L2 *If onside EIU is failed.*
In this case, the FADEC maintains the takeoff thrust (TO, FLEX TO, or DRT TO).

L1 ■ **In flight, if TLA at, or below MCT:**

■ **If approach phase not selected**

ENG (AFFECTED) HI PWR IN MAN THR

L2 *If A/THR is not engaged, the FADEC selects CLB thrust.*

L1 A/THR (IF ENGAGED) ..... KEEP ON

L2 *If A/THR is engaged, the thrust is automatically managed between IDLE and CLB.*

L1 ● **BEFORE SLATS IN (if SLATS extended):**

A/THR (IF NOT ENGAGED) ..... ON

■ **If approach phase selected:**

ENG (AFFECTED) AT IDLE

L2 *FADEC selects IDLE thrust and freezes it (even for go around) until next FADEC reset.*

L1 THR LEVER (AFFECTED)..... IDLE

L2 *The approach phase is selected:*
- If the slats/flaps are extended, or

Continued on the following page

ENG 1(2) THR LEVER FAULT (Cont'd)

- *If the associated EIU is failed, and MN is below 0.47.*

Ident.: PRO-ABN-ENG-M-00012152.0013001 / 04 DEC 17

327

L12

STATUS

GA THR: TOGA ONLY

ENG (AFFECTED) AT IDLE

Displayed when TLA at or below MCT, and
- *The slats are extended, or*
- *The onside EIU is failed, and MN is below 0.47.*

ON GND ENG (affected) MAX PWR: IDLE

INOP SYS

REVERSER 1(2)
ENG 1(2) THR
GA SOFT

ENG T.O. THRUST DISAGREE

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-DC-00018282.0001001 / 13 MAY 16

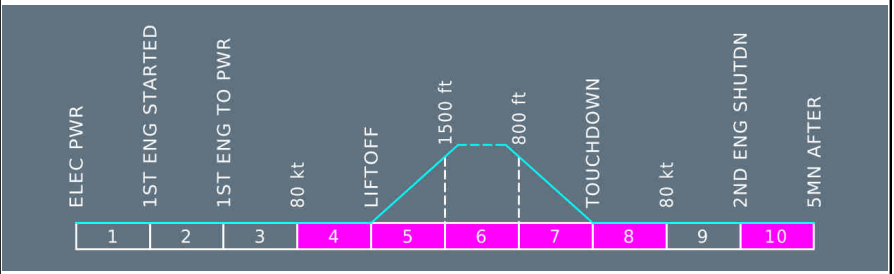
328

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- The derated takeoff ◁ function and/or the thrust bump ◁ function are installed, and
- A rating discrepancy between two engines is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DC-00017779.0001001 / 21 MAR 16

329

Crew awareness.

ENG 1(2) TURB COOL FAULT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-CX-00017908.0003001 / 13 MAY 16

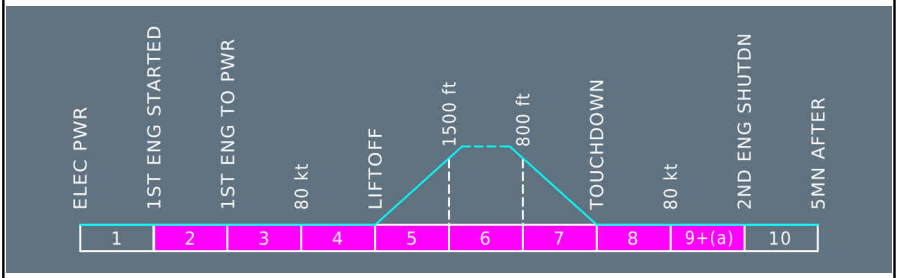
330

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the turbine Active Clearance Control (ACC) valve is failed in the closed position.

Flight Phase Inhibition:



Note: *(a) Alert inhibited during the first 60 seconds of the flight phase 9.*

Ident.: PRO-ABN-ENG-CX-00012292.0002001 / 06 DEC 16

331

Crew awareness.

ENG THR LEVERS NOT SET

Applicable to: MSN 01767-02097, 02121, 02138, 02388, 02457, 02584, 02712, 03138, 03750, 04314, 04393-04438, 04491, 04510, 04532-04535, 04603, 04645, 04757, 04813, 05027, 05076, 05090, 05259, 05411, 05683, 05807, 06036-06289

Ident.: PRO-ABN-ENG-DD-00017892.0001001 / 21 MAR 16

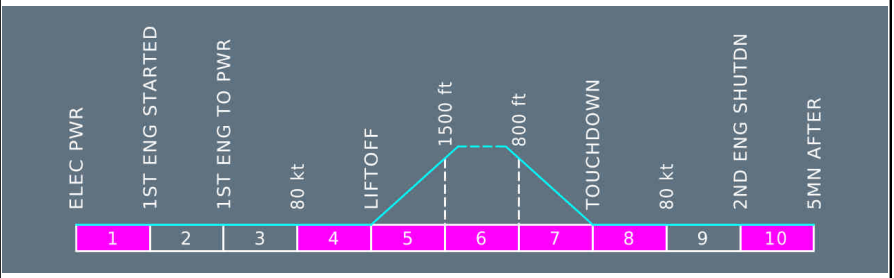
332

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the levers position does not correspond to TO power mode.

Flight Phase Inhibition:



Continued on the following page

ENG THR LEVERS NOT SET (Cont'd)

Ident.: PRO-ABN-ENG-DD-00017863.0007001 / 21 MAR 16

333

L2 At least one FADEC engaged a takeoff thrust mode that is not in accordance with the position of the thrust levers.

Note: *1. The takeoff thrust mode is engaged when the flight crew sets the thrust levers above the CL position.*
2. The flex takeoff thrust mode is armed only if the flight crew entered a FLEX TO TEMP on the MCDU that is above the OAT.

L1 ■ **If the flex mode is not armed, and the flight crew sets the thrust levers below or at the MCT/FLX position:**
THR LEVERS..... TO/GA

L2 *If the flight crew does not set the thrust levers to the TOGA position, the FADEC will automatically select TOGA thrust after 8 s.*

L1 ■ **If the flex mode is armed, and the flight crew sets the thrust levers below the MCT/FLX position:**
THR LEVERS ..... MCT/FLX

ENG THR LEVERS NOT SET

Applicable to: MSN 02108, 02135, 02139-02359, 02405-02443, 02482, 02609-02670, 02737-03071, 03264-03618, 03782-04312, 04328-04384, 04481-04488, 04506, 04518, 04552, 04609-04637, 04752, 04762, 04818-04965, 05036, 05080, 05092-05231, 05262-05365, 05437-05676, 05712-05744, 05829-06010, 06336

Ident.: PRO-ABN-ENG-DD-00017892.0001001 / 21 MAR 16

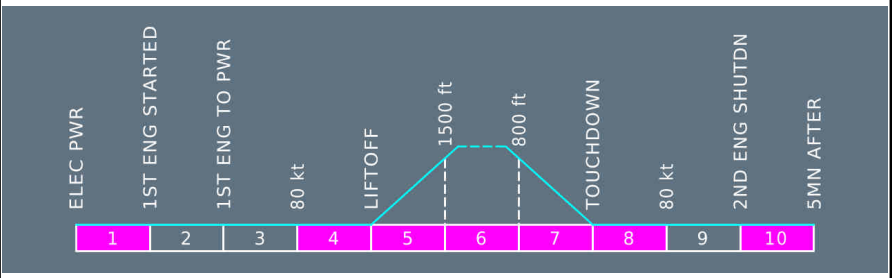
334

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the levers position does not correspond to TO power mode.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DD-00017863.0003001 / 21 MAR 16

L2 At least one FADEC engaged a takeoff thrust mode that is not in accordance with the position of the thrust levers.

Note: *1. The takeoff thrust mode is engaged when the flight crew sets the thrust levers above the CL position.*
2. The flex takeoff thrust mode is armed only if the flight crew entered a FLEX TO TEMP on the MCDU that is above the OAT.

L1 ■ **If the flex mode is not armed, and the flight crew sets the thrust levers below or at the MCT/FLX position:**
THR LEVERS..... TO/GA

■ **If the flex mode is armed, and the flight crew sets the thrust levers below the MCT/FLX position:**
THR LEVERS ..... MCT/FLX

ENG THR LEVERS NOT SET (ON GROUND)

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-DS-00022038.0001001 / 04 DEC 17

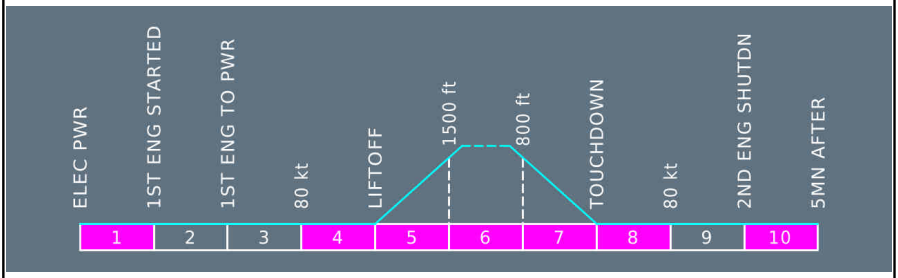
335

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the levers position does not correspond to TO power mode.

Flight Phase Inhibition:



Continued on the following page

ENG THR LEVERS NOT SET (ON GROUND) (Cont'd)

Ident.: PRO-ABN-ENG-DS-00022039.0001001 / 04 DEC 17

336

L2 At least one FADEC engaged a takeoff thrust mode that is not in accordance with the position of the thrust levers.

Note: *1. The takeoff thrust mode is engaged when the flight crew sets the thrust levers above the CL position.*
2. The flex takeoff thrust mode is armed only if the flight crew entered a FLEX TO TEMP on the MCDU that is above the OAT.
3. The derated thrust mode is armed only if the flight crew entered a DERATE level on the MCDU.

L1 ■ **If the flex mode is not armed, and the flight crew sets the thrust levers at or below the FLX/MCTposition:**
THR LEVERS..... TOGA

L2 *If the flight crew does not set the thrust levers to the TOGA position, the FADEC will automatically select TOGA thrust after 8 s.*

L1 ■ **If the flex mode is armed, and the flight crew sets the thrust levers below the FLX//MCT position:**
THR LEVERS ..... FLX/MCT

■ **If the derated is not armed, and the flight crew sets the thrust levers at or below the FLX/MCT position:**
THR LEVERS..... TOGA

■ **If the derated is armed, and the flight crew sets the thrust levers at any position except the FLX/MCT position:**
THR LEVERS..... FLX/MCT

ENG THR LEVERS NOT SET (AT GO-AROUND)

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-ENG-DT-00022040.0001001 / 04 DEC 17

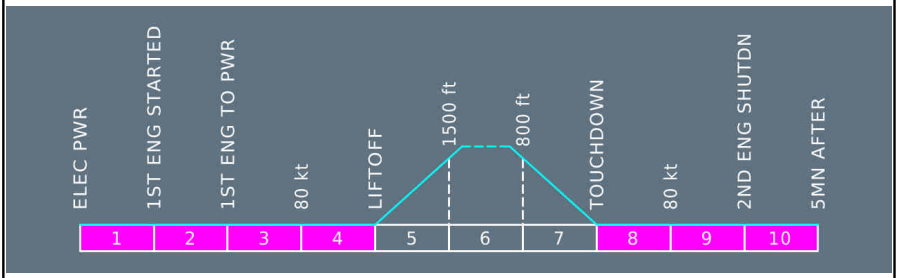
337

ANNUNCIATIONS

Triggering Conditions:

L2 During go-around initiation with the soft go-around technique, the soft go-around function is lost or not available. Consequently, the thrust levers are not set at the right detent.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DT-00022041.0001001 / 04 DEC 17

338

THR LEVERS..... TOGA

L2 *If the soft go-around function is lost or not available (associated with ENG GA SOFT FAULT alert), the thrust levers must be set to TOGA.*

ENG THRUST LOCKED

Applicable to: ALL

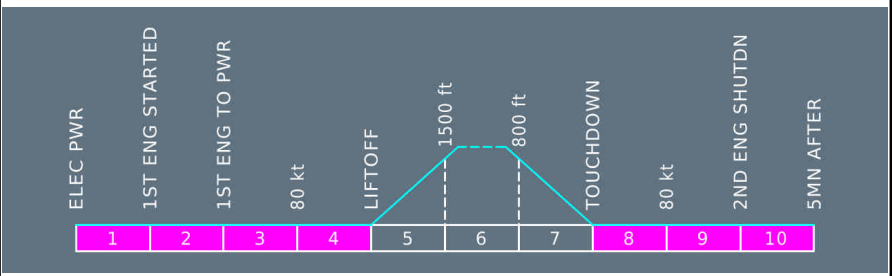
Ident.: PRO-ABN-ENG-DE-00017888.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when thrust levers are not moved within 5 s, following an unvoluntary disconnection of the A/THR (or disconnection through the FCU pb).

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DE-00017865.0002001 / 21 MAR 16

THR LEVERS.....MOVE

ENG TYPE DISAGREE

Applicable to: ALL

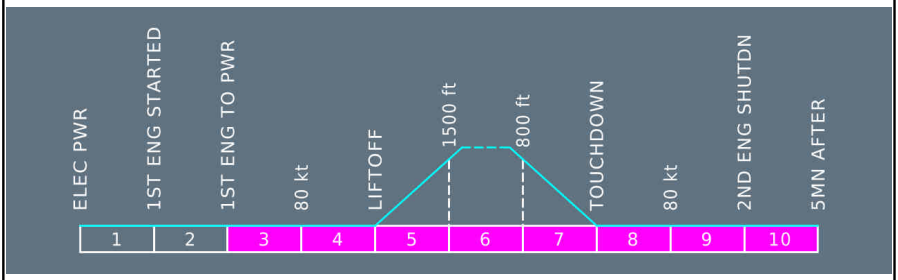
Ident.: PRO-ABN-ENG-DF-00017881.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a rating discrepancy between two engines is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DF-00017868.0001001 / 21 MAR 16

Crew awareness.

ENG VIB SYS FAULT

Applicable to: MSN 01767-06336

Ident.: PRO-ABN-ENG-DG-00017879.0001001 / 21 MAR 16

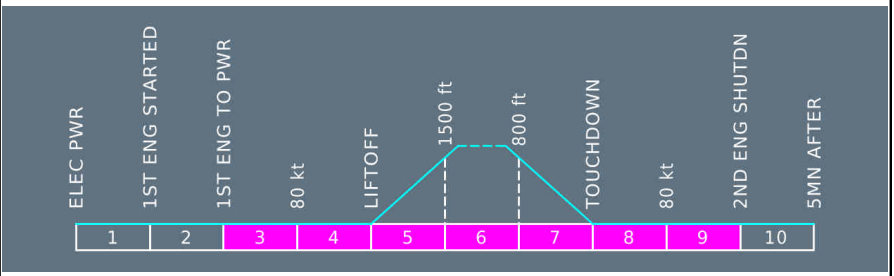
339

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the vibration detection system is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-ENG-DG-00012074.0001001 / 25 FEB 14

340

Crew awareness.

[QRH] LANDING WITH SLATS OR FLAPS JAMMED

Ident.: PRO-ABN-F_CTL-00010683.0001001 / 17 MAR 17

1 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

LDG DIST PROC.....APPLY

Determine flap lever position for landing

- **Repeat the following until landing configuration is reached:**
  SPD SEL.....VFE NEXT - 5 kt
  AT VFE NEXT: SELECT FLAPS LEVER ONE STEP DOWN

  Note:
  - *OVERSPEED alert, and VLS displayed on the PFD, are computed according to the actual flaps/slats position*
  - *VFE and VFE NEXT are displayed on the PFD according to the FLAPS lever position. If not displayed, use the placard speeds*
  - *If VLS is greater than VFE NEXT (overweight landing case), the FLAPS lever can be set in the required next position, while the speed is reduced to follow VLS reduction as surfaces extend. The VFE warning threshold should not be triggered. In this case, disconnect the A/THR. A/THR can be re-engaged when the landing configuration is established.*

- **When in landing CONF and in final approach:**
  DECELERATE TO CALCULATED VAPP
  AP BELOW 500 ft AGL : DO NOT USE

- **For Go-around:**

MAX SPEED					
Flaps / Slats	F = 0	0 < F ≤ 1	1 < F ≤ 2	2 < F ≤ 3	F > 3
S = 0	NO LIMITATION	215 kt	200 kt	185 kt	177 kt (Not allowed)
0 < S < 1	230 kt				
S = 1					177 kt
1 < S ≤ 3	200 kt		200 kt	185 kt	
S > 3	177 kt		177 kt	177 kt	177 kt

■ **If SLATS FAULT:**

- **For circuit:**
  MAINTAIN SLATS/FLAPS CONFIGURATION
  Recommended speed: MAX SPEED - 10 kt

Continued on the following page

[QRH] LANDING WITH SLATS OR FLAPS JAMMED (Cont'd)

- **For diversion:**
  SELECT CLEAN CONFIGURATION
  Recommended speed for flaps retraction: between MAX SPEED - 10 kt and MAX SPEED.
  Recommended diversion speed: MAX SPEED - 10 kt.

  INCREASED FUEL CONSUMPTION

■ **If FLAPS FAULT:**

- **For circuit:**
  MAINTAIN SLATS/FLAPS CONFIGURATION
  Recommended speed: MAX SPEED - 10 kt

- **For diversion:**

  ■ **If FLAPS jammed at 0:**
  SELECT CLEAN CONFIGURATION
  Recommended speed for slats retraction: between MAX SPEED - 10 kt and MAX SPEED
  USE NORMAL OPERATING SPEEDS

  ■ **If FLAPS jammed > 0:**
  MAINTAIN SLAT/FLAP CONFIGURATION
  Recommended speed for diversion: MAX SPEED - 10 kt

  Note: In case of a go-around with CONF FULL selected, the L/G NOT DOWN warning is triggered at landing gear retraction.

  INCREASED FUEL CONSUMPTION

CAUTION	For flight with SLATS or FLAPS extended, fuel consumption is increased. Refer to the fuel flow indication. As a guideline, determine the fuel consumption in clean configuration at the same altitude without airspeed limitation (e.g. From ALTERNATE FLIGHT PLANNING tables) and multiply this result by the applicable Fuel Penalty Factor provided in the QRH, to obtain the fuel penalty required to reach the destination in the current configuration. *Refer to QRH/OPS Fuel Penalty Factors/ECAM Alert Table*.

[QRH] LANDING WITH SLATS OR FLAPS JAMMED

Ident.: PRO-ABN-F_CTL-00010683.0105001 / 04 SEP 18

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

LDG DIST PROC.....APPLY

Determine flap lever position for landing

- **Repeat the following until landing configuration is reached:**
  SPD SEL.....VFE NEXT - 5 kt
  AT VFE NEXT: SELECT FLAPS LEVER ONE STEP DOWN

  Note: - *OVERSPEED alert, and VLS displayed on the PFD, are computed according to the actual flaps/slats position*
  - *VFE and VFE NEXT are displayed on the PFD according to the FLAPS lever position. If not displayed, use the placard speeds*
  - *If VLS is greater than VFE NEXT (overweight landing case), the FLAPS lever can be set in the required next position, while the speed is reduced to follow VLS reduction as surfaces extend. The VFE warning threshold should not be triggered. In this case, disconnect the A/THR. A/THR can be re-engaged when the landing configuration is established.*

- **When in landing CONF and in final approach:**
  DECELERATE TO CALCULATED VAPP
  AP BELOW 500 ft AGL : DO NOT USE

- **For Go-around:**

MAX SPEED					
Flaps / Slats	F = 0	0 < F ≤ 1	1 < F ≤ 2	2 < F ≤ 3	F > 3
S = 0	NO LIMITATION	225 kt	215 kt	195 kt	186 kt (Not allowed)
0 < S < 1	243 kt				
S = 1					186 kt
1 < S ≤ 3	215 kt		215 kt	195 kt	
S > 3	186 kt		186 kt	186 kt	186 kt

  - **If SLATS FAULT:**
    - **For circuit:**
      MAINTAIN SLATS/FLAPS CONFIGURATION
      Recommended speed: MAX SPEED - 10 kt

Continued on the following page

[QRH] LANDING WITH SLATS OR FLAPS JAMMED (Cont'd)

Note: In case of a go-around with CONF FULL selected, the L/G NOT DOWN warning is triggered at landing gear retraction.

- **For diversion:**
  SELECT CLEAN CONFIGURATION
  Recommended flaps retraction speed: between MAX SPEED - 10 kt and MAX SPEED.
  Recommended diversion speed: MAX SPEED - 10 kt.

  INCREASED FUEL CONSUMPTION

■ **If FLAPS FAULT:**

- **For circuit:**
  MAINTAIN SLATS/FLAPS CONFIGURATION
  Recommended speed: MAX SPEED - 10 kt
- **For diversion:**
  - **If FLAPS jammed at 0:**
    SELECT CLEAN CONFIGURATION
    Recommended speed for slats retraction: between MAX SPEED - 10 kt and MAX SPEED
    USE NORMAL OPERATING SPEEDS
  - **If FLAPS jammed > 0:**
    MAINTAIN SLAT/FLAP CONFIGURATION
    Recommended speed for diversion: MAX SPEED - 10 kt

    INCREASED FUEL CONSUMPTION

CAUTION	For flight with SLATS or FLAPS extended, fuel consumption is increased. Refer to the fuel flow indication. As a guideline, determine the fuel consumption in clean configuration at the same altitude without airspeed limitation (e.g. From ALTERNATE FLIGHT PLANNING tables) and multiply this result by the applicable Fuel Penalty Factor provided in the QRH, to obtain the fuel penalty required to reach the destination in the current configuration. *Refer to QRH/OPS Fuel Penalty Factors/ECAM Alert Table*.

[QRH] RUDDER JAM

Ident.: PRO-ABN-F_CTL-00011807.0001001 / 17 MAR 17
Applicable to: ALL

L2 Rudder jamming may be detected by undue (and adverse) pedal movement during rolling maneuvers.
This is because the yaw damper orders can no longer be sent to the rudder, but are fed back to the pedals.
Use F/CTL SD page for a visual check of the rudder position.

L1 ● **For approach:**

AVOID LANDING WITH CROSSWIND FROM THE SIDE WHERE THE RUDDER IS DEFLECTED

MAX CROSSWIND FOR LDG: 15 kt

AUTO BRK.....DO NOT USE

L2 *Do not use the autobrake, so as not to delay the application of differential braking at landing roll.*

L1 FOR LANDING..... USE NORMAL CONF
SPEED AND TRAJECTORY.....STABILIZE ASAP
LDG DIST PROC..... APPLY

● **For landing:**

DIFFERENTIAL BRAKING..... USE ASAP
REVERSER: SYMMETRIC USE ONLY

L2 *Use nosewheel steering handle below 70 kt.*

[QRH] STABILIZER JAM

Ident.: PRO-ABN-F_CTL-00011806.0001001 / 17 MAR 17
Applicable to: ALL

L2 The ELACs may not detect a stabilizer jam when the pitch trim wheel is jammed.
The flight control normal law remains active in this case and there is no ECAM warning.
Apply the following procedure.

L1 AP..... OFF
MAN PITCH TRIM..... CHECK

L2 *The pitch trim wheel may not be fully jammed, the force needed may be higher than pre-takeoff manual setting.*

L1 ● **If MAN PITCH TRIM available:**
TRIM FOR NEUTRAL ELEV

L2 *If manual pitch trim is available, trim to maintain the elevator at the zero position (indications on F/CTL SD page).*

L1 ● **If MAN PITCH TRIM not available:**
FOR LANDING: USE FLAP 3

L2 *Do not select configuration full so as not to degrade the handling qualities.*

L1 GPWS LDG FLAP 3..... ON

CAT 1 ONLY

ACTIVE CONTROL LAW

Ident.: PRO-ABN-F_CTL-00018549.0001001 / 21 MAR 16

3 **Applicable to: MSN 01767-05411**

ACTIVE LAW ▸	PITCH		ROLL	YAW
SYS FAILED▾	LAW	PROTEC		
ELAC 1 or 2 or SEC 1 or 2	NORM	NORM	NORM	NORM
ELAC 1 and 2 or both ailerons	ALTN	REDUCED	DIRECT	ALTN
2 SEC	NORM	NORM	NORM	NORM
3 SEC	ALTN	REDUCED	DIRECT	ALTN
2 FAC	ALTN	REDUCED	DIRECT	MECH
Yaw damper	ALTN	REDUCED	DIRECT	MECH
2 SFCC (slat channel)	ALTN	NO	DIRECT	ALTN
2 ADR or 2 IR (2nd self detected)	ALTN	REDUCED	DIRECT	ALTN
2 ADR (2nd not self detec.)	ALTN	NO – – – – – REDUCED (1)	DIRECT	ALTN
2 IR (2nd not self detec.)	DIRECT – – – – – ALTN (2)	NO – – – – – REDUCED (2)	DIRECT	MECH – – – – – ALTN (2)
3 ADR	ALTN	NO	DIRECT	MECH
3 IR	DIRECT	NO	DIRECT	MECH
2 RADIO ALT	NORM – – – – – DIRECT (4)	NORM – – – – – NO (4)	NORM – – – – – DIRECT (4)	NORM – – – – – MECH (4)
SPOILER 4 or 5 or (4 and 5)	NORM	NORM	NORM	NORM
All SPOILERS	ALTN	REDUCED	DIRECT	ALTN
1 AIL SERVO or 1 AILERON	NORM	NORM	NORM	NORM
1 ELEV SERVO	NORM	NORM	NORM	NORM
1 ELEVATOR	ALTN	REDUCED	DIRECT	ALTN
THS (jammed) (5)	NORM	NORM	NORM	NORM
	ALTN	REDUCED	DIRECT	ALTN
HYD G or Y or B	NORM	NORM	NORM	NORM
HYD G + Y	ALTN	REDUCED	DIRECT	MECH
HYD G + B	ALTN	NO	DIRECT	ALTN
HYD Y + B	NORM	NORM	NORM	NORM
on BATTERIES	ALTN	REDUCED	DIRECT	MECH

Continued on the following page

ACTIVE CONTROL LAW (Cont'd)

ACTIVE LAW ▸ / SYS FAILED ▾	PITCH		ROLL	YAW
	LAW	PROTEC		
on EMER GEN	ALTN	REDUCED	DIRECT	MECH – – – – – ALTN (3)

(1) *In case of AOA disagree*

(2) *After the faulty IR is selected OFF*

(3) *After FAC 1 is reset*

(4) *When landing gear down (or CONF 2, if both LGCIUs faulty)*

(5) *Depending where the failure is, control law may revert to alternate law*

ACTIVE CONTROL LAW

Ident.: PRO-ABN-F_CTL-00018549.0069001 / 21 MAR 16

4 **Applicable to: MSN 05437-09063**

ACTIVE LAW ▸	PITCH		ROLL	YAW
SYS FAILED▾	LAW	PROTEC		
ELAC 1 or 2 or SEC 1 or 2	NORM	NORM	NORM	NORM
ELAC 1 and 2 or both ailerons	ALTN	REDUCED	DIRECT	ALTN
2 SEC	NORM	NORM	NORM	NORM
3 SEC	ALTN	REDUCED	DIRECT	ALTN
2 FAC	ALTN (6)	REDUCED (6)	DIRECT (6)	MECH
Yaw damper	ALTN (6)	REDUCED (6)	DIRECT (6)	MECH
2 SFCC (slat channel)	ALTN	NO	DIRECT	ALTN
2 ADR or 2 IR (2nd self detected)	ALTN	REDUCED	DIRECT	ALTN
2 ADR (2nd not self detec.)	ALTN	NO – – – – – REDUCED (1)	DIRECT	ALTN
2 IR (2nd not self detec.)	DIRECT – – – – – ALTN (2)	NO – – – – – REDUCED (2)	DIRECT	MECH – – – – – ALTN (2)
3 ADR	ALTN	NO	DIRECT	MECH
3 IR	DIRECT	NO	DIRECT	MECH
2 RADIO ALT	NORM – – – – – DIRECT (4)	NORM – – – – – NO (4)	NORM – – – – – DIRECT (4)	NORM – – – – – MECH (4)
SPOILER 4 or 5 or (4 and 5)	NORM	NORM	NORM	NORM
All SPOILERS	ALTN	REDUCED	DIRECT	ALTN
1 AIL SERVO or 1 AILERON	NORM	NORM	NORM	NORM
1 ELEV SERVO	NORM	NORM	NORM	NORM
1 ELEVATOR	ALTN	REDUCED	DIRECT	ALTN
THS (jammed) (5)	NORM	NORM	NORM	NORM
	ALTN	REDUCED	DIRECT	ALTN
HYD G or Y or B	NORM	NORM	NORM	NORM
HYD G + Y	ALTN	REDUCED	DIRECT	MECH
HYD G + B	ALTN	NO	DIRECT	ALTN
HYD Y + B	NORM	NORM	NORM	NORM
on BATTERIES	ALTN	REDUCED	DIRECT	MECH

Continued on the following page

ACTIVE CONTROL LAW (Cont'd)

ACTIVE LAW ▸ / SYS FAILED▾	PITCH		ROLL	YAW
	LAW	PROTEC		
on EMER GEN	ALTN	REDUCED	DIRECT	MECH – – – – – ALTN (3)

(1) *In case of AOA disagree*

(2) *After the faulty IR is selected OFF*

(3) *After FAC 1 is reset*

(4) *When landing gear down (or CONF 2, if both LGCIUs faulty)*

(5) *Depending where the failure is, control law may revert to alternate law*

(6) *The alternate laws are enhanced for better handling qualities.*

ELEVATORS AND STABILIZER CONTROL AFTER FAILURE

Ident.: PRO-ABN-F_CTL-00018591.0001001 / 09 FEB 16
Applicable to: ALL

	LEFT ELEVATOR		THS	RIGHT ELEVATOR	
	BLUE	GREEN	GREEN AND YELLOW	YELLOW	BLUE
NORM OPERATION		ELAC 2	ELAC 2	ELAC 2	
SINGLE FAILURE					
ELAC 2	ELAC 1		ELAC 1		ELAC 1
ELAC 1		ELAC 2	ELAC 2	ELAC 2	
SEC 2		ELAC 2	ELAC 2	ELAC 2	
SEC 1		ELAC 2	ELAC 2	ELAC 2	
G	ELAC 1		ELAC 1		ELAC 1
Y	ELAC 1		ELAC 1		ELAC 1
B		ELAC 2	ELAC 2	ELAC 2	
DOUBLE FAILURE					
ELAC 2	+ ELAC 1	SEC 2	SEC 2	SEC 2	
	+ SEC 2	ELAC 1	ELAC 1		ELAC 1
	+ SEC 1	ELAC 1	ELAC 1		ELAC 1
	+ G	ELAC 1	ELAC 1		ELAC 1
	+ Y	ELAC 1	ELAC 1		ELAC 1
	+ B	SEC 2	SEC 2	SEC 2	
ELAC 1	+ SEC 2	ELAC 2	ELAC 2	ELAC 2	
	+ SEC 1	ELAC 2	ELAC 2	ELAC 2	
	+ G	SEC 1	SEC 2	SEC 2	
	+ Y	SEC 2	SEC 2		SEC 1
	+ B	ELAC 2	ELAC 2	ELAC 2	
SEC 2	+ SEC 1	ELAC 2	ELAC 2	ELAC 2	
	+ G	ELAC 1	ELAC 1		ELAC 1
	+ Y	ELAC 1	ELAC 1		ELAC 1
	+ B	ELAC 2	ELAC 2	ELAC 2	
SEC 1	+ G	ELAC 1	ELAC 1		ELAC 1
	+ Y	ELAC 1	ELAC 1		ELAC 1
	+ B	ELAC 2	ELAC 2	ELAC 2	
G + Y		ELAC 1	INOP		ELAC 1
B + G		Damped	ELAC 2	ELAC 2	
B + Y		ELAC 2	ELAC 2	Damped	
TRIPLE FAILURE					
ELAC 2					
ELAC 1	+ SEC 2	SEC 1	SEC 1		SEC 1
	+ SEC 1	SEC 2	SEC 2	SEC 2	
	+ G	SEC 1	SEC 2	SEC 2	

Continued on the following page

ELEVATORS AND STABILIZER CONTROL AFTER FAILURE (Cont'd)

+ Y		SEC 2	SEC 2	SEC 1
+ B		SEC 2	SEC 2	SEC 2
SEC 2 + SEC 1	ELAC 1		ELAC 1	ELAC 1
+ G	ELAC 1		ELAC 1	ELAC 1
+ Y	ELAC 1		ELAC 1	ELAC 1
+ B	Centered		Mechanical	Centered
SEC 1 + G	ELAC 1		ELAC 1	ELAC 1
+ Y	ELAC 1		ELAC 1	ELAC 1
+ B		SEC 2	SEC 2	SEC 2
G + Y	ELAC 1		INOP	ELAC 1
B + G	Damped		SEC 2	SEC 2
B + Y		SEC 2	SEC 2	Damped
ELAC 1				
SEC 2 + SEC 1		ELAC 2	ELAC 2	ELAC 2
+ G	SEC 1		SEC 1	SEC 1
+ Y	SEC 1		SEC 1	SEC 1
+ B		ELAC 2	ELAC 2	ELAC 2
SEC 1 + G	Damped		SEC 2	SEC 2
+ Y		SEC 2	SEC 2	Damped
+ B		ELAC 2	ELAC 2	ELAC 2
G + Y	SEC 1		INOP	SEC 1
B + G	Damped		ELAC 2	ELAC 2
B + Y		ELAC 2	ELAC 2	Damped
SEC 2				
SEC 1 + G	ELAC 1		ELAC 1	ELAC 1
+ Y	ELAC 1		ELAC 1	ELAC 1
+ B		ELAC 2	ELAC 2	ELAC 2
G + Y	ELAC 1		INOP	ELAC 1
B + G	Damped		ELAC 2	ELAC 2
B + Y		ELAC 2	ELAC 2	Damped
SEC 1				
G + Y	ELAC 1		INOP	ELAC 1
B + G	Damped		ELAC 2	ELAC 2
B + Y		ELAC 2	ELAC 2	Damped

F/CTL AIL SERVO FAULT

Applicable to: ALL

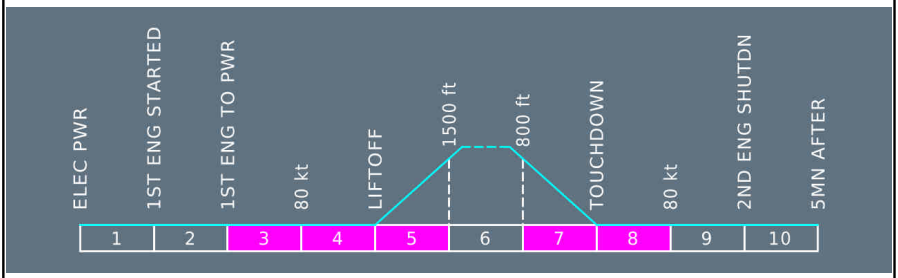
Ident.: PRO-ABN-F_CTL-AF-00016986.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a loss of one servojack on one aileron, or loss of one or both ELAC 1 rudder pedal transducers.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-AF-00018412.0001001 / 21 MAR 16

Crew awareness.

F/CTL ALTN LAW

Applicable to: MSN 01767-05411

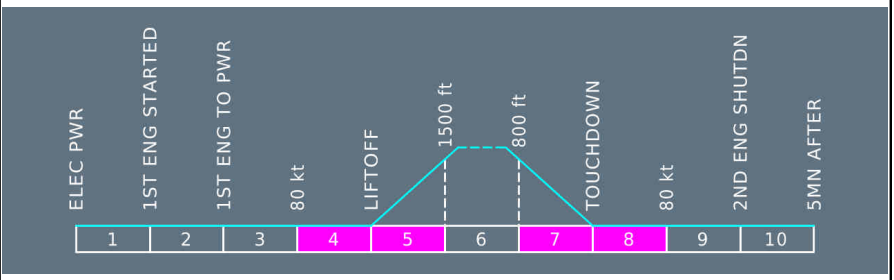
Ident.: PRO-ABN-F_CTL-K-00016965.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when alternate laws are active.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-K-00018413.0001001 / 22 MAR 17

L2 *Refer to DSC-27-20-20 General* for flight characteristics.
With autopilot engaged the FMGC (AP mode) controls the aircraft.

L1 (PROT LOST)

L2 *All protections, except maneuver protections, are lost. Depending on the failure, static stability may be introduced.*

L1 *Note:* *In case of GPWS (EGPWS ◁) alerts, since protections are lost, respect stall warnings when applying the GPWS (EGPWS ◁) procedure.*

MAX SPEED.....320 KT

L2 *(320/.77 if dual hydraulic system low pressure). Speed is limited to 320 /.82 or 320/.77 for dual hydraulic failure, due to the loss of high-speed protection.*

L1 SPD BRK (IF L OR R ELEVATOR FAULT) .....DO NOT USE

Continued on the following page

F/CTL ALTN LAW (Cont'd)

Ident.: PRO-ABN-F_CTL-K-00018414.0003001 / 22 MAR 17

5

L12

STATUS

MAX SPEED..... 320 KT

(320/.77, if dual hydraulic system low pressure).

SPD BRK (IF L OR R ELEVATOR FAULT)..... DO NOT USE

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3 .....ON
APPR SPD ..... VREF+10
LDG DIST PROC ..... APPLY

- **If no AP engaged:**
  WHEN L/G DN: DIRECT LAW

  At landing gear extension, control reverts to direct law in pitch, as well as in roll. Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW.
- **If AP engaged:**
  WHEN L/G DN AND AP OFF: DIRECT LAW

If the autopilot is disengaged:
- *Before landing gear extension, flight control alternate law is active.*
- *After landing gear extension, flight control direct law is active. Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW.*

ALTN LAW: PROT LOST

INOP SYS

F/CTL PROT
STEEP APPR

F/CTL ALTN LAW

Applicable to: MSN 05437-06336

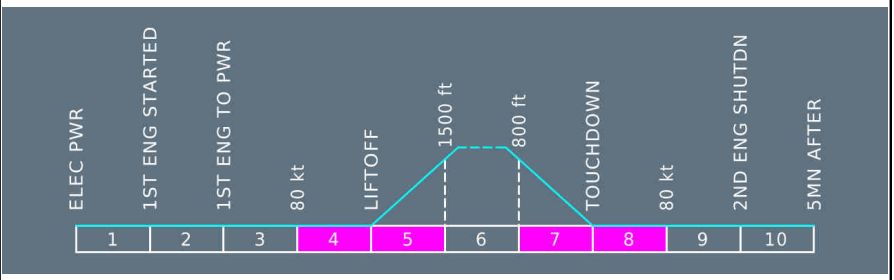
Ident.: PRO-ABN-F_CTL-K-00016965.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when alternate laws are active.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-K-00018413.0001001 / 22 MAR 17

L2 *Refer to DSC-27-20-20 General* for flight characteristics.
With autopilot engaged the FMGC (AP mode) controls the aircraft.

L1 (PROT LOST)

L2 *All protections, except maneuver protections, are lost. Depending on the failure, static stability may be introduced.*

L1 *Note:* *In case of GPWS (EGPWS ◁) alerts, since protections are lost, respect stall warnings when applying the GPWS (EGPWS ◁) procedure.*

MAX SPEED.....320 KT

L2 *(320/.77 if dual hydraulic system low pressure). Speed is limited to 320 /.82 or 320/.77 for dual hydraulic failure, due to the loss of high-speed protection.*

L1 SPD BRK (IF L OR R ELEVATOR FAULT) .....DO NOT USE

Continued on the following page

F/CTL ALTN LAW (Cont'd)

Ident.: PRO-ABN-F_CTL-K-00018414.0004001 / 22 MAR 17

L12

STATUS

MAX SPEED..... 320 KT
(320/.77, if dual hydraulic system low pressure).
SPD BRK (IF L OR R ELEVATOR FAULT)..... DO NOT USE

APPR PROC

FOR LDG..... USE FLAP 3
This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.
GPWS LDG FLAP 3 .....ON
APPR SPD ..... VREF+10
LDG DIST PROC ..... APPLY

- **If no AP engaged:**
  WHEN L/G DN: DIRECT LAW
  At landing gear extension, control reverts to direct law in pitch, as well as in roll (except for the Yaw Damper loss where the controls remain in alternate law). Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW.
- **If AP engaged:**
  WHEN L/G DN AND AP OFF: DIRECT LAW

If the autopilot is disengaged:
- *Before landing gear extension, flight control alternate law is active.*
- *After landing gear extension, flight control direct law is active (except for the Yaw Damper loss where the controls remain in alternate law). Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW.*

ALTN LAW: PROT LOST

INOP SYS

F/CTL PROT
STEEP APPR

F/CTL ALTN LAW

Applicable to: MSN 06720-09063

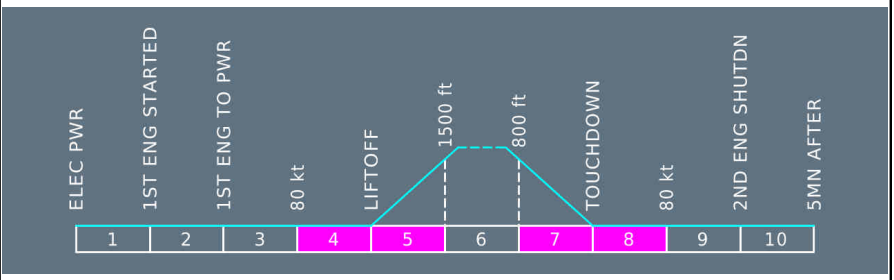
Ident.: PRO-ABN-F_CTL-K-00016965.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when alternate laws are active.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-K-00018413.0001001 / 22 MAR 17

L2 *Refer to DSC-27-20-20 General* for flight characteristics.
With autopilot engaged the FMGC (AP mode) controls the aircraft.

L1 (PROT LOST)

L2 *All protections, except maneuver protections, are lost. Depending on the failure, static stability may be introduced.*

L1 *Note:* *In case of GPWS (EGPWS ◁) alerts, since protections are lost, respect stall warnings when applying the GPWS (EGPWS ◁) procedure.*

MAX SPEED.....320 KT

L2 *(320/.77 if dual hydraulic system low pressure). Speed is limited to 320 /.82 or 320/.77 for dual hydraulic failure, due to the loss of high-speed protection.*

L1 SPD BRK (IF L OR R ELEVATOR FAULT) .....DO NOT USE

Continued on the following page

F/CTL ALTN LAW (Cont'd)

Ident.: PRO-ABN-F_CTL-K-00018414.0014001 / 04 DEC 17

6

L12

STATUS

MAX SPEED..... 320 KT

(320/.77, if dual hydraulic system low pressure).

- **If L or R elevator fault:**
  SPD BRK..... DO NOT USE
- **If ADR disagree in flight:**
  GA THR: TOGA ONLY

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG: USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3 .....ON
APPR SPD .....VREF + 15 KT
LDG DIST PROC ..... APPLY

ALTN LAW: PROT LOST

- **If AP OFF:**
  WHEN L/G DN: DIRECT LAW

  At landing gear extension, control reverts to direct law in pitch, as well as in roll (except for the Yaw Damper loss where the controls remain in alternate law for A320/A321 aircraft). Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW.
- **If one AP engaged:**
  WHEN L/G DN AND AP OFF:
  DIRECT LAW

If the autopilot is disengaged:
- *Before landing gear extension, flight control alternate law is active.*
- *After landing gear extension, flight control direct law is active (except for the Yaw Damper loss where the controls*

INOP SYS

F/CTL PROT
STEEP APPR
GA SOFT (1)

Continued on the following page

F/CTL ALTN LAW (Cont'd)

remain in alternate law for A320/A321 aircraft). Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW.

(1) *(If ADR disagree in flight)*

F/CTL DIRECT LAW

Applicable to: MSN 01767-06336

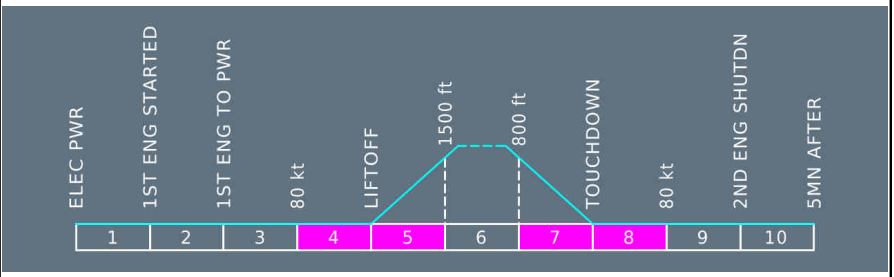
Ident.: PRO-ABN-F_CTL-J-00016964.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when direct law is active.

Flight Phase Inhibition:



Continued on the following page

F/CTL DIRECT LAW (Cont'd)

Ident.: PRO-ABN-F_CTL-J-00018420.0001001 / 22 MAR 17

L2 PFD displays « USE MAN PITCH TRIM » in amber. *Refer to DSC-27-20-10-70 Aircraft Trimming*

L1 (PROT LOST)

L2 *Note: In case of GPWS (EGPWS) alerts, since protections are lost, respect stall warning when applying the GPWS (EGPWS) procedure.*

L1 MAX SPEED.....320/.77

L2 *Speed is limited, due to the loss of high-speed protection. Do not exceed M 0.77, so as not to degrade handling qualities.*

L1 MAN PITCH TRIM (EXCEPT IF HYD Y + G SYS LO PR)..... USE

L2 *Automatic trim is inoperative in direct law.*

L1 MANEUVER WITH CARE

L2 *Use small control inputs at high speed, since in direct law the controls are powerful. Use of manual thrust is recommended. Avoid large thrust changes.*

L1 USE SPD BRK WITH CARE

L2 *At high Mach numbers, use speed brakes with care to avoid too strong nose up changes.*

Continued on the following page

F/CTL DIRECT LAW (Cont'd)

Ident.: PRO-ABN-F_CTL-J-00018422.0003001 / 22 MAR 17

7

L12

STATUS

MAX SPEED..... 320/.77
MANEUVER WITH CARE
USE SPD BRK WITH CARE

APPR PROC

FOR LDG.....USE FLAPS 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON
MAN PITCH TRIM.....USE
APPR SPD..... VREF+10
LDG DIST PROC..... APPLY

DIRECT LAW

INOP SYS

F/CTL PROT
STEEP APPR

F/CTL DIRECT LAW

Applicable to: MSN 06720-09063

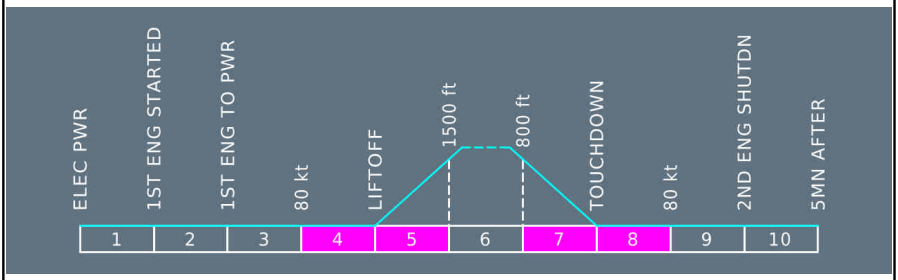
Ident.: PRO-ABN-F_CTL-J-00016964.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when direct law is active.

Flight Phase Inhibition:



Continued on the following page

F/CTL DIRECT LAW (Cont'd)

Ident.: PRO-ABN-F_CTL-J-00018420.0001001 / 22 MAR 17

L2 PFD displays « USE MAN PITCH TRIM » in amber. *Refer to DSC-27-20-10-70 Aircraft Trimming*

L1 (PROT LOST)

L2 *Note: In case of GPWS (EGPWS) alerts, since protections are lost, respect stall warning when applying the GPWS (EGPWS) procedure.*

L1 MAX SPEED.....320/.77

L2 *Speed is limited, due to the loss of high-speed protection. Do not exceed M 0.77, so as not to degrade handling qualities.*

L1 MAN PITCH TRIM (EXCEPT IF HYD Y + G SYS LO PR)..... USE

L2 *Automatic trim is inoperative in direct law.*

L1 MANEUVER WITH CARE

L2 *Use small control inputs at high speed, since in direct law the controls are powerful. Use of manual thrust is recommended. Avoid large thrust changes.*

L1 USE SPD BRK WITH CARE

L2 *At high Mach numbers, use speed brakes with care to avoid too strong nose up changes.*

Continued on the following page

F/CTL DIRECT LAW (Cont'd)

Ident.: PRO-ABN-F_CTL-J-00018422.0005001 / 08 NOV 16

8

L12

STATUS

MAX SPEED..... 320/.77
MANEUVER WITH CARE
USE SPD BRK WITH CARE

APPR PROC

FOR LDG.....USE FLAPS 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON
MAN PITCH TRIM.....USE
APPR SPD..... VREF+15
LDG DIST PROC..... APPLY

DIRECT LAW

INOP SYS

F/CTL PROT

F/CTL ELAC 1(2) FAULT
(ONE COMPUTER FAILED)

Applicable to: ALL

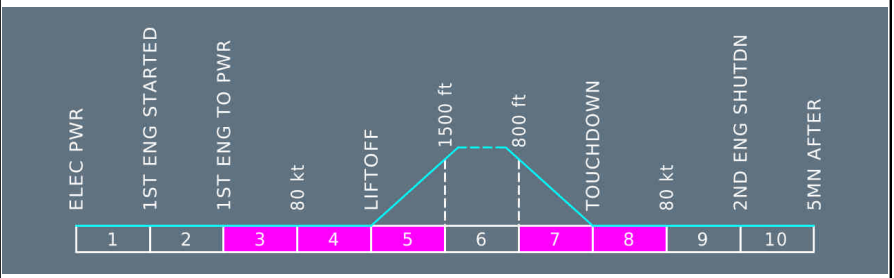
Ident.: PRO-ABN-F_CTL-F-00016960.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a failure of ELAC (FAULT lt on ELAC pb), or when one sidestick transducer is faulty.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-F-00018425.0006001 / 21 MAR 16

ELAC (AFFECTED)..... OFF THEN ON

L2 *Note:* 1. *In some sidestick transducer failure cases, ELAC 1(2) FAULT is triggered without the procedure, and FAULT lt on associated pb does not come on.*
2. *If the ELAC 1 computer is reset on ground the pitch trim returns to the ground setting position (0 °).*

L1 ● **IF UNSUCCESSFUL:**
ELAC (AFFECTED)..... OFF

L2 *Functions are performed by other ELAC.*

L1 FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

Continued on the following page

F/CTL ELAC 1(2) FAULT (Cont'd)
(ONE COMPUTER FAILED)

Ident.: PRO-ABN-F_CTL-F-00018426.0003001 / 21 MAR 17

L12

STATUS	INOP SYS
CAT 3 SINGLE ONLY	ELAC 1(2)
FUEL CONSUMPT INCRSD	CAT 3 DUAL
See (1)	
FMS PRED UNRELIABLE	
See (2)	

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS chapter in order to find the applicable Fuel Penalty Factor.*

F/CTL ELAC 1(2) FAULT
(BOTH COMPUTERS FAILED)

Applicable to: MSN 01767-06336

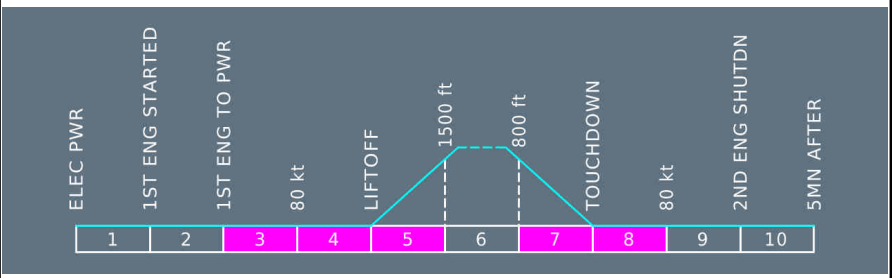
Ident.: PRO-ABN-F_CTL-G-00018899.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a failure of ELAC (FAULT lt on ELAC pb), or when one sidestick transducer is faulty.

Flight Phase Inhibition:



Continued on the following page

F/CTL ELAC 1(2) FAULT (Cont'd)
(BOTH COMPUTERS FAILED)

Ident.: PRO-ABN-F_CTL-G-00018433.0009001 / 22 MAR 17

9

ELAC 1 ..... OFF THEN ON

L2 *Note:* *If the ELAC 1 computer is reset on ground, the pitch trim returns to the ground setting position (0 °).*

L1 ELAC 2 ..... OFF THEN ON

- **If both ELAC FAULT remain:**
  ELAC 1 ..... OFF
  ELAC 2 ..... OFF

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 Pitch and roll normal laws are lost: *Refer to PRO-ABN-F_CTL F/CTL ALTN LAW*. THS motor 1 and both ailerons are lost. LAF is degraded and uses spoilers only.

L1 MAX SPEED ..... 320 KT

FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

Continued on the following page

F/CTL ELAC 1(2) FAULT (Cont'd)
(BOTH COMPUTERS FAILED)

Ident.: PRO-ABN-F_CTL-G-00018434.0004001 / 22 MAR 17

10

L12

STATUS

MAX SPEED..... 320 KT

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will be displayed when flaps in CONF 3

APPR SPD.....VREF+10 KT

LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DOWN: DIRECT LAW
See (1)

FUEL CONSUMPT INCRSD
See (2)

FMS PRED UNRELIABLE
See (3)

INOP SYS

F/CTL PROT
L+R AIL
ELAC 1+2
AP 1+2
CAT 2
STEEP APPR

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS chapter in order to find the applicable Fuel Penalty Factor.*

F/CTL ELAC 1(2) FAULT
(BOTH COMPUTERS FAILED)

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

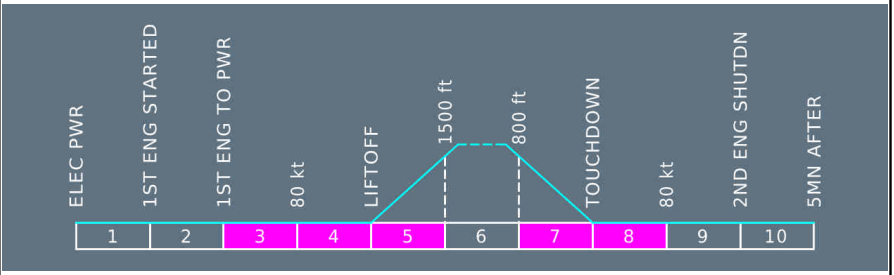
Ident.: PRO-ABN-F_CTL-G-00018899.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a failure of ELAC (FAULT lt on ELAC pb), or when one sidestick transducer is faulty.

Flight Phase Inhibition:



Continued on the following page

F/CTL ELAC 1(2) FAULT (Cont'd)
(BOTH COMPUTERS FAILED)

Ident.: PRO-ABN-F_CTL-G-00018433.0009001 / 22 MAR 17

11

ELAC 1 ..... OFF THEN ON

L2 *Note:* *If the ELAC 1 computer is reset on ground, the pitch trim returns to the ground setting position (0 °).*

L1 ELAC 2 ..... OFF THEN ON

- **If both ELAC FAULT remain:**

  ELAC 1 ..... OFF
  ELAC 2 ..... OFF

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 Pitch and roll normal laws are lost: *Refer to PRO-ABN-F_CTL F/CTL ALTN LAW*. THS motor 1 and both ailerons are lost. LAF is degraded and uses spoilers only.

L1 MAX SPEED ..... 320 KT

FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

Continued on the following page

F/CTL ELAC 1(2) FAULT (Cont'd)
(BOTH COMPUTERS FAILED)

Ident.: PRO-ABN-F_CTL-G-00018434.0008001 / 21 MAR 17

12

L12

STATUS

MAX SPEED..... 320 KT

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will be displayed when flaps in CONF 3

APPR SPD.....VREF+15 KT

LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DOWN: DIRECT LAW
See (1)

FUEL CONSUMPT INCRSD
See (2)

FMS PRED UNRELIABLE
See (3)

INOP SYS

F/CTL PROT
L+R AIL
ELAC 1+2
AP 1+2
CAT 2

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS chapter in order to find the applicable Fuel Penalty Factor.*

F/CTL ELAC 1(2) FAULT
(BOTH COMPUTERS FAILED)

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

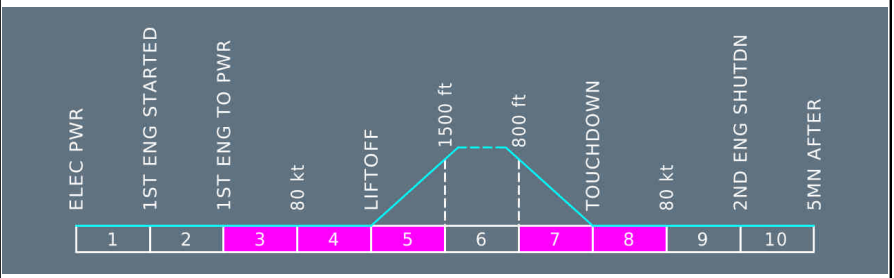
Ident.: PRO-ABN-F_CTL-G-00018899.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a failure of ELAC (FAULT lt on ELAC pb), or when one sidestick transducer is faulty.

Flight Phase Inhibition:



Continued on the following page

F/CTL ELAC 1(2) FAULT (Cont'd)
(BOTH COMPUTERS FAILED)

Ident.: PRO-ABN-F_CTL-G-00018433.0003001 / 22 MAR 17

13

ELAC 1 ..... OFF THEN ON

L2 *Note:* *If the ELAC 1 computer is reset on ground, the pitch trim returns to the ground setting position (0 °).*

L1 ELAC 2 ..... OFF THEN ON

- **If both ELAC FAULT remain:**
  ELAC 1 ..... OFF
  ELAC 2 ..... OFF

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 Pitch and roll normal laws are lost: *Refer to PRO-ABN-F_CTL F/CTL ALTN LAW*. THS motor 1 and both ailerons are lost.

L1 MAX SPEED ..... 320 KT

FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

Continued on the following page

F/CTL ELAC 1(2) FAULT (Cont'd)
(BOTH COMPUTERS FAILED)

Ident.: PRO-ABN-F_CTL-G-00018434.0008001 / 21 MAR 17

14

L12

STATUS

MAX SPEED..... 320 KT

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will be displayed when flaps in CONF 3

APPR SPD.....VREF+15 KT

LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DOWN: DIRECT LAW
See (1)

FUEL CONSUMPT INCRSD
See (2)

FMS PRED UNRELIABLE
See (3)

INOP SYS

F/CTL PROT
L+R AIL
ELAC 1+2
AP 1+2
CAT 2

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS chapter in order to find the applicable Fuel Penalty Factor.*

F/CTL ELAC 1(2) PITCH FAULT

Applicable to: ALL

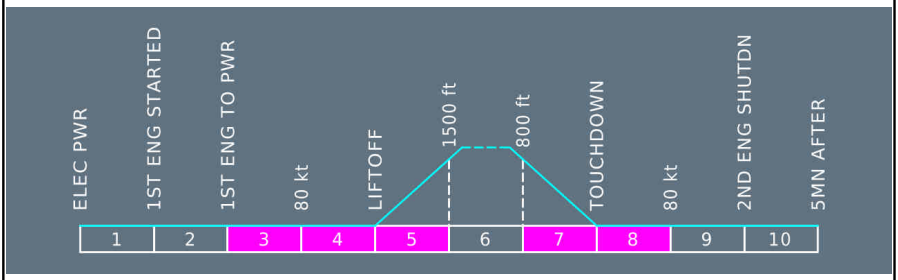
Ident.: PRO-ABN-F_CTL-H-00016977.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a failure of pitch channel in ELAC 1(2).

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-H-00018447.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-F_CTL-H-00018448.0001001 / 21 MAR 16

STATUS

	INOP SYS
CAT 3 SINGLE ONLY	ELAC PITCH (1) CAT 3 DUAL

(1) *(If ELAC 1 and 2 PITCH FAULT)*

F/CTL ELEV SERVO FAULT

Applicable to: ALL

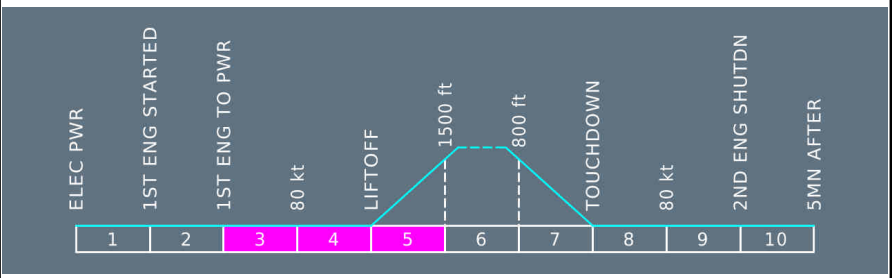
Ident.: PRO-ABN-F_CTL-P-00016979.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a loss of one servojack on one elevator.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-P-00018449.0001001 / 21 MAR 16

Crew awareness.

CAUTION	Do not use speedbrakes above 350 kt/M 0.82 (VMO/MMO).

Ident.: PRO-ABN-F_CTL-P-00018450.0001001 / 21 MAR 16

STATUS

	INOP SYS
CAT 3 SINGLE ONLY	CAT 3 DUAL

F/CTL FCDC 1(2) FAULT

Applicable to: ALL

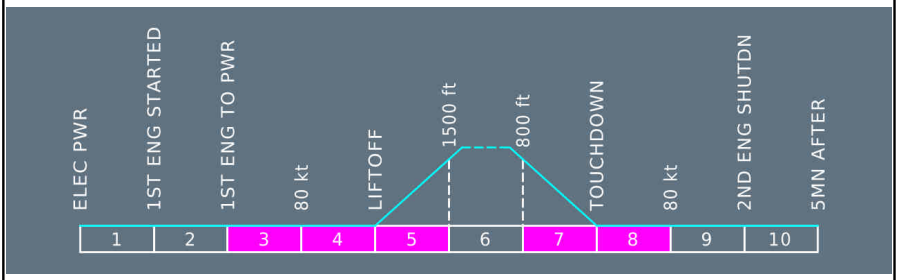
Ident.: PRO-ABN-F_CTL-L-00016981.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a failure of one FCDC.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-L-00011777.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-F_CTL-L-00011778.0001001 / 18 AUG 10

STATUS

INOP SYS
FCDC 1(2)

F/CTL FCDC 1+2 FAULT

Applicable to: ALL

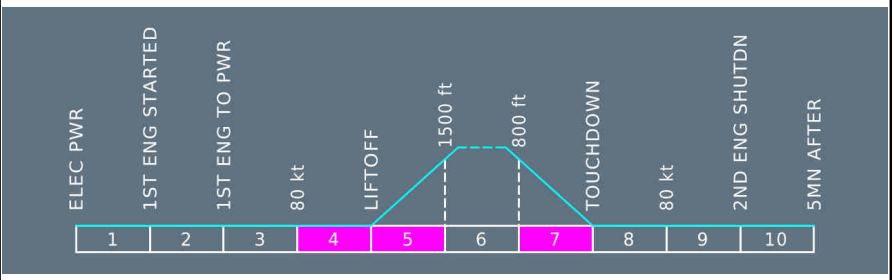
Ident.: PRO-ABN-F_CTL-M-00016963.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a failure of both FCDCs.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-M-00011779.0001001 / 18 AUG 10

MONITOR F/CTL OVHD PNL

L2 *F/CTL data on ECAM is lost.*
Control laws remains normal.

Note: *When both FCDCs fails:*

- *F/CTL warning are not available on the ECAM.*
- *Stall warning may be triggered as in alternate or direct law (it may occur at speeds greater than Vα max).*
- *Bank and pitch limits are no longer displayed on the PFD.*
- *Vα prot, Vα max are lost on the PFD.*
- *Vsw, displayed on the PFD, corresponds to the stall warning of the alternate or direct law.*

Continued on the following page

F/CTL FCDC 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-M-00018451.0001001 / 21 MAR 16

STATUS	INOP SYS
F/CTL INDICATIONS LOST	FCDC 1 + 2 STEEP APPR

F/CTL FLAP ATTACH SENSOR

Applicable to: ALL

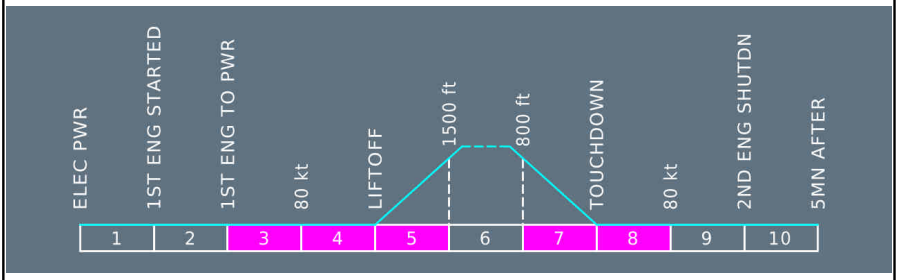
Ident.: PRO-ABN-F_CTL-AH-00016989.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is failure of flap attachment's failure detection sensor.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-AH-00018453.0001001 / 21 MAR 16

Crew awareness.

F/CTL FLAPS FAULT/LOCKED

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-F_CTL-A-00011744.0002001 / 05 JUN 18

- **If flaps locked:**

  WING TIP BRK ON OR ALIGNMENT FAULT

  MAX SPEED..... REFER TO PRO-ABN-F_CTL F/CTL FLAPS/SLATS FAULT/LOCKED

L2 *Limit speed to the VFE corresponding to the next flap position*

L1 - **If flaps not locked:**

  FLAPS LEVER..... RECYCLE

L2 *Return to the previous selection, then back to the desired position.*

L1 - **If flaps extended:**

  FUEL CONSUMPT INCRSD
  FMS PRED UNRELIABLE

L2 - **If unsuccessful:**

  Refer to PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed.

  The autopilot may be used down to 500 ft AGL. As it is not tuned for abnormal configurations, its behavior can be less than optimum and must be monitored.

Continued on the following page

F/CTL FLAPS FAULT/LOCKED (Cont'd)

Ident.: PRO-ABN-F_CTL-A-00018456.0004001 / 05 JUN 18

15

L12

STATUS

APPR PROC

FOR LDG (IF FLAPS ≤ 3).....USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder

FLAPS (IF FLAPS>3).....KEEP CONF FULL
GPWS FLAP MODE (IF FLAPS < 3).....OFF
GPWS LDG FLAP 3 (IF FLAPS ≥ 3).....ON
APPR SPD..... REFER TO PRO-ABN-F_CTL
F/CTL FLAPS/SLATS FAULT/LOCKED
LDG DIST PROC..... APPLY

ENG 1 APPR IDLE ONLY (Only in case of FLAPS FAULT)
ENG 2 APPR IDLE ONLY (Only in case of FLAPS FAULT)
FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)

INOP SYS

FLAPS
AP 1+2 (1)
A/THR (1)
Moreover, both FDs are lost (1)
CAT 2 (1)
GLS AUTOLAND
STEEP APPR

(1) *(If both flap channels fault.)*

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS chapter in order to find the applicable Fuel Penalty Factor.*

F/CTL FLAPS FAULT/LOCKED

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-F_CTL-A-00011744.0002001 / 05 JUN 18

- **If flaps locked:**

  WING TIP BRK ON OR ALIGNMENT FAULT

  MAX SPEED..... REFER TO PRO-ABN-F_CTL F/CTL FLAPS/SLATS FAULT/LOCKED

L2 *Limit speed to the VFE corresponding to the next flap position*

L1 - **If flaps not locked:**

  FLAPS LEVER..... RECYCLE

L2 *Return to the previous selection, then back to the desired position.*

L1 - **If flaps extended:**

  FUEL CONSUMPT INCRSD
  FMS PRED UNRELIABLE

L2 - **If unsuccessful:**

  Refer to PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed.

  The autopilot may be used down to 500 ft AGL. As it is not tuned for abnormal configurations, its behavior can be less than optimum and must be monitored.

Continued on the following page

F/CTL FLAPS FAULT/LOCKED (Cont'd)

Ident.: PRO-ABN-F_CTL-A-00018456.0005001 / 05 JUN 18

16

L12

STATUS

APPR PROC

S/F JAMMED PROC..... APPLY
FOR LDG (IF FLAPS ≤ 3).....USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder

FLAPS (IF FLAPS>3).....KEEP CONF FULL
GPWS FLAP MODE (IF FLAPS < 3).....OFF
GPWS LDG FLAP 3 (IF FLAPS ≥ 3).....ON
APPR SPD..... REFER TO PRO-ABN-F_CTL
F/CTL FLAPS/SLATS FAULT/LOCKED
LDG DIST PROC..... APPLY

ENG 1 APPR IDLE ONLY (Only in case of FLAPS FAULT)
ENG 2 APPR IDLE ONLY (Only in case of FLAPS FAULT)
FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)

INOP SYS

FLAPS
AP 1+2 (1)
A/THR (1)
Moreover, both FDs are lost (1)
CAT 2 (1)
GLS AUTOLAND
STEEP APPR

(1) *(If both flap channels fault.)*

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS chapter in order to find the applicable Fuel Penalty Factor.*

F/CTL FLAP LVR NOT ZERO

Applicable to: ALL

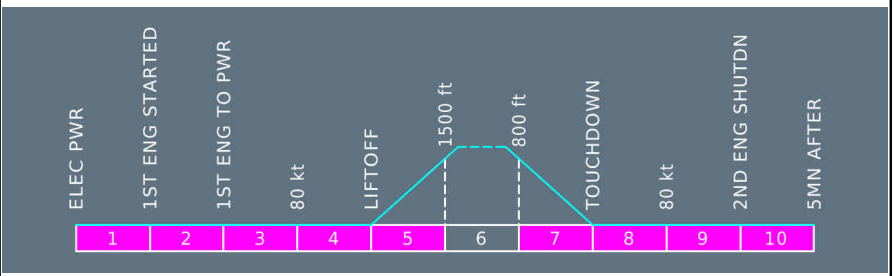
Ident.: PRO-ABN-F_CTL-AI-00018902.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FLAP lever is not in the zero position, and the aircraft is above 22 000 ft.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-AI-00018454.0001001 / 21 MAR 16

Crew awareness.

F/CTL FLAP SYS 1(2) FAULT

Applicable to: ALL

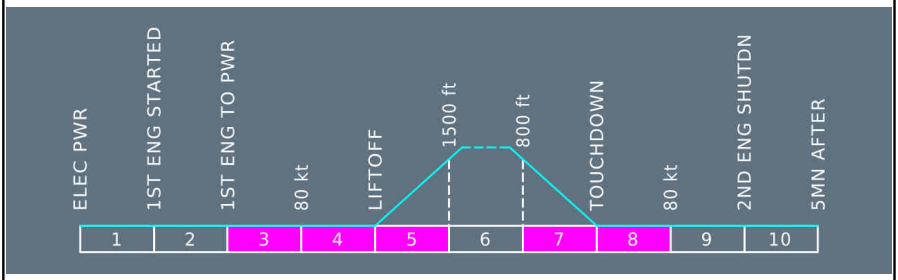
Ident.: PRO-ABN-F_CTL-E-00016990.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is failure of flap channel in one SFCC.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-E-00011753.0002001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-F_CTL-E-00011754.0002001 / 30 MAR 12

L12

STATUS

APPR PROC

- **In case of FLAP SYS 1 FAULT:**
  GPWS FLAP MODE.....OFF
  Flap position signal to GPWS is lost.

ENG 1(2) APPR IDLE ONLY
FLAPS SLOW

F/CTL FLAP/MCDU DISAGREE

Applicable to: MSN 01957-02097, 02121-02139, 02443, 02712, 02908-03264, 03330, 03414-03453, 03541-03618, 03782-04216, 04312, 04384, 04399, 04438, 04488, 04506, 04518, 04535-04637, 04757-04813, 04868-04947, 04965-05080, 05094, 05155-05190, 05230-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336

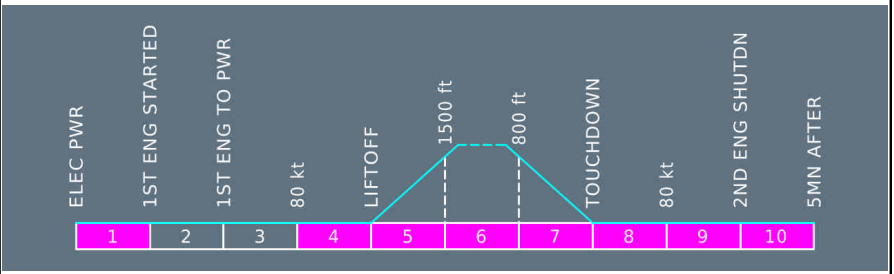
Ident.: PRO-ABN-F_CTL-AG-00016987.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers at phase 2 when T.O CONFIG TEST pb is pressed, or at phase 3, if the FLAPS lever position and the FLAPS position entered in the FMS are different.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-AG-00018452.0011001 / 21 MAR 16

Crew awareness.

F/CTL FLAPS/SLATS FAULT/LOCKED

Ident.: PRO-ABN-F_CTL-00018457.0024001 / 09 APR 18

17 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

MAX SPEED					
Slats(1) / Flaps(1)	F = 0	0 < F ≤ 1	1 < F ≤ 2	2 < F ≤ 3	F > 3
S = 0	NO LIMITATION	225 kt	215 kt	195 kt	186 kt (Not allowed)
0 < S < 1	243 kt				
S = 1					186 kt
1 < S ≤ 3	215 kt		215 kt	195 kt	
S > 3	186 kt		186 kt	186 kt	186 kt

(1) *Slats/Flaps position displayed on the upper ECAM display.*

APPR SPD					
Slats(1) / Flaps(1)	F = 0	0 < F <1	1 ≤ F < 2	2 ≤ F < 3	F ≥ 3
S = 0	VREF +70 (Appr) VREF +60 (Touch Down)	VREF +50	VREF +30	VREF +25	(FLAPS > 3 not allowed) VREF +25
0 < S < 1					
1 ≤ S ≤ 3	VREF +35		VREF +15	VREF +10	VREF +10
S > 3	VREF +35		VREF +15	VREF +10	VREF +5

(1) *Slats/Flaps position displayed on the upper ECAM display.*

CAUTION	For flight with SLATS or FLAPS extended, fuel consumption is increased. Refer to the fuel flow indication. As a guideline, determine the fuel consumption in clean configuration, at the same altitude without airspeed limitation (e.g. from ALTERNATE FLIGHT PLANNING tables, *Refer to PER-FPL-FLP-ALN-20 ALTERNATE PLANNING ISA*), and multiply this result by the applicable Fuel Penalty Factor provided in the QRH (*Refer to QRH/OPS Fuel Penalty Factors/ECAM Alert Table*) to obtain the fuel penalty required to reach the destination in the current configuration.

F/CTL FLAPS/SLATS FAULT/LOCKED

Ident.: PRO-ABN-F_CTL-00018457.0001001 / 17 MAR 17

18 **Applicable to: MSN 01767-06336**

MAX SPEED					
Flaps(1) / Slats(1)	F = 0	0 < F ≤ 1	1 < F ≤ 2	2 < F ≤ 3	F > 3
S = 0	NO LIMITATION	215 kt	200 kt	185 kt	Not allowed (177 kt)
0 < S <1	230 kt				
S = 1					
1 < S ≤ 3	200 kt				
S > 3					177 kt

(1) *Slats/Flaps position displayed on the upper ECAM display.*

APPR SPD					
Flaps(1) / Slats(1)	F = 0	0 < F < 1	1 ≤ F < 2	2 ≤ F < 3	F ≥ 3
S = 0	VREF +60 (Appr) VREF +50 (Touch Down)	VREF +45	VREF +30	VREF +25	(FLAPS > 3 not allowed) VREF +25
0 < S < 1					
1 ≤ S ≤ 3	VREF +25		VREF +15	VREF +10	VREF +10
S > 3					VREF +5

(1) *Slats/Flaps position displayed on the upper ECAM display.*

CAUTION For flight with SLATS or FLAPS extended, fuel consumption is increased.
Refer to the fuel flow indication.
As a guideline, determine the fuel consumption in clean configuration, at the same altitude without airspeed limitation (e.g. from ALTERNATE FLIGHT PLANNING tables, *Refer to PER-FPL-FLP-ALN-20 ALTERNATE PLANNING ISA*), and multiply this result by the applicable Fuel Penalty Factor provided in the QRH (*Refer to QRH/OPS Fuel Penalty Factors/ECAM Alert Table*) to obtain the fuel penalty required to reach the destination in the current configuration.

F/CTL FLAPS/SLATS FAULT/LOCKED

Ident.: PRO-ABN-F_CTL-00018457.0020001 / 17 MAR 17

19 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

MAX SPEED					
Flaps(1) / Slats(1)	F = 0	0 < F ≤ 1	1 < F ≤ 2	2 < F ≤ 3	F > 3
S = 0	NO LIMITATION	215 kt	200 kt	185 kt	Not allowed (177 kt)
0 < S <1	230 kt				
S = 1					
1 < S ≤ 3	200 kt				
S > 3					177 kt

(1) *Slats/Flaps position displayed on the upper ECAM display.*

APPR SPD					
Flaps(1) / Slats(1)	F = 0	0 < F < 1	1 ≤ F < 2	2 ≤ F < 3	F ≥ 3
S = 0	VREF +65 (Appr) VREF +55 (Touch Down)	VREF +50	VREF +30	VREF +25	(FLAPS > 3 not allowed) VREF +25
0 < S < 1					
1 ≤ S ≤ 3	VREF +30		VREF +15	VREF +10	VREF +10
S > 3					VREF +5

(1) *Slats/Flaps position displayed on the upper ECAM display.*

CAUTION For flight with SLATS or FLAPS extended, fuel consumption is increased.
Refer to the fuel flow indication.
As a guideline, determine the fuel consumption in clean configuration, at the same altitude without airspeed limitation (e.g. from ALTERNATE FLIGHT PLANNING tables, *Refer to PER-FPL-FLP-ALN-20 ALTERNATE PLANNING ISA*), and multiply this result by the applicable Fuel Penalty Factor provided in the QRH (*Refer to QRH/OPS Fuel Penalty Factors/ECAM Alert Table*) to obtain the fuel penalty required to reach the destination in the current configuration.

F/CTL GND SPLR 5 FAULT

Applicable to: ALL

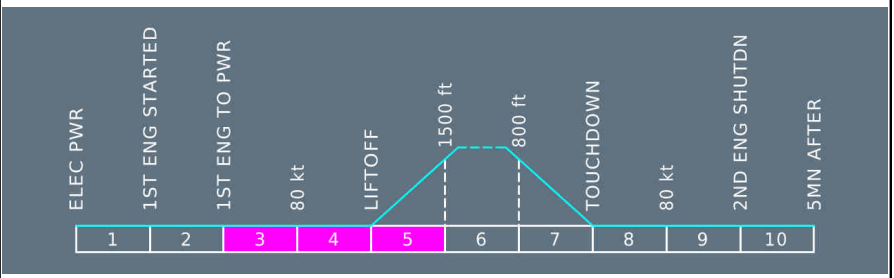
Ident.: PRO-ABN-F_CTL-Z-00016967.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a loss of ground spoiler function in SEC 2.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-Z-00018903.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-F_CTL-Z-00014253.0001001 / 23 MAY 12

L12

STATUS	INOP SYS
LDG DIST PROC..... APPLY .	GND SPLR 5

F/CTL GND SPLR / 1+2 / 3+4 / FAULT

Applicable to: ALL

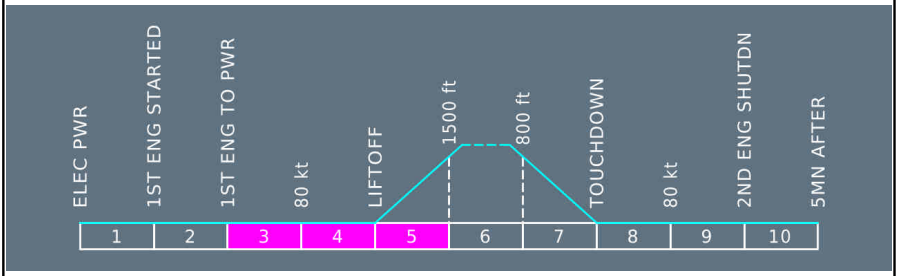
Ident.: PRO-ABN-F_CTL-S-00016968.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2
- GND SPLR FAULT :
  Loss of ground spoiler function in SEC 1+3, or 1+2, or 2+3, or 1+2+3.
  If ground spoiler function is lost in SEC (1+2) or (1+3), one reverser is inoperative.
  If ground spoiler function is lost in SEC (1+2+3), both reversers are inoperative.
  In any case, the autobrake function is lost.
- GND SPLR 1+2(3+4) FAULT:
  Loss of ground spoiler function in SEC 3 (or 1).

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-S-00018466.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-F_CTL-S-00011793.0001001 / 11 MAY 12

STATUS

	INOP SYS
LDG DIST PROC..... APPLY	GND SPLR (affected)

F/CTL GND SPLR NOT ARMED

Applicable to: ALL

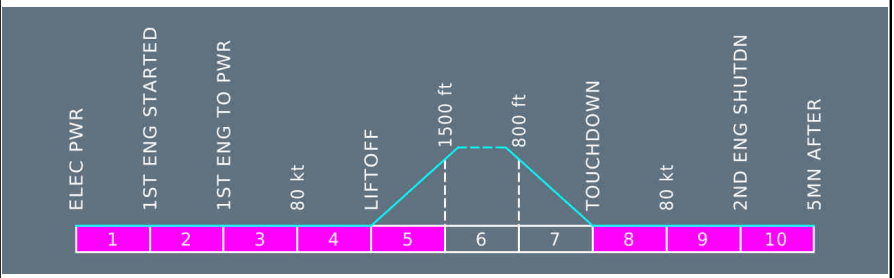
Ident.: PRO-ABN-F_CTL-AJ-00016966.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when ground spoilers are not armed before landing.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-AJ-00018905.0001001 / 21 MAR 16

Crew awareness.

F/CTL L(R) AIL FAULT

Applicable to: ALL

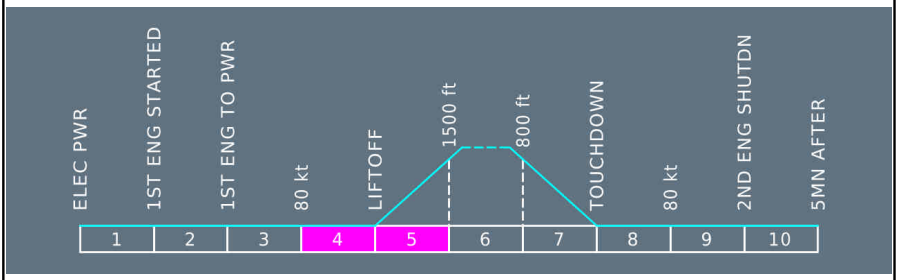
Ident.: PRO-ABN-F_CTL-N-00016975.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a loss of both servojacks on one aileron.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-N-00018474.0002001 / 21 MAR 16

Crew awareness.

FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

Continued on the following page

F/CTL L(R) AIL FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-N-00011783.0003001 / 21 MAR 17

L12

STATUS	INOP SYS
FUEL CONSUMPT INCRSD *See* (1)	L (R) AIL
FMS PRED UNRELIABLE *See* (2)	

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS chapter in order to find the applicable Fuel Penalty Factor.*

F/CTL L(R) ELEV FAULT

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336

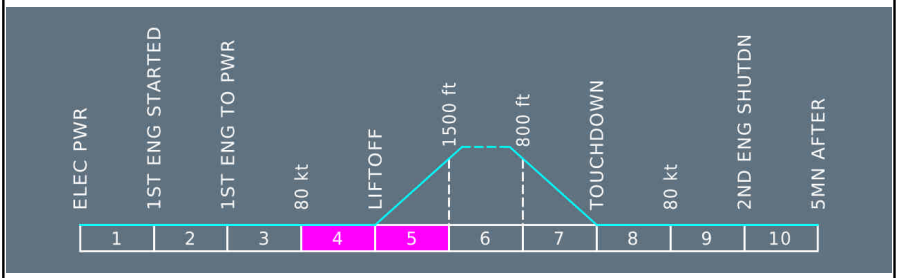
Ident.: PRO-ABN-F_CTL-Q-00016974.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a loss of both servojacks on one elevator, or activation of elevator flutter protection in ELAC.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-Q-00018484.0003001 / 22 MAR 17

20

MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 *Note:* *If the L(R) elevator fails, the ELACs lose pitch control through the elevator. Therefore, the SECs control pitch in alternate law. This is not the case, if the right elevator is lost, due to the failure of B+Y hydraulic circuits. Pitch normal law remains active in ELAC.*

L1 MAX SPEED.....320 KT

L2 *Speed is limited, due to the loss of high-speed protection.*

L1 SPD BRK.....DO NOT USE

Continued on the following page

F/CTL L(R) ELEV FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-Q-00018490.0007001 / 22 MAR 17

21

L12

STATUS

MAX SPEED..... 320 KT
MANEUVER WITH CARE
SPD BRK.....DO NOT USE
FOR GA: MAX PITCH 15 DEG

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will be displayed, when flaps in CONF 3.

APPR SPD.....VREF+10 KT
LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)

INOP SYS

F/CTL PROT
L (R) ELEV
ELAC PITCH
AP 1+2
CAT 2
GLS AUTOLAND
STEEP APPR

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll.Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW.*

F/CTL L(R) ELEV FAULT

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

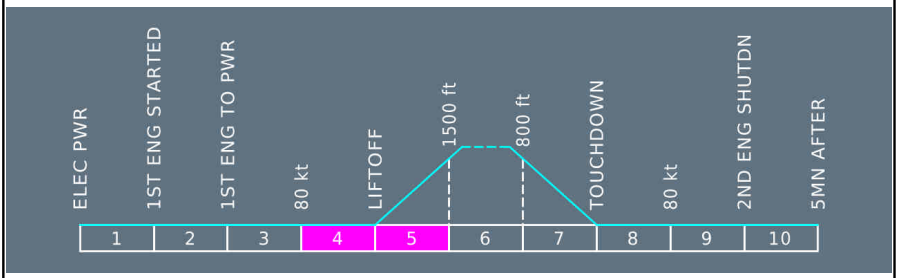
Ident.: PRO-ABN-F_CTL-Q-00016974.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a loss of both servojacks on one elevator, or activation of elevator flutter protection in ELAC.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-Q-00018484.0001001 / 22 MAR 17

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 *Note:* *If the L(R) elevator fails, the ELACs loose pitch control through the elevator. Therefore, the SECs control pitch in alternate law. This is not the case, if the right elevator is lost, due to the failure of B+Y hydraulic circuits. Pitch normal law remains active in ELAC.*

L1 MAX SPEED.....320 KT

L2 *Speed is limited, due to the loss of high-speed protection.*

L1 SPD BRK.....DO NOT USE

Continued on the following page

F/CTL L(R) ELEV FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-Q-00018490.0003001 / 22 MAR 17

L12

STATUS

MAX SPEED..... 320 KT
SPD BRK.....DO NOT USE

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will be displayed, when flaps in CONF 3.

APPR SPD.....VREF+10 KT
LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)

INOP SYS

F/CTL PROT
L (R) ELEV
ELAC PITCH
AP 1+2
CAT 2
GLS AUTOLAND
STEEP APPR

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll.Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW.*

F/CTL L(R) ELEV FAULT

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

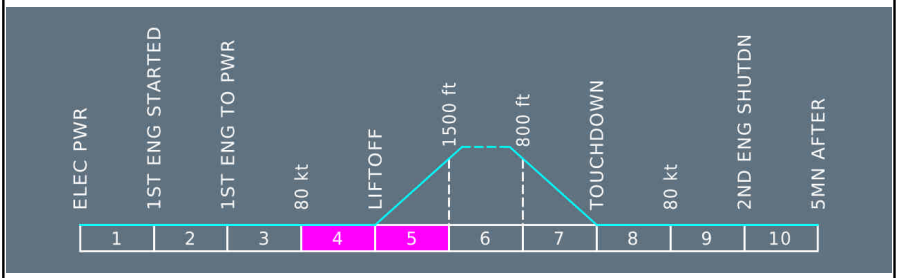
Ident.: PRO-ABN-F_CTL-Q-00016974.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a loss of both servojacks on one elevator, or activation of elevator flutter protection in ELAC.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-Q-00018484.0002001 / 21 MAR 16

22

MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 *Note: If the L(R) elevator fails, the ELACs loose pitch control through the elevator. Therefore, the SECs control pitch in alternate law. This is not the case, if the right elevator is lost, due to the failure of B+Y hydraulic circuits. Pitch normal law remains active in ELAC.*

L1 MAX SPEED.....320 KT
L2 *Speed is limited, due to the loss of high-speed protection.*
L1 SPD BRK.....DO NOT USE

Continued on the following page

F/CTL L(R) ELEV FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-Q-00018490.0006001 / 21 MAR 17

23

L12

STATUS

MAX SPEED..... 320 KT
MANEUVER WITH CARE
SPD BRK.....DO NOT USE
FOR GA: MAX PITCH 15 DEG

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will be displayed, when flaps in CONF 3.

APPR SPD.....VREF+25 KT
LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)

INOP SYS

F/CTL PROT
L (R) ELEV
ELAC PITCH
AP 1+2
CAT 2
GLS AUTOLAND
STEEP APPR

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll.Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW.*

F/CTL L(R) ELEV FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

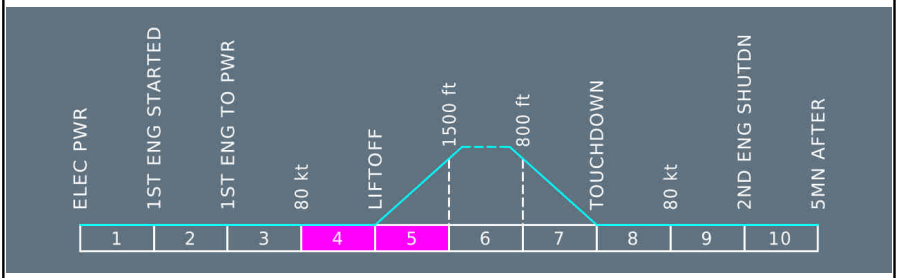
Ident.: PRO-ABN-F_CTL-Q-00016974.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a loss of both servojacks on one elevator, or activation of elevator flutter protection in ELAC.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-Q-00018484.0006001 / 09 APR 18

24

MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG
THR LVR.....TOGA THEN MCT

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 *Note:* *If the L(R) elevator fails, the ELACs loose pitch control through the elevator. Therefore, the SECs control pitch in alternate law. This is not the case, if the right elevator is lost, due to the failure of B+Y hydraulic circuits. Pitch normal law remains active in ELAC.*

L1 MAX SPEED.....320 KT

L2 *Speed is limited, due to the loss of high-speed protection.*

L1 SPD BRK.....DO NOT USE

Continued on the following page

F/CTL L(R) ELEV FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-Q-00018490.0014001 / 09 APR 18

25

L12

STATUS

MAX SPEED..... 320 KT
MANEUVER WITH CARE
SPD BRK.....DO NOT USE
FOR GA: MAX PITCH 15 DEG
THR LVR.....TOGA THEN MCT

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will be displayed, when flaps in CONF 3.

APPR SPD.....VREF+25 KT
LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)

INOP SYS

F/CTL PROT
L (R) ELEV
ELAC PITCH
AP 1+2
CAT 2
GLS AUTOLAND
STEEP APPR

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll.Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW.*

F/CTL L+R ELEV FAULT

Applicable to: MSN 01767-06336

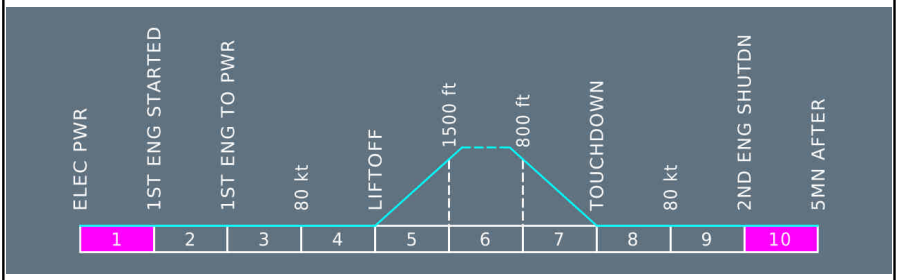
Ident.: PRO-ABN-F_CTL-O-00016958.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both elevators are lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-O-00018491.0001001 / 22 MAR 17

MAX SPEED.....320/.77

L2 *Due to loss of high speed protections.*

L1 MAN PITCH TRIM..... USE

L2 *Only manual trim is available for pitch control.*

L1 SPD BRK.....DO NOT USE

L2 *Do not use speed brakes, because it is difficult to control the induced pitch moment with manual pitch trim only.*

Continued on the following page

F/CTL L+R ELEV FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-O-00018492.0009001 / 22 MAR 17

26

L12

STATUS

MAX SPEED..... 320/.77
SPD BRK.....DO NOT USE

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder

GPWS LDG FLAP 3.....ON

Will be displayed when flaps in CONF 3.

MAN PITCH TRIM.....USE
APPR SPD..... VREF+10
LDG DIST PROC..... APPLY

PITCH MECH BACK UP
ROLL DIRECT LAW

INOP SYS

L+R ELEV
ELAC PITCH
AP 1+2
CAT 2
GLS AUTOLAND
STEEP APPR

F/CTL L+R ELEV FAULT

Applicable to: MSN 06720-09063

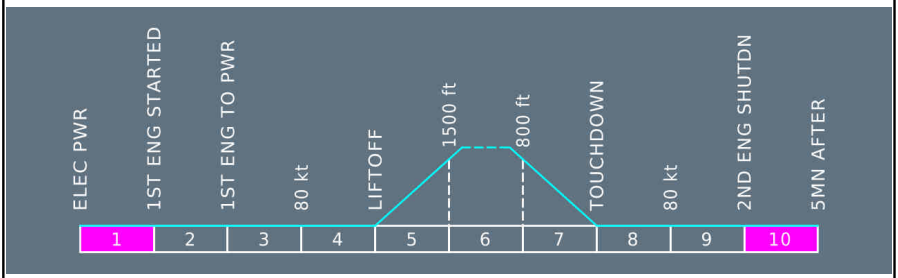
Ident.: PRO-ABN-F_CTL-O-00016958.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both elevators are lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-O-00018491.0001001 / 22 MAR 17

MAX SPEED.....320/.77

L2 *Due to loss of high speed protections.*

L1 MAN PITCH TRIM..... USE

L2 *Only manual trim is available for pitch control.*

L1 SPD BRK.....DO NOT USE

L2 *Do not use speed brakes, because it is difficult to control the induced pitch moment with manual pitch trim only.*

Continued on the following page

F/CTL L+R ELEV FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-O-00018492.0014001 / 21 MAR 16

27

L12

STATUS

MAX SPEED..... 320/.77
SPD BRK.....DO NOT USE

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will be displayed when flaps in CONF 3.

MAN PITCH TRIM.....USE
APPR SPD.....VREF+15 KT
LDG DIST PROC..... APPLY

PITCH MECH BACK UP
ROLL DIRECT LAW

INOP SYS

L+R ELEV
ELAC PITCH
AP 1+2
CAT 2
GLS AUTOLAND
STEEP APPR

F/CTL L(R) SIDESTICK FAULT

Applicable to: ALL

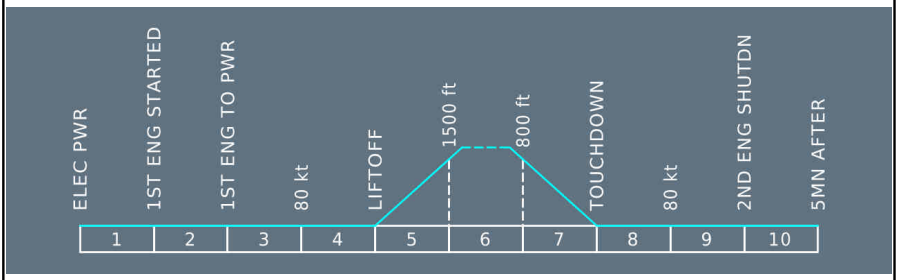
Ident.: PRO-ABN-F_CTL-Y-00016959.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when transducers, on pitch or roll axis, are failed on one sidestick.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-Y-00011756.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-F_CTL-Y-00014250.0001001 / 30 MAR 12

STATUS

INOP SYS
L(R) SIDESTICK

F/CTL PITCH TRIM/MCDU/CG DISAGREE

Applicable to: MSN 01767-01920, 02108, 02204-02457, 02626-02712, 02804, 03071-03264, 03330-04384, 04399-09063

Ident.: PRO-ABN-F_CTL-AL-00016956.0003001 / 06 AUG 18

28

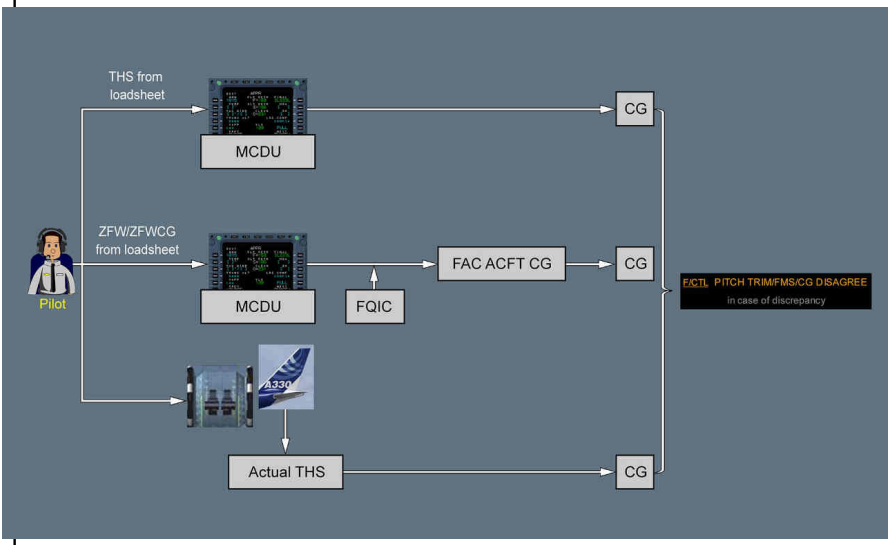
ANNUNCIATIONS

Triggering Conditions:

L2 When the TO CONFIG pb on the ECP is pressed, or when the thrust levers are set to FLEX or TOGA, there is a discrepancy between:

- The actual pitch trim value from THSA
- The pitch trim value calculated by the FAC, based on the CG
- The pitch trim value entered by crew in the MCDU.

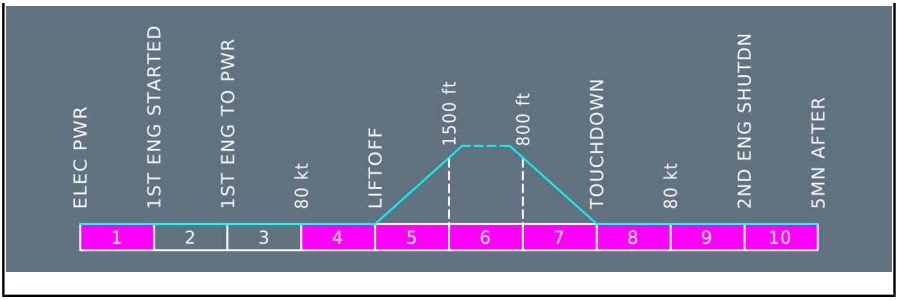
Pitch Trim / MCDU /CG Disagree



Flight Phase Inhibition:

Continued on the following page

F/CTL PITCH TRIM/MCDU/CG DISAGREE (Cont'd)



Ident.: PRO-ABN-F_CTL-AL-00018906.0025001 / 06 AUG 18

29

Crew awareness.

L2 The flight crew checks the LOADSHEET data, the FMS entries and the trim setting.

F/CTL PITCH TRIM/MCDU/CG DISAGREE

Applicable to: MSN 01957-02097, 02121-02139, 02908-02914

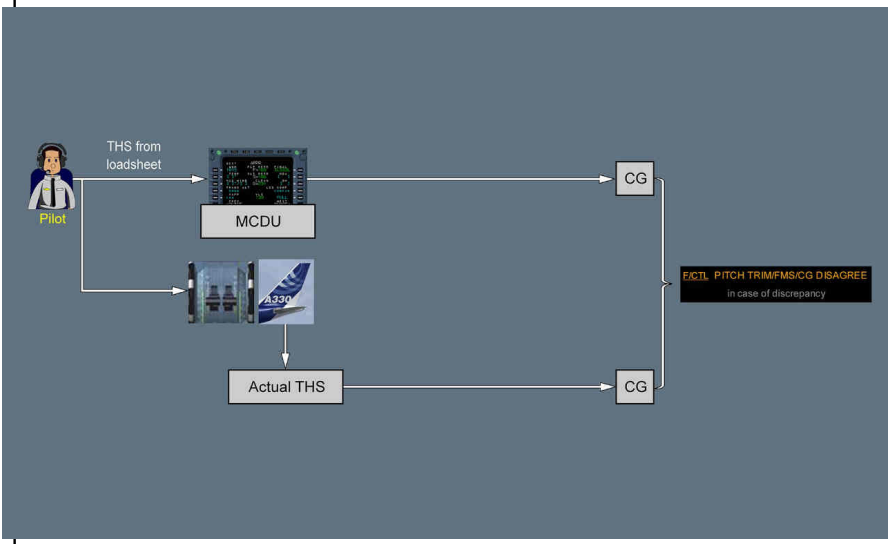
Ident.: PRO-ABN-F_CTL-AL-00016956.0002001 / 06 AUG 18

ANNUNCIATIONS

Triggering Conditions:

L2 When the TO CONFIG pb on the ECP is pressed, or when the thrust levers are set to FLEX or TOGA, there is a discrepancy between:
- The actual pitch trim value from THSA
- The pitch trim value entered by crew in the MCDU.

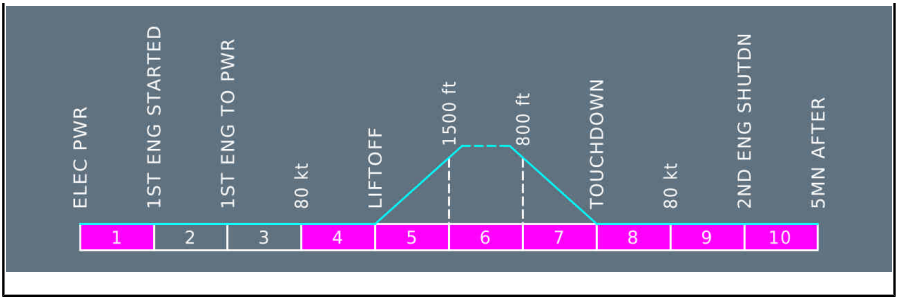
Pitch Trim / MCDU / CG Disagree



Flight Phase Inhibition:

Continued on the following page

F/CTL PITCH TRIM/MCDU/CG DISAGREE (Cont'd)



Ident.: PRO-ABN-F_CTL-AL-00018906.0025001 / 06 AUG 18

30

Crew awareness.

L2 The flight crew checks the LOADSHEET data, the FMS entries and the trim setting.

F/CTL PITCH TRIM/MCDU/CG DISAGREE

Applicable to: MSN 02584, 02737

Ident.: PRO-ABN-F_CTL-AL-00016956.0001001 / 06 AUG 18

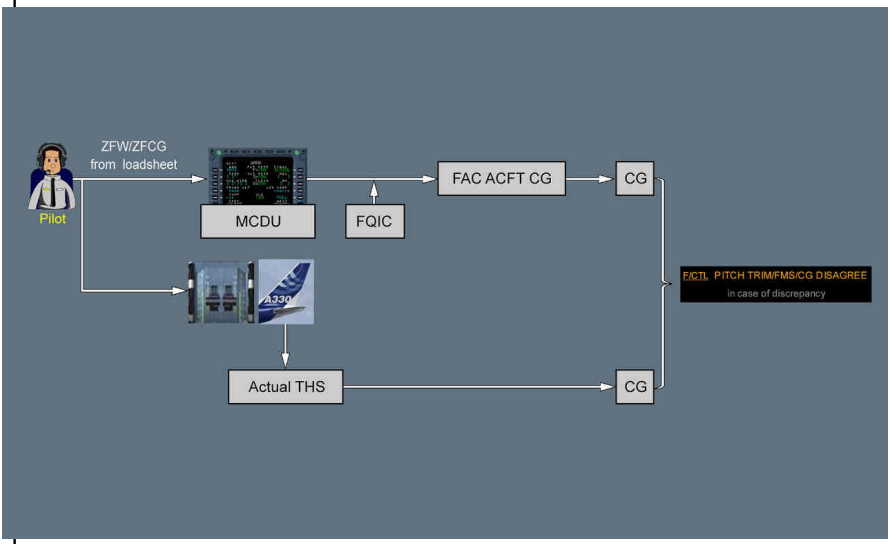
ANNUNCIATIONS

Triggering Conditions:

L2 When the TO CONFIG pb on the ECP is pressed, or when the thrust levers are set to FLEX or TOGA, there is a discrepancy between:

- The actual pitch trim value from THSA
- The pitch trim value calculated by the FAC, based on the CG.

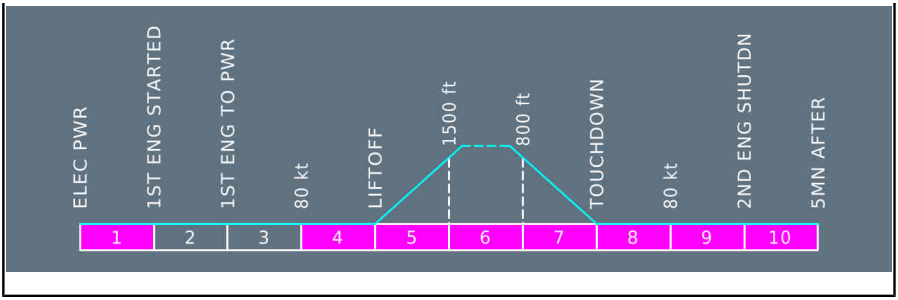
Pitch Trim / MCDU / CG Disagree



Flight Phase Inhibition:

Continued on the following page

F/CTL PITCH TRIM/MCDU/CG DISAGREE (Cont'd)



Ident.: PRO-ABN-F_CTL-AL-00018906.0025001 / 06 AUG 18

31

Crew awareness.

L2 The flight crew checks the LOADSHEET data, the FMS entries and the trim setting.

F/CTL PITCH TRIM/MCDU/CG DISAGREE

Applicable to: MSN 04393-04397

Ident.: PRO-ABN-F_CTL-AL-00016956.0003001 / 06 AUG 18

32

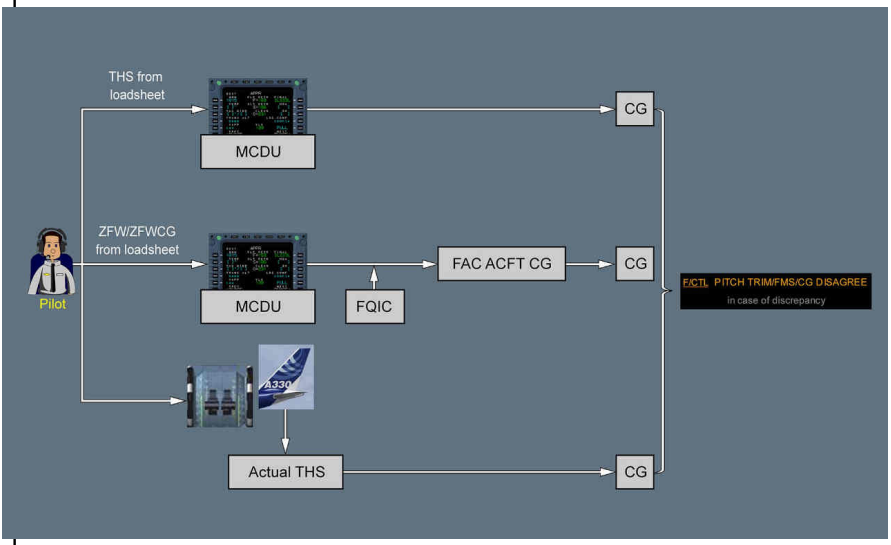
ANNUNCIATIONS

Triggering Conditions:

L2 When the TO CONFIG pb on the ECP is pressed, or when the thrust levers are set to FLEX or TOGA, there is a discrepancy between:

- The actual pitch trim value from THSA
- The pitch trim value calculated by the FAC, based on the CG
- The pitch trim value entered by crew in the MCDU.

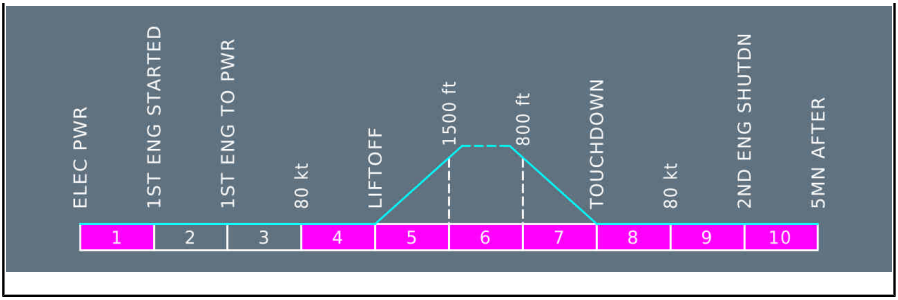
Pitch Trim / MCDU /CG Disagree



Flight Phase Inhibition:

Continued on the following page

F/CTL PITCH TRIM/MCDU/CG DISAGREE (Cont'd)



F/CTL SEC 1(2)(3) FAULT

Applicable to: MSN 01767-06336

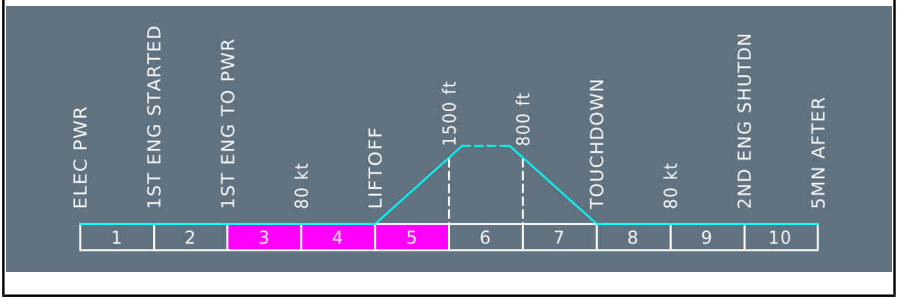
Ident.: PRO-ABN-F_CTL-I-00016961.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a failure of one SEC.

Flight Phase Inhibition:



Continued on the following page

F/CTL SEC 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-I-00018502.0002001 / 21 MAR 16

33

SEC (AFFECTED).....OFF THEN ON

- **IF UNSUCCESSFUL:**

  SEC (AFFECTED).....OFF

L2 *Associated spoilers are lost.*
If all spoilers are inoperative (3 SECs failed), roll direct law and pitch alternate law become active.

L1 SPD BRK (IF SEC 1 AFFECTED).....DO NOT USE

L2 *VLS would not be corrected, if speed brakes 2 extend (no speed brake position sent to FACs).*

L1 ● **If SEC 1 + 2 + 3 fail**

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
PROT LOST

Continued on the following page

F/CTL SEC 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-I-00018504.0004001 / 04 SEP 18

34

L12

STATUS

SPD BRK.....DO NOT USE

(If SEC 1 is affected.)

- **If SEC 1 + 2 + 3 fail:**
  FOR LDG.....USE FLAP 3
  APPR SPD.....VREF + 10KT

LDG DIST PROC..... APPLY

- **(If SEC 1 + 2 + 3 fail).**
  ALTN LAW: PROT LOST
- If no AP engaged
  and
  SEC 1 + 2 + 3 fail.
  WHEN L/G DN: DIRECT LAW

  If SEC 1 + 2 + 3 fail. In such a case, the LGCIU information can no longer be sent to the ELAC. For the activation of DIRECT law, the ELAC uses the condition "slats and flaps in CONF 2", instead of "landing gear down".
- If AP engaged
  and
  SEC 1 + 2 + 3 fail.
  WHEN L/G DN AND AP OFF: DIRECT LAW

  If SEC 1 + 2 + 3 fail. In such a case, the LGCIU information can no longer be sent to the ELAC. For the activation of DIRECT law, the ELAC uses the condition "slats and flaps in CONF 2", instead of "landing gear down".

INOP SYS

F/CTL PROT (1)
SPLR (associated)
SEC (affected)
REVERSER 1(2) (2)
AUTO BRK (3)
STEEP APPR (4)

(1) *(If SEC 1 + 2 + 3 fail)*
(2) *(If SEC 1 + 2 fail, reverser 1 is not available for landing. If SEC 1 + 3 fail, reverser 2 is not available for landing)*
(3) *(If at least 2 SECs fail)*

Continued on the following page

F/CTL SEC 1(2)(3) FAULT (Cont'd)

(4) *(If at least SEC 1 fails.)*

F/CTL SEC 1(2)(3) FAULT

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

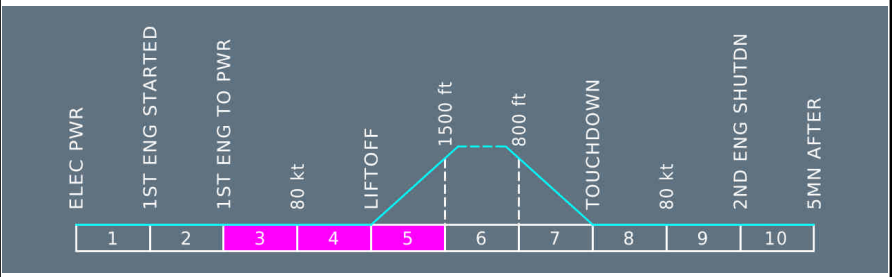
Ident.: PRO-ABN-F_CTL-I-00016961.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a failure of one SEC.

Flight Phase Inhibition:



Continued on the following page

F/CTL SEC 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-I-00018502.0002001 / 21 MAR 16

35

SEC (AFFECTED)..... OFF THEN ON

- **IF UNSUCCESSFUL:**

  SEC (AFFECTED)..... OFF

L2 *Associated spoilers are lost.*
If all spoilers are inoperative (3 SECs failed), roll direct law and pitch alternate law become active.

L1 SPD BRK (IF SEC 1 AFFECTED)..... DO NOT USE

L2 *VLS would not be corrected, if speed brakes 2 extend (no speed brake position sent to FACs).*

L1 ● **If SEC 1 + 2 + 3 fail**

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
PROT LOST

Continued on the following page

F/CTL SEC 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-I-00018504.0011001 / 04 SEP 18

36

L12

STATUS

SPD BRK.....DO NOT USE

(If SEC 1 is affected.)

- **If SEC 1 + 2 + 3 fail:**
  FOR LDG.....USE FLAP 3
  APPR SPD.....VREF + 15KT

LDG DIST PROC..... APPLY

- **(If SEC 1 + 2 + 3 fail).**
  ALTN LAW: PROT LOST
- If no AP engaged
  and
  SEC 1 + 2 + 3 fail.
  WHEN L/G DN: DIRECT LAW

  If SEC 1 + 2 + 3 fail. In such a case, the LGCIU information can no longer be sent to the ELAC. For the activation of DIRECT law, the ELAC uses the condition "slats and flaps in CONF 2", instead of "landing gear down".
- If AP engaged
  and
  SEC 1 + 2 + 3 fail.
  WHEN L/G DN AND AP OFF: DIRECT LAW

  If SEC 1 + 2 + 3 fail. In such a case, the LGCIU information can no longer be sent to the ELAC. For the activation of DIRECT law, the ELAC uses the condition "slats and flaps in CONF 2", instead of "landing gear down".

INOP SYS

F/CTL PROT (1)
SPLR (associated)
SEC (affected)
REVERSER 1(2) (2)
AUTO BRK (3)

(1) *(If SEC 1 + 2 + 3 fail)*
(2) *(If SEC 1 + 2 fail, reverser 1 is not available for landing. If SEC 1 + 3 fail, reverser 2 is not available for landing)*

Continued on the following page

F/CTL SEC 1(2)(3) FAULT (Cont'd)

(3) *(If at least 2 SECs fail)*

F/CTL SEC 1(2)(3) FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

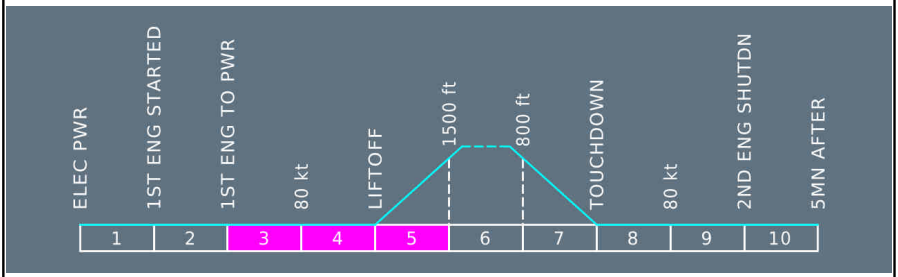
Ident.: PRO-ABN-F_CTL-I-00016961.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a failure of one SEC.

Flight Phase Inhibition:



Continued on the following page

F/CTL SEC 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-I-00018502.0001001 / 21 MAR 16

37

SEC (AFFECTED)..... OFF THEN ON

- **IF UNSUCCESSFUL:**

  SEC (AFFECTED)..... OFF

L2 *Associated spoilers are lost. If SEC 1 or 2 fails, LAF is degraded (A320 with LAF only). If all spoilers are inoperative (3 SECs failed), roll direct law and pitch alternate law become active.*

L1 SPD BRK (IF SEC 1 AFFECTED)..... DO NOT USE

L2 *VLS would not be corrected, if speed brakes 2 extend (no speed brake position sent to FACs).*

L1 ● **If SEC 1 + 2 + 3 fail.**

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

Continued on the following page

F/CTL SEC 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-I-00018504.0011001 / 04 SEP 18

38

L12

STATUS

SPD BRK.....DO NOT USE

(If SEC 1 is affected.)

- **If SEC 1 + 2 + 3 fail:**
  FOR LDG.....USE FLAP 3
  APPR SPD.....VREF + 15KT

LDG DIST PROC..... APPLY

- **(If SEC 1 + 2 + 3 fail).**
  ALTN LAW: PROT LOST
- If no AP engaged
  and
  SEC 1 + 2 + 3 fail.
  WHEN L/G DN: DIRECT LAW

  If SEC 1 + 2 + 3 fail. In such a case, the LGCIU information can no longer be sent to the ELAC. For the activation of DIRECT law, the ELAC uses the condition "slats and flaps in CONF 2", instead of "landing gear down".
- If AP engaged
  and
  SEC 1 + 2 + 3 fail.
  WHEN L/G DN AND AP OFF: DIRECT LAW

  If SEC 1 + 2 + 3 fail. In such a case, the LGCIU information can no longer be sent to the ELAC. For the activation of DIRECT law, the ELAC uses the condition "slats and flaps in CONF 2", instead of "landing gear down".

INOP SYS

F/CTL PROT (1)
SPLR (associated)
SEC (affected)
REVERSER 1(2) (2)
AUTO BRK (3)

(1) *(If SEC 1 + 2 + 3 fail)*
(2) *(If SEC 1 + 2 fail, reverser 1 is not available for landing. If SEC 1 + 3 fail, reverser 2 is not available for landing)*

Continued on the following page

F/CTL SEC 1(2)(3) FAULT (Cont'd)

(3) *(If at least 2 SECs fail)*

F/CTL SIDESTICK PRIORITY

Applicable to: ALL

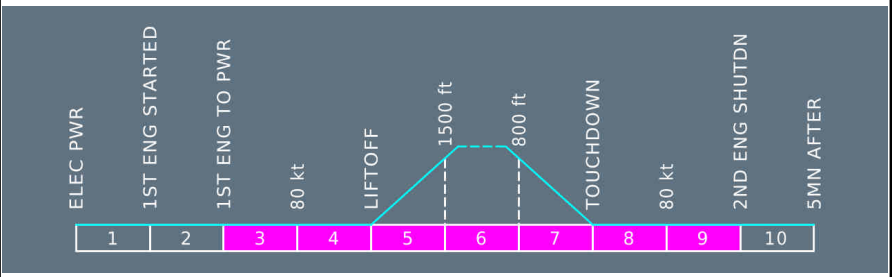
Ident.: PRO-ABN-F_CTL-AM-00016983.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is failure in a sidestick priority logic circuit.

Flight Phase Inhibition:



Continued on the following page

F/CTL SIDESTICK PRIORITY (Cont'd)

Ident.: PRO-ABN-F_CTL-AM-00018509.0001001 / 21 MAR 16

CHECK PRIORITY LOGIC

L2 Check the integrity of flight control priority, as follows (not displayed on ECAM) :

L1 ELAC 1 ..... OFF THEN ON

L2 *Note:* *When the ELAC 1 computer is reset on ground, the pitch trim returns to the ground setting position (0 °).*

L1 ELAC 2 ..... OFF THEN ON

L2 ■ **If the warning disappears:**

CAPT TAKE OVER pb ..... PRESS (at least 3 seconds)

Check that the :
- *Aural "priority left" message is activated.*
- *F/O red arrow light is on.*

CAPT TAKE OVER pb ..... RELEASE
F/O TAKE OVER pb ..... PRESS (at least 3 seconds)

Check that the:
- *Aural "priority right" message is activated*
- *CAPT red arrow light is on.*

F/O TAKE OVER pb ..... RELEASE

Check that the warning does not reappear.

Note: *There is no need to move the sidestick for the check.*

■ **If the warning does not disappear, or if the warning reappears after the above check:**

Maintenance action is due.

F/CTL SLAT(FLAP) TIP BRK FAULT

Applicable to: ALL

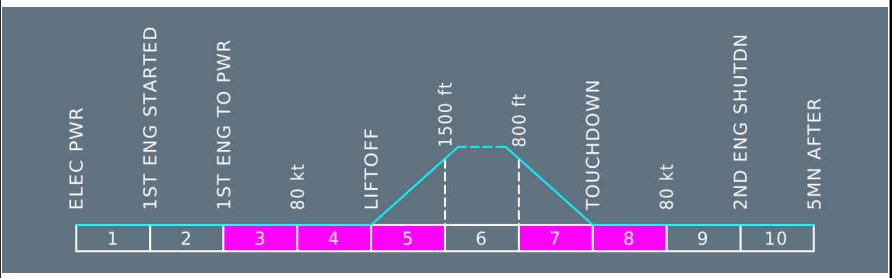
Ident.: PRO-ABN-F_CTL-AN-00016996.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is failure of one wing tip brake on slats or flaps, or failure of one wing tip brake solenoid on slats, or flaps.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-AN-00018510.0001001 / 21 MAR 16

Crew awareness.

F/CTL SLATS AND FLAPS FAULT IN CONF 0

Applicable to: MSN 01767-06036

Ident.: PRO-ABN-F_CTL-C-00018511.0001001 / 22 MAR 17

FLAPS LEVER.....RECYCLE

- **If both slat channels fail:**

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED.....320 KT

Continued on the following page

F/CTL SLATS AND FLAPS FAULT IN CONF 0 (Cont'd)

Ident.: PRO-ABN-F_CTL-C-00018512.0002001 / 22 MAR 17

39

L12

STATUS

MAX SPEED..... 320 KT

ALTN LAW: PROT LOST

APPR PROC

FOR LDG..... USE FLAP 1

With FLAPS lever set at 1, AP/FD GO AROUND mode is available.

CTR TK PUMPS..... OFF
GPWS FLAP MODE..... OFF

APPR SPD..... VREF +60 KT

Approach with A/THR in selected mode is recommended.

- **If both slat channels fail:**
  WHEN L/G DN: DIRECT LAW
- **AT 300 FT AGL:**
  TARGET SPD..... VREF +50 KT
  Reduce speed between 500 ft and 300 ft to reach VREF +50 kt at runway threshold, and disconnect A/THR, as the target speed may be below VLS.
  LDG DIST PROC..... APPLY
- **Only in case of FLAPS FAULT:**
  ENG 1 APPR IDLE ONLY
  ENG 2 APPR IDLE ONLY

INOP SYS

F/CTL PROT (1)
SLATS
FLAPS
AP 1+2 (2)
A/THR (2)
Moreover, both FDs are lost (2)
CAT 2 (2)
STEEP APPR

(1) *(If both slat channels fail.)*
(2) *(If both slat or flap channels fail.)*

F/CTL SLATS AND FLAPS FAULT IN CONF 0

Applicable to: MSN 06208-06336

Ident.: PRO-ABN-F_CTL-C-00018511.0001001 / 22 MAR 17

FLAPS LEVER.....RECYCLE

- **If both slat channels fail:**

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED..... 320 KT

Continued on the following page

F/CTL SLATS AND FLAPS FAULT IN CONF 0 (Cont'd)

Ident.: PRO-ABN-F_CTL-C-00018512.0003001 / 25 JAN 17

L12

STATUS

- **If both slat channels fail:**
  MAX SPEED.....320 KT

ALTN LAW: PROT LOST

APPR PROC

FOR LDG..... USE FLAP 1

With FLAPS lever set at 1, AP/FD GO AROUND mode is available.

GPWS FLAP MODE..... OFF

APPR SPD..... VREF +60 KT

Approach with A/THR in selected mode is recommended.

- **If both slat channels fail:**
  WHEN L/G DN: DIRECT LAW

- **AT 300 FT AGL:**
  TARGET SPD..... VREF +50 KT
  Reduce speed between 500 ft and 300 ft to reach VREF +50 kt at runway threshold and disconnect A/THR, as the target speed may be below VLS.
  LDG DIST PROC.....APPLY

- **Only in case of FLAPS FAULT:**
  ENG 1 APPR IDLE ONLY
  ENG 2 APPR IDLE ONLY

INOP SYS

F/CTL PROT (1)
SLATS
FLAPS
AP 1+2 (2)
A/THR (2)
Moreover, both FDs are lost (2)
CAT 2 (2)
STEEP APPR

(1) *(If both slat channels fail.)*
(2) *(If both slat or flap channels fail.)*

F/CTL SLATS AND FLAPS FAULT IN CONF 0

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-F_CTL-C-00018511.0001001 / 22 MAR 17

FLAPS LEVER.....RECYCLE

- **If both slat channels fail:**

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED..... 320 KT

Continued on the following page

F/CTL SLATS AND FLAPS FAULT IN CONF 0 (Cont'd)

Ident.: PRO-ABN-F_CTL-C-00018512.0005001 / 21 MAR 16

40

L12

STATUS

- **If both slat channels fail:**
  MAX SPEED.....320 KT

ALTN LAW: PROT LOST

APPR PROC

FOR LDG..... USE FLAP 1

With FLAPS lever set at 1, AP/FD GO AROUND mode is available.

GPWS FLAP MODE..... OFF

APPR SPD..... VREF +65 KT

Approach with A/THR in selected mode is recommended.

- **If both slat channels fail:**
  WHEN L/G DN: DIRECT LAW

- **AT 300 FT AGL:**
  TARGET SPD..... VREF +55 KT

  Reduce speed between 500 ft and 300 ft to reach VREF +55 kt at runway threshold and disconnect A/THR, as the target speed may be below VLS.

  LDG DIST PROC.....APPLY

- **Only in case of FLAPS FAULT:**
  ENG 1 APPR IDLE ONLY
  ENG 2 APPR IDLE ONLY

INOP SYS

F/CTL PROT (1)
SLATS
FLAPS
AP 1+2 (2)
A/THR (2)
Moreover, both FDs are lost (2)
CAT 2 (2)
STEEP APPR

(1) *(If both slat channels fail.)*
(2) *(If both slat or flap channels fail.)*

F/CTL SLATS AND FLAPS FAULT IN CONF 0

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-F_CTL-C-00018511.0001001 / 22 MAR 17

FLAPS LEVER.....RECYCLE

- **If both slat channels fail:**

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED..... 320 KT

Continued on the following page

F/CTL SLATS AND FLAPS FAULT IN CONF 0 (Cont'd)

Ident.: PRO-ABN-F_CTL-C-00018512.0008001 / 25 JAN 17

41

L12

STATUS

- **If both slat channels fail:**
  MAX SPEED.....320 KT

ALTN LAW: PROT LOST

APPR PROC

FOR LDG..... USE FLAP 1

With FLAPS lever set at 1, AP/FD GO AROUND mode is available.

GPWS FLAP MODE..... OFF

APPR SPD..... VREF +70 KT

Approach with A/THR in selected mode is recommended.

- **If both slat channels fail:**
  WHEN L/G DN: DIRECT LAW

- **AT 300 FT AGL:**
  TARGET SPD..... VREF +60 KT

  Reduce speed between 500 ft and 300 ft to reach VREF +60 kt at runway threshold and disconnect A/THR, as the target speed may be below VLS.

  LDG DIST PROC.....APPLY

- **Only in case of FLAPS FAULT:**
  ENG 1 APPR IDLE ONLY
  ENG 2 APPR IDLE ONLY

INOP SYS

F/CTL PROT (1)
SLATS
FLAPS
AP 1+2 (2)
A/THR (2)
Moreover, both FDs are lost (2)
CAT 2 (2)

(1) *(If both slat channels fail.)*
(2) *(If both slat or flap channels fail.)*

F/CTL SLATS FAULT/LOCKED

Applicable to: MSN 01767-06036

Ident.: PRO-ABN-F_CTL-B-00018517.0006001 / 05 JUN 18

42

- **If slats locked:**
  WING TIP BRK ON

MAX SPEED..... REFER TO PRO-ABN-F_CTL F/CTL FLAPS/SLATS FAULT/LOCKED

L2 *Speed is limited to the VFE corresponding to the next slat position.*

L1
- **If slats not locked:**
  FLAPS LEVER..... RECYCLE

L2 *Return to the previous selection, then back to the desired position.*

L1
- **If slats extended:**
  FUEL CONSUMPT INCRSD
  FMS PRED UNRELIABLE

- **If unsuccessful:**

L2
Refer to PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed.
The autopilot may be used down to 500 ft AGL. As it is not tuned for the abnormal configurations, its behavior could be less than optimum and must be monitored.

L1
L12

Note: If there is a SLATS FAULT after both slat channels fail, alternate law becomes active (Refer to PRO-ABN-F_CTL F/CTL ALTN LAW).

- **If slats not at zero:**
  FUEL MODE SEL..... MAN

L2 *To allow CTR TK feeding.*

L1 CTR TK PUMPS..... AS RQRD

L2 *Set CTR TK PUMPS pb to OFF when CTR TK is empty or during approach.*

Continued on the following page

F/CTL SLATS FAULT/LOCKED (Cont'd)

Ident.: PRO-ABN-F_CTL-B-00018518.0004001 / 05 JUN 18

43

L12

STATUS

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

CTR TK PUMPS..... OFF
GPWS LDG FLAP 3..... ON

APPR SPD..... REFER TO PRO-ABN-F_CTL F/CTL FLAPS/SLATS FAULT/LOCKED
LDG DIST PROC..... APPLY

CTR TK FEED: MAN ONLY

- **If both slat channels fail, or slats are locked in clean configuration and flaps are at, or above, CONF 2:**
  ALTN LAW: PROT LOST
  WHEN L/G DN: DIRECT LAW

FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)

INOP SYS

F/CTL PROT (1)
SLATS
AP 1+2 (1)
A/THR (1)
Moreover, both FDs are lost (1)
CAT 2 (1)
STEEP APPR (1)
GLS AUTOLAND

(1) *(If both slat channels fail.)*
(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(3) *Disregard FMS fuel predictions and refer to QRH/OPS chapter in order to find the applicable Fuel Penalty Factor.*

F/CTL SLATS FAULT/LOCKED

Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-F_CTL-B-00018517.0008001 / 05 JUN 18

44

- **If slats locked:**
  WING TIP BRK ON

MAX SPEED..... REFER TO PRO-ABN-F_CTL F/CTL FLAPS/SLATS FAULT/LOCKED

L2 *Speed is limited to the VFE corresponding to the next slat position.*

L1
- **If slats not locked:**
  FLAPS LEVER..... RECYCLE

L2 *Return to the previous selection, then back to the desired position.*

L1
- **If slats extended:**
  FUEL CONSUMPT INCRSD
  FMS PRED UNRELIABLE

- **If unsuccessful:**

L2
Refer to PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed.

The autopilot may be used down to 500 ft AGL. As it is not tuned for the abnormal configurations, its behavior could be less than optimum and must be monitored.

L1
L12

Note: *If there is a SLATS FAULT after both slat channels fail, alternate law becomes active (Refer to PRO-ABN-F_CTL F/CTL ALTN LAW).*

Continued on the following page

F/CTL SLATS FAULT/LOCKED (Cont'd)

Ident.: PRO-ABN-F_CTL-B-00018518.0005001 / 05 JUN 18

45

L12

STATUS

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

APPR SPD..... REFER TO PRO-ABN-F_CTL F/CTL FLAPS/SLATS FAULT/LOCKED

LDG DIST PROC..... APPLY

- **If both slat channels fail, or slats are locked in clean configuration and flaps are at, or above, CONF 2:**
  ALTN LAW : PROT LOST
  WHEN L/G DN : DIRECT LAW

FUEL CONSUMPT INCRSD

See (2)

FMS PRED UNRELIABLE

See (3)

INOP SYS

F/CTL PROT (1)
AP 1+2 (1)
A/THR (1)
Moreover, both FDs are lost (1)
CAT 2 (1)
SLATS
GLS AUTOLAND
STEEP APPR

(1) *(If both slat channels fail)*

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS chapter in order to find the applicable Fuel Penalty Factor.*

F/CTL SLATS FAULT/LOCKED

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-F_CTL-B-00018517.0007001 / 05 JUN 18

46

- **If slats locked:**
  WING TIP BRK ON

MAX SPEED..... REFER TO PRO-ABN-F_CTL F/CTL FLAPS/SLATS FAULT/LOCKED

L2 *Speed is limited to the VFE corresponding to the next slat position.*

L1
- **If slats not locked:**
  FLAPS LEVER..... RECYCLE

L2 *Return to the previous selection, then back to the desired position.*

L1
- **If slats extended:**
  FUEL CONSUMPT INCRSD
  FMS PRED UNRELIABLE

- **If unsuccessful:**

L2
Refer to PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed.

The autopilot may be used down to 500 ft AGL. As it is not tuned for the abnormal configurations, its behavior could be less than optimum and must be monitored.

L1
L2
Note:
1. *If there is a SLATS FAULT after both slat channels fail, alternate law becomes active (Refer to PRO-ABN-F_CTL F/CTL ALTN LAW).*
2. *If the slats are locked in clean configuration (< 18 °), alternate law without protection is selected once the flaps are at or above CONF 2 (> 13 °).*

Continued on the following page

F/CTL SLATS FAULT/LOCKED (Cont'd)

Ident.: PRO-ABN-F_CTL-B-00018518.0009001 / 05 JUN 18

47

L12

STATUS

APPR PROC

S/F JAMMED PROC..... APPLY
FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3..... ON

APPR SPD..... REFER TO PRO-ABN-F_CTL F/CTL FLAPS/SLATS FAULT/LOCKED

LDG DIST PROC..... APPLY

- **If both slat channels fail, or slats are locked in clean configuration and flaps are at, or above, CONF 2:**
  ALTN LAW: PROT LOST
  WHEN L/G DN: DIRECT LAW

FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)

INOP SYS

F/CTL PROT (1)
SLATS
AP 1+2 (1)
A/THR (1)
Moreover, both FDs are lost (1)
CAT 2 (1)
STEEP APPR (1)
GLS AUTOLAND

(1) *(If both slat channels fail.)*
(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(3) *Disregard FMS fuel predictions and refer to QRH/OPS chapter in order to find the applicable Fuel Penalty Factor.*

F/CTL SLAT SYS 1(2) FAULT

Applicable to: ALL

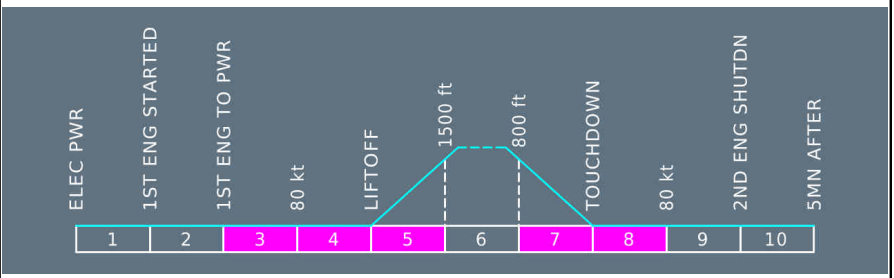
Ident.: PRO-ABN-F_CTL-D-00016995.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is failure of slat channel in one SFCC.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-D-00011751.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-F_CTL-D-00011752.0001001 / 18 AUG 10

STATUS

SLATS SLOW

F/CTL SPD BRK 2 (3+4) FAULT

Applicable to: ALL

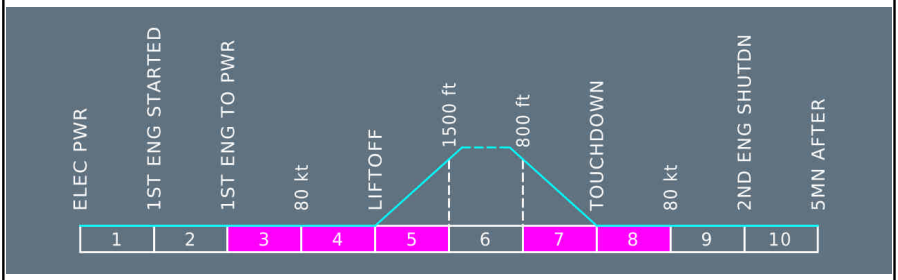
Ident.: PRO-ABN-F_CTL-W-00016980.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when speedbrake lever transducers to SEC 3 (1) failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-W-00018519.0001001 / 21 MAR 16

- **If SPD BRK 3+4 affected:**
  SPD BRK..... DO NOT USE

L2 *Do not use speedbrakes since it is not efficient to use only surfaces n° 2, and would active the SPD BRK DISAGREE caution.*

Ident.: PRO-ABN-F_CTL-W-00018520.0001001 / 21 MAR 16

STATUS

- **If SPD BRK 3+4 affected:**
  SPD BRK..... DO NOT USE
  LDG DIST PROC..... APPLY

INOP SYS

SPD BRK (affected)
STEEP APPR (1)

(1) *(if SPD BRK 3 and 4 are affected)*

F/CTL SPD BRK DISAGREE
(SURFACES 3+4 AFFECTED)

Applicable to: ALL

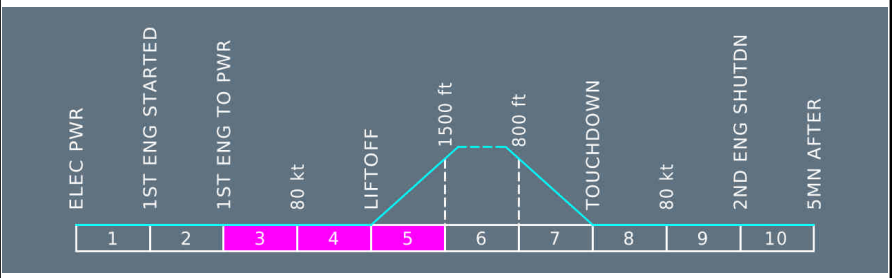
Ident.: PRO-ABN-F_CTL-T-00016970.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a position disagree between surfaces and lever position.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-T-00018521.0001001 / 21 MAR 16

SPD BRK LEVER.....RETRACT
SPD BRK.....DO NOT USE

Ident.: PRO-ABN-F_CTL-T-00018522.0001001 / 21 MAR 16

STATUS

SPD BRK.....DO NOT USE

INOP SYS

SPD BRK 3+4
STEEP APPR

F/CTL SPD BRK DISAGREE
(SURFACES 2+3+4 AFFECTED)

Applicable to: ALL

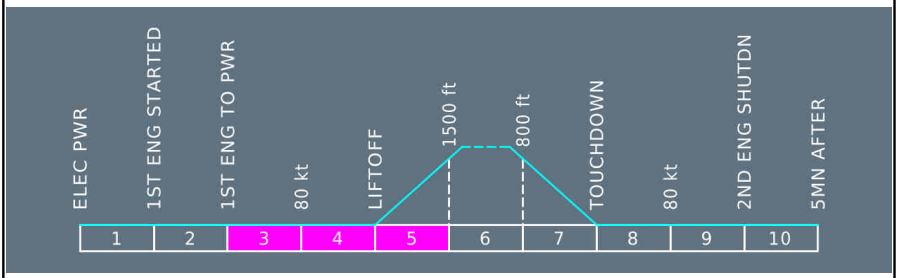
Ident.: PRO-ABN-F_CTL-U-00018907.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a position disagree between surfaces and lever position.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-U-00018523.0001001 / 21 MAR 16

SPD BRK LEVER.....RETRACT

F/CTL SPD BRK FAULT

Applicable to: ALL

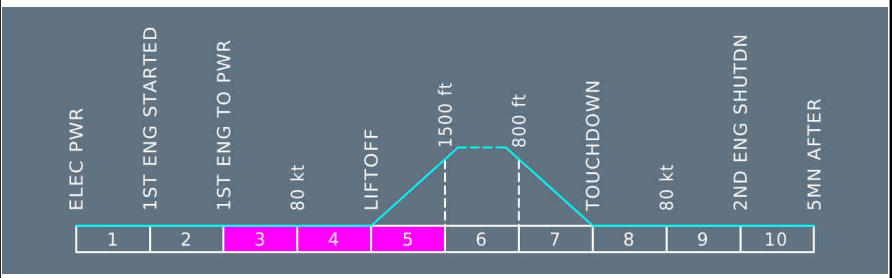
Ident.: PRO-ABN-F_CTL-V-00016971.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when speedbrake lever transducers to SEC 1 and 3 failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-V-00018534.0001001 / 21 MAR 16

L2 In addition, associated ground spoilers are available only through reverse selection.
L1 Crew awareness.

Ident.: PRO-ABN-F_CTL-V-00018535.0002001 / 22 MAR 17

STATUS

	INOP SYS
SPD BRK.....DO NOT USE	STEEP APPR (1)

(1) *(if SPD BRK 3 or 4 are affected)*

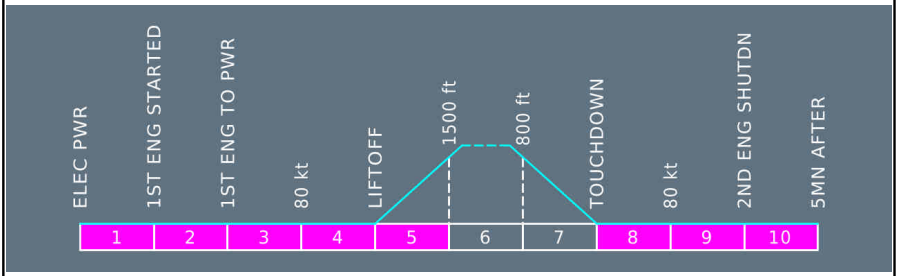
F/CTL SPD BRK STILL OUT

Applicable to: ALL

Ident.: PRO-ABN-F_CTL-AO-00016972.0002001 / 21 MAR 16

ANNUNCIATIONS

Flight Phase Inhibition:



Ident.: PRO-ABN-F_CTL-AO-00011810.0014001 / 25 FEB 14

Crew awareness.

F/CTL SPLR FAULT

Applicable to: MSN 01767-06336

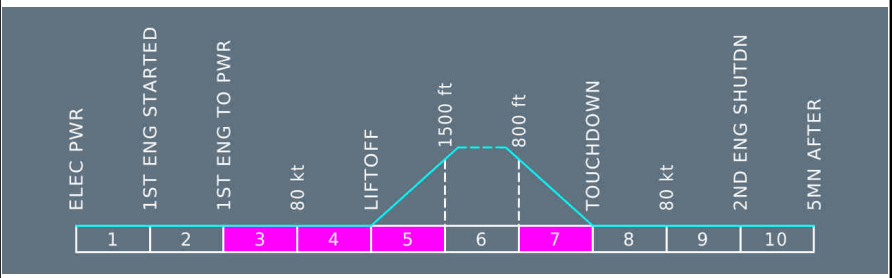
Ident.: PRO-ABN-F_CTL-R-00016976.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a loss of one or more spoilers.

Flight Phase Inhibition:



Continued on the following page

F/CTL SPLR FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-R-00018536.0003001 / 22 MAR 17

L2 *Note: If heavy vibrations are felt, CONF 3 may be used for landing in order to reduce the buffeting.*

L1 ● **If one or more spoilers are fully extended:**

Current Flight Level (FL) may not be maintained due to increased drag. Maintain a cruise FL as high as possible.

OPT SPD.....G DOT+10KT

L2 *Whenever possible, target green dot speed +10 kt to minimize fuel consumption. However, if buffet is encountered at GDOT speed +10 kt, increase speed to fly out of buffet condition.*

L1 AP.....DO NOT USE

L2 *Depending on the failed spoiler position, the AP may not have enough authority to counteract the roll induced by spoiler runaway.*

L1 SPD BRK (IF SPOILERS 3+4 AFFECTED).....DO NOT USE

L2 *Do not use speedbrakes, since using only surfaces N° 2 is not efficient and would activate the SPD BRK DISAGREE caution.*

L1 ● **If one or more spoilers are extended:**

FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

Continued on the following page

F/CTL SPLR FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-R-00018544.0004001 / 21 MAR 17

48

L12

STATUS

- **If one or more spoilers are fully extended:**
  AP.....DO NOT USE
- **If spoilers 3+4 affected:**
  SPD BRK.....DO NOT USE

INOP SYS

SPLR (affected)
SPD BRK (1)
STEEP APPR (2)

APPR PROC

- **If one or more spoilers are fully extended:**

  In clean configuration, if VLS is above VFE_{NEXT}, the flight crew should deselect A/THR, decelerate to VFE_{NEXT}, and select CONF 1 when below VFE_{NEXT}. When established at CONF 1, the flight crew can reengage the A/THR and use managed speed again.

  FOR LDG.....USE FLAP 3

  This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

  GPWS LDG FLAP 3 .....ON
  APPR SPD : VREF + 10 KT

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (3)
FMS PRED UNRELIABLE
See (4)

(1) *(If spoilers 2+3+4 affected)*
(2) *(if spoilers 3 and/or 4 affected)*
(3) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(4) *Disregard FMS fuel predictions and refer to QRH/OPS chapter in order to find the applicable Fuel Penalty Factor.*

F/CTL SPLR FAULT

Applicable to: MSN 06720-09063

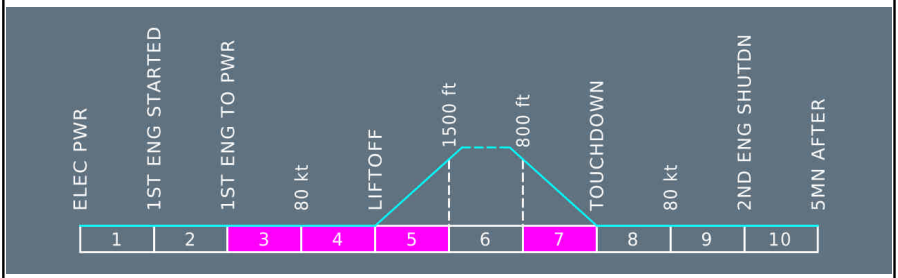
Ident.: PRO-ABN-F_CTL-R-00016976.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a loss of one or more spoilers.

Flight Phase Inhibition:



Continued on the following page

F/CTL SPLR FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-R-00018536.0003001 / 22 MAR 17

L2 *Note: If heavy vibrations are felt, CONF 3 may be used for landing in order to reduce the buffeting.*

L1 ● **If one or more spoilers are fully extended:**

Current Flight Level (FL) may not be maintained due to increased drag. Maintain a cruise FL as high as possible.

OPT SPD.....G DOT+10KT

L2 *Whenever possible, target green dot speed +10 kt to minimize fuel consumption. However, if buffet is encountered at GDOT speed +10 kt, increase speed to fly out of buffet condition.*

L1 AP.....DO NOT USE

L2 *Depending on the failed spoiler position, the AP may not have enough authority to counteract the roll induced by spoiler runaway.*

L1 SPD BRK (IF SPOILERS 3+4 AFFECTED).....DO NOT USE

L2 *Do not use speedbrakes, since using only surfaces N° 2 is not efficient and would activate the SPD BRK DISAGREE caution.*

L1 ● **If one or more spoilers are extended:**

FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

Continued on the following page

F/CTL SPLR FAULT (Cont'd)

Ident.: PRO-ABN-F_CTL-R-00018544.0006001 / 21 MAR 17

49

L12

STATUS

- **If one or more spoilers are fully extended:**
  AP..... DO NOT USE
- **If spoilers 3+4 affected:**
  SPD BRK..... DO NOT USE

INOP SYS

SPLR (affected)
SPD BRK (1)
STEEP APPR (2)

APPR PROC

- **If one or more spoilers are fully extended:**

  In clean configuration, if VLS is above VFE_{NEXT}, the flight crew should deselect A/THR, decelerate to VFE_{NEXT}, and select CONF 1 when below VFE_{NEXT}. When established at CONF 1, the flight crew can reengage the A/THR and use managed speed again.

  FOR LDG.....USE FLAP 3

  This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

  GPWS LDG FLAP 3 ..... ON
  APPR SPD : VREF + 15 KT

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (3)
FMS PRED UNRELIABLE
See (4)

(1) *(If spoilers 2+3+4 affected)*
(2) *(if spoilers 3 and/or 4 affected)*
(3) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(4) *Disregard FMS fuel predictions and refer to QRH/OPS chapter in order to find the applicable Fuel Penalty Factor.*

F/CTL STABILIZER JAM

Applicable to: MSN 01767-06336

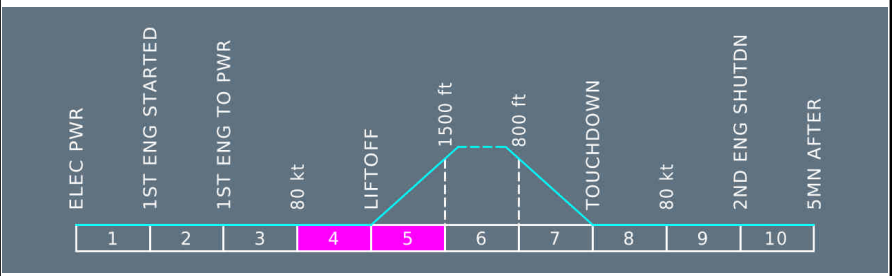
Ident.: PRO-ABN-F_CTL-X-00016973.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a loss of the electrical control of the stabilizer (with or without jamming of the stabilizer).

Flight Phase Inhibition:



Continued on the following page

F/CTL STABILIZER JAM (Cont'd)

Ident.: PRO-ABN-F_CTL-X-00018545.0001001 / 22 MAR 17

50

L2 When the Flight Control Computers detect a loss of electrical control of the stabilizer, pitch control law reverts to alternate law. Depending on the type of failure, the MAN PITCH TRIM may still be available.

L1 MAN PITCH TRIM..... CHECK

L2 *The force needed on the PITCH TRIM wheel may be higher than during pre-takeoff manual setting.*

L1 ● **IF MAN TRIM AVAIL:**
TRIM FOR NEUTRAL ELEV

L2 *If manual pitch trim is available, trim to maintain the elevator at the zero position (indications on F/CTL SD page).*

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED.....320 KT

Continued on the following page

F/CTL STABILIZER JAM (Cont'd)

Ident.: PRO-ABN-F_CTL-X-00018546.0003001 / 22 MAR 17

51

L12

STATUS

MAX SPEED..... 320 KT

APPR PROC:

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will be displayed when flaps in CONF 3

- **IF MAN TRIM NOT AVAIL:**
  - **WHEN CONF 3 AND VAPP:**

    L/G..... DN

    Landing gear extension is delayed, in order to delay the switching to direct law.

APPR SPD:.....VREF + 10 KT
LDG DIST PROC..... APPLY
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW

At landing gear extension, control reverts to direct law in pitch, as well as in roll. Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW.

INOP SYS

F/CTL PROT
STABILIZER
ELAC PITCH
AP 1 + 2
CAT 2
GLS AUTOLAND
STEEP APPR

F/CTL STABILIZER JAM

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

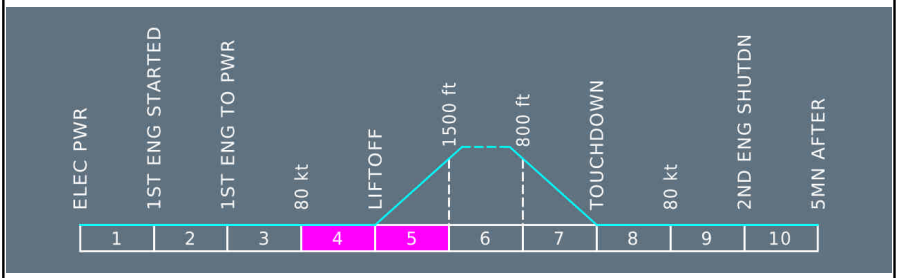
Ident.: PRO-ABN-F_CTL-X-00016973.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a loss of the electrical control of the stabilizer (with or without jamming of the stabilizer).

Flight Phase Inhibition:



Continued on the following page

F/CTL STABILIZER JAM (Cont'd)

Ident.: PRO-ABN-F_CTL-X-00018545.0001001 / 22 MAR 17

52

L2 When the Flight Control Computers detect a loss of electrical control of the stabilizer, pitch control law reverts to alternate law. Depending on the type of failure, the MAN PITCH TRIM may still be available.

L1 MAN PITCH TRIM..... CHECK

L2 *The force needed on the PITCH TRIM wheel may be higher than during pre-takeoff manual setting.*

L1 ● **IF MAN TRIM AVAIL:**
TRIM FOR NEUTRAL ELEV

L2 *If manual pitch trim is available, trim to maintain the elevator at the zero position (indications on F/CTL SD page).*

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED.....320 KT

Continued on the following page

F/CTL STABILIZER JAM (Cont'd)

Ident.: PRO-ABN-F_CTL-X-00018546.0005001 / 21 MAR 16

53

L12

STATUS

MAX SPEED..... 320 KT

APPR PROC:

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will be displayed when flaps in CONF 3

- **IF MAN TRIM NOT AVAIL:**
  - **WHEN CONF 3 AND VAPP:**

    L/G..... DN

    Landing gear extension is delayed, in order to delay the switching to direct law.

APPR SPD.....VREF + 15 KT
LDG DIST PROC..... APPLY
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW

At landing gear extension, control reverts to direct law in pitch, as well as in roll. Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW.

INOP SYS

F/CTL PROT
STABILIZER
ELAC PITCH
AP 1 + 2
CAT 2
GLS AUTOLAND
STEEP APPR

F/CTL STABILIZER JAM

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

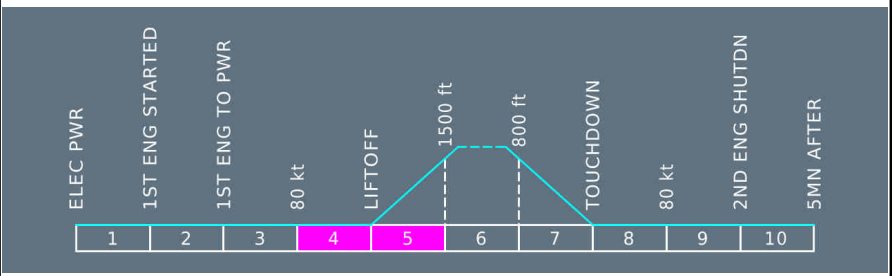
Ident.: PRO-ABN-F_CTL-X-00016973.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a loss of the electrical control of the stabilizer (with or without jamming of the stabilizer).

Flight Phase Inhibition:



Continued on the following page

F/CTL STABILIZER JAM (Cont'd)

Ident.: PRO-ABN-F_CTL-X-00018545.0003001 / 09 APR 18

54

L2 When the Flight Control Computers detect a loss of electrical control of the stabilizer, pitch control law reverts to alternate law. Depending on the type of failure, the MAN PITCH TRIM may still be available.

L1 MAN PITCH TRIM..... CHECK

L2 *The force needed on the PITCH TRIM wheel may be higher than during pre-takeoff manual setting.*

L1 ● **IF MAN TRIM AVAIL:**
TRIM FOR NEUTRAL ELEV

L2 *If manual pitch trim is available, trim to maintain the elevator at the zero position (indications on F/CTL SD page).*

L1 MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG
THR LVR..... TOGA THEN MCT

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED.....320 KT

Continued on the following page

F/CTL STABILIZER JAM (Cont'd)

Ident.: PRO-ABN-F_CTL-X-00018546.0008001 / 09 APR 18

55

L12

STATUS

MAX SPEED..... 320 KT
MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG
THR LVR ..... TOGA THEN MCT

APPR PROC:

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will be displayed when flaps in CONF 3

- **IF MAN TRIM NOT AVAIL:**
  - **WHEN CONF 3 AND VAPP:**
    L/G..... DN

    Landing gear extension is delayed, in order to delay the switching to direct law.

APPR SPD..... VREF + 15 KT
LDG DIST PROC..... APPLY
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW

At landing gear extension, control reverts to direct law in pitch, as well as in roll. Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW.

INOP SYS

F/CTL PROT
STABILIZER
ELAC PITCH
AP 1 + 2
CAT 2
GLS AUTOLAND
STEEP APPR

[QRH] ACT SYSTEM FAULT

Ident.: PRO-ABN-FUEL-00011274.0005001 / 04 SEP 18

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

ACT XFR..... OFF
ACT XFR MODE SEL..... MAN
CTR TK L XFR..... OFF
CTR TK R XFR..... OFF
USE ONLY WING TANK FUEL TO KEEP CG WITHIN LIMITS

CAUTION	Disregard FMS fuel predictions as usable fuel is limited to wings only. After failure detection, land before the maximum flight time allowed by the table.

	Number of refuelled ACTs at dispatch		
	1	2	3
FWD ACT XFR failed	-	-	120 min
AFT2 ACT XFR failed	-	120 min	170 min
AFT1 ACT XFR failed	120 min	170 min	200 min

[QRH] ACT XFR FAULT

Ident.: PRO-ABN-FUEL-00011268.0005001 / 04 SEP 18

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

DO NOT APPLY THIS PROCEDURE IN ELEC EMER CONFIG

- **At ANY TIME of the procedure, If FUEL ACT SYSTEM FAULT alert or no ACT transfer:**
  ACT SYSTEM FAULT PROC..... APPLY
  Refer to PRO-ABN-FUEL [QRH] ACT SYSTEM FAULT

ALL ACT pb.....CHECK NOT ISOL
ACT XFR rotary sel.....APPROPRIATE ACT

Select the ACT to be transferred in sequence FWD - AFT2 - AFT1. On the FUEL SD page, disregard any pulsing indication of the fuel quantity during the application of the procedure.

ACT XFR MODE SEL pb.....MAN
ACT FUEL TRANSFER.....MONITOR

Note: When an ACT contains less than 150 kg (330 lb) of fuel, continue the manual transfer of this ACT for 5 min. After 5 min, consider this ACT as transferred, and select the next ACT in the sequence FWD - AFT2 - AFT1, until all ACTs have transferred. Up to 150 kg (330 lb) of fuel may remain in any ACT after manual transfer, a total of 450 kg (990 lb) of fuel may be considered as unusable.

- **When all ACTs have transferred:**
  ACT XFR rotary sel.....OFF
  ACT XFR MODE SEL pb.....AUTO
  Disregard any amber transfer line indication from an ACT that may still be displayed on the FUEL SD page.

[QRH] FUEL IMBALANCE

Ident.: PRO-ABN-FUEL-00011257.0002001 / 17 MAR 17

3 **Applicable to: MSN 01767-06036**

FOB..... CHECK

Compare the FOB + FU, with the FOB at departure.
If the difference is significant, or if the FOB + FU decreases, suspect a fuel leak.

CAUTION	A fuel imbalance may indicate a fuel leak. Do not apply this procedure, if a fuel leak is suspected. *Refer to PRO-ABN-FUEL [QRH] FUEL LEAK.*

FUEL X FEED.....ON

- **On lighter side and in center tank:**
  FUEL PUMPS..... OFF
- **When fuel balanced:**
  FUEL PUMPS.....ON
  FUEL X FEED..... OFF

Note: There is no requirement to correct an imbalance, until the ECAM fuel advisory is displayed.

[QRH] FUEL IMBALANCE

Ident.: PRO-ABN-FUEL-00011257.0003001 / 17 MAR 17

4 **Applicable to: MSN 06208-09063**

FOB..... CHECK

Compare the FOB + FU, with the FOB at departure.
If the difference is significant, or if the FOB + FU decreases, suspect a fuel leak.

CAUTION	A fuel imbalance may indicate a fuel leak. Do not apply this procedure, if a fuel leak is suspected. *Refer to PRO-ABN-FUEL [QRH] FUEL LEAK.*

FUEL X FEED.....ON
CTR TK L XFR.....OFF
CTR TK R XFR.....OFF

- **On lighter side:**
  FUEL PUMPS.....OFF

- **When fuel balanced:**
  FUEL PUMPS.....ON
  CTR TK L XFR.....ON
  CTR TK R XFR.....ON
  FUEL X FEED.....OFF

Note: *There is no requirement to correct an imbalance, until the ECAM fuel advisory is displayed.*

[QRH] FUEL LEAK

Ident.: PRO-ABN-FUEL-00018665.0003001 / 17 MAR 17

5 **Applicable to: MSN 01767-06036**

A fuel leak may be detected, if:

- The sum of FOB and FU significantly less than FOB at engine start or is decreasing, or
- A passenger observes fuel spray from engine/pylon or wingtip/sharklet, or
- The total fuel quantity is decreasing at an abnormal rate, or
- A fuel imbalance is developing, or
- Fuel quantity in a tank is decreasing too fast (leak from engine/pylon, or hole in a tank), or
- The Fuel flow is excessive (leak from engine), or
- Fuel is smelt in the cabin.
- The destination EFOB turns to amber on the F-PLN (or on the FUEL PRED) page, or
- "DEST EFOB BELOW MIN" appears on the MCDU scratchpad.

If visibility permits, leak source may be identified by a visual check from the cabin.

WHEN A LEAK IS CONFIRMED

LAND ASAP

■ **Leak from engine/pylon confirmed by excessive fuel flow or visual check:**

THR LEVER (affected engine).....IDLE
ENG MASTER (affected engine).....OFF
FUEL X FEED.....AS RQRD

If the leak stops, the crossfeed valve can now be opened to re-balance fuel quantity, or to enable use of fuel from both wings.

DO NOT RESTART AFFECTED ENGINE

■ **Leak from engine/pylon not confirmed or leak not located:**

Stop any fuel transfer, and then monitor the depletion rate of each inner tank, to determine if the leak is from an engine or a wing, or from the Center tank, or the APU feeding line.

FUEL X FEED.....MAINTAIN CLOSED

The crossfeed valve must remain closed to prevent the leak from affecting both sides.

CTR TK PUMP 1.....OFF
CTR TK PUMP 2.....OFF

Each engine is fed via its associated inner tank only.

INNER TANK FUEL QUANTITIES.....MONITOR

Monitor the depletion rate of each inner tank.

Continued on the following page

[QRH] FUEL LEAK (Cont'd)

■ **If one inner tank depletes faster than other by at least 300 kg (660 lb) in less than 30 min:**

An engine leak may still be suspected. Therefore:

THR LEVER (engine on leaking side)..... IDLE
ENG MASTER (engine on leaking side).....OFF
CTR TK PUMP 1..... ON
CTR TK PUMP 2..... ON
FUEL LEAK..... MONITOR

■ **If leak stops:**

ENGINE LEAK CONFIRMED

FUEL X FEED..... AS RQRD
DO NOT RESTART AFFECTED ENGINE

■ **If leak continues (after engine shutdown):**

WING LEAK SUSPECTED

ENGINE RESTART.....CONSIDER

CAUTION	Do not apply the FUEL IMBALANCE procedure. Approach and landing can be done, even with one full wing/one empty wing.

■ **If both inner tanks deplete at a similar rate:**

LEAK FROM CENTER TANK OR APU FEEDING LINE SUSPECTED

● **If fuel smell in cabin:**
APU.....OFF
This prevents additional fuel loss through the APU feeding line.

● **When fuel quantity in one inner tank less than 3 000 kg (6 600 lb):**
CTR TK PUMP 1.....ON
CTR TK PUMP 2.....ON

● **For landing:**
DO NOT USE REVERSERS

[QRH] FUEL LEAK

Ident.: PRO-ABN-FUEL-00018665.0006001 / 30 AUG 18

6 **Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

A fuel leak may be detected, if:
- The sum of FOB and FU significantly less than FOB at engine start or is decreasing, or
- A passenger observes fuel spray from engine/pylon or wingtip/sharklet, or
- The total fuel quantity is decreasing at an abnormal rate, or
- A fuel imbalance is developing, or
- Fuel quantity in a tank is decreasing too fast (leak from engine/pylon, or hole in a tank), or
- A tank is overflowing (due to pipe rupture in a tank), or
- The Fuel flow is excessive (leak from engine), or
- Fuel is smelt in the cabin, or
- The destination EFOB turns to amber on the F-PLN (or on the FUEL PRED) page, or
- "DEST EFOB BELOW MIN" appears on the MCDU scratchpad.

If visibility permits, leak source may be identified by a visual check from the cabin.

WHEN A LEAK IS CONFIRMED

LAND ASAP

■ **Leak from engine/pylon confirmed by excessive fuel flow or visual check:**

THR LEVER (affected engine).....IDLE
ENG MASTER (affected engine).....OFF
FUEL X FEED.....AS RQRD

If the leak stops, the crossfeed valve can now be opened to re-balance fuel quantity, or to enable use of fuel from both wings.

DO NOT RESTART AFFECTED ENGINE

■ **Leak from engine/pylon not confirmed or leak not located:**

Stop any fuel transfer, and then monitor the depletion rate of each inner tank, to determine if the leak is from an engine or a wing, or from the Center tank, or the APU feeding line.

FUEL X FEED.....MAINTAIN CLOSED

The crossfeed valve must remain closed to prevent the leak from affecting both sides.

CTR TK L XFR.....OFF
CTR TK R XFR.....OFF

Each engine is fed via its associated inner tank only.

INNER TANK FUEL QUANTITIES.....MONITOR

Continued on the following page

[QRH] FUEL LEAK (Cont'd)

Monitor the depletion rate of each inner tank.

■ **If one inner tank depletes faster than other by at least 300 kg (660 lb) in less than 30 min :**

An engine leak may still be suspected. Therefore:

THR LEVER (engine on leaking side)..... IDLE
ENG MASTER (engine on leaking side).....OFF
FUEL LEAK..... MONITOR

■ **If leak stops:**

ENGINE LEAK CONFIRMED

CTR TK L XFR.....ON
CTR TK R XFR..... ON
FUEL X FEED.....AS RQRD
DO NOT RESTART AFFECTED ENGINE

■ **If leak continues (after engine shutdown):**

WING LEAK SUSPECTED

ENGINE RESTART.....CONSIDER
CTR TK XFR (non-leaking side)..... ON

CAUTION	Do not apply the FUEL IMBALANCE procedure. Approach and landing can be done, even with one full wing/one empty wing.

■ **If both inner tanks deplete at a similar rate:**

LEAK FROM CENTER TANK OR APU FEEDING LINE SUSPECTED

● **If fuel smell in cabin:**
APU.....OFF
This prevents additional fuel loss through the APU feeding line.

● **When fuel quantity in one inner tank less than 3 000 kg (6 600 lb):**
CTR TK L XFR.....ON
CTR TK R XFR..... ON

● **For landing:**
DO NOT USE REVERSERS

[QRH] FUEL LEAK

Ident.: PRO-ABN-FUEL-00018665.0015001 / 17 MAR 17

7 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

A fuel leak may be detected, if:
- The sum of FOB and FU significantly less than FOB at engine start or is decreasing, or
- A passenger observes fuel spray from engine/pylon or wingtip/sharklet, or
- The total fuel quantity is decreasing at an abnormal rate, or
- A fuel imbalance is developing, or
- Fuel quantity in a tank is decreasing too fast (leak from engine/pylon, or hole in a tank), or
- A tank is overflowing (due to pipe rupture in a tank), or
- The Fuel flow is excessive (leak from engine), or
- Fuel is smelt in the cabin, or
- The destination EFOB turns to amber on the F-PLN (or on the FUEL PRED) page, or
- "DEST EFOB BELOW MIN" appears on the MCDU scratchpad.

If visibility permits, leak source may be identified by a visual check from the cabin.

WHEN A LEAK IS CONFIRMED

LAND ASAP

■ **Leak from engine/pylon confirmed by excessive fuel flow or visual check:**

THR LEVER (affected engine).....IDLE
ENG MASTER (affected engine).....OFF
FUEL X FEED.....AS RQRD

If the leak stops, the crossfeed valve can now be opened to re-balance fuel quantity, or to enable use of fuel from both wings.

DO NOT RESTART AFFECTED ENGINE

■ **Leak from engine/pylon not confirmed or leak not located:**

Stop any fuel transfer, and then monitor the depletion rate of each wing tank, to determine if the leak is from an engine or a wing, or from the Center tank, or the APU feeding line.

FUEL X FEED.....MAINTAIN CLOSED

The crossfeed valve must remain closed to prevent the leak from affecting both sides.

CTR TK L XFR.....OFF
CTR TK R XFR.....OFF

Each engine is fed via its associated wing tank only.

WING TANK FUEL QUANTITIES.....MONITOR

Continued on the following page

[QRH] FUEL LEAK (Cont'd)

Monitor the depletion rate of each wing tank.

■ **If one wing tank depletes faster than other by at least 300 kg (660 lb) in less than 30 min:**

An engine leak may still be suspected. Therefore:

THR LEVER (engine on leaking side)..... IDLE
ENG MASTER (engine on leaking side).....OFF
FUEL LEAK..... MONITOR

■ **If leak stops:**

ENGINE LEAK CONFIRMED

CTR TK L XFR.....ON
CTR TK R XFR..... ON
FUEL X FEED.....AS RQRD
DO NOT RESTART AFFECTED ENGINE

■ **If leak continues (after engine shutdown):**

WING LEAK SUSPECTED

ENGINE RESTART.....CONSIDER
CTR TK XFR (non-leaking side)..... ON

CAUTION	Do not apply the FUEL IMBALANCE procedure. Approach and landing can be done, even with one full wing/one empty wing.

■ **If both wing tanks deplete at a similar rate:**

LEAK FROM CENTER TANK OR APU FEEDING LINE SUSPECTED

● **If fuel smell in cabin:**
APU.....OFF
This prevents additional fuel loss through the APU feeding line.

● **When fuel quantity in one wing tank less than 3 000 kg (6 600 lb):**
CTR TK L XFR.....ON
CTR TK R XFR..... ON

● **For landing:**
DO NOT USE REVERSERS

[QRH] FWD ACT ISOLATED

Ident.: PRO-ABN-FUEL-00011279.0005001 / 04 SEP 18

8 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

DO NOT APPLY THIS PROCEDURE IN ELEC EMER CONFIG

- **If no ENG 1(2) FAIL alert:**
  FWD ACT..... OVRD
  FWD ACT was isolated due to spurious damage detection.

- **If ENG 1(2) FAIL alert and FWD ACT not empty:**
  ACT XFR.....OFF
  ACT XFR MODE SEL.....MAN
  CTR TK L XFR..... OFF
  CTR TK R XFR..... OFF
  USE ONLY WING TANK FUEL TO KEEP CG WITHIN LIMITS

CAUTION	Disregard FMS fuel predictions as usable fuel is limited to wings only. After failure detection, land before the maximum flight time allowed.

  Maximum Flight Time : 120 min

- **If ENG 1(2) FAIL alert and FWD ACT empty or not installed:**
  CONTROL ACT TRANSFER MANUALLY

[QRH] GRAVITY FUEL FEEDING

Ident.: PRO-ABN-FUEL-00011261.0002001 / 17 MAR 17

9 **Applicable to: MSN 06720-09063**

ENG MODE SEL.....IGN
AVOID NEGATIVE G FACTOR
MAX FL: GRAVITY FEED CEILING

- *Current FL if flight time above FL 300 > 30 min.*
- *FL 280 if flight time above FL 300 < 30 min.*
- *FL 150 if FL 300 never exceeded.*

- **When reaching gravity feed ceiling:**
  FUEL X FEED..... OFF
- **If no fuel leak and with one engine running (fed by gravity):**
  FUEL X FEED..... ON
  BANK ANGLE..... 1° WING DOWN ON LIVE ENG SIDE
  The fuel from the wing tank on the engine running side is used.
  RUDDER TRIM.....USE
  Use rudder trim to maintain constant course and neutral stick.
  - **When fuel imbalance reaches 1 000 kg (2 200 lb):**
    BANK ANGLE.....2° or 3° WING DOWN ON LIVE ENG SIDE
    Use fuel from the opposite wing tank, until fuel imbalance is reduced to 0.

[QRH] GRAVITY FUEL FEEDING

Ident.: PRO-ABN-FUEL-00011261.0001001 / 17 MAR 17

10 **Applicable to: MSN 01767-06336**

ENG MODE SEL.....IGN
AVOID NEGATIVE G FACTOR
MAX FL: GRAVITY FEED CEILING

- *Current FL if flight time above FL 300 > 30 min.*
- *FL 300 if flight time above FL 300 < 30 min.*
- *Highest of FL 150 or 7 000 ft above takeoff airport if FL 300 never exceeded.*
- *FL 100 for JET B.*

- **When reaching gravity feed ceiling:**
  FUEL X FEED..... OFF
- **If no fuel leak and with one engine running (fed by gravity):**
  FUEL X FEED..... ON
  BANK ANGLE..... 1° WING DOWN ON LIVE ENG SIDE
  The fuel from the wing tank on the engine running side is used.
  RUDDER TRIM.....USE
  Use rudder trim to maintain constant course and neutral stick.
  - **When fuel imbalance reaches 1 000 kg (2 200 lb):**
    BANK ANGLE.....2° or 3° WING DOWN ON LIVE ENG SIDE
    Use fuel from the opposite wing tank, until fuel imbalance is reduced to 0.

[QRH] FUEL OVERREAD

Ident.: PRO-ABN-FUEL-00022322.0003001 / 30 MAR 18

11 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

FUEL QTY UNRELIABLE

L2 *FOB must be considered unreliable even if the indication is not displayed with two dashes across the two last digits on the FUEL SD page.*

L1 FUEL LO LVL ALERTS REMAIN RELIABLE

L2 *Fuel low level alerts remain reliable as they are computed using independent sensors.*

FUEL ACT PUMP LO PR

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-FUEL-T-00018189.0001001 / 21 MAR 16

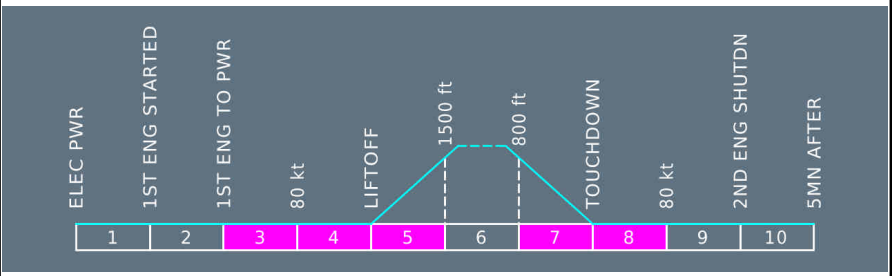
12

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the ACT pump is in low pressure.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-T-00011276.0001001 / 13 AUG 10

13

SELECTED ACT LO LVL
ACT.....AUTO

L2 *The pump does not operate in flight. However the PUMP LO PR warning will be displayed when the FUEL MODE SEL pb-sw is selected to MAN and the selected ACT is empty. The ACT pb-sw must be set to AUTO so that the normal automatic sequence restarts.*

Ident.: PRO-ABN-FUEL-T-00011277.0001001 / 13 AUG 10

14

STATUS

	INOP SYS
	ACT PUMP

FUEL ACT SYSTEM FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-FUEL-BA-00016812.0001001 / 21 MAR 16

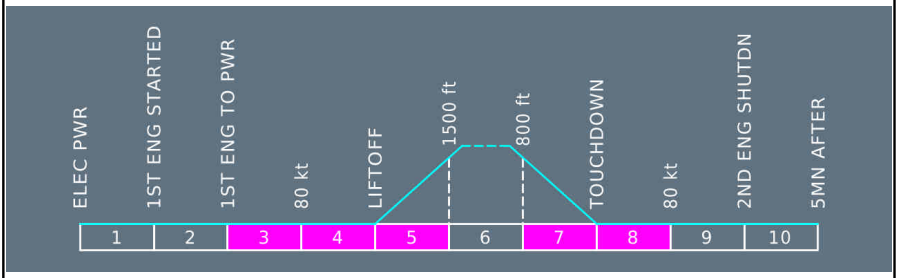
15

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when, in MAN mode, any of the valves are in the incorrect position.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BA-00018838.0001001 / 21 MAR 16

16

PROC..... APPLY

L2 *Refer to PRO-ABN-FUEL [QRH] ACT SYSTEM FAULT which is not indicated on ECAM.*

FUEL ACT XFR FAULT

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

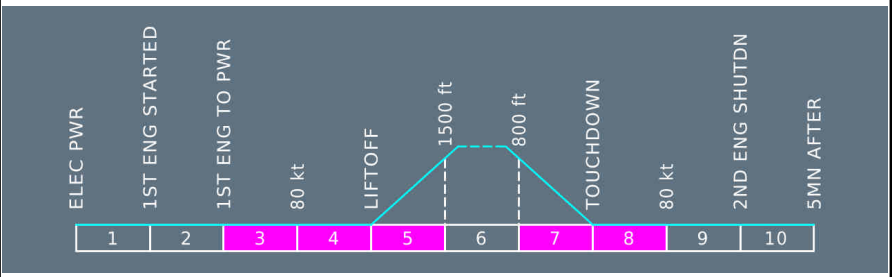
Ident.: PRO-ABN-FUEL-R-00016820.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- The ACT quantity > 250 kg (550 lb) and
- The CTR TK quantity < 3 000 kg (6 600 lb).

Flight Phase Inhibition:



Continued on the following page

FUEL ACT XFR FAULT ⩤ (Cont'd)

Ident.: PRO-ABN-FUEL-R-00017614.0001001 / 21 MAR 16

17

ACT.....FWD

- **IF NECESSARY:**
  DESCEND TO FL270

L2 *Note:*
- *ACT transfer rate depends on altitude and on remaining ACT fuel quantity.*
- *If ACT transfer is uncertain, set the ACT pb to AUTO to avoid pump dry running.*
- *ACT pb can be set back to FWD at lower Flight Level to recover remaining ACT fuel.*

L1 - **WHEN ACT EMPTY:**
  ACT..... AUTO
  - **For A321 aircraft equipped with 1 ACT ⩤ :**
    ACT UNUSABLE (IF AUTOMATIC AND MANUAL MODES ARE FAILED)
- **For aircraft equipped with 2 ACTs ⩤ :**
  - **IF NO XFR:**
    ACT UNUSABLE
    PROC..... APPLY

Ident.: PRO-ABN-FUEL-R-00011267.0001001 / 13 AUG 10

18

	STATUS INOP SYS
- **If automatic and manual mode are failed:** ACT UNUSABLE	ACT XFR

FUEL ACT XFR FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

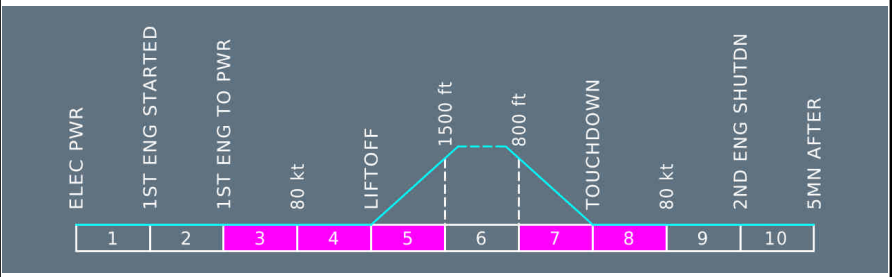
Ident.: PRO-ABN-FUEL-R-00016820.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- The ACT quantity > 250 kg (550 lb) and
- The CTR TK quantity < 3 000 kg (6 600 lb).

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-R-00017614.0003001 / 30 MAR 18

19

L2 Automatic sequencing is not working.

This warning is triggered when:
a. The center tank quantity is less than 3 000 kg and there is still fuel in one or more ACTs, or
b. Any ACT is not full and there is still fuel in the previous ACT.

Thus, if a transfer failure occurs, the warning may not be displayed immediately. It will be displayed only when one of the above conditions is present.

L1 PROC..... APPLY

L2 *Refer to PRO-ABN-FUEL [QRH] ACT XFR FAULT which is not indicated on ECAM.*

FUEL ACT PUMP LO PR

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-FUEL-BB-00016811.0001001 / 21 MAR 16

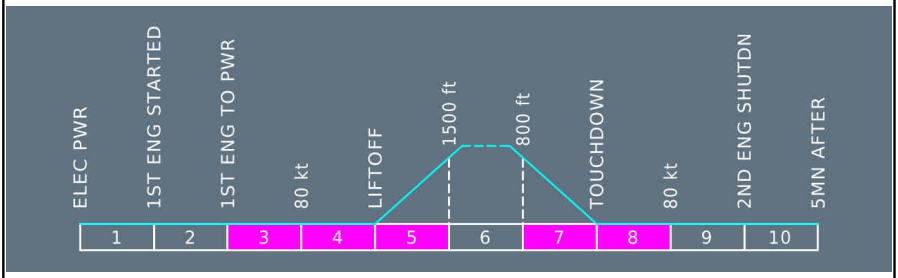
20

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the ACT pump is in low pressure.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BB-00018877.0001001 / 21 MAR 16

21

ACT LO LVL

L2 *Note:* *Displayed if ACT is empty.*

L1 ACT.....OFF

FUEL APU LP VALVE FAULT

Applicable to: ALL

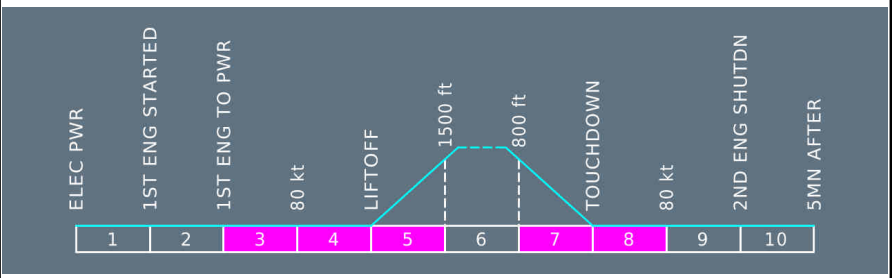
Ident.: PRO-ABN-FUEL-BC-00016826.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the valve position disagrees with the selected position.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BC-00017633.0002001 / 21 MAR 16

Crew awareness.

FUEL AUTO FEED FAULT

Applicable to: MSN 01767-06036

Ident.: PRO-ABN-FUEL-Q-00016698.0001001 / 21 MAR 16

22

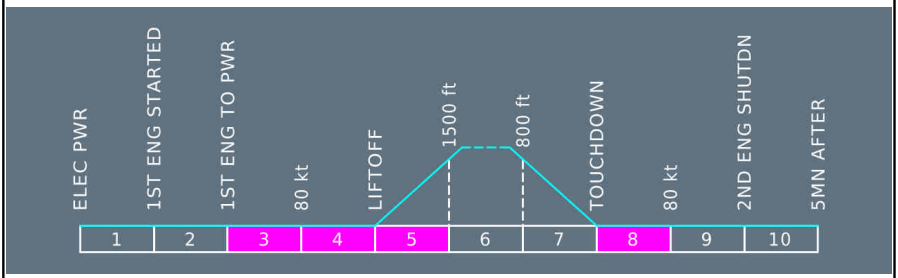
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- CTR TK quantity > 250 kg (550 lb) and left or right wing tanks quantity < 5 000 kg (11 000 lb), or
- CTR TK pumps do not stop after slat extension or CTR TK level is low.

Flight Phase Inhibition:



Continued on the following page

FUEL AUTO FEED FAULT (Cont'd)

Ident.: PRO-ABN-FUEL-Q-00017666.0001001 / 21 MAR 16

23

FUEL MODE SEL.....MAN

L2 *The center tank pumps will run and feed the engines.*

L1 ■ **Fuel in one wing tank < 5 000 kg (11 000 lb) and in center tank > 250 kg (550 lb):**

CTR TK PUMP 1.....ON
CTR TK PUMP 2.....ON

L2 *When the center tank is empty, CTR TK PUMP LO PR alert will come on.*
For aircraft equipped with CFM engines only: If the center tank is not empty at slat extension, CTR TK PUMPs should be switched OFF. This action will prevent a possible wing tank overflow on ground, due to IDG fuel recirculation.

L1 ■ **CTR TK PUMPS running after slat extension, or LO LVL in center tank:**

CTR TK PUMP 1.....OFF
CTR TK PUMP 2.....OFF

Ident.: PRO-ABN-FUEL-Q-00018882.0001001 / 21 MAR 16

24

	STATUS
CTR TK FEED : MAN ONLY	

FUEL AUTO TRANSFER FAULT

Applicable to: MSN 06208-09063

Ident.: PRO-ABN-FUEL-O-00016830.0001001 / 21 MAR 16

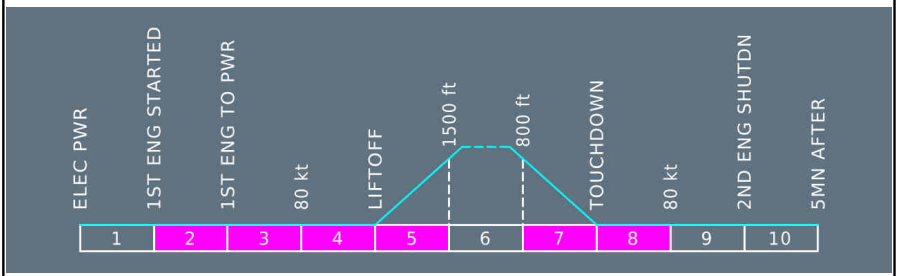
25

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- the CTR TK quantity > 250 kg (550 lb) and
- Left or right wing tanks quantity < 5 000 kg (11 000 lb).

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-O-00011223.0001001 / 31 AUG 17

26

FUEL MODE SEL.....MAN

L2 *The center tank transfer valves open.*

L1 CTR TK L XFR..... ON
CTR TK R XFR.....ON

L2 *The flight crew should select the CTR TK L+R XFR pb-switches OFF when the center tank is empty, and/or when the wing tanks are full to prevent overflow.*

Ident.: PRO-ABN-FUEL-O-00011225.0001001 / 13 NOV 13

27

STATUS

CTR TK FEED : MAN ONLY

FUEL CTR L(R) XFR FAULT
(VALVE NOT FULLY CLOSED)

Applicable to: MSN 06208-09063

Ident.: PRO-ABN-FUEL-X-00016835.0001001 / 06 SEP 16

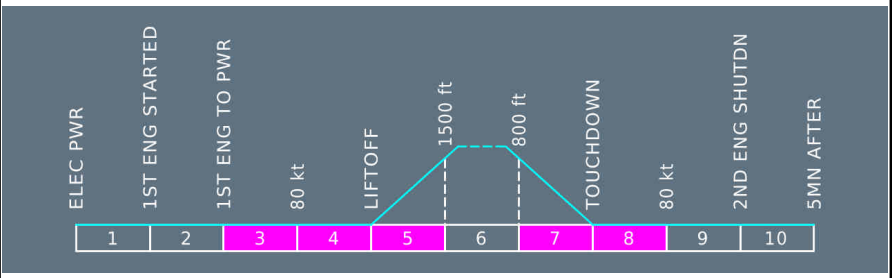
28

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when either center transfer valve is failed in open position.

Flight Phase Inhibition:



Continued on the following page

FUEL CTR L(R) XFR FAULT (Cont'd)
(VALVE NOT FULLY CLOSED)

Ident.: PRO-ABN-FUEL-X-00018886.0001001 / 12 OCT 16

29

CTR TK L (R) XFR..... OFF

- **IF UNSUCCESSFUL and if the center tank is not empty:**
  - **For A319/A320/A321 aircraft:**

L2 Stop fuel transfer from the center tank to L(R) inner/wing tank by switching off both L(R) inner/wing tank pumps ; both engines are fed by the R (L) inner/wing tank until the center tank is empty.

L1
FUEL X FEED..... ON
L (R) TK PUMP 1..... OFF
L (R) TK PUMP 2..... OFF

L2 *Note:* *FUEL L(R) TK PUMP 1 + 2 LO PR will be triggered.*

L1
- **When the center tank is empty (automatic recall of the warning) :**

L (R) TK PUMP 1..... ON
L (R) TK PUMP 2..... ON
FUEL X FEED..... OFF

Ident.: PRO-ABN-FUEL-X-00014902.0008001 / 13 NOV 13

30

STATUS	
	INOP SYS
	CTR TK L (R) XFR

FUEL CTR L(R) XFR FAULT
(VALVE NOT FULLY OPEN)

Applicable to: MSN 06208-09063

Ident.: PRO-ABN-FUEL-Y-00018050.0001001 / 06 SEP 16

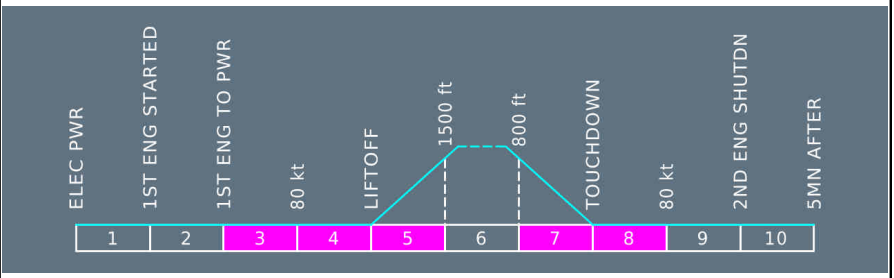
31

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when either center transfer valve is failed in closed position.

Flight Phase Inhibition:



Continued on the following page

FUEL CTR L(R) XFR FAULT (Cont'd)
(VALVE NOT FULLY OPEN)

Ident.: PRO-ABN-FUEL-Y-00018904.0001001 / 12 OCT 16

32

FUEL MODE SEL.....MAN

- **IF UNSUCCESSFUL and if the center tank is not empty :**
  - **For A319/A320/A321 aircraft:**

L2 Because fuel does not transfer from the center tank to L(R) inner/wing tank, both engines are fed by L(R) inner/wing tank.

L1
FUEL X FEED.....ON
L (R) TK PUMP 1.....OFF
L (R) TK PUMP 2.....OFF

L2 *Note:* *FUEL L(R) TK PUMP 1 + 2 LO PR will be triggered.*

L1
- **When the center tank is empty (automatic recall of the warning) :**

L (R) TK PUMP 1.....ON
L (R) TK PUMP 2.....ON
FUEL X FEED.....OFF

Ident.: PRO-ABN-FUEL-Y-00014906.0008001 / 13 NOV 13

33

STATUS	
	INOP SYS
	CTR TK L (R) XFR

FUEL CTR L + R XFR FAULT
(VALVES NOT FULLY CLOSED)

Applicable to: MSN 06208-09063

Ident.: PRO-ABN-FUEL-Z-00016838.0001001 / 28 JUL 16

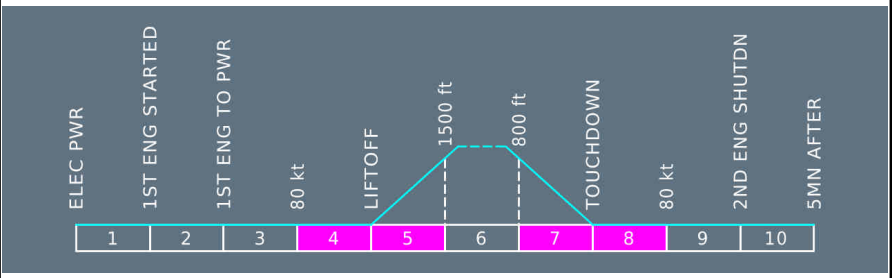
34

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both center transfer valves are failed in open position.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-Z-00014908.0008001 / 13 NOV 13

35

CTR TK L XFR.....OFF
CTR TK R XFR.....OFF

Ident.: PRO-ABN-FUEL-Z-00014907.0008001 / 13 NOV 13

36

STATUS

INOP SYS

CTR TK XFR

FUEL CTR L + R XFR FAULT
(VALVES NOT FULLY OPEN)

Applicable to: MSN 06208-09063

Ident.: PRO-ABN-FUEL-AA-00018051.0003001 / 28 JUL 16

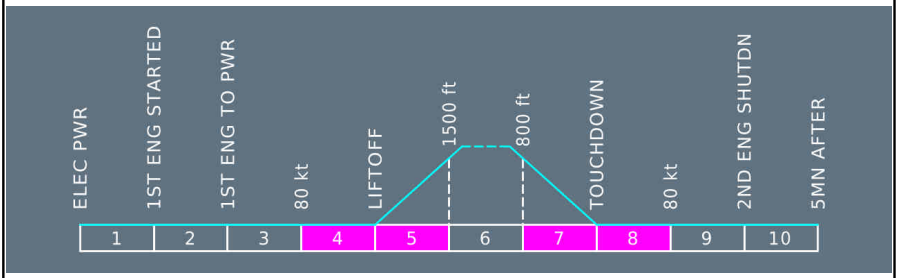
37

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both center transfer valves are failed in closed position.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-AA-00014903.0012001 / 13 NOV 13

38

FUEL MODE SEL.....MAN

- **IF UNSUCCESSFUL:**
  CTR AVAIL BY GRAVITY

L2 *If the center tank transfer valves are not fully open, the center tank fuel may be used by gravity.*

L1 2 T (4400 LBS) UNUSABLE

Ident.: PRO-ABN-FUEL-AA-00014904.0011001 / 13 NOV 13

39

STATUS

	INOP SYS
CTR TK USABLE BY GRAVITY CTR TK FUEL: 2 T (4400 LBS) UNUSABLE	CTR TK XFR

FUEL CTR TK PUMP 1(2) LO PR

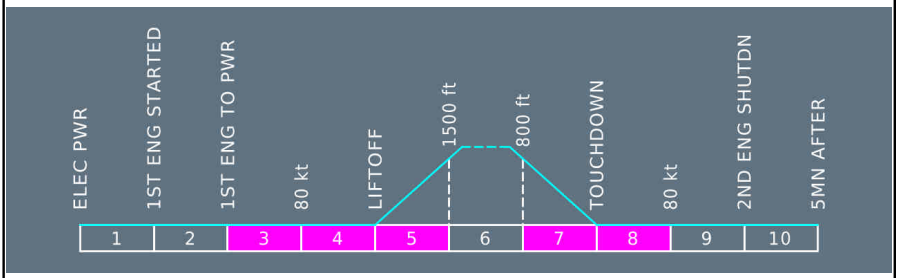
Applicable to: MSN 01767-06036

Ident.: PRO-ABN-FUEL-M-00016843.0001001 / 21 MAR 16

40

ANNUNCIATIONS

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-M-00018914.0003001 / 21 MAR 16

41

- **IF NO FUEL LEAK:**

  FUEL X FEED..... ON

  CTR TK PUMP (AFFECTED)..... OFF

L2 *A fuel imbalance may occur, if the performance of the pumps of one wing is different from that of the other wing, and the CTR TK PUMP that is not affected stops automatically because:*

- *The L(R) INR TK is full, or*
- *The CTR TK is empty.*

In this case, apply the FUEL IMBALANCE procedure, as required.

L1 - **WHEN CTR TK EMPTY:**

  FUEL X FEED..... OFF

L2 *When the CTR TK is empty, the X FEED pb-sw must be turned off, to avoid a possible fuel imbalance.*

Continued on the following page

FUEL CTR TK PUMP 1(2) LO PR (Cont'd)

Ident.: PRO-ABN-FUEL-M-00018918.0002001 / 21 MAR 16

42

STATUS

	INOP SYS
● **WHEN CTR TK EMPTY:** FUEL X FEED..... OFF	CTR TK PUMP 1(2)

FUEL CTR TK PUMPS LO PR

Applicable to: MSN 01767-06036

Ident.: PRO-ABN-FUEL-N-00016845.0001001 / 21 MAR 16

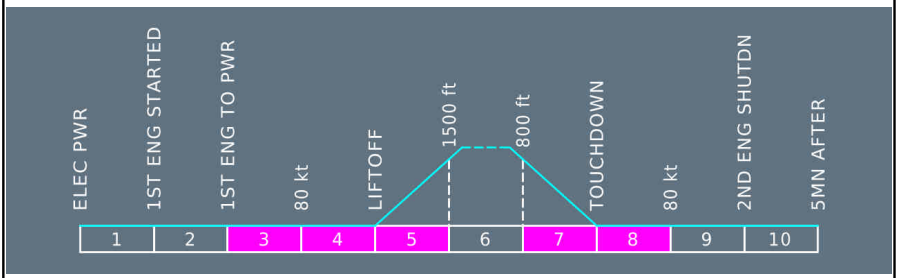
43

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pressure of the CTR TK pumps is low.

Flight Phase Inhibition:



Continued on the following page

FUEL CTR TK PUMPS LO PR (Cont'd)

Ident.: PRO-ABN-FUEL-N-00011221.0003001 / 30 MAR 12

44

L2 Set FUEL MODE SEL pb-sw to MAN, to avoid the possible triggering of the FUEL CTR TK PUMPS OFF ECAM caution.

L1 CTR TK PUMP 1 ..... OFF
CTR TK PUMP 2 ..... OFF
FUEL X FEED ..... OFF
CTR TK UNUSABLE

L2 *Gravity feeding from the center tank is not possible (no by-pass valve fitted on the center tank pumps).*

Ident.: PRO-ABN-FUEL-N-00011222.0001001 / 13 AUG 10

45

STATUS	
	INOP SYS
CTR TK FUEL UNUSABLE	CTR TK PUMPS

FUEL CTR TK PUMPS OFF

Applicable to: MSN 01767-06036

Ident.: PRO-ABN-FUEL-BE-00016846.0001001 / 21 MAR 16

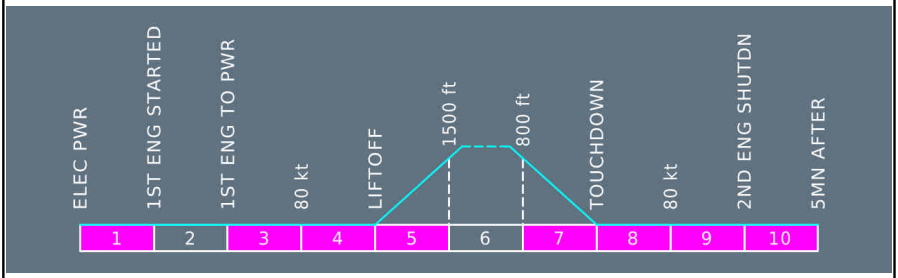
46

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both CTR TK PUMP 1 pb-sw and CTR TK PUMP 2 pb-sw are at OFF with no failure.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BE-00011260.0002001 / 10 JAN 11

47

L2 The center tank pumps pushbuttons are OFF, with slats retracted.

L1 CTR TK PUMP 1..... ON
CTR TK PUMP 2..... ON

FUEL CTR TK XFR OFF

Applicable to: MSN 06208-09063

Ident.: PRO-ABN-FUEL-BF-00016847.0001001 / 21 MAR 16

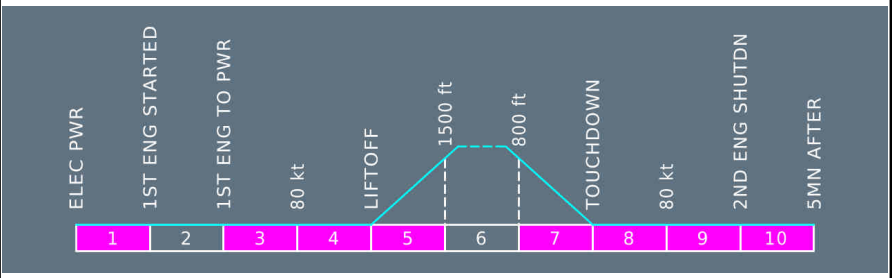
48

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both CTR TK L XFR pb-sw and CTR TK R XFR pb-sw at OFF when the system is in automatic mode.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BF-00011239.0001001 / 13 AUG 10

49

L2 Center tank transfer valves pushbuttons at off.

L1 CTR TK L XFR..... ON
CTR TK R XFR..... ON

FUEL ENG 1(2) LP VALVE OPEN

Applicable to: ALL

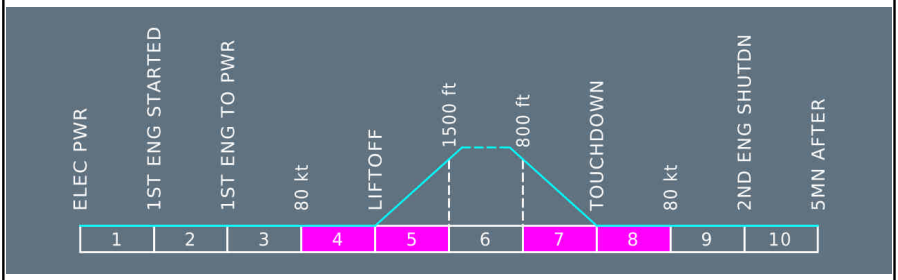
Ident.: PRO-ABN-FUEL-BG-00016814.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the valve remains in the open position.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BG-00011217.0001001 / 25 FEB 14

Crew awareness.

FUEL F. USED/FOB DISAGREE

Applicable to: MSN 02388, 02443, 02584-02626, 02670, 02804-02914, 05365-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-FUEL-BH-00016816.0002001 / 21 MAR 16

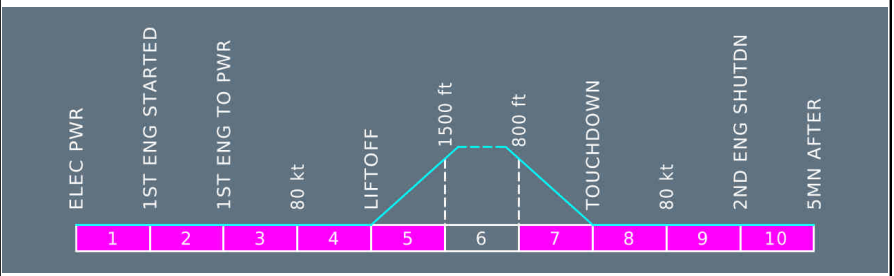
50

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the difference between the initial FOB and the actual FOB + fuel used is significant.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BH-00017634.0001001 / 21 MAR 16

51

FUEL LEAK PROC..... APPLY

FUEL F. USED/FOB DISAGREE

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-FUEL-BH-00016816.0002001 / 21 MAR 16

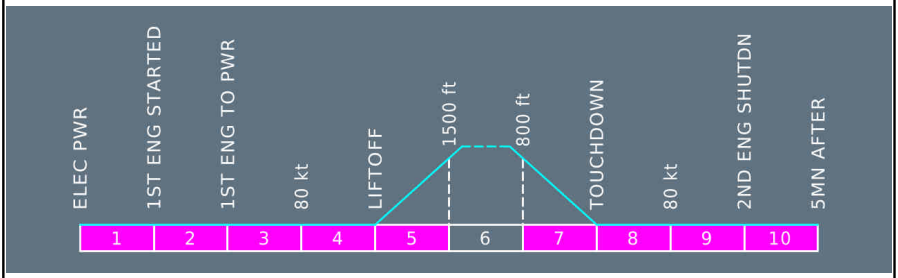
52

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the difference between the initial FOB and the actual FOB + fuel used is significant.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BH-00017634.0005001 / 30 MAR 18

53

- **If current FOB + FUEL USED is more than initial FOB:**
  OVERREAD PROC..... APPLY
- **If current FOB + FUEL USED is less than initial FOB:**
  FUEL LEAK PROC.....APPLY

FUEL FQI CH 1(2) FAULT

Applicable to: ALL

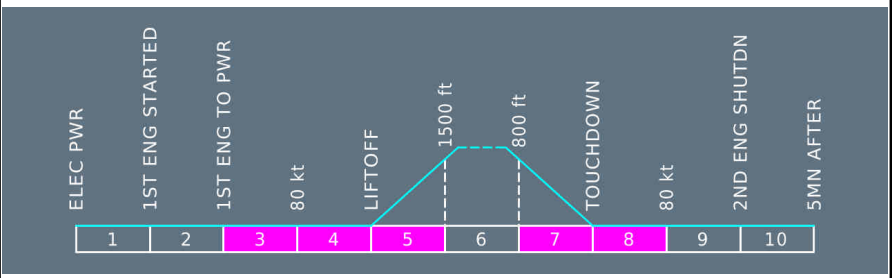
Ident.: PRO-ABN-FUEL-BI-00016817.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when a FQI channel is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BI-00011216.0001001 / 25 FEB 14

Crew awareness.

FUEL FWD ACT ISOLATED

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-FUEL-BJ-00016819.0001001 / 21 MAR 16

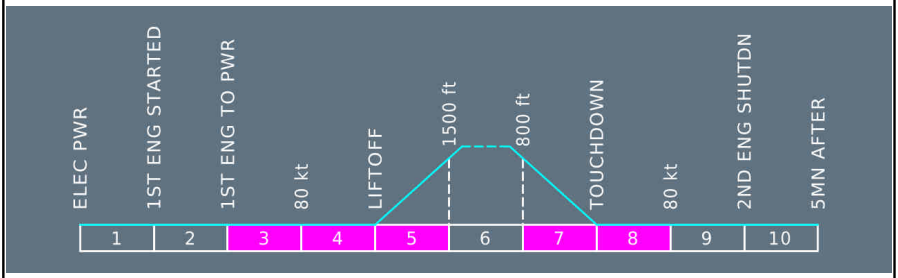
54

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when forward ACT are automatically isolated due to damage that is detected during the forward ACT transfer.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BJ-00017635.0001001 / 21 MAR 16

55

PROC..... APPLY

L2 *Apply the FWD ACT ISOLATED procedure (Refer to PRO-ABN-FUEL [QRH] FWD ACT ISOLATED) which is not indicated on ECAM.*

FUEL FWD ACT LINE FAULT

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-FUEL-BS-00022249.0001001 / 30 MAR 18

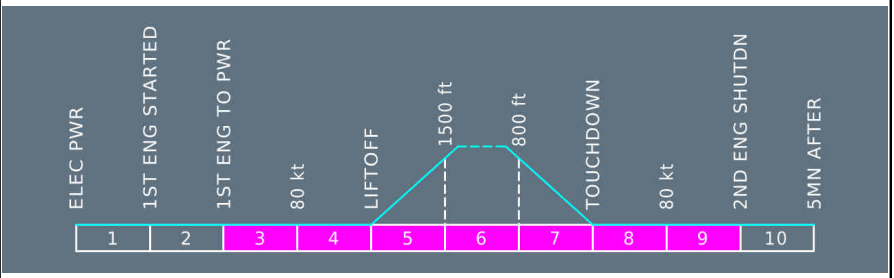
56

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers on ground when the FWD ACT isolation valve or FWD ACT inlet valve is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BS-00022250.0001001 / 30 MAR 18

57

- **If FWD ACT isolation valve or FWD ACT inlet valve is failed open :**
  FWD ACT VALVE OPEN
- **If FWD ACT isolation valve is failed closed and FWD ACT inlet valve is NOT failed open :**
  FWD ACT VALVE CLOSED

FUEL IDG 1(2) COOL FAULT

Applicable to: MSN 02135, 02195, 02405, 04314, 04393-04397, 06720-09063

Ident.: PRO-ABN-FUEL-BK-00016821.0001001 / 21 MAR 17

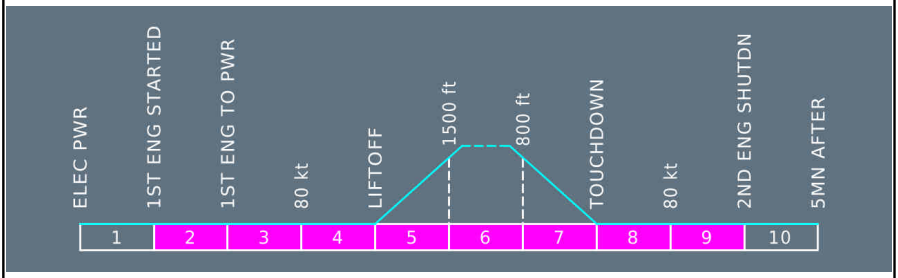
58

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when equipment related to the fuel recirculation command is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BK-00011262.0001001 / 25 FEB 14

59

L2 Maintenance action is due.

L1 Crew awareness.

FUEL FUEL INERTING SYS FAULT

Applicable to: MSN 02405, 02482, 04314, 04393-04397, 04965-09063

Ident.: PRO-ABN-FUEL-U-00016823.0001001 / 21 MAR 16

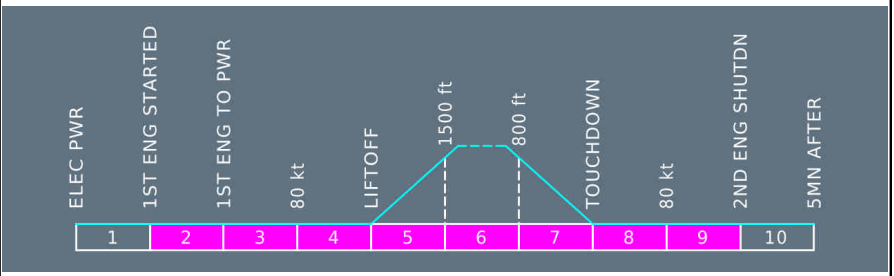
60

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fuel inerting system is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-U-00014390.0002001 / 25 FEB 14

61

Crew awareness.

Ident.: PRO-ABN-FUEL-U-00014391.0002001 / 30 MAR 12

62

STATUS

INOP SYS
FUEL INERT

FUEL L (R) OUTER (INNER) TK HI TEMP

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Ident.: PRO-ABN-FUEL-BL-00016825.0001001 / 21 MAR 16

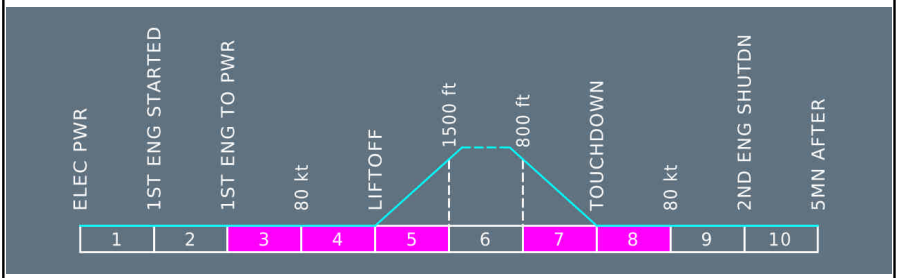
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fuel temperature:

- In outer cell, is above 55 °C on ground
- In outer cell, is above 60 °C in flight
- In inner cell, is above 45 °C on ground
- In inner cell, is above 54 °C in flight.

Flight Phase Inhibition:



Continued on the following page

FUEL L (R) OUTER (INNER) TK HI TEMP (Cont'd)

Ident.: PRO-ABN-FUEL-BL-00011214.0001001 / 13 AUG 10

L2 This caution may spuriously trigger due to interference from communication equipment. Therefore, the flight crew should wait 2 min while the fuel temperature measurement is updated. After 2 min, if the ECAM caution has not disappeared, the flight crew must apply the following procedure:

L1 GALLEY.....OFF

L2 *Reducing electrical loads reduce heat emitted by IDG.*

L1 ■ **On the ground:**

LIMITED TAXI TIME

- **If temp reaches 60° C in outer cell or 54° C in inner cell:**

DELAY T.O.

ENG MASTER (AFFECTED SIDE).....OFF

■ **In flight:**

ENG F. FLOW (AFFECTED SIDE).....INCREASE

L2 *Disconnect autothrust. Adjust the thrust lever to increase fuel flow through the IDG oil heat exchanger and decrease the temperature of the fuel returning to the outer cell.*

L1

- **IF TEMP ABV 65 DEG C in outer cell or 57 DEG C in inner cell:**

APU.....AS RQRD

L2 *APU if available may be started and APU GEN used to allow IDG disconnection.*

L1

- **If opposite GEN avail:**

IDG (AFFECTED SIDE).....OFF

FUEL L (R) OUTER (INNER) TK HI TEMP

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-FUEL-BL-00016825.0002001 / 21 MAR 16

63

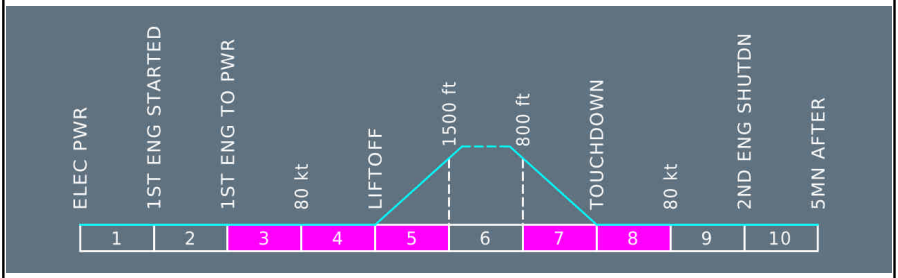
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fuel temperature:

- In outer cell, is above 60 °C
- In inner cell, is above 54 °C.

Flight Phase Inhibition:



Continued on the following page

FUEL L (R) OUTER (INNER) TK HI TEMP (Cont'd)

Ident.: PRO-ABN-FUEL-BL-00011214.0002001 / 13 AUG 10

64

L2 This caution may spuriously trigger due to interference from communication equipment. Therefore, the flight crew should wait 2 min while the fuel temperature measurement is updated. After 2 min, if the ECAM caution has not disappeared, the flight crew must apply the following procedure:

L1 GEN (AFFECTED SIDE).....OFF

■ **On the ground:**
DELAY T.O.
ENG MASTER (AFFECTED SIDE).....OFF

■ **In flight:**
ENG F. FLOW (AFFECTED SIDE).....INCREASE

L2 *Disconnect autothrust. Adjust the thrust lever to increase fuel flow through the IDG oil heat exchanger and decrease the temperature of the fuel returning to the outer cell.*

L1 ● **IF TEMP ABV 65 DEG C in outer cell or 57 DEG C in inner cell:**
APU.....AS RQRD

L2 *APU if available may be started and APU GEN used to allow IDG disconnection.*

L1 ● **If opposite GEN avail:**
IDG (AFFECTED SIDE).....OFF

FUEL L (R) OUTER (INNER) TK LO TEMP

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-FUEL-BM-00016827.0001001 / 21 MAR 16

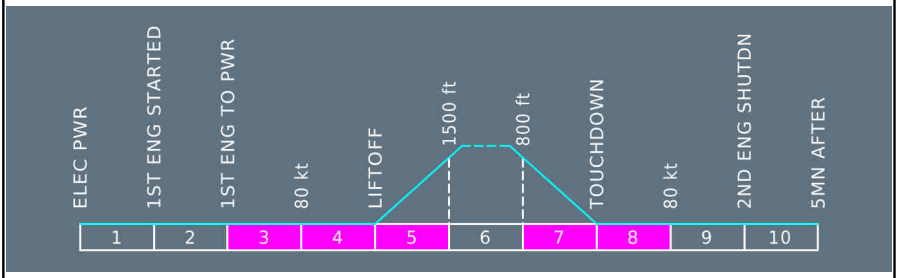
65

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fuel temperature is approximately below -43 °C.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BM-00011208.0001001 / 25 FEB 14

66

■ **On the ground before takeoff:**
DELAY T.O

L2 *Do not takeoff until temperatures are within limits.*

L1 ■ **In flight:**

Crew awareness.

L2 Consider descending to a lower altitude and/or increasing Mach to increase TAT.

FUEL L (R) OUTER XFR CLOSED

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-FUEL-V-00016829.0001001 / 21 MAR 16

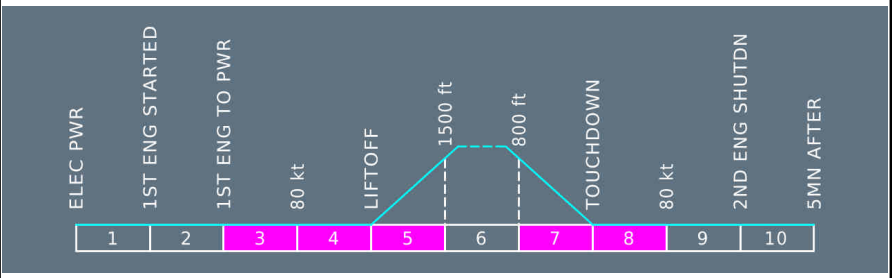
67

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both transfer valves remain closed after inner tank reaches the low level.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-V-00014879.0006001 / 07 MAR 13

68

Note: *When fuel quantity in affected wing reaches low level, corresponding FUEL WING TK LO LVL warning is triggered.*

L (R) OUTER TK UNUSABLE

Ident.: PRO-ABN-FUEL-V-00014881.0006001 / 07 MAR 13

69

STATUS

L (R) OUTER TK UNUSABLE

FUEL L (R) OUTER XFR OPEN

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-FUEL-W-00016831.0001001 / 21 MAR 16

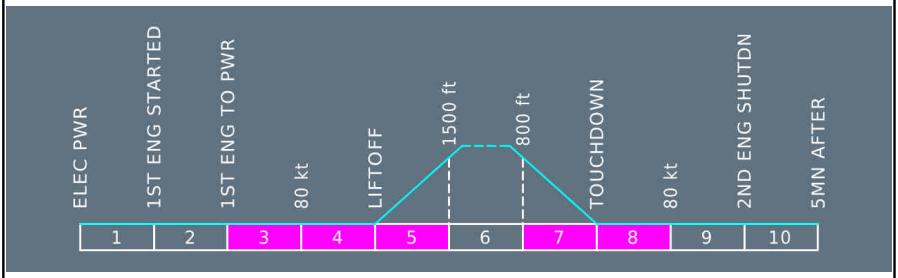
70

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when either transfer valve opens before inner tank reaches low level.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-W-00014882.0006001 / 25 FEB 14

71

Crew awareness.

Ident.: PRO-ABN-FUEL-W-00014883.0006001 / 07 MAR 13

72

STATUS

INOP SYS
L (R) CELL VALVE

FUEL L (R) TK PUMP 1(2) LO PR

Applicable to: MSN 01767-06336

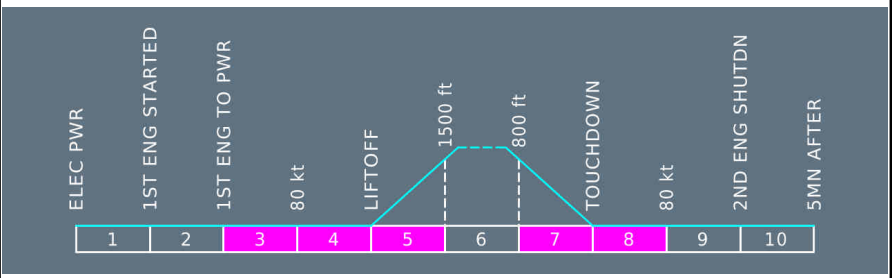
Ident.: PRO-ABN-FUEL-D-00016832.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pressure of one tank pump is low.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-D-00011177.0002001 / 13 AUG 10

73

TK PUMP (AFFECTED).....OFF

L2 *Note:* *Aircraft altitude must be limited to 35 000 ft if a single fuel pump feeds both engines with hot JET B (JP4) fuel (fuel temperature above 30 °C).*

Ident.: PRO-ABN-FUEL-D-00011178.0001001 / 13 AUG 10

STATUS

	INOP SYS
	TK PUMP (affected)

FUEL L (R) TK PUMP 1(2) LO PR

Applicable to: MSN 06720-09063

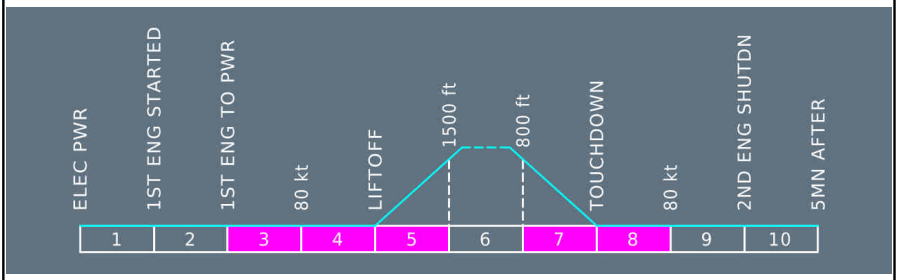
Ident.: PRO-ABN-FUEL-D-00016832.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pressure of one tank pump is low.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-D-00011177.0001001 / 13 AUG 10

74

TK PUMP (AFFECTED).....OFF

Ident.: PRO-ABN-FUEL-D-00011178.0001001 / 13 AUG 10

STATUS

	INOP SYS
	TK PUMP (affected)

FUEL L (R) TK PUMP 1 + 2 LO PR

Applicable to: MSN 06208-09063

Ident.: PRO-ABN-FUEL-A-00016833.0001001 / 21 MAR 16

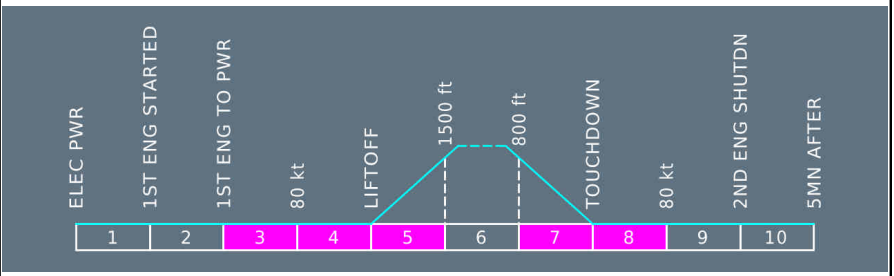
75

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pressure of the tank pumps is low.

Flight Phase Inhibition:



Continued on the following page

FUEL L (R) TK PUMP 1 + 2 LO PR (Cont'd)

Ident.: PRO-ABN-FUEL-A-00017636.0001001 / 21 MAR 16

76

- **IF NO FUEL LEAK:**

FUEL X FEED (IF ABOVE FL150)..... ON

ENG MODE SEL.....IGN

L2 *The selection of continuous relight protects against flame-out, caused by possible fuel supply surging.*

L1 TK PUMP 1 (AFFECTED).....OFF

TK PUMP 2 (AFFECTED).....OFF

- **WHEN TK (affected) FUEL RQRD:**

TK (AFFECTED) FEED.....GRVTY ONLY

L2 *Apply the GRVTY FUEL FEEDING procedure, (Refer to PRO-ABN-FUEL [QRH] GRAVITY FUEL FEEDING).*

Fuel from the affected tank may be used immediately if there is no ceiling limitation for gravity fuel feeding.

L1 FUEL X FEED (IF BELOW FL150).....OFF

- **If FUEL X FEED off:**

L2 As long as fuel X feed is closed, associated engine is fed by gravity only.

L1 PROC: GRVTY FUEL FEEDING

L2 *Apply the GRVTY FUEL FEEDING procedure, (Refer to PRO-ABN-FUEL [QRH] GRAVITY FUEL FEEDING).*

L1 AVOID NEGATIVE G FACTOR

L2 *Avoiding negative g will prevent fuel surging and therefore reduce the risk of engine malfunction.*

Ident.: PRO-ABN-FUEL-A-00018926.0001001 / 21 MAR 16

77

STATUS

- **If FUEL X FEED off:**

PROC: GRVTY FUEL FEEDING
AVOID NEGATIVE G FACTOR

TK (affected) GRVTY FEED ONLY

INOP SYS

TK PUMPS (affected)

FUEL L (R) TK PUMP 1 + 2 LO PR
(CENTER TANK EMPTY)

Applicable to: MSN 01767-06036

Ident.: PRO-ABN-FUEL-C-00018184.0001001 / 21 MAR 16

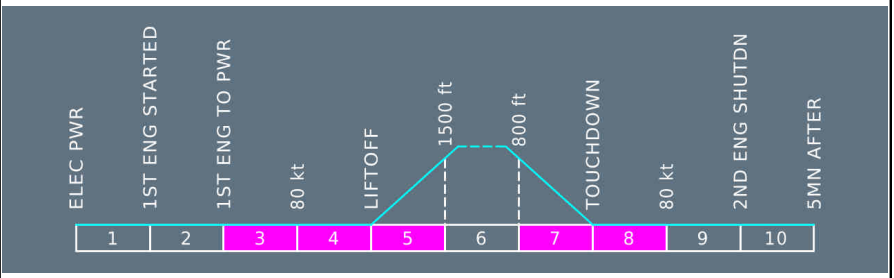
78

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pressure of the tank pumps is low.

Flight Phase Inhibition:



Continued on the following page

FUEL L (R) TK PUMP 1 + 2 LO PR (Cont'd)
(CENTER TANK EMPTY)

Ident.: PRO-ABN-FUEL-C-00017648.0004001 / 21 MAR 16

79

- **IF NO FUEL LEAK:**

FUEL X FEED (IF ABOVE FL150)..... ON

ENG MODE SEL.....IGN

L2 *The selection of continuous relight protects against flame-out, caused by possible fuel supply surging.*

L1 TK PUMP 1 (AFFECTED).....OFF

TK PUMP 2 (AFFECTED).....OFF

- **WHEN TK (affected) FUEL RQRD:**

TK (AFFECTED) FEED.....GRVTY ONLY

L2 *Apply GRVTY FUEL FEED procedure, (Refer to PRO-ABN-FUEL [QRH] GRAVITY FUEL FEEDING).*

Fuel from the affected tank may be used immediately if there is no ceiling limitation for gravity fuel feeding.

L1 FUEL X FEED (IF BELOW FL150).....OFF

- **If FUEL X FEED off:**

L2 As long as fuel X feed is closed, associated engine is fed by gravity only.

L1 PROC: GRVTY FUEL FEEDING

L2 *Apply GRVTY FUEL FEED procedure, (Refer to PRO-ABN-FUEL [QRH] GRAVITY FUEL FEEDING).*

L1 AVOID NEGATIVE G FACTOR

L2 *Avoiding negative g will prevent fuel surging and therefore reduce the risk of engine malfunction.*

Ident.: PRO-ABN-FUEL-C-00011175.0001001 / 13 AUG 10

80

STATUS

● **If FUEL X FEED off:** PROC:GRVTY FUEL FEEDING AVOID NEGATIVE G FACTOR TK (affected) GRVTY FEED ONLY	**INOP SYS** TK PUMPS (affected)

FUEL L (R) TK PUMP 1 + 2 LO PR
(CENTER TANK NOT EMPTY)

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Ident.: PRO-ABN-FUEL-B-00018196.0001001 / 21 MAR 16

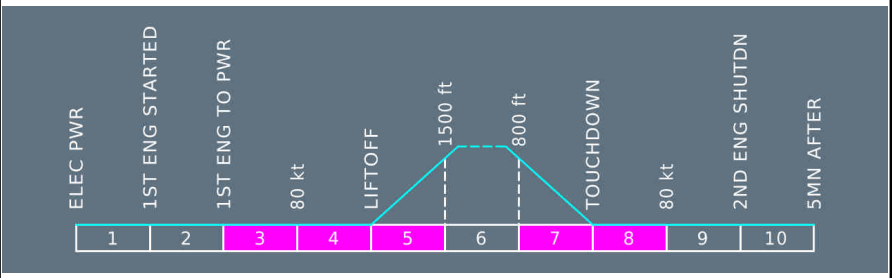
81

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pressure of the tank pumps is low.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-B-00011170.0003001 / 26 JUL 12

FUEL MODE SEL (IF CTR TK NOT FEEDING).....MAN

L2 *Setting FUEL MODE SEL pb-sw to MAN will allow center tank pumps to run.*
If the center tank is not empty at slat extension, CTR TK PUMPS should be switched OFF. This action will prevent a possible wing tank overflow on ground, due to IDG fuel recirculation.

L1 TK PUMP 1 (AFFECTED).....OFF
TK PUMP 2 (AFFECTED).....OFF

- **WHEN TK (affected) FUEL RQRD:**

L2 Apply the GRVTY FUEL FEEDING procedure, (*Refer to PRO-ABN-FUEL [QRH] GRAVITY FUEL FEEDING*).

L1 TK (AFFECTED) FEED.....GRVTY ONLY
PROC: GRVTY FUEL FEEDING

Continued on the following page

FUEL L (R) TK PUMP 1 + 2 LO PR (Cont'd)
(CENTER TANK NOT EMPTY)

Ident.: PRO-ABN-FUEL-B-00011171.0001001 / 13 AUG 10

82

STATUS

	INOP SYS
PROC:GRVTY FUEL FEEDING	
TK (affected) GRVTY FEED ONLY	TK PUMPS (affected)
CTR TK FEED: MAN ONLY	

FUEL L (R) TK PUMP 1 + 2 LO PR
(CENTER TANK NOT EMPTY)

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06036

Ident.: PRO-ABN-FUEL-B-00018196.0001001 / 21 MAR 16

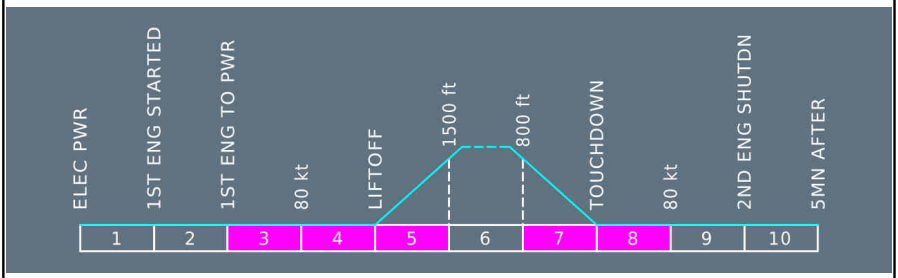
83

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pressure of the tank pumps is low.

Flight Phase Inhibition:



Continued on the following page

FUEL L (R) TK PUMP 1 + 2 LO PR (Cont'd)
(CENTER TANK NOT EMPTY)

Ident.: PRO-ABN-FUEL-B-00011170.0001001 / 13 AUG 10

84

FUEL MODE SEL (IF CTR TK NOT FEEDING).....MAN

L2 *Setting FUEL MODE SEL pb-sw to MAN will allow center tank pumps to run.*

L1 TK PUMP 1 (AFFECTED).....OFF
TK PUMP 2 (AFFECTED).....OFF

- **WHEN TK (affected) FUEL RQRD:**

L2 Apply the GRVTY FUEL FEEDING procedure, (*Refer to PRO-ABN-FUEL [QRH] GRAVITY FUEL FEEDING*).

L1 TK (AFFECTED) FEED.....GRVTY ONLY
PROC: GRVTY FUEL FEEDING

Ident.: PRO-ABN-FUEL-B-00011171.0001001 / 13 AUG 10

85

STATUS

	INOP SYS
PROC:GRVTY FUEL FEEDING	
TK (affected) GRVTY FEED ONLY	TK PUMPS (affected)
CTR TK FEED: MAN ONLY	

FUEL L (R) WING TK HI TEMP

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-FUEL-BN-00016834.0002001 / 21 MAR 16

86

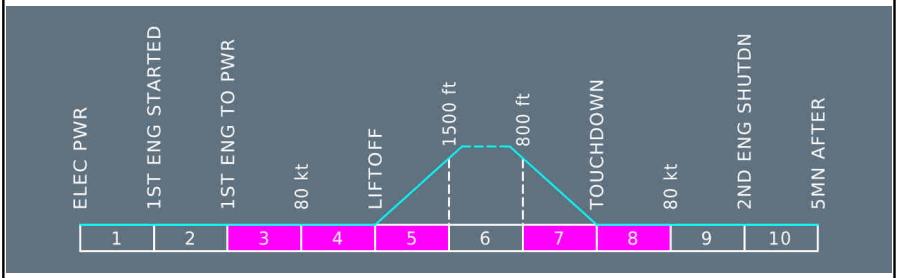
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fuel temperature is above :

- 45 °C on ground
- 54 °C in flight.

Flight Phase Inhibition:



Continued on the following page

FUEL L (R) WING TK HI TEMP (Cont'd)

Ident.: PRO-ABN-FUEL-BN-00011215.0004001 / 16 NOV 11

87

GEN (AFFECTED SIDE).....OFF

■ **On the ground:**

DELAY T.O.

ENG MASTER (AFFECTED SIDE).....OFF

■ **In flight:**

ENG. F. FLOW (AFFECTED SIDE).....INCREASE

L2 *Disconnect autothrust. Adjust the thrust lever to increase fuel flow through the IDG oil heat exchanger and decrease the temperature of the fuel returning to the wing tank.*

L1 ● **IF TEMP ABV 57 DEG C:**

APU.....AS RQRD

L2 *APU if available may be started and APU GEN used allow IDG disconnection.*

L1 ● **If opposite GEN avail:**

IDG (AFFECTED SIDE).....OFF

FUEL L (R) WING TK LO LVL

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

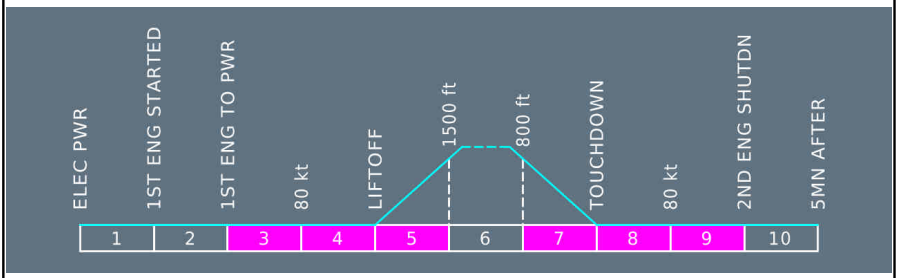
Ident.: PRO-ABN-FUEL-E-00016837.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when left or right wing tanks quantity is below 750 kg (1 650 lb). This alert is triggered by sensors getting dry and is independent from the fuel quantity indications.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-E-00018927.0002001 / 21 MAR 16

88

- **If center tank not empty:**
  FUEL MODE SEL ..... MAN
- **IF NO FUEL LEAK AND FUEL IMBALANCE:**
  FUEL X FEED ..... ON
  TK PUMP 1 (ON SIDE WITH LO LVL) ..... OFF
  TK PUMP 2 (ON SIDE WITH LO LVL) ..... OFF

L2 *Note:* *TK PUMP 1+2 (on side with LO LVL) LO PR warning will be triggered.*

Continued on the following page

FUEL L (R) WING TK LO LVL (Cont'd)

Ident.: PRO-ABN-FUEL-E-00018928.0001001 / 21 MAR 16

STATUS	INOP SYS
● **If center tank not empty:** CTR TK FEED: MAN ONLY	TK PUMPS

FUEL L (R) WING TK LO LVL

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

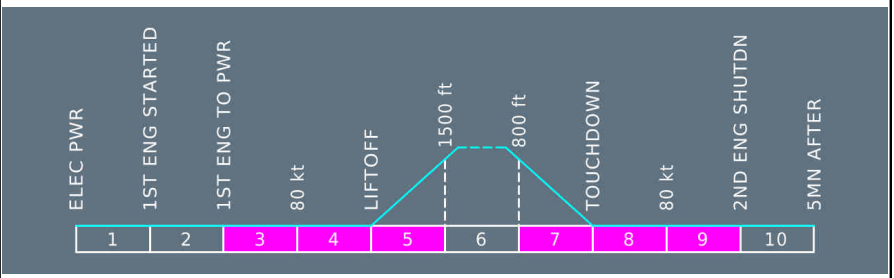
Ident.: PRO-ABN-FUEL-E-00016837.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when left or right wing tanks quantity is below 750 kg (1 650 lb). This alert is triggered by sensors getting dry and is independent from the fuel quantity indications.

Flight Phase Inhibition:



Continued on the following page

FUEL L (R) WING TK LO LVL (Cont'd)

Ident.: PRO-ABN-FUEL-E-00018927.0003001 / 30 MAR 18

89

- **If center tank not empty:**
  FUEL MODE SEL ..... MAN
- **IF NO FUEL LEAK:**
  FUEL X FEED ..... ON
  TK PUMP 1 (ON SIDE WITH LO LVL) ..... OFF
  TK PUMP 2 (ON SIDE WITH LO LVL) ..... OFF

L2 *Note:* *TK PUMP 1+2 LO PR warning will be triggered on side with LO LVL.*

Ident.: PRO-ABN-FUEL-E-00018928.0001001 / 21 MAR 16

	STATUS INOP SYS
● **If center tank not empty:** CTR TK FEED: MAN ONLY	TK PUMPS

FUEL L + R WING TK LO LVL

Applicable to: MSN 01767-06036

Ident.: PRO-ABN-FUEL-BO-00016810.0001001 / 21 MAR 16

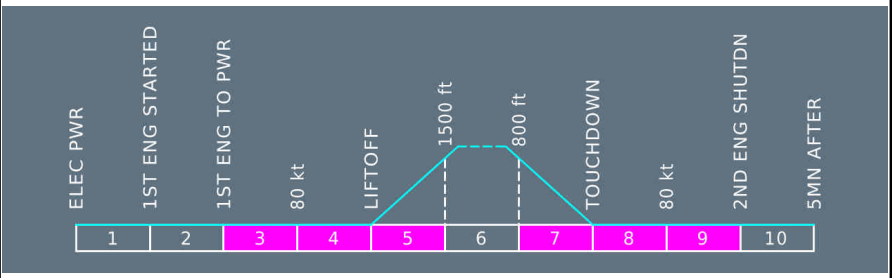
90

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the low level is detected in both wing inner tanks. The alert is triggered by sensors getting dry and is independent from the fuel quantity indications.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BO-00018673.0003001 / 21 MAR 16

91

LAND ASAP

FUEL MODE SEL (IF CENTER TANK NOT EMPTY)..... MAN
ALL TK PUMPS..... ON

L2 *All pumps in center tank and in wing tanks will run.*

L1 ■ **IF NO FUEL LEAK:**
FUEL X FEED..... ON

■ **IF GRVTY FEED:**
FUEL X FEED..... OFF

FUEL L + R WING TK LO LVL

Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-FUEL-BO-00016810.0001001 / 21 MAR 16

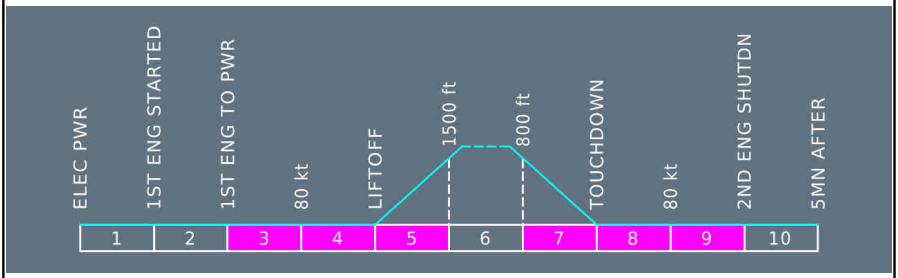
92

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the low level is detected in both wing inner tanks. The alert is triggered by sensors getting dry and is independent from the fuel quantity indications.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BO-00018673.0004001 / 21 MAR 16

93

LAND ASAP

FUEL MODE SEL (IF CENTER TANK NOT EMPTY)..... MAN
ALL TK PUMPS..... ON
CTR TK L+R XFR..... ON

L2 *The center tank transfer valves will open and all pumps in wing tanks will run.*

L1 ■ **IF NO FUEL LEAK:**
FUEL X FEED..... ON

■ **IF GRVTY FEED:**
FUEL X FEED..... OFF

FUEL L + R WING TK LO LVL

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-FUEL-BO-00016810.0002001 / 21 MAR 16

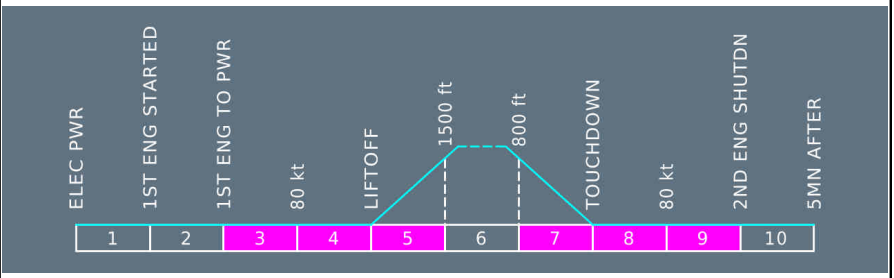
94

ANNUNCIATIONS

Triggering Conditions:

L3 This alert triggers when the low level is detected in both wing tanks. The alert is triggered by sensors getting dry and is independent from the fuel quantity indications.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BO-00018673.0004001 / 21 MAR 16

95

LAND ASAP

FUEL MODE SEL (IF CENTER TANK NOT EMPTY)..... MAN
ALL TK PUMPS..... ON
CTR TK L+R XFR..... ON

L2 *The center tank transfer valves will open and all pumps in wing tanks will run.*

L1 ■ **IF NO FUEL LEAK:**
FUEL X FEED..... ON

■ **IF GRVTY FEED:**
FUEL X FEED..... OFF

FUEL L (R) WING TK LO TEMP

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-FUEL-BP-00016815.0001001 / 21 MAR 16

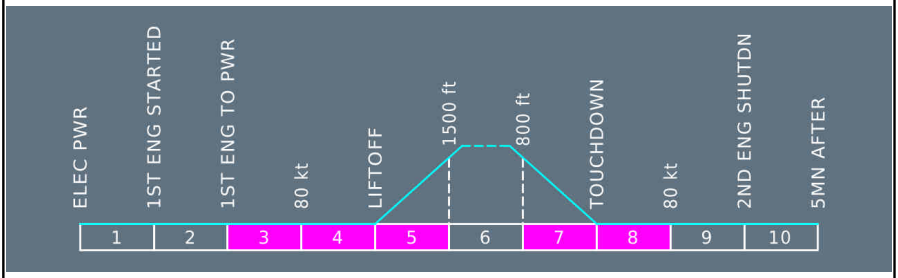
96

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fuel temperature is below -44 °C.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BP-00011209.0001001 / 25 FEB 14

97

■ **On the ground before takeoff:**
DELAY T.O

L2 *Do not takeoff until temperatures are within limits.*

L1 ■ **In flight:**

Crew awareness.

L2 Consider descending to a lower altitude and/or increasing mach to increase TAT.

FUEL L (R) WING TK OVERFLOW

Applicable to: MSN 03138, 05641-06036

Ident.: PRO-ABN-FUEL-P-00016818.0002001 / 21 MAR 16

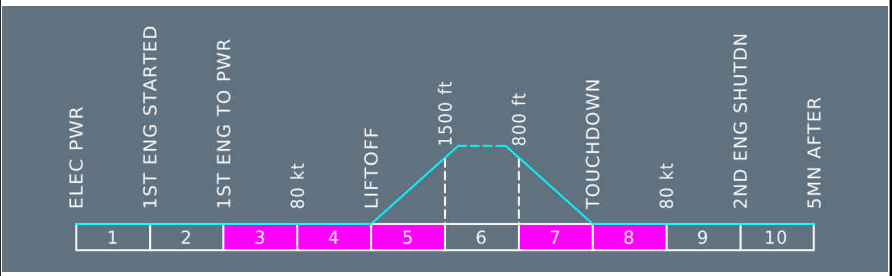
98

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when an overflow of the tank is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-P-00018938.0003001 / 21 MAR 16

FUEL X FEED.....OFF
FUEL MODE SEL.....AUTO
CTR TK PUMP 1(2).....OFF

L2 *When the CTR TK PUMP 1(2) is ON, fuel from the center tank can be used to cool the IDG 1(2) and recirculate into the left (right) outer tank. Switching the CTR TK PUMP 1(2) OFF enables to stop this fuel recirculation.*

L1 EXPECT FUEL IMBALANCE

Ident.: PRO-ABN-FUEL-P-00018980.0002001 / 21 MAR 16

STATUS

	INOP SYS
	CTR TK PUMP 1(2)

FUEL L (R) WING TK OVERFLOW

Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-FUEL-P-00016818.0002001 / 21 MAR 16

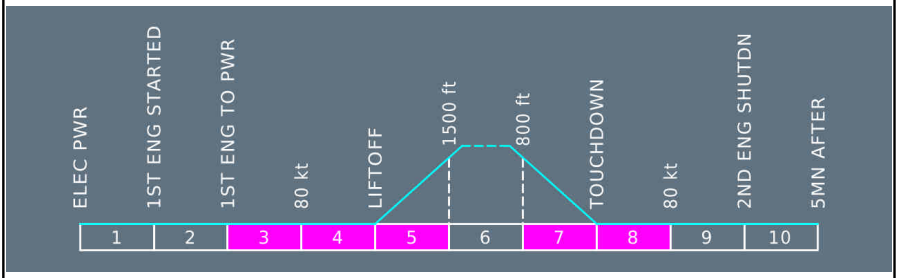
99

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when an overflow of the tank is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-P-00018938.0002001 / 21 MAR 16

100

CTR TK L (R) XFR..... OFF

- **IF UNSUCCESSFUL and if center tank not empty:**

L2 Stop fuel transfer from the center tank to L(R) inner tank by switching off both L(R) inner tank pumps. Both engines are fed by L(R) inner tank until the center tank is empty.

L1 FUEL X FEED..... ON
L (R) TK PUMP 1..... OFF
L (R) TK PUMP 2..... OFF

- **When CTR TK empty:**

L (R) TK PUMP 1..... ON
L (R) TK PUMP 2..... ON
FUEL X FEED..... OFF

Continued on the following page

FUEL L (R) WING TK OVERFLOW (Cont'd)

Ident.: PRO-ABN-FUEL-P-00018980.0001001 / 21 MAR 16

101

STATUS

	INOP SYS
	CTR TK L (R) XFR

FUEL L (R) WING TK OVERFLOW

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-FUEL-P-00016818.0002001 / 21 MAR 16

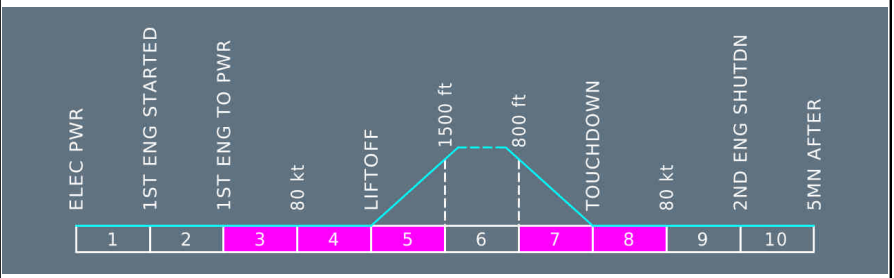
102

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when an overflow of the tank is detected.

Flight Phase Inhibition:



Continued on the following page

FUEL L (R) WING TK OVERFLOW (Cont'd)

Ident.: PRO-ABN-FUEL-P-00018938.0005001 / 21 MAR 16

103

CTR TK L (R) XFR ..... OFF
ALL ACT ..... ISOL

L2 *Displayed only if ACTs are transferring.*

L1 ● **IF UNSUCCESSFUL and if center tank not empty:**

L2 Stop fuel transfer from the center tank to L (R) inner tank by switching off both L (R) inner tank pumps. Both engines are fed by R (L) inner tank until the center tank is empty.

L1 FUEL X FEED ..... ON
L (R) TK PUMP 1 ..... OFF
L (R) TK PUMP 2 ..... OFF

● **When CTR TK empty:**

L (R) TK PUMP 1 ..... ON
L (R) TK PUMP 2 ..... ON
FUEL X FEED ..... OFF

EXPECT FUEL IMBALANCE

Ident.: PRO-ABN-FUEL-P-00018980.0001001 / 21 MAR 16

104

STATUS

INOP SYS
CTR TK L (R) XFR

FUEL LO LVL DET FAULT

Applicable to: MSN 02135, 02195, 02405, 04314, 04393-04397, 06720-09063

Ident.: PRO-ABN-FUEL-BQ-00016840.0002001 / 21 MAR 16

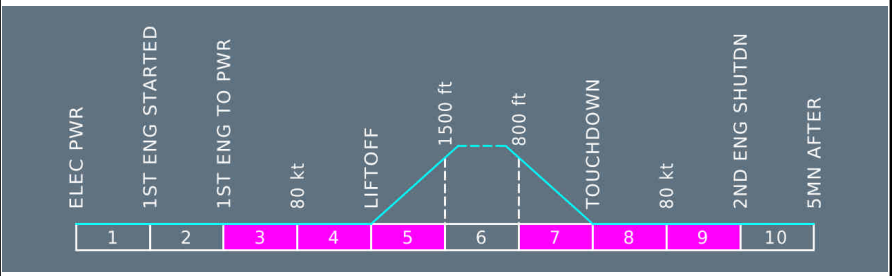
105

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both low level sensors are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-BQ-00011263.0001001 / 25 FEB 14

106

L2 Maintenance action is due.

L1 Crew awareness.

FUEL X FEED VALVE FAULT

Applicable to: ALL

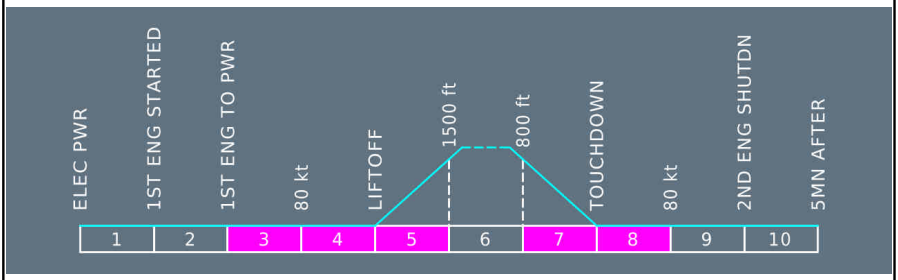
Ident.: PRO-ABN-FUEL-J-00016842.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the valve position disagrees with the selected position.

Flight Phase Inhibition:



Ident.: PRO-ABN-FUEL-J-00011206.0001001 / 25 FEB 14

L2 If valve failed open, maintain fuel balance with selective use of pumps.
If valve failed closed and if unable to maintain an acceptable balance, land as soon as possible.

L1 Crew awareness.

Ident.: PRO-ABN-FUEL-J-00011207.0001001 / 13 AUG 10

STATUS

INOP SYS
FUEL X FEED

Intentionally left blank

[QRH] MULTIPLE UNDUE ECAM ALERTS

Ident.: TDU / PRO-ABN-FWS-00012928.0001001 / 17 MAR 17
Applicable to: MSN 02388, 02584-02626, 02804, 03308, 04294, 04433, 04510
Impacted DU: NONE

In the case of multiple undue ECAM alerts:

- ENG 1(2) N1(N2) (EGT) OVER LIMIT, or
- ENG 1(2) N1(N2) (EGT)(EPR) (FF) DISCREPANCY, or
- NAV ATT (ALTI) (HDG) DISCREPANCY, or
- NAV FM/GPS POS DISAGREE, or
- MINIMUM or HUNDRED ABOVE callouts.

Possibly associated with EFIS red flags, apply the procedure below:

AFFECTED PARAMETERS.....CROSSCHECK

Crosscheck the affected parameters on the E/WD, PFD, ND or on the related SD page to confirm that the alerts are spurious.

- **If spurious alerts:**
  SWITCHING EIS DMC..... CAPT 3
  DMC3 replaces DMC1. If the undue alerts stop, DMC1 is the faulty DMC.
  - **If unsuccessful :**
    SWITCHING EIS DMC.....F/O 3
    DMC3 replaces DMC2. If the undue alerts stop, DMC2 is the faulty DMC.

FWS FWC 1 + 2 FAULT

Applicable to: ALL

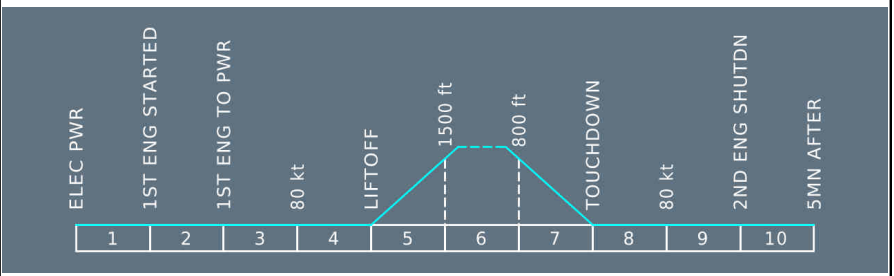
Ident.: PRO-ABN-FWS-H-00017311.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both FWC 1 and FWC 2 are failed, or when the communication between the FWC and the EIS is lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-FWS-H-00010055.0001001 / 14 FEB 13

MONITOR SYS
MONITOR OVERHEAD PANEL

NOT AVAIL

ECAM WARN
ALTI ALERT
STATUS
A/CALL OUT
MEMO

Continued on the following page

FWS FWC 1 + 2 FAULT (Cont'd)

Ident.: PRO-ABN-FWS-H-00010056.0001001 / 14 FEB 13

L2

Other INOP SYS

CAT2

ECAM Cautions and Warnings, aural warnings, master caution and warning lights are lost.
ECAM system pages are still available. therefore check regularly (more often than usual) cockpit panels for local warnings and ECAM system pages for system checks.
Check the general status of the systems for the DES/APPR preparation.

FWS FWC 1(2) FAULT

Applicable to: ALL

Ident.: PRO-ABN-FWS-G-00017310.0001001 / 21 MAR 16

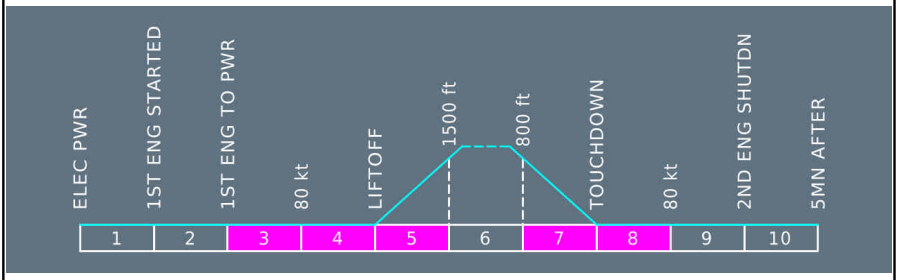
ANNUNCIATIONS

Triggering Conditions:

L2

This alert triggers when either FWC 1 or, FWC 2 is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-FWS-G-00010059.0001001 / 10 AUG 10

Crew awareness.

Continued on the following page

FWS FWC 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-FWS-G-00010060.0001001 / 10 AUG 10

STATUS	INOP SYS
CAT 3 SINGLE ONLY	CAT 3 DUAL FWC 1(2)

FWS OEB/FWC DISCREPANCY

Applicable to: ALL

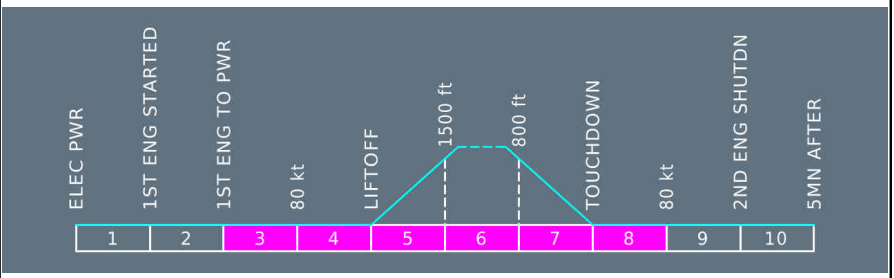
Ident.: PRO-ABN-FWS-J-00017314.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when FWC1 and FWC2 do not have the same OEBs listed in their OEB reminder database.

Flight Phase Inhibition:



Ident.: PRO-ABN-FWS-J-00010050.0001001 / 10 AUG 10

OEB DATABASE..... XCHECK

L2 *This action is normally performed by maintenance.*

FWS SDAC 1 + 2 FAULT

Applicable to: ALL

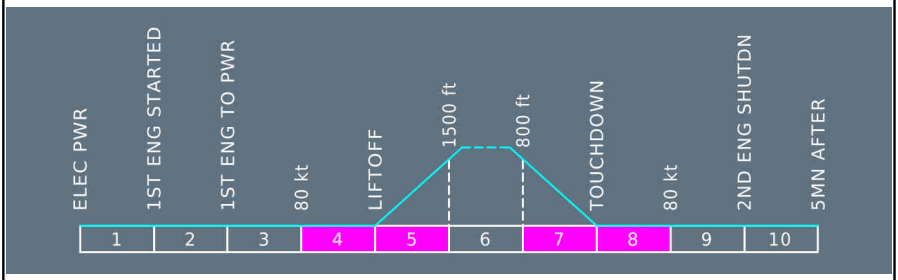
Ident.: PRO-ABN-FWS-E-00017306.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both SDAC 1 and SDAC 2 are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-FWS-E-00010053.0001001 / 04 SEP 18

MONITOR OVERHEAD PANEL

L2 *Some of amber cautions are lost.*

L1 *Aircraft status on the ECAM STATUS page is lost.*

L2 *All red warnings, engine and fuel parameters, and slat/flap positions are available on ECAM upper DU.*

L1 ECAM ENG FUEL F/CTL WHEEL (L/G pos ind) SYS PAGES AVAIL.

Ident.: PRO-ABN-FWS-E-00010054.0002001 / 10 AUG 10

STATUS

INOP SYS
SDAC 1 + 2

FWS SDAC 1(2) FAULT

Applicable to: ALL

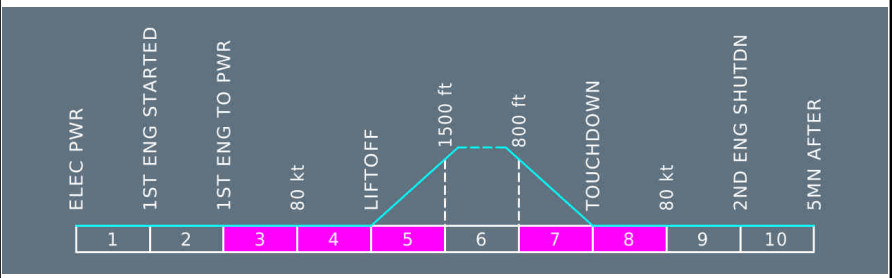
Ident.: PRO-ABN-FWS-D-00017308.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alerts triggers when either SDAC 1 or, SDAC 2 is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-FWS-D-00010051.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-FWS-D-00010052.0001001 / 10 AUG 10

L12

STATUS	
	INOP SYS
	SDAC 1(2)

Note: *Although the ECAM may display some symbols and/or parameters in amber, this does not always signify that additional systems are failed.*

HYD B ELEC PUMP LO PR OR OVHT

Applicable to: ALL

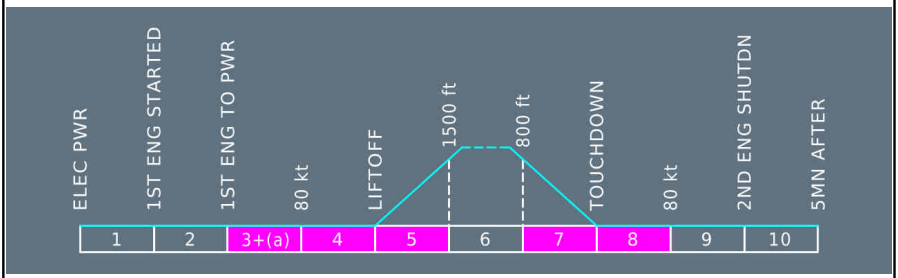
Ident.: PRO-ABN-HYD-T-00017137.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 LO PR: This alert triggers when the pump outlet pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).
OVHT: This alert triggers when the blue electric pump overheats.

Flight Phase Inhibition:



Note: *(a) The Flight Phase Inhibition 3 is only available for HYD B ELEC PUMP OVHT.*

Ident.: PRO-ABN-HYD-T-00011661.0002001 / 27 NOV 12

BLUE ELEC PUMP.....OFF
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

B SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD B ELEC PUMP LO PR OR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-T-00018313.0003001 / 21 MAR 17

L12

STATUS

APPR PROC

HYD LO PR

- **IF BLUE OVHT OUT:**
  BLUE ELEC PUMP..... AUTO

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
SLATS SLOW
CAT 3 SINGLE ONLY

INOP SYS

BLUE HYD
SPLR 3
CAT 3 DUAL
B ELEC PUMP
STEEP APPR

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD B RSVR LO AIR PR

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-HYD-A-00017106.0002001 / 21 MAR 16

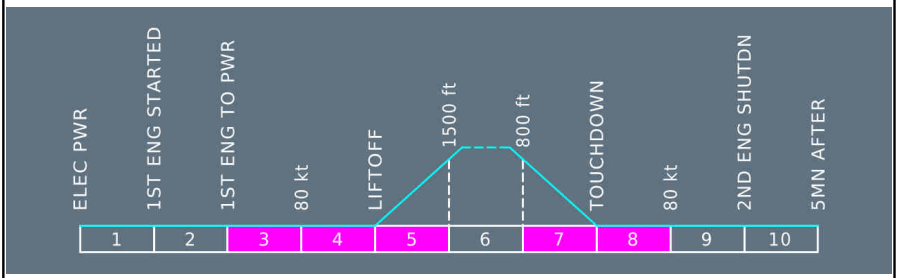
1

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the reservoir air pressure ≤ 22 PSI (the alert resets if pressure ≥ 25 PSI).
This alert triggers when the reservoir air pressure ≤ 30 PSI (detected in flight but only displayed on ground after landing).

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-A-00011602.0002001 / 05 MAR 13

- **IF PRESS FLUCTUATES:**
  BLUE ELEC PUMP.....OFF

ASSOCIATED PROCEDURES

B SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD B RSVR LO AIR PR (Cont'd)

Ident.: PRO-ABN-HYD-A-00018312.0003001 / 21 MAR 17

L12

STATUS

APPR PROC

The probability of cavitation increases with altitude.
Therefore, it may be possible to restore the system after descending to a lower altitude.

HYD LO PR
BLUE ELEC PUMP.....AUTO

- **If sys not recovered:**
  LDG DIST PROC.....APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
SLATS SLOW
CAT 3 SINGLE ONLY

INOP SYS

BLUE HYD
SPLR 3
CAT 3 DUAL
B ELEC PUMP
STEEP APPR

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD B RSVR LO AIR PR

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-HYD-A-00017106.0001001 / 21 MAR 16

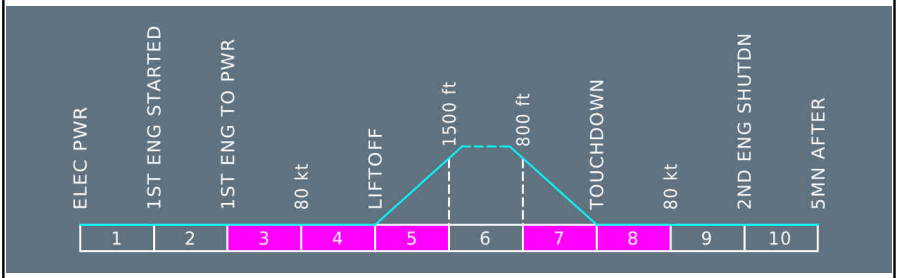
2

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the reservoir air pressure ≤ 22 PSI (the alert resets if pressure ≥ 25 PSI.)

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-A-00011602.0002001 / 05 MAR 13

- **IF PRESS FLUCTUATES:**
  BLUE ELEC PUMP.....OFF

ASSOCIATED PROCEDURES

B SYS LO PR

FUEL CONSUMPT INCRSD

FMS PRED UNRELIABLE

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD B RSVR LO AIR PR (Cont'd)

Ident.: PRO-ABN-HYD-A-00018312.0003001 / 21 MAR 17

L12

STATUS

APPR PROC

The probability of cavitation increases with altitude.
Therefore, it may be possible to restore the system after descending to a lower altitude.

HYD LO PR
BLUE ELEC PUMP.....AUTO

- **If sys not recovered:**
  LDG DIST PROC.....APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
SLATS SLOW
CAT 3 SINGLE ONLY

INOP SYS

BLUE HYD
SPLR 3
CAT 3 DUAL
B ELEC PUMP
STEEP APPR

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD B RSVR LO LVL

Applicable to: ALL

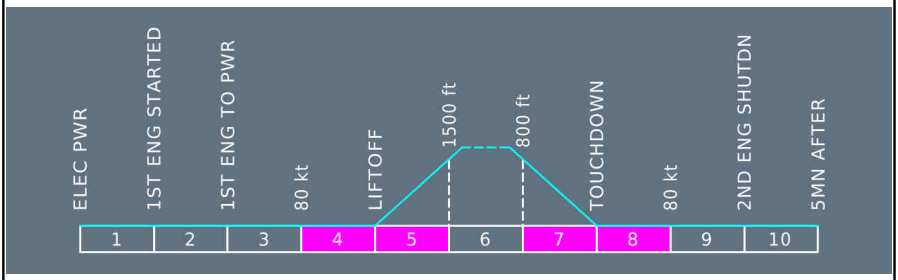
Ident.: PRO-ABN-HYD-C-00017144.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 The alert triggers when the fluid quantity < 2.4 l (0.63 US Gal).

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-C-00011606.0002001 / 05 MAR 13

BLUE ELEC PUMP..... OFF

ASSOCIATED PROCEDURES

B SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD B RSVR LO LVL (Cont'd)

Ident.: PRO-ABN-HYD-C-00018314.0003001 / 21 MAR 17

L12

STATUS

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
SLATS SLOW
CAT 3 SINGLE ONLY

INOP SYS

BLUE HYD
SPLR 3
CAT 3 DUAL
EMER GEN
B ELEC PUMP
STEEP APPR

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD B RSVR OVHT

Applicable to: ALL

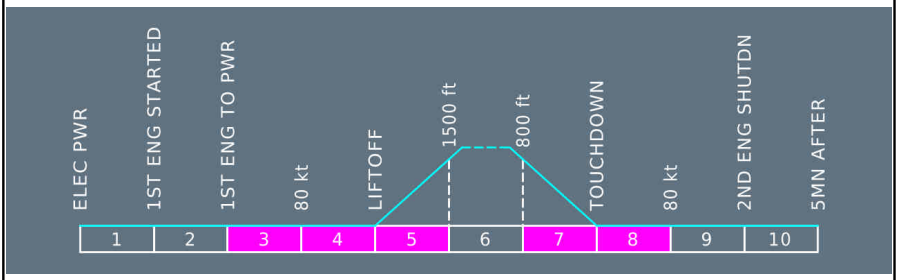
Ident.: PRO-ABN-HYD-B-00017108.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fluid temperature ≥93 °C (the alert resets if temperature ≤88 °C).

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-B-00011604.0002001 / 05 MAR 13

BLUE ELEC PUMP..... OFF

ASSOCIATED PROCEDURES

B SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD B RSVR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-B-00018315.0003001 / 21 MAR 17

L12

STATUS

APPR PROC

HYD LO PR

- **IF BLUE OVHT OUT:**
  BLUE ELEC PUMP..... AUTO
- **If sys not recovered:**
  LDG DIST PROC.....APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
SLATS SLOW
CAT 3 SINGLE ONLY

INOP SYS

BLUE HYD
SPLR 3
CAT 3 DUAL
B ELEC PUMP
STEEP APPR

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD G ENG 1 PUMP LO PR
(PTU OPERATIVE)

Applicable to: MSN 01767-06336

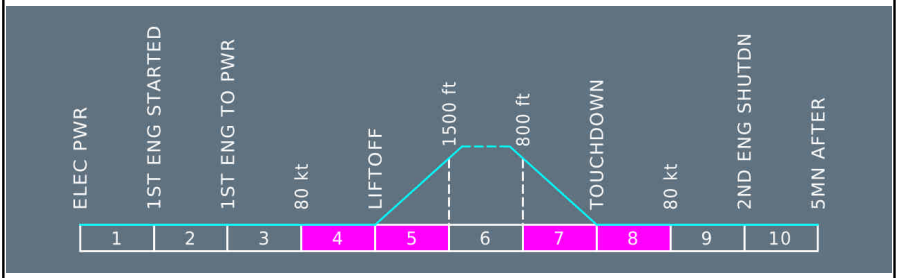
Ident.: PRO-ABN-HYD-N-00017136.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pump outlet pressure ≤1 750 PSI (the alert resets if pressure ≥2 200 PSI).

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-N-00011648.0001001 / 18 AUG 10

GREEN ENG 1 PUMP.....OFF

Ident.: PRO-ABN-HYD-N-00011649.0001001 / 17 MAR 11

3

STATUS

INOP SYS
G ENG 1 PUMP

HYD G ENG 1 PUMP LO PR
(PTU OPERATIVE)

Applicable to: MSN 06720-09063

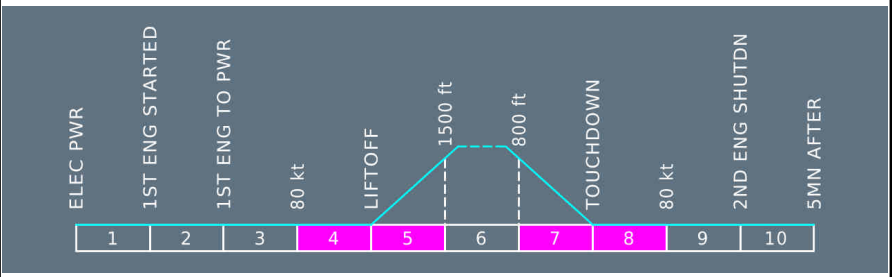
Ident.: PRO-ABN-HYD-N-00017136.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pump outlet pressure ≤1 750 PSI (the alert resets if pressure ≥2 200 PSI).

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-N-00011648.0001001 / 18 AUG 10

GREEN ENG 1 PUMP.....OFF

Ident.: PRO-ABN-HYD-N-00011649.0003001 / 02 MAY 16

4

STATUS

	INOP SYS
LDG DIST PROC..... APPLY	G ENG 1 PUMP

HYD G ENG 1 PUMP LO PR
(PTU INOPERATIVE)

Applicable to: MSN 01767-02405, 02482

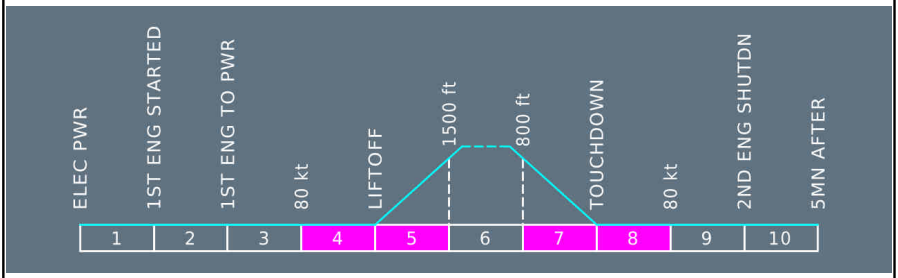
Ident.: PRO-ABN-HYD-P-00018805.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pump outlet pressure ≤1 750 PSI (the alert resets if pressure ≥2 200 PSI).

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-P-00011652.0001001 / 18 AUG 10

GREEN ENG 1 PUMP.....OFF

ASSOCIATED PROCEDURES

G SYS LO PR

SECONDARY FAILURES

*WHEEL
*F/CTL

Continued on the following page

HYD G ENG 1 PUMP LO PR (Cont'd)
(PTU INOPERATIVE)

Ident.: PRO-ABN-HYD-P-00018316.0001001 / 21 MAR 16

STATUS

L/G..... GRVTY EXTN
LDG DIST PROC..... APPLY

SLATS/FLAPS SLOW
CAT 3 SINGLE

INOP SYS

GREEN HYD
SPLR 1+5
CAT 3 DUAL
N.W. STEER
AUTO BRK
NORM BRK
L/G RETRACT
REVERSER 1
PTU
G ENG 1 PUMP
YAW DAMPER 1

HYD G ENG 1 PUMP LO PR
(PTU INOPERATIVE)

Applicable to: MSN 02443-02457, 02584-09063

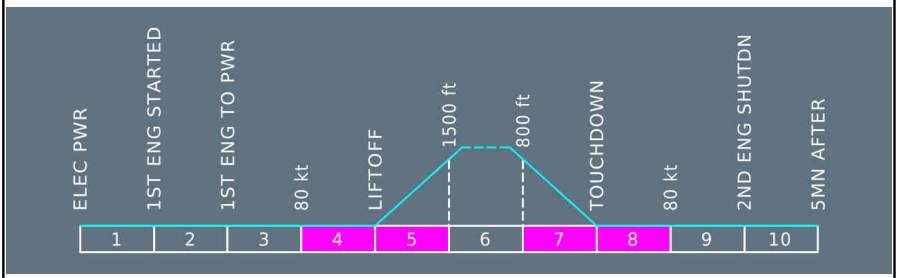
Ident.: PRO-ABN-HYD-P-00018805.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pump outlet pressure ≤1 750 PSI (the alert resets if pressure ≥2 200 PSI).

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-P-00011652.0001001 / 18 AUG 10

GREEN ENG 1 PUMP.....OFF

ASSOCIATED PROCEDURES

G SYS LO PR

SECONDARY FAILURES

*WHEEL
*F/CTL

Continued on the following page

HYD G ENG 1 PUMP LO PR (Cont'd)
(PTU INOPERATIVE)

Ident.: PRO-ABN-HYD-P-00018316.0002001 / 21 MAR 16

5

STATUS

L/G..... GRVTY EXTN
LDG DIST PROC..... APPLY

SLATS/FLAPS SLOW
CAT 3 SINGLE

INOP SYS

GREEN HYD
SPLR 1+5
CAT 3 DUAL
AUTO BRK
NORM BRK
L/G RETRACT
REVERSER 1
PTU
G ENG 1 PUMP
YAW DAMPER 1

HYD G RSVR LO AIR PR

Applicable to: MSN 01767-02405, 02482

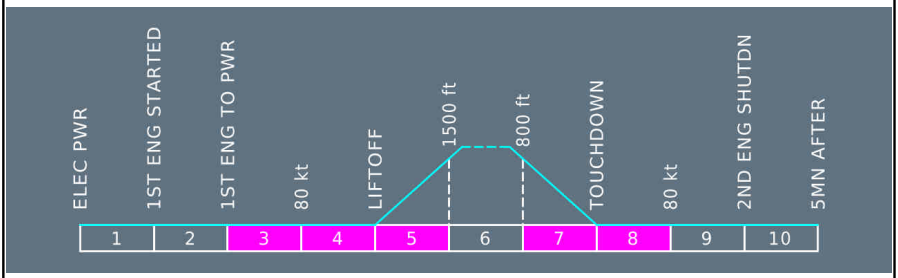
Ident.: PRO-ABN-HYD-D-00017104.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the reservoir air pressure ≤22 PSI (the alert resets if air pressure ≥25 PSI).

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-D-00011609.0002001 / 05 MAR 13

- **IF PRESS FLUCTUATES:**
  PTU..... OFF
  GREEN ENG 1 PUMP..... OFF

G ENG 1 PUMP LO PR

ASSOCIATED PROCEDURES

G SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*WHEEL
*F/CTL

Continued on the following page

HYD G RSVR LO AIR PR (Cont'd)

Ident.: PRO-ABN-HYD-D-00018317.0006001 / 21 MAR 17

L12

STATUS

APPR PROC

HYD LO PR

The probability of cavitation increases with altitude. Therefore, it may be possible to restore the system after descending to a lower altitude.

GREEN ENG 1 PUMP..... ON

- **IF HYD NOT RECOVERED:**

  L/G.....GRVTY EXTN

  Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION

  LDG DIST PROC.....APPLY

FUEL CONSUMPT INCRSD

See (1)

FMS PRED UNRELIABLE

See (2)

ALTN Y BRK WITH A/SKID

SLATS/FLAPS SLOW

CAT 3 SINGLE ONLY

INOP SYS

GREEN HYD
SPLR 1 + 5
CAT 3 DUAL
N/W STRG
AUTO BRK
NORM BRK
L/G RETRACT
REVERSER 1
YAW DAMPER 1

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD G RSVR LO AIR PR

Applicable to: MSN 02443-02457, 02584-09063

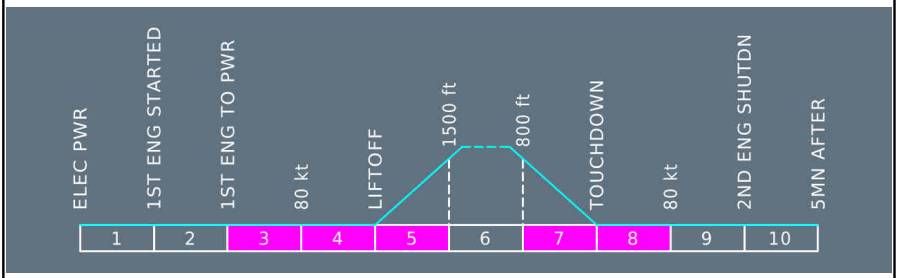
Ident.: PRO-ABN-HYD-D-00017104.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the reservoir air pressure ≤22 PSI (the alert resets if air pressure ≥25 PSI).

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-D-00011609.0002001 / 05 MAR 13

- **IF PRESS FLUCTUATES:**
  PTU..... OFF
  GREEN ENG 1 PUMP..... OFF

G ENG 1 PUMP LO PR

ASSOCIATED PROCEDURES

G SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*WHEEL
*F/CTL

Continued on the following page

HYD G RSVR LO AIR PR (Cont'd)

Ident.: PRO-ABN-HYD-D-00018317.0007001 / 21 MAR 17

6

L12

STATUS

APPR PROC

HYD LO PR

The probability of cavitation increases with altitude. Therefore, it may be possible to restore the system after descending to a lower altitude.

GREEN ENG 1 PUMP..... ON

- **IF HYD NOT RECOVERED:**

  L/G.....GRVTY EXTN

  Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION

  LDG DIST PROC.....APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
ALTN Y BRK WITH A/SKID
SLATS/FLAPS SLOW
CAT 3 SINGLE ONLY

INOP SYS

GREEN HYD
SPLR 1 + 5
CAT 3 DUAL
AUTO BRK
NORM BRK
L/G RETRACT
REVERSER 1
YAW DAMPER 1

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD G RSVR LO LVL

Applicable to: MSN 01767-02405, 02482

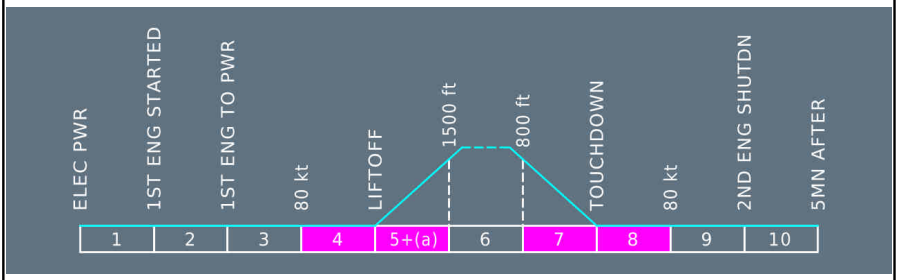
Ident.: PRO-ABN-HYD-F-00017142.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fluid quantity < 3.5 l (0.92 US Gal).

Flight Phase Inhibition:



L1 *Note: The HYD G RSVR LO LVL alert is inhibited for the first 15 s of flight phase 5.*

Ident.: PRO-ABN-HYD-F-00011614.0002001 / 05 MAR 13

PTU.....OFF
GREEN ENG 1 PUMP.....OFF
G ENG 1 PUMP LO PR

ASSOCIATED PROCEDURES

G SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*WHEEL
*F/CTL

Continued on the following page

HYD G RSVR LO LVL (Cont'd)

Ident.: PRO-ABN-HYD-F-00018320.0006001 / 21 MAR 17

L12

STATUS

L/G..... GRVTY EXTN

Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD

See (1)

FMS PRED UNRELIABLE

See (2)

ALTN Y BRK WITH A/SKID

SLATS/FLAPS SLOW

CAT 3 SINGLE ONLY

INOP SYS

GREEN HYD
SPLR 1 + 5
CAT 3 DUAL
N/W STRG
AUTO BRK
NORM BRK
L/G RETRACT
REVERSER 1
YAW DAMPER 1

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD G RSVR LO LVL

Applicable to: MSN 02443-02457, 02584-09063

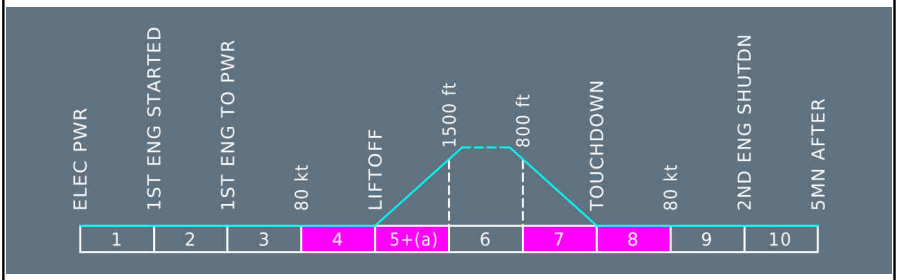
Ident.: PRO-ABN-HYD-F-00017142.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fluid quantity < 3.5 l (0.92 US Gal).

Flight Phase Inhibition:



L1 *Note: The HYD G RSVR LO LVL alert is inhibited for the first 15 s of flight phase 5.*

Ident.: PRO-ABN-HYD-F-00011614.0002001 / 05 MAR 13

PTU.....OFF
GREEN ENG 1 PUMP.....OFF
G ENG 1 PUMP LO PR

ASSOCIATED PROCEDURES

G SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*WHEEL
*F/CTL

Continued on the following page

HYD G RSVR LO LVL (Cont'd)

Ident.: PRO-ABN-HYD-F-00018320.0007001 / 21 MAR 17

7

L12

STATUS

L/G..... GRVTY EXTN

Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD

See (1)

FMS PRED UNRELIABLE

See (2)

ALTN Y BRK WITH A/SKID

SLATS/FLAPS SLOW

CAT 3 SINGLE ONLY

INOP SYS

GREEN HYD
SPLR 1 + 5
CAT 3 DUAL
AUTO BRK
NORM BRK
L/G RETRACT
REVERSER 1
YAW DAMPER 1

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD G RSVR OVHT

Applicable to: MSN 01767-02405, 02482

Ident.: PRO-ABN-HYD-E-00017107.0001001 / 21 MAR 16

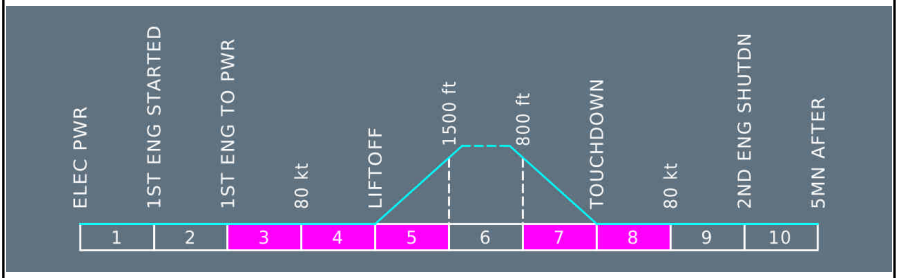
8

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fluid temperature ≥93 °C (the alert resets if temperature ≤88 °C).

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-E-00011612.0002001 / 05 MAR 13

PTU.....OFF
GREEN ENG 1 PUMP.....OFF
G ENG 1 PUMP LO PR

ASSOCIATED PROCEDURES

G SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*WHEEL
*F/CTL

Continued on the following page

HYD G RSVR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-E-00018321.0006001 / 02 MAY 17

L12

STATUS

APPR PROC

HYD LO PR

- **IF GREEN OVHT OUT:**
  GREEN ENG 1 PUMP.....ON
- **IF HYD NOT RECOVERED:**
  L/G.....GRVTY EXTN
  Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION
  LDG DIST PROC.....APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
SLATS/FLAPS SLOW
CAT 3 SINGLE ONLY

INOP SYS

GREEN HYD
SPLR 1 + 5
CAT 3 DUAL
N/W STRG
AUTO BRK
NORM BRK
L/G RETRACT
REVERSER 1
YAW DAMPER 1

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD G RSVR OVHT

Applicable to: MSN 02443-02457, 02584-06336

Ident.: PRO-ABN-HYD-E-00017107.0001001 / 21 MAR 16

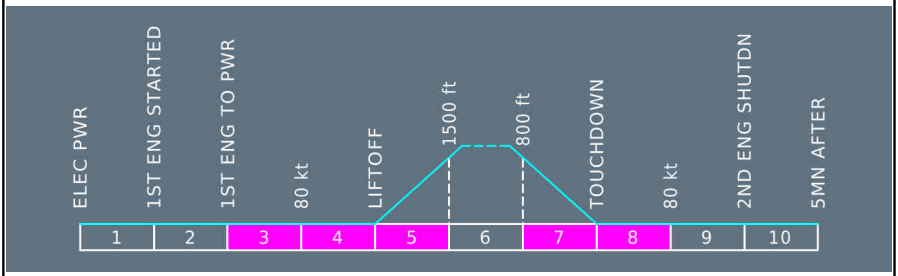
9

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fluid temperature ≥93 °C (the alert resets if temperature ≤88 °C).

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-E-00011612.0002001 / 05 MAR 13

PTU.....OFF
GREEN ENG 1 PUMP.....OFF
G ENG 1 PUMP LO PR

ASSOCIATED PROCEDURES

G SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*WHEEL
*F/CTL

Continued on the following page

HYD G RSVR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-E-00018321.0007001 / 02 MAY 17

10

L12

STATUS

APPR PROC

HYD LO PR

- **IF GREEN OVHT OUT:**
  GREEN ENG 1 PUMP.....ON
- **IF HYD NOT RECOVERED:**
  L/G.....GRVTY EXTN
  Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION
  LDG DIST PROC.....APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
ALTN Y BRK WITH A/SKID
SLATS/FLAPS SLOW
CAT 3 SINGLE ONLY

INOP SYS

GREEN HYD
SPLR 1 + 5
CAT 3 DUAL
AUTO BRK
NORM BRK
L/G RETRACT
REVERSER 1
YAW DAMPER 1

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD G RSVR OVHT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-HYD-E-00017107.0002001 / 01 JUN 16

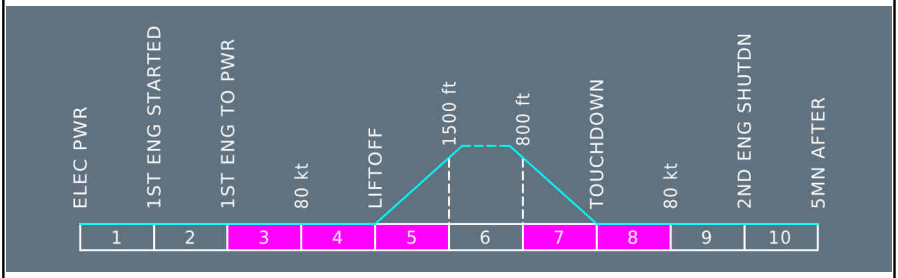
11

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fluid temperature ≥98 °C (the alert resets if temperature ≤93 °C).

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-E-00011612.0002001 / 05 MAR 13

PTU.....OFF
GREEN ENG 1 PUMP.....OFF
G ENG 1 PUMP LO PR

ASSOCIATED PROCEDURES

G SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*WHEEL
*F/CTL

Continued on the following page

HYD G RSVR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-E-00018321.0007001 / 02 MAY 17

12

L12

STATUS

APPR PROC

HYD LO PR

- **IF GREEN OVHT OUT:**
  GREEN ENG 1 PUMP.....ON
- **IF HYD NOT RECOVERED:**
  L/G.....GRVTY EXTN
  Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION
  LDG DIST PROC.....APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
ALTN Y BRK WITH A/SKID
SLATS/FLAPS SLOW
CAT 3 SINGLE ONLY

INOP SYS

GREEN HYD
SPLR 1 + 5
CAT 3 DUAL
AUTO BRK
NORM BRK
L/G RETRACT
REVERSER 1
YAW DAMPER 1

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD Y ELEC PUMP LO PR OR OVHT

Applicable to: MSN 01767-02405, 02482

Ident.: PRO-ABN-HYD-M-00017133.0001001 / 21 MAR 16

ANNUNCIATIONS

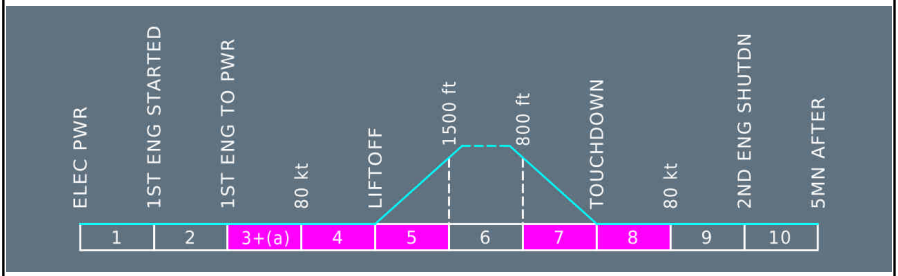
Triggering Conditions:

L2 LO PR: This alert triggers when the yellow system pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI) with:

- Y ELEC PUMP pb at ON
- Y ENG PUMP and PTU not available.

OVHT: This alert triggers when the yellow electric pump overheats.

Flight Phase Inhibition:



Note: *(a) The Flight Phase Inhibition 3 is only available for HYD Y ELEC PUMP OVHT.*

Continued on the following page

HYD Y ELEC PUMP LO PR OR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-M-00019032.0003001 / 21 MAR 16

YELLOW ELEC PUMP..... OFF

ASSOCIATED PROCEDURES

Y SYS LO PR

BRK Y ACCU PR MONITOR

L2 *This check is recommended to cover the case of a pipe rupture, which could lead to the simultaneous loss of the hydraulic system and the accumulator fluid. If this occurs, the loss of the accumulator should be observed on the indicator within 10 min. In that case: The only remaining braking means is the normal braking using green pressure, the parking brake should not be used since it is not available and the chocks should be in place before engine 1 shutdown.*

L1 FUEL CONSUMPT INCRSD

FMS PRED UNRELIABLE

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD Y ELEC PUMP LO PR OR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-M-00018322.0003001 / 21 MAR 17

L12

STATUS

APPR PROC

HYD LO PR

- **IF YELLOW OVHT OUT:**
  YELLOW ENG 2 PUMP.....ON
  PTU.....AUTO
  The above two lines are only displayed, in case of an electrical pump overheat.

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
FLAPS SLOW
CAT 3 SINGLE ONLY

INOP SYS

YELLOW HYD
SPLR 2+4
CAT 3 DUAL
REVERSER 2
Y ELEC PUMP
YAW DAMPER 2

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD Y ELEC PUMP LO PR OR OVHT

Applicable to: MSN 02443-02457, 02584-09063

Ident.: PRO-ABN-HYD-M-00017133.0001001 / 21 MAR 16

ANNUNCIATIONS

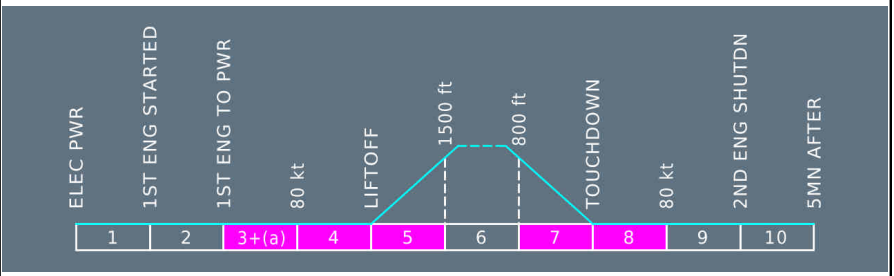
Triggering Conditions:

L2 LO PR: This alert triggers when the yellow system pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI) with:

- Y ELEC PUMP pb at ON
- Y ENG PUMP and PTU not available.

OVHT: This alert triggers when the yellow electric pump overheats.

Flight Phase Inhibition:



Note: *(a) The Flight Phase Inhibition 3 is only available for HYD Y ELEC PUMP OVHT.*

Continued on the following page

HYD Y ELEC PUMP LO PR OR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-M-00019032.0003001 / 21 MAR 16

YELLOW ELEC PUMP..... OFF

ASSOCIATED PROCEDURES

Y SYS LO PR

BRK Y ACCU PR MONITOR

L2 *This check is recommended to cover the case of a pipe rupture, which could lead to the simultaneous loss of the hydraulic system and the accumulator fluid. If this occurs, the loss of the accumulator should be observed on the indicator within 10 min. In that case: The only remaining braking means is the normal braking using green pressure, the parking brake should not be used since it is not available and the chocks should be in place before engine 1 shutdown.*

L1 FUEL CONSUMPT INCRSD

FMS PRED UNRELIABLE

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD Y ELEC PUMP LO PR OR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-M-00018322.0004001 / 21 MAR 17

13

L12

STATUS

APPR PROC

HYD LO PR

- **IF YELLOW OVHT OUT:**
  YELLOW ENG 2 PUMP.....ON
  PTU.....AUTO
  The above two lines are only displayed, in case of an electrical pump overheat.

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
FLAPS SLOW
CAT 3 SINGLE ONLY

INOP SYS

YELLOW HYD
SPLR 2+4
CAT 3 DUAL
N/W STRG
REVERSER 2
Y ELEC PUMP
YAW DAMPER 2
STEEP APPR

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD Y ENG 2 PUMP LO PR
(PTU OPERATIVE)

Applicable to: ALL

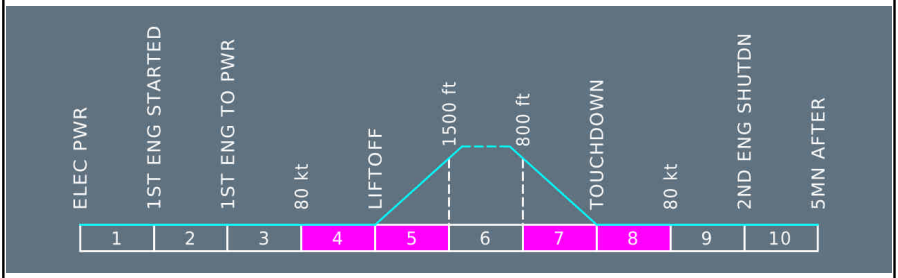
Ident.: PRO-ABN-HYD-O-00017135.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pump outlet pressure ≤1 750 PSI (the alert resets if pressure ≥2 200 PSI).

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-O-00011650.0001001 / 18 AUG 10

YELLOW ENG 2 PUMP.....OFF

Ident.: PRO-ABN-HYD-O-00011651.0001001 / 18 AUG 10

STATUS

INOP SYS
Y ENG 2 PUMP

HYD Y ENG 2 PUMP LO PR
(PTU INOPERATIVE)

Applicable to: MSN 01767-02405, 02482

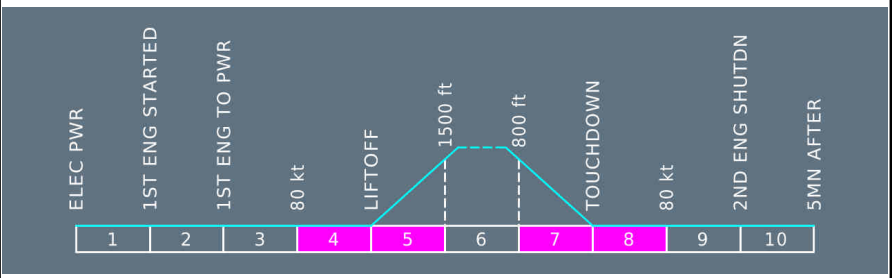
Ident.: PRO-ABN-HYD-Q-00018806.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pump outlet pressure ≤1 750 PSI (the alert resets if pressure ≥2 200 PSI).

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-Q-00011654.0001001 / 18 AUG 10

YELLOW ENG 2 PUMP.....OFF

ASSOCIATED PROCEDURES

Y SYS LO PR

L2 *Note:* *If yellow system is affected, the yellow electrical pump may be used.*

L1

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD Y ENG 2 PUMP LO PR (Cont'd)
(PTU INOPERATIVE)

Ident.: PRO-ABN-HYD-Q-00018323.0001001 / 21 MAR 16

L12

STATUS

LDG DIST PROC..... APPLY

FLAPS SLOW
CAT 3 SINGLE
See (1)

INOP SYS

YELLOW HYD
SPLR 2+4
CAT 3 DUAL
REVERSER 2
PTU
Y ENG 2 PUMP
YAW DAMPER 2

(1) Note: *Following a yellow hydraulic system failure, the parking brake may be inoperative due to a yellow accumulator low pressure.*

HYD Y ENG 2 PUMP LO PR
(PTU INOPERATIVE)

Applicable to: MSN 02443-02457, 02584-09063

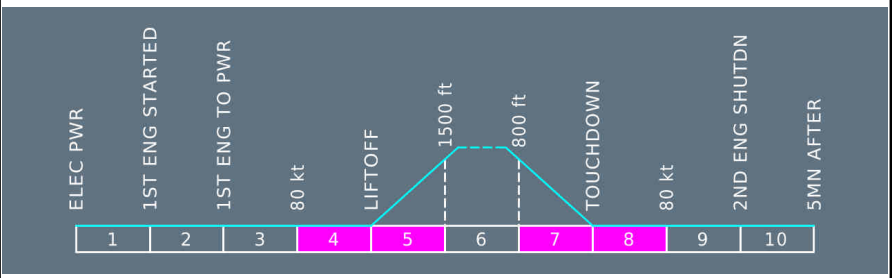
Ident.: PRO-ABN-HYD-Q-00018806.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the pump outlet pressure ≤1 750 PSI (the alert resets if pressure ≥2 200 PSI).

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-Q-00011654.0001001 / 18 AUG 10

YELLOW ENG 2 PUMP.....OFF

ASSOCIATED PROCEDURES

Y SYS LO PR

L2 *Note:* *If yellow system is affected, the yellow electrical pump may be used.*

L1

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD Y ENG 2 PUMP LO PR (Cont'd)
(PTU INOPERATIVE)

Ident.: PRO-ABN-HYD-Q-00018323.0002001 / 21 MAR 16

14

L12

STATUS

LDG DIST PROC..... APPLY

FLAPS SLOW
CAT 3 SINGLE
See (1)

INOP SYS

YELLOW HYD
SPLR 2+4
CAT 3 DUAL
N/W STRG
REVERSER 2
PTU
Y ENG 2 PUMP
YAW DAMPER 2
STEEP APPR

(1) Note: *Following a yellow hydraulic system failure, the parking brake may be inoperative due to a yellow accumulator low pressure.*

HYD Y RSVR LO AIR PR

Applicable to: MSN 01767-02405, 02482

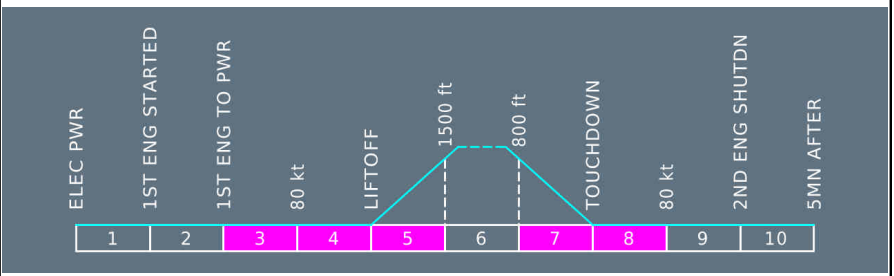
Ident.: PRO-ABN-HYD-G-00017105.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the reservoir air pressure ≤ 22 PSI (the alert resets if pressure ≥ 25 PSI).

Flight Phase Inhibition:



Continued on the following page

HYD Y RSVR LO AIR PR (Cont'd)

Ident.: PRO-ABN-HYD-G-00011626.0003001 / 27 NOV 12

- **IF PRESS FLUCTUATES:**
  - PTU ..... OFF
  - YELLOW ENG 2 PUMP ..... OFF
  - YELLOW ELEC PUMP ..... OFF

BRK Y ACCU PR MONITOR

L2 *This check is recommended to cover the case of a pipe rupture, which could lead to the simultaneous loss of the hydraulic system and the accumulator fluid. If this occurs, the loss of the accumulator should be observed on the indicator within 10 min. In that case : The only remaining braking means is normal braking, using green pressure. The parking brake should not be used since, it is not available. And, the chocks should be in place before Engine 1 shutdown.*

L1 Y ENG 2 PUMP LO PR

ASSOCIATED PROCEDURES

Y SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD Y RSVR LO AIR PR (Cont'd)

Ident.: PRO-ABN-HYD-G-00018324.0006001 / 21 MAR 17

L2 The probability of cavitation increases with altitude.
Therefore, it may be possible to restore the system after descending to a lower altitude.

L12

STATUS

APPR PROC

HYD LO PR
YELLOW ENG 2 PUMP..... ON

- **If sys not recovered:**
  LDG DIST PROC.....APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
FLAPS SLOW
CAT 3 SINGLE

INOP SYS

YELLOW HYD
SPLR 2 + 4
CAT 3 DUAL
REVERSER 2
YAW DAMPER 2

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*
(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD Y RSVR LO AIR PR

Applicable to: MSN 02443-02457, 02584-09063

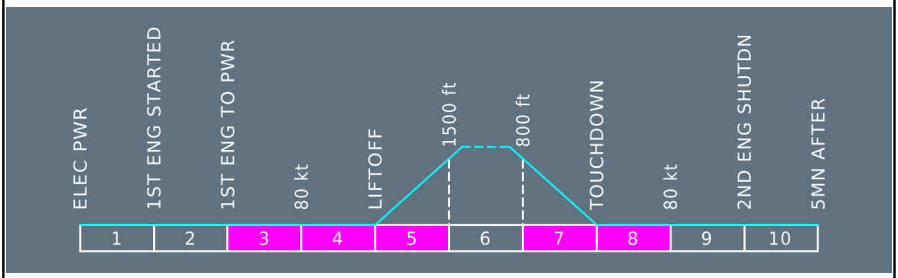
Ident.: PRO-ABN-HYD-G-00017105.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the reservoir air pressure ≤ 22 PSI (the alert resets if pressure ≥ 25 PSI).

Flight Phase Inhibition:



Continued on the following page

HYD Y RSVR LO AIR PR (Cont'd)

Ident.: PRO-ABN-HYD-G-00011626.0003001 / 27 NOV 12

- **IF PRESS FLUCTUATES:**
  - PTU ..... OFF
  - YELLOW ENG 2 PUMP ..... OFF
  - YELLOW ELEC PUMP ..... OFF

BRK Y ACCU PR MONITOR

L2 *This check is recommended to cover the case of a pipe rupture, which could lead to the simultaneous loss of the hydraulic system and the accumulator fluid. If this occurs, the loss of the accumulator should be observed on the indicator within 10 min. In that case : The only remaining braking means is normal braking, using green pressure. The parking brake should not be used since, it is not available. And, the chocks should be in place before Engine 1 shutdown.*

L1 Y ENG 2 PUMP LO PR

ASSOCIATED PROCEDURES

Y SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD Y RSVR LO AIR PR (Cont'd)

Ident.: PRO-ABN-HYD-G-00018324.0007001 / 21 MAR 17

15

L2 The probability of cavitation increases with altitude.
Therefore, it may be possible to restore the system after descending to a lower altitude.

L12

STATUS

APPR PROC

HYD LO PR
YELLOW ENG 2 PUMP..... ON

- **If sys not recovered:**
  LDG DIST PROC.....APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
FLAPS SLOW
CAT 3 SINGLE

INOP SYS

YELLOW HYD
SPLR 2 + 4
CAT 3 DUAL
N/W STRG
REVERSER 2
YAW DAMPER 2
STEEP APPR

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD Y RSVR LO LVL

Applicable to: MSN 01767-02405, 02482

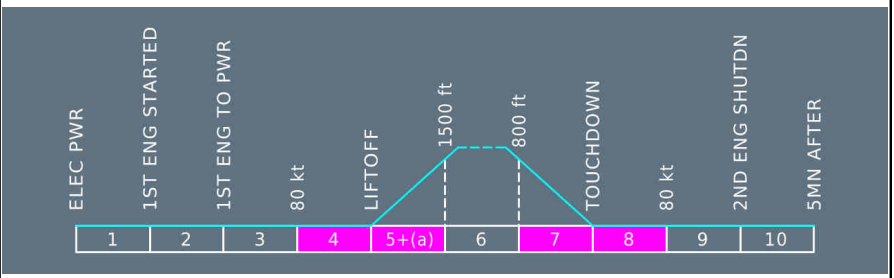
Ident.: PRO-ABN-HYD-I-00017143.0002001 / 06 SEP 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fluid quantity < 3.5 l (0.92 US Gal).

Flight Phase Inhibition:



L1 *Note:* *(a) The HYD Y RSVR LO LVL alert is inhibited for the first 15 s of flight phase 5.*

Continued on the following page

HYD Y RSVR LO LVL (Cont'd)

Ident.: PRO-ABN-HYD-I-00011631.0003001 / 05 MAR 13

PTU.....OFF
YELLOW ENG 2 PUMP.....OFF
YELLOW ELEC PUMP..... OFF
BRK Y ACCU PR MONITOR

L2 *This check is recommended to cover the case of a pipe rupture, which could lead to the simultaneous loss of the hydraulic system and the accumulator fluid. If this occurs, the loss of the accumulator should be observed on the indicator within 10 min. In that case: The only remaining braking means is normal braking, using green pressure. The parking brake should not be used since, it is not available. And, the chocks should be in place before Engine 1 shutdown.*

L1 Y ENG 2 PUMP LO PR

ASSOCIATED PROCEDURES

Y SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD Y RSVR LO LVL (Cont'd)

Ident.: PRO-ABN-HYD-I-00018326.0005001 / 21 MAR 17

L12

STATUS

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD

See (1)

FMS PRED UNRELIABLE

See (2)

FLAPS SLOW

CAT 3 SINGLE

See (3)

INOP SYS

YELLOW HYD
SPLR 2 + 4
CAT 3 DUAL
REVERSER 2
CARGO DOOR
YAW DAMPER 2

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

(3) *Note: Following a yellow hydraulic system failure, the parking brake may be inoperative due to a yellow accumulator low pressure.*

HYD Y RSVR LO LVL

Applicable to: MSN 02443-02457, 02584-09063

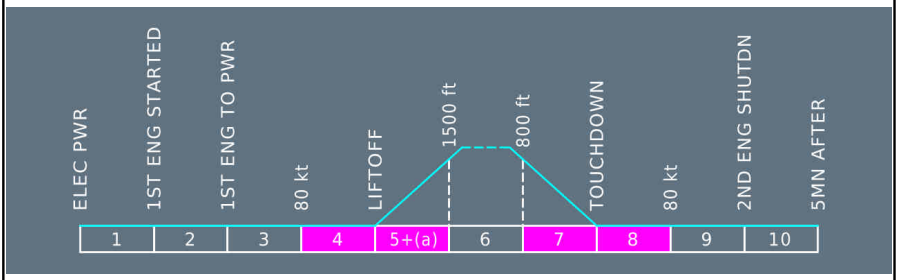
Ident.: PRO-ABN-HYD-I-00017143.0002001 / 06 SEP 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fluid quantity < 3.5 l (0.92 US Gal).

Flight Phase Inhibition:



L1 *Note:* *(a) The HYD Y RSVR LO LVL alert is inhibited for the first 15 s of flight phase 5.*

Continued on the following page

HYD Y RSVR LO LVL (Cont'd)

Ident.: PRO-ABN-HYD-I-00011631.0003001 / 05 MAR 13

PTU.....OFF
YELLOW ENG 2 PUMP.....OFF
YELLOW ELEC PUMP.....OFF
BRK Y ACCU PR MONITOR

L2 *This check is recommended to cover the case of a pipe rupture, which could lead to the simultaneous loss of the hydraulic system and the accumulator fluid. If this occurs, the loss of the accumulator should be observed on the indicator within 10 min. In that case: The only remaining braking means is normal braking, using green pressure. The parking brake should not be used since, it is not available. And, the chocks should be in place before Engine 1 shutdown.*

L1 Y ENG 2 PUMP LO PR

ASSOCIATED PROCEDURES

Y SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD Y RSVR LO LVL (Cont'd)

Ident.: PRO-ABN-HYD-I-00018326.0006001 / 21 MAR 17

16

L12

STATUS

LDG DIST PROC..... APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
FLAPS SLOW
CAT 3 SINGLE
See (3)

INOP SYS

YELLOW HYD
SPLR 2 + 4
CAT 3 DUAL
N/W STRG
REVERSER 2
CARGO DOOR
YAW DAMPER 2
STEEP APPR

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

(3) *Note: Following a yellow hydraulic system failure, the parking brake may be inoperative due to a yellow accumulator low pressure.*

HYD Y RSVR OVHT

Applicable to: MSN 01767-02405, 02482

Ident.: PRO-ABN-HYD-H-00017109.0001001 / 21 MAR 16

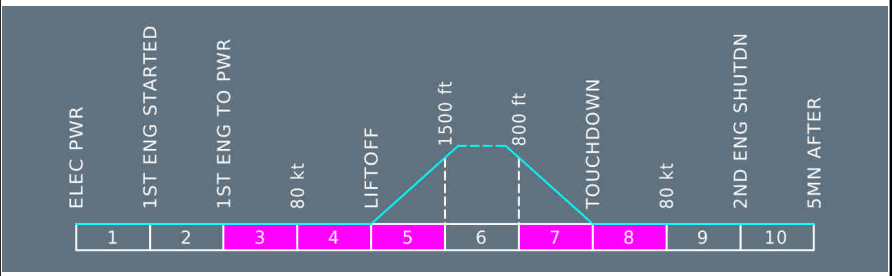
17

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fluid temperature ≥93 °C (the alert resets if temperature ≤88 °C).

Flight Phase Inhibition:



Continued on the following page

HYD Y RSVR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-H-00011629.0003001 / 05 MAR 13

PTU.....OFF
YELLOW ENG 2 PUMP.....OFF
YELLOW ELEC PUMP..... OFF
BRK Y ACCU PR MONITOR

L2 *This check is recommended to cover the case of a pipe rupture, which could lead to the simultaneous loss of the hydraulic system and the accumulator fluid. If this occurs, the loss of the accumulator should be observed on the indicator within 10 min. In that case: The only remaining braking means is normal braking, using green pressure. The parking brake should not be used since, it is not available. And, the chocks should be in place before Engine 1 shutdown.*

L1 Y ENG 2 PUMP LO PR

ASSOCIATED PROCEDURES

Y SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD Y RSVR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-H-00018327.0006001 / 21 MAR 17

L12

STATUS

APPR PROC

HYD LO PR

- **IF YELLOW OVHT OUT:**
  YELLOW ENG 2 PUMP.....ON
- **If not recovered:**
  LDG DIST PROC.....APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
FLAPS SLOW
CAT 3 SINGLE

INOP SYS

YELLOW HYD
SPLR 2 + 4
CAT 3 DUAL
REVERSER 2
YAW DAMPER 2

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD Y RSVR OVHT

Applicable to: MSN 02443-02457, 02584-06336

Ident.: PRO-ABN-HYD-H-00017109.0001001 / 21 MAR 16

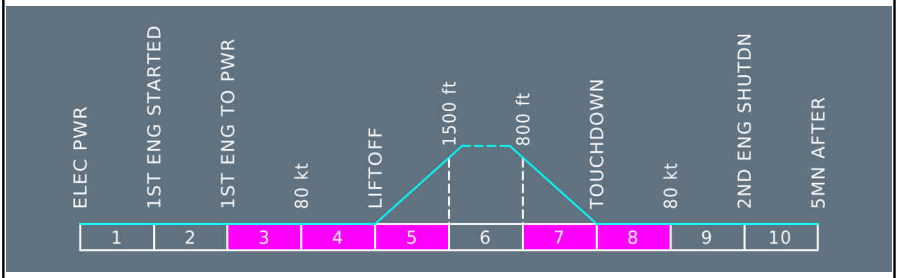
18

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fluid temperature ≥93 °C (the alert resets if temperature ≤88 °C).

Flight Phase Inhibition:



Continued on the following page

HYD Y RSVR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-H-00011629.0003001 / 05 MAR 13

PTU.....OFF
YELLOW ENG 2 PUMP.....OFF
YELLOW ELEC PUMP.....OFF
BRK Y ACCU PR MONITOR

L2 *This check is recommended to cover the case of a pipe rupture, which could lead to the simultaneous loss of the hydraulic system and the accumulator fluid. If this occurs, the loss of the accumulator should be observed on the indicator within 10 min. In that case: The only remaining braking means is normal braking, using green pressure. The parking brake should not be used since, it is not available. And, the chocks should be in place before Engine 1 shutdown.*

L1 Y ENG 2 PUMP LO PR

ASSOCIATED PROCEDURES

Y SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD Y RSVR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-H-00018327.0007001 / 21 MAR 17

19

L12

STATUS

APPR PROC

HYD LO PR

- **IF YELLOW OVHT OUT:**
  YELLOW ENG 2 PUMP.....ON
- **If not recovered:**
  LDG DIST PROC.....APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
FLAPS SLOW
CAT 3 SINGLE

INOP SYS

YELLOW HYD
SPLR 2 + 4
CAT 3 DUAL
N/W STRG
REVERSER 2
YAW DAMPER 2
STEEP APPR

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD Y RSVR OVHT

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-HYD-H-00017109.0002001 / 01 JUN 16

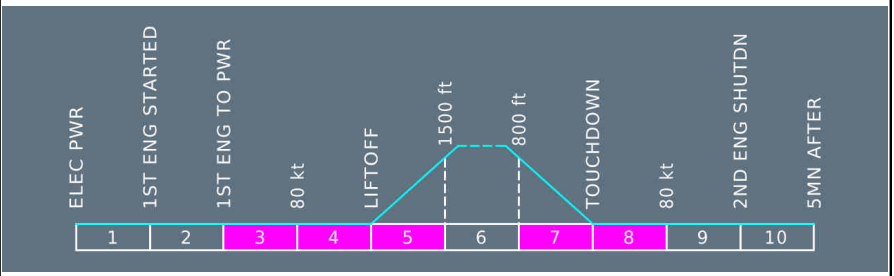
20

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the fluid temperature ≥98 °C (the alert resets if temperature ≤93 °C).

Flight Phase Inhibition:



Continued on the following page

HYD Y RSVR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-H-00011629.0003001 / 05 MAR 13

PTU.....OFF
YELLOW ENG 2 PUMP.....OFF
YELLOW ELEC PUMP.....OFF
BRK Y ACCU PR MONITOR

L2 *This check is recommended to cover the case of a pipe rupture, which could lead to the simultaneous loss of the hydraulic system and the accumulator fluid. If this occurs, the loss of the accumulator should be observed on the indicator within 10 min. In that case: The only remaining braking means is normal braking, using green pressure. The parking brake should not be used since, it is not available. And, the chocks should be in place before Engine 1 shutdown.*

L1 Y ENG 2 PUMP LO PR

ASSOCIATED PROCEDURES

Y SYS LO PR
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD Y RSVR OVHT (Cont'd)

Ident.: PRO-ABN-HYD-H-00018327.0007001 / 21 MAR 17

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L12

STATUS

APPR PROC

HYD LO PR

- **IF YELLOW OVHT OUT:**
  YELLOW ENG 2 PUMP.....ON
- **If not recovered:**
  LDG DIST PROC.....APPLY

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)
FLAPS SLOW
CAT 3 SINGLE

INOP SYS

YELLOW HYD
SPLR 2 + 4
CAT 3 DUAL
N/W STRG
REVERSER 2
YAW DAMPER 2
STEEP APPR

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD B+Y SYS LO PR

Applicable to: MSN 01767-02388, 02482

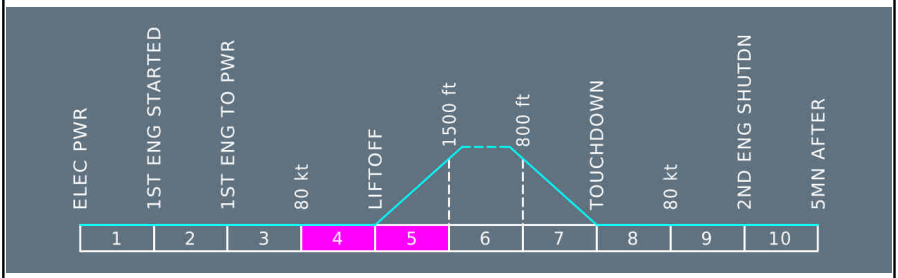
Ident.: PRO-ABN-HYD-L-00018917.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the blue and yellow systems pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).

Flight Phase Inhibition:



Continued on the following page

HYD B+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-L-00018727.0003001 / 21 MAR 16

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L2 *Note: If the yellow hydraulic system is lost due to low level, the "HYD PTU FAULT" ECAM message may appear, and requests that the flight crew switches the PTU off.*

L1 **LAND ASAP**

- **If yellow sys lost by ENG 2 PUMP LO PR:**
  YELLOW ELEC PUMP.....ON
- **If blue sys lost by ELEC PUMP LO PR:**
  RAT.....MAN ON

L2 *To extend the RAT, the flight crew must press the RAT MAN ON pb located on the Hydraulic overhead panel.*

L1 MIN RAT SPD.....140 KT

AFFECTED PUMPS.....OFF
MAX SPEED.....320/0.77

L2 *Note: Flight controls remain in normal law.*

L1 MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

L2 ● **If blue or yellow sys recovered:**

See procedure for single failure.

L1 ● **If neither system recovered:**

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD B+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-L-00018342.0011001 / 21 MAR 17

L12

STATUS

MIN RAT SPD.....140 KT
(If B PUMP LO PR)
MAX SPEED.....320/0.77
MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG

APPR PROC

DUAL HYD LO PR
(Line not displayed for dual LO LVL)

- **If sys lost by RSVR LO AIR PR:**

  In approach, system lost by RSVR LO AIR PR may be recovered at low altitude.

  RELATED PUMP.....ON

- **If sys lost by RSVR OVHT:**

  In approach, system lost by RSVR OVHT may be recovered if OVHT indication disappears.

  - **IF BLUE OVHT OUT:**
    BLUE ELEC PUMP.....AUTO
  - **IF YELLOW OVHT OUT:**
    YELLOW ENG 2 PUMP.....ON

- **IF HYD NOT RECOVERED (line not displayed for dual LO LVL):**
  - **For A321 aircraft:**
    FOR LDG.....USE FLAP 3
    This line is replaced by "FOR LDG: USE FLAP 3" when CONF 3 is selected, as a reminder.
    GPWS LDG FLAP 3.....ON

  L/G.....GRVTY EXTN

INOP SYS

B+Y HYD
R ELEV
SPLR 2+3+4
SPD BRK
AP 1+2
CARGO DOOR (If Y RSVR LO LVL)
REVERSER 2
B ELEC PUMP
EMER GEN (If B RSVR LO LVL)
YAW DAMPER 2
CAT 2
GLS AUTOLAND
STEEP APPR

Continued on the following page

HYD B+Y SYS LO PR (Cont'd)

Landing gear is extended by gravity to preserve green system integrity Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.

- **For A321 aircraft:**
  APPR SPD.....VREF +10 KT

LDG DIST PROC..... APPLY

SLATS/FLAPS SLOW
See (1)
FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)

(1) Note: *Following a yellow hydraulic system failure, the parking brake may be inoperative due to yellow accumulator low pressure.*

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS - Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD B+Y SYS LO PR

Applicable to: MSN 02405

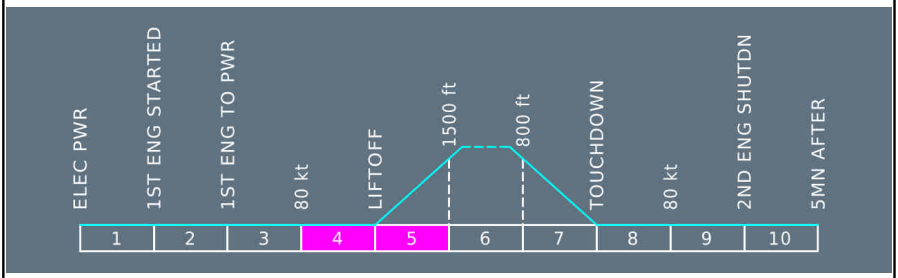
Ident.: PRO-ABN-HYD-L-00018917.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the blue and yellow systems pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).

Flight Phase Inhibition:



Continued on the following page

HYD B+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-L-00018727.0002001 / 21 MAR 16

L2 *Note: If the yellow hydraulic system is lost due to low level, the "HYD PTU FAULT" ECAM message may appear, and requests that the flight crew switches the PTU off.*

L1 **LAND ASAP**

- **If yellow sys lost by ENG 2 PUMP LO PR:**
  YELLOW ELEC PUMP.....ON
- **If blue sys lost by ELEC PUMP LO PR:**
  RAT.....MAN ON

L2 *To extend the RAT, the flight crew must press the RAT MAN ON pb located on the Hydraulic overhead panel.*

L1 MIN RAT SPD.....140 KT

AFFECTED PUMPS.....OFF
MAX SPEED.....320/0.77

L2 *Note: Flight controls remain in normal law.*

L1 MANEUVER WITH CARE
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

L2 ● **If blue or yellow sys recovered:**

See procedure for single failure.

L1 ● **If neither system recovered:**

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD B+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-L-00018342.0008001 / 21 MAR 17

L12

STATUS

MIN RAT SPD.....140 KT
(If B PUMP LO PR)
MAX SPEED.....320/0.77
MANEUVER WITH CARE

APPR PROC

DUAL HYD LO PR
(Line not displayed for dual LO LVL)

- **If sys lost by RSVR LO AIR PR:**

  In approach, system lost by RSVR LO AIR PR may be recovered at low altitude.

  RELATED PUMP.....ON

- **If sys lost by RSVR OVHT:**

  In approach, system lost by RSVR OVHT may be recovered if OVHT indication disappears.

  - **IF BLUE OVHT OUT:**
    BLUE ELEC PUMP.....AUTO
  - **IF YELLOW OVHT OUT:**
    YELLOW ENG 2 PUMP.....ON

- **IF HYD NOT RECOVERED (line not displayed for dual LO LVL):**
  - **For A321 aircraft:**
    FOR LDG.....USE FLAP 3
    This line is replaced by "FOR LDG: USE FLAP 3" when CONF 3 is selected, as a reminder.
    GPWS LDG FLAP 3.....ON

  L/G.....GRVTY EXTN

INOP SYS

B+Y HYD
R ELEV
SPLR 2+3+4
SPD BRK
AP 1+2
CARGO DOOR (If Y RSVR LO LVL)
REVERSER 2
B ELEC PUMP
EMER GEN (If B RSVR LO LVL)
YAW DAMPER 2
CAT 2
GLS AUTOLAND
STEEP APPR

Continued on the following page

HYD B+Y SYS LO PR (Cont'd)

Landing gear is extended by gravity to preserve green system integrity Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.

- **For A321 aircraft:**
  APPR SPD.....VREF +10 KT

LDG DIST PROC..... APPLY

SLATS/FLAPS SLOW
See (1)
FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)

(1) Note: *Following a yellow hydraulic system failure, the parking brake may be inoperative due to yellow accumulator low pressure.*

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS - Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD B+Y SYS LO PR

Applicable to: MSN 02443-02457, 02584-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336

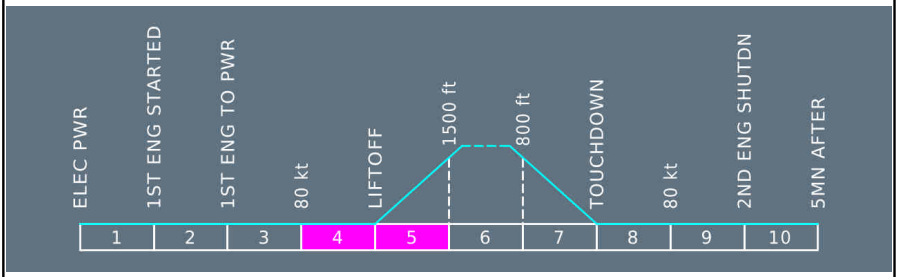
Ident.: PRO-ABN-HYD-L-00018917.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the blue and yellow systems pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).

Flight Phase Inhibition:



Continued on the following page

HYD B+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-L-00018727.0003001 / 21 MAR 16

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L2 *Note:* *If the yellow hydraulic system is lost due to low level, the "HYD PTU FAULT" ECAM message may appear, and requests that the flight crew switches the PTU off.*

L1 **LAND ASAP**

- **If yellow sys lost by ENG 2 PUMP LO PR:**
  YELLOW ELEC PUMP.....ON
- **If blue sys lost by ELEC PUMP LO PR:**
  RAT.....MAN ON

L2 *To extend the RAT, the flight crew must press the RAT MAN ON pb located on the Hydraulic overhead panel.*

L1 MIN RAT SPD.....140 KT

AFFECTED PUMPS.....OFF
MAX SPEED.....320/0.77

L2 *Note:* *Flight controls remain in normal law.*

L1 MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

L2
- **If blue or yellow sys recovered:**

  See procedure for single failure.

L1
- **If neither system recovered:**

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD B+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-L-00018342.0013001 / 21 MAR 17

24

L12

STATUS

MIN RAT SPD.....140 KT
(If B PUMP LO PR)
MAX SPEED.....320/0.77
MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG

APPR PROC

DUAL HYD LO PR
(Line not displayed for dual LO LVL)

- **If sys lost by RSVR LO AIR PR:**

  In approach, system lost by RSVR LO AIR PR may be recovered at low altitude.

  RELATED PUMP.....ON

- **If sys lost by RSVR OVHT:**

  In approach, system lost by RSVR OVHT may be recovered if OVHT indication disappears.

  - **IF BLUE OVHT OUT:**
    BLUE ELEC PUMP.....AUTO
  - **IF YELLOW OVHT OUT:**
    YELLOW ENG 2 PUMP.....ON

- **IF HYD NOT RECOVERED (line not displayed for dual LO LVL):**
  - **For A321 aircraft:**
    FOR LDG.....USE FLAP 3
    This line is replaced by "FOR LDG: USE FLAP 3" when CONF 3 is selected, as a reminder.
    GPWS LDG FLAP 3.....ON

  L/G.....GRVTY EXTN

INOP SYS

B+Y HYD
R ELEV
SPLR 2+3+4
SPD BRK
AP 1+2
N/W STRG
CARGO DOOR (If Y RSVR LO LVL)
REVERSER 2
B ELEC PUMP
EMER GEN (If B RSVR LO LVL)
YAW DAMPER 2
CAT 2
GLS AUTOLAND
STEEP APPR

Continued on the following page

HYD B+Y SYS LO PR (Cont'd)

Landing gear is extended by gravity to preserve green system integrity Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.

- **For A321 aircraft:**
  APPR SPD.....VREF +10 KT

LDG DIST PROC..... APPLY

SLATS/FLAPS SLOW
See (1)
FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)

(1) Note: *Following a yellow hydraulic system failure, the parking brake may be inoperative due to yellow accumulator low pressure.*

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS - Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD B+Y SYS LO PR

Applicable to: MSN 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

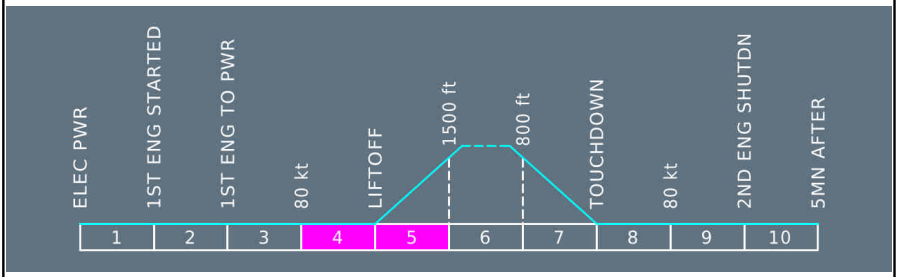
Ident.: PRO-ABN-HYD-L-00018917.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the blue and yellow systems pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).

Flight Phase Inhibition:



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HYD B+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-L-00018727.0002001 / 21 MAR 16

L2 *Note: If the yellow hydraulic system is lost due to low level, the "HYD PTU FAULT" ECAM message may appear, and requests that the flight crew switches the PTU off.*

L1 **LAND ASAP**

- **If yellow sys lost by ENG 2 PUMP LO PR:**
  YELLOW ELEC PUMP.....ON
- **If blue sys lost by ELEC PUMP LO PR:**
  RAT.....MAN ON

L2 *To extend the RAT, the flight crew must press the RAT MAN ON pb located on the Hydraulic overhead panel.*

L1 MIN RAT SPD.....140 KT

AFFECTED PUMPS.....OFF
MAX SPEED.....320/0.77

L2 *Note: Flight controls remain in normal law.*

L1 MANEUVER WITH CARE
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

L2 ● **If blue or yellow sys recovered:**

See procedure for single failure.

L1 ● **If neither system recovered:**

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD B+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-L-00018342.0009001 / 21 MAR 17

L12

STATUS

MIN RAT SPD.....140 KT
(If B PUMP LO PR)
MAX SPEED.....320/0.77
MANEUVER WITH CARE

APPR PROC

DUAL HYD LO PR
(Line not displayed for dual LO LVL)

- **If sys lost by RSVR LO AIR PR:**

  In approach, system lost by RSVR LO AIR PR may be recovered at low altitude.

  RELATED PUMP.....ON

- **If sys lost by RSVR OVHT:**

  In approach, system lost by RSVR OVHT may be recovered if OVHT indication disappears.

  - **IF BLUE OVHT OUT:**
    BLUE ELEC PUMP.....AUTO
  - **IF YELLOW OVHT OUT:**
    YELLOW ENG 2 PUMP.....ON

- **IF HYD NOT RECOVERED (line not displayed for dual LO LVL):**
  - **For A321 aircraft:**
    FOR LDG.....USE FLAP 3
    This line is replaced by "FOR LDG: USE FLAP 3" when CONF 3 is selected, as a reminder.
    GPWS LDG FLAP 3.....ON

  L/G.....GRVTY EXTN

INOP SYS

B+Y HYD
R ELEV
SPLR 2+3+4
SPD BRK
AP 1+2
N/W STRG
CARGO DOOR (If Y RSVR LO LVL)
REVERSER 2
B ELEC PUMP
EMER GEN (If B RSVR LO LVL)
YAW DAMPER 2
CAT 2
GLS AUTOLAND
STEEP APPR

Continued on the following page

HYD B+Y SYS LO PR (Cont'd)

Landing gear is extended by gravity to preserve green system integrity Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.

- **For A321 aircraft:**
  APPR SPD.....VREF +10 KT

LDG DIST PROC..... APPLY

SLATS/FLAPS SLOW
See (1)
FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)

(1) Note: *Following a yellow hydraulic system failure, the parking brake may be inoperative due to yellow accumulator low pressure.*

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS - Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD B+Y SYS LO PR

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

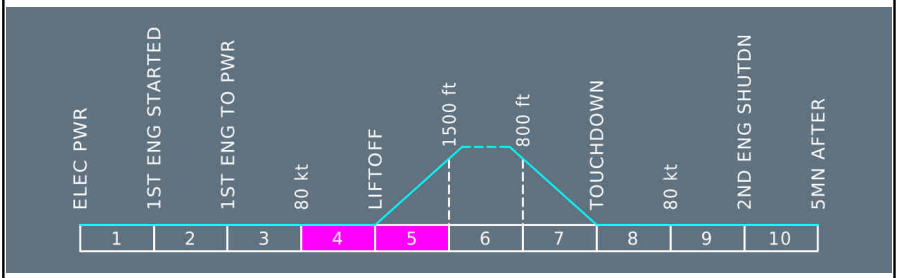
Ident.: PRO-ABN-HYD-L-00018917.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the blue and yellow systems pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).

Flight Phase Inhibition:



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HYD B+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-L-00018727.0003001 / 21 MAR 16

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L2 *Note: If the yellow hydraulic system is lost due to low level, the "HYD PTU FAULT" ECAM message may appear, and requests that the flight crew switches the PTU off.*

L1 **LAND ASAP**

- **If yellow sys lost by ENG 2 PUMP LO PR:**
  YELLOW ELEC PUMP.....ON
- **If blue sys lost by ELEC PUMP LO PR:**
  RAT.....MAN ON

L2 *To extend the RAT, the flight crew must press the RAT MAN ON pb located on the Hydraulic overhead panel.*

L1 MIN RAT SPD.....140 KT

AFFECTED PUMPS.....OFF
MAX SPEED.....320/0.77

L2 *Note: Flight controls remain in normal law.*

L1 MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

L2 ● **If blue or yellow sys recovered:**

See procedure for single failure.

L1 ● **If neither system recovered:**

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD B+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-L-00018342.0010001 / 21 MAR 17

26

L12

STATUS

MIN RAT SPD.....140 KT
(If B PUMP LO PR)
MAX SPEED.....320/0.77
MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG

INOP SYS

B+Y HYD
R ELEV
SPLR 2+3+4
SPD BRK
AP 1+2
N/W STRG
CARGO DOOR (If Y RSVR LO LVL)
REVERSER 2
B ELEC PUMP
EMER GEN (If B RSVR LO LVL)
YAW DAMPER 2
CAT 2
GLS AUTOLAND

APPR PROC

DUAL HYD LO PR
(Line not displayed for dual LO LVL).

- **If sys lost by RSVR LO AIR PR:**

  In approach, system lost by RSVR LO AIR PR may be recovered at low altitude.

  RELATED PUMP.....ON

- **If sys lost by RSVR OVHT:**

  In approach, system lost by RSVR OVHT may be recovered if OVHT indication disappears.

  - **IF BLUE OVHT OUT:**
    BLUE ELEC PUMP.....AUTO
  - **IF YELLOW OVHT OUT:**
    YELLOW ENG 2 PUMP.....ON

- **IF HYD NOT RECOVERED (line not displayed for dual LO LVL):**
  L/G.....GRVTY EXTN
  Landing gear is extended by gravity to preserve green system integrity *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

  - **IF CONF3:**
    APPR SPD.....VREF +25 KT

Continued on the following page

HYD B+Y SYS LO PR (Cont'd)

LDG DIST PROC..... APPLY

SLATS/FLAPS SLOW
See (1)

FUEL CONSUMPT INCRSD
See (2)

FMS PRED UNRELIABLE
See (3)

(1) Note: *Following a yellow hydraulic system failure, the parking brake may be inoperative due to yellow accumulator low pressure.*

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS - Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD B+Y SYS LO PR

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

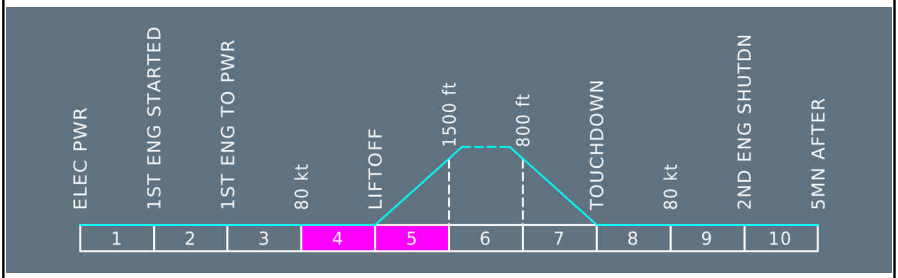
Ident.: PRO-ABN-HYD-L-00018917.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the blue and yellow systems pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).

Flight Phase Inhibition:



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HYD B+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-L-00018727.0004001 / 09 APR 18

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L2 *Note: If the yellow hydraulic system is lost due to low level, the "HYD PTU FAULT" ECAM message may appear, and requests that the flight crew switches the PTU off.*

L1 **LAND ASAP**

- **If yellow sys lost by ENG 2 PUMP LO PR:**
  YELLOW ELEC PUMP.....ON
- **If blue sys lost by ELEC PUMP LO PR:**
  RAT.....MAN ON

L2 *To extend the RAT, the flight crew must press the RAT MAN ON pb located on the Hydraulic overhead panel.*

L1 MIN RAT SPD.....140 KT

AFFECTED PUMPS.....OFF
MAX SPEED.....320/0.77

L2 *Note: Flight controls remain in normal law.*

L1 MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG
THR LVR.....TOGA THEN MCT
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

L2 ● **If blue or yellow sys recovered:**

See procedure for single failure.

L1 ● **If neither system recovered:**

SECONDARY FAILURES

*F/CTL

Continued on the following page

HYD B+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-L-00018342.0015001 / 09 APR 18

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L12

STATUS

MIN RAT SPD.....140 KT
(If B PUMP LO PR)
MAX SPEED..... 320/0.77
MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG
THR LVR.....TOGA THEN MCT

APPR PROC

DUAL HYD LO PR
(Line not displayed for dual LO LVL).

- **If sys lost by RSVR LO AIR PR:**

  In approach, system lost by RSVR LO AIR PR may be recovered at low altitude.

  RELATED PUMP..... ON

- **If sys lost by RSVR OVHT:**

  In approach, system lost by RSVR OVHT may be recovered if OVHT indication disappears.

  - **IF BLUE OVHT OUT:**
    BLUE ELEC PUMP.....AUTO
  - **IF YELLOW OVHT OUT:**
    YELLOW ENG 2 PUMP..... ON

- **IF HYD NOT RECOVERED (line not displayed for dual LO LVL):**
  FOR LDG.....USE FLAP 3
  This line is replaced by "FOR LDG: USE FLAP 3" when CONF 3 is selected, as a reminder.
  GPWS LDG FLAP 3..... ON
  L/G.....GRVTY EXTN

INOP SYS

B+Y HYD
R ELEV
SPLR 2+3+4
SPD BRK
AP 1+2
N/W STRG
CARGO DOOR (If Y RSVR LO LVL)
REVERSER 2
B ELEC PUMP
EMER GEN (If B RSVR LO LVL)
YAW DAMPER 2
CAT 2
GLS AUTOLAND

Continued on the following page

HYD B+Y SYS LO PR (Cont'd)

Landing gear is extended by gravity to preserve green system integrity *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

APPR SPD..... VREF +25 KT
LDG DIST PROC..... APPLY

SLATS/FLAPS SLOW
See (1)
FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)

(1) Note: *Following a yellow hydraulic system failure, the parking brake may be inoperative due to yellow accumulator low pressure.*

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS - Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD G+B SYS LO PR

Applicable to: MSN 01767-02388, 02482

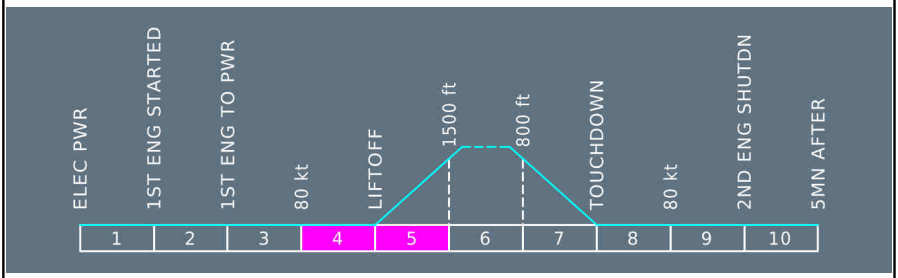
Ident.: PRO-ABN-HYD-J-00018920.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the green and blue systems pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).

Flight Phase Inhibition:



Continued on the following page

HYD G+B SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-J-00018349.0004001 / 05 JUN 18

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L2 *Note: If the green hydraulic system is lost due to low level, the "HYD PTU FAULT" ECAM message may appear, and requests the flight crew to switch the PTU off.*

L1 **LAND ASAP**

- **If blue sys lost by ELEC PUMP LO PR:**

RAT.....MAN ON
MIN RAT SPD.....140 KT

AFFECTED PUMPS.....OFF
MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 The flight control normal laws and associated protections are lost. Only load factor limitation is furnished (alternate law without protection).

L1 MAX SPEED.....320/0.77

L2 *Speed is limited due to loss of high speed protection.*

L1 SPD BRK.....DO NOT USE

- **If blue sys recovered:**

See procedure for single failure.

- **If blue sys not recovered:**

Refer to PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed.

SECONDARY FAILURES

*WHEEL
*F/CTL

Continued on the following page

HYD G+B SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-J-00018350.0017001 / 05 JUN 18

L12

STATUS

MIN RAT SPD (IF RAT OUT)..... 140 KT
(If B PUMP LO PR)
MAX SPEED..... 320/0.77
MANEUVER WITH CARE
SPD BRK.....DO NOT USE
FOR GA: MAX PITCH 15 DEG
FUEL CONSUMPT INCRSD
See (1)

APPR PROC

DUAL HYD LO PR
(Line not displayed for a double LO LVL):

- **If sys lost by RSVR LO AIR PR:**
  RELATED PUMPS..... ON
- **If sys lost by RSVR OVHT:**
  - **IF BLUE OVHT OUT:**
    BLUE ELEC PUMP.....AUTO
  - **IF GREEN OVHT OUT:**
    GREEN ENG 1 PUMP..... ON
- **IF HYD NOT RECOVERED (line not displayed for a double LO LVL):**
  A/THR..... OFF
  Select the target speed on the FCU. Due to the loss of slats and some flight control surfaces, the A/THR may not satisfactorily maintain speed.
  FOR LDG.....USE FLAP 3
  This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.
  GPWS LDG FLAP 3..... ON

INOP SYS

G+B HYD
F/CTL PROT
L ELEV
L+R AIL
SPLR 1+3+5
SLATS
AP 1+2
N/W STRG
AUTO BRK
NORM BRK
L/G RETRACT
REVERSER 1
EMER GEN (If B RSVR LO LVL)
G ENG 1 PUMP
B ELEC PUMP
YAW DAMPER 1
CAT 2
GLS AUTOLAND
STEEP APPR

Continued on the following page

HYD G+B SYS LO PR (Cont'd)

- **WHEN SPD 200 KT (displayed when slats are retracted):**

  L/G..... GRVTY EXTN

  Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION

  Extend the landing gear at 200 kt to revert sooner in direct law. This provides, below 200 kt , a better pitch control than in alternate law with one elevator lost and all slats lost.

APPR SPD..... VREF +25 KT

Approach speed must be increased, due to the loss of ailerons and slats.

LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (2)
FMS PRED UNRELIABLE
See (3)
FLAPS SLOW

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD G+B SYS LO PR

Applicable to: MSN 02405

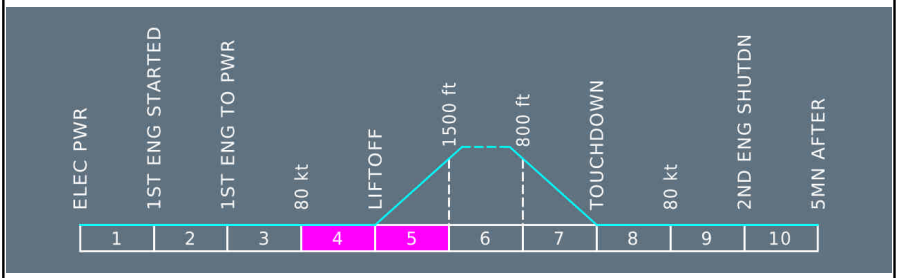
Ident.: PRO-ABN-HYD-J-00018920.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the green and blue systems pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).

Flight Phase Inhibition:



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HYD G+B SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-J-00018349.0002001 / 05 JUN 18

L2 *Note: If the green hydraulic system is lost due to low level, the "HYD PTU FAULT" ECAM message may appear, and requests the flight crew to switch the PTU off.*

L1 **LAND ASAP**

- **If blue sys lost by ELEC PUMP LO PR:**

RAT.....MAN ON
MIN RAT SPD.....140 KT

AFFECTED PUMPS.....OFF
MANEUVER WITH CARE
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 The flight control normal laws and associated protections are lost. Only load factor limitation is furnished (alternate law without protection).

L1 MAX SPEED.....320/0.77

L2 *Speed is limited due to loss of high speed protection.*

L1 SPD BRK.....DO NOT USE

- **If blue sys recovered:**

See procedure for single failure.

- **If blue sys not recovered:**

Refer to PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed.

SECONDARY FAILURES

*WHEEL
*F/CTL

Continued on the following page

HYD G+B SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-J-00018350.0011001 / 05 JUN 18

L12

STATUS

MIN RAT SPD (IF RAT OUT)..... 140 KT
(If B PUMP LO PR)
MAX SPEED..... 320/0.77
MANEUVER WITH CARE
SPD BRK.....DO NOT USE
FUEL CONSUMPT INCRSD
See (1)

APPR PROC

DUAL HYD LO PR
(Line not displayed for a double LO LVL):

- **If sys lost by RSVR LO AIR PR:**
  RELATED PUMPS..... ON
- **If sys lost by RSVR OVHT:**
  - **IF BLUE OVHT OUT:**
    BLUE ELEC PUMP.....AUTO
  - **IF GREEN OVHT OUT:**
    GREEN ENG 1 PUMP..... ON
- **IF HYD NOT RECOVERED (line not displayed for a double LO LVL):**
  A/THR..... OFF
  Select the target speed on the FCU. Due to the loss of slats and some flight control surfaces, the A/THR may not satisfactorily maintain speed.
  FOR LDG.....USE FLAP 3
  This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.
  GPWS LDG FLAP 3..... ON

INOP SYS

G+B HYD
F/CTL PROT
L ELEV
L+R AIL
SPLR 1+3+5
SLATS
AP 1+2
N/W STRG
AUTO BRK
NORM BRK
L/G RETRACT
REVERSER 1
EMER GEN (If B RSVR LO LVL)
G ENG 1 PUMP
B ELEC PUMP
YAW DAMPER 1
CAT 2
GLS AUTOLAND
STEEP APPR

Continued on the following page

HYD G+B SYS LO PR (Cont'd)

- **WHEN SPD 200 KT (displayed when slats are retracted):**

  L/G..... GRVTY EXTN

  Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION

  Extend the landing gear at 200 kt to revert sooner in direct law. This provides, below 200 kt , a better pitch control than in alternate law with one elevator lost and all slats lost.

APPR SPD..... VREF +25 KT

Approach speed must be increased, due to the loss of ailerons and slats.

LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See [2]
FMS PRED UNRELIABLE
See [3]
FLAPS SLOW

[1] *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

[2] *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

[3] *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD G+B SYS LO PR

Applicable to: MSN 02443-02457, 02584-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336

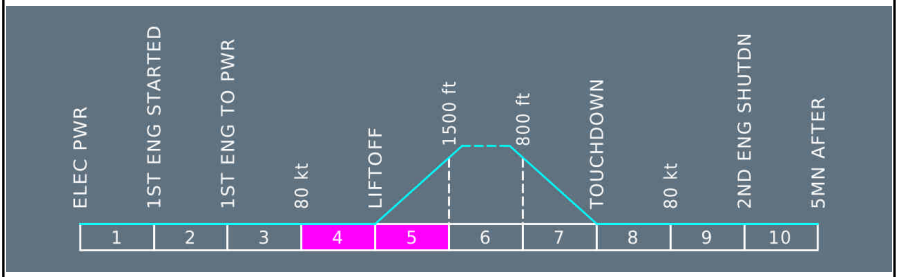
Ident.: PRO-ABN-HYD-J-00018920.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the green and blue systems pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).

Flight Phase Inhibition:



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HYD G+B SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-J-00018349.0004001 / 05 JUN 18

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L2 *Note: If the green hydraulic system is lost due to low level, the "HYD PTU FAULT" ECAM message may appear, and requests the flight crew to switch the PTU off.*

L1 **LAND ASAP**

- **If blue sys lost by ELEC PUMP LO PR:**

RAT.....MAN ON
MIN RAT SPD.....140 KT

AFFECTED PUMPS.....OFF
MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 The flight control normal laws and associated protections are lost. Only load factor limitation is furnished (alternate law without protection).

L1 MAX SPEED.....320/0.77

L2 *Speed is limited due to loss of high speed protection.*

L1 SPD BRK.....DO NOT USE

- **If blue sys recovered:**

See procedure for single failure.

- **If blue sys not recovered:**

Refer to PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed.

SECONDARY FAILURES

*WHEEL
*F/CTL

Continued on the following page

HYD G+B SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-J-00018350.0023001 / 05 JUN 18

31

L12

STATUS

MIN RAT SPD (IF RAT OUT)..... 140 KT
(If B PUMP LO PR)
MAX SPEED..... 320/0.77
MANEUVER WITH CARE
SPD BRK.....DO NOT USE
FOR GA: MAX PITCH 15 DEG
FUEL CONSUMPT INCRSD
See (1)

APPR PROC

DUAL HYD LO PR
(Line not displayed for a double LO LVL):

- **If sys lost by RSVR LO AIR PR:**
  RELATED PUMPS..... ON
- **If sys lost by RSVR OVHT:**
  - **IF BLUE OVHT OUT:**
    BLUE ELEC PUMP.....AUTO
  - **IF GREEN OVHT OUT:**
    GREEN ENG 1 PUMP..... ON
- **IF HYD NOT RECOVERED (line not displayed for a double LO LVL):**
  A/THR..... OFF
  Select the target speed on the FCU. Due to the loss of slats and some flight control surfaces, the A/THR may not satisfactorily maintain speed.
  FOR LDG.....USE FLAP 3
  This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.
  GPWS LDG FLAP 3..... ON

INOP SYS

G+B HYD
F/CTL PROT
L ELEV
L+R AIL
SPLR 1+3+5
SLATS
AP 1+2
AUTO BRK
NORM BRK
L/G RETRACT
REVERSER 1
EMER GEN (If B RSVR LO LVL)
G ENG 1 PUMP
B ELEC PUMP
YAW DAMPER 1
CAT 2
GLS AUTOLAND
STEEP APPR

Continued on the following page

HYD G+B SYS LO PR (Cont'd)

- **WHEN SPD 200 KT (displayed when slats are retracted):**

  L/G..... GRVTY EXTN

  Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION

  Extend the landing gear at 200 kt to revert sooner in direct law. This provides, below 200 kt , a better pitch control than in alternate law with one elevator lost and all slats lost.

APPR SPD..... VREF +25 KT

Approach speed must be increased, due to the loss of ailerons and slats.

LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (2)
FMS PRED UNRELIABLE
See (3)
FLAPS SLOW

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD G+B SYS LO PR

Applicable to: MSN 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

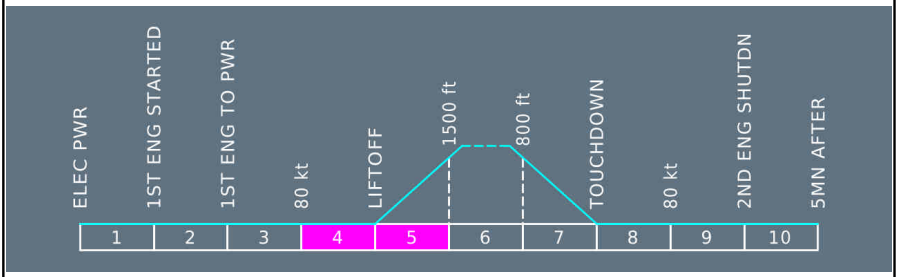
Ident.: PRO-ABN-HYD-J-00018920.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the green and blue systems pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).

Flight Phase Inhibition:



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HYD G+B SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-J-00018349.0002001 / 05 JUN 18

L2 *Note: If the green hydraulic system is lost due to low level, the "HYD PTU FAULT" ECAM message may appear, and requests the flight crew to switch the PTU off.*

L1 **LAND ASAP**

- **If blue sys lost by ELEC PUMP LO PR:**

RAT.....MAN ON
MIN RAT SPD.....140 KT

AFFECTED PUMPS.....OFF
MANEUVER WITH CARE
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 The flight control normal laws and associated protections are lost. Only load factor limitation is furnished (alternate law without protection).

L1 MAX SPEED.....320/0.77

L2 *Speed is limited due to loss of high speed protection.*

L1 SPD BRK.....DO NOT USE

- **If blue sys recovered:**

See procedure for single failure.

- **If blue sys not recovered:**

Refer to PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed.

SECONDARY FAILURES

*WHEEL
*F/CTL

Continued on the following page

HYD G+B SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-J-00018350.0013001 / 05 JUN 18

L12

STATUS

MIN RAT SPD (IF RAT OUT)..... 140 KT
(If B PUMP LO PR)
MAX SPEED..... 320/0.77
MANEUVER WITH CARE
SPD BRK.....DO NOT USE
FUEL CONSUMPT INCRSD
See (1)

APPR PROC

DUAL HYD LO PR
(Line not displayed for a double LO LVL):

- **If sys lost by RSVR LO AIR PR:**
  RELATED PUMPS..... ON
- **If sys lost by RSVR OVHT:**
  - **IF BLUE OVHT OUT:**
    BLUE ELEC PUMP.....AUTO
  - **IF GREEN OVHT OUT:**
    GREEN ENG 1 PUMP..... ON
- **IF HYD NOT RECOVERED (line not displayed for a double LO LVL):**
  A/THR..... OFF
  Select the target speed on the FCU. Due to the loss of slats and some flight control surfaces, the A/THR may not satisfactorily maintain speed.
  FOR LDG.....USE FLAP 3
  This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.
  GPWS LDG FLAP 3..... ON

INOP SYS

G+B HYD
F/CTL PROT
L ELEV
L+R AIL
SPLR 1+3+5
SLATS
AP 1+2
AUTO BRK
NORM BRK
L/G RETRACT
REVERSER 1
EMER GEN (If B RSVR LO LVL)
G ENG 1 PUMP
B ELEC PUMP
YAW DAMPER 1
CAT 2
GLS AUTOLAND
STEEP APPR

Continued on the following page

HYD G+B SYS LO PR (Cont'd)

- **WHEN SPD 200 KT (displayed when slats are retracted):**

  L/G..... GRVTY EXTN

  Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION

  Extend the landing gear at 200 kt to revert sooner in direct law. This provides, below 200 kt , a better pitch control than in alternate law with one elevator lost and all slats lost.

APPR SPD..... VREF +25 KT

Approach speed must be increased, due to the loss of ailerons and slats.

LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See [2]
FMS PRED UNRELIABLE
See [3]
FLAPS SLOW

[1] *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

[2] *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

[3] *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD G+B SYS LO PR

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

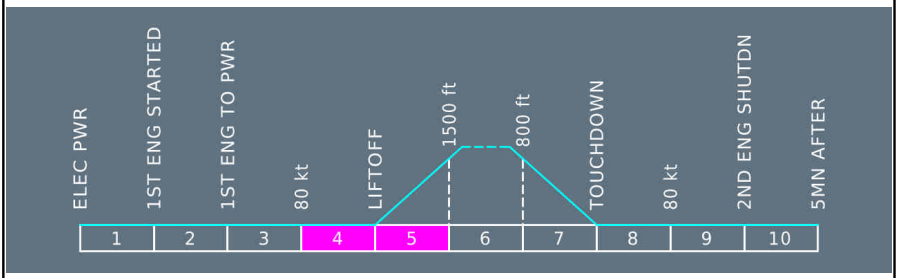
Ident.: PRO-ABN-HYD-J-00018920.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the green and blue systems pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).

Flight Phase Inhibition:



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HYD G+B SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-J-00018349.0003001 / 05 JUN 18

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L2 *Note: If the green hydraulic system is lost due to low level, the "HYD PTU FAULT" ECAM message may appear, and requests the flight crew to switch the PTU off.*

L1 **LAND ASAP**

- **If blue sys lost by ELEC PUMP LO PR:**

RAT.....MAN ON
MIN RAT SPD.....140 KT

AFFECTED PUMPS.....OFF
MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 The flight control normal laws and associated protections are lost. Only load factor limitation is furnished (alternate law without protection).

L1 MAX SPEED.....320/0.77

L2 *Speed is limited due to loss of high speed protection.*

L1 SPD BRK.....DO NOT USE

- **If blue sys recovered:**

See procedure for single failure.

- **If blue sys not recovered:**

Refer to PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed.

SECONDARY FAILURES

*WHEEL
*F/CTL

Continued on the following page

HYD G+B SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-J-00018350.0016001 / 21 MAR 17

33

L12

STATUS

MIN RAT SPD (IF RAT OUT)..... 140 KT
(If B PUMP LO PR)
MAX SPEED..... 320/0.77
MANEUVER WITH CARE
SPD BRK.....DO NOT USE
FOR GA: MAX PITCH 15 DEG

APPR PROC

DUAL HYD LO PR
(Line not displayed for a double LO LVL):

- **If sys lost by RSVR LO AIR PR:**
  RELATED PUMPS..... ON
- **If sys lost by RSVR OVHT:**
  - **IF BLUE OVHT OUT:**
    BLUE ELEC PUMP.....AUTO
  - **IF GREEN OVHT OUT:**
    GREEN ENG 1 PUMP..... ON
- **IF HYD NOT RECOVERED (line not displayed for a double LO LVL):**
  A/THR..... OFF
  Select the target speed on the FCU. Due to the loss of slats and some flight control surfaces, the A/THR may not satisfactorily maintain speed.
  FOR LDG.....USE FLAP 3
  This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.
  GPWS LDG FLAP 3..... ON

INOP SYS

G+B HYD
F/CTL PROT
L ELEV
L+R AIL
SPLR 1+3+5
SLATS
AP 1+2
AUTO BRK
NORM BRK
L/G RETRACT
REVERSER 1
EMER GEN (If B RSVR LO LVL)
B ELEC PUMP
YAW DAMPER 1
CAT 2
GLS AUTOLAND

Continued on the following page

HYD G+B SYS LO PR (Cont'd)

- **WHEN SPD 200 KT (displayed when slats are retracted):**

  L/G..... GRVTY EXTN

  Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION

  Extend the landing gear at 200 kt to revert sooner in direct law. This provides, below 200 kt , a better pitch control than in alternate law with one elevator lost and all slats lost.

APPR SPD..... VREF +30 KT
LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)
FUEL CONSUMPT INCRSD
See (2)
FMS PRED UNRELIABLE
See (3)
FLAPS SLOW

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

(2) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS Operational data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD G+B SYS LO PR

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

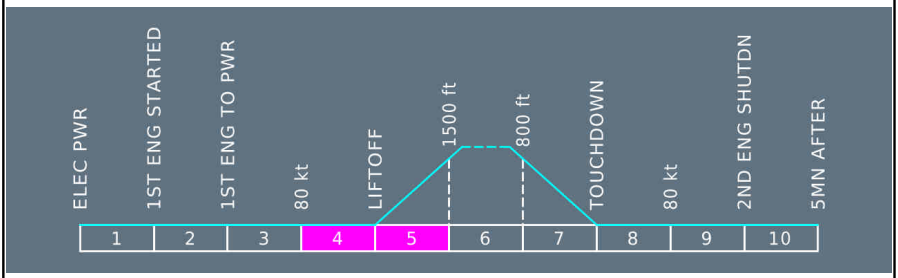
Ident.: PRO-ABN-HYD-J-00018920.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the green and blue systems pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).

Flight Phase Inhibition:



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HYD G+B SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-J-00018349.0008001 / 05 JUN 18

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L2 *Note: If the green hydraulic system is lost due to low level, the "HYD PTU FAULT" ECAM message may appear, and requests the flight crew to switch the PTU off.*

L1 **LAND ASAP**

- **If blue sys lost by ELEC PUMP LO PR:**

RAT.....MAN ON
MIN RAT SPD.....140 KT

AFFECTED PUMPS.....OFF
MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG
THR LVR.....TOGA THEN MCT
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 The flight control normal laws and associated protections are lost. Only load factor limitation is furnished (alternate law without protection).

L1 MAX SPEED.....320/0.77

L2 *Speed is limited due to loss of high speed protection.*

L1 SPD BRK.....DO NOT USE

- **If blue sys recovered:**

See procedure for single failure.

- **If blue sys not recovered:**

Refer to PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed.

SECONDARY FAILURES

*WHEEL
*F/CTL

Continued on the following page

HYD G+B SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-J-00018350.0025001 / 24 MAY 18

35

L12

STATUS

MIN RAT SPD (IF RAT OUT)..... 140 KT
(If B PUMP LO PR)
MAX SPEED..... 320/0.77
MANEUVER WITH CARE
SPD BRK.....DO NOT USE
FOR GA: MAX PITCH 15 DEG
THR LVR.....TOGA THEN MCT
FUEL CONSUMPT INCRSD
See (1)

APPR PROC

DUAL HYD LO PR
(Line not displayed for a double LO LVL):

- **If sys lost by RSVR LO AIR PR:**
  RELATED PUMPS..... ON
- **If sys lost by RSVR OVHT:**
  - **IF BLUE OVHT OUT:**
    BLUE ELEC PUMP.....AUTO
  - **IF GREEN OVHT OUT:**
    GREEN ENG 1 PUMP..... ON
- **IF HYD NOT RECOVERED (line not displayed for a double LO LVL):**
  S/F JAMMED PROC.....APPLY
  A/THR..... OFF
  Select the target speed on the FCU. Due to the loss of slats and some flight control surfaces, the A/THR may not satisfactorily maintain speed.
  FOR LDG.....USE FLAP 3

INOP SYS

G+B HYD
F/CTL PROT
L ELEV
L+R AIL
SPLR 1+3+5
SLATS
AP 1+2
AUTO BRK
NORM BRK
L/G RETRACT
REVERSER 1
EMER GEN (If B RSVR LO LVL)
G ENG 1 PUMP
B ELEC PUMP
YAW DAMPER 1
CAT 2
GLS AUTOLAND

Continued on the following page

HYD G+B SYS LO PR (Cont'd)

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3..... ON

- **WHEN SPD 200 KT (displayed when slats are retracted):**

  L/G..... GRVTY EXTN

  Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION

  Extend the landing gear at 200 kt to revert sooner in direct law. This provides, below 200 kt , a better pitch control than in alternate law with one elevator lost and all slats lost.

■ **For A319 aircraft:**

APPR SPD.....VREF +40 KT

Approach speed must be increased, due to the loss of flaps.

■ **For A320 and A321 aircraft:**

APPR SPD.....VREF +30 KT

LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See [2]
FMS PRED UNRELIABLE
See [3]
FLAPS SLOW

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

(3) *Disregard FMS fuel predictions and refer to QRH/OPS Operational data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

HYD G+Y SYS LO PR

Applicable to: MSN 01767-06336

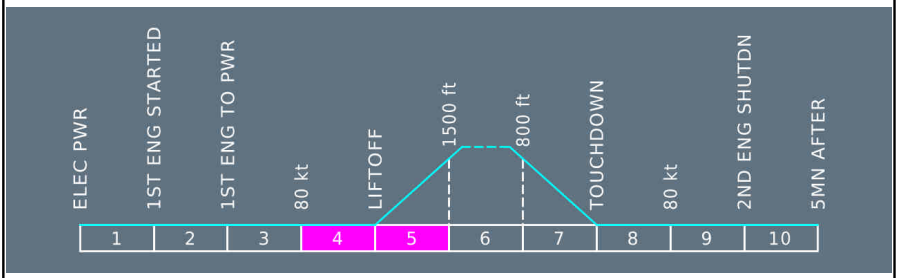
Ident.: PRO-ABN-HYD-K-00018921.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the green and yellow systems pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).

Flight Phase Inhibition:



Continued on the following page

HYD G+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-K-00018352.0003001 / 05 JUN 18

36

LAND ASAP

PTU.....OFF
AFFECTED PUMPS.....OFF

- **If yellow sys lost by ENG 2 PUMP LO PR:**
  YELLOW ELEC PUMP.....ON

MANEUVER WITH CARE
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 Flight control normal laws and associated protections are lost. Only load factor limitation, high and low speed stability are provided (alternate law with reduced protection).

L1 MAX SPEED.....320/0.77

L2 *Speed is limited due to loss of high speed protection.*

L1 ■ **If yellow sys recovered:**

See procedure for single failure.

■ **If yellow sys not recovered:**

Refer to PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed.

SECONDARY FAILURES

*F/CTL
*WHEEL

Continued on the following page

HYD G+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-K-00018353.0014001 / 22 MAR 17

37

L12

STATUS

MAX SPEED..... 320/0.77
MAX BRK PR..... 1 000 PSI
MANEUVER WITH CARE

APPR PROC

DUAL HYD LO PR

(Line not displayed for a double LO LVL)

- **If sys lost by RSVR LO AIR PR:**
  RELATED PUMP..... ON
- **If sys lost by RSVR OVHT:**
  - **IF GREEN OVHT OUT:**
    GREEN ENG 1 PUMP..... ON
  - **IF YELLOW OVHT OUT:**
    YELLOW ENG 2 PUMP..... ON
- **IF HYD NOT RECOVERED (line not displayed for a double LO LVL):**
  FOR LDG.....USE FLAP 3
  This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.
  GPWS FLAP MODE.....OFF
  - **WHEN CONF 3 AND VAPP:**
    L/G..... GRVTY EXTN
    Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION. Being stabilized at VAPP, before selecting the gear down, enables the aircraft to be trimmed for approach.

APPR SPD..... VREF +25 KT

Approach speed must be increased, due to the loss of flaps.

LDG DIST PROC..... APPLY

INOP SYS

G+Y HYD
F/CTL PROT
STABILIZER
REVERSER 1+2
SPLR 1+2+ 4+5
FLAPS
LAF
YAW DAMPER
AP 1+2
ANTI SKID
N/W STRG
NORM BRK
AUTO BRK
L/G RETRACT
CARGO DOOR (If Y RSVR LO LVL)
CAT 2
GLS AUTOLAND
STEEP APPR

Continued on the following page

HYD G+Y SYS LO PR (Cont'd)

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)
BRK Y ACCU PR ONLY
See (2)
FUEL CONSUMPT INCRSD
See (3)
FMS PRED UNRELIABLE
See (4)
SLATS SLOW
See (5)

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

(2) *7 full brake applications are available.*

(3) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(4) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

(5) *Note: Following a yellow hydraulic system failure, the parking brake may be inoperative due to yellow accumulator low pressure.*

HYD G+Y SYS LO PR

Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

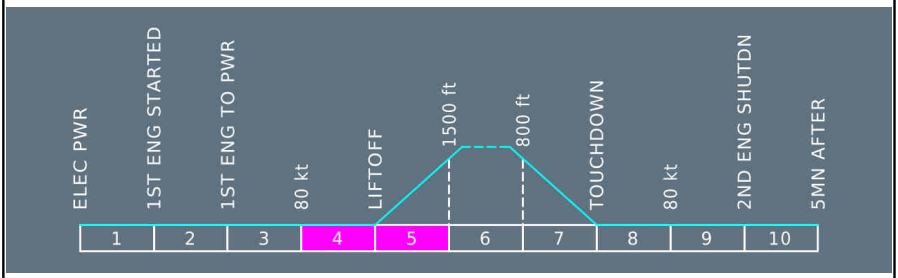
Ident.: PRO-ABN-HYD-K-00018921.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the green and yellow systems pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).

Flight Phase Inhibition:



Continued on the following page

HYD G+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-K-00018352.0003001 / 05 JUN 18

38

LAND ASAP

PTU.....OFF
AFFECTED PUMPS.....OFF

- **If yellow sys lost by ENG 2 PUMP LO PR:**
  YELLOW ELEC PUMP.....ON

MANEUVER WITH CARE
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 Flight control normal laws and associated protections are lost. Only load factor limitation, high and low speed stability are provided (alternate law with reduced protection).

L1 MAX SPEED.....320/0.77

L2 *Speed is limited due to loss of high speed protection.*

L1 ■ **If yellow sys recovered:**

See procedure for single failure.

■ **If yellow sys not recovered:**

Refer to PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed.

SECONDARY FAILURES

*F/CTL
*WHEEL

Continued on the following page

HYD G+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-K-00018353.0016001 / 21 MAR 17

39

L12

STATUS

MAX SPEED..... 320/0.77
MAX BRK PR..... 1 000 PSI
MANEUVER WITH CARE

APPR PROC

DUAL HYD LO PR

(Line not displayed for a double LO LVL)

- **If sys lost by RSVR LO AIR PR:**
  RELATED PUMP..... ON
- **If sys lost by RSVR OVHT:**
  - **IF GREEN OVHT OUT:**
    GREEN ENG 1 PUMP..... ON
  - **IF YELLOW OVHT OUT:**
    YELLOW ENG 2 PUMP..... ON
- **IF HYD NOT RECOVERED (line not displayed for a double LO LVL):**
  FOR LDG.....USE FLAP 3
  This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.
  GPWS FLAP MODE.....OFF
  - **WHEN CONF 3 AND VAPP:**
    L/G..... GRVTY EXTN
    Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION. Being stabilized at VAPP, before selecting the gear down, enables the aircraft to be trimmed for approach.

■ **For A319 and A320 aircraft:**
APPR SPD.....VREF +30 KT

INOP SYS

G+Y HYD
F/CTL PROT
STABILIZER
REVERSER 1+2
SPLR 1+2+4+5
FLAPS
YAW DAMPER
AP 1+2
ANTI SKID
N/W STRG
NORM BRK
AUTO BRK
L/G RETRACT
CARGO DOOR (If Y RSVR LO LVL)
CAT 2
GLS AUTOLAND

Continued on the following page

HYD G+Y SYS LO PR (Cont'd)

Approach speed must be increased, due to the loss of flaps.

■ **For A321 aircraft:**

APPR SPD.....VREF +35 KT

LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)
BRK Y ACCU PR ONLY
See (2)
FUEL CONSUMPT INCRSD
See (3)
FMS PRED UNRELIABLE
See (4)
SLATS SLOW
See (5)

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll. (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

(2) *7 full brake applications are available.*

(3) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(4) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

(5) *Note: Following a yellow hydraulic system failure, the parking brake may be inoperative due to yellow accumulator low pressure.*

HYD G+Y SYS LO PR

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

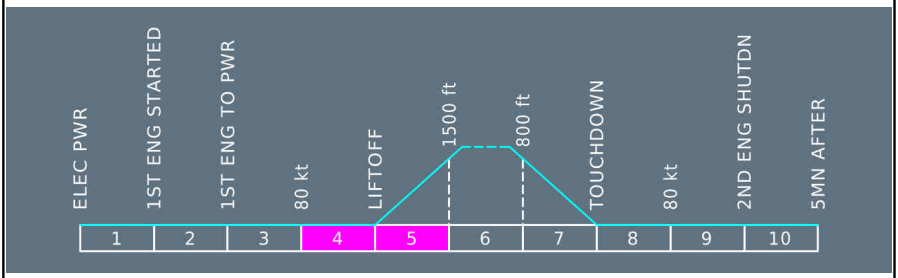
Ident.: PRO-ABN-HYD-K-00018921.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the green and yellow systems pressure ≤1 450 PSI (the alert resets if pressure ≥1 750 PSI).

Flight Phase Inhibition:



Continued on the following page

HYD G+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-K-00018352.0006001 / 05 JUN 18

40

LAND ASAP

PTU.....OFF
AFFECTED PUMPS.....OFF

- **If yellow sys lost by ENG 2 PUMP LO PR:**
  YELLOW ELEC PUMP.....ON

MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG
THR LVR.....TOGA THEN MCT
FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 Flight control normal laws and associated protections are lost. Only load factor limitation, high and low speed stability are provided (alternate law with reduced protection).

L1 MAX SPEED.....320/0.77

L2 *Speed is limited due to loss of high speed protection.*

L1 ■ **If yellow sys recovered:**

See procedure for single failure.

■ **If yellow sys not recovered:**

Refer to PRO-ABN-F_CTL [QRH] Landing with Slats or Flaps Jammed.

SECONDARY FAILURES

*F/CTL
*WHEEL

Continued on the following page

HYD G+Y SYS LO PR (Cont'd)

Ident.: PRO-ABN-HYD-K-00018353.0024001 / 24 MAY 18

41

L12

STATUS

MAX SPEED..... 320/0.77
MAX BRK PR..... 1 000 PSI
MANEUVER WITH CARE
FOR GA: MAX PITCH 15 DEG
THR LVR.....TOGA THEN MCT

APPR PROC

DUAL HYD LO PR

(Line not displayed for a double LO LVL)

- **If sys lost by RSVR LO AIR PR:**
  RELATED PUMP..... ON
- **If sys lost by RSVR OVHT:**
  - **IF GREEN OVHT OUT:**
    GREEN ENG 1 PUMP..... ON
  - **IF YELLOW OVHT OUT:**
    YELLOW ENG 2 PUMP..... ON
- **IF HYD NOT RECOVERED (line not displayed for a double LO LVL):**
  S/F JAMMED PROC.....APPLY
  FOR LDG.....USE FLAP 3

  This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

  GPWS FLAP MODE.....OFF
  - **WHEN CONF 3 AND VAPP:**
    L/G..... GRVTY EXTN

    Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION. Being stabilized at VAPP, before selecting the gear down, enables the aircraft to be trimmed for approach.

INOP SYS

G+Y HYD
F/CTL PROT
STABILIZER
REVERSER 1+2
SPLR 1+2+4+5
FLAPS
YAW DAMPER
AP 1+2
ANTI SKID
N/W STRG
NORM BRK
AUTO BRK
L/G RETRACT
CARGO DOOR (If Y RSVR LO LVL)
CAT 2
GLS AUTOLAND

Continued on the following page

HYD G+Y SYS LO PR (Cont'd)

■ **For A319 and A320 aircraft:**

APPR SPD.....VREF +30 KT

Approach speed must be increased, due to the loss of flaps.

■ **For A321 aircraft:**

APPR SPD.....VREF +35 KT

LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)

BRK Y ACCU PR ONLY
See (2)

FUEL CONSUMPT INCRSD
See (3)

FMS PRED UNRELIABLE
See (4)

SLATS SLOW
See (5)

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll. (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

(2) *7 full brake applications are available.*

(3) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(4) *Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.*

(5) *Note: Following a yellow hydraulic system failure, the parking brake may be inoperative due to yellow accumulator low pressure.*

HYD PTU FAULT

Applicable to: ALL

Ident.: PRO-ABN-HYD-R-00017140.0001001 / 21 MAR 16

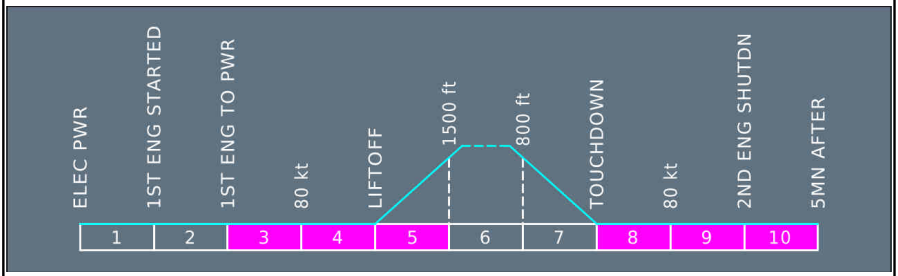
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- On ground, PTU does not run if the differential pressure is higher than 650 PSI between G and Y system, or
- In flight, PTU at AUTO position does not run when G or Y reservoir level is low, and G or Y system pressure is low.

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-R-00011657.0001001 / 31 AUG 17

L2 *Note:* *This warning is triggered, if the last engine is started within 40 s following the end of the cargo doors operation. In this case, reset the warning by switching the yellow ELEC pump ON, then OFF.*

L1 ● **If green or yellow reservoir low level and system low press:**

PTU..... OFF

Continued on the following page

HYD PTU FAULT (Cont'd)

Ident.: PRO-ABN-HYD-R-00011658.0001001 / 18 AUG 10

STATUS	INOP SYS
	PTU

HYD RAT FAULT

Applicable to: ALL

Ident.: PRO-ABN-HYD-S-00017141.0001001 / 21 MAR 16

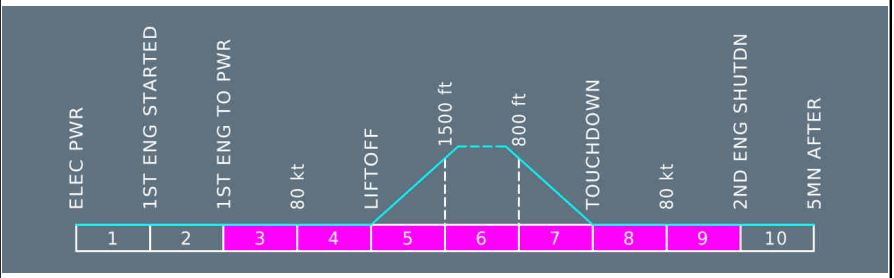
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- The RAT is not fully stowed, or
- Pressure is present in the RAT stowing actuator, or
- The RAT pump is not available.

Flight Phase Inhibition:



Ident.: PRO-ABN-HYD-S-00011659.0001001 / 16 NOV 11

Crew awareness.

Continued on the following page

HYD RAT FAULT (Cont'd)

Ident.: PRO-ABN-HYD-S-00011660.0001001 / 18 AUG 10

STATUS	INOP SYS
	RAT

Intentionally left blank

[QRH] LANDING WITH ABNORMAL L/G

Applicable to: ALL

Ident.: PRO-ABN-LG-AD-00018650.0002001 / 17 MAR 17

The procedure is intended for use when the nose or main landing gear fail to extend and/or lock down following the application of the L/G GRVTY EXTN procedure.
It is preferable to use any available landing gear, rather than carry out a belly landing.
Under these circumstances, a hard surface runway landing is recommended.
Full advantage should be taken of any foam, spread on the runway.

CAUTION	Do not apply this procedure if at least one green triangle is displayed on each landing gear on the WHEEL SD page. This is sufficient to confirm that the landing gear is downlocked. Disregard any possible GPWS "TOO LOW GEAR" aural alert.

Ident.: PRO-ABN-LG-AD-00018651.0002001 / 17 MAR 17

CABIN CREW.....NOTIFY

Notify the cabin crew of the nature of the emergency encountered and state intentions. Specify the amount of available preparation time.

ATC.....NOTIFY

Notify ATC of the nature of the emergency and state intentions.

GALY & CAB.....OFF

CONSIDER FUEL REDUCTION. This reduces VREF and, consequently, the load factor at impact and the energy to be dissipated.

- **If NOSE L/G abnormal:**
  SHIFT CG AFT IF POSSIBLE
  - *10 pax from front to rear moves the CG roughly 4 % aft*
  - *10 pax from mid to rear moves the CG roughly 2.5 aft.*

- **If one MAIN L/G abnormal:**
  FUEL DISTRIBUTION.....CONSIDER
  Open the fuel X-FEED valve and switch off the pumps on the side with landing gear normally extended.

OXYGEN CREW SUPPLY.....OFF
SIGNS.....ON
CABIN and COCKPIT (LOOSE EQPT).....SECURE

Continued on the following page

[QRH] LANDING WITH ABNORMAL L/G (Cont'd)

Ident.: PRO-ABN-LG-AD-00018652.0001001 / 17 MAR 17

- **For approach:**

  GPWS SYS.....OFF
  L/G lever..... CHECK DOWN
  GRVTY GEAR EXTN handcrank..... TURN BACK TO NORMAL

  Rotating three turns back to normal may, in certain cases, pressurize the landing gear down actuators, thereby reducing the probability of gear collapse after touchdown.

  DO NOT ARM AUTOBRAKE

  Manual braking will enable better pitch and roll control. Moreover, with at least one main landing gear in the abnormal position the autobrake cannot be activated (ground spoilers not armed).

  EMER EXIT LT.....ON
  CABIN REPORT.....OBTAIN
  A/SKID & N/W STRG..... OFF

  With one main landing gear not extended, the reference speed used by the anti-skid to detect a wheel blockage is not correctly initialized. As a result, the anti-skid must be switched off to prevent permanent brake release.

  MAX BRAKE PR : 1 000 PSI

  Modulate the brake pressure to 1 000 PSI because the anti-skid is off.

  - **If one or both MAIN L/G abnormal:**

    DO NOT ARM GROUND SPOILERS

    To keep as much roll authority as possible for maintaining the wings level.
    Ground spoiler extension would prevent spoilers from acting as roll surfaces.

  RAM AIR.....ON

  To ensure full depressurization of the aircraft before impact.

  DOME LT.....DIM

  Set the dome light to DIM to ensure that there is a light source after both engines are shut down after landing, in order to see and read the BRAKE PRESS indicator.

- **At 500 ft AGL:**

  BRACE FOR IMPACT..... ORDER

Continued on the following page

[QRH] LANDING WITH ABNORMAL L/G (Cont'd)

Ident.: PRO-ABN-LG-AD-00018654.0001001 / 17 MAR 17

- **At flare, touchdown and rollout:**

  Engines should be shut down sufficiently early to ensure fuel is shut off before the nacelles impact, but sufficiently late to ensure adequate hydraulic supplies for the flight controls.

  Engine pumps continue to supply adequate hydraulic pressure for 30 s after engine shutdown.

  DO NOT USE REVERSE

  - **If NOSE L/G abnormal:**

    KEEP NOSE UP

    After touchdown, keep the nose off the runway by the use of the elevator. Then, lower the nose on to the runway before elevator control is lost.

    BRAKES..... SMOOTHLY APPLY

    Adapt braking to the efficiency of the elevator.

    BEFORE NOSE IMPACT : ALL ENG MASTERS OFF

  - **If one MAIN L/G abnormal:**

    AT TOUCHDOWN : ALL ENG MASTERS OFF

    KEEP AFFECTED SIDE WING UP

    Use roll control, as necessary, to maintain the unsupported wing up as long as possible.

  - **If both MAIN L/G abnormal:**

    DURING FLARE : ALL ENG MASTERS OFF

    MIN PITCH ATT : 6 °

Continued on the following page

[QRH] LANDING WITH ABNORMAL L/G (Cont'd)

Ident.: PRO-ABN-LG-AD-00018655.0001001 / 09 MAY 17

- **When aircraft stopped:**

  PARK BRK.....ON
  ALL FIRE pb (ENGs & APU).....PUSH
  ALL AGENT (ENGs & APU).....DISCH

  - **If evacuation required:**

    EVACUATION.....INITIATE

    Make a short and precise announcement to order the emergency evacuation.
    Press the EVAC COMMAND pb .

  - **If evacuation not required:**

    CABIN CREW and PASSENGERS (PA).....NOTIFY

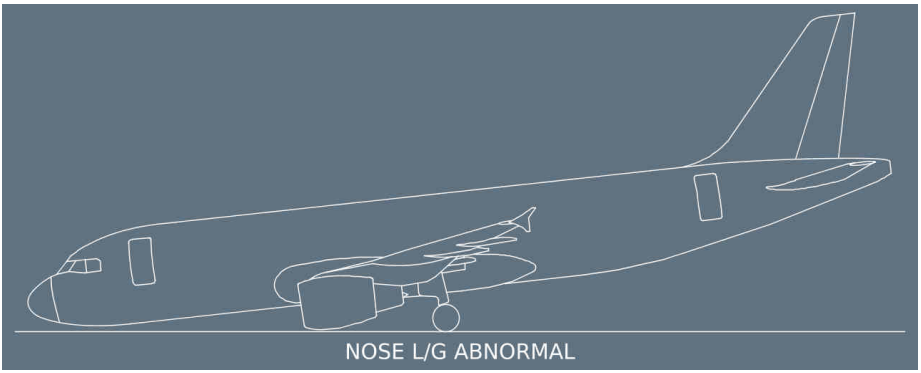
    Ensure that all the landing gears are secured before initiating the disembarkation (before switching OFF the seat belts signs).

Continued on the following page

[QRH] LANDING WITH ABNORMAL L/G (Cont'd)

Ident.: PRO-ABN-LG-AD-00018711.0001001 / 17 MAR 17

REFERENCE AIRCRAFT ATTITUDE AFTER IMPACT



[QRH] L/G GRAVITY EXTENSION

Ident.: PRO-ABN-LG-00011286.0010001 / 17 MAR 17
Applicable to: MSN 01767-02405, 02482

CAUTION	Do not apply this procedure if at least one green triangle is displayed on each landing gear on the WHEEL SD page. This is sufficient to confirm that the landing gear is downlocked. Disregard any possible GPWS "TOO LOW GEAR" aural alert.

GRAVITY GEAR EXTN handcrank.....PULL AND TURN

Rotate the handle clockwise 3 turns until reaching the mechanical stop, even if resistance is felt.

L/G lever.....DOWN

The landing gear lever should be confirmed in the DOWN position for the following reasons:
- *To extinguish the UNLK lights on the landing gear indication panel.*
- *To prevent the L/G CTL message from appearing on the WHEEL SD page.*
- *To minimize the risk of landing gear retraction on the ground, due to an unknown system fault, when the free-fall system is reset.*

GEAR DOWN indications (if available).....CHECK

The L/G LGCIU 2 FAULT or BRAKES SYS 1(2) FAULT alert may be spuriously triggered after a gravity extension.

Note:
1. *Depending on aircraft speed, the display may show the landing gear doors in the amber transit position.*
2. *In the event of gravity extension, caused by the failure of both LGCIUs, landing gear position indication on ECAM are lost. LDG GEAR lights on LDG GEAR control panel remain available, if LGCIU 1 is electrically supplied.*
3. *If the three green downlock arrows are not on, it is possible that the handcrank is not at the mechanical stop. Check that the handcrank is firmly against the mechanical stop.*

N/W STEERING NOT AVAILABLE

■ **If successful:**
DO NOT RESET LDG GEAR GRVTY EXTN

Do not reset the free-fall system. This will avoid such undesirable effects as further loss of fluid, in the event of a leak, or possible landing gear unlocking, in the event of a gear selector valve jamming in the UP position.

Note: *The free-fall system may be reset in flights used for training. If the green hydraulic system is available, resetting the free-fall system allows the landing gear doors to be closed and the nosewheel steering to operate.*

Continued on the following page

[QRH] L/G GRAVITY EXTENSION (Cont'd)

The flight crew should not reset the free-fall system on the ground after flight.

■ **If unsuccessful:**

LDG WITH ABNORMAL L/G PROC.....APPLY

Refer to PRO-ABN-LG [QRH] Landing with Abnormal L/G.

[QRH] L/G GRAVITY EXTENSION

Ident.: PRO-ABN-LG-00011286.0011001 / 17 MAR 17

1 **Applicable to: MSN 02443-02457, 02584-09063**

CAUTION	Do not apply this procedure if at least one green triangle is displayed on each landing gear on the WHEEL SD page. This is sufficient to confirm that the landing gear is downlocked. Disregard any possible GPWS "TOO LOW GEAR" aural alert.

GRAVITY GEAR EXTN handcrank.....PULL AND TURN

Rotate the handle clockwise 3 turns until reaching the mechanical stop, even if resistance is felt.

L/G lever.....DOWN

The landing gear lever should be confirmed in the DOWN position for the following reasons:
- *To extinguish the UNLK lights on the landing gear indication panel*
- *To prevent the L/G CTL message from appearing on the WHEEL SD page*
- *To minimize the risk of landing gear retraction on the ground, due to an unknown system fault, when the free-fall system is reset.*

GEAR DOWN indications (if available).....CHECK

The L/G LGCIU 2 FAULT or BRAKES SYS 1(2) FAULT alert may be spuriously triggered after a gravity extension.

Note:
1. *Depending on aircraft speed, the display may show the landing gear doors in the amber transit position.*
2. *In the event of gravity extension, caused by the failure of both LGCIUs, landing gear position indication on ECAM are lost. LDG GEAR lights on LDG GEAR control panel remain available, if LGCIU 1 is electrically supplied.*
3. *If the three green downlock arrows are not on, it is possible that the handcrank is not at the mechanical stop. Check that the handcrank is firmly against the mechanical stop.*

■ **If successful:**

DO NOT RESET LDG GEAR GRVTY EXTN

Do not reset the free-fall system. This will avoid such undesirable effects as further loss of fluid, in the event of a leak, or possible landing gear unlocking, in the event of a gear selector valve jamming in the UP position.

Note: *The free-fall system may be reset in flights used for training. If the green hydraulic system is available, resetting the free-fall system allows the landing gear doors to be closed and the nosewheel steering to operate.*
The flight crew should not reset the free-fall system on the ground after flight.

Continued on the following page

[QRH] L/G GRAVITY EXTENSION (Cont'd)

■ **If unsuccessful:**
LDG WITH ABNORMAL L/G PROC.....APPLY

Refer to PRO-ABN-LG [QRH] Landing with Abnormal L/G.

L/G DOORS NOT CLOSED

Applicable to: ALL

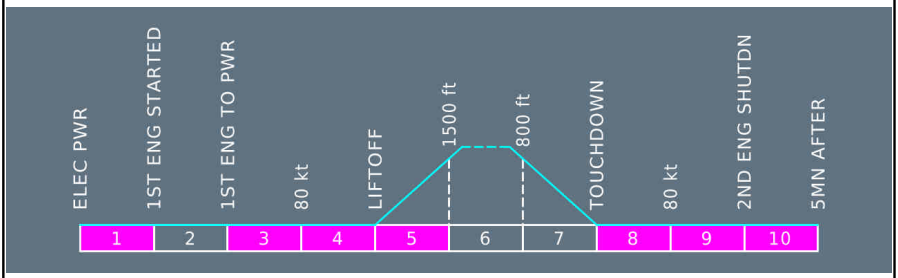
Ident.: PRO-ABN-LG-D-00017734.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one gear door is not uplocked.

Flight Phase Inhibition:



Continued on the following page

L/G DOORS NOT CLOSED (Cont'd)

Ident.: PRO-ABN-LG-D-00011287.0003001 / 01 DEC 14

- **If the L/G lever is UP:**
  - **WHEN SPD < 220/0.54:**

    L/G LEVER..... RECYCLE

L2 *Note: To recycle the landing gear, the flight crew must perform the following actions:*
- *Move the landing gear lever down*
- *Wait for the landing gear to downlock and for the landing gear doors to close. Simultaneously monitor the WHEEL page on the System Display (SD)*
- *Move the landing gear lever up.*

The active LGCIU changes when the landing gear is recycled.

L1 ● **IF UNSUCCESSFUL:**

MAX SPEED..... 250/0.60

FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

Ident.: PRO-ABN-LG-D-00011288.0002001 / 17 MAR 17

L12

STATUS	
MAX SPEED..... 250/.60	**INOP SYS**
	L/G DOOR
FUEL CONSUMPT INCRSD *See* (1)	
FMS PRED UNRELIABLE *See* (2)	

(1) *This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *Disregard FMS fuel predictions and Refer to QRH/OPS Fuel Penalty Factors/ECAM Alert Table in order to find the applicable Fuel Penalty Factor.*

L/G GEAR NOT DOWN

Applicable to: ALL

Ident.: PRO-ABN-LG-AA-00017859.0001001 / 21 MAR 16

ANNUNCIATIONS

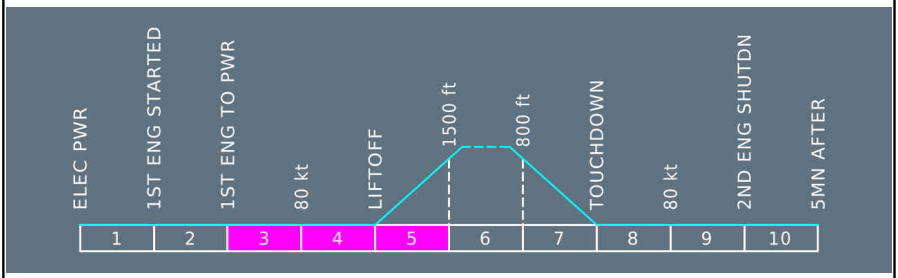
Triggering Conditions:

L2 This alert triggers when:

1. L/G is not downlocked and radio height is lower than 750 ft and both engines N1 lower than 75% (or if engine shutdown N1 of remaining engine lower than 97%) or
2. L/G is not downlocked and radio height is lower than 750 ft and both engines are not at T.O power and flaps at 1, 2, 3 or FULL or
3. L/G is not downlocked and flaps at 3 or FULL and both radio altimeters are failed.

Note: In the cases 2 and 3 above, the aural warning can only be cancelled by the emergency cancel pushbutton.

Flight Phase Inhibition:



Ident.: PRO-ABN-LG-AA-00018573.0002001 / 21 MAR 16

L2 When this warning appears, the red arrow on the instrument panel comes on.

L1 Crew awareness.

L/G GEAR NOT DOWNLOCKED

Applicable to: MSN 01767-02405, 02482

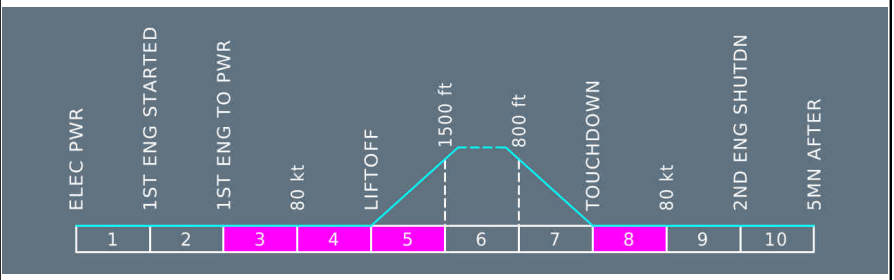
Ident.: PRO-ABN-LG-C-00017860.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one gear is not downlocked and L/G is selected down.

Flight Phase Inhibition:



Ident.: PRO-ABN-LG-C-00011284.0002001 / 01 DEC 14

L2 This warning appears, if the landing gear sequence is not completed after 30 s.

L1 L/G LEVER..... RECYCLE

L2 *Note:* *To recycle the landing gear, the flight crew must perform the following actions:*
- *Move the landing gear lever up*
- *Wait for the landing gear to uplock and for the landing gear doors to close. Simultaneously monitor the WHEEL page on the System Display (SD)*
- *Move the landing gear lever down.*

The active LGCIU changes when the landing gear is recycled.

L1 ● **IF UNSUCCESSFUL AFTER 120 s:**

L/G..... GRVTY EXTN

L2 *Rotate the handle clockwise about 3 turns until reaching the mechanical stop.* *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

Continued on the following page

L/G GEAR NOT DOWNLOCKED (Cont'd)

Ident.: PRO-ABN-LG-C-00011285.0001001 / 21 MAR 16

L12

STATUS

	INOP SYS
L/G..... GRVTY EXTN CAT 3 SINGLE ONLY *See* (2)	CAT 3 DUAL N.W. STEER *See* (1)

(1) *As nose gear doors remain open, hydraulic power for nosewheel steering is lost.*

(2) *If gravity extension is unsuccessful, Refer to PRO-ABN-LG [QRH] Landing with Abnormal L/G.*

L/G GEAR NOT DOWNLOCKED

Applicable to: MSN 02443-02457, 02584-09063

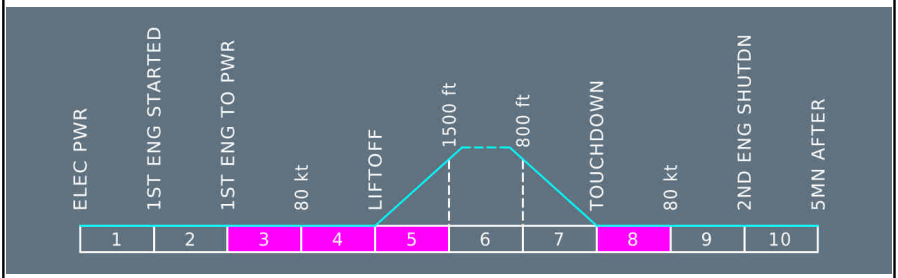
Ident.: PRO-ABN-LG-C-00017860.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one gear is not downlocked and L/G is selected down.

Flight Phase Inhibition:



Continued on the following page

L/G GEAR NOT DOWNLOCKED (Cont'd)

Ident.: PRO-ABN-LG-C-00011284.0002001 / 01 DEC 14

L2 This warning appears, if the landing gear sequence is not completed after 30 s.

L1 L/G LEVER..... RECYCLE

L2 *Note:* *To recycle the landing gear, the flight crew must perform the following actions:*
- *Move the landing gear lever up*
- *Wait for the landing gear to uplock and for the landing gear doors to close. Simultaneously monitor the WHEEL page on the System Display (SD)*
- *Move the landing gear lever down.*

The active LGCIU changes when the landing gear is recycled.

L1 ● **IF UNSUCCESSFUL AFTER 120 s:**

L/G..... GRVTY EXTN

L2 *Rotate the handle clockwise about 3 turns until reaching the mechanical stop.* *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

Ident.: PRO-ABN-LG-C-00011285.0003001 / 21 MAR 16

2

L12

	STATUS	INOP SYS
L/G..... GRVTY EXTN	CAT 3 SINGLE ONLY *See* (1)	CAT 3 DUAL

(1) *If gravity extension is unsuccessful,* *Refer to PRO-ABN-LG [QRH] Landing with Abnormal L/G.*

L/G GEAR NOT UPLOCKED

Applicable to: ALL

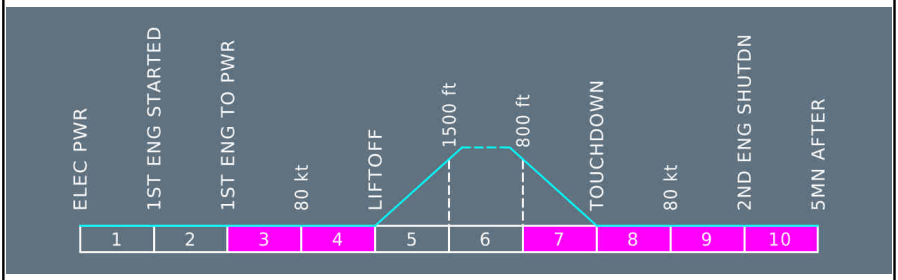
Ident.: PRO-ABN-LG-B-00017736.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one gear is not uplocked and L/G is not selected down.

Flight Phase Inhibition:



Continued on the following page

L/G GEAR NOT UPLOCKED (Cont'd)

Ident.: PRO-ABN-LG-B-00011061.0003001 / 01 DEC 14

L2 This warning appears if the landing gear sequence is not completed after 30 s.

L1 ■ **L/G doors closed:**

AVOID EXCESS G FACTOR

L2 *Because the gear rests on the doors, avoid excessive load factors in order not to damage door structure.*

L1 ■ **L/G doors not closed and shock absorber fault:**

MAX SPEED..... 220/0.54
L/G..... DOWN
MAX SPEED..... 280/0.67

■ **L/G doors not closed and no shock absorber fault:**

MAX SPEED..... 220/0.54
L/G LEVER.....RECYCLE

L2 *Note:* *To recycle the landing gear, the flight crew must perform the following actions:*

- *Move the landing gear lever down*
- *Wait for the landing gear to downlock and for the landing gear doors to close. Simultaneously monitor the WHEEL page on the System Display (SD)*
- *Move the landing gear lever up.*

The active LGCIU changes when the landing gear is recycled.

L1 ● **IF UNSUCCESSFUL:**

L/G.....DOWN
MAX SPEED.....280/0.67

FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE

Continued on the following page

L/G GEAR NOT UPLOCKED (Cont'd)

Ident.: PRO-ABN-LG-B-00018687.0002001 / 25 JUL 17

L12

STATUS

	INOP SYS
MAX SPEED..... 280/.67	L/G RETRACT
FUEL CONSUMPT INCRSD	
FMS PRED UNRELIABLE	
See (1)	

(1)

If the flight is continued (to destination or to alternate) with landing gear extended:

- *Disregard FMS fuel predictions. Refer to QRH/OPS Fuel Penalty Factors/ECAM Alert Table in order to find the applicable Fuel Penalty Factor*
- *Disregard FMS altitude and speed predictions. Time predictions are only valid in cruise*
- *Do not use the managed speed mode (except in approach)*
- *Do not use the CLB and the DES autopilot modes.*

Also Refer to PRO-NOR-SUP-L/G- Flight with Gear Down.

L/G GEAR UPLOCK FAULT

Applicable to: ALL

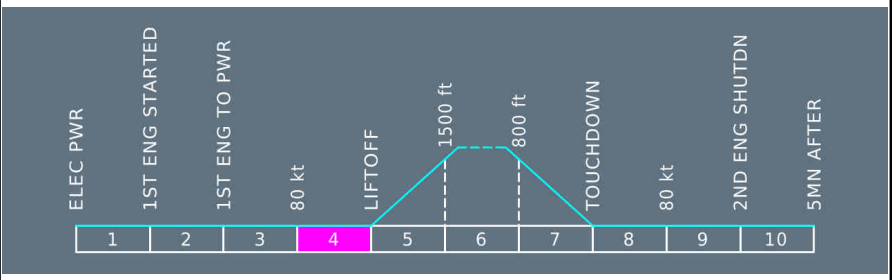
Ident.: PRO-ABN-LG-E-00017737.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one gear uplock is engaged with corresponding gear downlocked.

Flight Phase Inhibition:



Ident.: PRO-ABN-LG-E-00011289.0002001 / 27 NOV 12

L/G.....KEEP DOWN

L2 *The landing gear must be left down to avoid structural damage, because the uplock device will stay in the locked position.*

L1 MAX SPEED.....280/.67

FUEL CONSUMPT INCRSD

FMS PRED UNRELIABLE

Continued on the following page

L/G GEAR UPLOCK FAULT (Cont'd)

Ident.: PRO-ABN-LG-E-00018719.0002001 / 25 JUL 17

L12

STATUS

MAX SPEED..... 280/.67
L/G..... KEEP DOWN

FUEL CONSUMPT INCRSD
See (1)
FMS PRED UNRELIABLE
See (2)

INOP SYS

L/G RETRACT

(1) *This message triggers when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.*

(2) *If the flight is continued (to destination or to alternate) with landing gear extended:*
- *Disregard FMS fuel predictions. Refer to QRH/OPS Fuel Penalty Factors/ECAM Alert Table in order to find the applicable Fuel Penalty Factor*
- *Disregard FMS altitude and speed predictions. Time predictions are only valid in cruise*
- *Do not use the managed speed mode (except in approach)*
- *Do not use the CLB and the DES autopilot modes.*

Also Refer to PRO-NOR-SUP-L/G- Flight with Gear Down.

L/G LGCIU 1(2) FAULT

Applicable to: MSN 01767-06336

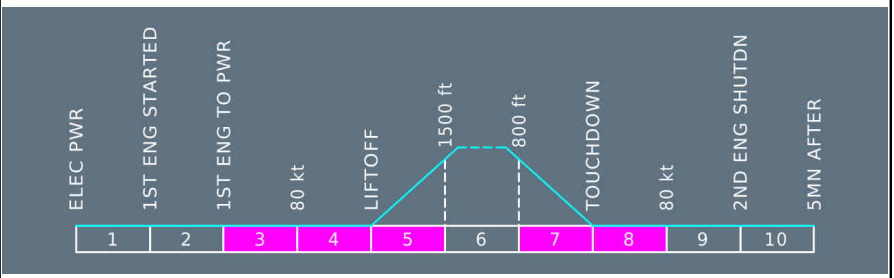
Ident.: PRO-ABN-LG-G-00018059.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when LGCIU 1(2) is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-LG-G-00018681.0002001 / 21 MAR 16

- **If LGCIU 1 is failed:**
  GPWS SYS.....OFF

L2 *GPWS receives "L/G in up position" information even if the landing gear is down.*
Set the GPWS SYS pb-sw to OFF in order to prevent untimely warnings during the approach.

Continued on the following page

L/G LGCIU 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-LG-G-00018682.0001001 / 21 MAR 16

3

L12

STATUS	INOP SYS
ENG 1(2) APPR IDLE ONLY *See* (2)	LGCIU 1(2) REVERSER 1(2) GPWS (1)

Note: *1. The partial spoiler extension at landing when only one main landing gear is compressed is not available. The spoilers extend normally on ground when wheel speed greater than 72 kt.*

2. Depending on the LGCIU failure, only a part of the above systems may be lost.

(1) *(If LGCIU 1 is failed)*

(2) *When idle is selected on ground with slats extended, only approach idle is available.*

L/G LGCIU 1(2) FAULT

Applicable to: MSN 06720-09063

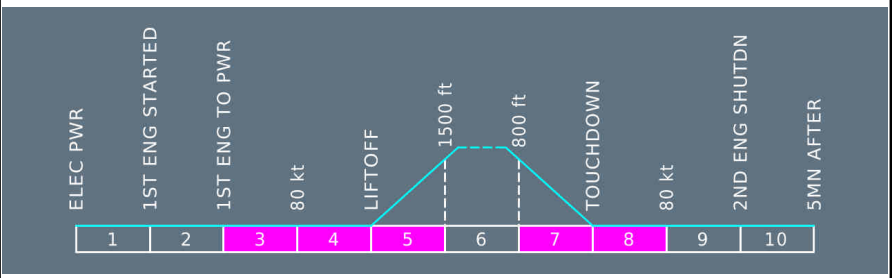
Ident.: PRO-ABN-LG-G-00018059.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when LGCIU 1(2) is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-LG-G-00018681.0002001 / 21 MAR 16

- **If LGCIU 1 is failed:**
  GPWS SYS.....OFF

L2 *GPWS receives "L/G in up position" information even if the landing gear is down.*
Set the GPWS SYS pb-sw to OFF in order to prevent untimely warnings during the approach.

Continued on the following page

L/G LGCIU 1(2) FAULT (Cont'd)

Ident.: PRO-ABN-LG-G-00018682.0002001 / 09 JAN 18

4

L12

STATUS	INOP SYS
ENG 1(2) APPR IDLE ONLY *See* (2)	LGCIU 1(2) GPWS (1)

Note: *1. The partial spoiler extension at landing when only one main landing gear is compressed is not available. The spoilers extend normally on ground when wheel speed greater than 72 kt.*
2. Depending on the LGCIU failure, only a part of the above systems may be lost.

(1) *(If LGCIU 1 is failed)*
(2) *When idle is selected on ground with slats extended, only approach idle is available.*

L/G LGCIU 1+2 FAULT

Applicable to: MSN 01767-02405, 02482

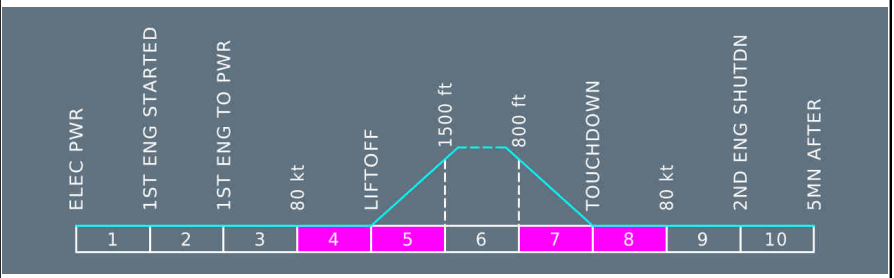
Ident.: PRO-ABN-LG-V-00017739.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both LGCIUs are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-LG-V-00018683.0002001 / 21 MAR 16

L2 Normal landing gear control and position indications are lost. LDG GEAR lights on LDG GEAR control panel remain available if LGCIU 1 is electrically supplied.

L1 L/G..... GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 GPWS SYS..... OFF

L2 *As LGCIU 1 is lost, GPWS receives "L/G in up position" information even if the landing gear is down.*
Set the GPWS SYS pb-sw to OFF in order to prevent untimely warnings during approach.

Continued on the following page

L/G LGCIU 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-LG-V-00018684.0008001 / 05 OCT 16

L12

STATUS

- **If the selected configuration is not FLAP 3:**
  FOR LDG.....USE FLAP 3
- **If the selected configuration is FLAP 3:**
  FOR LDG: USE FLAP 3

L/G..... GRVTY EXTN

L/G CONTROL NOT AVAIL
ENG 1 APPR IDLE ONLY
ENG 2 APPR IDLE ONLY

INOP SYS

REVERSER 1+2
AP 1+2 (1)
CAT 2 (1)
A/THR
N/W STRG
GLS AUTOLAND ◁✻
LGCIU 1
LGCIU 2
GPWS
ROW/ROP ◁✻

Note: *1. The partial spoiler extension ◁✻ at landing when only one main landing gear is compressed is not available. The spoilers extend normally on ground when wheel speed greater than 72 kt.*

2. In flight with both LGCIUs "faulty", whatever the landing gear configuration, when the flight crew switches ON Wing Anti-Ice pb, the Wing Anti-Ice pb will illuminate "on" and there will be only 30 s of heating. This loss of Wing Anti-ice will not have an ECAM/Aural warning, although BLEED SD page shows a "no-Anti-ice" legend.

(1) *(Except in LAND mode)*

L/G LGCIU 1+2 FAULT

Applicable to: MSN 02443-02457, 02584-09063

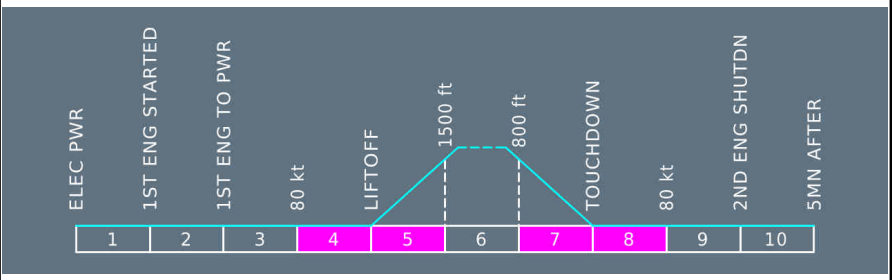
Ident.: PRO-ABN-LG-V-00017739.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both LGCIUs are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-LG-V-00018683.0002001 / 21 MAR 16

L2 Normal landing gear control and position indications are lost. LDG GEAR lights on LDG GEAR control panel remain available if LGCIU 1 is electrically supplied.

L1 L/G..... GRVTY EXTN

L2 *Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION.*

L1 GPWS SYS..... OFF

L2 *As LGCIU 1 is lost, GPWS receives "L/G in up position" information even if the landing gear is down.*
Set the GPWS SYS pb-sw to OFF in order to prevent untimely warnings during approach.

Continued on the following page

L/G LGCIU 1+2 FAULT (Cont'd)

Ident.: PRO-ABN-LG-V-00018684.0006001 / 05 OCT 16

5

L12

STATUS

■ **If the selected configuration is not FLAP 3:**
FOR LDG.....USE FLAP 3

■ **If the selected configuration is FLAP 3:**
FOR LDG: USE FLAP 3

L/G..... GRVTY EXTN

L/G CONTROL NOT AVAIL
ENG 1 APPR IDLE ONLY
ENG 2 APPR IDLE ONLY

INOP SYS

REVERSER 1+2
AP 1+2 (1)
CAT 2 (1)
A/THR
GLS AUTOLAND ◁
LGCIU 1
LGCIU 2
GPWS
ROW/ROP ◁

Note: *1. The partial spoiler extension ◁ at landing when only one main landing gear is compressed is not available. The spoilers extend normally on ground when wheel speed greater than 72 kt.*

2. In flight with both LGCIUs "faulty", whatever the landing gear configuration, when the flight crew switches ON Wing Anti-Ice pb, the Wing Anti-Ice pb will illuminate "on" and there will be only 30 s of heating. This loss of Wing Anti-ice will not have an ECAM/Aural warning, although BLEED SD page shows a "no-Anti-ice" legend.

(1) *(Except in LAND mode)*

L/G SHOCK ABSORBER FAULT
(SHOCK ABSORBER EXTENDED ON GROUND)

Applicable to: ALL

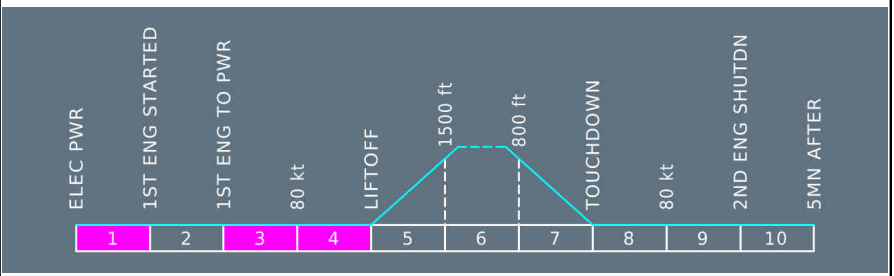
Ident.: PRO-ABN-LG-AB-00017733.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one shock absorber is not compressed after landing.

Flight Phase Inhibition:



Ident.: PRO-ABN-LG-AB-00011056.0001001 / 25 FEB 14

Crew awareness.

L/G SHOCK ABSORBER FAULT
(SHOCK ABSORBER NOT EXTENDED AFTER LIFTOFF)

Applicable to: ALL

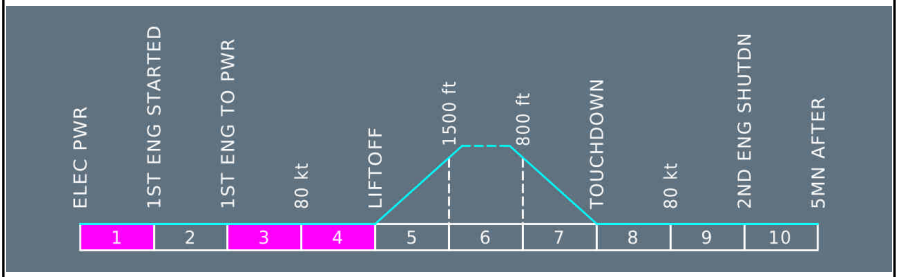
Ident.: PRO-ABN-LG-A-00018062.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one shock absorber is not extended when airborne.

Flight Phase Inhibition:



Ident.: PRO-ABN-LG-A-00011058.0003001 / 25 FEB 14

- **Shock absorber not extended after liftoff and L/G uplocked :**

  Crew awareness.

- **Shock absorber not extended after liftoff and L/G not uplocked :**

  MAX SPEED..... 280/.67

  - **If L/G lever still down :**

    L/G.....KEEP DOWN

  - **If L/G lever selected up :**

    L/G.....DOWN

  FUEL CONSUMPT INCRSD
  FMS PRED UNRELIABLE

Continued on the following page

L/G SHOCK ABSORBER FAULT (Cont'd)
(SHOCK ABSORBER NOT EXTENDED AFTER LIFTOFF)

Ident.: PRO-ABN-LG-A-00011059.0003001 / 25 JUL 17

L12

STATUS

INOP SYS

- **If L/G not uplocked:**
  MAX SPEED.....280/.67
  L/G.....KEEP DOWN

  L/G RETRACT

FUEL CONSUMPT INCRSD
FMS PRED UNRELIABLE
See (1)

(1) *If the flight is continued (to destination or to alternate) with landing gear extended:*
- *Disregard FMS fuel predictions. Refer to QRH/OPS Fuel Penalty Factors/ECAM Alert Table in order to find the applicable Fuel Penalty Factor*
- *Disregard FMS altitude and speed predictions. Time predictions are only valid in cruise*
- *Do not use the managed speed mode (except in approach)*
- *Do not use the CLB and the DES autopilot modes.*

Also Refer to PRO-NOR-SUP-L/G- Flight with Gear Down.

Note: In few cases, autothrust and autopilot may also be lost.
If WHEEL N.W. STEER FAULT is also displayed, then the nose wheels may be at maximum deflection. (Turned 90 ° from center.) During landing, delay nose wheel touchdown for as long as possible.

L/G SYS DISAGREE

Applicable to: ALL

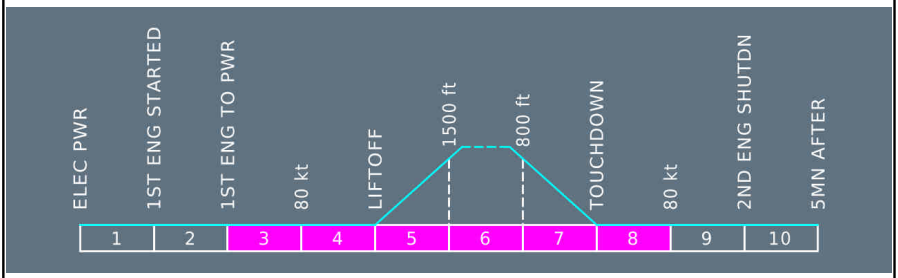
Ident.: PRO-ABN-LG-AC-00017861.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when LGCIU 1 and LGCIU 2 detect a discrepancy between the landing gear positions.

Flight Phase Inhibition:



Ident.: PRO-ABN-LG-AC-00018664.0002001 / 21 MAR 16

Crew awareness.

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[MEM] EMER DESCENT

Ident.: PRO-ABN-MISC-00012092.0001001 / 17 MAR 17
Applicable to: ALL

CREW OXY MASKS..... USE
SIGNS..... ON
EMER DESCENT..... INITIATE

- **If A/THR not active:**

  THR LEVERS..... IDLE

SPD BRK..... FULL

- **When descent established:**

  SPEED..... MAX/APPROPRIATE

  - **If structural damage suspected:**
    MANEUVER WITH CARE

  CONSIDER L/G EXTENSION
  ENG MODE SEL..... IGN
  ATC..... NOTIFY

  Notify ATC of the nature of the emergency, and state intention. The flight crew can communicate with the ATC using voice, or CPDLC when the voice contact cannot be established or has poor quality.

  EMER DESCENT (PA)..... ANNOUNCE

  The flight crew must inform the cabin of emergency descent on the PA system.

  ATC XPDR 7700..... CONSIDER

  Squawk 7700 unless otherwise specified by ATC.

  CREW OXY MASKS DILUTION..... NORM

  - *To save oxygen, set the oxygen diluter selector to the N position*
  - *If the oxygen diluter selector remains set to 100 %, oxygen quantity may be insufficient to cover the entire emergency descent profile*
  - *Ensure that crew communication is established with oxygen masks. Avoid the continuous use of the interphone to minimize interference with the breathing noise in the oxygen mask.*

  MAX FL: 100/MEA-MORA

  - **If CAB ALT above 14 000 ft:**
    OXYGEN PAX MASK MAN ON..... PRESS

    This action confirms that the passenger oxygen masks are released.

Continued on the following page

[MEM] EMER DESCENT (Cont'd)

Note: *Notify the cabin crew, when the aircraft reaches a safe flight level, and when cabin oxygen is no more necessary.*

[MEM] STALL RECOVERY

Ident.: PRO-ABN-MISC-00013768.0001001 / 17 MAR 17

Applicable to: MSN 01767-01920, 02097-02121, 02138, 02195-02405, 02457-02626, 02670, 02737-02804, 03138, 03308, 04156, 04294, 04314, 04393-04397, 04433, 04510, 04532-04535, 04762-04868, 04954, 05094, 05218, 05262, 05365-05411, 05473, 05577-05641, 05712, 05744-05807, 05992, 06247, 06289-06336

As soon as any stall indication (could be aural warning, buffet...) is recognized, apply the immediate actions:

NOSE DOWN PITCH CONTROL.....APPLY

This will reduce angle of attack

Note: *In case of lack of pitch down authority, reducing thrust may be necessary.*

BANK.....WINGS LEVEL

- **When out of stall (no longer stall indications) :**

  THRUST.....INCREASE SMOOTHLY AS NEEDED

  Note: *In case of one engine inoperative, progressively compensate the thrust asymmetry with rudder.*

  SPEEDBRAKES.....CHECK RETRACTED

  FLIGHT PATH.....RECOVER SMOOTHLY

  - **If in clean configuration and below 20 000 ft :**

    FLAP1.....SELECT

    Note: *If a risk of ground contact exists, once clearly out of stall (no longer stall indications), establish smoothly a positive climb gradient.*

[MEM] STALL RECOVERY

Ident.: PRO-ABN-MISC-00013768.0002001 / 17 MAR 17

1 **Applicable to: MSN 01957, 02135, 02139, 02443, 02649, 02712, 02908-03071, 03264, 03330-04113, 04216, 04312, 04328-04384, 04399, 04438-04506, 04518, 04552-04757, 04888-04947, 04965-05092, 05120-05190, 05230-05259, 05291-05313, 05437-05460, 05476-05537, 05676-05683, 05727, 05829-05952, 06010-06208, 06275-06287, 06720-09063**

As soon as any stall indication (could be aural warning, "STALL STALL" red message on PFD, buffet...) is recognized, apply the immediate actions:

NOSE DOWN PITCH CONTROL.....APPLY

This will reduce angle of attack

Note: In case of lack of pitch down authority, reducing thrust may be necessary.

BANK.....WINGS LEVEL

- **When out of stall (no longer stall indications) :**

  THRUST.....INCREASE SMOOTHLY AS NEEDED

  Note: In case of one engine inoperative, progressively compensate the thrust asymmetry with rudder.

  SPEEDBRAKES.....CHECK RETRACTED

  FLIGHT PATH.....RECOVER SMOOTHLY

  - **If in clean configuration and below 20 000 ft :**

    FLAP1.....SELECT

    Note: If a risk of ground contact exists, once clearly out of stall (no longer stall indications), establish smoothly a positive climb gradient.

[MEM] STALL WARNING AT LIFT-OFF

Ident.: PRO-ABN-MISC-00013769.0001001 / 17 MAR 17

Applicable to: MSN 01767-01920, 02097-02121, 02138, 02195-02405, 02457-02626, 02670, 02737-02804, 03138, 03308, 04156, 04294, 04314, 04393-04397, 04433, 04510, 04532-04535, 04762-04868, 04954, 05094, 05218, 05262, 05365-05411, 05473, 05577-05641, 05712, 05744-05807, 05992, 06247, 06289-06336

Spurious stall warning may sound in NORMAL law, if an angle of attack probe is damaged. In this case, apply immediately the following actions:

THRUST..... TOGA

At the same time:

PITCH ATTITUDE.....15 °
BANK.....WINGS LEVEL

Note: When a safe flight path and speed are achieved and maintained, if stall warning continues, consider it as spurious.

[MEM] STALL WARNING AT LIFT-OFF

Ident.: PRO-ABN-MISC-00013769.0002001 / 17 MAR 17

2 **Applicable to: MSN 01957, 02135, 02139, 02443, 02649, 02712, 02908-03071, 03264, 03330-04113, 04216, 04312, 04328-04384, 04399, 04438-04506, 04518, 04552-04757, 04888-04947, 04965-05092, 05120-05190, 05230-05259, 05291-05313, 05437-05460, 05476-05537, 05676-05683, 05727, 05829-05952, 06010-06208, 06275-06287, 06720-09063**

Spurious stall warnings may sound and appear on PFD in NORMAL law, if an angle of attack probe is damaged. In this case, apply immediately the following actions:

THRUST..... TOGA

At the same time:

PITCH ATTITUDE.....15 °
BANK.....WINGS LEVEL

Note: When a safe flight path and speed are achieved and maintained, if stall warning continues, consider it as spurious.

[QRH] BOMB ON BOARD

Ident.: PRO-ABN-MISC-00012095.0002001 / 17 MAR 17
Applicable to: ALL

COCKPIT PROCEDURES

BACKGROUND

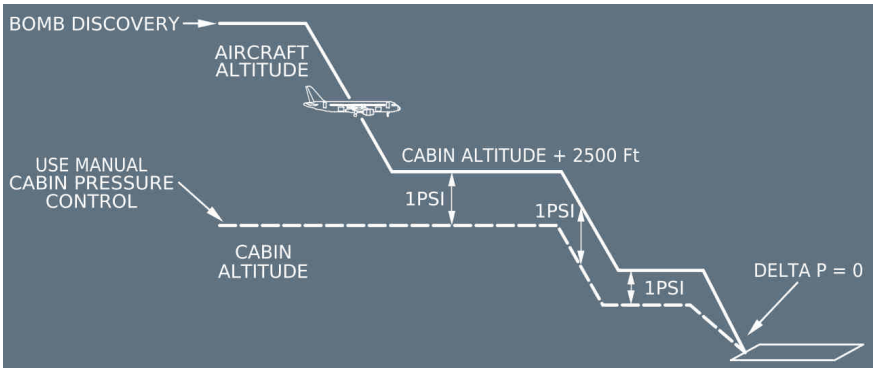
To avoid the activation of an altitude-sensitive bomb, the cabin altitude should not exceed the value at which the bomb has been discovered.
To reduce the effects of the explosion, the aircraft should fly as long as possible with approximately 1 PSI differential pressure, to help the blast go outwards. 1 PSI differential pressure corresponds to a 2 500 ft difference between the aircraft and the cabin altitude.
These conditions are achieved by using the manual pressure control.

PROCEDURE

The following procedure assumes that it is initiated during climb or cruise:

First, maintain the cabin altitude using manual pressure mode.
While maintaining the cabin altitude, descend the aircraft to the cabin altitude + 2 500 ft and maintain delta P at 1 PSI.
During further steps of descent, maintain delta P at 1 PSI using the cabin V/S target selector.
During the approach, use automatic pressure mode in order to reduce the differential pressure to zero at touchdown.

If flight conditions are different, the crew should adapt the procedure, bearing in mind the above-mentioned principles (background paragraph).



CKPT / CAB COM..... ESTABLISH

Continued on the following page

[QRH] BOMB ON BOARD (Cont'd)

■ **If landing and evacuation possible within 30 min:**

ATC / COMPANY..... NOTIFY
EVAC.....PREPARE

■ **If landing and evacuation NOT possible within 30 min:**

AIRCRAFT (IF CLIMBING).....LEVEL OFF
CABIN PRESS MODE SEL..... MAN

The purpose is to immediately prevent the cabin altitude from increasing, in order to avoid the activation of an altitude-sensitive bomb.

MAINTAIN CAB ALT

Use MAN V/S CTL selector to maintain the cabin altitude at the value it had when the bomb was discovered.

ATC / COMPANY..... NOTIFY

To obtain expert advice from explosive specialists.

TRGT SPEED: PREFER LO IAS

Low speed could reduce the consequences of possible structural damage, if the bomb explodes.

DESCENT TO CAB ALT + 2 500 ft or MEA - MORA..... INITIATE

Descending to 2 500 ft above the cabin altitude gives a cabin differential pressure of approximately 1 PSI, which helps to ensure that the blast goes outwards, if the bomb explodes.

AVOID SHARP MANEUVERS

Which might result in the bomb moving.

MAINTAIN CAB ALT

Use MAN V/S CTL selector to maintain the cabin altitude. Initially brief UP input should be required; but, be careful not to increase the cabin altitude.

● **When at CAB ALT + 2 500 ft:**

MAINTAIN 1 PSI ΔP

Use MAN V/S CTL selector to adjust delta P to 1 PSI. Brief DN input should be initially required to set 0 ft/min cabin vertical speed.

GALLEY..... OFF
FUEL RESERVES..... DETERMINE

When flying at cabin altitude + 2 500 ft, fuel consumption in CONF 1, with landing gear down, will be about 2.1 times that consumed in clean configuration.

Continued on the following page

[QRH] BOMB ON BOARD (Cont'd)

- **When bomb secured at the LRBL or cannot be moved:**

  Least Risk Bomb Location (LRBL) is the center of the RH aft cabin door

  EMER EXIT LT.....ON

  To recover minimum cabin lighting when the COMMERCIAL pb-sw will be switched OFF

  COMMERCIAL.....OFF

- **If fuel permits:**

  FLAPS.....AT LEAST CONF 1

  L/G lever (except for flight over water).....DOWN

  The detonation could damage the landing systems. Therefore, if fuel permits, configure the aircraft for landing as soon as possible. Reducing the speed will minimize stress on the aircraft structure.

  USE NORMAL CONF FOR LANDING

DURING FURTHER DESCENT: MAINTAIN MAX 1 PSI ΔP

Use MAN V/S CTL selector to DN to adjust delta P to 1 PSI.

- **During approach:**

  CABIN PRESS MODE SEL.....AUTO

  This allows CPC to automatically control the cabin altitude to 0 during final approach.

- **When aircraft on ground and stopped in a remote area (if possible):**

  Refer to PRO-ABN-MISC [QRH] EMER EVAC

CABIN PROCEDURES

If a suspect device is found in the cabin:

WARNING	Do not cut or disconnect any wires and do not open or attempt to gain entry to internal components of a closed or concealed suspect device. Any attempt may result in an explosion. Booby-trapped closed devices have been used on aircraft in the past.

WARNING	Alternate locations must not be used without consulting with an aviation explosives security specialist. Never take a suspect device to the flight deck.

CAUTION	The least risk bomb location for the aircraft structure and systems is center of the RH aft cabin door.

EOD PERSONNEL ON BOARD.....CHECK

Continued on the following page

[QRH] BOMB ON BOARD (Cont'd)

Announce "Is there any EOD personnel on board ?". By using the initials, only persons familiar with EOD (Explosive Ordnance Disposal) will be made aware of the problem.

DO NOT OPEN THE BOMB
DO NOT CUT BOMB'S WIRES
SECURE BOMB AGAINST SLIPPING
PROTECT BOMB AGAINST SHOCKS

Secure in the attitude found and do not lift before having checked for an anti-lift ignition device.

PASSENGERS..... LEAD AWAY FROM BOMB

Move passengers at least 4 seat rows away from the bomb location. On full flights, it may be necessary to double up passengers to achieve standoff from the suspect device.
Passengers near the bomb should protect their heads with pillows, blankets.
All passengers must remain seated with seatbelts on and, if possible, head below the top of the head rest. Seat backs and tray tables should be in their full upright position.
Service items may need to be collected in order to secure tray tables.

PORTABLE ELECTRONIC DEVICES.....SWITCH OFF

The cabin crews must command passengers to switch off all portable electronic devices.

BOMB.....CHECK NO ANTI-LIFT DEVICE

To check for an anti-lift switch or lever, slide a string or stiff card, (such as the emergency information card) under the bomb, without disturbing the bomb.
If the string or card cannot be slipped under the bomb, it may indicate that an anti-lift switch or lever is present and that the bomb cannot be moved.
If a card is used and can be slid under the bomb, leave it under the bomb and move together with the bomb.
If it is not possible to move the bomb, then it should be surrounded with a single thin sheet of plastic (e. g. trash bag), then with wetted materials, and other blast attenuation materials such as seat cushions and soft carry-on baggage. Move personnel as far away from the bomb location as possible.

EMERGENCY EQUIPMENT.....REMOVE AND STOW

Emergency equipment (PBE, fire extinguisher, ...) located close to the LRBL must be removed and stowed in alternate location.

GALLEY/IFE POWER.....OFF

All galley and IFE equipment located close to the LRBL must be switched off.

- **If the bomb can be moved:**
  RH AFT CABIN DOOR SLIDE..... DISARM
  LEAST RISK BOMB LOCATION (LRBL)..... PREPARE

Continued on the following page

[QRH] BOMB ON BOARD (Cont'd)

Build up a platform of solid baggage against the door up to about 25 cm (10 in) below the middle of the door.
On top of this, build up at least 25 cm (10 in) of wetted material such as blankets and pillows. Place a single thin sheet of plastic (e. g. trash bag) on top of the wetted materials. This prevents any possible short circuit.

CAUTION	*DO NOT OMIT THE PLASTIC SHEETS, AS THE SUSPECT DEVICE COULD GET WET AND POSSIBLY SHORT CIRCUIT ELECTRONIC COMPONENTS CAUSING INADVERTENT DEVICE ACTIVATION.*

BOMB INDICATION LINE.....POSITION

Note: *A bomb location indicator line is a 6 to 8 ft (1.8 to 2.4 m) (e.g. neckties, headset cord, or belts connected together) preferably of constrating color, that helps the responding bomb squad find the precise location of the suspect device within the LRBL stack once constructed.*

Position the bomb indication line from the location on the platform where you will place the suspect device, EXTENDING outward into the aisle.

BOMB.....MOVE TO LRBL

Carefully carry in the attitude found and place on top of the wetted materials in the same attitude and as close to the door structure as possible.

CAUTION	*Ensure that the suspect device, when placed on the stack against the door, is above the slide pack but not against the door handle, and if possible, avoid placement in the view port.*

LEAST RISK BOMB LOCATION (LRBL).....COMPLETE

Place an additional single thin sheet of plastic over the bomb.

CAUTION	*DO NOT OMIT THE PLASTIC SHEETS, AS THE SUSPECT DEVICE COULD GET WET AND POSSIBLY SHORT CIRCUIT ELECTRONIC COMPONENTS CAUSING INADVERTENT DEVICE ACTIVATION.*

Build up at 25 cm (10 in) of wetted material around the sides and on top of the bomb.

DO NOT PLACE ANYTHING BETWEEN THE BOMB AND THE DOOR, AND MINIMIZE AIRSPACE AROUND THE BOMB.

The idea is to build up a protective surrounding of the bomb so that the explosive force is directed in the only unprotected area into the door structure.
Fill the area around the bomb with seat cushions and other soft materials such as hand luggage (saturated with water or any other nonflammable liquid) up to the cabin ceiling,

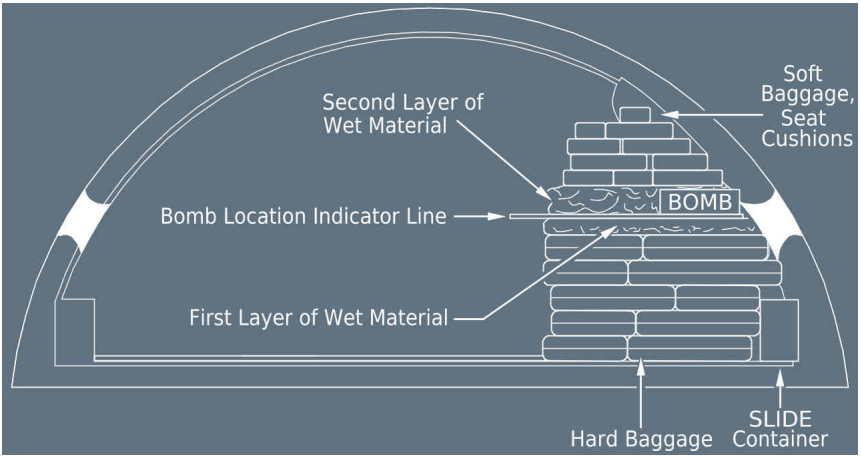
Continued on the following page

[QRH] BOMB ON BOARD (Cont'd)

compressing as much as possible. Secure the LRBL stack in place using belt, ties or other appropriate materials. The more material stacked around the bomb, the less the damage will be.

USE ONLY SOFT MATERIAL. AVOID USING MATERIALS CONTAINING ANY INFLAMMABLE LIQUID AND ANY METAL OBJECTS WHICH COULD BECOME DANGEROUS PROJECTILES.

LRBL STACK



PASSENGERS.....MOVE/ADVISE

Move passengers at least 4 seat rows away from the least risk bomb location (RH aft cabin door). On full flights, it may be necessary to double up passengers to achieve standoff from the suspect device.

Passengers near the bomb should protect their heads with pillows, blankets. All passengers must remain seated with seatbelts on and, if possible, head below the top of the head rest. Seat backs and tray tables must be in their full upright position.

CABIN CREW.....NOTIFY COCKPIT CREW

Cabin crew notify the flight crew that the bomb is secured at the LRBL.

EVACUATION/DISEMBARKATION.....EXECUTE

Evacuate through normal and emergency exits on the opposite side of the "bomb" location. Do not use the door just opposite the "bomb".

Continued on the following page

[QRH] BOMB ON BOARD (Cont'd)

Use all available airport facilities to disembark without delay.

[QRH] COCKPIT WINDSHIELD / WINDOW ARCING

Ident.: PRO-ABN-MISC-00012099.0001001 / 17 MAR 17
Applicable to: ALL

Affected WINDOW / WINDSHIELD ANTI-ICE C/B..... PULL

Pull the circuit breaker of the affected window/windshield heating system, in case of:

- *Electrical arcing of the cockpit windshield/window, or*
- *Burning smell or smoke identified as coming from the bottom right corner of CAPT windshield or bottom left corner of the F/O windshield.*

On the rear C/B panel:

- *ANTI-ICE L WSHLD AF10 C/B [123VU],*
- *ANTI-ICE R WSHLD AF03 C/B [123VU],*
- *ANTI-ICE/WINDOWS L X14 C/B [122VU],*
- *ANTI-ICE/WINDOWS R W14 C/B [122VU].*

[QRH] COCKPIT WINDSHIELD / WINDOW CRACKED

Ident.: PRO-ABN-MISC-00012097.0001001 / 04 DEC 18
Applicable to: ALL

SHOULDER HARNESS..... FASTEN
TOUCH THE CRACK WITH A PEN (OR CAREFULLY WITH FINGERNAIL)

■ **If no crack on cockpit side:**
NO LIMITATION

The inner ply is not affected. Therefore, the window/windshield is still able to sustain the differential pressure up to the maximum flight level.

■ **If cracks on cockpit side:**
CREW OXY MASKS..... USE
MAX FL: 230 / MEA-MORA

The inner ply is affected. The flight crew is not able to easily determine if other plies are affected. Descend to FL 230/MEA and reduce differential pressure to 5 PSI .

Note: The maximum flight level is restricted to FL 230/MEA to obtain ΔP 5 PSI , without resulting in an excessive cabin altitude and an EXCESS CAB ALT warning.

The following procedure enables maintaining ΔP 5 PSI in manual cabin pressure mode.

CAB PRESS MODE SEL..... MAN
DISREGARD THE CAB ALT TARGET TABLE DISPLAYED ON THE ECAM
MAN V/S CTL.....AS RQRD
SET THE CABIN ALTITUDE ACCORDING TO THE TABLE BELOW TO MAINTAIN ΔP 5 PSI

FL	*100*	*150*	*200*	*230*
CABIN ALTITUDE	*0*	*3 000*	*6 000*	*8 000*

● **When ΔP is 5 PSI:**
CREW OXY MASKS.....REMOVE

● **Below FL 100:**
CAB PRESS MODE SEL.....AUTO

Note: Due to the increased noise level, pay particular attention to visual warnings.

● **If visibility not sufficient for approach due to damage:**
CONSIDER AUTOLAND

● **For approach, if AUTOLAND not available:**
CAB PRESS MODE SEL.....MAN
MAN V/S CTL.....FULL UP

Continued on the following page

[QRH] COCKPIT WINDSHIELD / WINDOW CRACKED (Cont'd)

MAX SPEED: 200 kt
PF SLIDING WINDOW..... OPEN

[QRH] DITCHING

Ident.: PRO-ABN-MISC-00022090.0006001 / 05 JUN 18
Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

This procedure applies when engines are running.
If engines are not running, *Refer to PRO-ABN-ENG [QRH] ENG DUAL FAILURE - FUEL REMAINING - DITCHING* procedure or *Refer to PRO-ABN-ENG [QRH] ENG DUAL FAILURE - NO FUEL REMAINING - DITCHING* procedure, which include the ditching procedure when the engines are failed.

ATC.....NOTIFY
ATC XPDR 7700..... CONSIDER
PREPARE CABIN AND COCKPIT

L2 *Notify the cabin crew of the nature of the emergency and indicate intentions.*

Specify the available time, in order to:
- *Secure loose equipment*
- *Prepare survival equipment*
- *Lock belts and shoulder harnesses.*

L1 GPWS SYS..... OFF
GPWS TERR.....OFF

L2 *Set both the SYS pb-sw and the TERR pb-sw to OFF, in order to prevent nuisance warnings.*

L1 SIGNS.....ON
EMER EXIT LT..... ON
COMMERCIAL.....OFF
LDG ELEV.....SELECT 00
BARO..... SET
DISREGARD NORM C/Ls
ELT ◁ (when conditions permit)..... ON

- **For approach and ditching:**
  KEEP LANDING GEAR UP
  SLATS / FLAPS.....MAX AVAIL
  FOR FLARE: TARGET PITCH 11 ° & MIN V/S

- **At 2 000 ft AGL:**
  CAB PRESS MODE SEL.....CHECK AUTO

L2 *The outflow valve remains open, if the MODE SEL pb is not set to AUTO.*

L1 ALL BLEEDS (ENGs & APU).....OFF

Continued on the following page

[QRH] DITCHING (Cont'd)

CABIN CREW.....NOTIFY FOR DITCHING
DITCHING pb..... ON

L2 *The outflow valve, emergency ram air inlet, avionics ventilation inlet and extract valves, and pack flow control valves close.*

The ditching direction mainly depends on the wind direction, and on the state of the sea. These factors may be considered as follows :

1. Wind direction :
This may be determined by observing of the waves, which move and break downwind. Spray from the wave tops is also a reliable indicator.

2. Wind speed :

The following guidelines can be used to evaluate wind speed :

A few white crests	*8-17 kt*
Many white crests	*17-26 kt*
Streaks of foam along the water	*23-35 kt*
Spray from the waves	*35-43 kt*

3. Sea state :
This is best determined from a height of 500 to 1 000 ft.
At a lower altitude, the swell direction may be less obvious than the wave direction, even though the waves are much smaller.

4. When there is no swell, align into the wind. In the presence of swell, and provided that drift does not exceed 10 °, ditch parallel to the swell and as nearly into wind as possible. If drift exceeds 10 °, ditch into the wind. The presence of drift on touchdown is not dangerous, but every effort should be made to minimize roll.

L1 ● **At 500 ft AGL:**
BRACE FOR IMPACT..... ORDER

● **At touchdown:**
ALL ENG MASTERS..... OFF
APU MASTER SW.....OFF

● **After ditching:**
ATC (VHF 1).....NOTIFY

L2 *With both engines and APU shut down, only VHF 1 is supplied.*

L1 ALL FIRE pb (ENGs & APU).....PUSH
ALL AGENTS (ENGs and APU).....DISCH
EVACUATION..... INITIATE

Continued on the following page

[QRH] DITCHING (Cont'd)

L2 *After impact, the lowest point of the passenger exits (aft door) remains above the waterline for more than 7 min.*

[QRH] DITCHING

Ident.: PRO-ABN-MISC-00022090.0015001 / 05 JUN 18

3 **Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063**

This procedure applies when engines are running.
If engines are not running, *Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If ditching anticipated* procedure, which includes the ditching procedure when the engines are failed.

ATC.....NOTIFY
ATC XPDR 7700..... CONSIDER
PREPARE CABIN AND COCKPIT

L2 *Notify the cabin crew of the nature of the emergency and indicate intentions.*

Specify the available time, in order to:
- *Secure loose equipment*
- *Prepare survival equipment*
- *Lock belts and shoulder harnesses.*

L1 GPWS SYS..... OFF
GPWS TERR.....OFF

L2 *Set both the SYS pb-sw and the TERR pb-sw to OFF, in order to prevent nuisance warnings.*

L1 SIGNS.....ON
EMER EXIT LT..... ON
COMMERCIAL.....OFF
LDG ELEV.....SELECT 00
BARO.....SET
DISREGARD NORM C/Ls
ELT ◁ (when conditions permit)..... ON

- **For approach and ditching:**
  KEEP LANDING GEAR UP
  SLATS / FLAPS.....MAX AVAIL
  FOR FLARE: TARGET PITCH 11 ° & MIN V/S

- **At 2 000 ft AGL:**
  CAB PRESS MODE SEL.....CHECK AUTO

L2 *The outflow valve remains open, if the MODE SEL pb is not set to AUTO.*

L1 ALL BLEEDS (ENGs & APU).....OFF
CABIN CREW.....NOTIFY FOR DITCHING
DITCHING pb..... ON

Continued on the following page

[QRH] DITCHING (Cont'd)

L2 *The outflow valve, emergency ram air inlet, avionics ventilation inlet and extract valves, and pack flow control valves close.*

The ditching direction mainly depends on the wind direction, and on the state of the sea. These factors may be considered as follows :

1. Wind direction :
This may be determined by observing of the waves, which move and break downwind. Spray from the wave tops is also a reliable indicator.

2. Wind speed :

The following guidelines can be used to evaluate wind speed :

A few white crests	*8-17 kt*
Many white crests	*17-26 kt*
Streaks of foam along the water	*23-35 kt*
Spray from the waves	*35-43 kt*

3. Sea state :
This is best determined from a height of 500 to 1 000 ft.
At a lower altitude, the swell direction may be less obvious than the wave direction, even though the waves are much smaller.

4. When there is no swell, align into the wind. In the presence of swell, and provided that drift does not exceed 10 °, ditch parallel to the swell and as nearly into wind as possible. If drift exceeds 10 °, ditch into the wind. The presence of drift on touchdown is not dangerous, but every effort should be made to minimize roll.

L1 ● **At 500 ft AGL:**
BRACE FOR IMPACT..... ORDER

● **At touchdown:**
ALL ENG MASTERS..... OFF
APU MASTER SW.....OFF

● **After ditching:**
ATC (VHF 1).....NOTIFY

L2 *With both engines and APU shut down, only VHF 1 is supplied.*

L1 ALL FIRE pb (ENGs & APU).....PUSH
ALL AGENTS (ENGs and APU).....DISCH
EVACUATION..... INITIATE

L2 *After impact, the lowest point of the passenger exits (aft door) remains above the waterline for more than 7 min.*

[QRH] EMER EVAC

Ident.: PRO-ABN-MISC-00012083.0001001 / 09 MAY 17

4 **Applicable to: MSN 01767-02334, 02388, 02443-02457, 02584-09063**

Apply this procedure when considering an emergency evacuation, or when required by the ECAM. Carefully analyze the situation before deciding to evacuate passengers. However do not waste valuable time.

AIRCRAFT / PARKING BRK.....STOP / ON
ATC (VHF1).....NOTIFY

Notify ATC of the nature of the emergency, and state intentions.
Only VHF 1 is available on batteries.

CABIN CREW (PA).....ALERT

Make a short and precise announcement to warn that an emergency evacuation may be required.

ΔP (only if MAN CAB PR has been used).....CHECK ZERO

If ΔP is not at zero, MODE selector on MAN and V/S CTL FULL UP, to fully open the outflow valve.

- **If ΔP not at zero:**
  CAB PR MODE SEL.....MAN
  V/S CTL.....FULL UP

ALL ENG MASTER.....OFF

Associated LP and HP valves close.

ALL FIRE pb (ENGs & APU).....PUSH
ALL AGENTS (ENGs & APU).....AS RQRD

Engine Agent 2 is not available.
The use of agents is required if the ENG FIRE or APU FIRE is displayed.

- **If evacuation required:**
  EVACUATION.....INITIATE

  Make a short and precise announcement to order the emergency evacuation.
  Press the EVAC COMMAND pb ◁ .

- **If evacuation not required:**
  CABIN CREW AND PASSENGERS (PA).....NOTIFY

[QRH] EMER EVAC

Ident.: PRO-ABN-MISC-00012083.0002001 / 09 MAY 17
Applicable to: MSN 02359, 02405, 02482

Apply this procedure when considering an emergency evacuation, or when required by the ECAM. Carefully analyze the situation before deciding to evacuate passengers. However do not waste valuable time.

AIRCRAFT / PARKING BRK.....STOP / ON
ATC (VHF 1).....NOTIFY

Notify ATC of the nature of the emergency, and state intentions.
Only VHF 1 is available on batteries.

CABIN CREW (PA).....ALERT

Make a short and precise announcement to warn that an emergency evacuation may be required.

ΔP (only if MAN CAB PR has been used).....CHECK ZERO

- **If ΔP not at zero:**
  CAB PR MODE SEL.....MAN
  V/S CTL.....FULL UP

ALL ENG MASTER.....OFF

Associated LP and HP valves close.

ALL FIRE pb (ENGs & APU).....PUSH
ALL AGENTS (ENGs & APU).....AS RQRD

Engine Agent 2 is not available.
The use of agents is required if the ENG FIRE or APU FIRE is displayed.

- **If evacuation required:**
  EVACUATION.....INITIATE

  Make a short and precise announcement to order the emergency evacuation.
  Press the EVAC COMMAND pb .

- **If evacuation not required:**
  CABIN CREW AND PASSENGERS (PA).....NOTIFY

[QRH] EMER LANDING
ALL ENG FAILURE

Ident.: PRO-ABN-MISC-00015075.0009001 / 17 MAR 17
Applicable to: ALL

Apply the following if not able to maintain altitude after the loss of thrust near the ground.

■ **If ditching anticipated:**

APU..... START
L/G LEVER.....CHECK UP
FOR LANDING.....USE FLAP 2

L2 *Only slats extend, and slowly.*

L1 VAPP.....DETERMINE

Weight	40 t / 90 klb	50 t / 110 klb	60 t / 130 klb	70 t / 155 klb	80 t / 175 klb	90 t / 200 klb	95 t / 210 klb
VAPP	150 kt	150 kt	163 kt	173 kt	183 kt	193 kt	198 kt

DITCHING pb..... ON

L2 *Ditch the aircraft parallel to the swell. If that causes a strong crosswind, ditch the aircraft into the wind.*

L1 ● **At 500 ft AGL or below:**

BRACE FOR IMPACT.....ORDER

● **For flare:**

TOUCH DOWN AT MIN V/S
TARGET PITCH ATT 11 °

● **At touchdown:**

ALL ENG MASTERS.....OFF
APU MASTER SW.....OFF
EMER EVAC PROC..... APPLY

L2 *Refer to PRO-ABN-MISC [QRH] EMER EVAC*

L1 ■ **If forced landing anticipated:**

APU..... START
FOR LANDING.....USE FLAP 2

L2 *Only slats extend, and slowly.*

L1 VAPP.....DETERMINE

Weight	40 t / 90 klb	50 t / 110 klb	60 t / 130 klb	70 t / 155 klb	80 t / 175 klb	90 t / 200 klb	95 t / 210 klb

Continued on the following page

[QRH] EMER LANDING (Cont'd)
ALL ENG FAILURE

VAPP	150 kt	150 kt	163 kt	173 kt	183 kt	193 kt	198 kt

GND SPLRs..... ARM

- **At 1 000 ft AGL at the latest:**

  GRAVITY GEAR EXTN handcrank..... PULL AND TURN

L2 *Flight controls revert to direct law at landing gear extension. To ensure correct aircraft trimming for approach, extend the landing gear only when the aircraft is in CONF 2 and at VAPP. Disregard the ″USE MAN PITCH TRIM″ message on the PFD, because the stabilizer is jammed, due to not sufficient hydraulic power.*

L1
- **When L/G downlocked:**

  L/G LEVER..... DOWN

- **At 500 ft AGL or below:**

  BRACE FOR IMPACT..... ORDER

- **For flare:**

  TOUCH DOWN AT MIN V/S

- **At touchdown:**

  ALL ENG MASTERS..... OFF
  APU MASTER SW..... OFF
  EMER EVAC PROC..... APPLY

L2 *Refer to PRO-ABN-MISC [QRH] EMER EVAC*

[QRH] FORCED LANDING

Ident.: PRO-ABN-MISC-00022092.0006001 / 05 JUN 18
Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

This procedure applies when engines are running.
If engines are not running, *Refer to PRO-ABN-ENG [QRH] ENG DUAL FAILURE - FUEL REMAINING - FORCED LANDING* procedure or *Refer to PRO-ABN-ENG [QRH] ENG DUAL FAILURE - NO FUEL REMAINING - FORCED LANDING* procedure, which include the forced landing procedure when the engines are failed.

ATC.....NOTIFY
ATC XPDR 7700..... CONSIDER
PREPARE CABIN AND COCKPIT

L2 *Notify the cabin crew of the nature of the emergency and indicate intentions.*

Specify the available time, in order to:
- *Secure loose equipment*
- *Prepare survival equipment*
- *Lock belts and shoulder harnesses.*

L1 GPWS SYS..... OFF
GPWS TERR.....OFF

L2 *Set both the SYS pb-sw and the TERR pb-sw to OFF, in order to prevent nuisance warnings.*

L1 SIGNS.....ON
EMER EXIT LT..... ON
COMMERCIAL.....OFF
LDG ELEV..... SET

L2 *If not known, select an approximate value.*

L1 BARO..... SET
DISREGARD NORM C/Ls
ELT ◁ (when conditions permit)..... ON

● **For approach and landing:**
RAM AIR.....ON

L2 *Switch the RAM AIR on, in order to ensure entire depressurization of the aircraft on the ground.*

L1 L/G lever..... DOWN
SLATS / FLAPS.....MAX AVAIL
GND SPLR.....ARM

MAX BRK PR: 1000 PSI

Continued on the following page

[QRH] FORCED LANDING (Cont'd)

- **At 2 000 ft AGL:**
  CABIN CREW.....NOTIFY FOR LANDING
- **At 500 ft AGL:**
  BRACE FOR IMPACT..... ORDER
- **At touchdown:**
  ALL ENG MASTERS..... OFF
  APU MASTER SW.....OFF

  BRAKES ON ACCU ONLY
- **When aircraft stopped:**
  PARKING BRK..... ON
  ATC (VHF 1).....NOTIFY

L2 *With both engines and APU shut down, only VHF 1 is supplied.*

L1 ALL FIRE pb (ENGs & APU).....PUSH
ALL AGENTS (ENGs & APU)..... DISCH

■ **If evacuation required:**
EVACUATION.....INITIATE

L2 *Make a short and precise announcement to order the emergency evacuation.*
Press the EVAC COMMAND pb ◁ .

L1 ■ **If evacuation not required:**
CABIN CREW AND PASSENGERS (PA)..... NOTIFY

[QRH] FORCED LANDING

Ident.: PRO-ABN-MISC-00022092.0010001 / 05 JUN 18

5 **Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063**

This procedure applies when engines are running.
If engines are not running, *Refer to PRO-ABN-ENG [QRH] ALL ENG FAIL - If forced landing anticipated* procedure, which includes the forced landing procedure when the engines are failed.

ATC.....NOTIFY
ATC XPDR 7700..... CONSIDER
PREPARE CABIN AND COCKPIT

L2 *Notify the cabin crew of the nature of the emergency and indicate intentions.*

Specify the available time, in order to:
- *Secure loose equipment*
- *Prepare survival equipment*
- *Lock belts and shoulder harnesses.*

L1 GPWS SYS..... OFF
GPWS TERR.....OFF

L2 *Set both the SYS pb-sw and the TERR pb-sw to OFF, in order to prevent nuisance warnings.*

L1 SIGNS.....ON
EMER EXIT LT..... ON
COMMERCIAL.....OFF
LDG ELEV..... SET

L2 *If not known, select an approximate value.*

L1 BARO..... SET
DISREGARD NORM C/Ls
ELT ◁⫷ (when conditions permit)..... ON

● **For approach and landing:**
RAM AIR.....ON

L2 *Switch the RAM AIR on, in order to ensure entire depressurization of the aircraft on the ground.*

L1 L/G lever..... DOWN
SLATS / FLAPS.....MAX AVAIL
GND SPLR.....ARM

MAX BRK PR: 1000 PSI

Continued on the following page

[QRH] FORCED LANDING (Cont'd)

- **At 2 000 ft AGL:**
  CABIN CREW.....NOTIFY FOR LANDING
- **At 500 ft AGL:**
  BRACE FOR IMPACT..... ORDER
- **At touchdown:**
  ALL ENG MASTERS..... OFF
  APU MASTER SW.....OFF

  BRAKES ON ACCU ONLY
- **When aircraft stopped:**
  PARKING BRK..... ON
  ATC (VHF 1).....NOTIFY

L2 *With both engines and APU shut down, only VHF 1 is supplied.*

L1 ALL FIRE pb (ENGs & APU).....PUSH
ALL AGENTS (ENGs & APU)..... DISCH

■ **If evacuation required:**
EVACUATION.....INITIATE

L2 *Make a short and precise announcement to order the emergency evacuation.*
Press the EVAC COMMAND pb .

L1 ■ **If evacuation not required:**
CABIN CREW AND PASSENGERS (PA)..... NOTIFY

[QRH] OVERWEIGHT LANDING

Ident.: PRO-ABN-MISC-00012093.0108001 / 17 MAR 17

6 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

USE CONF FULL FOR LANDING UNLESS SPECIFIED BY ABN PROC OR LIMITED BY LANDING PERF

MAX WEIGHT (1 000 kg) FOR LANDING IN CONF FULL (GO AROUND IN CONF 3 CLIMB GRADIENT 2.1 %)								
OAT (°C)	AIRPORT ELEVATION (feet)							
	0	2 000	4 000	6 000	8 000	10 000	12 000	15 000
<=10	87	85	84	83	80	75	70	62
15	87	85	84	83	80	74	69	61
20	87	85	84	83	79	73	68	59
25	87	85	84	83	77	72	66	57
30	87	85	84	80	75	70	63	
35	87	85	84	77	72			
40	87	85	80	74				
45	87	83	77					
50	84	78						
55								

- **If aircraft weight above maximum weight for landing in conf FULL:**
  USE FLAP 3 FOR LANDING

LDG DIST.....CHECK

- **For approach:**
  PACK 1.....OFF OR SUPPLIED BY APU
  PACK 2.....OFF OR SUPPLIED BY APU
  Selecting packs OFF (or supplied from APU) will increase the maximum thrust available from the engines, in the event of a go-around.

- **If landing CONF other than full:**
  USE CONF 1+F FOR GO AROUND

SPEED AT RUNWAY THRESHOLD: VLS

Reduce the selected speed on the FCU to reach VLS at runway threshold.

MINIMIZE V/S AT TOUCHDOWN

- **At main landing gear touchdown:**
  USE MAX REVERSER

Continued on the following page

[QRH] OVERWEIGHT LANDING (Cont'd)

- **After nosewheel touchdown:**
  APPLY BRAKES AS NECESSARY
  Maximum braking may be used after nosewheel touchdown. But, if landing distance permits, delay or reduce braking to take full benefit of the available runway length.
- **When landing completed:**
  BRAKE FANS ..... ON
  Be prepared for tire deflation, if temperatures exceed 800 °C.

[QRH] OVERWEIGHT LANDING

Ident.: PRO-ABN-MISC-00012093.0106001 / 25 JAN 18

7 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

USE CONF FULL FOR LANDING UNLESS SPECIFIED BY ABN PROC OR LIMITED BY LANDING PERF

MAX WEIGHT (1 000 kg) FOR LANDING IN CONF FULL (GO AROUND IN CONF 3 CLIMB GRADIENT 2.1 %								
OAT (°C)	AIRPORT ELEVATION (feet)							
	0	2 000	4 000	6 000	8 000	10 000	12 000	15 000
≤10	97	92	86	80	75	70	65	57
15	97	92	86	80	75	69	64	56
20	97	92	86	79	73	68	64	54
25	97	92	85	78	72	67	61	
30	96	89	82	76	69	64	58	
35	92	85	79	73	67			
40	88	82	76	70				
45	84	78	72					
50	79	72						
55								

- **If aircraft weight above maximum weight for landing in conf FULL:**
  USE FLAP 3 FOR LANDING

LDG DIST.....CHECK

- **For approach:**
  PACK 1.....OFF OR SUPPLIED BY APU
  PACK 2.....OFF OR SUPPLIED BY APU
  Selecting packs OFF (or supplied from APU) will increase the maximum thrust available from the engines, in the event of a go-around.

- **If landing CONF other than full:**
  USE CONF 1+F FOR GO AROUND

SPEED AT RUNWAY THRESHOLD: VLS

Reduce the selected speed on the FCU to reach VLS at runway threshold.

MINIMIZE V/S AT TOUCHDOWN

- **At main landing gear touchdown:**
  USE MAX REVERSER

Continued on the following page

[QRH] OVERWEIGHT LANDING (Cont'd)

- **After nosewheel touchdown:**
  APPLY BRAKES AS NECESSARY
  Maximum braking may be used after nosewheel touchdown. But, if landing distance permits, delay or reduce braking to take full benefit of the available runway length.
- **When landing completed:**
  BRAKE FANS ..... ON
  Be prepared for tire deflation, if temperatures exceed 800 °C.

[QRH] OVERWEIGHT LANDING

Ident.: PRO-ABN-MISC-00012093.0078001 / 17 MAR 17
Applicable to: MSN 05437-06336

USE CONF FULL FOR LANDING UNLESS SPECIFIED BY ABN PROC OR LIMITED BY LANDING PERF

MAX WEIGHT (1 000 kg) FOR LANDING IN CONF FULL (GO AROUND IN CONF 3 CLIMB GRADIENT 2.1 %)								
OAT (°C)	AIRPORT ELEVATION (feet)							
	0	2 000	4 000	6 000	8 000	10 000	12 000	14 000
<10	86	84	80	77	73	69	64	61
15	86	84	80	77	73	69	64	61
20	86	84	80	77	73	68	63	59
25	86	84	80	77	72	67	51	
30	86	84	80	75	70			
35	86	84	79	73	67			
40	86	83	76	70				
45	86	79	72					
50	82	76						
55								

- **If aircraft weight above maximum weight for landing in conf FULL:**
  USE FLAP 3 FOR LANDING

LDG DIST.....CHECK

- **For approach:**
  PACK 1.....OFF OR SUPPLIED BY APU
  PACK 2.....OFF OR SUPPLIED BY APU
  Selecting packs OFF (or supplied from APU) will increase the maximum thrust available from the engines, in the event of a go-around.

- **If landing CONF other than full:**
  USE CONF 1+F FOR GO AROUND

SPEED AT RUNWAY THRESHOLD: VLS
Reduce the selected speed on the FCU to reach VLS at runway threshold.
MINIMIZE V/S AT TOUCHDOWN

- **At main landing gear touchdown:**
  USE MAX REVERSER

Continued on the following page

[QRH] OVERWEIGHT LANDING (Cont'd)

- **After nosewheel touchdown:**
  APPLY BRAKES AS NECESSARY
  Maximum braking may be used after nosewheel touchdown. But, if landing distance permits, delay or reduce braking to take full benefit of the available runway length.
- **When landing completed:**
  BRAKE FANS ..... ON
  Be prepared for tire deflation, if temperatures exceed 800 °C.

[QRH] OVERWEIGHT LANDING

Ident.: PRO-ABN-MISC-00012093.0057001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

USE CONF FULL FOR LANDING UNLESS SPECIFIED BY ABN PROC OR LIMITED BY LANDING PERF

MAX WEIGHT (1 000 kg) FOR LANDING IN CONF FULL (GO AROUND IN CONF 3 CLIMB GRADIENT 2.1 %)								
OAT (°C)	AIRPORT ELEVATION (feet)							
	0	2 000	4 000	6 000	8 000	10 000	12 000	14 000
<10	85	83	84	81	77	71	66	61
15	85	83	83	81	77	70	64	57
20	85	83	83	81	75	67	61	55
25	85	83	83	79	72	64	58	
30	84	83	81	77	69			
35	84	83	79	73	66			
40	84	81	75	69				
45	82	76	70					
50	78	72						
55								

- **If aircraft weight above maximum weight for landing in conf FULL:**
  USE FLAP 3 FOR LANDING

LDG DIST.....CHECK

- **For approach:**
  PACK 1.....OFF OR SUPPLIED BY APU
  PACK 2.....OFF OR SUPPLIED BY APU
  Selecting packs OFF (or supplied from APU) will increase the maximum thrust available from the engines, in the event of a go-around.

- **If landing CONF other than full:**
  USE CONF 1+F FOR GO AROUND

SPEED AT RUNWAY THRESHOLD: VLS
Reduce the selected speed on the FCU to reach VLS at runway threshold.
MINIMIZE V/S AT TOUCHDOWN

- **At main landing gear touchdown:**
  USE MAX REVERSER

Continued on the following page

[QRH] OVERWEIGHT LANDING (Cont'd)

- **After nosewheel touchdown:**
  APPLY BRAKES AS NECESSARY
  Maximum braking may be used after nosewheel touchdown. But, if landing distance permits, delay or reduce braking to take full benefit of the available runway length.
- **When landing completed:**
  BRAKE FANS ..... ON
  Be prepared for tire deflation, if temperatures exceed 800 °C.

[QRH] OVERWEIGHT LANDING

Ident.: PRO-ABN-MISC-00012093.0063001 / 17 MAR 17

8 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

USE CONF FULL FOR LANDING UNLESS SPECIFIED BY ABN PROC OR LIMITED BY LANDING PERF

MAX WEIGHT (1 000 kg) FOR LANDING IN CONF FULL (GO AROUND IN CONF 3 CLIMB GRADIENT 2.1 %)								
OAT (°C)	AIRPORT ELEVATION (feet)							
	0	2 000	4 000	6 000	8 000	10 000	12 000	14 000
<10	83	81	78	74	71	66	62	58
15	83	81	78	74	71	66	62	58
20	83	81	78	74	71	66	61	56
25	83	81	78	74	70	64	59	
30	83	81	78	73	67			
35	83	81	76	70	65			
40	83	80	73	67				
45	82	76	70					
50	79	73						
55								

- **If aircraft weight above maximum weight for landing in conf FULL:**
  USE FLAP 3 FOR LANDING

LDG DIST.....CHECK

- **For approach:**
  PACK 1.....OFF OR SUPPLIED BY APU
  PACK 2.....OFF OR SUPPLIED BY APU

  Selecting packs OFF (or supplied from APU) will increase the maximum thrust available from the engines, in the event of a go-around.

- **If landing CONF other than full:**
  USE CONF 1+F FOR GO AROUND

SPEED AT RUNWAY THRESHOLD: VLS

Reduce the selected speed on the FCU to reach VLS at runway threshold.

MINIMIZE V/S AT TOUCHDOWN

- **At main landing gear touchdown:**
  USE MAX REVERSER

Continued on the following page

[QRH] OVERWEIGHT LANDING (Cont'd)

- **After nosewheel touchdown:**
  APPLY BRAKES AS NECESSARY
  Maximum braking may be used after nosewheel touchdown. But, if landing distance permits, delay or reduce braking to take full benefit of the available runway length.
- **When landing completed:**
  BRAKE FANS ..... ON
  Be prepared for tire deflation, if temperatures exceed 800 °C.

[QRH] SEVERE TURBULENCE

Ident.: PRO-ABN-MISC-10-00002202.0001001 / 17 MAR 17
Applicable to: ALL

Whenever possible, avoid areas with known or forecasted severe turbulence. If turbulence is unavoidable, aim to keep the speed in the region of the target speed given in this section, so as to provide the best protection against the effect of gust on the structural limits, whilst maintaining an adequate margin above VLS.
Sufficient buffet margin exists at optimum altitude. In order to further increase the margin to buffet onset, consider descending to a lower altitude.
Severe turbulence is defined as turbulence that causes large, abrupt changes in altitude and/or attitude. It usually causes large variations in airspeed. Occupants are forced violently against their seat belts and loose objects will move around the aircraft.
If severe turbulence occurs during a flight, the flight crew must make a logbook entry in order to initiate maintenance action.

Note: *Recommendations for severe turbulence are also applicable to extreme turbulence.*

Ident.: PRO-ABN-MISC-10-00002203.0001001 / 22 FEB 17
Applicable to: ALL

Before the aircraft enters an area where turbulence is expected:

- All loose equipment must be secured in the cockpit and in the cabin
- The flight crew must set the SEAT BELTS sw to ON.

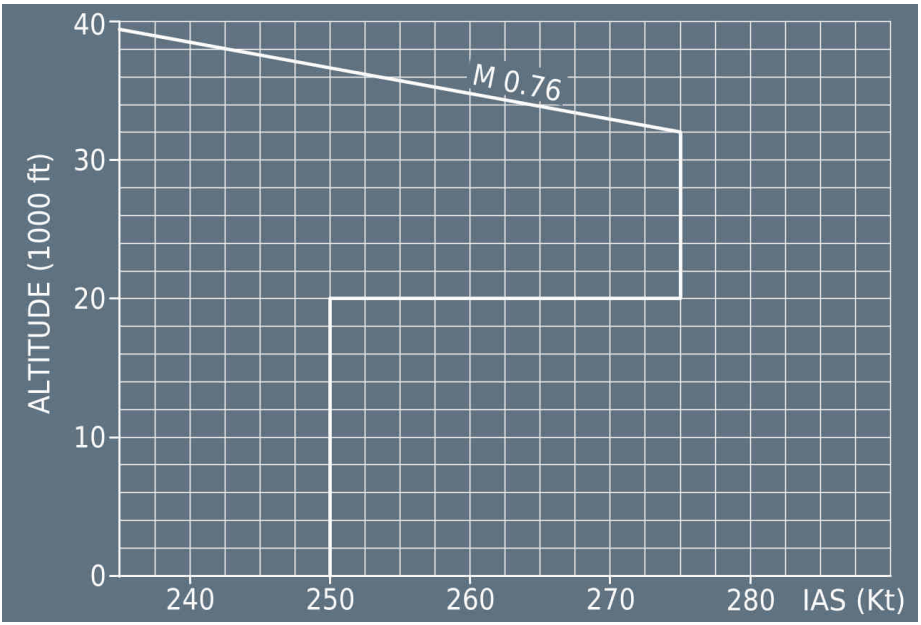
Ident.: PRO-ABN-MISC-10-00002301.0001001 / 09 DEC 09
Applicable to: ALL

Keep the autopilot ON.
When thrust changes become excessive : Disconnect Autothrust.
For approach : Use A/THR for managed speed.

Ident.: PRO-ABN-MISC-10-00002208.0002001 / 22 MAY 12

9 **Applicable to: MSN 01767-06336**

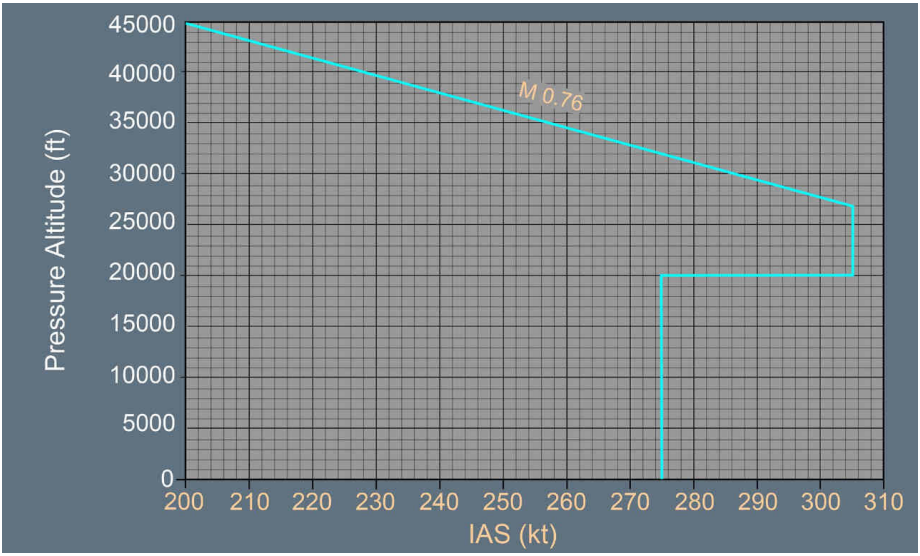
Set the thrust to give the recommended speed (*Refer to PRO-ABN-MISC [QRH] Thrust Setting (N1) for Recommended Speed*). This thrust setting attempts to obtain, in stabilized conditions, the speed for turbulence penetration given in the graph below.
Only change thrust in case of an extreme variation in airspeed, and do not chase your Mach or airspeed.
A transient increase is preferable to a loss of speed, that decreases buffet margins and is difficult to recover.



Ident.: PRO-ABN-MISC-10-00002208.0007001 / 18 JAN 17

10 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Set the thrust to give the recommended speed (*Refer to PRO-ABN-MISC [QRH] Thrust Setting (N1) for Recommended Speed*). This thrust setting attempts to obtain, in stabilized conditions, the speed for turbulence penetration given in the graph below.
Only change thrust in case of an extreme variation in airspeed, and do not chase your Mach or airspeed.
A transient increase is preferable to a loss of speed, that decreases buffet margins and is difficult to recover.



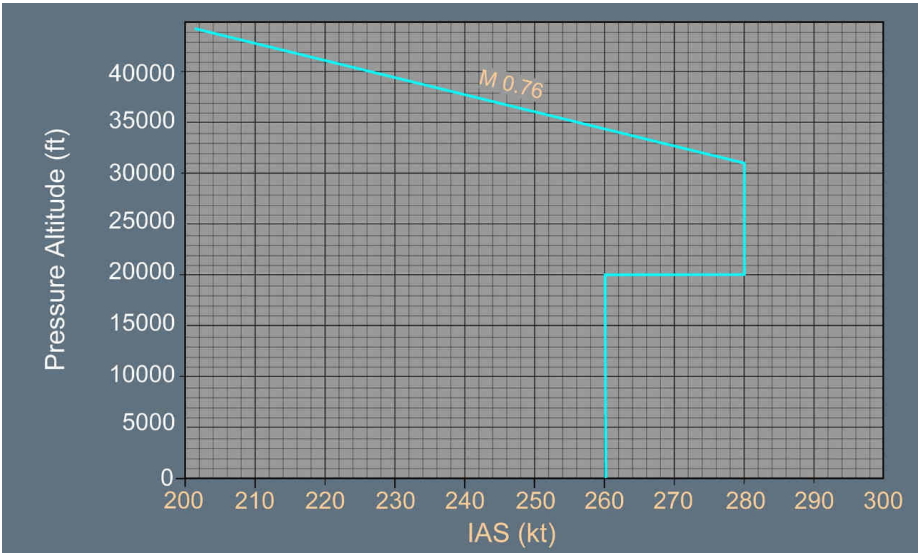
Ident.: PRO-ABN-MISC-10-00002208.0055001 / 16 NOV 15

11 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Set the thrust to give the recommended speed (*Refer to PRO-ABN-MISC [QRH] Thrust Setting (N1) for Recommended Speed*). This thrust setting attempts to obtain, in stabilized conditions, the speed for turbulence penetration given in the graph below.

Only change thrust in case of an extreme variation in airspeed, and do not chase your Mach or airspeed.

A transient increase is preferable to a loss of speed, that decreases buffet margins and is difficult to recover.



Ident.: PRO-ABN-MISC-10-00007380.0108001 / 30 OCT 18

[12] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

SEVERE TURBULENCE													
N1 SETTING FOR RECOMMENDED TURBULENCE SPEED (%)													
FL	SPD or Mach	WEIGHT (1 000 kg)											
		54	58	62	66	70	74	78	82	86	90	95	100
390	.76	80.8	81.9	83.2	-	-	-	-	-	-	-	-	-
370	.76	79.5	80.3	81.2	82.3	-	-	-	-	-	-	-	-
350	.76	78.8	79.5	80.2	81.0	81.9	83.0	-	-	-	-	-	-
330	.76	78.6	79.2	79.7	80.4	81.1	81.8	82.7	83.7	-	-	-	-
310	.76	78.5	79.0	79.5	80.0	80.6	81.2	81.8	82.6	83.4	84.3	-	-
290	.76	78.6	79.0	79.4	79.8	80.3	80.8	81.3	81.9	82.5	83.2	84.1	-
270	305	78.4	78.8	79.2	79.5	79.9	80.4	80.8	81.3	81.8	82.3	83.1	83.9
250	305	76.8	77.2	77.6	78.0	78.4	78.8	79.2	79.7	80.2	80.7	81.4	82.2
200	305	73.1	73.4	73.7	74.0	74.4	74.8	75.2	75.7	76.2	76.7	77.4	78.1
150	275	63.9	64.4	64.9	65.5	66.1	66.7	67.4	68.2	68.9	69.7	70.8	72.0
100	275	58.7	59.1	59.6	60.1	60.7	61.3	62.0	62.7	63.5	64.3	65.5	66.7
50	275	55.3	55.6	56.1	56.6	57.1	57.7	58.2	58.9	59.6	60.3	61.3	62.3

Ident.: PRO-ABN-MISC-10-00007380.0103001 / 06 JAN 16

13 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

SEVERE TURBULENCE										
N1 SETTING FOR RECOMMENDED TURBULENCE SPEED (%)										
FL	SPD or Mach	WEIGHT (1000 KG)								
		44	48	52	56	60	64	68	72	79
390	.76	77.5	78.4	79.4	80.4	81.7	-	-	-	-
370	.76	76.5	77.3	78.1	78.9	79.9	80.9	-	-	-
350	.76	76.1	76.7	77.3	78.1	78.8	79.6	80.5	81.6	-
330	.76	76.0	76.5	77.1	77.7	78.3	79.0	79.8	80.5	82.1
310	280	75.8	76.3	76.8	77.3	77.9	78.5	79.1	79.8	81.0
290	280	74.4	74.7	75.2	75.7	76.3	76.9	77.5	78.2	79.4
270	280	72.9	73.3	73.7	74.2	74.8	75.3	75.9	76.6	77.8
250	280	71.5	71.8	72.2	72.7	73.2	73.8	74.4	75.0	76.1
200	280	67.6	67.9	68.3	68.8	69.3	69.8	70.4	70.9	72.0
150	260	59.1	59.7	60.2	60.8	61.5	62.1	62.9	63.7	65.2
100	260	55.2	55.7	56.2	56.7	57.3	57.9	58.6	59.3	60.6
50	260	52.3	52.7	53.1	53.6	54.1	54.7	55.3	55.9	57.1

Ident.: PRO-ABN-MISC-10-00007380.0075001 / 21 DEC 12

Applicable to: MSN 05437-06336

SEVERE TURBULENCE										
N1 SETTING FOR RECOMMENDED TURBULENCE SPEED (%)										
FL	SPD or Mach	WEIGHT (1000 KG)								
		44	48	52	56	60	64	68	72	76
390	.76	75.4	76.2	77.1	78.3	-	-	-	-	-
370	.76	74.5	75.2	76.0	76.7	77.7	78.8	-	-	-
350	.76	74.2	74.7	75.3	76.0	76.7	77.5	78.5	79.5	-
330	.76	74.5	74.7	75.2	75.7	76.4	77.0	77.7	78.5	79.4
310	275	74.1	74.4	74.6	75.1	75.6	76.2	76.8	77.5	78.3
290	275	73.4	73.7	74.0	74.4	74.9	75.4	76.0	76.7	77.4
270	275	72.5	72.7	73.0	73.4	73.9	74.5	75.1	75.7	76.4
250	275	71.2	71.5	71.8	72.1	72.6	73.2	73.8	74.4	75.1
200	275	67.8	68.1	68.4	68.8	69.3	69.9	70.4	71.0	71.6
150	250	60.8	61.2	61.8	62.4	63.2	64.1	65.0	65.9	66.9
100	250	56.7	57.0	57.5	58.0	58.6	59.5	60.8	62.0	63.1
50	250	52.8	53.3	53.7	54.2	54.8	55.5	56.5	57.5	58.5

Ident.: PRO-ABN-MISC-10-00007380.0005001 / 21 NOV 11

14 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

SPEED AND THRUST SETTING FOR RECOMMENDED TURBULENCE SPEED										
FL	SPD or Mach	GROSS WEIGHT (1000 kg)								
		44	48	52	56	60	64	68	72	76
		N1 %								
390	0.76	75.7	76.6	77.7	79.0	-	-	-	-	-
370	0.76	74.7	75.5	76.3	77.2	78.4	79.7	-	-	-
350	0.76	74.3	74.8	75.6	76.3	77.1	78.1	79.3	80.5	-
330	0.76	74.5	74.8	75.3	76.0	76.6	77.4	78.2	79.2	80.2
310	275	74.1	74.3	74.7	75.2	75.8	76.4	77.1	77.9	78.8
290	275	72.9	73.2	73.5	73.9	74.5	75.1	75.8	76.5	77.3
270	275	71.7	71.9	72.3	72.7	73.3	73.9	74.5	75.2	76.0
250	275	70.4	70.7	71.0	71.4	71.9	72.6	73.2	73.9	74.7
200	275	66.8	67.1	67.4	67.9	68.4	69.0	69.8	70.4	71.1
150	250	59.9	60.4	61.0	61.7	62.5	63.5	64.5	65.5	66.5
100	250	56.3	56.7	57.2	57.8	58.5	59.3	60.3	61.4	62.5
50	250	52.7	53.4	53.8	54.4	54.9	55.7	56.5	57.4	58.4

Ident.: PRO-ABN-MISC-10-00007380.0009001 / 16 NOV 11

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

SEVERE TURBULENCE SPEED AND THRUST SETTING FOR RECOMMENDED TURBULENCE SPEED										
FL	SPD or Mach	GROSS WEIGHT (1000 kg)								
		44	48	52	56	60	64	68	72	76
		N1 %								
390	0.76	80.0	81.0	82.0	83.1	–	–	–	–	–
370	0.76	79.1	79.8	80.7	81.6	82.6	83.6	–	–	–
350	0.76	78.8	79.3	80.0	80.7	81.5	82.4	83.3	84.3	–
330	0.76	78.8	79.3	79.8	80.4	81.0	81.8	82.6	83.4	84.2
310	275	78.1	78.6	79.2	79.8	80.3	80.9	81.5	82.3	83.1
290	275	76.6	77.1	77.6	78.2	78.9	79.6	80.3	81.0	81.7
270	275	75.1	75.6	76.1	76.7	77.3	78.0	78.7	79.6	80.5
250	275	73.5	74.0	74.5	75.1	75.8	76.5	77.2	77.9	78.8
200	275	69.9	70.3	70.7	71.2	71.8	72.4	73.0	73.7	74.4
150	250	61.9	62.6	63.3	64.0	64.9	65.9	66.9	68.0	68.9
100	250	58.3	59.0	59.6	60.2	61.0	61.8	62.6	63.5	64.5
50	250	54.3	54.9	55.6	56.3	57.1	58.0	59.0	60.0	60.8

Ident.: PRO-ABN-MISC-10-00007386.0001001 / 09 JUN 15
Applicable to: ALL

If the flight crew flies the aircraft manually:

- The flight crew may expect large variations in altitude, but should not chase altitude.
- The flight crew should consider descending to or below OPT FL, in order to increase the margin to buffet.

Ident.: PRO-ABN-MISC-10-00007388.0002001 / 29 SEP 15
Applicable to: ALL

Configuration FULL, or 3, can be used.
CONF FULL provides better handling capability in turbulent conditions, however, CONF 3 provides more energy and less drag.

[QRH] TAILSTRIKE

Ident.: PRO-ABN-MISC-00012273.0001001 / 17 MAR 17
Applicable to: ALL

LAND ASAP

MAX FL: 100 / MEA-MORA

500 ft/min should be targeted for the climb, to minimize pressure changes, and for passenger and crew comfort. Similarly, the rate of descent must be limited to about 1 000 ft/min, except for the final approach that must be performed normally.
Notify the ATC of the aircraft's rate of climb.

RAM AIR..... ON
PACK 1.....OFF
PACK 2.....OFF

[QRH] VOLCANIC ASH ENCOUNTER

Ident.: PRO-ABN-MISC-00012176.0004001 / 17 MAR 17

15 **Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063**

180° TURN.....INITIATE

The performance of a 180 ° turn will usually enable the aircraft to exit the volcanic ash clouds as quickly as possible, because volcanic ash clouds can extend for hundreds of nautical miles.

ATC.....NOTIFY

Note: Electrostatic conditions may cause communication problems.

A/THR.....OFF

This prevents the autothrust from generating thrust variations.

THRUST (IF CONDS PERMIT).....REDUCE

Reduced thrust minimizes ash ingestion.
If altitude permits, reduce thrust to idle. This maximizes engine surge margin and lowers engine turbine temperature.

CREW OXY MASKS.....USE / 100 % / EMER
CABIN CREW.....NOTIFY
OXYGEN PASSENGER MASK MAN ON.....AS RQRD

Depending on contamination.

ENG ANTI ICE.....ON
WING ANTI ICE.....ON
PACK FLOW.....HI

Maximum air bleed gives the engines additional stall margin.

CARGO ISOL VALVES ◁ .....OFF

Note: To prevent a cargo smoke warning being triggered

ENGINE PARAMETERS.....MONITOR

Monitor particularly EGT. If EGT exceeds limits, it may become necessary to consider a precautionary engine shutdown and engine restart in flight.

Note: In the case of precautionary shutdown:
- *restart when clear of the volcanic ash cloud*
- *Upon restart, the engine may accelerate very slowly. Do not misinterpret this as a failure to start*

Continued on the following page

[QRH] VOLCANIC ASH ENCOUNTER (Cont'd)

- *Consider that the compressor and turbine blades have been eroded and avoid sudden changes in thrust. Fuel flow and EGT may increase.*

AIRSPEED INDICATIONS.....MONITOR

If airspeed is unreliable or lost, Refer to PRO-ABN-NAV UNRELIABLE SPEED INDICATION - Memory Items.

Note: *If both engines flame out and speed indications are lost, Refer to ALL ENGINES FAILURE procedure to get the required pitch attitude for the optimum relight speed. In case of engine failure, switch off the wing anti ice before engine restart.*

● **If visibility not sufficient for approach due to windshield damage:**
CONSIDER AUTOLAND

● **For approach, if AUTOLAND is not available:**
CAB PRESS MODE SEL.....MAN
MAN V/S CTL.....FULL UP

Due to the increased noise level, pay particular attention to visual warnings.

MAX SPEED: 200 kt
PF SLIDING WINDOW..... OPEN

[QRH] VOLCANIC ASH ENCOUNTER

Ident.: PRO-ABN-MISC-00012176.0001001 / 17 MAR 17
Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

180° TURN.....INITIATE

The performance of a 180 ° turn will usually enable the aircraft to exit the volcanic ash clouds as quickly as possible, because volcanic ash clouds can extend for hundreds of nautical miles.

ATC.....NOTIFY

Note: Electrostatic conditions may cause communication problems.

A/THR.....OFF

This prevents the autothrust from generating thrust variations.

THRUST (IF CONDS PERMIT).....REDUCE

Reduced thrust minimizes ash ingestion.
If altitude permits, reduce thrust to idle. This maximizes engine surge margin and lowers engine turbine temperature.

CREW OXY MASKS.....USE / 100 % / EMER
CABIN CREW.....NOTIFY
OXYGEN PASSENGER MASK MAN ON.....AS RQRD

Depending on contamination.

ENG ANTI ICE.....ON
WING ANTI ICE.....ON
PACK FLOW.....HI

Maximum air bleed gives the engines additional stall margin.

CARGO ISOL VALVES ◁ .....OFF

Note: To prevent a cargo smoke warning being triggered

ENGINE PARAMETERS.....MONITOR

Monitor particularly EGT. If EGT exceeds limits, it may become necessary to consider a precautionary engine shutdown and engine restart in flight.

Note: In the case of precautionary shutdown:
- *restart when clear of the volcanic ash cloud*
- *Upon restart, the engine may accelerate very slowly. Do not misinterpret this as a failure to start*
- *Consider that the compressor and turbine blades have been eroded and avoid sudden changes in thrust. Fuel flow and EGT may increase.*

Continued on the following page

[QRH] VOLCANIC ASH ENCOUNTER (Cont'd)

AIRSPEED INDICATIONS.....MONITOR

If airspeed is unreliable or lost, Refer to PRO-ABN-NAV UNRELIABLE SPEED INDICATION - Memory Items.

Note: *If both engines flame out and speed indications are lost,Refer to DUAL ENGINE FAILURE procedure to get the required pitch attitude for the optimum relight speed. In case of engine failure, switch off the wing anti ice before engine restart.*

- **If visibility not sufficient for approach due to windshield damage:**
  CONSIDER AUTOLAND
  - **For approach, if AUTOLAND is not available:**
    CAB PRESS MODE SEL.....MAN
    MAN V/S CTL.....FULL UP
    Due to the increased noise level, pay particular attention to visual warnings.
    MAX SPEED: 200 kt
    PF SLIDING WINDOW..... OPEN

[MEM] UNRELIABLE SPEED INDICATION

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03750, 04294, 04399-04438

Ident.: PRO-ABN-NAV-AM-00017720.0002001 / 17 MAR 17

- **If the safe conduct of the flight is impacted:**

  AP..... OFF
  A/THR..... OFF
  FD..... OFF
  PITCH/THRUST:
  Below THRUST RED ALT.....15° / TOGA
  Above THRUST RED ALT and Below FL 100.....10° / CLB
  Above THRUST RED ALT and Above FL 100.....5° / CLB
  FLAPS (if CONF 0(1)(2)(3)).....MAINTAIN CURRENT CONF
  FLAPS (if CONF FULL)..... SELECT CONF 3 AND MAINTAIN
  SPEEDBRAKES.....CHECK RETRACTED
  L/G..... UP
  When at, or above MSA or Circuit Altitude: Level off for troubleshooting.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017722.0008001 / 17 MAR 17

- **To level off:**

AP.....OFF
A/THR.....OFF
FD.....OFF
SPEEDBRAKES.....CHECK RETRACTED
PITCH/THRUST TABLE.....APPLY

PITCH / THRUST FOR LEVEL OFF				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
SLATS / FLAPS EXTENDED				
CONF	PITCH	THRUST % N1 (Resultant speed)		
3	7°	64% (155 kt)	60% (140 kt)	56% (130 kt)
2	5.5°	62% (170 kt)	58% (160 kt)	54% (145 kt)
1+F	5°	62% (190 kt)	58% (175 kt)	54% (160 kt)
1	6.5°	62% (205 kt)	58% (190 kt)	54% (170 kt)
CLEAN				
PITCH	FL	THRUST % N1 (Resultant speed)		
4° at or below FL250	100	62% (245 kt)	60% (225 kt)	54% (205 kt)
	200	70% (245 kt)	66% (225 kt)	62% (205 kt)
3° above FL250	300	80% (265 kt)	76% (245 kt)	72% (225 kt)
	350	84% (255 kt)	80% (240 kt)	76% (220 kt)
	400	/	86% (235 kt)	80% (220 kt)

FLYING TECHNIQUE TO STABILIZE SPEED

Stabilize the altitude. When altitude is stabilized:
- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017724.0002001 / 17 MAR 17

1

- **When flight path is stabilized:**
  AP.....OFF
  A/THR.....OFF
  FD.....OFF
  SPEEDBRAKES.....CHECK RETRACTED
  FLIGHT PATH..... KEEP STABILIZED

RESPECT STALL WARNING

Ident.: PRO-ABN-NAV-AM-00017725.0001001 / 17 MAR 17

AFFECTED ADR IDENTIFICATION

PROBE/WINDOW HEAT.....ON
ALL SPEED INDICATIONS.....CROSSCHECK
ADR3 and STBY speeds use the data of the same probe.

- **If at least one ADR confirmed reliable:**
  RELIABLE AIR DATA.....USE
  UNRELIABLE ADR pb(s).....OFF

- **If affected ADR(s) cannot be identified, or all ADRs affected:**
  KEEP ONE ADR ON
  TWO ADR pbs.....OFF
  This prevents the flight control laws from using two coherent but unreliable ADR data.
  FOR LANDING: USE FLAP 3
  APP SPD .....VLS +10 kt
  LDG DIST PROC..... APPLY

  - **For flight continuation:**
    USE PITCH/THRUST TABLES

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017726.0008001 / 17 MAR 17

CLIMB

CLIMB IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	FL	PITCH (Resultant speed)		
CLB	50	11° (235 kt)	13° (215 kt)	16° (195 kt)
	100	10° (235 kt)	12° (215 kt)	14° (195 kt)
	200	7° (235 kt)	8° (220 kt)	10° (195 kt)
	300	5° (235 kt)	6° (220 kt)	7° (200 kt)
	400	/	4° (215 kt)	5° (195 kt)

CRUISE

FLYING TECHNIQUE TO STABILIZE SPEED

Stabilize the altitude. When altitude is stabilized:
- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

LEVEL FLIGHT IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
PITCH	FL	THRUST % N1 (Resultant speed)		
4° at or below FL250	100	62% (245 kt)	60% (225 kt)	54% (205 kt)
	200	70% (245 kt)	66% (225 kt)	62% (205 kt)
3° above FL250	300	80% (265 kt)	76% (245 kt)	72% (225 kt)
	350	84% (255 kt)	80% (240 kt)	76% (220 kt)
	400	/	86% (235 kt)	80% (220 kt)

Note: *If the failure is due to radome destruction, the drag will increase and therefore N1 must be increased by 5 %. Fuel flow will increase by about 27 %.*

DESCENT

DESCENT IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	PITCH	Resultant speed		
IDLE	1°	245 kt	230 kt	210 kt

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

INITIAL / INTERMEDIATE APPROACH

APPLY FLYING TECHNIQUE TO STABILIZE SPEED

LEVEL FLIGHT				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
WITH LANDING GEAR UP				
CONF	PITCH	THRUST % N1 (Resultant speed)		
0	5.5°	58% (225 kt)	54% (205 kt)	50% (185 kt)
1	6.5°	62% (205 kt)	58% (190 kt)	54% (170 kt)
1+F	5°	62% (190 kt)	58% (175 kt)	54% (160 kt)
2	5.5°	62% (170 kt)	58% (160 kt)	54% (145 kt)
WITH LANDING GEAR DOWN				
3	7°	70% (155 kt)	64% (140 kt)	60% (130 kt)

FINAL APPROACH AT -3° DESCENT FLIGHT PATH

APPROACH IN CONF 3 AND L/G EXTENDED				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
CONF	PITCH	THRUST (% N1)		
3	4°	54%	50%	46%

[MEM] UNRELIABLE SPEED INDICATION

Applicable to: MSN 01957-02097, 02121, 02138, 02670, 02804, 03071, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

Ident.: PRO-ABN-NAV-AM-00017720.0002001 / 17 MAR 17

- **If the safe conduct of the flight is impacted:**

  AP..... OFF
  A/THR..... OFF
  FD..... OFF
  PITCH/THRUST:
  Below THRUST RED ALT.....15° / TOGA
  Above THRUST RED ALT and Below FL 100.....10° / CLB
  Above THRUST RED ALT and Above FL 100.....5° / CLB
  FLAPS (if CONF 0(1)(2)(3)).....MAINTAIN CURRENT CONF
  FLAPS (if CONF FULL)..... SELECT CONF 3 AND MAINTAIN
  SPEEDBRAKES.....CHECK RETRACTED
  L/G..... UP
  When at, or above MSA or Circuit Altitude: Level off for troubleshooting.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017722.0019001 / 17 MAR 17

2

- **To level off:**

AP.....OFF
A/THR.....OFF
FD.....OFF
SPEEDBRAKES.....CHECK RETRACTED
PITCH/THRUST TABLE.....APPLY

PITCH / THRUST FOR LEVEL OFF				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
SLATS / FLAPS EXTENDED				
CONF	PITCH	THRUST % N1 (Resultant speed)		
3	7°	62% (155 kt)	58% (140 kt)	54% (130 kt)
2	5.5°	62% (175 kt)	58% (160 kt)	54% (145 kt)
1+F	5°	62% (190 kt)	58% (175 kt)	54% (160 kt)
1	6.5°	60% (205 kt)	56% (190 kt)	52% (175 kt)
CLEAN				
PITCH	FL	THRUST % N1 (Resultant speed)		
4° at or below FL250	100	60% (245 kt)	56% (225 kt)	52% (205 kt)
	200	68% (245 kt)	66% (225 kt)	60% (205 kt)
3° above FL250	300	76% (265 kt)	74% (245 kt)	70% (225 kt)
	350	80% (255 kt)	76% (240 kt)	74% (225 kt)
	400	/	82% (235 kt)	78% (220 kt)

FLYING TECHNIQUE TO STABILIZE SPEED

Stabilize the altitude. When altitude is stabilized:
- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017724.0002001 / 17 MAR 17

3

- **When flight path is stabilized:**
  - AP.....OFF
  - A/THR.....OFF
  - FD.....OFF
  - SPEEDBRAKES.....CHECK RETRACTED
  - FLIGHT PATH..... KEEP STABILIZED

RESPECT STALL WARNING

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017725.0003001 / 05 JUN 18

4

AFFECTED ADR IDENTIFICATION

PROBE/WINDOW HEAT.....ON
ALL SPEED INDICATIONS.....CROSSCHECK

ADR3 and STBY speeds use the data of the same probe.

■ **If at least one ADR confirmed reliable:**
RELIABLE AIR DATA.....USE
UNRELIABLE ADR pb(s).....OFF

■ **If affected ADR(s) cannot be identified, or all ADRs affected:**

● **When above FL 250:**
KEEP ONE ADR ON
TWO ADR pbs..... OFF

This prevents the flight control laws from using two coherent but unreliable ADR data.

● **For flight continuation:**
USE PITCH/THRUST TABLES

● **When below FL 250, if speed still unreliable:**
ALL ADR pbs..... OFF

All ADRs must be switched OFF to replace the PFD's normal speed scale and altitude indication by the BUSS and GPS altitude indication.

SPEED.....FLY THE GREEN

Note: If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust tables.

NAV ADR 1+2+3 FAULT ECAM PROCEDURE.....APPLY

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017726.0019001 / 17 MAR 17

5

CLIMB

CLIMB IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	FL	PITCH (Resultant speed)		
CLB	50	11° (235 kt)	13° (215 kt)	15° (195 kt)
	100	10° (235 kt)	12° (215 kt)	14° (195 kt)
	200	7° (235 kt)	8° (220 kt)	10° (200 kt)
	300	5° (235 kt)	6° (220 kt)	7° (200 kt)
	400	/	4° (215 kt)	5° (195 kt)

CRUISE

FLYING TECHNIQUE TO STABILIZE SPEED

Stabilize the altitude. When altitude is stabilized:

- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

LEVEL FLIGHT IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
PITCH	FL	THRUST % N1 (Resultant speed)		
4° at or below FL250	100	60% (245 kt)	56% (225 kt)	52% (205 kt)
	200	68% (245 kt)	66% (225 kt)	60% (205 kt)
3° above FL250	300	76% (265 kt)	74% (245 kt)	70% (225 kt)
	350	80% (255 kt)	76% (240 kt)	74% (225 kt)
	400	/	82% (235 kt)	78% (220 kt)

Note: If the failure is due to radome destruction, the drag will increase and therefore N1 must be increased by 5 %. Fuel flow will increase by about 27 %.

DESCENT

DESCENT IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	PITCH	Resultant speed		
IDLE	1°	255 kt	235 kt	215 kt

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

INITIAL / INTERMEDIATE APPROACH

APPLY FLYING TECHNIQUE TO STABILIZE SPEED

LEVEL FLIGHT				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
WITH LANDING GEAR UP				
CONF	PITCH	THRUST % N1 (Resultant speed)		
0	5.5°	54% (220 kt)	50% (200 kt)	46% (180 kt)
1	6.5°	60% (205 kt)	56% (190 kt)	52% (175 kt)
1+F	5°	62% (190 kt)	58% (175 kt)	54% (160 kt)
2	5.5°	62% (175 kt)	58% (160 kt)	54% (145 kt)
WITH LANDING GEAR DOWN				
3	7°	68% (155 kt)	62% (145 kt)	58% (130 kt)

FINAL APPROACH AT -3° DESCENT FLIGHT PATH

APPROACH IN CONF 3 AND L/G EXTENDED				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
CONF	PITCH	THRUST (% N1)		
3	4°	52%	48%	44%

[MEM] UNRELIABLE SPEED INDICATION

Applicable to: MSN 02108, 02135, 02139-02359, 02405-02482, 02609-02649, 02737, 02908-02914, 03264-03330

Ident.: PRO-ABN-NAV-AM-00017720.0002001 / 17 MAR 17

- **If the safe conduct of the flight is impacted:**

  AP..... OFF
  A/THR..... OFF
  FD..... OFF
  PITCH/THRUST:
  Below THRUST RED ALT.....15° / TOGA
  Above THRUST RED ALT and Below FL 100..... 10° / CLB
  Above THRUST RED ALT and Above FL 100.....5° / CLB
  FLAPS (if CONF 0(1)(2)(3))..... MAINTAIN CURRENT CONF
  FLAPS (if CONF FULL)..... SELECT CONF 3 AND MAINTAIN
  SPEEDBRAKES.....CHECK RETRACTED
  L/G..... UP
  When at, or above MSA or Circuit Altitude: Level off for troubleshooting.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017722.0019001 / 17 MAR 17

6

- **To level off:**

  AP.....OFF
  A/THR.....OFF
  FD.....OFF
  SPEEDBRAKES.....CHECK RETRACTED
  PITCH/THRUST TABLE.....APPLY

PITCH / THRUST FOR LEVEL OFF				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
SLATS / FLAPS EXTENDED				
CONF	PITCH	THRUST % N1 (Resultant speed)		
3	7°	62% (155 kt)	58% (140 kt)	54% (130 kt)
2	5.5°	62% (175 kt)	58% (160 kt)	54% (145 kt)
1+F	5°	62% (190 kt)	58% (175 kt)	54% (160 kt)
1	6.5°	60% (205 kt)	56% (190 kt)	52% (175 kt)
CLEAN				
PITCH	FL	THRUST % N1 (Resultant speed)		
4° at or below FL250	100	60% (245 kt)	56% (225 kt)	52% (205 kt)
	200	68% (245 kt)	66% (225 kt)	60% (205 kt)
3° above FL250	300	76% (265 kt)	74% (245 kt)	70% (225 kt)
	350	80% (255 kt)	76% (240 kt)	74% (225 kt)
	400	/	82% (235 kt)	78% (220 kt)

FLYING TECHNIQUE TO STABILIZE SPEED

Stabilize the altitude. When altitude is stabilized:
- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017724.0002001 / 17 MAR 17

7

- **When flight path is stabilized:**
  AP.....OFF
  A/THR.....OFF
  FD.....OFF
  SPEEDBRAKES.....CHECK RETRACTED
  FLIGHT PATH..... KEEP STABILIZED

RESPECT STALL WARNING

Ident.: PRO-ABN-NAV-AM-00017725.0001001 / 17 MAR 17

AFFECTED ADR IDENTIFICATION

PROBE/WINDOW HEAT.....ON
ALL SPEED INDICATIONS.....CROSSCHECK

ADR3 and STBY speeds use the data of the same probe.

- **If at least one ADR confirmed reliable:**
  RELIABLE AIR DATA.....USE
  UNRELIABLE ADR pb(s).....OFF

- **If affected ADR(s) cannot be identified, or all ADRs affected:**
  KEEP ONE ADR ON
  TWO ADR pbs.....OFF

  This prevents the flight control laws from using two coherent but unreliable ADR data.

  FOR LANDING: USE FLAP 3
  APP SPD .....VLS +10 kt
  LDG DIST PROC..... APPLY

  - **For flight continuation:**
    USE PITCH/THRUST TABLES

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017726.0019001 / 17 MAR 17

8

CLIMB

CLIMB IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	FL	PITCH (Resultant speed)		
CLB	50	11° (235 kt)	13° (215 kt)	15° (195 kt)
	100	10° (235 kt)	12° (215 kt)	14° (195 kt)
	200	7° (235 kt)	8° (220 kt)	10° (200 kt)
	300	5° (235 kt)	6° (220 kt)	7° (200 kt)
	400	/	4° (215 kt)	5° (195 kt)

CRUISE

FLYING TECHNIQUE TO STABILIZE SPEED

Stabilize the altitude. When altitude is stabilized:

- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

LEVEL FLIGHT IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
PITCH	FL	THRUST % N1 (Resultant speed)		
4° at or below FL250	100	60% (245 kt)	56% (225 kt)	52% (205 kt)
	200	68% (245 kt)	66% (225 kt)	60% (205 kt)
3° above FL250	300	76% (265 kt)	74% (245 kt)	70% (225 kt)
	350	80% (255 kt)	76% (240 kt)	74% (225 kt)
	400	/	82% (235 kt)	78% (220 kt)

Note: *If the failure is due to radome destruction, the drag will increase and therefore N1 must be increased by 5 %. Fuel flow will increase by about 27 %.*

DESCENT

DESCENT IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	PITCH	Resultant speed		
IDLE	1°	255 kt	235 kt	215 kt

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

INITIAL / INTERMEDIATE APPROACH

APPLY FLYING TECHNIQUE TO STABILIZE SPEED

LEVEL FLIGHT				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
WITH LANDING GEAR UP				
CONF	PITCH	THRUST % N1 (Resultant speed)		
0	5.5°	54% (220 kt)	50% (200 kt)	46% (180 kt)
1	6.5°	60% (205 kt)	56% (190 kt)	52% (175 kt)
1+F	5°	62% (190 kt)	58% (175 kt)	54% (160 kt)
2	5.5°	62% (175 kt)	58% (160 kt)	54% (145 kt)
WITH LANDING GEAR DOWN				
3	7°	68% (155 kt)	62% (145 kt)	58% (130 kt)

FINAL APPROACH AT -3° DESCENT FLIGHT PATH

APPROACH IN CONF 3 AND L/G EXTENDED				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
CONF	PITCH	THRUST (% N1)		
3	4°	52%	48%	44%

[MEM] UNRELIABLE SPEED INDICATION

Applicable to: MSN 03138, 04314, 04393-04397, 04510

Ident.: PRO-ABN-NAV-AM-00017720.0002001 / 17 MAR 17

- **If the safe conduct of the flight is impacted:**

  AP..... OFF
  A/THR..... OFF
  FD..... OFF
  PITCH/THRUST:
  Below THRUST RED ALT.....15° / TOGA
  Above THRUST RED ALT and Below FL 100.....10° / CLB
  Above THRUST RED ALT and Above FL 100.....5° / CLB
  FLAPS (if CONF 0(1)(2)(3)).....MAINTAIN CURRENT CONF
  FLAPS (if CONF FULL).....SELECT CONF 3 AND MAINTAIN
  SPEEDBRAKES.....CHECK RETRACTED
  L/G..... UP
  When at, or above MSA or Circuit Altitude: Level off for troubleshooting.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017722.0008001 / 17 MAR 17

- **To level off:**

AP.....OFF
A/THR.....OFF
FD.....OFF
SPEEDBRAKES.....CHECK RETRACTED
PITCH/THRUST TABLE.....APPLY

PITCH / THRUST FOR LEVEL OFF				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
SLATS / FLAPS EXTENDED				
CONF	PITCH	THRUST % N1 (Resultant speed)		
3	7°	64% (155 kt)	60% (140 kt)	56% (130 kt)
2	5.5°	62% (170 kt)	58% (160 kt)	54% (145 kt)
1+F	5°	62% (190 kt)	58% (175 kt)	54% (160 kt)
1	6.5°	62% (205 kt)	58% (190 kt)	54% (170 kt)
CLEAN				
PITCH	FL	THRUST % N1 (Resultant speed)		
4° at or below FL250	100	62% (245 kt)	60% (225 kt)	54% (205 kt)
	200	70% (245 kt)	66% (225 kt)	62% (205 kt)
3° above FL250	300	80% (265 kt)	76% (245 kt)	72% (225 kt)
	350	84% (255 kt)	80% (240 kt)	76% (220 kt)
	400	/	86% (235 kt)	80% (220 kt)

FLYING TECHNIQUE TO STABILIZE SPEED

Stabilize the altitude. When altitude is stabilized:
- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017724.0002001 / 17 MAR 17

9

- **When flight path is stabilized:**
  - AP.....OFF
  - A/THR.....OFF
  - FD.....OFF
  - SPEEDBRAKES.....CHECK RETRACTED
  - FLIGHT PATH..... KEEP STABILIZED

RESPECT STALL WARNING

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017725.0003001 / 05 JUN 18

10

AFFECTED ADR IDENTIFICATION

PROBE/WINDOW HEAT.....ON
ALL SPEED INDICATIONS.....CROSSCHECK

ADR3 and STBY speeds use the data of the same probe.

■ **If at least one ADR confirmed reliable:**
RELIABLE AIR DATA.....USE
UNRELIABLE ADR pb(s).....OFF

■ **If affected ADR(s) cannot be identified, or all ADRs affected:**

● **When above FL 250:**
KEEP ONE ADR ON
TWO ADR pbs..... OFF

This prevents the flight control laws from using two coherent but unreliable ADR data.

● **For flight continuation:**
USE PITCH/THRUST TABLES

● **When below FL 250, if speed still unreliable:**
ALL ADR pbs..... OFF

All ADRs must be switched OFF to replace the PFD's normal speed scale and altitude indication by the BUSS and GPS altitude indication.

SPEED.....FLY THE GREEN

Note: If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust tables.

NAV ADR 1+2+3 FAULT ECAM PROCEDURE.....APPLY

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017726.0008001 / 17 MAR 17

CLIMB

CLIMB IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	FL	PITCH (Resultant speed)		
CLB	50	11° (235 kt)	13° (215 kt)	16° (195 kt)
	100	10° (235 kt)	12° (215 kt)	14° (195 kt)
	200	7° (235 kt)	8° (220 kt)	10° (195 kt)
	300	5° (235 kt)	6° (220 kt)	7° (200 kt)
	400	/	4° (215 kt)	5° (195 kt)

CRUISE

FLYING TECHNIQUE TO STABILIZE SPEED

Stabilize the altitude. When altitude is stabilized:
- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

LEVEL FLIGHT IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
PITCH	FL	THRUST % N1 (Resultant speed)		
4° at or below FL250	100	62% (245 kt)	60% (225 kt)	54% (205 kt)
	200	70% (245 kt)	66% (225 kt)	62% (205 kt)
3° above FL250	300	80% (265 kt)	76% (245 kt)	72% (225 kt)
	350	84% (255 kt)	80% (240 kt)	76% (220 kt)
	400	/	86% (235 kt)	80% (220 kt)

Note: *If the failure is due to radome destruction, the drag will increase and therefore N1 must be increased by 5 %. Fuel flow will increase by about 27 %.*

DESCENT

DESCENT IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	PITCH	Resultant speed		
IDLE	1°	245 kt	230 kt	210 kt

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

INITIAL / INTERMEDIATE APPROACH

APPLY FLYING TECHNIQUE TO STABILIZE SPEED

LEVEL FLIGHT				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
WITH LANDING GEAR UP				
CONF	PITCH	THRUST % N1 (Resultant speed)		
0	5.5°	58% (225 kt)	54% (205 kt)	50% (185 kt)
1	6.5°	62% (205 kt)	58% (190 kt)	54% (170 kt)
1+F	5°	62% (190 kt)	58% (175 kt)	54% (160 kt)
2	5.5°	62% (170 kt)	58% (160 kt)	54% (145 kt)
WITH LANDING GEAR DOWN				
3	7°	70% (155 kt)	64% (140 kt)	60% (130 kt)

FINAL APPROACH AT -3° DESCENT FLIGHT PATH

APPROACH IN CONF 3 AND L/G EXTENDED				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
CONF	PITCH	THRUST (% N1)		
3	4°	54%	50%	46%

[MEM] UNRELIABLE SPEED INDICATION

Applicable to: MSN 06720-07510

Ident.: PRO-ABN-NAV-AM-00017720.0002001 / 17 MAR 17

- **If the safe conduct of the flight is impacted:**
  - AP..... OFF
  - A/THR..... OFF
  - FD..... OFF
  - PITCH/THRUST:
  - Below THRUST RED ALT.....15° / TOGA
  - Above THRUST RED ALT and Below FL 100.....10° / CLB
  - Above THRUST RED ALT and Above FL 100.....5° / CLB
  - FLAPS (if CONF 0(1)(2)(3)).....MAINTAIN CURRENT CONF
  - FLAPS (if CONF FULL).....SELECT CONF 3 AND MAINTAIN
  - SPEEDBRAKES.....CHECK RETRACTED
  - L/G..... UP
  - When at, or above MSA or Circuit Altitude: Level off for troubleshooting.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017723.0001001 / 17 MAR 17

- **To level off:**

AP.....OFF
A/THR.....OFF
FD.....OFF
SPEEDBRAKES.....CHECK RETRACTED
PITCH/THRUST TABLE.....APPLY

PITCH / THRUST FOR LEVEL OFF				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
SLATS / FLAPS EXTENDED				
CONF	PITCH	THRUST % N1 (Resultant speed)		
3	7°	56% (150 kt)	52% (140 kt)	48% (125 kt)
2	5.5°	56% (165 kt)	52% (155 kt)	48% (140 kt)
1+F	5°	54% (180 kt)	50% (165 kt)	46% (150 kt)
1	6.5°	56% (200 kt)	52% (185 kt)	48% (170 kt)
CLEAN				
PITCH	FL	THRUST % N1 (Resultant speed)		
4° at or below FL250	100	58% (235 kt)	54% (220 kt)	50% (200 kt)
	200	66% (235 kt)	62% (220 kt)	58% (200 kt)
3° above FL250	300	78% (260 kt)	74% (240 kt)	68% (220 kt)
	350	82% (250 kt)	78% (235 kt)	72% (215 kt)
	400	/	84% (230 kt)	78% (215 kt)

FLYING TECHNIQUE TO STABILIZE SPEED

Stabilize the altitude. When altitude is stabilized:
- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017724.0002001 / 17 MAR 17

11

- **When flight path is stabilized:**
  - AP.....OFF
  - A/THR.....OFF
  - FD.....OFF
  - SPEEDBRAKES.....CHECK RETRACTED
  - FLIGHT PATH..... KEEP STABILIZED

RESPECT STALL WARNING

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017725.0003001 / 05 JUN 18

12

AFFECTED ADR IDENTIFICATION

PROBE/WINDOW HEAT.....ON
ALL SPEED INDICATIONS.....CROSSCHECK

ADR3 and STBY speeds use the data of the same probe.

■ **If at least one ADR confirmed reliable:**
RELIABLE AIR DATA.....USE
UNRELIABLE ADR pb(s).....OFF

■ **If affected ADR(s) cannot be identified, or all ADRs affected:**

● **When above FL 250:**
KEEP ONE ADR ON
TWO ADR pbs..... OFF

This prevents the flight control laws from using two coherent but unreliable ADR data.

● **For flight continuation:**
USE PITCH/THRUST TABLES

● **When below FL 250, if speed still unreliable:**
ALL ADR pbs..... OFF

All ADRs must be switched OFF to replace the PFD's normal speed scale and altitude indication by the BUSS and GPS altitude indication.

SPEED.....FLY THE GREEN

Note: If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust tables.

NAV ADR 1+2+3 FAULT ECAM PROCEDURE.....APPLY

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017727.0001001 / 17 MAR 17

13

CLIMB

CLIMB IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	FL	PITCH (Resultant speed)		
CLB	50	13° (225 kt)	15° (205 kt)	19° (185 kt)
	100	11° (225 kt)	14° (205 kt)	17° (185 kt)
	200	9° (230 kt)	10° (210 kt)	12° (190 kt)
	300	6° (230 kt)	7° (210 kt)	9° (190 kt)
	400	/	4° (210 kt)	5° (190 kt)

CRUISE

FLYING TECHNIQUE TO STABILIZE SPEED

Stabilize the altitude. When altitude is stabilized:

- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

LEVEL FLIGHT IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
PITCH	FL	THRUST % N1 (Resultant speed)		
4° at or below FL250	100	58% (235 kt)	54% (220 kt)	50% (200 kt)
	200	66% (235 kt)	62% (220 kt)	58% (200 kt)
3° above FL250	300	78% (260 kt)	74% (240 kt)	68% (220 kt)
	350	82% (250 kt)	78% (235 kt)	72% (215 kt)
	400	/	84% (230 kt)	78% (215 kt)

Note: *If the failure is due to radome destruction, the drag will increase and therefore N1 must be increased by 5 %. Fuel flow will increase by about 27 %.*

DESCENT

DESCENT IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	PITCH	Resultant speed		
IDLE	1°	245 kt	225 kt	205 kt

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

INITIAL / INTERMEDIATE APPROACH

APPLY FLYING TECHNIQUE TO STABILIZE SPEED

LEVEL FLIGHT WITH LANDING GEAR UP				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
CONF	PITCH	THRUST % N1 (Resultant speed)		
0	5°	54% (225 kt)	50% (205 kt)	46% (185 kt)
1	6.5°	56% (200 kt)	52% (185 kt)	48% (170 kt)
1+F	5°	54% (180 kt)	50% (165 kt)	46% (150 kt)
2	5.5°	56% (165 kt)	52% (155 kt)	48% (140 kt)
LEVEL FLIGHT WITH LANDING GEAR DOWN				
3	7°	62% (150 kt)	56% (140 kt)	52% (125 kt)

FINAL APPROACH AT -3° DESCENT FLIGHT PATH

APPROACH IN CONF 3 AND L/G EXTENDED				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
CONF	PITCH	THRUST (% N1)		
3	4°	46%	42%	38%

[MEM] UNRELIABLE SPEED INDICATION

Applicable to: MSN 07618-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-NAV-AM-00017720.0002001 / 17 MAR 17

- **If the safe conduct of the flight is impacted:**

  AP..... OFF
  A/THR..... OFF
  FD..... OFF
  PITCH/THRUST:
  Below THRUST RED ALT.....15° / TOGA
  Above THRUST RED ALT and Below FL 100.....10° / CLB
  Above THRUST RED ALT and Above FL 100.....5° / CLB
  FLAPS (if CONF 0(1)(2)(3)).....MAINTAIN CURRENT CONF
  FLAPS (if CONF FULL).....SELECT CONF 3 AND MAINTAIN
  SPEEDBRAKES.....CHECK RETRACTED
  L/G..... UP
  When at, or above MSA or Circuit Altitude: Level off for troubleshooting.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017723.0004001 / 20 MAR 17

14

- **To level off:**

AP.....OFF
A/THR.....OFF
FD.....OFF
SPEEDBRAKES.....CHECK RETRACTED

■ **Below FL 250:**

BKUP SPD/ALT pb.....USE

This action is reversible.

SPEED.....FLY THE GREEN

Note: If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust tables.

■ **Above FL 250:**

PITCH/THRUST TABLE.....APPLY

PITCH / THRUST FOR LEVEL OFF				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
PITCH	FL	THRUST % N1 (Resultant speed)		
3° above FL250	300	78% (260 kt)	74% (240 kt)	68% (220 kt)
	350	82% (250 kt)	78% (235 kt)	72% (215 kt)
	400	/	84% (230 kt)	78% (215 kt)

FLYING TECHNIQUE TO STABILIZE SPEED

Stabilize the altitude. When altitude is stabilized:
- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017724.0003001 / 20 MAR 17

15

- **When flight path is stabilized:**

  AP.....OFF
  A/THR.....OFF
  FD.....OFF
  SPEEDBRAKES.....CHECK RETRACTED

  - **Below FL 250:**

    BKUP SPD/ALT pb.....USE

    This action is reversible.

    SPEED.....FLY THE GREEN

    Note: *If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust tables.*

  - **Above FL 250:**

    FLIGHT PATH.....KEEP STABILIZED

RESPECT STALL WARNING

Disregard "RISK OF UNDUE STALL WARNING" STATUS message, if displayed on ECAM.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017725.0005001 / 11 JUL 17

16

AFFECTED ADR IDENTIFICATION

PROBE/WINDOW HEAT.....ON
ALL SPEED INDICATIONS.....CROSSCHECK

ADR3 and STBY speeds use the data of the same probe.

■ **If at least one ADR confirmed reliable:**
RELIABLE AIR DATA.....USE
UNRELIABLE ADR pb(s).....OFF

■ **If affected ADR(s) cannot be identified, or all ADRs affected:**
KEEP ONE ADR ON
TWO ADR pbs.....OFF

This prevents the flight control laws from using two coherent but unreliable ADR data.

● **When above FL 250:**
USE PITCH/THRUST TABLES

● **When below FL 250, if speed still unreliable:**
BKUP SPD/ALT pb.....USE

This action is reversible.

SPEED.....FLY THE GREEN

Note: *If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust tables.*

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017727.0001001 / 17 MAR 17

17

CLIMB

CLIMB IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	FL	PITCH (Resultant speed)		
CLB	50	13° (225 kt)	15° (205 kt)	19° (185 kt)
	100	11° (225 kt)	14° (205 kt)	17° (185 kt)
	200	9° (230 kt)	10° (210 kt)	12° (190 kt)
	300	6° (230 kt)	7° (210 kt)	9° (190 kt)
	400	/	4° (210 kt)	5° (190 kt)

CRUISE

FLYING TECHNIQUE TO STABILIZE SPEED

Stabilize the altitude. When altitude is stabilized:

- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

LEVEL FLIGHT IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
PITCH	FL	THRUST % N1 (Resultant speed)		
4° at or below FL250	100	58% (235 kt)	54% (220 kt)	50% (200 kt)
	200	66% (235 kt)	62% (220 kt)	58% (200 kt)
3° above FL250	300	78% (260 kt)	74% (240 kt)	68% (220 kt)
	350	82% (250 kt)	78% (235 kt)	72% (215 kt)
	400	/	84% (230 kt)	78% (215 kt)

Note: *If the failure is due to radome destruction, the drag will increase and therefore N1 must be increased by 5 %. Fuel flow will increase by about 27 %.*

DESCENT

DESCENT IN CLEAN CONFIGURATION				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
THRUST	PITCH	Resultant speed		
IDLE	1°	245 kt	225 kt	205 kt

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

INITIAL / INTERMEDIATE APPROACH

APPLY FLYING TECHNIQUE TO STABILIZE SPEED

LEVEL FLIGHT WITH LANDING GEAR UP				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
CONF	PITCH	THRUST % N1 (Resultant speed)		
0	5°	54% (225 kt)	50% (205 kt)	46% (185 kt)
1	6.5°	56% (200 kt)	52% (185 kt)	48% (170 kt)
1+F	5°	54% (180 kt)	50% (165 kt)	46% (150 kt)
2	5.5°	56% (165 kt)	52% (155 kt)	48% (140 kt)
LEVEL FLIGHT WITH LANDING GEAR DOWN				
3	7°	62% (150 kt)	56% (140 kt)	52% (125 kt)

FINAL APPROACH AT -3° DESCENT FLIGHT PATH

APPROACH IN CONF 3 AND L/G EXTENDED				
		70 t 155 000 lb	60 t 130 000 lb	50 t 110 000 lb
CONF	PITCH	THRUST (% N1)		
3	4°	46%	42%	38%

[MEM] UNRELIABLE SPEED INDICATION

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-NAV-AM-00017720.0002001 / 17 MAR 17

- **If the safe conduct of the flight is impacted:**

  AP..... OFF
  A/THR..... OFF
  FD..... OFF
  PITCH/THRUST:
  Below THRUST RED ALT.....15° / TOGA
  Above THRUST RED ALT and Below FL 100.....10° / CLB
  Above THRUST RED ALT and Above FL 100.....5° / CLB
  FLAPS (if CONF 0(1)(2)(3)).....MAINTAIN CURRENT CONF
  FLAPS (if CONF FULL).....SELECT CONF 3 AND MAINTAIN
  SPEEDBRAKES.....CHECK RETRACTED
  L/G..... UP
  When at, or above MSA or Circuit Altitude: Level off for troubleshooting.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017723.0008001 / 20 MAR 17

18

- **To level off:**

AP.....OFF
A/THR.....OFF
FD.....OFF
SPEEDBRAKES.....CHECK RETRACTED

- **Below FL 250:**

BKUP SPD/ALT pb.....USE

This action is reversible.

SPEED.....FLY THE GREEN

Note: If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust tables.

- **Above FL 250:**

PITCH/THRUST TABLE.....APPLY

PITCH / THRUST FOR LEVEL OFF					
		90 t 200 000 lb	80 t 175 000 lb	70 t 155 000 lb	60 t 130 000 lb
PITCH	FL	THRUST % N1 (Resultant speed)			
3° above FL250	300	**84%** (275 kt)	**80%** (260 kt)	**76%** (245 kt)	**72%** (225 kt)
	350	**90%** (265 kt)	**84%** (255 kt)	**80%** (240 kt)	**78%** (225 kt)
	400	/	/	**88%** (230 kt)	**84%** (220 kt)

FLYING TECHNIQUE TO STABILIZE SPEED

Stabilize the altitude. When altitude is stabilized:
- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017724.0003001 / 20 MAR 17

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- **When flight path is stabilized:**

  AP.....OFF
  A/THR.....OFF
  FD.....OFF
  SPEEDBRAKES.....CHECK RETRACTED

  - **Below FL 250:**

    BKUP SPD/ALT pb.....USE

    This action is reversible.

    SPEED.....FLY THE GREEN

    Note: If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust tables.

  - **Above FL 250:**

    FLIGHT PATH.....KEEP STABILIZED

RESPECT STALL WARNING

Disregard "RISK OF UNDUE STALL WARNING" STATUS message, if displayed on ECAM.

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017725.0005001 / 11 JUL 17

20

AFFECTED ADR IDENTIFICATION

PROBE/WINDOW HEAT.....ON
ALL SPEED INDICATIONS.....CROSSCHECK

ADR3 and STBY speeds use the data of the same probe.

■ **If at least one ADR confirmed reliable:**
RELIABLE AIR DATA.....USE
UNRELIABLE ADR pb(s).....OFF

■ **If affected ADR(s) cannot be identified, or all ADRs affected:**
KEEP ONE ADR ON
TWO ADR pbs.....OFF

This prevents the flight control laws from using two coherent but unreliable ADR data.

● **When above FL 250:**
USE PITCH/THRUST TABLES

● **When below FL 250, if speed still unreliable:**
BKUP SPD/ALT pb.....USE

This action is reversible.

SPEED.....FLY THE GREEN

Note: *If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust tables.*

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

Ident.: PRO-ABN-NAV-AM-00017727.0003001 / 09 JAN 18

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CLIMB

CLIMB IN CLEAN CONFIGURATION					
		90 t 200 000 lb	80 t 175 000 lb	70 t 155 000 lb	60 t 130 000 lb
THRUST	FL	PITCH (Resultant speed)			
CLB	50	11° (250 kt)	12.5° (235 kt)	14.5° (220 kt)	17.5° (200 kt)
	100	9.5° (250 kt)	11° (235 kt)	12.5° (220 kt)	15° (200 kt)
	200	7.5° (250 kt)	8° (235 kt)	9.5° (220 kt)	11° (200 kt)
	300	5.5° (250 kt)	6° (235 kt)	6.5° (220 kt)	7.5° (200 kt)
	400	/	4° (225 kt)	4.5° (215 kt)	5° (200 kt)

CRUISE

FLYING TECHNIQUE TO STABILIZE SPEED

Stabilize the altitude. When altitude is stabilized:

- If the pitch is above the target pitch, increase the thrust and maintain the altitude.
- If the pitch is below the target pitch, decrease the thrust and maintain the altitude.

When the pitch reaches the target pitch, adjust the thrust to keep this target pitch.

LEVEL FLIGHT IN CLEAN CONFIGURATION					
		90 t 200 000 lb	80 t 175 000 lb	70 t 155 000 lb	60 t 130 000 lb
PITCH	FL	THRUST % N1 (Resultant speed)			
4° at or below FL250	100	64% (260 kt)	60% (245 kt)	56% (230 kt)	54% (210 kt)
	200	74% (260 kt)	70% (245 kt)	66% (230 kt)	62% (210 kt)
3° above FL250	300	84% (275 kt)	80% (260 kt)	76% (245 kt)	72% (225 kt)
	350	90% (265 kt)	84% (255 kt)	80% (240 kt)	78% (225 kt)
	400	/	/	88% (230 kt)	84% (220 kt)

Note: *If the failure is due to radome destruction, the drag will increase and therefore N1 must be increased by 5 %. Fuel flow will increase by about 27 %.*

DESCENT

DESCENT IN CLEAN CONFIGURATION					
		90 t 200 000 lb	80 t 175 000 lb	70 t 155 000 lb	60 t 130 000 lb
THRUST	PITCH	Resultant speed			
IDLE	1°	265 kt	250 kt	235 kt	220 kt

Continued on the following page

[MEM] UNRELIABLE SPEED INDICATION (Cont'd)

INITIAL / INTERMEDIATE APPROACH

APPLY FLYING TECHNIQUE TO STABILIZE SPEED

LEVEL FLIGHT					
		90 t 200 000 lb	80 t 175 000 lb	70 t 155 000 lb	60 t 130 000 lb
WITH LANDING GEAR UP					
CONF	PITCH	THRUST % N1 (Resultant speed)			
0	5°	60% (245 kt)	56% (230 kt)	52% (215 kt)	48% (200 kt)
1	7°	62% (215 kt)	58% (200 kt)	54% (185 kt)	50% (170 kt)
1+F	4.5°	62% (195 kt)	58% (185 kt)	54% (170 kt)	50% (160 kt)
2	4.5°	64% (185 kt)	60% (175 kt)	56% (165 kt)	52% (150 kt)
WITH LANDING GEAR DOWN					
3	5°	70% (165 kt)	66% (155 kt)	62% (145 kt)	58% (130 kt)

FINAL APPROACH AT -3° DESCENT FLIGHT PATH

APPROACH IN CONF 3 AND L/G EXTENDED					
		90 t 200 000 lb	80 t 175 000 lb	70 t 155 000 lb	60 t 130 000 lb
CONF	PITCH	THRUST (% N1)			
3	1°	54%	50%	48%	44%

[QRH] ADR 1+2+3 FAULT

Applicable to: MSN 01767-01920, 02108, 02135, 02139-02482, 02609-02649, 02712, 02908-02914, 03264-03330, 04294, 04399-04438

Ident.: PRO-ABN-NAV-C-00017828.0001001 / 17 MAR 17

In case of a triple ADR failure, ECAM only displays dual ADR alerts.
All dual ADR alerts trigger: NAV ADR 1+2 FAULT, and NAV ADR 1+3 FAULT, and NAV ADR 2+3 FAULT.

L2 *Note: In case of a simultaneous ADR and IR (same ADIRU) failure, apply the ADR FAULT procedure prior to the IR FAULT procedure.*

L1 ALL ADR pbs..... OFF
STBY INST.....USE
DISREGARD ECAM ACTIONS FOR AIR DATA SWTG AND ATC
Air data switching and ATC have no effect.

TCAS & ATC ALT RPTG INOP

Ident.: PRO-ABN-NAV-C-00017830.0002001 / 22 MAR 17

MAX SPEED.....320/0.82
See the following table for the IAS/M relationship for 0.82

FL	*390*	*370*	*350*	*330*	*310*	*290*	*280 and below*
MAX SPD	*252*	*265*	*278*	*290*	*305*	*315*	*320*

WHEN L/G DN: DIRECT LAW
At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).

Note: Use manual control of cabin pressurization:
MODE SEL..... MAN
MAN V/S CTL..... AS RQRD
These lines are not displayed on the ECAM. (For details, Refer to PRO-ABN-CAB_PR CAB PR SYS 1+2 FAULT - FWSPAGE).

Continued on the following page

[QRH] ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-C-00021399.0009001 / 17 MAR 17

EXPECT ALTN LAW

FL	390	370	350	330	310	290	280 and below
MAX SPEED (kt)	252	265	278	290	305	315	320

This table provides IAS/MACH 0.82 relationship at or above FL 280.

USE RUDDER WITH CARE

At slats extension, full rudder travel authority is recovered.

WHEN L/G DOWN: DIRECT LAW

At landing gear extension, flight controls revert to direct law in pitch and in roll.

CABIN PRESS MODE SEL..... MAN
MAN V/S CTL..... AS RQRD

Target CAB PRESS V/S:
- *Climb: 500 ft/min*
- *Descent: 300 ft/min*

AIRCRAFTCRZ FL	CAB ALT TARGET (ft)
410	8000
350	7000
300	5500
250	3000
<200	0

Continued on the following page

[QRH] ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-C-00021262.0001001 / 17 MAR 17

- **For approach:**

  CAT 1 ONLY

  FOR LANDING: USE FLAP 3
  GPWS LDG FLAP 3.....ON
  LDG DIST PROC..... APPLY

  - **For L/G GRVTY EXTN:**
    LDG GEAR GRVTY EXTN handcrank.....PULL AND TURN
  - **When L/G downlocked:**
    L/G lever.....DOWN
    GEAR DOWN indications..... CHECK

    L/G DOORS REMAIN OPEN
  - **During final approach:**
    MAN V/S CTL.....FULL UP

- **Before door opening:**
  CHECK ΔP ZERO

Continued on the following page

[QRH] ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-C-00016863.0002001 / 22 MAR 17

STATUS

MAX SPEED..... 320/0.82
MANEUVER WITH CARE
RUD WITH CARE ABV 160 KT
See (1)

APPR PROC

FOR LDG..... USE FLAP 3

Do not select CONF FULL, so as not to degrade handling qualities.

GPWS LDG FLAP 3.....ON

Displayed, when CONF 3 is selected.

APPR SPD..... VREF +10 KT
LDG DIST PROC..... APPLY

Note: *As the landing gear safety valve is closed, landing gear extension must be performed by gravity (Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION).*

WHEN L/G DN : DIRECT LAW

At landing gear extension, control reverts to direct law in pitch, as well as in roll.

- **DURING FINAL APPR**
  MAN V/S CTL.....FULL UP

  Note: *In case of a go-around, respect the maximum speed of 215 kt in CONF 1+F, due to loss of flap auto retraction to CONF 1.*

CAUTION	*Check that the outflow valve is fully open and that cabin altitude is at airfield elevation before opening the doors.*

INOP SYS

F/CTL PROT
WINDSHEAR DET
GPWS
ADR 1+2+3
AP 1+2
A/THR
RUD TRV LIM 1+2
CAB PR 1+2
YAW DAMPER
ATC/XPDR 1
ATC/XPDR 2
STEEP APPR ◁
ROW/ROP ◁

Other INOP SYS

ATC ALTI MODE
TCAS ◁
L/G RETRACT
RAT AUTOMATIC EXTENSION
CAT 2

Continued on the following page

[QRH] ADR 1+2+3 FAULT (Cont'd)

(1) *The rudder travel limit value is frozen at the moment when the failure occurs. Therefore, to prevent damage to the aircraft structure, use the rudder with care, when the speed is above 160 kt. At slats' extension, full rudder travel authority is recovered.*

[QRH] ADR 1+2+3 FAULT

Applicable to: MSN 02584, 02737

Ident.: PRO-ABN-NAV-C-00017828.0001001 / 17 MAR 17

In case of a triple ADR failure, ECAM only displays dual ADR alerts.
All dual ADR alerts trigger: NAV ADR 1+2 FAULT, and NAV ADR 1+3 FAULT, and NAV ADR 2+3 FAULT.

L2 *Note: In case of a simultaneous ADR and IR (same ADIRU) failure, apply the ADR FAULT procedure prior to the IR FAULT procedure.*

L1 ALL ADR pbs..... OFF
STBY INST.....USE
DISREGARD ECAM ACTIONS FOR AIR DATA SWTG AND ATC
Air data switching and ATC have no effect.
TCAS & ATC ALT RPTG INOP

Continued on the following page

[QRH] ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-C-00017830.0001001 / 21 MAR 16

Note: *The STALL WARNING is lost.*

MAX SPEED.....320/0.82

See the following table for the IAS/M relationship for 0.82

FL	*390*	*370*	*350*	*330*	*310*	*290*	*280 and below*
MAX SPD	*252*	*265*	*278*	*290*	*305*	*315*	*320*

WHEN L/G DN: DIRECT LAW

At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).

Note: *Use manual control of cabin pressurization:*

MODE SEL..... MAN
MAN V/S CTL..... AS RQRD

These lines are not displayed on the ECAM. (For details, Refer to PRO-ABN-CAB_PR CAB PR SYS 1+2 FAULT - FWSPAGE).

Continued on the following page

[QRH] ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-C-00021399.0005001 / 17 MAR 17

STALL WARNING LOST
EXPECT ALTN LAW

FL	390	370	350	330	310	290	280 and below
MAX SPEED (kt)	252	265	278	290	305	315	320

This table provides IAS/MACH 0.82 relationship at or above FL 280.

USE RUDDER WITH CARE

At slats extension, full rudder travel authority is recovered.

WHEN L/G DOWN: DIRECT LAW

At landing gear extension, flight controls revert to direct law in pitch and in roll.

CABIN PRESS MODE SEL..... MAN
MAN V/S CTL..... AS RQRD

Target CAB PRESS V/S:

- *Climb: 500 ft/min*
- *Descent: 300 ft/min*

AIRCRAFTCRZ FL	CAB ALT TARGET (ft)
410	8000
350	7000
300	5500
250	3000
<200	0

Continued on the following page

[QRH] ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-C-00021262.0001001 / 17 MAR 17

- **For approach:**

  CAT 1 ONLY

  FOR LANDING: USE FLAP 3
  GPWS LDG FLAP 3.....ON
  LDG DIST PROC..... APPLY

  - **For L/G GRVTY EXTN:**
    LDG GEAR GRVTY EXTN handcrank.....PULL AND TURN
  - **When L/G downlocked:**
    L/G lever.....DOWN
    GEAR DOWN indications..... CHECK

    L/G DOORS REMAIN OPEN
  - **During final approach:**
    MAN V/S CTL.....FULL UP

- **Before door opening:**
  CHECK ΔP ZERO

Continued on the following page

[QRH] ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-C-00016863.0002001 / 22 MAR 17

STATUS

MAX SPEED..... 320/0.82
MANEUVER WITH CARE
RUD WITH CARE ABV 160 KT
See (1)

APPR PROC

FOR LDG..... USE FLAP 3

Do not select CONF FULL, so as not to degrade handling qualities.

GPWS LDG FLAP 3.....ON

Displayed, when CONF 3 is selected.

APPR SPD..... VREF +10 KT
LDG DIST PROC..... APPLY

Note: As the landing gear safety valve is closed, landing gear extension must be performed by gravity (Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION).

WHEN L/G DN : DIRECT LAW

At landing gear extension, control reverts to direct law in pitch, as well as in roll.

- **DURING FINAL APPR**
  MAN V/S CTL.....FULL UP

  Note: In case of a go-around, respect the maximum speed of 215 kt in CONF 1+F, due to loss of flap auto retraction to CONF 1.

CAUTION	*Check that the outflow valve is fully open and that cabin altitude is at airfield elevation before opening the doors.*

INOP SYS

F/CTL PROT
WINDSHEAR DET
GPWS
ADR 1+2+3
AP 1+2
A/THR
RUD TRV LIM 1+2
CAB PR 1+2
YAW DAMPER
ATC/XPDR 1
ATC/XPDR 2
STEEP APPR ◁
ROW/ROP ◁

Other INOP SYS

ATC ALTI MODE
TCAS ◁
L/G RETRACT
RAT AUTOMATIC EXTENSION
CAT 2

Continued on the following page

[QRH] ADR 1+2+3 FAULT (Cont'd)

(1) *The rudder travel limit value is frozen at the moment when the failure occurs. Therefore, to prevent damage to the aircraft structure, use the rudder with care, when the speed is above 160 kt. At slats' extension, full rudder travel authority is recovered.*

[QRH] ADR 1+2+3 FAULT

Applicable to: MSN 03750

Ident.: PRO-ABN-NAV-C-00017828.0002001 / 17 MAR 17

In case of a triple ADR failure, ECAM only displays dual ADR alerts.
All dual ADR alerts trigger: NAV ADR 1+2 FAULT, and NAV ADR 1+3 FAULT, and NAV ADR 2+3 FAULT.

L2 *Note: In case of a simultaneous ADR and IR (same ADIRU) failure, apply the ADR FAULT procedure prior to the IR FAULT procedure.*

L1 ALL ADR pbs..... OFF

WHEN ALL ADR OFF BOTH FMS LOST

STBY INST.....USE
BACK UP NAV.....USE

Revert to Back Up Nav via the NAV B/UP Prompt on the MCDU MENU page.

USE RMP FOR NAVAID TUNING
DISREGARD ECAM ACTIONS FOR AIR DATA SWTG AND ATC

Air data switching and ATC have no effect.

TCAS & ATC ALT RPTG INOP

Continued on the following page

[QRH] ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-C-00017830.0002001 / 22 MAR 17

MAX SPEED.....320/0.82

See the following table for the IAS/M relationship for 0.82

FL	*390*	*370*	*350*	*330*	*310*	*290*	*280 and below*
MAX SPD	*252*	*265*	*278*	*290*	*305*	*315*	*320*

WHEN L/G DN: DIRECT LAW

At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).

Note: *Use manual control of cabin pressurization:*

MODE SEL..... MAN
MAN V/S CTL..... AS RQRD

These lines are not displayed on the ECAM. (For details, Refer to PRO-ABN-CAB_PR CAB PR SYS 1+2 FAULT - FWSPAGE).

Continued on the following page

[QRH] ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-C-00021399.0009001 / 17 MAR 17

EXPECT ALTN LAW

FL	390	370	350	330	310	290	280 and below
MAX SPEED (kt)	252	265	278	290	305	315	320

This table provides IAS/MACH 0.82 relationship at or above FL 280.

USE RUDDER WITH CARE

At slats extension, full rudder travel authority is recovered.

WHEN L/G DOWN: DIRECT LAW

At landing gear extension, flight controls revert to direct law in pitch and in roll.

CABIN PRESS MODE SEL..... MAN
MAN V/S CTL..... AS RQRD

Target CAB PRESS V/S:
- *Climb: 500 ft/min*
- *Descent: 300 ft/min*

AIRCRAFTCRZ FL	CAB ALT TARGET (ft)
410	8000
350	7000
300	5500
250	3000
<200	0

Continued on the following page

[QRH] ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-C-00021262.0001001 / 17 MAR 17

- **For approach:**

  CAT 1 ONLY

  FOR LANDING: USE FLAP 3
  GPWS LDG FLAP 3.....ON
  LDG DIST PROC..... APPLY

  - **For L/G GRVTY EXTN:**
    LDG GEAR GRVTY EXTN handcrank.....PULL AND TURN
  - **When L/G downlocked:**
    L/G lever.....DOWN
    GEAR DOWN indications..... CHECK

    L/G DOORS REMAIN OPEN
  - **During final approach:**
    MAN V/S CTL.....FULL UP

- **Before door opening:**
  CHECK ΔP ZERO

Continued on the following page

[QRH] ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-C-00016863.0002001 / 22 MAR 17

STATUS

MAX SPEED..... 320/0.82
MANEUVER WITH CARE
RUD WITH CARE ABV 160 KT
See (1)

APPR PROC

FOR LDG..... USE FLAP 3

Do not select CONF FULL, so as not to degrade handling qualities.

GPWS LDG FLAP 3.....ON

Displayed, when CONF 3 is selected.

APPR SPD..... VREF +10 KT
LDG DIST PROC..... APPLY

Note: *As the landing gear safety valve is closed, landing gear extension must be performed by gravity (Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION).*

WHEN L/G DN : DIRECT LAW

At landing gear extension, control reverts to direct law in pitch, as well as in roll.

- **DURING FINAL APPR**
  MAN V/S CTL.....FULL UP

  Note: *In case of a go-around, respect the maximum speed of 215 kt in CONF 1+F, due to loss of flap auto retraction to CONF 1.*

CAUTION	*Check that the outflow valve is fully open and that cabin altitude is at airfield elevation before opening the doors.*

INOP SYS

F/CTL PROT
WINDSHEAR DET
GPWS
ADR 1+2+3
AP 1+2
A/THR
RUD TRV LIM 1+2
CAB PR 1+2
YAW DAMPER
ATC/XPDR 1
ATC/XPDR 2
STEEP APPR ◁✻
ROW/ROP ◁✻

Other INOP SYS

ATC ALTI MODE
TCAS ◁✻
L/G RETRACT
RAT AUTOMATIC EXTENSION
CAT 2

Continued on the following page

[QRH] ADR 1+2+3 FAULT (Cont'd)

(1) *The rudder travel limit value is frozen at the moment when the failure occurs. Therefore, to prevent damage to the aircraft structure, use the rudder with care, when the speed is above 160 kt. At slats' extension, full rudder travel authority is recovered.*

[QRH] ADR CHECK PROC

Ident.: PRO-ABN-NAV-00015311.0001001 / 17 MAR 17
Applicable to: ALL

For the ADR CHECK procedure, apply the UNRELIABLE SPEED INDICATION procedure. *Refer to PRO-ABN-NAV UNRELIABLE SPEED INDICATION - Memory Items.*

[QRH] ALL ADR OFF

Ident.: PRO-ABN-NAV-00012464.0020001 / 20 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138, 02670, 02804, 03071-03138, 03357-03618, 03782-04216, 04312-04397, 04481-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

Apply this QRH procedure when requested by the NAV ADR 1+2+3 FAULT ECAM alert.

SPEED.....FLY THE GREEN

Fly within the green area of the speed scale to ensure safe flight.
For slats/flaps retraction, it is better to fly at the top of the green area of the speed scale.

Note: If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust tables.

PFD ALTITUDE: GPS

TCAS & ATC ALT RPTG INOP

CABIN PRESS MODE SEL..... MAN
MAN V/S CTL..... AS RQRD

Target CAB PRESS V/S:
- *Climb: 500 ft/min*
- *Descent: 300 ft/min*

AIRCRAFT CRZ FL	*CAB ALT TARGET (ft)*
410	*8000*
350	*7000*
300	*5500*
250	*3000*
<200	*0*

- **For approach:**
  SPEED.....FLY THE GREEN
  Before extending the slats/flaps, it is better to fly at the bottom of the speed scale green area, and to be in straight flight.
  FOR LANDING: USE FLAP 3
  GPWS LDG FLAP 3.....ON
  LDG DIST PROC..... APPLY
  APPR SPEED: BUSS TARGET SPEED
  During approach, BUSS TARGET SPEED (green triangle) indicates VAPP.
  - **When flap 2:**
    LDG GEAR GRVTY EXTN handcrank.....PULL AND TURN

Continued on the following page

[QRH] ALL ADR OFF (Cont'd)

- **When landing gear downlocked:**
  L/G lever.....DOWN
  GEAR DOWN indications..... CHECK

  L/G DOORS REMAIN OPEN

- **During final approach:**
  MAN V/S CTL.....FULL UP

- **Before door opening:**
  CHECK ΔP ZERO

[QRH] ALL ADR OFF

Ident.: PRO-ABN-NAV-00012464.0026001 / 20 MAR 17

22 **Applicable to: MSN 04491, 04532, 04645, 05120, 05218, 06720-09063**

Apply this QRH procedure when requested by the NAV ADR 1+2+3 FAULT ECAM alert.

SPEED.....FLY THE GREEN

Fly within the green area of the speed scale to ensure safe flight.
For slats/flaps retraction, it is better to fly at the top of the green area of the speed scale.

Note: If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust tables.

WHEN ALL ADR OFF BOTH FMS LOST

BACK UP NAV.....USE

Revert to Back Up Nav via the NAV B/UP prompt on the MCDU MENU page.

USE RMP FOR NAVAID TUNING

PFD ALTITUDE: GPS

TCAS & ATC ALT RPTG INOP

CABIN PRESS MODE SEL..... MAN
MAN V/S CTL.....AS RQRD

Target CAB PRESS V/S:
- *Climb: 500 ft/min*
- *Descent: 300 ft/min*

AIRCRAFT CRZ FL	*CAB ALT TARGET (ft)*
410	*8000*
350	*7000*
300	*5500*
250	*3000*
<200	*0*

- **For approach:**

  SPEED.....FLY THE GREEN

  Before extending the slats/flaps, it is better to fly at the bottom of the speed scale green area, and to be in straight flight.

  FOR LANDING: USE FLAP 3
  GPWS LDG FLAP 3.....ON
  LDG DIST PROC..... APPLY
  APPR SPEED: BUSS TARGET SPEED

Continued on the following page

[QRH] ALL ADR OFF (Cont'd)

During approach, BUSS TARGET SPEED (green triangle) indicates VAPP.

- **When flap 2:**
  LDG GEAR GRVTY EXTN handcrank.....PULL AND TURN
- **When landing gear downlocked:**
  L/G lever.....DOWN
  GEAR DOWN indications..... CHECK
  L/G DOORS REMAIN OPEN
- **During final approach:**
  MAN V/S CTL.....FULL UP

- **Before door opening:**
  CHECK ΔP ZERO

[QRH] IR ALIGNMENT IN ATT MODE

Ident.: PRO-ABN-NAV-00012425.0002001 / 17 MAR 17
Applicable to: MSN 01767-03541

If IR alignment is lost, the navigation mode is inoperative (red ATT flag on PFD and red HDG flag on ND).
Aircraft attitude and heading may be recovered by applying the following procedure:

IR MODE sel (affected IR)..... ATT

ALIGN light on during 30 s.
ATT MODE displayed on CDU.

KEEP SPEED, HEADING, AND FL CONSTANT FOR 30 s

■ **For alignment through MCDU:**

FMS DATA page.....SELECT

The DATA INDEX page is displayed

IRS MONITOR key..... PRESS
[SET HDG key] A/C HDG.....ENTER

■ **For alignment through ADIRS panel:**

DISPLAY SYS sel..... SELECT AFFECTED SYS
DISPLAY DATA sel.....HDG

● **If "H" written on the "5" key of ADIRS panel:**

H Key.....PRESS

Degree marker, zero decimal point, ENT and CLR lights come on.

A/C HEADING..... ENTER

A/C HEADING.....INSERT
ENT key..... PRESS

Example : to enter heading 320 °, dial 3, 2, 0, 0 then press ENT.
Heading will be displayed on the associated ND.
"HDG–ATT MODE" will be displayed on CDU.

CROSSCHECK HEADING REGULARLY WITH STBY COMPASS AND UPDATE AS REQUIRED

[QRH] IR ALIGNMENT IN ATT MODE

Ident.: PRO-ABN-NAV-00012425.0006001 / 17 MAR 17

23 **Applicable to: MSN 03618-09063**

If IR alignment is lost, the navigation mode is inoperative (red ATT flag on PFD and red HDG flag on ND).
Aircraft attitude and heading may be recovered by applying the following procedure:

IR MODE sel (affected IR)..... ATT
KEEP SPEED, HEADING, AND FL CONSTANT FOR 30 s
FMS DATA page..... SELECT
The DATA INDEX page is displayed
IRS MONITOR key.....PRESS
[SET HDG key] A/C HDG..... ENTER
CROSSCHECK HEADING REGULARLY WITH STBY COMPASS AND UPDATE AS REQUIRED

NAV ADR 1(2)(3) FAULT

Applicable to: ALL

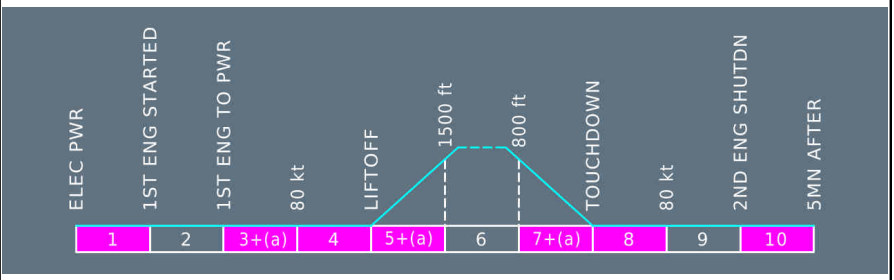
Ident.: PRO-ABN-NAV-A-00018111.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the ADR 1(2)(3) is failed.

Flight Phase Inhibition:



Note: *(a) Not inhibited in flight phase 3 in the case of NAV ADR 3 FAULT while the ADR 3 is in use.*
Not inhibited in flight phases 3, 5, and 7 in the case of NAV ADR 1(2) FAULT.

Continued on the following page

NAV ADR 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-A-00017302.0003001 / 21 MAR 16

L2 *Note: In case of simultaneous failure of ADR and IR (same ADIRU), apply ADR FAULT procedure before IR FAULT procedure.*

L1 ■ **ADR 1 FAULT:**

AIR DATA SWTG.....CAPT 3

L2 *Select ADR 3 to captain side.*
For aircraft equipped with EGPWS ⋘, T2CAS ⋘ or T3CAS ⋘, the GPWS TERR FAULT light comes on, because the predictive functions of the GPWS are inhibited. As such, the GPWS TERR pb-sw should be switched OFF.

L1 ADR 1 P/B.....OFF

■ **ADR 2 FAULT:**

AIR DATA SWTG.....F/O 3

L2 *Select ADR 3 to first officer side.*

L1 ADR 2 P/B.....OFF

BARO REF.....CHECK

L2 *If ADR 2 fails, both baro reference channels are driven by the same FCU channel. Consequently the baro reference displays must be checked.*

L1 ■ **ADR 3 FAULT:**

ADR 3 P/B.....OFF

AIR DATA SWTG (IF ADR 3 IN USE).....NORM

Ident.: PRO-ABN-NAV-A-00017505.0001001 / 21 MAR 16

STATUS	INOP SYS
CAT 3 SINGLE ONLY	ADR 1(2)(3) CAT 3 DUAL GPWS (1)

(1) *(in case of ADR 1 FAULT only)*

NAV ADR 1+2(1+3)(2+3) FAULT

Applicable to: MSN 01767-02405, 02482

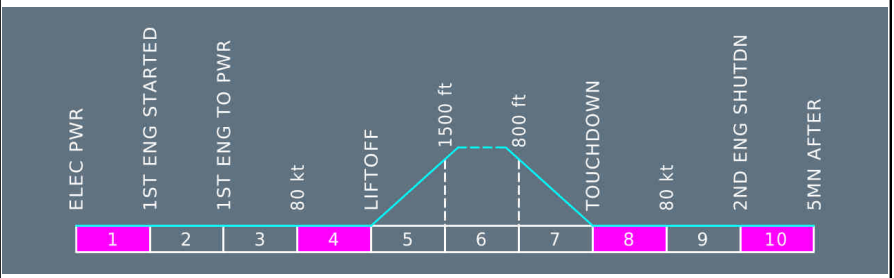
Ident.: PRO-ABN-NAV-B-00018113.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when two ADRs are failed.

Flight Phase Inhibition:



Continued on the following page

NAV ADR 1+2(1+3)(2+3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-B-00017147.0003001 / 04 DEC 18

L2 Flight control normal laws are lost. Pitch alternate law preserves the neutral static stability. All protections, except maneuver protections are lost.

Note: In case of a simultaneous ADR and IR (same ADIRU) failure, apply the ADR FAULT procedure prior to the IR FAULT procedure.

L1 ● **ADR 1+2 FAULT:**

AIR DATA SWTG.....CAPT 3

L2 *Set ADR 3 (if available) to the captain's side.*

L1 ADR (AFFECTED) P/B.....OFF

L2 *Due to the fact that the enhanced functions of the EGPWS ◁ or the predictive functions of the GPWS (for aircraft equipped with T2CAS ◁ or T3CAS ◁) are inhibited, the GPWS TERR FAULT light and the GPWS SYS FAULT light come on. If this occurs, the flight crew should switch off the GPWS TERR pb-sw and the GPWS SYS pb-sw.*

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED.....320 KT

L2 *Speed is limited, due to the loss of high-speed protections.*

L1 ● **ADR 1+3 (or 2+3) FAULT:**

L2 Air data information is lost on one PFD.

Note: In case of an ADR 1+3 FAULT, the landing gear safety valve is controlled closed:
- *Landing gear retraction is inoperative*
- *Landing gear extension must be performed by gravity.*

L1 AIR DATA SWTG.....NORM
ATC/XPDR (IF ADR 1 FAILED).....SYS 2
ATC/XPDR (IF ADR 2 FAILED).....SYS 1
ADR (AFFECTED) P/B.....OFF

L2 *Due to the fact that the enhanced functions of the EGPWS ◁ or the predictive functions of the GPWS (for aircraft equipped with T2CAS ◁ or T3CAS ◁) are inhibited, the GPWS TERR FAULT light and the GPWS SYS FAULT light come on in the case of an ADR 1+3*

Continued on the following page

NAV ADR 1+2(1+3)(2+3) FAULT (Cont'd)

FAULT. If this occurs, the flight crew should switch off the GPWS TERR pb-sw and the GPWS SYS pb-sw.

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED..... 320 KT

L2 *Speed is limited, due to the loss of high-speed protections.*

Continued on the following page

NAV ADR 1+2(1+3)(2+3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-B-00017397.0007001 / 09 FEB 18

L12

STATUS

MAX SPEED..... 320 KT

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Appears when CONF 3 is selected.

- **If ADR 1+3 FAULT:**

  L/G.....GRVTY EXTN

  Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION

APPR SPD.....VREF + 10 KT
LDG DIST PROC..... APPLY
ALTN LAW : PROT LOST
WHEN L/G DN : DIRECT LAW

At L/G extension, control reverts to direct law in pitch and roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).

FLS ◁ LIMITED TO F–APP + RAW

- **If ADR 1 + 3 (or 2 + 3) FAULT:**

  BOTH PFD ON THE SAME FAC

  Due to the fact that the enhanced functions of the EGPWS ◁ or the predictive functions of the GPWS (for aircraft equipped with T2CAS ◁ or T3CAS ◁) are inhibited, the GPWS TERR FAULT light and the GPWS SYS FAULT light come on in the case of an ADR 1+3 FAULT. If this occurs, the flight crew should switch off the GPWS TERR pb-sw and the GPWS SYS pb-sw.

INOP SYS

F/CTL PROT
ADR 1 + 2 or (2 + 3) or (1 + 3)
AP 1 + 2
A/THR
ATC/XPDR 1 (1)
ATC/XPDR 2 (2)
RUD TRV LIM 1(2) (3)
GPWS (if ADR 1 fault)
N.W. STEER (4)
CAT 2
GLS AUTOLAND ◁
STEEP APPR ◁
ROW/ROP ◁

(1) *(ATC/XPDR 1 in the case of ADR 1 failure)*

Continued on the following page

NAV ADR 1+2(1+3)(2+3) FAULT (Cont'd)

(2) *(ATC/XPDR 2 in the case of ADR 2 failure)*
(3) *(in the case of an ADR 1 + 3 FAULT or in the case of an ADR 2 + 3 FAULT)*
(4) *(if ADR 1 + 3 fault)*

NAV ADR 1+2(1+3)(2+3) FAULT

Applicable to: MSN 02443-02457, 02584-06336

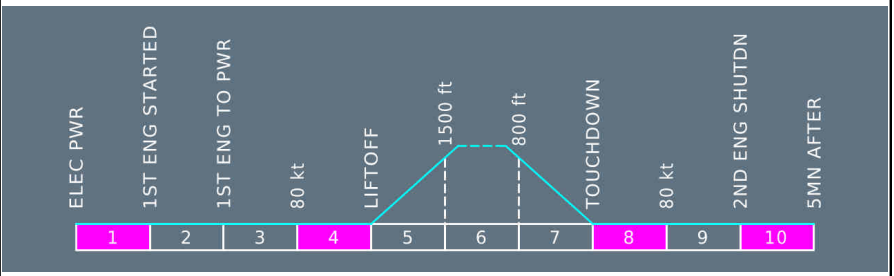
Ident.: PRO-ABN-NAV-B-00018113.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when two ADRs are failed.

Flight Phase Inhibition:



Continued on the following page

NAV ADR 1+2(1+3)(2+3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-B-00017147.0003001 / 04 DEC 18

L2 Flight control normal laws are lost. Pitch alternate law preserves the neutral static stability. All protections, except maneuver protections are lost.

Note: In case of a simultaneous ADR and IR (same ADIRU) failure, apply the ADR FAULT procedure prior to the IR FAULT procedure.

L1 ● **ADR 1+2 FAULT:**

AIR DATA SWTG.....CAPT 3

L2 *Set ADR 3 (if available) to the captain's side.*

L1 ADR (AFFECTED) P/B.....OFF

L2 *Due to the fact that the enhanced functions of the EGPWS ◁ or the predictive functions of the GPWS (for aircraft equipped with T2CAS ◁ or T3CAS ◁) are inhibited, the GPWS TERR FAULT light and the GPWS SYS FAULT light come on. If this occurs, the flight crew should switch off the GPWS TERR pb-sw and the GPWS SYS pb-sw.*

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED.....320 KT

L2 *Speed is limited, due to the loss of high-speed protections.*

L1 ● **ADR 1+3 (or 2+3) FAULT:**

L2 Air data information is lost on one PFD.

Note: In case of an ADR 1+3 FAULT, the landing gear safety valve is controlled closed:
- *Landing gear retraction is inoperative*
- *Landing gear extension must be performed by gravity.*

L1 AIR DATA SWTG.....NORM
ATC/XPDR (IF ADR 1 FAILED).....SYS 2
ATC/XPDR (IF ADR 2 FAILED).....SYS 1
ADR (AFFECTED) P/B.....OFF

L2 *Due to the fact that the enhanced functions of the EGPWS ◁ or the predictive functions of the GPWS (for aircraft equipped with T2CAS ◁ or T3CAS ◁) are inhibited, the GPWS TERR FAULT light and the GPWS SYS FAULT light come on in the case of an ADR 1+3*

Continued on the following page

NAV ADR 1+2(1+3)(2+3) FAULT (Cont'd)

FAULT. If this occurs, the flight crew should switch off the GPWS TERR pb-sw and the GPWS SYS pb-sw.

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED..... 320 KT

L2 *Speed is limited, due to the loss of high-speed protections.*

Continued on the following page

NAV ADR 1+2(1+3)(2+3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-B-00017397.0009001 / 09 FEB 18

24

L12

STATUS

MAX SPEED..... 320 KT

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Appears when CONF 3 is selected.

- **If ADR 1+3 FAULT:**

  L/G.....GRVTY EXTN

  Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION

APPR SPD.....VREF + 10 KT
LDG DIST PROC..... APPLY
ALTN LAW : PROT LOST
WHEN L/G DN : DIRECT LAW

At L/G extension, control reverts to direct law in pitch and roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).

FLS ◁ LIMITED TO F–APP + RAW

- **If ADR 1 + 3 (or 2 + 3) FAULT:**

  BOTH PFD ON THE SAME FAC

  Due to the fact that the enhanced functions of the EGPWS ◁ or the predictive functions of the GPWS (for aircraft equipped with T2CAS ◁ or T3CAS ◁) are inhibited, the GPWS TERR FAULT light and the GPWS SYS FAULT light come on in the case of an ADR 1+3 FAULT. If this occurs, the flight crew should switch off the GPWS TERR pb-sw and the GPWS SYS pb-sw.

INOP SYS

F/CTL PROT
ADR 1 + 2 or (2 + 3) or (1 + 3)
AP 1 + 2
A/THR
ATC/XPDR 1 (1)
ATC/XPDR 2 (2)
RUD TRV LIM 1(2) (3)
GPWS (if ADR 1 fault)
CAT 2
GLS AUTOLAND ◁
STEEP APPR ◁
ROW/ROP ◁

(1) *(ATC/XPDR 1 in the case of ADR 1 failure)*

Continued on the following page

NAV ADR 1+2(1+3)(2+3) FAULT (Cont'd)

(2) *(ATC/XPDR 2 in the case of ADR 2 failure)*
(3) *(in the case of an ADR 1 + 3 FAULT or in the case of an ADR 2 + 3 FAULT)*

NAV ADR 1+2(1+3)(2+3) FAULT

Applicable to: MSN 06720-09063

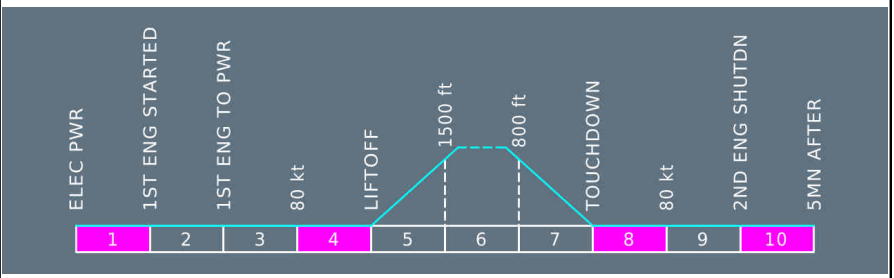
Ident.: PRO-ABN-NAV-B-00018113.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when two ADRs are failed.

Flight Phase Inhibition:



Continued on the following page

NAV ADR 1+2(1+3)(2+3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-B-00017147.0003001 / 04 DEC 18

L2 Flight control normal laws are lost. Pitch alternate law preserves the neutral static stability. All protections, except maneuver protections are lost.

Note: In case of a simultaneous ADR and IR (same ADIRU) failure, apply the ADR FAULT procedure prior to the IR FAULT procedure.

L1 ● **ADR 1+2 FAULT:**

AIR DATA SWTG.....CAPT 3

L2 *Set ADR 3 (if available) to the captain's side.*

L1 ADR (AFFECTED) P/B.....OFF

L2 *Due to the fact that the enhanced functions of the EGPWS ◁ or the predictive functions of the GPWS (for aircraft equipped with T2CAS ◁ or T3CAS ◁) are inhibited, the GPWS TERR FAULT light and the GPWS SYS FAULT light come on. If this occurs, the flight crew should switch off the GPWS TERR pb-sw and the GPWS SYS pb-sw.*

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED.....320 KT

L2 *Speed is limited, due to the loss of high-speed protections.*

L1 ● **ADR 1+3 (or 2+3) FAULT:**

L2 Air data information is lost on one PFD.

Note: In case of an ADR 1+3 FAULT, the landing gear safety valve is controlled closed:
- *Landing gear retraction is inoperative*
- *Landing gear extension must be performed by gravity.*

L1 AIR DATA SWTG.....NORM
ATC/XPDR (IF ADR 1 FAILED).....SYS 2
ATC/XPDR (IF ADR 2 FAILED).....SYS 1
ADR (AFFECTED) P/B.....OFF

L2 *Due to the fact that the enhanced functions of the EGPWS ◁ or the predictive functions of the GPWS (for aircraft equipped with T2CAS ◁ or T3CAS ◁) are inhibited, the GPWS TERR FAULT light and the GPWS SYS FAULT light come on in the case of an ADR 1+3*

Continued on the following page

NAV ADR 1+2(1+3)(2+3) FAULT (Cont'd)

FAULT. If this occurs, the flight crew should switch off the GPWS TERR pb-sw and the GPWS SYS pb-sw.

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED..... 320 KT

L2 *Speed is limited, due to the loss of high-speed protections.*

Continued on the following page

NAV ADR 1+2(1+3)(2+3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-B-00017397.0011001 / 09 FEB 18

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L12

STATUS

MAX SPEED..... 320 KT
GA THR: TOGA ONLY

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG: USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Appears when CONF 3 is selected.

- **If ADR (1+3) or (2+3) FAULT:**
  L/G.....GRVTY EXTN
  Refer to PRO-ABN-LG [QRH] L/G GRAVITY EXTENSION

APPR SPD.....VREF + 15 KT
LDG DIST PROC..... APPLY
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW

At L/G extension, control reverts to direct law in pitch and roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).

FLS ◁ LIMITED TO RAW ONLY

- **If ADR (1+3) or (2+3) FAULT:**
  BOTH PFD ON THE SAME FAC
  Due to the fact that the enhanced functions of the EGPWS ◁ or the predictive functions of the GPWS (for aircraft equipped with T2CAS ◁ or T3CAS ◁) are inhibited, the GPWS TERR FAULT light and the GPWS SYS FAULT light come on in the case of an ADR 1+3 FAULT. If this occurs, the flight crew should switch off the GPWS TERR pb-sw and the GPWS SYS pb-sw.

INOP SYS

F/CTL PROT
ADR 1+2 or (1+3) or (2+3)
STEEP APPR ◁
RUD TRV LIM 1(2) (1)
AP 1+2
A/THR
CAT 2
GLS AUTOLAND ◁
GA SOFT
ATC/XPDR 1 (if ADR 1+3 FAULT)
ATC/XPDR 2 (if ADR 2+3 FAULT)
GPWS (2)
ROW/ROP ◁ (2)

Continued on the following page

NAV ADR 1+2(1+3)(2+3) FAULT (Cont'd)

(1) *(if ADR 1+3 FAULT or ADR 2+3 FAULT)*
(2) *(if ADR 1+2 FAULT)*

NAV ADR 1+2+3 FAULT

Applicable to: MSN 01957-02097, 02121, 02138, 02670, 02804, 03071-03138, 03357-03618, 03782-04216, 04312-04397, 04481-06336

Ident.: PRO-ABN-NAV-X-00018114.0001001 / 21 MAR 16

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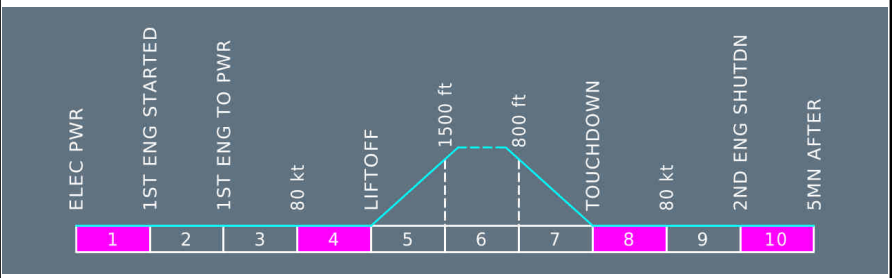
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the three ADRs are failed.

Flight Phase Inhibition:



Continued on the following page

NAV ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-X-00017497.0003001 / 10 OCT 17

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L2 This procedure requires to turn off the three ADRs, and to use the Back Up Speed Scale (BUSS) and GPS altitude.

Note: In case of a simultaneous ADR and IR (same ADIRU) failure, apply the ADR FAULT procedure prior to the IR FAULT procedure.

L1 AP+FD..... OFF
A/THR..... OFF
PROBE/WINDOW HEAT..... ON
ADR 1+2+3 P/B.....OFF

L2 *Note: The STALL WARNING remains operative.*

L1 SPD..... FLY THE GREEN

L2 *Fly the green area of the speed scale to ensure safe flight.*

L1 *Note: If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust table.*

STBY INST.....MAY BE UNREL

L2 *ADR3 and STBY speeds use the data of the same probes. Therefore, standby instrument must be used with care.*

L1 ALL ADR OFF PROC.....APPLY

L2 *Refer to PRO-ABN-NAV [QRH] ALL ADR OFF.*

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MANEUVER WITH CARE

L2 *Note: The rudder travel limiter is frozen at the value it had at the moment when the failure occurred, and may not be in correct position for the flight speed. At slats extension, full rudder travel authority is recovered.*

L1 SPD BRK.....DO NOT USE

Continued on the following page

NAV ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-X-00016858.0002001 / 22 MAR 17

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STATUS

MANEUVER WITH CARE
SPD BRK.....DO NOT USE

STBY INST..... MAY BE UNREL

APPR PROC

FOR LDG..... USE FLAP 3
LDG.....GRVTY EXTN

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW

INOP SYS

REAC W/S DET
PRED W/S DET
F/CTL PROT
ADR 1+2+3
STEEP APPR
RUD TRV LIM
YAW DAMPER
AP 1+2
A/THR
CAB PR 1+2
GPWS
GPWS TERR
ATC/XPDR 1
ATC/XPDR 2
ROW/ROP

NAV ADR 1+2+3 FAULT

Applicable to: MSN 06720-07510

Ident.: PRO-ABN-NAV-X-00018114.0001001 / 21 MAR 16

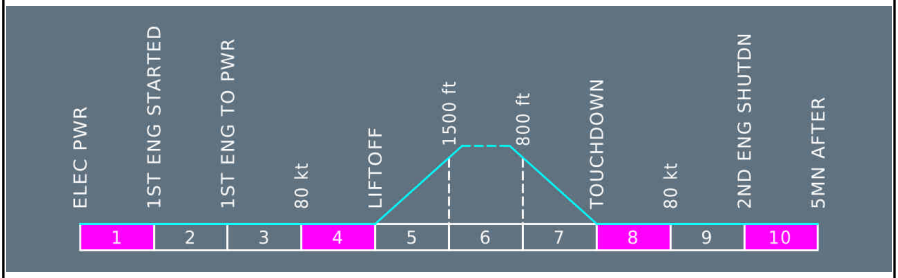
29

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the three ADRs are failed.

Flight Phase Inhibition:



Continued on the following page

NAV ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-X-00017497.0003001 / 10 OCT 17

30

L2 This procedure requires to turn off the three ADRs, and to use the Back Up Speed Scale (BUSS) and GPS altitude.

Note: In case of a simultaneous ADR and IR (same ADIRU) failure, apply the ADR FAULT procedure prior to the IR FAULT procedure.

L1 AP+FD..... OFF
A/THR..... OFF
PROBE/WINDOW HEAT..... ON
ADR 1+2+3 P/B.....OFF

L2 *Note: The STALL WARNING remains operative.*

L1 SPD..... FLY THE GREEN

L2 *Fly the green area of the speed scale to ensure safe flight.*

L1 *Note: If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust table.*

STBY INST.....MAY BE UNREL

L2 *ADR3 and STBY speeds use the data of the same probes. Therefore, standby instrument must be used with care.*

L1 ALL ADR OFF PROC.....APPLY

L2 *Refer to PRO-ABN-NAV [QRH] ALL ADR OFF.*

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MANEUVER WITH CARE

L2 *Note: The rudder travel limiter is frozen at the value it had at the moment when the failure occurred, and may not be in correct position for the flight speed. At slats extension, full rudder travel authority is recovered.*

L1 SPD BRK.....DO NOT USE

Continued on the following page

NAV ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-X-00016858.0004001 / 04 DEC 17

31

L12

STATUS

MANEUVER WITH CARE
SPD BRK.....DO NOT USE
GA THR: TOGA ONLY

STBY INST..... MAY BE UNREL

- **If AOA disagree:**
  BKUP SPD/ALT..... DO NOT USE

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG: USE FLAP 3" when CONF 3 is selected, as a reminder.

LDG.....GRVTY EXTN

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW

INOP SYS

REAC W/S DET
PRED W/S DET
F/CTL PROT
ADR 1+2+3
STEEP APPR
RUD TRV LIM
YAW DAMPER
AP 1+2
A/THR
GA SOFT
CAB PR 1+2
ATC/XPDR 1
ATC/XPDR 2
GPWS
GPWS TERR
ROW/ROP

NAV ADR 1+2+3 FAULT

Applicable to: MSN 07618-09063

Ident.: PRO-ABN-NAV-X-00018114.0001001 / 21 MAR 16

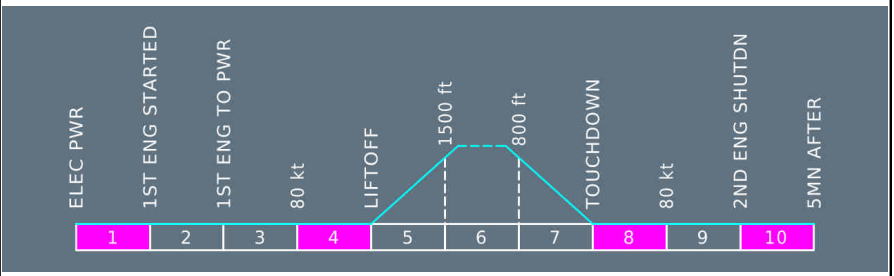
32

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the three ADRs are failed.

Flight Phase Inhibition:



Continued on the following page

NAV ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-X-00017497.0006001 / 10 OCT 17

33

L2 This procedure requires to turn off the three ADRs, and to use the BackUp Speed Scale (BUSS) and GPS altitude.

Note: In case of a simultaneous ADR and IR (same ADIRU) failure, apply the ADR FAULT procedure prior to the IR FAULT procedure.

L1 AP+FD..... OFF
A/THR..... OFF
PROBE/WINDOW HEAT..... ON
BKUP SPD/ALT PB..... USE
ADR 1+2+3 P/B.....OFF

L2 *Note: The STALL WARNING remains operative.*

L1 SPD..... FLY THE GREEN

L2 *Fly the green area of the speed scale to ensure safe flight.*

L1 *Note: If the BUSS does not react to longitudinal stick input when flying the green area of the speed scale, the flight crew must disregard the BUSS and use pitch/thrust table.*

- **If AOA disagree:**
  BKUP SPD/ALT..... DO NOT USE

STBY INST.....MAY BE UNREL

L2 *ADR3 and STBY speeds use the data of the same probes. Therefore, standby instrument must be used with care.*

L1 ALL ADR OFF PROC.....APPLY

L2 *Refer to PRO-ABN-NAV [QRH] ALL ADR OFF.*

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MANEUVER WITH CARE

L2 *Note: The rudder travel limiter is frozen at the value it had at the moment when the failure occurred, and may not be in correct position for the flight speed. At slats extension, full rudder travel authority is recovered.*

L1 SPD BRK.....DO NOT USE

Continued on the following page

NAV ADR 1+2+3 FAULT (Cont'd)

Ident.: PRO-ABN-NAV-X-00016858.0004001 / 04 DEC 17

34

L12

STATUS

MANEUVER WITH CARE
SPD BRK.....DO NOT USE
GA THR: TOGA ONLY

STBY INST..... MAY BE UNREL

- **If AOA disagree:**
  BKUP SPD/ALT..... DO NOT USE

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG: USE FLAP 3" when CONF 3 is selected, as a reminder.

LDG.....GRVTY EXTN

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW

INOP SYS

REAC W/S DET
PRED W/S DET
F/CTL PROT
ADR 1+2+3
STEEP APPR
RUD TRV LIM
YAW DAMPER
AP 1+2
A/THR
GA SOFT
CAB PR 1+2
ATC/XPDR 1
ATC/XPDR 2
GPWS
GPWS TERR
ROW/ROP

NAV ADR DISAGREE

Applicable to: MSN 01767-06336

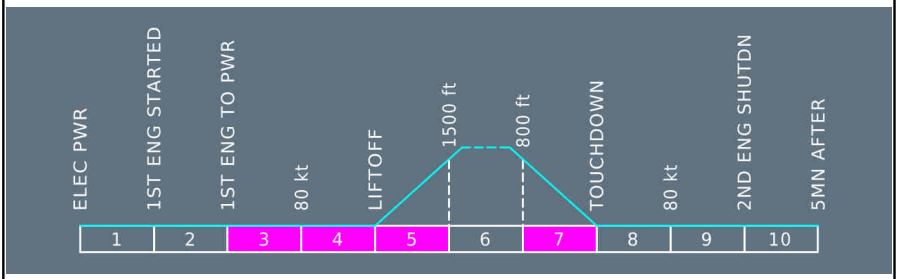
Ident.: PRO-ABN-NAV-U-00018110.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the following conditions occur:
- The ELAC rejected an ADR, or an ADR is faulty
- The speed or the Angle Of Attack (AOA) from the two remaining ADRs are different.

Flight Phase Inhibition:



Continued on the following page

NAV ADR DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-U-00017130.0002001 / 22 MAR 17

35

L2 The alternate law activates, and protections are lost.

L1 AIR SPD.....X CHECK

■ **IF SPD DISAGREE:**

ADR CHECK PROC.....APPLY

L2 To determine the faulty ADR, *Refer to PRO-ABN-NAV UNRELIABLE SPEED INDICATION - Memory Items*.

L1 ■ **IF NO SPD DISAGREE:**

AOA DISCREPANCY

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED.....320 KT

Continued on the following page

NAV ADR DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-U-00017131.0001001 / 22 MAR 17

36

L12

STATUS

MAX SPEED..... 320 KT

APPR PROC

FOR LDG..... USE FLAP 3

Do not select CONF FULL, so as not to degrade handling qualities.

GPWS LDG FLAP 3.....ON

Displayed, when CONF 3 is selected.

APPR SPD..... VREF +10
LDG DIST PROC..... APPLY

- **IF NO SPD DISAGREE:**
  RISK OF UNDUE STALL WARN

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)

INOP SYS

F/CTL PROT
STEEP APPR

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

NAV ADR DISAGREE

Applicable to: MSN 06720-07510

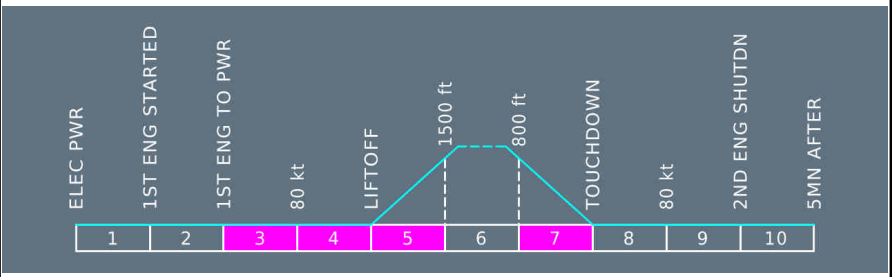
Ident.: PRO-ABN-NAV-U-00018110.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the following conditions occur:
- The ELAC rejected an ADR, or an ADR is faulty
- The speed or the Angle Of Attack (AOA) from the two remaining ADRs are different.

Flight Phase Inhibition:



Continued on the following page

NAV ADR DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-U-00017130.0002001 / 22 MAR 17

37

L2 The alternate law activates, and protections are lost.

L1 AIR SPD.....X CHECK

■ **IF SPD DISAGREE:**

ADR CHECK PROC.....APPLY

L2 To determine the faulty ADR, *Refer to PRO-ABN-NAV UNRELIABLE SPEED INDICATION - Memory Items*.

L1 ■ **IF NO SPD DISAGREE:**

AOA DISCREPANCY

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED.....320 KT

Continued on the following page

NAV ADR DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-U-00017131.0005001 / 08 NOV 16

38

L12

STATUS

MAX SPEED..... 320 KT

APPR PROC

FOR LDG..... USE FLAP 3

Do not select CONF FULL, so as not to degrade handling qualities.

GPWS LDG FLAP 3.....ON

Displayed, when CONF 3 is selected.

APPR SPD..... VREF +15

LDG DIST PROC..... APPLY

- **IF NO SPD DISAGREE:**
  RISK OF UNDUE STALL WARN

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)

INOP SYS

F/CTL PROT

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

NAV ADR DISAGREE

Applicable to: MSN 07618-09063

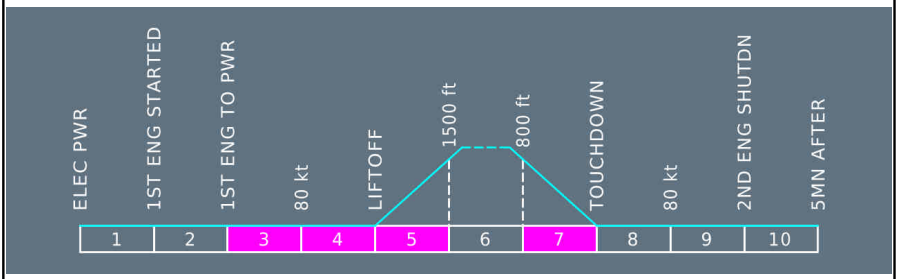
Ident.: PRO-ABN-NAV-U-00018110.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the following conditions occur:
- The ELAC rejected an ADR, or an ADR is faulty
- The speed or the Angle Of Attack (AOA) from the two remaining ADRs are different.

Flight Phase Inhibition:



Continued on the following page

NAV ADR DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-U-00017130.0003001 / 04 JUL 17

39

L2 The alternate law activates, and protections are lost.

L1 AIR SPD.....X CHECK

L2 *Check airspeed information on both PFDs, and on the standby airspeed indicator.*

L1 ■ **IF NO SPD DISAGREE:**

AOA DISCREPANCY

BKUP SPD/ALT..... DO NOT USE

■ **IF SPD DISAGREE:**

ADR CHECK PROC.....APPLY

L2 *Refer to PRO-ABN-NAV UNRELIABLE SPEED INDICATION - Memory Items.*

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

■ **For A318 aircraft:**

MAX SPEED..... 320/0.77

MANEUVER WITH CARE

MAX FL..... 350

■ **For A319/A320/A321 aircraft:**

MAX SPEED..... 320 KT

Continued on the following page

NAV ADR DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-U-00017131.0005001 / 08 NOV 16

40

L12

STATUS

MAX SPEED..... 320 KT

APPR PROC

FOR LDG..... USE FLAP 3

Do not select CONF FULL, so as not to degrade handling qualities.

GPWS LDG FLAP 3.....ON

Displayed, when CONF 3 is selected.

APPR SPD..... VREF +15

LDG DIST PROC..... APPLY

- **IF NO SPD DISAGREE:**
  RISK OF UNDUE STALL WARN

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)

INOP SYS

F/CTL PROT

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

NAV ADS-B RPTG 1(2) FAULT

Applicable to: MSN 08511, 08558-09063

Ident.: PRO-ABN-NAV-AL-00018118.0001001 / 21 MAR 16

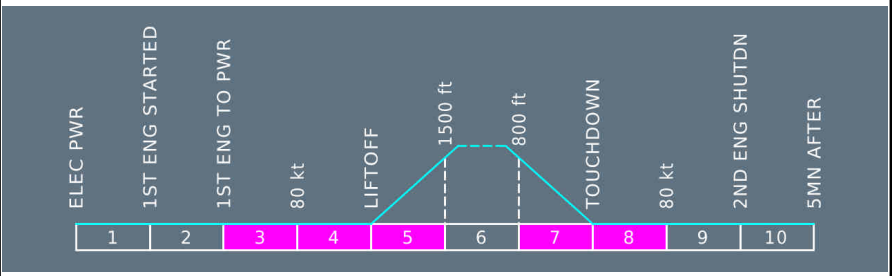
41

ANNUNCIATIONS

Triggering Conditions:

L2 The Automatic Dependent Surveillance-Broadcast (ADS-B) function is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AL-00015758.0001001 / 08 AUG 14

42

ATC/XPDR.....SYS 2(1)

Ident.: PRO-ABN-NAV-AL-00015760.0001001 / 08 AUG 14

43

STATUS

	INOP SYS
	ADS-B RPTG 1(2)

NAV ALTI DISCREPANCY

Applicable to: ALL

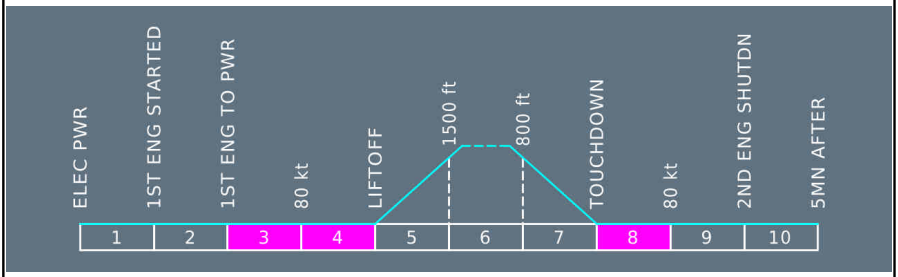
Ident.: PRO-ABN-NAV-AO-00018116.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the difference between the altitude displayed on the CAPT and F/O PFDs is greater than:
- 500 ft, if STD BARO reference is selected
- 250 ft, if QNH or QFE BARO reference is selected.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AO-00012411.0002001 / 09 APR 14

ALT ..... X CHECK

L2 *Crosscheck with the standby altimeter.*

L1 AIR DATA SWTG ..... AS RQRD

L2 *Select ADR 3 to the faulty side.*

NAV CAPT(F/O)(STBY) AOA FAULT

Applicable to: ALL

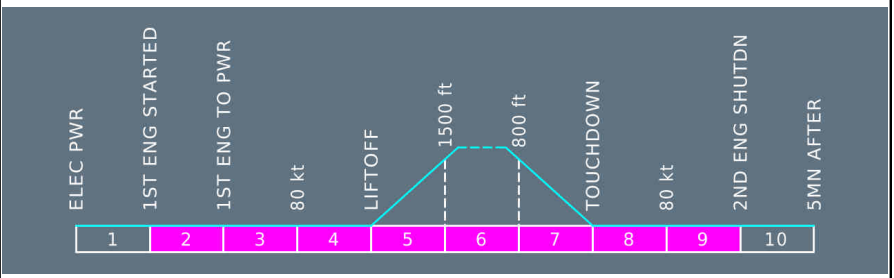
Ident.: PRO-ABN-NAV-V-00018124.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the CAPT(F/O)(STBY) Angle Of Attack (AOA) sensor is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-V-00012458.0003001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-NAV-V-00012459.0003001 / 19 JUN 12

STATUS

INOP SYS

CAPT (F/O) (STBY)
AOA

NAV ATC/XPDR 1(2) FAULT

Applicable to: MSN 03357-03618, 03782-04216, 04312, 04328-04384, 04481-08492, 08527-08557

Ident.: PRO-ABN-NAV-Z-00018119.0001001 / 21 MAR 16

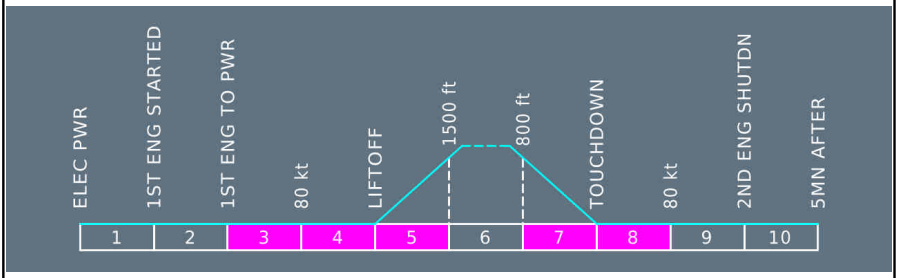
44

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the related transponder fails.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-Z-00013539.0001001 / 18 JAN 17

45

ATC/XPDR.....SYS 2(1)

Note: *In case of flight in RVSM airspace, select AP1 if SYS1 is used and AP2 if SYS2 is used.*

Ident.: PRO-ABN-NAV-Z-00013541.0001001 / 17 MAR 11

46

STATUS

INOP SYS
ATC/XPDR 1(2)

NAV ATC/XPDR 1(2) FAULT

Applicable to: MSN 08511, 08558-09063

Ident.: PRO-ABN-NAV-Z-00018119.0001001 / 21 MAR 16

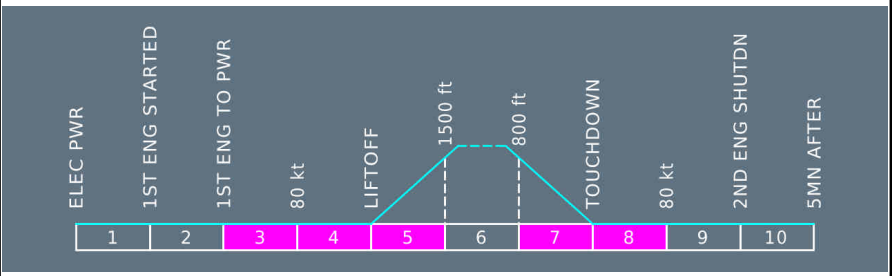
47

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the related transponder fails.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-Z-00013539.0001001 / 18 JAN 17

48

ATC/XPDR.....SYS 2(1)

Note: *In case of flight in RVSM airspace, select AP1 if SYS1 is used and AP2 if SYS2 is used.*

Ident.: PRO-ABN-NAV-Z-00013541.0002001 / 08 AUG 14

49

STATUS

	INOP SYS
	ATC/XPDR 1(2) ADS-B RPTG 1(2)

NAV ATC/XPDR 1+2 FAULT

Applicable to: MSN 03357-03618, 03782-04216, 04312, 04328-04384, 04481-08492, 08527-08557

Ident.: PRO-ABN-NAV-AA-00018120.0001001 / 21 MAR 16

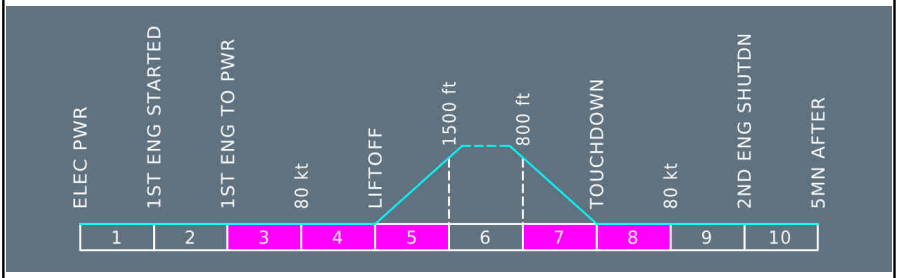
50

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both transponders fail.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AA-00013542.0001001 / 25 FEB 14

51

Crew awareness.

Ident.: PRO-ABN-NAV-AA-00013543.0001001 / 17 MAR 11

52

STATUS

INOP SYS

TCAS
ATC/XPDR 1
ATC/XPDR 2

NAV ATC/XPDR 1+2 FAULT

Applicable to: MSN 08511, 08558-09063

Ident.: PRO-ABN-NAV-AA-00018120.0001001 / 21 MAR 16

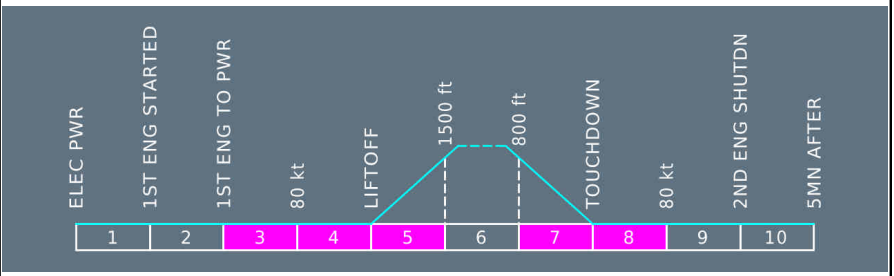
53

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both transponders fail.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AA-00013542.0001001 / 25 FEB 14

54

Crew awareness.

Ident.: PRO-ABN-NAV-AA-00013543.0002001 / 08 AUG 14

55

STATUS

INOP SYS

TCAS
ATC/XPDR 1
ATC/XPDR 2
ADS-B RPTG 1
ADS-B RPTG 2

NAV ATC/XPDR STBY

Applicable to: MSN 03357-03618, 03782-04216, 04312, 04328-04384, 04481-09063

Ident.: PRO-ABN-NAV-AP-00018121.0001001 / 21 MAR 16

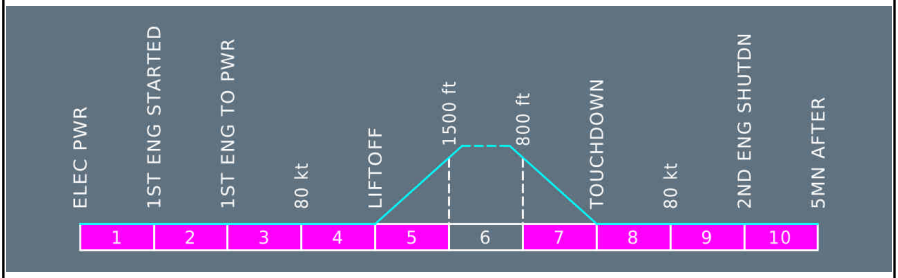
56

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the flight crew sets the ATC transponder on STBY in flight.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AP-00013545.0001001 / 25 FEB 14

57

Crew awareness.

NAV ATT DISCREPANCY

Applicable to: ALL

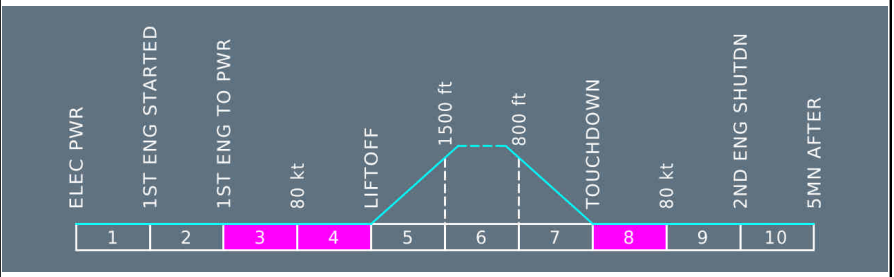
Ident.: PRO-ABN-NAV-AQ-00018122.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the difference between the roll or pitch angle displayed on the CAPT and F/O PFDs is greater than 5 °.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AQ-00012410.0001001 / 19 AUG 10

ATT.....X CHECK

L2 *Crosscheck with standby horizon.*

L1 ATT HDG SWTG.....AS RQRD

L2 *Select IR 3 (if available) to faulty side.*

NAV BARO REF DISCREPANCY

Applicable to: ALL

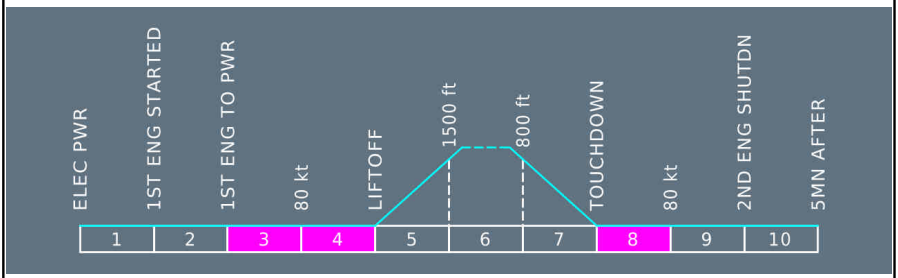
Ident.: PRO-ABN-NAV-AR-00018123.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the BARO reference is not the same on CAPT and F/O sides.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AR-00012413.0001001 / 16 NOV 11

BARO REF.....X CHECK

L2 *Crosscheck the barometric reference selection, captain side versus first officer side.*

NAV BARO VALUE DISAGREE

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: PRO-ABN-NAV-BA-00022266.0001001 / 27 FEB 18

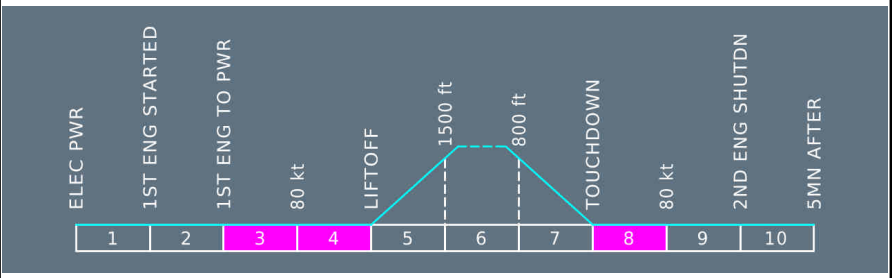
58

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a difference between the barometer value selections on the FCU control panels.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-BA-00022267.0001001 / 27 FEB 18

59

BARO REF VALUE.....X CHECK

NAV BKUP SPD/ALT ON CAPT(F/O) PFD

Applicable to: MSN 07618-09063

Ident.: PRO-ABN-NAV-AY-00020395.0001001 / 20 MAR 17

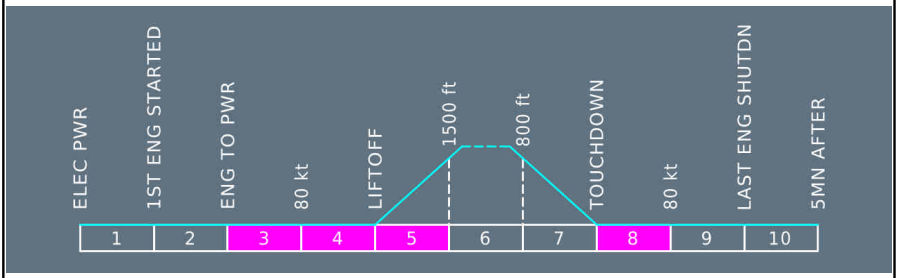
60

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the BKUP SPD/ALT is activated on the CAPT PFD or on the F/O PFD and the AP and/or FD of the same side is engaged.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AY-00020394.0001001 / 20 MAR 17

61

AP1(2).....DO NOT USE
FD1(2).....DO NOT USE

NAV BKUP SPD/ALT ON CAPT+F/O PFD

Applicable to: MSN 07618-09063

Ident.: PRO-ABN-NAV-AZ-00020396.0001001 / 20 MAR 17

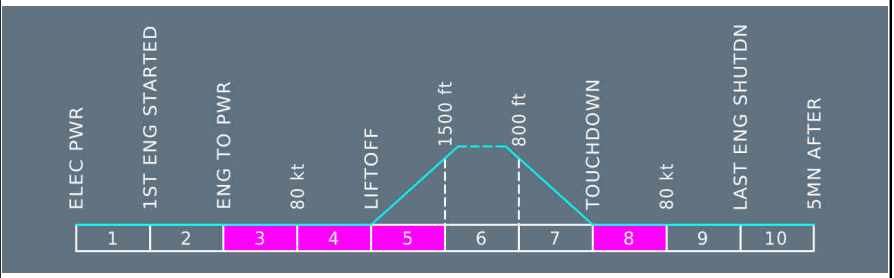
62

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the BKUP SPD/ALT is activated on CAPT and F/O PFDs at the same time.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AZ-00020398.0001001 / 20 MAR 17

63

- **If all airspeeds unreliable:**
  ADR CHECK PROC.....APPLY
- **If at least one airspeed reliable:**
  RELIABLE AIR DATA.....USE

NAV FM/GPS POS DISAGREE

Applicable to: MSN 01767-01920, 02108, 02195, 02275-02359, 02482, 02737-02804

Ident.: PRO-ABN-NAV-AG-00017090.0001001 / 21 MAR 16

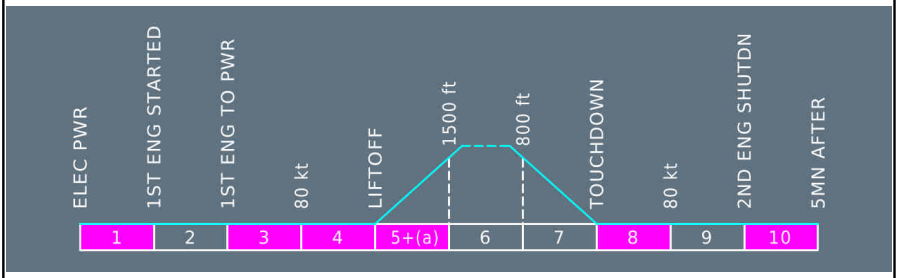
64

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FM and GPS positions disagree.

Flight Phase Inhibition:



Note: *(a) Alert inhibited only for the first 15 s in flight phase 5.*

Continued on the following page

NAV FM/GPS POS DISAGREE ◁ (Cont'd)

Ident.: PRO-ABN-NAV-AG-00017148.0002001 / 09 FEB 18

A/C POS.....CHECK

The following procedure is not displayed on the ECAM:

■ **During climb, cruise, or descent:**

Check accuracy on the MCDU PROG page:

■ **If ESTIMATED ACCUR below REQUIRED ACCUR:**
CONSIDER NAV MODE AND ND ARC/ROSE NAV

■ **If ESTIMATED ACCUR above REQUIRED ACCUR:**
HDG/TRK MODE.....SELECT
USE RAW DATA

● **For aircraft equipped with EGPWS ◁ or T2CAS ◁ :**
CONSIDER SWITCHING OFF GPWS TERRAIN FUNCTIONS

When possible, compare the positions of both FMs with the GPIRS position, on the MCDU POSITION MONITOR page:

■ **If one FM position agrees with onside GPIRS position:**
USE ASSOCIATED AP/FD

■ **If both FM positions DO NOT agree with onside GPIRS position:**
GPS..... DESELECT
USE RAW DATA

■ **During ILS/MLS ◁ /LOC/GLS ◁ approach:**
NAV MODE: DO NOT USE
CONTINUE APPROACH

■ **During LOC only approach with FLS ◁ :**
NAV MODE: DO NOT USE
DISREGARD F-G/S DEVIATION
REVERT TO VERTICAL SELECTED MODE

■ **During RNAV GNSS, or RNAV RNP approach:**

● **If visual references not sufficient:**
GO AROUND

■ **During VOR, VOR-DME, NDB, or NDB-DME approach:**
HDG/TRK MODE..... SELECT

Continued on the following page

NAV FM/GPS POS DISAGREE ⩤ (Cont'd)

USE RAW DATA

- **If FLS ⩤ used:**
  LS pb..... PRESS
  FLS deviations are removed from PFD.

NAV FM/GPS POS DISAGREE ⩤

Applicable to: MSN 01957-02097, 02121-02139, 02204, 02388, 02443-02457, 02584-02626, 02670-02712, 02908-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

Ident.: PRO-ABN-NAV-AG-00017090.0001001 / 21 MAR 16

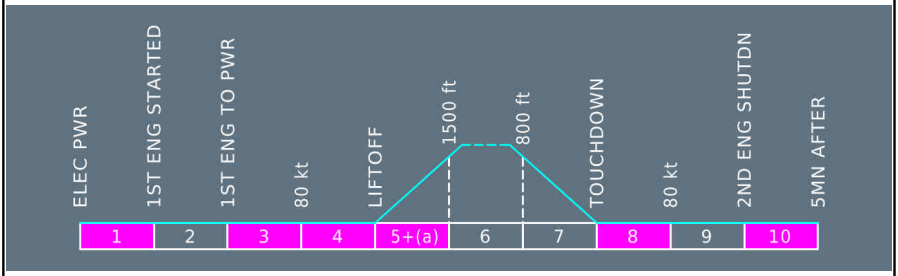
65

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FM and GPS positions disagree.

Flight Phase Inhibition:



Note: *(a) Alert inhibited only for the first 15 s in flight phase 5.*

Continued on the following page

NAV FM/GPS POS DISAGREE ◁ (Cont'd)

Ident.: PRO-ABN-NAV-AG-00017148.0003001 / 09 FEB 18

66

A/C POS.....CHECK

The following procedure is not displayed on the ECAM:

- **During climb, cruise, or descent:**

  Check accuracy on the MCDU PROG page:

  - **If ESTIMATED ACCUR below REQUIRED ACCUR:**
    CONSIDER NAV MODE AND ND ARC/ROSE NAV
  - **If ESTIMATED ACCUR above REQUIRED ACCUR:**
    HDG/TRK MODE.....SELECT
    USE RAW DATA

  When possible, compare the positions of both FMs with the GPIRS position, on the MCDU POSITION MONITOR page:

  - **If one FM position agrees with onside GPIRS position:**
    USE ASSOCIATED AP/FD
  - **If both FM positions DO NOT agree with onside GPIRS position:**
    GPS..... DESELECT
    USE RAW DATA

- **During ILS/MLS ◁ /LOC/GLS ◁ approach:**
  NAV MODE: DO NOT USE
  CONTINUE APPROACH
- **During LOC only approach with FLS ◁ :**
  NAV MODE: DO NOT USE
  DISREGARD F-G/S DEVIATION
  REVERT TO VERTICAL SELECTED MODE
- **During RNAV GNSS, or RNAV RNP approach:**
  - **If visual references not sufficient:**
    GO AROUND
- **During VOR, VOR-DME, NDB, or NDB-DME approach:**
  HDG/TRK MODE..... SELECT
  USE RAW DATA

Continued on the following page

NAV FM/GPS POS DISAGREE ⩤ (Cont'd)

- **If FLS ⩤ used:**
  LS pb..... PRESS
  FLS deviations are removed from PFD.

NAV FM/GPS POS DISAGREE ⩤

Applicable to: MSN 02405

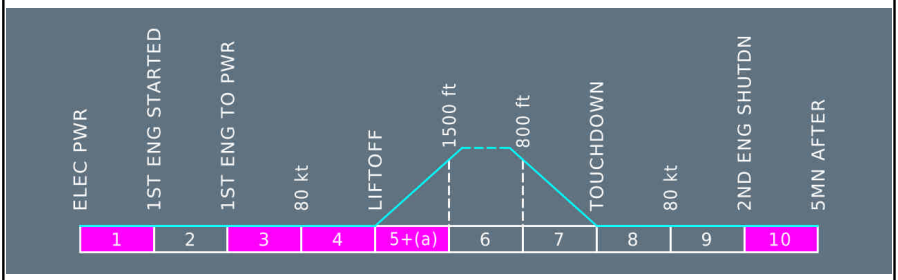
Ident.: PRO-ABN-NAV-AG-00017090.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FM and GPS positions disagree.

Flight Phase Inhibition:



Note: *(a) Alert inhibited only for the first 15 s in flight phase 5.*

Continued on the following page

NAV FM/GPS POS DISAGREE ◁ (Cont'd)

Ident.: PRO-ABN-NAV-AG-00017148.0002001 / 09 FEB 18

A/C POS.....CHECK

The following procedure is not displayed on the ECAM:

■ **During climb, cruise, or descent:**

Check accuracy on the MCDU PROG page:

■ **If ESTIMATED ACCUR below REQUIRED ACCUR:**
CONSIDER NAV MODE AND ND ARC/ROSE NAV

■ **If ESTIMATED ACCUR above REQUIRED ACCUR:**
HDG/TRK MODE.....SELECT
USE RAW DATA

● **For aircraft equipped with EGPWS ◁ or T2CAS ◁ :**
CONSIDER SWITCHING OFF GPWS TERRAIN FUNCTIONS

When possible, compare the positions of both FMs with the GPIRS position, on the MCDU POSITION MONITOR page:

■ **If one FM position agrees with onside GPIRS position:**
USE ASSOCIATED AP/FD

■ **If both FM positions DO NOT agree with onside GPIRS position:**
GPS..... DESELECT
USE RAW DATA

■ **During ILS/MLS ◁ /LOC/GLS ◁ approach:**
NAV MODE: DO NOT USE
CONTINUE APPROACH

■ **During LOC only approach with FLS ◁ :**
NAV MODE: DO NOT USE
DISREGARD F-G/S DEVIATION
REVERT TO VERTICAL SELECTED MODE

■ **During RNAV GNSS, or RNAV RNP approach:**

● **If visual references not sufficient:**
GO AROUND

■ **During VOR, VOR-DME, NDB, or NDB-DME approach:**
HDG/TRK MODE..... SELECT

Continued on the following page

NAV FM/GPS POS DISAGREE ⩤ (Cont'd)

USE RAW DATA

- **If FLS ⩤ used:**
  LS pb..... PRESS
  FLS deviations are removed from PFD.

NAV FM/GPS POS DISAGREE ⩤

Applicable to: MSN 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

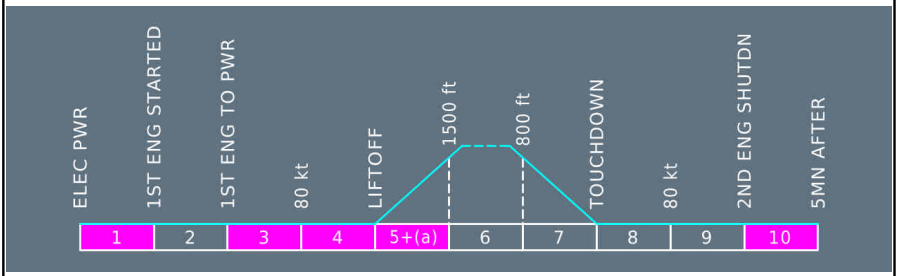
Ident.: PRO-ABN-NAV-AG-00017090.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FM and GPS positions disagree.

Flight Phase Inhibition:



Note: *(a) Alert inhibited only for the first 15 s in flight phase 5.*

Continued on the following page

NAV FM/GPS POS DISAGREE ◁ (Cont'd)

Ident.: PRO-ABN-NAV-AG-00017148.0003001 / 09 FEB 18

67

A/C POS.....CHECK

The following procedure is not displayed on the ECAM:

- **During climb, cruise, or descent:**

  Check accuracy on the MCDU PROG page:

  - **If ESTIMATED ACCUR below REQUIRED ACCUR:**
    CONSIDER NAV MODE AND ND ARC/ROSE NAV
  - **If ESTIMATED ACCUR above REQUIRED ACCUR:**
    HDG/TRK MODE.....SELECT
    USE RAW DATA

  When possible, compare the positions of both FMs with the GPIRS position, on the MCDU POSITION MONITOR page:

  - **If one FM position agrees with onside GPIRS position:**
    USE ASSOCIATED AP/FD
  - **If both FM positions DO NOT agree with onside GPIRS position:**
    GPS..... DESELECT
    USE RAW DATA

- **During ILS/MLS ◁ /LOC/GLS ◁ approach:**
  NAV MODE: DO NOT USE
  CONTINUE APPROACH
- **During LOC only approach with FLS ◁ :**
  NAV MODE: DO NOT USE
  DISREGARD F-G/S DEVIATION
  REVERT TO VERTICAL SELECTED MODE
- **During RNAV GNSS, or RNAV RNP approach:**
  - **If visual references not sufficient:**
    GO AROUND
- **During VOR, VOR-DME, NDB, or NDB-DME approach:**
  HDG/TRK MODE..... SELECT
  USE RAW DATA

Continued on the following page

NAV FM/GPS POS DISAGREE ◁ (Cont'd)

- **If FLS ◁ used:**
  LS pb..... PRESS
  FLS deviations are removed from PFD.

NAV GPS 1(2) FAULT ◁

Applicable to: ALL

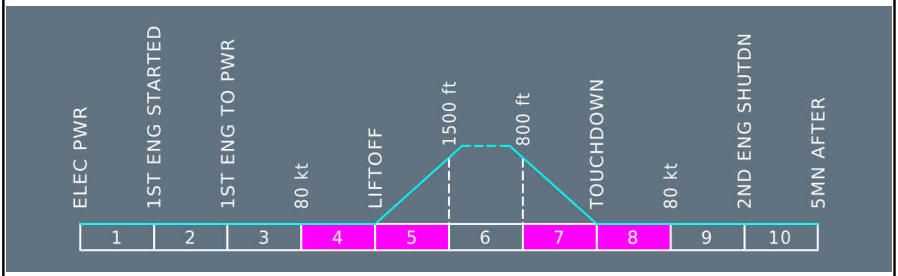
Ident.: PRO-ABN-NAV-L-00018144.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the GPS 1(2) is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-L-00017127.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-NAV-L-00017128.0001001 / 21 MAR 16

STATUS

	INOP SYS
● **If both GPS FAULT** FLS ◁ LIMITED TO F-APP + RAW	GPS 1(2)

NAV GPWS FAULT

Applicable to: ALL

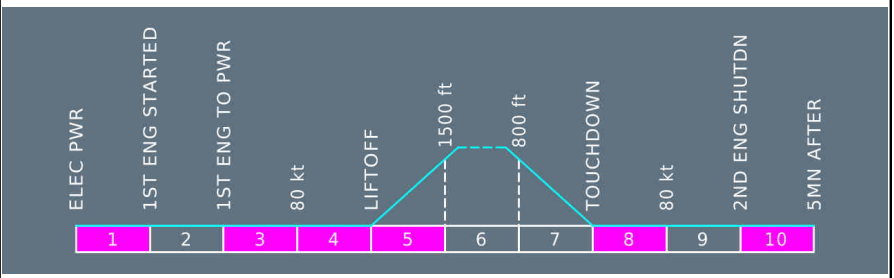
Ident.: PRO-ABN-NAV-N-00018129.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alerts triggers when the GPWS fails.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-N-00012443.0001001 / 16 NOV 11

GPWS.....OFF

L2 *This line remains displayed, even after the GPWS pb-sw has been switched OFF.*

Ident.: PRO-ABN-NAV-N-00012444.0001001 / 19 AUG 10

STATUS

	INOP SYS
	GPWS

NAV GPWS TERR DET FAULT

Applicable to: ALL

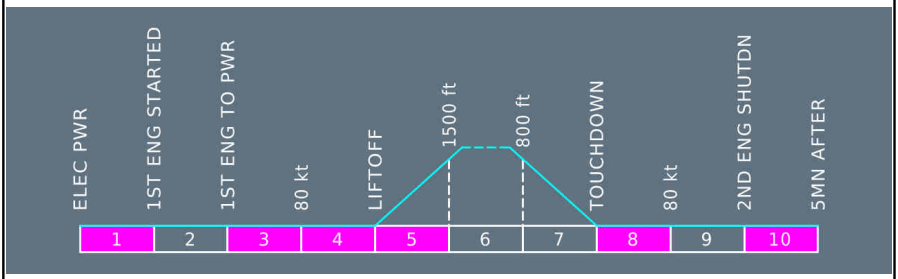
Ident.: PRO-ABN-NAV-AS-00018130.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the enhanced TCF and TAD modes of the EGPWS ✻ or the predictive function of the GPWS (for aircraft equipped with T2CAS ✻ or T3CAS ✻) are inoperative.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AS-00017542.0001001 / 21 MAR 16

GPWS TERR.....OFF

L2 *The basic GPWS mode 1 to mode 5 are still operative if SYS pb-sw lights FAULT or OFF are not illuminated.*

Ident.: PRO-ABN-NAV-AS-00019752.0001001 / 01 JUN 16

STATUS

INOP SYS

GPWS TERR
ROW/ROP ✻

NAV HDG DISCREPANCY

Applicable to: MSN 01767-03541

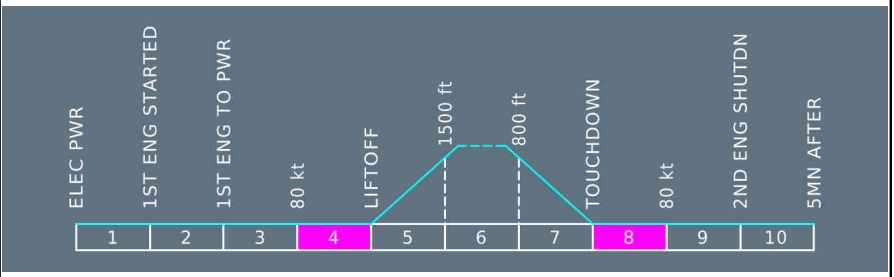
Ident.: PRO-ABN-NAV-AT-00018131.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the difference between the headings on the CAPT and F/O displays (PFD and ND) is greater than 5 °.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AT-00012409.0001001 / 19 AUG 10

HDG.....X CHECK

L2 *Compare the 3 IR headings on ADIRS CDU or crosscheck with standby compass.*

L1 ATT HDG SWTG.....AS RQRD

L2 *Select IR 3 (if available) to faulty side.*

NAV HDG DISCREPANCY

Applicable to: MSN 03618-09063

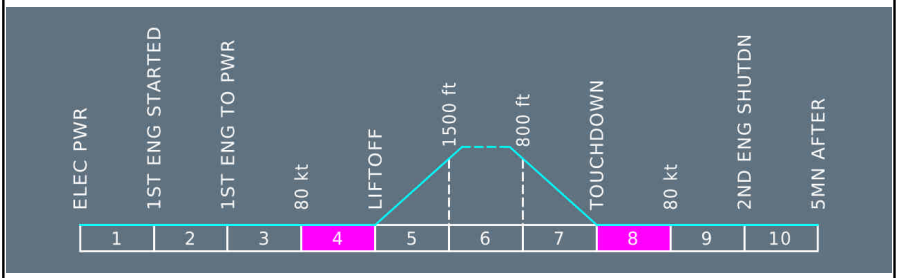
Ident.: PRO-ABN-NAV-AT-00018131.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the difference between the headings on the CAPT and F/O displays (PFD and ND) is greater than 5 °.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AT-00012409.0003001 / 19 AUG 10

68

HDG.....X CHECK

L2 *Compare the 3 IR headings on MCDU or crosscheck with standby compass.*

L1 ATT HDG SWTG.....AS RQRD

L2 *Select IR 3 (if available) to faulty side.*

NAV IAS DISCREPANCY

Applicable to: ALL

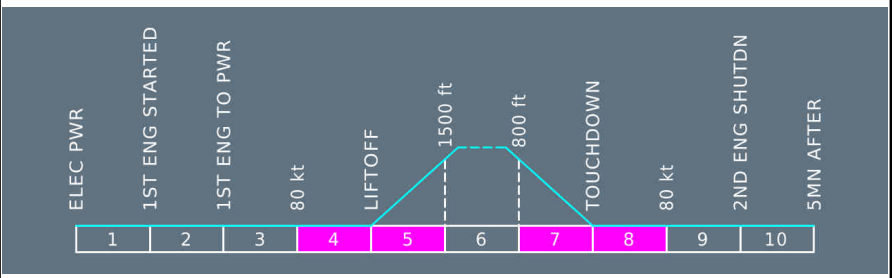
Ident.: PRO-ABN-NAV-W-00018146.0003001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the speed displayed on the CAPT and F/O PFDs are different.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-W-00017528.0001001 / 21 MAR 16

AIR SPD.....X CHECK
AIR DATA SWTG.....AS RQRD

Ident.: PRO-ABN-NAV-W-00017525.0001001 / 21 MAR 16

STATUS	INOP SYS
CAT 3 SINGLE ONLY	CAT 3 DUAL

NAV ILS 1(2)(1+2) FAULT

Applicable to: ALL

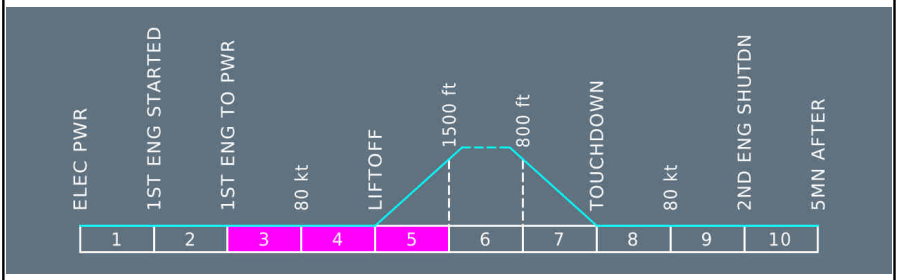
Ident.: PRO-ABN-NAV-M-00018138.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the ILS 1(2)(1+2) is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-M-00017125.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-NAV-M-00017126.0002001 / 21 MAR 16

STATUS

INOP SYS
ILS 1(2)(1+2)
CAT 2 (1)
GPWS (2)

(1) *(If ILS 1 FAULT or if ILS 2 FAULT)*
(2) *(if ILS 1 FAULT on ground or if ILS 1+2 FAULT)*

NAV IR 1(2)(3) FAULT

Applicable to: ALL

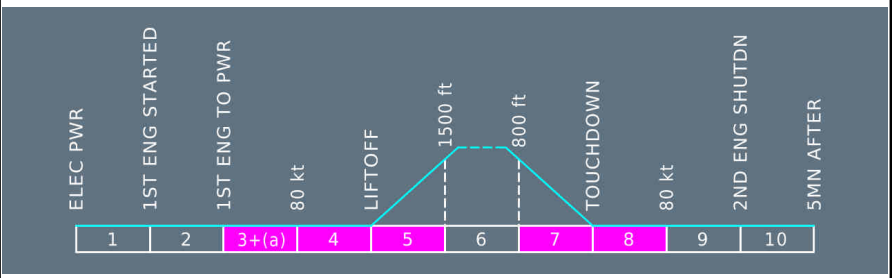
Ident.: PRO-ABN-NAV-D-00018140.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the IR 1(2)(3) is failed.

Flight Phase Inhibition:



Note: *(a) Alert not inhibited in flight phase 3 in the case of NAV IR 3 FAULT while the ADR 3 is in use.*
Alert not inhibited in flight phase 3 in the case of NAV IR 1(2) FAULT.

Continued on the following page

NAV IR 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-D-00017521.0003001 / 21 MAR 16

L2 *Note: In case of a simultaneous ADR and IR (same ADIRU) failure, apply the ADR FAULT procedure before the IR FAULT procedure.*

L1 ■ **IR 1 FAULT:**

ATT HDG SWTG..... CAPT 3
ATC/XPDR..... SYS 2

■ **IR 2 FAULT:**

ATT HDG SWTG..... F/O 3
ATC/XPDR..... SYS 1

■ **IR 3 FAULT:**

ATT HDG SWTG (IF IR 3 IN USE)..... NORM

L2 *This line is not displayed on the ECAM.*

Continued on the following page

NAV IR 1(2)(3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-D-00017123.0001001 / 23 FEB 18

L12

STATUS	INOP SYS
IR MAY BE AVAIL IN ATT *Refer to PRO-ABN-NAV [QRH] IR ALIGNMENT IN ATT MODE* CAT 3 SINGLE ONLY	IR 1(2)(3) cat 3 DUAL GPWS TERR (1) ROW/ROP (1) TCAS (1) ATC/XPDR 1 (1) ATC/XPDR 2 (2) *See* (3)

(1) *(In case of an IR 1 fault)*

(2) *(In case of an IR 2 fault)*

(3) Note: *In Case of an IR 1 fault, the TCAS may be inoperative (depending on the TCAS manufacturer). If the IR 1 is available in ATT mode, the TCAS can be recovered by entering the aircraft magnetic heading into the CDU, as per the IR ALIGNMENT IN ATT MODE procedure.*

NAV IR 1+2(1+3)(2+3) FAULT

Applicable to: MSN 01767-06336

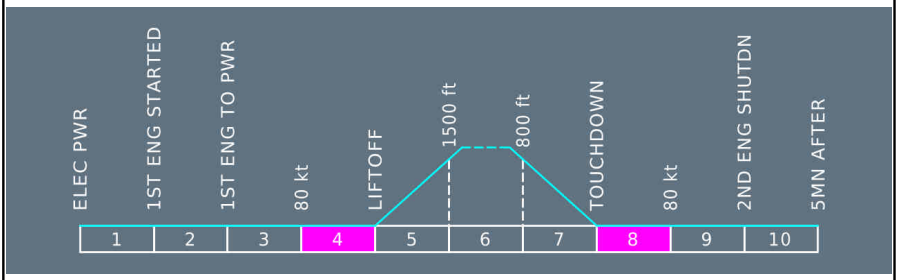
Ident.: PRO-ABN-NAV-E-00018139.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when IR 1+2(1+3)(2+3) are failed.

Flight Phase Inhibition:



Continued on the following page

NAV IR 1+2(1+3)(2+3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-E-00017111.0002001 / 22 MAR 17

L2 *Note: In case of a simultaneous ADR and IR (same ADIRU) failure, apply the ADR FAULT procedure prior to the IR FAULT procedure.*

L1 ● **If IR 1 + 2 FAULT:**

ATT HDG SWTG..... CAPT 3

L2 *Set IR 3 (If available) to the Captain's side.*
Attitude information is lost on first officer's PFD.

L1 ● **If IR 1 + 3 (or 2 + 3) FAULT:**

ATT HDG SWTG..... NORM

L2 *Attitude information is lost on one side (Captain or first officer).*

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 *Flight control normal laws are lost. Pitch alternate law with static stability becomes active.*
All protections, except maneuver protections, are lost.

L1 MAX SPEED..... 320 KT

L2 *Speed is limited, due to the loss of high speed protection.*

Continued on the following page

NAV IR 1+2(1+3)(2+3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-E-00016864.0004001 / 22 MAR 17

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L12

STATUS

MAX SPEED..... 320 KT

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will appear, when CONF 3 is selected.

APPR SPD : VREF + 10 KT

LDG DIST PROC..... APPLY

ALTN LAW : PROT LOST

WHEN L/G DN : DIRECT LAW

At landing gear extension, control reverts to direct law, in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).

IR (AFFECTED) MAY BE AVAIL IN ATT

Refer to PRO-ABN-NAV [QRH] IR ALIGNMENT IN ATT MODE

FLS ◁ LIMITED TO F–APP + RAW

INOP SYS

F/CTL PROT
IR 1 (2)(3)
IR 1+2 or 1+3 or 2+3
AP 1+2
A/THR
YAW DAMPER 1 (1)
YAW DAMPER 2 (2)
GPWS TERR ◁ (if IR 1 fault)
TCAS
CAT 2
ATC/XPDR 1 (3)
ATC/XPDR 2 (4)
GLS AUTOLAND ◁
STEEP APPR ◁ (if at least 2 IRs are lost)
ROW/ROP ◁

Note: *In case of an IR 1 fault, the TCAS may be inoperative (depending on the TCAS manufacturer). If the IR 1 is available in ATT mode, the TCAS can be recovered by entering the aircraft magnetic heading into the CDU, as per IR ALIGNMENT IN ATT MODE procedure.*

(1) *(In case of an IR 1+3 fault)*
(2) *(In case of an IR 2+3 fault)*
(3) *(In the case of an IR 1 or IR 1+2 or IR 1+3 failure)*
(4) *(In the case of an IR 2 or IR 1+2 or IR 2+3 failure)*

NAV IR 1+2(1+3)(2+3) FAULT

Applicable to: MSN 06720-09063

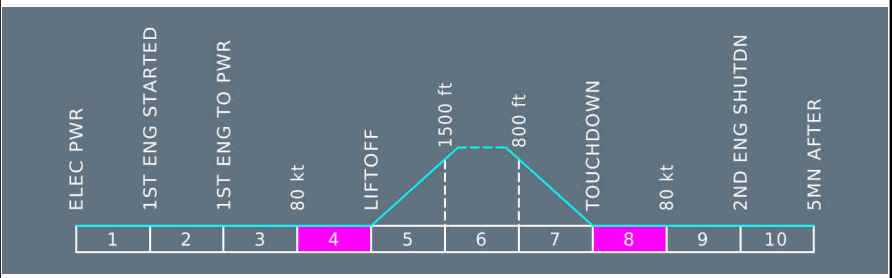
Ident.: PRO-ABN-NAV-E-00018139.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when IR 1+2(1+3)(2+3) are failed.

Flight Phase Inhibition:



Continued on the following page

NAV IR 1+2(1+3)(2+3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-E-00017111.0002001 / 22 MAR 17

L2 *Note: In case of a simultaneous ADR and IR (same ADIRU) failure, apply the ADR FAULT procedure prior to the IR FAULT procedure.*

L1 ● **If IR 1 + 2 FAULT:**

ATT HDG SWTG..... CAPT 3

L2 *Set IR 3 (If available) to the Captain's side.*
Attitude information is lost on first officer's PFD.

L1 ● **If IR 1 + 3 (or 2 + 3) FAULT:**

ATT HDG SWTG..... NORM

L2 *Attitude information is lost on one side (Captain or first officer).*

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)

L2 *Flight control normal laws are lost. Pitch alternate law with static stability becomes active.*
All protections, except maneuver protections, are lost.

L1 MAX SPEED..... 320 KT

L2 *Speed is limited, due to the loss of high speed protection.*

Continued on the following page

NAV IR 1+2(1+3)(2+3) FAULT (Cont'd)

Ident.: PRO-ABN-NAV-E-00016864.0006001 / 08 NOV 16

70

L12

STATUS

MAX SPEED..... 320 KT

APPR PROC

FOR LDG..... USE FLAP 3

This line is replaced by "FOR LDG : USE FLAP 3" when CONF 3 is selected, as a reminder.

GPWS LDG FLAP 3.....ON

Will appear, when CONF 3 is selected.

APPR SPD : VREF + 15 KT

LDG DIST PROC..... APPLY

ALTN LAW : PROT LOST

WHEN L/G DN : DIRECT LAW

At landing gear extension, control reverts to direct law, in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).

IR (AFFECTED) MAY BE AVAIL IN ATT

Refer to PRO-ABN-NAV [QRH] IR ALIGNMENT IN ATT MODE

FLS ◁✻ LIMITED TO F–APP + RAW

INOP SYS

F/CTL PROT
IR 1 (2)(3)
IR 1+2 or 1+3 or 2+3
AP 1+2
A/THR
YAW DAMPER 1 (1)
YAW DAMPER 2 (2)
GPWS TERR ◁✻ (if IR 1 fault)
TCAS
CAT 2
ATC/XPDR 1 (3)
ATC/XPDR 2 (4)
GLS AUTOLAND ◁✻
ROW/ROP ◁✻

Note: *In case of an IR 1 fault, the TCAS may be inoperative (depending on the TCAS manufacturer). If the IR 1 is available in ATT mode, the TCAS can be recovered by entering the aircraft magnetic heading into the CDU, as per IR ALIGNMENT IN ATT MODE procedure.*

(1) *(In case of an IR 1+3 fault)*
(2) *(In case of an IR 2+3 fault)*
(3) *(In the case of an IR 1 or IR 1+2 or IR 1+3 failure)*
(4) *(In the case of an IR 2 or IR 1+2 or IR 2+3 failure)*

NAV IR DISAGREE

Applicable to: MSN 01767-06336

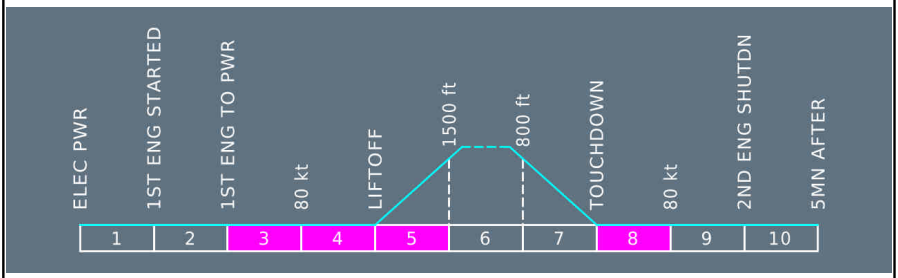
Ident.: PRO-ABN-NAV-G-00018147.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one IR is failed, and the information received from the two remaining IRs is different.

Flight Phase Inhibition:



Continued on the following page

NAV IR DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-G-00016851.0001001 / 22 MAR 17

L2 Direct law becomes active. All protections (pitch and roll) are lost.

L1 ATT.....X CHECK

L2 *Use the standby horizon to determine the faulty IR.*

L1 ● **IF DISAGREE CONFIRMED:**

FAULTY IR..... OFF

L2 - *If the ADIRS Control Panel has the IR pb, turn off the faulty IR using the associated IR pb.*
- *If the ADIRS Control Panel does not have the IR pb, set the ADIRS selector to OFF. This action will also switch off the associated ADR.*

L1 ELAC 2.....OFF THEN ON
ELAC 1.....OFF THEN ON

L2 *Note: When the ELAC 1 computer is reset on ground, the pitch trim returns to the ground setting position (0 °).*
After corrective action (faulty IR switched off and ELACs reset), pitch alternate law with reduced protections is recovered.

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED..... 320 KT

Continued on the following page

NAV IR DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-G-00016852.0001001 / 22 MAR 17

71

L12

STATUS

MAX SPEED..... 320 KT

APPR PROC

FOR LDG..... USE FLAP 3

Do not select CONF FULL, so as not to degrade handling qualities.

GPWS LDG FLAP 3.....ON

Will be displayed, when CONF 3 is selected.

APPR SPD.....VREF + 10
LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)

INOP SYS

F/CTL PROT
STEEP APPR

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

NAV IR DISAGREE

Applicable to: MSN 06720-09063

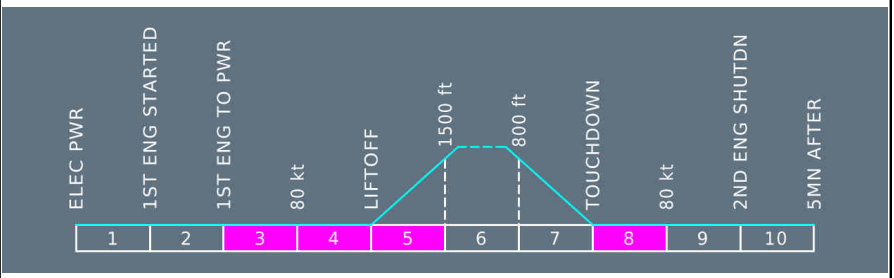
Ident.: PRO-ABN-NAV-G-00018147.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one IR is failed, and the information received from the two remaining IRs is different.

Flight Phase Inhibition:



Continued on the following page

NAV IR DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-G-00016851.0001001 / 22 MAR 17

L2 Direct law becomes active. All protections (pitch and roll) are lost.

L1 ATT.....X CHECK

L2 *Use the standby horizon to determine the faulty IR.*

L1 ● **IF DISAGREE CONFIRMED:**

FAULTY IR..... OFF

L2 - *If the ADIRS Control Panel has the IR pb, turn off the faulty IR using the associated IR pb.*
- *If the ADIRS Control Panel does not have the IR pb, set the ADIRS selector to OFF. This action will also switch off the associated ADR.*

L1 ELAC 2.....OFF THEN ON
ELAC 1.....OFF THEN ON

L2 Note: *When the ELAC 1 computer is reset on ground, the pitch trim returns to the ground setting position (0 °).*
After corrective action (faulty IR switched off and ELACs reset), pitch alternate law with reduced protections is recovered.

L1

ASSOCIATED PROCEDURES

F/CTL ALTN LAW
(PROT LOST)
MAX SPEED..... 320 KT

Continued on the following page

NAV IR DISAGREE (Cont'd)

Ident.: PRO-ABN-NAV-G-00016852.0005001 / 08 NOV 16

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L12

STATUS

MAX SPEED..... 320 KT

APPR PROC

FOR LDG..... USE FLAP 3

Do not select CONF FULL, so as not to degrade handling qualities.

GPWS LDG FLAP 3.....ON

Will be displayed, when CONF 3 is selected.

APPR SPD.....VREF + 15

LDG DIST PROC..... APPLY

ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
See (1)

INOP SYS

F/CTL PROT

(1) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

NAV IR NOT ALIGNED

Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063

Ident.: PRO-ABN-NAV-AU-00018141.0002001 / 21 MAR 16

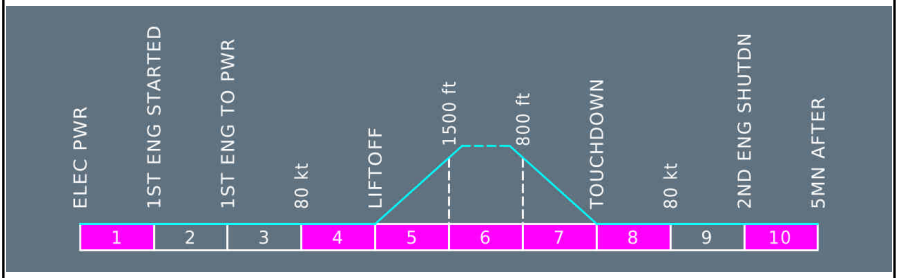
73

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is a problem during IR alignment.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AU-00012570.0001001 / 19 AUG 10

74

L2 This caution is available in Phase 2 (after first engine start, until takeoff)

L1 POSITION DISAGREE
POSITION MISSING
PRESENT POS..... INSERT
EXCESS MOTION
IR 1 (2) (3) (1+2) (2+3) (1+2+3) IN ALIGN

NAV LS TUNING DISAGREE

Applicable to: MSN 01767-04384, 04399-09063

Ident.: PRO-ABN-NAV-AI-00018151.0001001 / 21 MAR 16

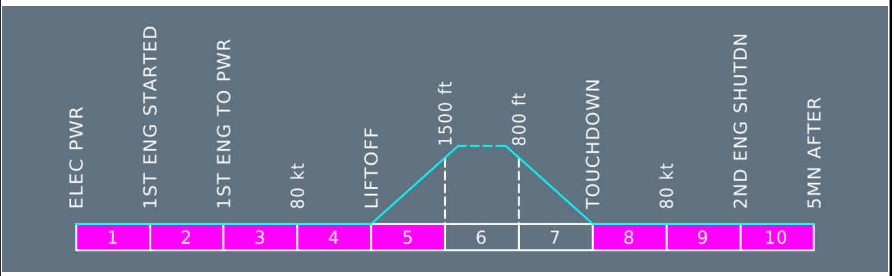
75

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the tuning of MMR 1 and MMR 2 are different.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AI-00018932.0004001 / 21 MAR 16

76

Crew awareness.

L2 When the alert is triggered, the AP/FD:

- Inhibits APPR mode arming, or
- Disarms the APPR mode if already armed, or
- Reverts to basic AP/FD modes if APPR mode already engaged.

Ident.: PRO-ABN-NAV-AI-00014337.0001001 / 29 MAR 12

77

STATUS

	INOP SYS
	CAT 2

NAV PRED W/S DET FAULT

Applicable to: MSN 01767-02334, 02388, 02443-02457, 02584-09063

Ident.: PRO-ABN-NAV-F-00018855.0002001 / 21 MAR 16

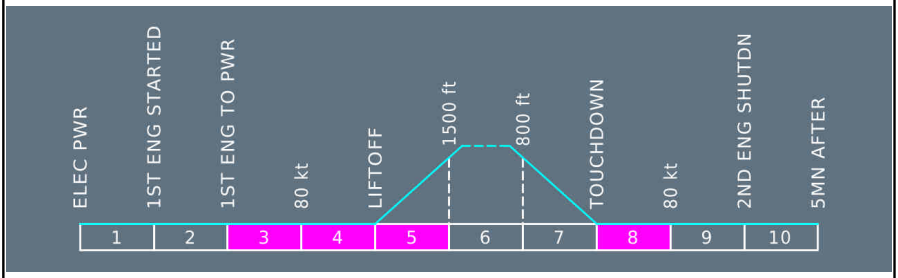
78

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the predictive function is lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-F-00018853.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-NAV-F-00018854.0001001 / 21 MAR 16

STATUS

INOP SYS
PRED W/S DET

NAV PRED W/S DET FAULT

Applicable to: MSN 02359, 02405, 02482

Ident.: PRO-ABN-NAV-F-00018855.0001001 / 21 MAR 16

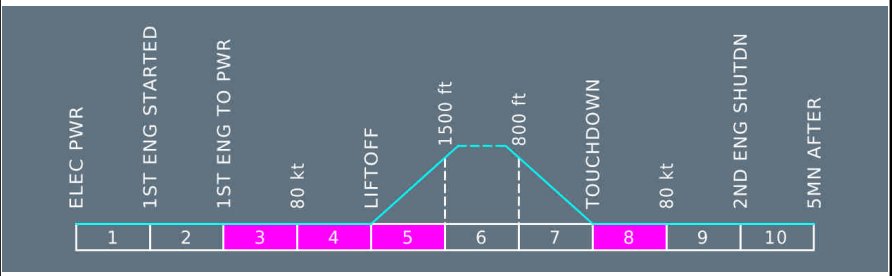
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the flight crew switches the predictive windshear function to ON. It may be cancelled by switching the weather radar and the predictive windshear function OFF then ON :

- If this clears the alert, the predictive windshear function is operative again
- If not, the predictive windshear function is lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-F-00018853.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-NAV-F-00018854.0001001 / 21 MAR 16

STATUS

INOP SYS

PRED W/S DET

NAV RA 1 AND 2 FAULT
(DUAL RA FAILURE)

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-06336

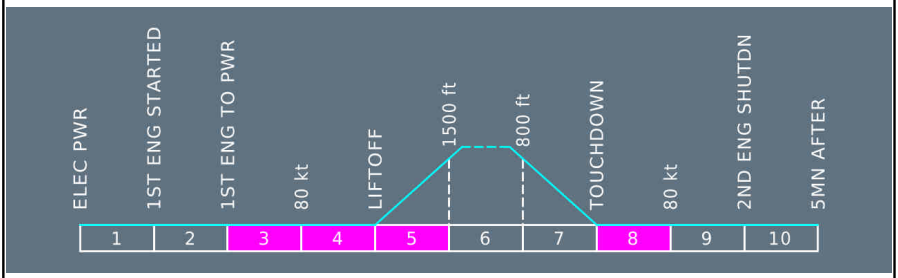
Ident.: PRO-ABN-NAV-J-00018403.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both RAs are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-J-00012432.0001001 / 25 FEB 14

Crew awareness.

Continued on the following page

NAV RA 1 AND 2 FAULT (Cont'd)
(DUAL RA FAILURE)

Ident.: PRO-ABN-NAV-J-00016850.0004001 / 01 JUN 16

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L12

STATUS

APPR PROC

FOR LDG.....USE FLAPS 3
GPWS LDG FLAP 3.....ON
APPR SPD.....VREF+10 KT
LDG DIST PROC..... APPLY

WHEN L/G DN: DIRECT LAW
See (1)

INOP SYS

RA 1+2
A/CALL OUT
GPWS
CAT 2
GLS AUTOLAND
REAC W/S DET
TCAS
ROW/ROP

(1) *At landing gear extension, flight controls revert to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*
ILS APPR mode cannot be engaged, LOC mode is available via the FCU LOC pb.

NAV RA 1 AND 2 FAULT
(DUAL RA FAILURE)

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

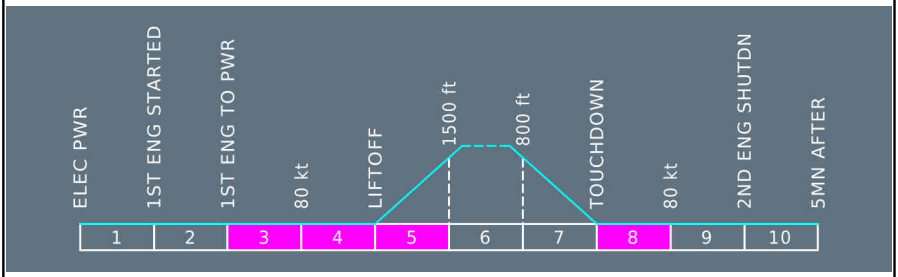
Ident.: PRO-ABN-NAV-J-00018403.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both RAs are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-J-00012432.0001001 / 25 FEB 14

Crew awareness.

Continued on the following page

NAV RA 1 AND 2 FAULT (Cont'd)
(DUAL RA FAILURE)

Ident.: PRO-ABN-NAV-J-00016850.0003001 / 01 JUN 16

L12

STATUS	INOP SYS
WHEN L/G DN: DIRECT LAW *See* (1)	RA 1+2 A/CALL OUT GPWS CAT 2 GLS AUTOLAND STEEP APPR REAC W/S DET TCAS ROW/ROP

(1) *At landing gear extension, flight controls revert to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*
ILS APPR mode cannot be engaged, LOC mode is available via the FCU LOC pb.

NAV RA 1 AND 2 FAULT
(DUAL RA FAILURE)

Applicable to: MSN 06720-09063

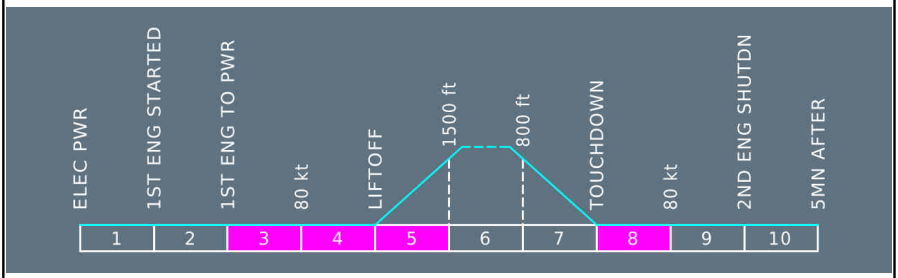
Ident.: PRO-ABN-NAV-J-00018403.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both RAs are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-J-00012432.0001001 / 25 FEB 14

Crew awareness.

Continued on the following page

NAV RA 1 AND 2 FAULT (Cont'd)
(DUAL RA FAILURE)

Ident.: PRO-ABN-NAV-J-00016850.0005001 / 01 JUN 16

80

L12

STATUS

APPR PROC

FOR LDG.....USE FLAPS 3
GPWS LDG FLAP 3.....ON
APPR SPD.....VREF+15 KT
LDG DIST PROC..... APPLY

WHEN L/G DN: DIRECT LAW
See (1)

INOP SYS

RA 1+2
A/CALL OUT
GPWS
CAT 2
GLS AUTOLAND
STEEP APPR
REAC W/S DET
TCAS
ROW/ROP

(1) *At landing gear extension, flight controls revert to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*
ILS APPR mode cannot be engaged, LOC mode is available via the FCU LOC pb.

NAV RA 1(2) FAULT

Applicable to: MSN 01767-01920, 02108, 02135, 02139-02914, 03750, 04491, 04532, 04645, 05120, 05158, 05218

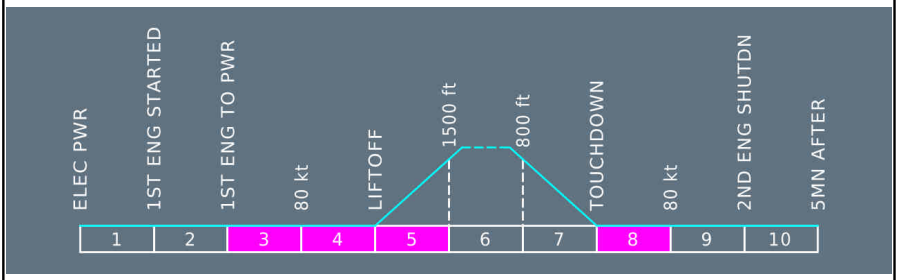
Ident.: PRO-ABN-NAV-I-00018135.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the RA 1(2) is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-I-00012430.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-NAV-I-00016849.0001001 / 01 JUN 16

81

STATUS

CAT 2 ONLY

INOP SYS

RA 1(2)
CAT 3
GPWS (If RA 1 fault)
ROW/ROP

NAV RA 1(2) FAULT

Applicable to: MSN 01957-02097, 02121, 02138, 03071-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-09063

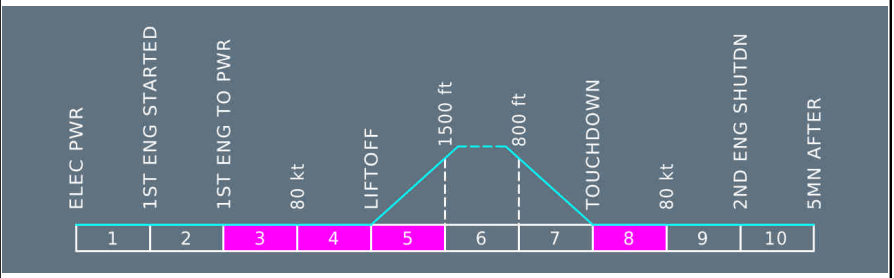
Ident.: PRO-ABN-NAV-I-00018135.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the RA 1(2) is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-I-00012430.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-NAV-I-00016849.0002001 / 01 JUN 16

82

STATUS

	INOP SYS
CAT 2 ONLY	RA 1(2) CAT 3 ROW/ROP

NAV RA DEGRADED

Applicable to: ALL

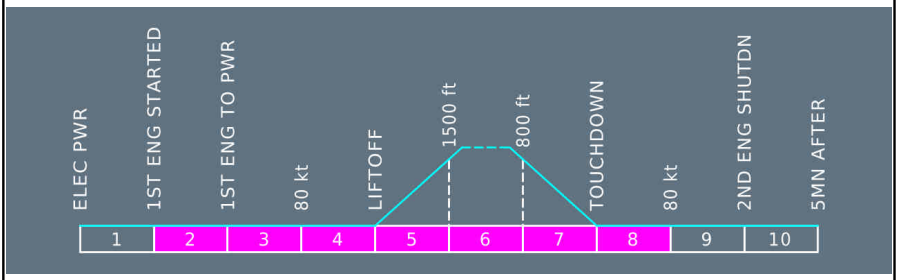
Ident.: PRO-ABN-NAV-AV-00018134.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the height that RA 1 and RA 2 provide are significantly different.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AV-00018933.0001001 / 21 MAR 16

Crew awareness.

NAV TCAS FAULT

Applicable to: MSN 01767-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

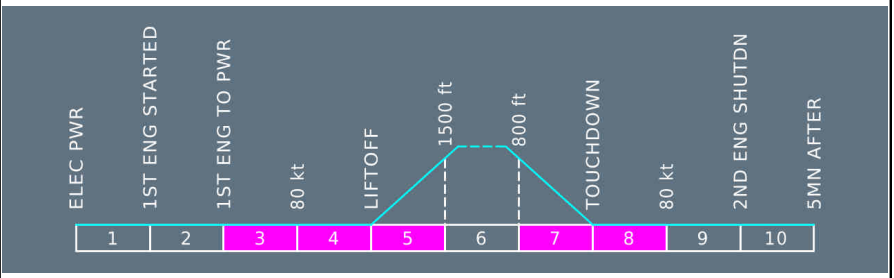
Ident.: PRO-ABN-NAV-K-00018397.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is an internal failure of the TCAS.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-K-00012434.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-NAV-K-00012435.0001001 / 19 AUG 10

STATUS

INOP SYS

TCAS

NAV TCAS FAULT

Applicable to: MSN 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

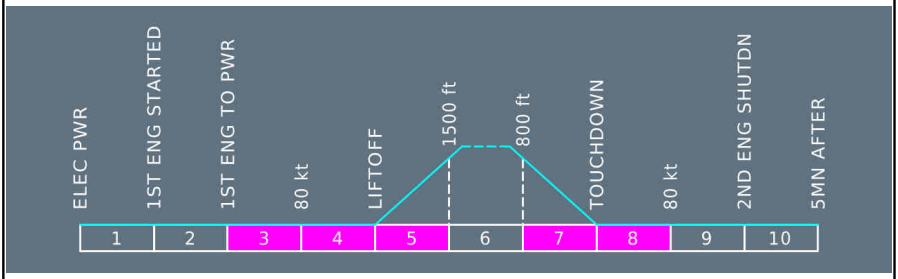
Ident.: PRO-ABN-NAV-K-00018397.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when there is an internal failure of the TCAS.

Flight Phase Inhibition:



Ident.: TDU / PRO-ABN-NAV-K-00015480.0015001 / 23 JUN 15
Impacted DU: 00012434 NAV TCAS FAULT (If Installed)

Crew awareness.

Note: *On ground, if the alert is triggered while the ADIRUs are OFF, the flight crew can disregard it. The alert automatically disappears once the ADIRUs are powered.*

Ident.: PRO-ABN-NAV-K-00012434.0001001 / 25 FEB 14
Impacted by TDU: 00015480 NAV TCAS FAULT

Crew awareness.

Continued on the following page

NAV TCAS FAULT (Cont'd)

Ident.: PRO-ABN-NAV-K-00012435.0001001 / 19 AUG 10

STATUS

	INOP SYS
	TCAS

NAV TCAS STBY

Applicable to: ALL

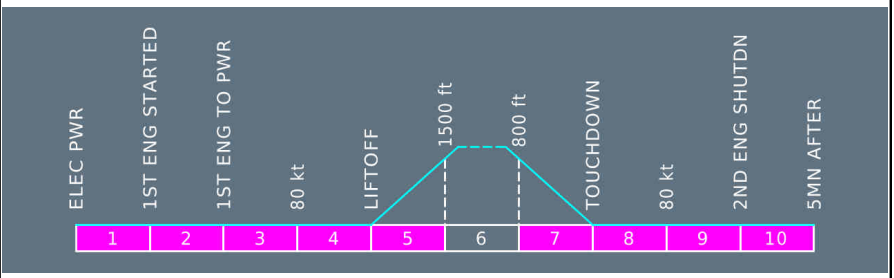
Ident.: PRO-ABN-NAV-AW-00018133.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the flight crew sets the TCAS on STBY in flight.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AW-00018847.0001001 / 21 MAR 16

Crew awareness.

NAV L(R) CAPT(F/O) STATIC FAULT

Applicable to: MSN 01957, 05641-09063

Ident.: PRO-ABN-NAV-AJ-00018132.0001001 / 21 MAR 16

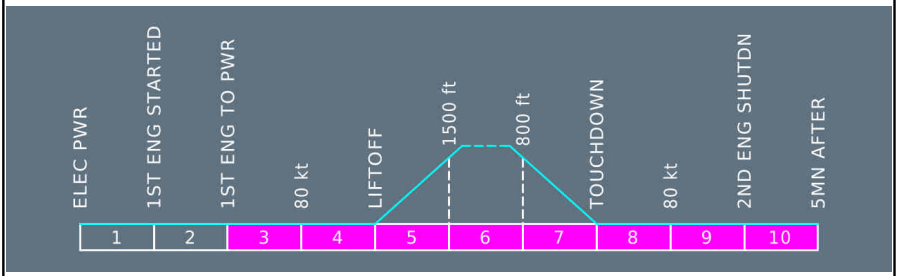
83

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the left(right) CAPT(F/O) static pressure probe is lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-NAV-AJ-00015067.0001001 / 08 AUG 13

84

IAS/ALTI MAY BE UNREL

Ident.: PRO-ABN-NAV-AJ-00015068.0001001 / 08 AUG 13

85

STATUS

INOP SYS
CAPT(F/O) (R)(L) STAT
CAPT PROBES (1)
F/O PROBES (2)

(1) *((If the CAPT AOA and STAT are failed, and the heating systems of the CAPT PITOT and TAT are lost), or (If all the heating systems of the CAPT PROBES are lost))*

(2) *((If the F/O AOA and STAT are failed, and the heating systems of the F/O PITOT and TAT are lost), or (If all the heating systems of the F/O PROBES are lost))*

STALL WARNING

Ident.: PRO-ABN-NAV-00013994.0001001 / 21 MAR 17

Applicable to: MSN 01767-01920, 02097-02121, 02138, 02195-02405, 02457-02626, 02670, 02737-02804, 03138, 03308, 04156, 04294, 04314, 04393-04397, 04433, 04510, 04532-04535, 04762-04868, 04954, 05094, 05218, 05262, 05365-05411, 05473, 05577-05641, 05712, 05744-05807, 05992, 06247, 06289-06336

When the threshold is reached, a permanent aural warning is triggered "STALL + CRICKET" as long as a correct angle-of-attack is not recovered. (*Refer to PRO-ABN-MISC [MEM] Stall Recovery*).

STALL WARNING

Ident.: PRO-ABN-NAV-00013994.0002001 / 21 MAR 17

86 **Applicable to: MSN 01957, 02135, 02139, 02443, 02649, 02712, 02908-03071, 03264, 03330-04113, 04216, 04312, 04328-04384, 04399, 04438-04506, 04518, 04552-04757, 04888-04947, 04965-05092, 05120-05190, 05230-05259, 05291-05313, 05437-05460, 05476-05537, 05676-05683, 05727, 05829-05952, 06010-06208, 06275-06287, 06720-09063**

When the threshold is reached, permanent aural and visual alerts (“STALL, STALL” synthetic voice then cricket, "STALL STALL" red message on PFD) are triggered until a correct angle-of-attack is recovered (*Refer to PRO-ABN-MISC [MEM] Stall Recovery*).

OVERSPEED

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: PRO-ABN-OVERSPEED-AX-00018108.0001001 / 20 APR 17

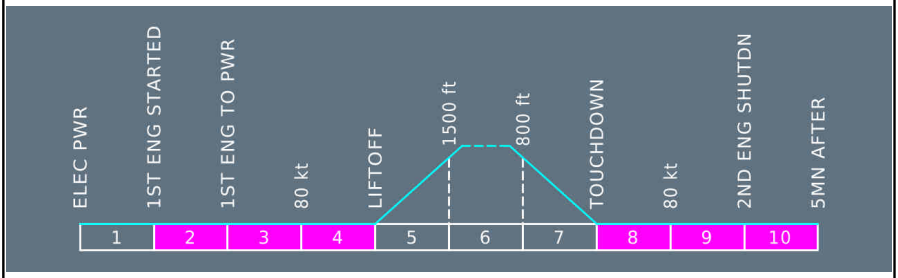
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- The aircraft speed/mach is greater than VMO + 4 kt/MMO + 0.006, or
- The aircraft speed is greater than VLE + 4 kt, with L/G not uplocked or L/G doors not closed, or
- The aircraft speed is greater than VFE + 4 kt, with slats and/or flaps extended.

Flight Phase Inhibition:



Ident.: PRO-ABN-OVERSPEED-AX-00016848.0001001 / 21 MAR 16

1

VMO/MMO..... 350/.82

L2 *(235/0.60 in case of dispatch with landing gear down).*

L1 VLE..... 280/.67

VFE.....SEE BELOW

CONF	*VFE*
FULL	*177*
3	*185*
2	*200*
1+F	*215*
1	*230*

OVERSPEED

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

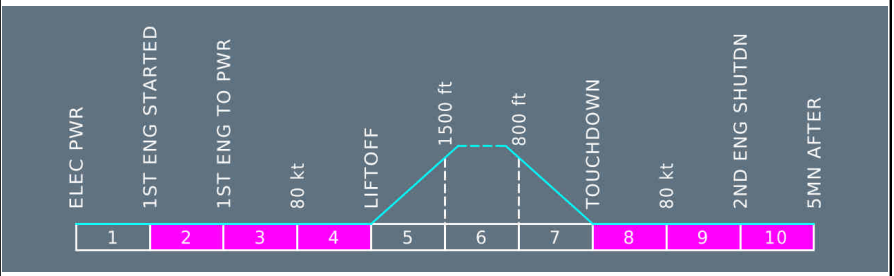
Ident.: PRO-ABN-OVERSPEED-AX-00018108.0001001 / 20 APR 17

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- The aircraft speed/mach is greater than VMO + 4 kt/MMO + 0.006, or
- The aircraft speed is greater than VLE + 4 kt, with L/G not uplocked or L/G doors not closed, or
- The aircraft speed is greater than VFE + 4 kt, with slats and/or flaps extended.

Flight Phase Inhibition:



Ident.: PRO-ABN-OVERSPEED-AX-00016848.0005001 / 09 APR 18

2

VMO/MMO..... 350/.82

L2 *(235/0.60 in case of dispatch with landing gear down).*

L1 VLE..... 280/.67

VFE.....SEE BELOW

CONF	*VFE*
FULL	*186*
3	*195*
2	*215*
1+F	*225*
1	*243*

RECORDER DFDR FAULT

Applicable to: ALL

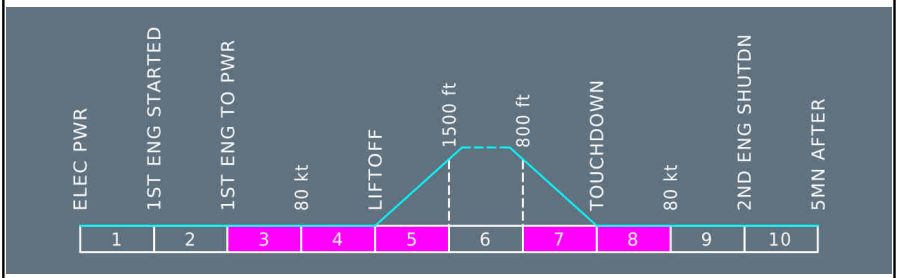
Ident.: PRO-ABN-RECORDER-A-00017312.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the DFDR is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-RECORDER-A-00010046.0001001 / 10 AUG 10

Crew awareness.

Ident.: PRO-ABN-RECORDER-A-00010047.0001001 / 10 AUG 10

STATUS

INOP SYS
DFDR

RECORDER SYS FAULT

Applicable to: ALL

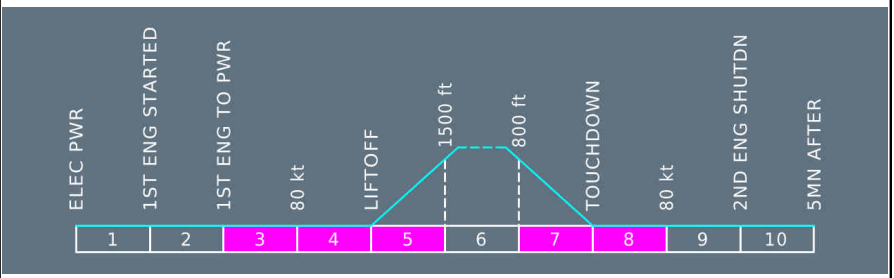
Ident.: PRO-ABN-RECORDER-B-00017313.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FDIU is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-RECORDER-B-00010048.0002001 / 10 AUG 10

Crew awareness.

Ident.: PRO-ABN-RECORDER-B-00010049.0002001 / 10 AUG 10

STATUS

INOP SYS

RECORDER SYS

SEVERE ICE DETECTED

Applicable to: MSN 01767, 02584-02649, 04314, 04393-04397

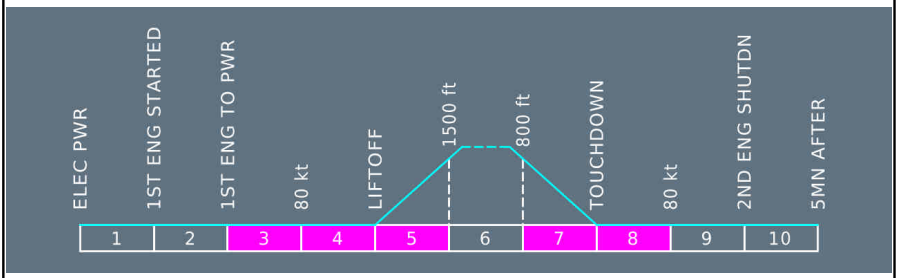
Ident.: PRO-ABN-SEVERE_ICE-AB-00017188.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when heavy ice is detected in flight above 1 500 ft (with TAT<10 °C) and the WING ANTI ICE pb-sw is set to OFF.

Flight Phase Inhibition:



Ident.: PRO-ABN-SEVERE_ICE-AB-00018892.0001001 / 21 MAR 16

WING ANTI ICE.....ON
ENG MODE SEL.....IGN

L2 *This line does not normally appear since continuous ignition has already been selected with the "ICE DETECTED" warning (selection of ENG ANTI ICE).*

Intentionally left blank

[QRH] SMOKE / FUMES / AVNCS SMOKE

Applicable to: MSN 01767-01920

Ident.: PRO-ABN-SMOKE-D-00012212.0004001 / 17 MAR 17

This procedure includes all the steps of the AVIONICS SMOKE ECAM procedure.

Apply this procedure when:

- The flight (cabin) crew suspect that smoke is coming from any of the following:
  - The avionics
  - The air conditioning
  - The cabin equipment
- Requested by the AVIONICS SMOKE ECAM procedure.
- There is a smell of smoke / fumes in the cockpit :
  - If the smell is similar to that of orange peels, suspect a toxic leak of rain repellent fluid.
  - If the smell is similar to that of pine needles, suspect a non-toxic leak.

If any other ECAM SMOKE alert triggers (CARGO, ...), the crew must first apply the ECAM procedure, then consider applying this procedure.
Note that these ECAM alerts may be caused by another source, that should usually first be detected by the flight crew/cabin crew/avionics smoke detectors.

The following explains the layout of this procedure:

- The procedure lines above the text boxes indicate the actions that the flight crew must immediately perform, if smoke is detected (with or without ECAM activation and regardless of the smoke source). These immediate actions correspond to the most common steps to be taken in smoke cases. In all cases, the flight crew must also be prepared to immediately perform a diversion. However, this diversion may be avoided if the smoke source is obvious, accessible and extinguishable or confirmed isolated (after completion of the immediate actions).
- The text boxes indicate the actions that the flight crew must consider, if at any time during the remainder of the procedure but always after the initial steps:
  - Smoke / fumes become the greatest threat and removal of smoke / fumes is required, and/or
  - The situation becomes critical and can no longer be controlled.
- The procedure lines below the text boxes indicate the actions that the flight crew must perform, as soon as they suspect a source of smoke. The actions will depend on whether the smoke is coming from the avionics, and/or air conditioning, and/or cabin equipment.

LAND ASAP

IF PERCEPTIBLE SMOKE APPLY IMMEDIATELY:

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

If smoke is confirmed, the following procedure must be applied.

OXY MASK / GOGGLE (if required).....USE/100%/EMERG

Ensure crew communication is established. Avoid continuous use of the interphone to minimize interference from the oxygen mask breathing noise.
Turn the emergency knob to remove condensation or smoke from the mask.

VENTILATION BLOWER..... OVRD
VENTILATION EXTRACT..... OVRD

Avionics ventilation air is extracted overboard.

CAB FANS.....OFF

To prevent smoke from entering the cockpit and cabin.

GALY & CAB.....OFF
SIGNS.....ON
CKPT / CABIN COM..... ESTABLISH

Communication must be established with the cabin crew in order to follow up on the smoke origin and dissipation.

- **If smoke source immediately obvious, accessible, and extinguishable:**
  FAULTY EQPT..... ISOLATE

- **If smoke source not immediately isolated:**
  DIVERSION.....INITIATE
  DESCENT TO FL 100 / MEA-MORA..... INITIATE

- **At ANY TIME of the procedure, if SMOKE / FUMES becomes the GREATEST THREAT:**
  REMOVAL OF SMOKE / FUMES.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES
  ELEC EMER CONFIG.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG

- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE:**
  IMMEDIATE LANDING.....CONSIDER
  L2 *Depending on the situation, the Captain can consider an overweight landing, a tailwind landing, a ditching, a forced landing, etc.*

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

L1 Guidelines to determine smoke source:

- If smoke initially comes out of the ventilation outlets, the crew may suspect AIR COND SMOKE. In addition, very shortly thereafter, several SMOKE warnings (cargo, lavatory, avionics) will be triggered. The displayed ECAM procedures must be applied.
- After an ENG or APU failure, smoke may come from the faulty item via the bleed system and be perceived in the cockpit and/or cabin. In such a case, it will be recirculated throughout the aircraft, until it completely disappears from the air conditioning system.
- If only the AVIONICS SMOKE warning is triggered, the crew may suspect avionics smoke.
- If the smoke is detected while an equipment is declared faulty, the crew may suspect that smoke is coming from this equipment.
- Avionics or forward galley smoke may be smelt, or may enter in the cockpit before ECAM warning activation.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012214.0007001 / 17 MAR 17

- **If Air COND smoke suspected:**

  APU BLEED.....OFF
  VENTILATION BLOWER and EXTRACT.....AUTO

  Note: *When both VENTILATION BLOWER and VENTILATION EXTRACT are in the OVRD position, a single pack may not be able to maintain the cabin pressure.*

  CARGO AFT ISOL VALVE.....OFF

  To prevent a cargo smoke warning from being triggered due to cabin smoke.

  PACK 1.....OFF

  - **If smoke continues:**

    PACK 1.....ON
    PACK 2.....OFF

    - **If smoke persists:**

      PACK 2.....ON

      Restore normal configuration if PACK 2 is not suspected to cause smoke

      VENTILATION BLOWER.....OVRD
      VENTILATION EXTRACT.....OVRD

  REMOVAL OF SMOKE / FUMES.....CONSIDER

  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

- **If CABIN EQPT smoke suspected:**

  - **If smoke continues:**

    EMER EXIT LIGHT.....ON
    COMMERCIAL.....OFF
    SMOKE DISSIPATION.....CHECK
    FAULTY EQPT.....SEARCH / ISOLATE

    Once the cabin has been secured, try to find the smoke source and isolate it.
    Cabin lights, reading lights, passenger systems, galleys have dedicated control C/B in the cabin or cockpit.

    - **If smoke persists or if faulty equipment confirmed isolated:**

      COMMERCIAL.....NORM

    REMOVAL OF SMOKE / FUMES.....CONSIDER

    Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012215.0001001 / 17 MAR 17

- **If smoke source cannot be determined and persists or AVNCS / ELECTRICAL smoke suspected:**
  ELEC EMER CONFIG..... CONSIDER
  Refer to the end of the procedure to set ELEC EMER CONFIG.
- **If smoke disappears within 5 min:**
  NORMAL VENTILATION..... RESTORE

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012565.0019001 / 17 MAR 17

1

TO SET ELEC EMER CONFIG

EMER ELEC GEN 1 LINE.....OFF

GEN 1 LINE contactor opens. GEN 1 remains running and supplies one fuel pump in each wing tank. AC BUS 1 is supplied by GEN 2 through the bus tie contactor.

EMER ELEC PWR.....MAN ON

RAT is extended and the EMER GEN is connected to the aircraft network. Check emergency generator parameters on the ELEC SD page (displayed automatically).

- **When EMER GEN AVAIL:**

  APU GEN.....OFF
  GEN 2.....OFF
  ELEC EMER CONFIG

  Two different procedures can be displayed on the ECAM, depending on whether the AVIONICS SMOKE ECAM caution is triggered or not before the flight crew sets the electrical emergency configuration.

  - **If AVIONICS SMOKE not triggered:**

    APPLY ELEC EMER CONFIG PROCEDURE, BUT DO NOT RESET GEN, EVEN IF REQUESTED BY ECAM

    - **At 3 min or 2 000 ft AAL before landing:**

      Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

      GEN 2.....ON
      EMER ELEC GEN 1 LINE.....ON

    - **When aircraft stopped:**

      ALL GENs.....OFF

  - **If AVIONICS SMOKE triggered:**

    The ECAM displays a specific ELEC EMER CONFIG procedure. The flight crew must apply the following ECAM procedure.

    MIN RAT SPEED.....140 KT

    Note: The electrical configuration is the same as for loss of both generators (except that one fuel pump in each wing tank remains supplied).

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

VHF 1 / HF 1 / ATC 1..... USE

Only VHF 1, HF 1 and ATC 1 are supplied in this configuration. Notify the ATC of the nature of the emergency, and state intentions. If there is no contact with the ATC, switch to code A7700, or transmit a distress message on one of the emergency frequencies.

FAC 1..... OFF THEN ON

Rudder trim is recovered, despite the fact that no indication is available.

- **At 3 min or 2 000 ft AAL before landing:**

  Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON

F/CTL ALTN LAW (PROT LOST)

Flight control normal laws and associated protections are lost. Only the load factor limitation, and the high and low speed stability remain (ALTN law with reduced protection).

MAX SPEED.....320 KT

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012217.0064001 / 31 AUG 17

ECAM lower display is not available. STATUS SD page is displayed on the upper ECAM display, as long as the STATUS pb is pressed.

L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED..... 320 KT
MAX BRK PR.....1000 PSI

FOR LDG.....USE FLAPS 3
GPWS LDG FLAP 3.....ON
APPR SPD..... VREF +10 KT
LDG DIST PROC..... APPLY
ENG 1+2 APPR IDLE ONLY
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
CTR TK FUEL USABLE BY GRAVITY
CTR TK FUEL: 2T UNUSABLE
FUEL CONSUMPT INCRSD

This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.

FMS PRED UNRELIABLE

Disregard FMS fuel predictions and refer to QRH/OPS - Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

SLATS/FLAPS SLOW

- **After recovery of normal electrical supply, the following STATUS will be displayed:**
  MAX SPEED.....320 KT
  APPR SPD.....VREF +10 KT
  LDG DIST PROC.....APPLY

INOP SYS

Refer to PRO-ABN-ELEC-[QRH] ELEC EMER CONFIG SYS REMAINING.

APPR PROC

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

- **3 MN/2000 FT BEFORE LDG:**
  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON
- **WHEN A/C IS STOPPED:**
  ALL GEN..... OFF

ALTN LAW: PROT LOST
See (1)
WHEN L/G DN: DIRECT LAW
See (2)

(1) *Flight controls remain in alternate law, due to the loss of IR 2 and 3.*
(2) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

[QRH] SMOKE / FUMES / AVNCS SMOKE

Applicable to: MSN 01957-02108, 02138, 02195, 02359, 02405, 02457-02482, 02670, 02737, 02908-02914, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05155, 05190-06036

Ident.: PRO-ABN-SMOKE-D-00012212.0004001 / 17 MAR 17

This procedure includes all the steps of the AVIONICS SMOKE ECAM procedure.

Apply this procedure when:
- The flight (cabin) crew suspect that smoke is coming from any of the following:
  - The avionics
  - The air conditioning
  - The cabin equipment
- Requested by the AVIONICS SMOKE ECAM procedure.
- There is a smell of smoke / fumes in the cockpit :
  - If the smell is similar to that of orange peels, suspect a toxic leak of rain repellent fluid.
  - If the smell is similar to that of pine needles, suspect a non-toxic leak.

If any other ECAM SMOKE alert triggers (CARGO, ...), the crew must first apply the ECAM procedure, then consider applying this procedure.
Note that these ECAM alerts may be caused by another source, that should usually first be detected by the flight crew/cabin crew/avionics smoke detectors.

The following explains the layout of this procedure:
- The procedure lines above the text boxes indicate the actions that the flight crew must immediately perform, if smoke is detected (with or without ECAM activation and regardless of the smoke source). These immediate actions correspond to the most common steps to be taken in smoke cases. In all cases, the flight crew must also be prepared to immediately perform a diversion. However, this diversion may be avoided if the smoke source is obvious, accessible and extinguishable or confirmed isolated (after completion of the immediate actions).
- The text boxes indicate the actions that the flight crew must consider, if at any time during the remainder of the procedure but always after the initial steps:
  - Smoke / fumes become the greatest threat and removal of smoke / fumes is required, and/or
  - The situation becomes critical and can no longer be controlled.
- The procedure lines below the text boxes indicate the actions that the flight crew must perform, as soon as they suspect a source of smoke. The actions will depend on whether the smoke is coming from the avionics, and/or air conditioning, and/or cabin equipment.

LAND ASAP

IF PERCEPTIBLE SMOKE APPLY IMMEDIATELY:

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

If smoke is confirmed, the following procedure must be applied.

OXY MASK / GOGGLE (if required).....USE/100%/EMERG

Ensure crew communication is established. Avoid continuous use of the interphone to minimize interference from the oxygen mask breathing noise.
Turn the emergency knob to remove condensation or smoke from the mask.

VENTILATION BLOWER..... OVRD
VENTILATION EXTRACT..... OVRD

Avionics ventilation air is extracted overboard.

CAB FANS.....OFF

To prevent smoke from entering the cockpit and cabin.

GALY & CAB.....OFF
SIGNS.....ON
CKPT / CABIN COM..... ESTABLISH

Communication must be established with the cabin crew in order to follow up on the smoke origin and dissipation.

- **If smoke source immediately obvious, accessible, and extinguishable:**
  FAULTY EQPT..... ISOLATE

- **If smoke source not immediately isolated:**
  DIVERSION.....INITIATE
  DESCENT TO FL 100 / MEA-MORA..... INITIATE

- **At ANY TIME of the procedure, if SMOKE / FUMES becomes the GREATEST THREAT:**
  REMOVAL OF SMOKE / FUMES.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES
  ELEC EMER CONFIG.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG

- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE:**
  IMMEDIATE LANDING.....CONSIDER

L2 *Depending on the situation, the Captain can consider an overweight landing, a tailwind landing, a ditching, a forced landing, etc.*

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

L1 Guidelines to determine smoke source:

- If smoke initially comes out of the ventilation outlets, the crew may suspect AIR COND SMOKE. In addition, very shortly thereafter, several SMOKE warnings (cargo, lavatory, avionics) will be triggered. The displayed ECAM procedures must be applied.
- After an ENG or APU failure, smoke may come from the faulty item via the bleed system and be perceived in the cockpit and/or cabin. In such a case, it will be recirculated throughout the aircraft, until it completely disappears from the air conditioning system.
- If only the AVIONICS SMOKE warning is triggered, the crew may suspect avionics smoke.
- If the smoke is detected while an equipment is declared faulty, the crew may suspect that smoke is coming from this equipment.
- Avionics or forward galley smoke may be smelt, or may enter in the cockpit before ECAM warning activation.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012214.0004001 / 17 MAR 17

2

- **If Air COND smoke suspected:**

  APU BLEED.....OFF
  VENTILATION BLOWER and EXTRACT.....AUTO

  Note: *When both VENTILATION BLOWER and VENTILATION EXTRACT are in the OVRD position, a single pack may not be able to maintain the cabin pressure.*

  PACK 1.....OFF

  - **If smoke continues:**

    PACK 1.....ON
    PACK 2.....OFF

    - **If smoke persists:**

      PACK 2.....ON

      Restore normal configuration if PACK 2 is not suspected to cause smoke

      VENTILATION BLOWER.....OVRD
      VENTILATION EXTRACT.....OVRD

  REMOVAL OF SMOKE / FUMES.....CONSIDER

  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

- **If CABIN EQPT smoke suspected:**

  - **If smoke continues:**

    EMER EXIT LIGHT.....ON
    COMMERCIAL.....OFF
    SMOKE DISSIPATION.....CHECK
    FAULTY EQPT.....SEARCH / ISOLATE

    Once the cabin has been secured, try to find the smoke source and isolate it.
    Cabin lights, reading lights, passenger systems, galleys have dedicated control C/B in the cabin or cockpit.

    - **If smoke persists or if faulty equipment confirmed isolated:**

      COMMERCIAL.....NORM

    REMOVAL OF SMOKE / FUMES.....CONSIDER

    Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012215.0001001 / 17 MAR 17

- **If smoke source cannot be determined and persists or AVNCS / ELECTRICAL smoke suspected:**
  ELEC EMER CONFIG..... CONSIDER
  Refer to the end of the procedure to set ELEC EMER CONFIG.
- **If smoke disappears within 5 min:**
  NORMAL VENTILATION..... RESTORE

Continued on the following page

Ident.: PRO-ABN-SMOKE-D-00012565.0017001 / 06 JUL 17

3

TO SET ELEC EMER CONFIG

EMER ELEC GEN 1 LINE.....OFF

GEN 1 LINE contactor opens. GEN 1 remains running and supplies one fuel pump in each wing tank. AC BUS 1 is supplied by GEN 2 through the bus tie contactor.

EMER ELEC PWR.....MAN ON

RAT is extended and the EMER GEN is connected to the aircraft network. Check emergency generator parameters on the ELEC SD page (displayed automatically).

- **When EMER GEN AVAIL:**

  APU GEN.....OFF
  GEN 2.....OFF
  ELEC EMER CONFIG

  Two different procedures can be displayed on the ECAM, depending on whether the AVIONICS SMOKE ECAM caution is triggered or not before the flight crew sets the electrical emergency configuration.

  - **If AVIONICS SMOKE not triggered:**

    APPLY ELEC EMER CONFIG PROCEDURE, BUT DO NOT RESET GEN, EVEN IF REQUESTED BY ECAM

    - **At 3 min or 2 000 ft AAL before landing:**

      Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

      GEN 2.....ON
      EMER ELEC GEN 1 LINE.....ON

    - **When aircraft stopped:**

      ALL GENs.....OFF

  - **If AVIONICS SMOKE triggered:**

    The ECAM displays a specific ELEC EMER CONFIG procedure. The flight crew must apply the following ECAM procedure.

    MIN RAT SPEED.....140 KT

    Note: The electrical configuration is the same as for loss of both generators (except that one fuel pump in each wing tank remains supplied).

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

VHF 1 / HF 1 / ATC 1..... USE

Only VHF 1, HF 1 and ATC 1 are supplied in this configuration. Notify the ATC of the nature of the emergency, and state intentions. If there is no contact with the ATC, switch to code A7700, or transmit a distress message on one of the emergency frequencies.

FAC 1..... OFF THEN ON

Rudder trim is recovered, despite the fact that no indication is available.

- **At 3 min or 2 000 ft AAL before landing:**

  Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON

F/CTL ALTN LAW (PROT LOST)

Flight control normal laws and associated protections are lost. Only the load factor limitation, and the high and low speed stability remain (ALTN law with reduced protection).

MAX SPEED.....320 KT

Note: Depending on the value of the engine total air temperature, the "EPR FAULT MODE" may be triggered, resulting in the degraded N1 MODE for both engines.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012217.0057001 / 31 AUG 17

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ECAM lower display is not available. STATUS SD page is displayed on the upper ECAM display, as long as the STATUS pb is pressed.

L12

STATUS

MIN RAT SPEED.....140 KT
MAX SPEED.....320 KT
MAX BRK PR.....1000 PSI

FOR LDG.....USE FLAPS 3
GPWS LDG FLAP 3.....ON
APPR SPD.....VREF +10 KT
LDG DIST PROC.....APPLY
ENG 1+2 APPR IDLE ONLY
ENG 1+2 N1 DEGRADED MODE
(IAE-powered aircraft)
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
CTR TK FUEL UNUSABLE
FUEL CONSUMPT INCRSD

This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.

FMS PRED UNRELIABLE

Disregard FMS fuel predictions and refer to QRH/OPS- Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

SLATS/FLAPS SLOW

- **After recovery of normal electrical supply, the following STATUS will be displayed:**
  MAX SPEED.....320 KT
  APPR SPD.....VREF +10 KT
  LDG DIST PROC.....APPLY

INOP SYS

Refer to PRO-ABN-ELEC-[QRH] ELEC EMER CONFIG SYS REMAINING.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

APPR PROC

- **3 MN/2000 FT BEFORE LDG:**
  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON
- **WHEN A/C IS STOPPED:**
  ALL GEN..... OFF

ALTN LAW: PROT LOST
See (1)
WHEN L/G DN: DIRECT LAW
See (2)

(1) *Flight controls remain in alternate law, due to the loss of IR 2 and 3.*
(2) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

[QRH] SMOKE / FUMES / AVNCS SMOKE

Applicable to: MSN 02121-02135, 02139, 02275-02334, 02443, 02609-02649, 02804, 03071, 05158

Ident.: PRO-ABN-SMOKE-D-00012212.0004001 / 17 MAR 17

This procedure includes all the steps of the AVIONICS SMOKE ECAM procedure.

Apply this procedure when:

- The flight (cabin) crew suspect that smoke is coming from any of the following:
  - The avionics
  - The air conditioning
  - The cabin equipment
- Requested by the AVIONICS SMOKE ECAM procedure.
- There is a smell of smoke / fumes in the cockpit :
  - If the smell is similar to that of orange peels, suspect a toxic leak of rain repellent fluid.
  - If the smell is similar to that of pine needles, suspect a non-toxic leak.

If any other ECAM SMOKE alert triggers (CARGO, ...), the crew must first apply the ECAM procedure, then consider applying this procedure.
Note that these ECAM alerts may be caused by another source, that should usually first be detected by the flight crew/cabin crew/avionics smoke detectors.

The following explains the layout of this procedure:

- The procedure lines above the text boxes indicate the actions that the flight crew must immediately perform, if smoke is detected (with or without ECAM activation and regardless of the smoke source). These immediate actions correspond to the most common steps to be taken in smoke cases. In all cases, the flight crew must also be prepared to immediately perform a diversion. However, this diversion may be avoided if the smoke source is obvious, accessible and extinguishable or confirmed isolated (after completion of the immediate actions).
- The text boxes indicate the actions that the flight crew must consider, if at any time during the remainder of the procedure but always after the initial steps:
  - Smoke / fumes become the greatest threat and removal of smoke / fumes is required, and/or
  - The situation becomes critical and can no longer be controlled.
- The procedure lines below the text boxes indicate the actions that the flight crew must perform, as soon as they suspect a source of smoke. The actions will depend on whether the smoke is coming from the avionics, and/or air conditioning, and/or cabin equipment.

LAND ASAP

IF PERCEPTIBLE SMOKE APPLY IMMEDIATELY:

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

If smoke is confirmed, the following procedure must be applied.

OXY MASK / GOGGLE (if required).....USE/100%/EMERG

Ensure crew communication is established. Avoid continuous use of the interphone to minimize interference from the oxygen mask breathing noise.
Turn the emergency knob to remove condensation or smoke from the mask.

VENTILATION BLOWER..... OVRD
VENTILATION EXTRACT..... OVRD

Avionics ventilation air is extracted overboard.

CAB FANS.....OFF

To prevent smoke from entering the cockpit and cabin.

GALY & CAB.....OFF
SIGNS.....ON
CKPT / CABIN COM..... ESTABLISH

Communication must be established with the cabin crew in order to follow up on the smoke origin and dissipation.

- **If smoke source immediately obvious, accessible, and extinguishable:**
  FAULTY EQPT..... ISOLATE

- **If smoke source not immediately isolated:**
  DIVERSION.....INITIATE
  DESCENT TO FL 100 / MEA-MORA..... INITIATE

- **At ANY TIME of the procedure, if SMOKE / FUMES becomes the GREATEST THREAT:**
  REMOVAL OF SMOKE / FUMES.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES
  ELEC EMER CONFIG.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG

- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE:**
  IMMEDIATE LANDING.....CONSIDER

L2 *Depending on the situation, the Captain can consider an overweight landing, a tailwind landing, a ditching, a forced landing, etc.*

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

L1 Guidelines to determine smoke source:

- If smoke initially comes out of the ventilation outlets, the crew may suspect AIR COND SMOKE. In addition, very shortly thereafter, several SMOKE warnings (cargo, lavatory, avionics) will be triggered. The displayed ECAM procedures must be applied.
- After an ENG or APU failure, smoke may come from the faulty item via the bleed system and be perceived in the cockpit and/or cabin. In such a case, it will be recirculated throughout the aircraft, until it completely disappears from the air conditioning system.
- If only the AVIONICS SMOKE warning is triggered, the crew may suspect avionics smoke.
- If the smoke is detected while an equipment is declared faulty, the crew may suspect that smoke is coming from this equipment.
- Avionics or forward galley smoke may be smelt, or may enter in the cockpit before ECAM warning activation.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012214.0007001 / 17 MAR 17

- **If Air COND smoke suspected:**

  APU BLEED.....OFF
  VENTILATION BLOWER and EXTRACT.....AUTO

  Note: *When both VENTILATION BLOWER and VENTILATION EXTRACT are in the OVRD position, a single pack may not be able to maintain the cabin pressure.*

  CARGO AFT ISOL VALVE.....OFF

  To prevent a cargo smoke warning from being triggered due to cabin smoke.

  PACK 1.....OFF

  - **If smoke continues:**

    PACK 1.....ON
    PACK 2.....OFF

    - **If smoke persists:**

      PACK 2.....ON

      Restore normal configuration if PACK 2 is not suspected to cause smoke

      VENTILATION BLOWER.....OVRD
      VENTILATION EXTRACT.....OVRD

  REMOVAL OF SMOKE / FUMES.....CONSIDER

  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

- **If CABIN EQPT smoke suspected:**

  - **If smoke continues:**

    EMER EXIT LIGHT.....ON
    COMMERCIAL.....OFF
    SMOKE DISSIPATION.....CHECK
    FAULTY EQPT.....SEARCH / ISOLATE

    Once the cabin has been secured, try to find the smoke source and isolate it.
    Cabin lights, reading lights, passenger systems, galleys have dedicated control C/B in the cabin or cockpit.

    - **If smoke persists or if faulty equipment confirmed isolated:**

      COMMERCIAL.....NORM

    REMOVAL OF SMOKE / FUMES.....CONSIDER

    Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012215.0001001 / 17 MAR 17

- **If smoke source cannot be determined and persists or AVNCS / ELECTRICAL smoke suspected:**
  ELEC EMER CONFIG..... CONSIDER
  Refer to the end of the procedure to set ELEC EMER CONFIG.
- **If smoke disappears within 5 min:**
  NORMAL VENTILATION..... RESTORE

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012565.0017001 / 06 JUL 17

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TO SET ELEC EMER CONFIG

EMER ELEC GEN 1 LINE.....OFF

GEN 1 LINE contactor opens. GEN 1 remains running and supplies one fuel pump in each wing tank. AC BUS 1 is supplied by GEN 2 through the bus tie contactor.

EMER ELEC PWR.....MAN ON

RAT is extended and the EMER GEN is connected to the aircraft network. Check emergency generator parameters on the ELEC SD page (displayed automatically).

- **When EMER GEN AVAIL:**

  APU GEN.....OFF
  GEN 2.....OFF
  ELEC EMER CONFIG

  Two different procedures can be displayed on the ECAM, depending on whether the AVIONICS SMOKE ECAM caution is triggered or not before the flight crew sets the electrical emergency configuration.

  - **If AVIONICS SMOKE not triggered:**

    APPLY ELEC EMER CONFIG PROCEDURE, BUT DO NOT RESET GEN, EVEN IF REQUESTED BY ECAM

    - **At 3 min or 2 000 ft AAL before landing:**

      Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

      GEN 2.....ON
      EMER ELEC GEN 1 LINE.....ON

    - **When aircraft stopped:**

      ALL GENs.....OFF

  - **If AVIONICS SMOKE triggered:**

    The ECAM displays a specific ELEC EMER CONFIG procedure. The flight crew must apply the following ECAM procedure.

    MIN RAT SPEED.....140 KT

    Note: The electrical configuration is the same as for loss of both generators (except that one fuel pump in each wing tank remains supplied).

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

VHF 1 / HF 1 / ATC 1..... USE

Only VHF 1, HF 1 and ATC 1 are supplied in this configuration. Notify the ATC of the nature of the emergency, and state intentions. If there is no contact with the ATC, switch to code A7700, or transmit a distress message on one of the emergency frequencies.

FAC 1..... OFF THEN ON

Rudder trim is recovered, despite the fact that no indication is available.

- **At 3 min or 2 000 ft AAL before landing:**

  Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON

F/CTL ALTN LAW (PROT LOST)

Flight control normal laws and associated protections are lost. Only the load factor limitation, and the high and low speed stability remain (ALTN law with reduced protection).

MAX SPEED.....320 KT

Note: *Depending on the value of the engine total air temperature, the "EPR FAULT MODE" may be triggered, resulting in the degraded N1 MODE for both engines.*

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012217.0057001 / 31 AUG 17

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ECAM lower display is not available. STATUS SD page is displayed on the upper ECAM display, as long as the STATUS pb is pressed.

L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED..... 320 KT
MAX BRK PR.....1000 PSI

FOR LDG.....USE FLAPS 3
GPWS LDG FLAP 3.....ON
APPR SPD..... VREF +10 KT
LDG DIST PROC..... APPLY
ENG 1+2 APPR IDLE ONLY
ENG 1+2 N1 DEGRADED MODE
(IAE-powered aircraft)
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
CTR TK FUEL UNUSABLE
FUEL CONSUMPT INCRSD

This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.

FMS PRED UNRELIABLE

Disregard FMS fuel predictions and refer to QRH/OPS- Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

SLATS/FLAPS SLOW

- **After recovery of normal electrical supply, the following STATUS will be displayed:**
  MAX SPEED.....320 KT
  APPR SPD.....VREF +10 KT
  LDG DIST PROC.....APPLY

INOP SYS

Refer to PRO-ABN-ELEC-[QRH] ELEC EMER CONFIG SYS REMAINING.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

APPR PROC

- **3 MN/2000 FT BEFORE LDG:**
  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON
- **WHEN A/C IS STOPPED:**
  ALL GEN..... OFF

ALTN LAW: PROT LOST
See (1)
WHEN L/G DN: DIRECT LAW
See (2)

(1) *Flight controls remain in alternate law, due to the loss of IR 2 and 3.*
(2) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

[QRH] SMOKE / FUMES / AVNCS SMOKE - GENERAL

Applicable to: MSN 02204

Ident.: TDU / PRO-ABN-SMOKE-D-00018929.0003001 / 17 MAR 17
Impacted DU: NONE

In case of perceptible smoke, remember that the smoke may be coming from the Cockpit Door Surveillance System LCD monitor :

- **If smoke from LCD monitor suspected :**
  CKPT DOOR VIDEO pb..... OFF

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE - GENERAL (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012212.0004001 / 17 MAR 17

This procedure includes all the steps of the AVIONICS SMOKE ECAM procedure.

Apply this procedure when:
- The flight (cabin) crew suspect that smoke is coming from any of the following:
  - The avionics
  - The air conditioning
  - The cabin equipment
- Requested by the AVIONICS SMOKE ECAM procedure.
- There is a smell of smoke / fumes in the cockpit :
  - If the smell is similar to that of orange peels, suspect a toxic leak of rain repellent fluid.
  - If the smell is similar to that of pine needles, suspect a non-toxic leak.

If any other ECAM SMOKE alert triggers (CARGO, ...), the crew must first apply the ECAM procedure, then consider applying this procedure.
Note that these ECAM alerts may be caused by another source, that should usually first be detected by the flight crew/cabin crew/avionics smoke detectors.

The following explains the layout of this procedure:
- The procedure lines above the text boxes indicate the actions that the flight crew must immediately perform, if smoke is detected (with or without ECAM activation and regardless of the smoke source). These immediate actions correspond to the most common steps to be taken in smoke cases. In all cases, the flight crew must also be prepared to immediately perform a diversion. However, this diversion may be avoided if the smoke source is obvious, accessible and extinguishable or confirmed isolated (after completion of the immediate actions).
- The text boxes indicate the actions that the flight crew must consider, if at any time during the remainder of the procedure but always after the initial steps:
  - Smoke / fumes become the greatest threat and removal of smoke / fumes is required, and/or
  - The situation becomes critical and can no longer be controlled.
- The procedure lines below the text boxes indicate the actions that the flight crew must perform, as soon as they suspect a source of smoke. The actions will depend on whether the smoke is coming from the avionics, and/or air conditioning, and/or cabin equipment.

LAND ASAP

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE - GENERAL (Cont'd)

IF PERCEPTIBLE SMOKE APPLY IMMEDIATELY:

If smoke is confirmed, the following procedure must be applied.

OXY MASK / GOGGLE (if required).....USE/100%/EMERG

Ensure crew communication is established. Avoid continuous use of the interphone to minimize interference from the oxygen mask breathing noise.
Turn the emergency knob to remove condensation or smoke from the mask.

VENTILATION BLOWER..... OVRD
VENTILATION EXTRACT..... OVRD

Avionics ventilation air is extracted overboard.

CAB FANS.....OFF

To prevent smoke from entering the cockpit and cabin.

GALY & CAB.....OFF
SIGNS.....ON
CKPT / CABIN COM..... ESTABLISH

Communication must be established with the cabin crew in order to follow up on the smoke origin and dissipation.

- **If smoke source immediately obvious, accessible, and extinguishable:**
  FAULTY EQPT..... ISOLATE

- **If smoke source not immediately isolated:**
  DIVERSION.....INITIATE
  DESCENT TO FL 100 / MEA-MORA..... INITIATE

- **At ANY TIME of the procedure, if SMOKE / FUMES becomes the GREATEST THREAT:**
  REMOVAL OF SMOKE / FUMES.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES
  ELEC EMER CONFIG.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG

- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE:**
  IMMEDIATE LANDING.....CONSIDER

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE - GENERAL (Cont'd)

L2 *Depending on the situation, the Captain can consider an overweight landing, a tailwind landing, a ditching, a forced landing, etc.*

L1 Guidelines to determine smoke source:

- If smoke initially comes out of the ventilation outlets, the crew may suspect AIR COND SMOKE. In addition, very shortly thereafter, several SMOKE warnings (cargo, lavatory, avionics) will be triggered. The displayed ECAM procedures must be applied.
- After an ENG or APU failure, smoke may come from the faulty item via the bleed system and be perceived in the cockpit and/or cabin. In such a case, it will be recirculated throughout the aircraft, until it completely disappears from the air conditioning system.
- If only the AVIONICS SMOKE warning is triggered, the crew may suspect avionics smoke.
- If the smoke is detected while an equipment is declared faulty, the crew may suspect that smoke is coming from this equipment.
- Avionics or forward galley smoke may be smelt, or may enter in the cockpit before ECAM warning activation.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE - GENERAL (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012214.0007001 / 17 MAR 17

- **If Air COND smoke suspected:**

  APU BLEED.....OFF
  VENTILATION BLOWER and EXTRACT.....AUTO

  Note: *When both VENTILATION BLOWER and VENTILATION EXTRACT are in the OVRD position, a single pack may not be able to maintain the cabin pressure.*

  CARGO AFT ISOL VALVE.....OFF

  To prevent a cargo smoke warning from being triggered due to cabin smoke.

  PACK 1.....OFF

  - **If smoke continues:**

    PACK 1.....ON
    PACK 2.....OFF

    - **If smoke persists:**

      PACK 2.....ON

      Restore normal configuration if PACK 2 is not suspected to cause smoke

      VENTILATION BLOWER.....OVRD
      VENTILATION EXTRACT.....OVRD

  REMOVAL OF SMOKE / FUMES.....CONSIDER

  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

- **If CABIN EQPT smoke suspected:**

  - **If smoke continues:**

    EMER EXIT LIGHT.....ON
    COMMERCIAL.....OFF
    SMOKE DISSIPATION.....CHECK
    FAULTY EQPT.....SEARCH / ISOLATE

    Once the cabin has been secured, try to find the smoke source and isolate it.
    Cabin lights, reading lights, passenger systems, galleys have dedicated control C/B in the cabin or cockpit.

    - **If smoke persists or if faulty equipment confirmed isolated:**

      COMMERCIAL.....NORM

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS
SMOKE - GENERAL (Cont'd)

REMOVAL OF SMOKE / FUMES.....CONSIDER

Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

Ident.: PRO-ABN-SMOKE-D-00012215.0001001 / 17 MAR 17

- **If smoke source cannot be determined and persists or AVNCS / ELECTRICAL smoke suspected:**

  ELEC EMER CONFIG.....CONSIDER

  Refer to the end of the procedure to set ELEC EMER CONFIG.

- **If smoke disappears within 5 min:**

  NORMAL VENTILATION.....RESTORE

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE - GENERAL (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012565.0017001 / 06 JUL 17

TO SET ELEC EMER CONFIG

EMER ELEC GEN 1 LINE.....OFF

GEN 1 LINE contactor opens. GEN 1 remains running and supplies one fuel pump in each wing tank. AC BUS 1 is supplied by GEN 2 through the bus tie contactor.

EMER ELEC PWR.....MAN ON

RAT is extended and the EMER GEN is connected to the aircraft network. Check emergency generator parameters on the ELEC SD page (displayed automatically).

- **When EMER GEN AVAIL:**

  APU GEN.....OFF
  GEN 2.....OFF
  ELEC EMER CONFIG

  Two different procedures can be displayed on the ECAM, depending on whether the AVIONICS SMOKE ECAM caution is triggered or not before the flight crew sets the electrical emergency configuration.

  - **If AVIONICS SMOKE not triggered:**

    APPLY ELEC EMER CONFIG PROCEDURE, BUT DO NOT RESET GEN, EVEN IF REQUESTED BY ECAM

    - **At 3 min or 2 000 ft AAL before landing:**

      Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

      GEN 2.....ON
      EMER ELEC GEN 1 LINE.....ON

    - **When aircraft stopped:**

      ALL GENs.....OFF

  - **If AVIONICS SMOKE triggered:**

    The ECAM displays a specific ELEC EMER CONFIG procedure. The flight crew must apply the following ECAM procedure.

    MIN RAT SPEED.....140 KT

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE - GENERAL (Cont'd)

Note: The electrical configuration is the same as for loss of both generators (except that one fuel pump in each wing tank remains supplied).

VHF 1 / HF 1 / ATC 1..... USE

Only VHF 1, HF 1 and ATC 1 are supplied in this configuration. Notify the ATC of the nature of the emergency, and state intentions. If there is no contact with the ATC, switch to code A7700, or transmit a distress message on one of the emergency frequencies.

FAC 1..... OFF THEN ON

Rudder trim is recovered, despite the fact that no indication is available.

- **At 3 min or 2 000 ft AAL before landing:**

  Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON

F/CTL ALTN LAW (PROT LOST)

Flight control normal laws and associated protections are lost. Only the load factor limitation, and the high and low speed stability remain (ALTN law with reduced protection).

MAX SPEED.....320 KT

Note: Depending on the value of the engine total air temperature, the "EPR FAULT MODE" may be triggered, resulting in the degraded N1 MODE for both engines.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS
SMOKE - GENERAL (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012217.0057001 / 31 AUG 17

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ECAM lower display is not available. STATUS SD page is displayed on the upper ECAM display, as long as the STATUS pb is pressed.

L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED..... 320 KT
MAX BRK PR.....1000 PSI

FOR LDG.....USE FLAPS 3
GPWS LDG FLAP 3.....ON
APPR SPD..... VREF +10 KT
LDG DIST PROC..... APPLY
ENG 1+2 APPR IDLE ONLY
ENG 1+2 N1 DEGRADED MODE
(IAE-powered aircraft)
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
CTR TK FUEL UNUSABLE
FUEL CONSUMPT INCRSD

This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.

FMS PRED UNRELIABLE

Disregard FMS fuel predictions and refer to QRH/OPS- Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

SLATS/FLAPS SLOW

- **After recovery of normal electrical supply, the following STATUS will be displayed:**
  MAX SPEED.....320 KT
  APPR SPD.....VREF +10 KT

INOP SYS

Refer to PRO-ABN-ELEC-[QRH] ELEC EMER CONFIG SYS REMAINING.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE - GENERAL (Cont'd)

LDG DIST PROC.....APPLY

APPR PROC

- **3 MN/2000 FT BEFORE LDG:**
  GEN 2..... ON
  EMER ELEC GEN 1 LINE.....ON
- **WHEN A/C IS STOPPED:**
  ALL GEN..... OFF

ALTN LAW: PROT LOST
See (1)
WHEN L/G DN: DIRECT LAW
See (2)

(1) *Flight controls remain in alternate law, due to the loss of IR 2 and 3.*
(2) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

[QRH] SMOKE / FUMES / AVNCS SMOKE

Applicable to: MSN 02388, 02584, 02712, 03138, 03750, 04399, 04438, 04510

Ident.: PRO-ABN-SMOKE-D-00012212.0004001 / 17 MAR 17

This procedure includes all the steps of the AVIONICS SMOKE ECAM procedure.

Apply this procedure when:
- The flight (cabin) crew suspect that smoke is coming from any of the following:
  - The avionics
  - The air conditioning
  - The cabin equipment
- Requested by the AVIONICS SMOKE ECAM procedure.
- There is a smell of smoke / fumes in the cockpit :
  - If the smell is similar to that of orange peels, suspect a toxic leak of rain repellent fluid.
  - If the smell is similar to that of pine needles, suspect a non-toxic leak.

If any other ECAM SMOKE alert triggers (CARGO, ...), the crew must first apply the ECAM procedure, then consider applying this procedure.
Note that these ECAM alerts may be caused by another source, that should usually first be detected by the flight crew/cabin crew/avionics smoke detectors.

The following explains the layout of this procedure:
- The procedure lines above the text boxes indicate the actions that the flight crew must immediately perform, if smoke is detected (with or without ECAM activation and regardless of the smoke source). These immediate actions correspond to the most common steps to be taken in smoke cases. In all cases, the flight crew must also be prepared to immediately perform a diversion. However, this diversion may be avoided if the smoke source is obvious, accessible and extinguishable or confirmed isolated (after completion of the immediate actions).
- The text boxes indicate the actions that the flight crew must consider, if at any time during the remainder of the procedure but always after the initial steps:
  - Smoke / fumes become the greatest threat and removal of smoke / fumes is required, and/or
  - The situation becomes critical and can no longer be controlled.
- The procedure lines below the text boxes indicate the actions that the flight crew must perform, as soon as they suspect a source of smoke. The actions will depend on whether the smoke is coming from the avionics, and/or air conditioning, and/or cabin equipment.

LAND ASAP

IF PERCEPTIBLE SMOKE APPLY IMMEDIATELY:

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

If smoke is confirmed, the following procedure must be applied.

OXY MASK / GOGGLE (if required).....USE/100%/EMERG

Ensure crew communication is established. Avoid continuous use of the interphone to minimize interference from the oxygen mask breathing noise.
Turn the emergency knob to remove condensation or smoke from the mask.

VENTILATION BLOWER..... OVRD
VENTILATION EXTRACT..... OVRD

Avionics ventilation air is extracted overboard.

CAB FANS.....OFF

To prevent smoke from entering the cockpit and cabin.

GALY & CAB.....OFF
SIGNS.....ON
CKPT / CABIN COM..... ESTABLISH

Communication must be established with the cabin crew in order to follow up on the smoke origin and dissipation.

- **If smoke source immediately obvious, accessible, and extinguishable:**
  FAULTY EQPT..... ISOLATE

- **If smoke source not immediately isolated:**
  DIVERSION.....INITIATE
  DESCENT TO FL 100 / MEA-MORA..... INITIATE

- **At ANY TIME of the procedure, if SMOKE / FUMES becomes the GREATEST THREAT:**
  REMOVAL OF SMOKE / FUMES.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES
  ELEC EMER CONFIG.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG

- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE:**
  IMMEDIATE LANDING.....CONSIDER

L2 *Depending on the situation, the Captain can consider an overweight landing, a tailwind landing, a ditching, a forced landing, etc.*

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

L1 Guidelines to determine smoke source:

- If smoke initially comes out of the ventilation outlets, the crew may suspect AIR COND SMOKE. In addition, very shortly thereafter, several SMOKE warnings (cargo, lavatory, avionics) will be triggered. The displayed ECAM procedures must be applied.
- After an ENG or APU failure, smoke may come from the faulty item via the bleed system and be perceived in the cockpit and/or cabin. In such a case, it will be recirculated throughout the aircraft, until it completely disappears from the air conditioning system.
- If only the AVIONICS SMOKE warning is triggered, the crew may suspect avionics smoke.
- If the smoke is detected while an equipment is declared faulty, the crew may suspect that smoke is coming from this equipment.
- Avionics or forward galley smoke may be smelt, or may enter in the cockpit before ECAM warning activation.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012214.0004001 / 17 MAR 17

- **If Air COND smoke suspected:**

  APU BLEED.....OFF
  VENTILATION BLOWER and EXTRACT.....AUTO

  Note: *When both VENTILATION BLOWER and VENTILATION EXTRACT are in the OVRD position, a single pack may not be able to maintain the cabin pressure.*

  PACK 1.....OFF

  - **If smoke continues:**

    PACK 1.....ON
    PACK 2.....OFF

    - **If smoke persists:**

      PACK 2.....ON

      Restore normal configuration if PACK 2 is not suspected to cause smoke

      VENTILATION BLOWER.....OVRD
      VENTILATION EXTRACT.....OVRD

  REMOVAL OF SMOKE / FUMES.....CONSIDER

  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

- **If CABIN EQPT smoke suspected:**

  - **If smoke continues:**

    EMER EXIT LIGHT.....ON
    COMMERCIAL.....OFF
    SMOKE DISSIPATION.....CHECK
    FAULTY EQPT.....SEARCH / ISOLATE

    Once the cabin has been secured, try to find the smoke source and isolate it.
    Cabin lights, reading lights, passenger systems, galleys have dedicated control C/B in the cabin or cockpit.

    - **If smoke persists or if faulty equipment confirmed isolated:**

      COMMERCIAL.....NORM

    REMOVAL OF SMOKE / FUMES.....CONSIDER

    Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012215.0001001 / 17 MAR 17

- **If smoke source cannot be determined and persists or AVNCS / ELECTRICAL smoke suspected:**
  ELEC EMER CONFIG..... CONSIDER
  Refer to the end of the procedure to set ELEC EMER CONFIG.
- **If smoke disappears within 5 min:**
  NORMAL VENTILATION..... RESTORE

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012565.0019001 / 17 MAR 17

10

TO SET ELEC EMER CONFIG

EMER ELEC GEN 1 LINE.....OFF

GEN 1 LINE contactor opens. GEN 1 remains running and supplies one fuel pump in each wing tank. AC BUS 1 is supplied by GEN 2 through the bus tie contactor.

EMER ELEC PWR.....MAN ON

RAT is extended and the EMER GEN is connected to the aircraft network. Check emergency generator parameters on the ELEC SD page (displayed automatically).

- **When EMER GEN AVAIL:**

  APU GEN.....OFF
  GEN 2.....OFF
  ELEC EMER CONFIG

  Two different procedures can be displayed on the ECAM, depending on whether the AVIONICS SMOKE ECAM caution is triggered or not before the flight crew sets the electrical emergency configuration.

  - **If AVIONICS SMOKE not triggered:**

    APPLY ELEC EMER CONFIG PROCEDURE, BUT DO NOT RESET GEN, EVEN IF REQUESTED BY ECAM

    - **At 3 min or 2 000 ft AAL before landing:**

      Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

      GEN 2.....ON
      EMER ELEC GEN 1 LINE.....ON

    - **When aircraft stopped:**

      ALL GENs.....OFF

  - **If AVIONICS SMOKE triggered:**

    The ECAM displays a specific ELEC EMER CONFIG procedure. The flight crew must apply the following ECAM procedure.

    MIN RAT SPEED.....140 KT

    Note: The electrical configuration is the same as for loss of both generators (except that one fuel pump in each wing tank remains supplied).

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

VHF 1 / HF 1 / ATC 1..... USE

Only VHF 1, HF 1 and ATC 1 are supplied in this configuration. Notify the ATC of the nature of the emergency, and state intentions. If there is no contact with the ATC, switch to code A7700, or transmit a distress message on one of the emergency frequencies.

FAC 1..... OFF THEN ON

Rudder trim is recovered, despite the fact that no indication is available.

- **At 3 min or 2 000 ft AAL before landing:**

  Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON

F/CTL ALTN LAW (PROT LOST)

Flight control normal laws and associated protections are lost. Only the load factor limitation, and the high and low speed stability remain (ALTN law with reduced protection).

MAX SPEED.....320 KT

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012217.0064001 / 31 AUG 17

ECAM lower display is not available. STATUS SD page is displayed on the upper ECAM display, as long as the STATUS pb is pressed.

L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED..... 320 KT
MAX BRK PR.....1000 PSI

FOR LDG.....USE FLAPS 3
GPWS LDG FLAP 3.....ON
APPR SPD..... VREF +10 KT
LDG DIST PROC..... APPLY
ENG 1+2 APPR IDLE ONLY
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
CTR TK FUEL USABLE BY GRAVITY
CTR TK FUEL: 2T UNUSABLE
FUEL CONSUMPT INCRSD

This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.

FMS PRED UNRELIABLE

Disregard FMS fuel predictions and refer to QRH/OPS - Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

SLATS/FLAPS SLOW

- **After recovery of normal electrical supply, the following STATUS will be displayed:**
  MAX SPEED.....320 KT
  APPR SPD.....VREF +10 KT
  LDG DIST PROC.....APPLY

APPR PROC

INOP SYS

Refer to PRO-ABN-ELEC-[QRH] ELEC EMER CONFIG SYS REMAINING.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

- **3 MN/2000 FT BEFORE LDG:**
  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON
- **WHEN A/C IS STOPPED:**
  ALL GEN..... OFF

ALTN LAW: PROT LOST
See (1)
WHEN L/G DN: DIRECT LAW
See (2)

(1) *Flight controls remain in alternate law, due to the loss of IR 2 and 3.*
(2) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

[QRH] SMOKE / FUMES / AVNCS SMOKE

Applicable to: MSN 04294, 04433

Ident.: PRO-ABN-SMOKE-D-00012212.0004001 / 17 MAR 17

This procedure includes all the steps of the AVIONICS SMOKE ECAM procedure.

Apply this procedure when:
- The flight (cabin) crew suspect that smoke is coming from any of the following:
  - The avionics
  - The air conditioning
  - The cabin equipment
- Requested by the AVIONICS SMOKE ECAM procedure.
- There is a smell of smoke / fumes in the cockpit :
  - If the smell is similar to that of orange peels, suspect a toxic leak of rain repellent fluid.
  - If the smell is similar to that of pine needles, suspect a non-toxic leak.

If any other ECAM SMOKE alert triggers (CARGO, ...), the crew must first apply the ECAM procedure, then consider applying this procedure.
Note that these ECAM alerts may be caused by another source, that should usually first be detected by the flight crew/cabin crew/avionics smoke detectors.

The following explains the layout of this procedure:
- The procedure lines above the text boxes indicate the actions that the flight crew must immediately perform, if smoke is detected (with or without ECAM activation and regardless of the smoke source). These immediate actions correspond to the most common steps to be taken in smoke cases. In all cases, the flight crew must also be prepared to immediately perform a diversion. However, this diversion may be avoided if the smoke source is obvious, accessible and extinguishable or confirmed isolated (after completion of the immediate actions).
- The text boxes indicate the actions that the flight crew must consider, if at any time during the remainder of the procedure but always after the initial steps:
  - Smoke / fumes become the greatest threat and removal of smoke / fumes is required, and/or
  - The situation becomes critical and can no longer be controlled.
- The procedure lines below the text boxes indicate the actions that the flight crew must perform, as soon as they suspect a source of smoke. The actions will depend on whether the smoke is coming from the avionics, and/or air conditioning, and/or cabin equipment.

LAND ASAP

IF PERCEPTIBLE SMOKE APPLY IMMEDIATELY:

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

If smoke is confirmed, the following procedure must be applied.

OXY MASK / GOGGLE (if required).....USE/100%/EMERG

Ensure crew communication is established. Avoid continuous use of the interphone to minimize interference from the oxygen mask breathing noise.
Turn the emergency knob to remove condensation or smoke from the mask.

VENTILATION BLOWER..... OVRD
VENTILATION EXTRACT..... OVRD

Avionics ventilation air is extracted overboard.

CAB FANS.....OFF

To prevent smoke from entering the cockpit and cabin.

GALY & CAB.....OFF
SIGNS.....ON
CKPT / CABIN COM..... ESTABLISH

Communication must be established with the cabin crew in order to follow up on the smoke origin and dissipation.

- **If smoke source immediately obvious, accessible, and extinguishable:**
  FAULTY EQPT..... ISOLATE

- **If smoke source not immediately isolated:**
  DIVERSION.....INITIATE
  DESCENT TO FL 100 / MEA-MORA..... INITIATE

- **At ANY TIME of the procedure, if SMOKE / FUMES becomes the GREATEST THREAT:**
  REMOVAL OF SMOKE / FUMES.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES
  ELEC EMER CONFIG.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG

- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE:**
  IMMEDIATE LANDING.....CONSIDER

L2 *Depending on the situation, the Captain can consider an overweight landing, a tailwind landing, a ditching, a forced landing, etc.*

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

L1 Guidelines to determine smoke source:

- If smoke initially comes out of the ventilation outlets, the crew may suspect AIR COND SMOKE. In addition, very shortly thereafter, several SMOKE warnings (cargo, lavatory, avionics) will be triggered. The displayed ECAM procedures must be applied.
- After an ENG or APU failure, smoke may come from the faulty item via the bleed system and be perceived in the cockpit and/or cabin. In such a case, it will be recirculated throughout the aircraft, until it completely disappears from the air conditioning system.
- If only the AVIONICS SMOKE warning is triggered, the crew may suspect avionics smoke.
- If the smoke is detected while an equipment is declared faulty, the crew may suspect that smoke is coming from this equipment.
- Avionics or forward galley smoke may be smelt, or may enter in the cockpit before ECAM warning activation.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012214.0004001 / 17 MAR 17

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- **If Air COND smoke suspected:**

  APU BLEED.....OFF
  VENTILATION BLOWER and EXTRACT.....AUTO

  Note: *When both VENTILATION BLOWER and VENTILATION EXTRACT are in the OVRD position, a single pack may not be able to maintain the cabin pressure.*

  PACK 1.....OFF

  - **If smoke continues:**

    PACK 1.....ON
    PACK 2.....OFF

    - **If smoke persists:**

      PACK 2.....ON

      Restore normal configuration if PACK 2 is not suspected to cause smoke

      VENTILATION BLOWER.....OVRD
      VENTILATION EXTRACT.....OVRD

  REMOVAL OF SMOKE / FUMES.....CONSIDER

  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

- **If CABIN EQPT smoke suspected:**

  - **If smoke continues:**

    EMER EXIT LIGHT.....ON
    COMMERCIAL.....OFF
    SMOKE DISSIPATION.....CHECK
    FAULTY EQPT.....SEARCH / ISOLATE

    Once the cabin has been secured, try to find the smoke source and isolate it.
    Cabin lights, reading lights, passenger systems, galleys have dedicated control C/B in the cabin or cockpit.

    - **If smoke persists or if faulty equipment confirmed isolated:**

      COMMERCIAL.....NORM

    REMOVAL OF SMOKE / FUMES.....CONSIDER

    Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012215.0001001 / 17 MAR 17

- **If smoke source cannot be determined and persists or AVNCS / ELECTRICAL smoke suspected:**
  ELEC EMER CONFIG..... CONSIDER
  Refer to the end of the procedure to set ELEC EMER CONFIG.
- **If smoke disappears within 5 min:**
  NORMAL VENTILATION..... RESTORE

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012565.0019001 / 17 MAR 17

12

TO SET ELEC EMER CONFIG

EMER ELEC GEN 1 LINE..... OFF

GEN 1 LINE contactor opens. GEN 1 remains running and supplies one fuel pump in each wing tank. AC BUS 1 is supplied by GEN 2 through the bus tie contactor.

EMER ELEC PWR.....MAN ON

RAT is extended and the EMER GEN is connected to the aircraft network. Check emergency generator parameters on the ELEC SD page (displayed automatically).

- **When EMER GEN AVAIL:**

  APU GEN..... OFF
  GEN 2..... OFF
  ELEC EMER CONFIG

  Two different procedures can be displayed on the ECAM, depending on whether the AVIONICS SMOKE ECAM caution is triggered or not before the flight crew sets the electrical emergency configuration.

  - **If AVIONICS SMOKE not triggered:**

    APPLY ELEC EMER CONFIG PROCEDURE, BUT DO NOT RESET GEN, EVEN IF REQUESTED BY ECAM

    - **At 3 min or 2 000 ft AAL before landing:**

      Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

      GEN 2..... ON
      EMER ELEC GEN 1 LINE..... ON

    - **When aircraft stopped:**

      ALL GENs..... OFF

  - **If AVIONICS SMOKE triggered:**

    The ECAM displays a specific ELEC EMER CONFIG procedure. The flight crew must apply the following ECAM procedure.

    MIN RAT SPEED.....140 KT

    Note: The electrical configuration is the same as for loss of both generators (except that one fuel pump in each wing tank remains supplied).

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

VHF 1 / HF 1 / ATC 1..... USE

Only VHF 1, HF 1 and ATC 1 are supplied in this configuration. Notify the ATC of the nature of the emergency, and state intentions. If there is no contact with the ATC, switch to code A7700, or transmit a distress message on one of the emergency frequencies.

FAC 1..... OFF THEN ON

Rudder trim is recovered, despite the fact that no indication is available.

- **At 3 min or 2 000 ft AAL before landing:**

  Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON

F/CTL ALTN LAW (PROT LOST)

Flight control normal laws and associated protections are lost. Only the load factor limitation, and the high and low speed stability remain (ALTN law with reduced protection).

MAX SPEED.....320 KT

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012217.0057001 / 31 AUG 17

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ECAM lower display is not available. STATUS SD page is displayed on the upper ECAM display, as long as the STATUS pb is pressed.

L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED..... 320 KT
MAX BRK PR.....1000 PSI

FOR LDG.....USE FLAPS 3
GPWS LDG FLAP 3.....ON
APPR SPD..... VREF +10 KT
LDG DIST PROC..... APPLY
ENG 1+2 APPR IDLE ONLY
ENG 1+2 N1 DEGRADED MODE
(IAE-powered aircraft)
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
CTR TK FUEL UNUSABLE
FUEL CONSUMPT INCRSD

This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.

FMS PRED UNRELIABLE

Disregard FMS fuel predictions and refer to QRH/OPS- Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

SLATS/FLAPS SLOW

- **After recovery of normal electrical supply, the following STATUS will be displayed:**
  MAX SPEED.....320 KT
  APPR SPD.....VREF +10 KT
  LDG DIST PROC.....APPLY

INOP SYS

Refer to PRO-ABN-ELEC-[QRH] ELEC EMER CONFIG SYS REMAINING.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

APPR PROC

- **3 MN/2000 FT BEFORE LDG:**
  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON
- **WHEN A/C IS STOPPED:**
  ALL GEN..... OFF

ALTN LAW: PROT LOST
See (1)
WHEN L/G DN: DIRECT LAW
See (2)

(1) *Flight controls remain in alternate law, due to the loss of IR 2 and 3.*
(2) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

[QRH] SMOKE / FUMES / AVNCS SMOKE

Applicable to: MSN 04314, 04393-04397

Ident.: PRO-ABN-SMOKE-D-00012212.0004001 / 17 MAR 17

This procedure includes all the steps of the AVIONICS SMOKE ECAM procedure.

Apply this procedure when:

- The flight (cabin) crew suspect that smoke is coming from any of the following:
  - The avionics
  - The air conditioning
  - The cabin equipment
- Requested by the AVIONICS SMOKE ECAM procedure.
- There is a smell of smoke / fumes in the cockpit :
  - If the smell is similar to that of orange peels, suspect a toxic leak of rain repellent fluid.
  - If the smell is similar to that of pine needles, suspect a non-toxic leak.

If any other ECAM SMOKE alert triggers (CARGO, ...), the crew must first apply the ECAM procedure, then consider applying this procedure.
Note that these ECAM alerts may be caused by another source, that should usually first be detected by the flight crew/cabin crew/avionics smoke detectors.

The following explains the layout of this procedure:

- The procedure lines above the text boxes indicate the actions that the flight crew must immediately perform, if smoke is detected (with or without ECAM activation and regardless of the smoke source). These immediate actions correspond to the most common steps to be taken in smoke cases. In all cases, the flight crew must also be prepared to immediately perform a diversion. However, this diversion may be avoided if the smoke source is obvious, accessible and extinguishable or confirmed isolated (after completion of the immediate actions).
- The text boxes indicate the actions that the flight crew must consider, if at any time during the remainder of the procedure but always after the initial steps:
  - Smoke / fumes become the greatest threat and removal of smoke / fumes is required, and/or
  - The situation becomes critical and can no longer be controlled.
- The procedure lines below the text boxes indicate the actions that the flight crew must perform, as soon as they suspect a source of smoke. The actions will depend on whether the smoke is coming from the avionics, and/or air conditioning, and/or cabin equipment.

LAND ASAP

IF PERCEPTIBLE SMOKE APPLY IMMEDIATELY:

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

If smoke is confirmed, the following procedure must be applied.

OXY MASK / GOGGLE (if required).....USE/100%/EMERG

Ensure crew communication is established. Avoid continuous use of the interphone to minimize interference from the oxygen mask breathing noise.
Turn the emergency knob to remove condensation or smoke from the mask.

VENTILATION BLOWER..... OVRD
VENTILATION EXTRACT..... OVRD

Avionics ventilation air is extracted overboard.

CAB FANS.....OFF

To prevent smoke from entering the cockpit and cabin.

GALY & CAB.....OFF
SIGNS.....ON
CKPT / CABIN COM..... ESTABLISH

Communication must be established with the cabin crew in order to follow up on the smoke origin and dissipation.

- **If smoke source immediately obvious, accessible, and extinguishable:**
  FAULTY EQPT..... ISOLATE

- **If smoke source not immediately isolated:**
  DIVERSION.....INITIATE
  DESCENT TO FL 100 / MEA-MORA..... INITIATE

- **At ANY TIME of the procedure, if SMOKE / FUMES becomes the GREATEST THREAT:**
  REMOVAL OF SMOKE / FUMES.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES
  ELEC EMER CONFIG.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG

- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE:**
  IMMEDIATE LANDING.....CONSIDER
  L2 *Depending on the situation, the Captain can consider an overweight landing, a tailwind landing, a ditching, a forced landing, etc.*

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

L1 Guidelines to determine smoke source:

- If smoke initially comes out of the ventilation outlets, the crew may suspect AIR COND SMOKE. In addition, very shortly thereafter, several SMOKE warnings (cargo, lavatory, avionics) will be triggered. The displayed ECAM procedures must be applied.
- After an ENG or APU failure, smoke may come from the faulty item via the bleed system and be perceived in the cockpit and/or cabin. In such a case, it will be recirculated throughout the aircraft, until it completely disappears from the air conditioning system.
- If only the AVIONICS SMOKE warning is triggered, the crew may suspect avionics smoke.
- If the smoke is detected while an equipment is declared faulty, the crew may suspect that smoke is coming from this equipment.
- Avionics or forward galley smoke may be smelt, or may enter in the cockpit before ECAM warning activation.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012214.0007001 / 17 MAR 17

- **If Air COND smoke suspected:**

  APU BLEED.....OFF
  VENTILATION BLOWER and EXTRACT.....AUTO

  Note: *When both VENTILATION BLOWER and VENTILATION EXTRACT are in the OVRD position, a single pack may not be able to maintain the cabin pressure.*

  CARGO AFT ISOL VALVE.....OFF

  To prevent a cargo smoke warning from being triggered due to cabin smoke.

  PACK 1.....OFF

  - **If smoke continues:**

    PACK 1.....ON
    PACK 2.....OFF

    - **If smoke persists:**

      PACK 2.....ON

      Restore normal configuration if PACK 2 is not suspected to cause smoke

      VENTILATION BLOWER.....OVRD
      VENTILATION EXTRACT.....OVRD

  REMOVAL OF SMOKE / FUMES.....CONSIDER

  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

- **If CABIN EQPT smoke suspected:**

  - **If smoke continues:**

    EMER EXIT LIGHT.....ON
    COMMERCIAL.....OFF
    SMOKE DISSIPATION.....CHECK
    FAULTY EQPT.....SEARCH / ISOLATE

    Once the cabin has been secured, try to find the smoke source and isolate it.
    Cabin lights, reading lights, passenger systems, galleys have dedicated control C/B in the cabin or cockpit.

    - **If smoke persists or if faulty equipment confirmed isolated:**

      COMMERCIAL.....NORM

    REMOVAL OF SMOKE / FUMES.....CONSIDER

    Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012215.0001001 / 17 MAR 17

- **If smoke source cannot be determined and persists or AVNCS / ELECTRICAL smoke suspected:**
  ELEC EMER CONFIG..... CONSIDER
  Refer to the end of the procedure to set ELEC EMER CONFIG.
- **If smoke disappears within 5 min:**
  NORMAL VENTILATION..... RESTORE

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012565.0019001 / 17 MAR 17

14

TO SET ELEC EMER CONFIG

EMER ELEC GEN 1 LINE.....OFF

GEN 1 LINE contactor opens. GEN 1 remains running and supplies one fuel pump in each wing tank. AC BUS 1 is supplied by GEN 2 through the bus tie contactor.

EMER ELEC PWR.....MAN ON

RAT is extended and the EMER GEN is connected to the aircraft network. Check emergency generator parameters on the ELEC SD page (displayed automatically).

- **When EMER GEN AVAIL:**

  APU GEN.....OFF
  GEN 2.....OFF
  ELEC EMER CONFIG

  Two different procedures can be displayed on the ECAM, depending on whether the AVIONICS SMOKE ECAM caution is triggered or not before the flight crew sets the electrical emergency configuration.

  - **If AVIONICS SMOKE not triggered:**

    APPLY ELEC EMER CONFIG PROCEDURE, BUT DO NOT RESET GEN, EVEN IF REQUESTED BY ECAM

    - **At 3 min or 2 000 ft AAL before landing:**

      Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

      GEN 2.....ON
      EMER ELEC GEN 1 LINE.....ON

    - **When aircraft stopped:**

      ALL GENs.....OFF

  - **If AVIONICS SMOKE triggered:**

    The ECAM displays a specific ELEC EMER CONFIG procedure. The flight crew must apply the following ECAM procedure.

    MIN RAT SPEED.....140 KT

    Note: The electrical configuration is the same as for loss of both generators (except that one fuel pump in each wing tank remains supplied).

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

VHF 1 / HF 1 / ATC 1..... USE

Only VHF 1, HF 1 and ATC 1 are supplied in this configuration. Notify the ATC of the nature of the emergency, and state intentions. If there is no contact with the ATC, switch to code A7700, or transmit a distress message on one of the emergency frequencies.

FAC 1..... OFF THEN ON

Rudder trim is recovered, despite the fact that no indication is available.

- **At 3 min or 2 000 ft AAL before landing:**

  Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON

F/CTL ALTN LAW (PROT LOST)

Flight control normal laws and associated protections are lost. Only the load factor limitation, and the high and low speed stability remain (ALTN law with reduced protection).

MAX SPEED.....320 KT

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012217.0057001 / 31 AUG 17

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ECAM lower display is not available. STATUS SD page is displayed on the upper ECAM display, as long as the STATUS pb is pressed.

L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED..... 320 KT
MAX BRK PR.....1000 PSI

FOR LDG.....USE FLAPS 3
GPWS LDG FLAP 3.....ON
APPR SPD..... VREF +10 KT
LDG DIST PROC..... APPLY
ENG 1+2 APPR IDLE ONLY
ENG 1+2 N1 DEGRADED MODE
(IAE-powered aircraft)
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
CTR TK FUEL UNUSABLE
FUEL CONSUMPT INCRSD

This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.

FMS PRED UNRELIABLE

Disregard FMS fuel predictions and refer to QRH/OPS- Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

SLATS/FLAPS SLOW

- **After recovery of normal electrical supply, the following STATUS will be displayed:**
  MAX SPEED.....320 KT
  APPR SPD.....VREF +10 KT
  LDG DIST PROC.....APPLY

INOP SYS

Refer to PRO-ABN-ELEC-[QRH] ELEC EMER CONFIG SYS REMAINING.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

APPR PROC

- **3 MN/2000 FT BEFORE LDG:**
  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON
- **WHEN A/C IS STOPPED:**
  ALL GEN..... OFF

ALTN LAW: PROT LOST
See (1)
WHEN L/G DN: DIRECT LAW
See (2)

(1) *Flight controls remain in alternate law, due to the loss of IR 2 and 3.*
(2) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

[QRH] SMOKE / FUMES / AVNCS SMOKE

Applicable to: MSN 06208-06336

Ident.: PRO-ABN-SMOKE-D-00012212.0004001 / 17 MAR 17

This procedure includes all the steps of the AVIONICS SMOKE ECAM procedure.

Apply this procedure when:
- The flight (cabin) crew suspect that smoke is coming from any of the following:
  - The avionics
  - The air conditioning
  - The cabin equipment
- Requested by the AVIONICS SMOKE ECAM procedure.
- There is a smell of smoke / fumes in the cockpit :
  - If the smell is similar to that of orange peels, suspect a toxic leak of rain repellent fluid.
  - If the smell is similar to that of pine needles, suspect a non-toxic leak.

If any other ECAM SMOKE alert triggers (CARGO, ...), the crew must first apply the ECAM procedure, then consider applying this procedure.
Note that these ECAM alerts may be caused by another source, that should usually first be detected by the flight crew/cabin crew/avionics smoke detectors.

The following explains the layout of this procedure:
- The procedure lines above the text boxes indicate the actions that the flight crew must immediately perform, if smoke is detected (with or without ECAM activation and regardless of the smoke source). These immediate actions correspond to the most common steps to be taken in smoke cases. In all cases, the flight crew must also be prepared to immediately perform a diversion. However, this diversion may be avoided if the smoke source is obvious, accessible and extinguishable or confirmed isolated (after completion of the immediate actions).
- The text boxes indicate the actions that the flight crew must consider, if at any time during the remainder of the procedure but always after the initial steps:
  - Smoke / fumes become the greatest threat and removal of smoke / fumes is required, and/or
  - The situation becomes critical and can no longer be controlled.
- The procedure lines below the text boxes indicate the actions that the flight crew must perform, as soon as they suspect a source of smoke. The actions will depend on whether the smoke is coming from the avionics, and/or air conditioning, and/or cabin equipment.

LAND ASAP

IF PERCEPTIBLE SMOKE APPLY IMMEDIATELY:

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

If smoke is confirmed, the following procedure must be applied.

OXY MASK / GOGGLE (if required).....USE/100%/EMERG

Ensure crew communication is established. Avoid continuous use of the interphone to minimize interference from the oxygen mask breathing noise.
Turn the emergency knob to remove condensation or smoke from the mask.

VENTILATION BLOWER..... OVRD
VENTILATION EXTRACT..... OVRD

Avionics ventilation air is extracted overboard.

CAB FANS.....OFF

To prevent smoke from entering the cockpit and cabin.

GALY & CAB.....OFF
SIGNS.....ON
CKPT / CABIN COM..... ESTABLISH

Communication must be established with the cabin crew in order to follow up on the smoke origin and dissipation.

- **If smoke source immediately obvious, accessible, and extinguishable:**
  FAULTY EQPT..... ISOLATE

- **If smoke source not immediately isolated:**
  DIVERSION.....INITIATE
  DESCENT TO FL 100 / MEA-MORA..... INITIATE

- **At ANY TIME of the procedure, if SMOKE / FUMES becomes the GREATEST THREAT:**
  REMOVAL OF SMOKE / FUMES.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES
  ELEC EMER CONFIG.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG

- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE:**
  IMMEDIATE LANDING.....CONSIDER

L2 *Depending on the situation, the Captain can consider an overweight landing, a tailwind landing, a ditching, a forced landing, etc.*

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

L1 Guidelines to determine smoke source:

- If smoke initially comes out of the ventilation outlets, the crew may suspect AIR COND SMOKE. In addition, very shortly thereafter, several SMOKE warnings (cargo, lavatory, avionics) will be triggered. The displayed ECAM procedures must be applied.
- After an ENG or APU failure, smoke may come from the faulty item via the bleed system and be perceived in the cockpit and/or cabin. In such a case, it will be recirculated throughout the aircraft, until it completely disappears from the air conditioning system.
- If only the AVIONICS SMOKE warning is triggered, the crew may suspect avionics smoke.
- If the smoke is detected while an equipment is declared faulty, the crew may suspect that smoke is coming from this equipment.
- Avionics or forward galley smoke may be smelt, or may enter in the cockpit before ECAM warning activation.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012214.0004001 / 17 MAR 17

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- **If Air COND smoke suspected:**

  APU BLEED.....OFF
  VENTILATION BLOWER and EXTRACT.....AUTO

  Note: *When both VENTILATION BLOWER and VENTILATION EXTRACT are in the OVRD position, a single pack may not be able to maintain the cabin pressure.*

  PACK 1.....OFF

  - **If smoke continues:**

    PACK 1.....ON
    PACK 2.....OFF

    - **If smoke persists:**

      PACK 2.....ON

      Restore normal configuration if PACK 2 is not suspected to cause smoke

      VENTILATION BLOWER.....OVRD
      VENTILATION EXTRACT.....OVRD

  REMOVAL OF SMOKE / FUMES.....CONSIDER

  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

- **If CABIN EQPT smoke suspected:**

  - **If smoke continues:**

    EMER EXIT LIGHT.....ON
    COMMERCIAL.....OFF
    SMOKE DISSIPATION.....CHECK
    FAULTY EQPT.....SEARCH / ISOLATE

    Once the cabin has been secured, try to find the smoke source and isolate it.
    Cabin lights, reading lights, passenger systems, galleys have dedicated control C/B in the cabin or cockpit.

    - **If smoke persists or if faulty equipment confirmed isolated:**

      COMMERCIAL.....NORM

    REMOVAL OF SMOKE / FUMES.....CONSIDER

    Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012215.0001001 / 17 MAR 17

- **If smoke source cannot be determined and persists or AVNCS / ELECTRICAL smoke suspected:**
  ELEC EMER CONFIG..... CONSIDER
  Refer to the end of the procedure to set ELEC EMER CONFIG.
- **If smoke disappears within 5 min:**
  NORMAL VENTILATION..... RESTORE

Continued on the following page

Ident.: PRO-ABN-SMOKE-D-00012565.0017001 / 06 JUL 17

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TO SET ELEC EMER CONFIG

EMER ELEC GEN 1 LINE..... OFF

GEN 1 LINE contactor opens. GEN 1 remains running and supplies one fuel pump in each wing tank. AC BUS 1 is supplied by GEN 2 through the bus tie contactor.

EMER ELEC PWR.....MAN ON

RAT is extended and the EMER GEN is connected to the aircraft network. Check emergency generator parameters on the ELEC SD page (displayed automatically).

- **When EMER GEN AVAIL:**

  APU GEN..... OFF
  GEN 2..... OFF
  ELEC EMER CONFIG

  Two different procedures can be displayed on the ECAM, depending on whether the AVIONICS SMOKE ECAM caution is triggered or not before the flight crew sets the electrical emergency configuration.

  - **If AVIONICS SMOKE not triggered:**

    APPLY ELEC EMER CONFIG PROCEDURE, BUT DO NOT RESET GEN, EVEN IF REQUESTED BY ECAM

    - **At 3 min or 2 000 ft AAL before landing:**

      Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

      GEN 2..... ON
      EMER ELEC GEN 1 LINE..... ON

    - **When aircraft stopped:**

      ALL GENs..... OFF

  - **If AVIONICS SMOKE triggered:**

    The ECAM displays a specific ELEC EMER CONFIG procedure. The flight crew must apply the following ECAM procedure.

    MIN RAT SPEED.....140 KT

    Note: The electrical configuration is the same as for loss of both generators (except that one fuel pump in each wing tank remains supplied).

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

VHF 1 / HF 1 / ATC 1..... USE

Only VHF 1, HF 1 and ATC 1 are supplied in this configuration. Notify the ATC of the nature of the emergency, and state intentions. If there is no contact with the ATC, switch to code A7700, or transmit a distress message on one of the emergency frequencies.

FAC 1..... OFF THEN ON

Rudder trim is recovered, despite the fact that no indication is available.

- **At 3 min or 2 000 ft AAL before landing:**

  Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON

F/CTL ALTN LAW (PROT LOST)

Flight control normal laws and associated protections are lost. Only the load factor limitation, and the high and low speed stability remain (ALTN law with reduced protection).

MAX SPEED.....320 KT

Note: Depending on the value of the engine total air temperature, the "EPR FAULT MODE" may be triggered, resulting in the degraded N1 MODE for both engines.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012217.0066001 / 31 AUG 17

ECAM lower display is not available. STATUS SD page is displayed on the upper ECAM display, as long as the STATUS pb is pressed.

L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED..... 320 KT
MAX BRK PR.....1000 PSI

FOR LDG.....USE FLAPS 3
GPWS LDG FLAP 3.....ON
APPR SPD..... VREF +10 KT
LDG DIST PROC..... APPLY
ENG 1+2 APPR IDLE ONLY
ENG 1+2 N1 DEGRADED MODE
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
CTR TK FUEL USABLE BY GRAVITY
CTR TK FUEL: 2T UNUSABLE
FUEL CONSUMPT INCRSD

This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.

FMS PRED UNRELIABLE

Disregard FMS fuel predictions and refer to QRH/OPS - Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

SLATS/FLAPS SLOW

- **After recovery of normal electrical supply, the following STATUS will be displayed:**
  MAX SPEED.....320 KT
  APPR SPD.....VREF +10 KT
  LDG DIST PROC.....APPLY

INOP SYS

Refer to PRO-ABN-ELEC-[QRH] ELEC EMER CONFIG SYS REMAINING.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

APPR PROC

- **3 MN/2000 FT BEFORE LDG:**
  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON
- **WHEN A/C IS STOPPED:**
  ALL GEN..... OFF

ALTN LAW: PROT LOST
See (1)
WHEN L/G DN: DIRECT LAW
See (2)

(1) *Flight controls remain in alternate law, due to the loss of IR 2 and 3.*
(2) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

[QRH] SMOKE / FUMES / AVNCS SMOKE

Applicable to: MSN 06720-09063

Ident.: PRO-ABN-SMOKE-D-00012212.0004001 / 17 MAR 17

This procedure includes all the steps of the AVIONICS SMOKE ECAM procedure.

Apply this procedure when:

- The flight (cabin) crew suspect that smoke is coming from any of the following:
  - The avionics
  - The air conditioning
  - The cabin equipment
- Requested by the AVIONICS SMOKE ECAM procedure.
- There is a smell of smoke / fumes in the cockpit :
  - If the smell is similar to that of orange peels, suspect a toxic leak of rain repellent fluid.
  - If the smell is similar to that of pine needles, suspect a non-toxic leak.

If any other ECAM SMOKE alert triggers (CARGO, ...), the crew must first apply the ECAM procedure, then consider applying this procedure.
Note that these ECAM alerts may be caused by another source, that should usually first be detected by the flight crew/cabin crew/avionics smoke detectors.

The following explains the layout of this procedure:

- The procedure lines above the text boxes indicate the actions that the flight crew must immediately perform, if smoke is detected (with or without ECAM activation and regardless of the smoke source). These immediate actions correspond to the most common steps to be taken in smoke cases. In all cases, the flight crew must also be prepared to immediately perform a diversion. However, this diversion may be avoided if the smoke source is obvious, accessible and extinguishable or confirmed isolated (after completion of the immediate actions).
- The text boxes indicate the actions that the flight crew must consider, if at any time during the remainder of the procedure but always after the initial steps:
  - Smoke / fumes become the greatest threat and removal of smoke / fumes is required, and/or
  - The situation becomes critical and can no longer be controlled.
- The procedure lines below the text boxes indicate the actions that the flight crew must perform, as soon as they suspect a source of smoke. The actions will depend on whether the smoke is coming from the avionics, and/or air conditioning, and/or cabin equipment.

LAND ASAP

IF PERCEPTIBLE SMOKE APPLY IMMEDIATELY:

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

If smoke is confirmed, the following procedure must be applied.

OXY MASK / GOGGLE (if required).....USE/100%/EMERG

Ensure crew communication is established. Avoid continuous use of the interphone to minimize interference from the oxygen mask breathing noise.
Turn the emergency knob to remove condensation or smoke from the mask.

VENTILATION BLOWER..... OVRD
VENTILATION EXTRACT..... OVRD

Avionics ventilation air is extracted overboard.

CAB FANS.....OFF

To prevent smoke from entering the cockpit and cabin.

GALY & CAB.....OFF
SIGNS.....ON
CKPT / CABIN COM..... ESTABLISH

Communication must be established with the cabin crew in order to follow up on the smoke origin and dissipation.

- **If smoke source immediately obvious, accessible, and extinguishable:**
  FAULTY EQPT..... ISOLATE

- **If smoke source not immediately isolated:**
  DIVERSION.....INITIATE
  DESCENT TO FL 100 / MEA-MORA..... INITIATE

- **At ANY TIME of the procedure, if SMOKE / FUMES becomes the GREATEST THREAT:**
  REMOVAL OF SMOKE / FUMES.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES
  ELEC EMER CONFIG.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] SMOKE / FUMES / AVNCS SMOKE - ELEC EMER CONFIG

- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE:**
  IMMEDIATE LANDING.....CONSIDER

L2 *Depending on the situation, the Captain can consider an overweight landing, a tailwind landing, a ditching, a forced landing, etc.*

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

L1 Guidelines to determine smoke source:

- If smoke initially comes out of the ventilation outlets, the crew may suspect AIR COND SMOKE. In addition, very shortly thereafter, several SMOKE warnings (cargo, lavatory, avionics) will be triggered. The displayed ECAM procedures must be applied.
- After an ENG or APU failure, smoke may come from the faulty item via the bleed system and be perceived in the cockpit and/or cabin. In such a case, it will be recirculated throughout the aircraft, until it completely disappears from the air conditioning system.
- If only the AVIONICS SMOKE warning is triggered, the crew may suspect avionics smoke.
- If the smoke is detected while an equipment is declared faulty, the crew may suspect that smoke is coming from this equipment.
- Avionics or forward galley smoke may be smelt, or may enter in the cockpit before ECAM warning activation.

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012214.0004001 / 17 MAR 17

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- **If Air COND smoke suspected:**

  APU BLEED.....OFF
  VENTILATION BLOWER and EXTRACT.....AUTO

  Note: *When both VENTILATION BLOWER and VENTILATION EXTRACT are in the OVRD position, a single pack may not be able to maintain the cabin pressure.*

  PACK 1.....OFF

  - **If smoke continues:**

    PACK 1.....ON
    PACK 2.....OFF

    - **If smoke persists:**

      PACK 2.....ON

      Restore normal configuration if PACK 2 is not suspected to cause smoke

      VENTILATION BLOWER.....OVRD
      VENTILATION EXTRACT.....OVRD

  REMOVAL OF SMOKE / FUMES.....CONSIDER

  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

- **If CABIN EQPT smoke suspected:**

  - **If smoke continues:**

    EMER EXIT LIGHT.....ON
    COMMERCIAL.....OFF
    SMOKE DISSIPATION.....CHECK
    FAULTY EQPT.....SEARCH / ISOLATE

    Once the cabin has been secured, try to find the smoke source and isolate it.
    Cabin lights, reading lights, passenger systems, galleys have dedicated control C/B in the cabin or cockpit.

    - **If smoke persists or if faulty equipment confirmed isolated:**

      COMMERCIAL.....NORM

    REMOVAL OF SMOKE / FUMES.....CONSIDER

    Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012215.0001001 / 17 MAR 17

- **If smoke source cannot be determined and persists or AVNCS / ELECTRICAL smoke suspected:**
  ELEC EMER CONFIG..... CONSIDER
  Refer to the end of the procedure to set ELEC EMER CONFIG.
- **If smoke disappears within 5 min:**
  NORMAL VENTILATION..... RESTORE

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012565.0019001 / 17 MAR 17

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TO SET ELEC EMER CONFIG

EMER ELEC GEN 1 LINE.....OFF

GEN 1 LINE contactor opens. GEN 1 remains running and supplies one fuel pump in each wing tank. AC BUS 1 is supplied by GEN 2 through the bus tie contactor.

EMER ELEC PWR.....MAN ON

RAT is extended and the EMER GEN is connected to the aircraft network. Check emergency generator parameters on the ELEC SD page (displayed automatically).

- **When EMER GEN AVAIL:**

  APU GEN.....OFF
  GEN 2.....OFF
  ELEC EMER CONFIG

  Two different procedures can be displayed on the ECAM, depending on whether the AVIONICS SMOKE ECAM caution is triggered or not before the flight crew sets the electrical emergency configuration.

  - **If AVIONICS SMOKE not triggered:**

    APPLY ELEC EMER CONFIG PROCEDURE, BUT DO NOT RESET GEN, EVEN IF REQUESTED BY ECAM

    - **At 3 min or 2 000 ft AAL before landing:**

      Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

      GEN 2.....ON
      EMER ELEC GEN 1 LINE.....ON

    - **When aircraft stopped:**

      ALL GENs.....OFF

  - **If AVIONICS SMOKE triggered:**

    The ECAM displays a specific ELEC EMER CONFIG procedure. The flight crew must apply the following ECAM procedure.

    MIN RAT SPEED.....140 KT

    Note: The electrical configuration is the same as for loss of both generators (except that one fuel pump in each wing tank remains supplied).

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

VHF 1 / HF 1 / ATC 1..... USE

Only VHF 1, HF 1 and ATC 1 are supplied in this configuration. Notify the ATC of the nature of the emergency, and state intentions. If there is no contact with the ATC, switch to code A7700, or transmit a distress message on one of the emergency frequencies.

FAC 1..... OFF THEN ON

Rudder trim is recovered, despite the fact that no indication is available.

- **At 3 min or 2 000 ft AAL before landing:**

  Restore all generators only 3 min before landing or at 2 000 ft AAL to recover normal braking, while minimizing possible reactivation of a smoke source.

  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON

F/CTL ALTN LAW (PROT LOST)

Flight control normal laws and associated protections are lost. Only the load factor limitation, and the high and low speed stability remain (ALTN law with reduced protection).

MAX SPEED.....320 KT

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-D-00012217.0070001 / 31 AUG 17

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ECAM lower display is not available. STATUS SD page is displayed on the upper ECAM display, as long as the STATUS pb is pressed.

L12

STATUS

MIN RAT SPEED..... 140 KT
MAX SPEED..... 320 KT
MAX BRK PR.....1000 PSI

FOR LDG.....USE FLAPS 3
GPWS LDG FLAP 3.....ON
APPR SPD..... VREF +15 KT
LDG DIST PROC..... APPLY
ENG 1+2 APPR IDLE ONLY
ALTN LAW: PROT LOST
WHEN L/G DN: DIRECT LAW
CTR TK FUEL USABLE BY GRAVITY
CTR TK FUEL: 2T UNUSABLE
FUEL CONSUMPT INCRSD

This message is triggered when the failure (or combination of failures) affects the nominal aerodynamic characteristics of the aircraft.

FMS PRED UNRELIABLE

Disregard FMS fuel predictions and refer to QRH/OPS Operational Data - Fuel Penalty Factors Tables in order to find the applicable Fuel Penalty Factor.

SLATS/FLAPS SLOW

- **After recovery of normal electrical supply, the following STATUS will be displayed:**
  MAX SPEED.....320 KT
  APPR SPD.....VREF +15 KT
  LDG DIST PROC.....APPLY

INOP SYS

Refer to PRO-ABN-ELEC-[QRH] ELEC EMER CONFIG SYS REMAINING.

APPR PROC

Continued on the following page

[QRH] SMOKE / FUMES / AVNCS SMOKE (Cont'd)

- **3 MN/2000 FT BEFORE LDG:**
  GEN 2..... ON
  EMER ELEC GEN 1 LINE..... ON
- **WHEN A/C IS STOPPED:**
  ALL GEN..... OFF

ALTN LAW: PROT LOST
See (1)
WHEN L/G DN: DIRECT LAW
See (2)

(1) *Flight controls remain in alternate law, due to the loss of IR 2 and 3.*
(2) *At landing gear extension, control reverts to direct law in pitch, as well as in roll (Refer to PRO-ABN-F_CTL F/CTL DIRECT LAW).*

[QRH] REMOVAL OF SMOKE / FUMES

Ident.: PRO-ABN-SMOKE-00012218.0001001 / 17 MAR 17
Applicable to: MSN 01767-02405, 02482

Apply the REMOVAL OF SMOKE / FUMES QRH procedure, if smoke / fumes become the greatest threat when applying the SMOKE / FUMES / AVNCS SMOKE QRH procedure.

EMER EXIT LIGHT.....ON

■ **If fuel vapors:**

CAB FANS.....ON

The recirculating air ventilates the air mixer bay and other fuselage area. This prevents fuel vapors from accumulating and the risk of explosion. Passenger health is not affected.

PACK 1.....OFF
PACK 2.....OFF

■ **If no fuel vapors:**

CAB FANS.....OFF

To prevent smoke from entering the cockpit and cabin.

PACK FLOW.....HI

To provide maximum airflow from the packs.
Do not shut down the air conditioning packs, and do not reduce ventilation in an attempt to smother the fire.
Do not deploy oxygen masks, if fire is suspected in the cabin.

LDG ELEV.....10 000 ft / MEA-MORA
DESCENT TO FL 100 / MEA-MORA.....INITIATE

The most effective means of smoke removal is use of ram air. Therefore, descent is initiated to FL 100 or the MEA-MORA, while the cabin altitude is increased to 10 000 ft or the MEA-MORA. The increase in cabin altitude also reduces, at least temporarily, the smoke concentration. Cabin depressurization starts, when descent is initiated.

ATC.....NOTIFY
SMOKE / FUMES / AVNCS SMOKE PROC.....CONTINUE

Refer to PRO-ABN-SMOKE [QRH] SMOKE / FUMES / AVNCS SMOKE - GENERAL

● **At FL 100 or MEA-MORA:**

● **If in ELEC EMER CONFIG:**

APU MASTER sw .....ON

Continued on the following page

[QRH] REMOVAL OF SMOKE / FUMES (Cont'd)

In electrical emergency configuration, when the APU MASTER sw is ON, the battery contactors will automatically close for a maximum of 3 min. This will enable the flight crew to manually control the outflow valve that is powered by the DC BAT BUS.

PACK 1 ..... OFF
PACK 2 ..... OFF

In electrical emergency configuration, the PACK 2 flow control valve cannot close because it is not electrically supplied. Therefore PACK 2 remains operative even when PACK 2 pb is set to OFF.

MODE SEL ..... MAN
MAN V/S CTL ..... FULL UP
RAM AIR ..... ON

At FL 100, or MEA-MORA, it is possible to open the RAM AIR valve when ΔP is 1 PSI or below. Opening the RAM AIR enables flying with both packs OFF.

APU MASTER sw ..... OFF

- **If smoke persists:**

  If there is smoke in the cockpit, open the cockpit (CKPT) window to evacuate the smoke.

  MAX SPEED: 200 kt
  COCKPIT DOOR ..... OPEN
  HEADSETS ..... ON
  PM SLIDING WINDOW ..... OPEN

  - **When window open:**
    NON-AFFECTED PACK(s) ..... ON
    VISUAL WARNINGS (noisy CKPT) ..... MONITOR

    Due to the increased noise level, pay particular attention to visual warnings.

    SMOKE / FUMES / AVNCS SMOKE PROC ..... CONTINUE

    Refer to PRO-ABN-SMOKE [QRH] SMOKE / FUMES / AVNCS SMOKE - GENERAL

[QRH] REMOVAL OF SMOKE / FUMES

Ident.: PRO-ABN-SMOKE-00012218.0003001 / 17 MAR 17

21 **Applicable to: MSN 02443-02457, 02584-09063**

Apply the REMOVAL OF SMOKE / FUMES QRH procedure, if smoke / fumes become the greatest threat when applying the SMOKE / FUMES / AVNCS SMOKE QRH procedure.

EMER EXIT LIGHT..... ON

■ **If fuel vapors:**

CAB FANS..... ON

The recirculating air ventilates the air mixer bay and other fuselage area. This prevents fuel vapors from accumulating and the risk of explosion. Passenger health is not affected.

PACK 1..... OFF
PACK 2..... OFF

■ **If no fuel vapors:**

CAB FANS..... OFF

To prevent smoke from entering the cockpit and cabin.

PACK FLOW..... HI

To provide maximum airflow from the packs.
Do not shut down the air conditioning packs, and do not reduce ventilation in an attempt to smother the fire.
Do not deploy oxygen masks, if fire is suspected in the cabin.

LDG ELEV..... 10 000 ft / MEA-MORA
DESCENT TO FL 100 / MEA-MORA..... INITIATE

The most effective means of smoke removal is use of ram air. Therefore, descent is initiated to FL 100 or the MEA-MORA, while the cabin altitude is increased to 10 000 ft or the MEA-MORA. The increase in cabin altitude also reduces, at least temporarily, the smoke concentration. Cabin depressurization starts, when descent is initiated.

ATC..... NOTIFY
SMOKE / FUMES / AVNCS SMOKE PROC..... CONTINUE

Refer to PRO-ABN-SMOKE [QRH] SMOKE / FUMES / AVNCS SMOKE - GENERAL

● **At FL 100 or MEA-MORA:**

● **If in ELEC EMER CONFIG:**

APU MASTER sw..... ON

Continued on the following page

[QRH] REMOVAL OF SMOKE / FUMES (Cont'd)

In electrical emergency configuration, when the APU MASTER sw is ON, the battery contactors will automatically close for a maximum of 3 min. This will enable the flight crew to manually control the outflow valve that is powered by the DC BAT BUS.

PACK 1 ..... OFF
PACK 2 ..... OFF
MODE SEL ..... MAN
MAN V/S CTL ..... FULL UP
RAM AIR ..... ON

At FL 100, or MEA-MORA, it is possible to open the RAM AIR valve when ΔP is 1 PSI or below. Opening the RAM AIR enables flying with both packs OFF.

APU MASTER sw ..... OFF

- **If smoke persists:**

  If there is smoke in the cockpit, open the cockpit (CKPT) window to evacuate the smoke.

  MAX SPEED: 200 kt
  COCKPIT DOOR ..... OPEN
  HEADSETS ..... ON
  PM SLIDING WINDOW ..... OPEN

  - **When window open:**
    NON-AFFECTED PACK(s) ..... ON
    VISUAL WARNINGS (noisy CKPT) ..... MONITOR

    Due to the increased noise level, pay particular attention to visual warnings.

    SMOKE / FUMES / AVNCS SMOKE PROC ..... CONTINUE

    Refer to PRO-ABN-SMOKE [QRH] SMOKE / FUMES / AVNCS SMOKE - GENERAL

[QRH] SMOKE / FIRE FROM LITHIUM BATTERY

Ident.: PRO-ABN-SMOKE-00016024.0001001 / 17 MAR 17
Applicable to: ALL

If necessary, transfer control to the flight crew member seated on the opposite side of the fire.

CKPT / CAB COM.....ESTABLISH
STORAGE AFTER Li BAT FIRE cabin procedure.....REQUEST INITIATION

- **If flames:**
  CREW OXY MASK (PF).....USE
  SMOKE HOOD (PM).....USE
  HALON EXTINGUISHER.....USE
- **If no flames or when flames extinguished:**
  - **If not possible to remove device from the cockpit:**
    WATER or NON-ALCOHOLIC LIQUID.....POUR ON DEVICE
    DEVICE.....MONITOR
  - **If possible to remove device from the cockpit:**
    DEVICE.....TRANSFER TO CABIN

- **At ANY TIME of the procedure, if SMOKE becomes the GREATEST THREAT:**
  REMOVAL OF SMOKE / FUMES procedure.....CONSIDER
  Refer to PRO-ABN-SMOKE [QRH] REMOVAL OF SMOKE / FUMES

- **At ANY TIME of the procedure, if situation becomes UNMANAGEABLE:**
  IMMEDIATE LANDING.....CONSIDER

L2 *Depending on the situation, the Captain can consider an overweight landing, a tailwind landing, a ditching, a forced landing, etc.*

SMOKE AFT CARGO SMOKE

Applicable to: MSN 01767, 02108, 02275-02443, 02482-02649, 02712-02737, 02908-02914, 03138-03264, 03330, 03750, 04294, 04314, 04393-04438, 04510, 05158, 06720-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252-08440, 08460-08492, 08557, 08587, 08655, 08710-09063

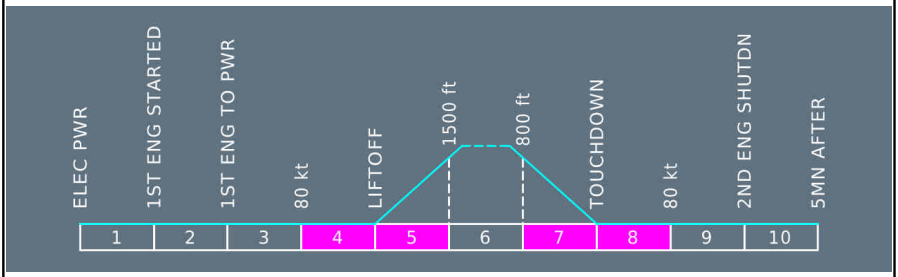
Ident.: PRO-ABN-SMOKE-O-00018698.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when smoke in the AFT cargo compartment is detected.

Flight Phase Inhibition:



Continued on the following page

SMOKE AFT CARGO SMOKE ◁ (Cont'd)

Ident.: PRO-ABN-SMOKE-O-00018589.0007001 / 06 OCT 17

22

LAND ASAP

AFT ISOL VALVE ◁ (IF NOT AUTOMATICALLY CLOSED).....OFF
CAB FANS.....OFF

- **IF AFT CRG CLOSED (displayed on ground only):**

L2 Order the ground crew not to open the door of the affected cargo compartment, unless the passengers have disembarked and fire services are present. Also ensure that the AFT cargo door is closed before discharging the extinguishing agent.

L1 AGENT.....DISCH

L2 *Note: Expect the SMOKE warning to remain after agent discharge, even if the smoke source is extinguished. Gases from the smoke source are not evacuated, and smoke detectors are also sensitive to the extinguishing agent.*

L1 ■ **In flight:**

- **WHEN ON GROUND BEFORE OPEN CRG DOORS:**
  PAX.....DISEMBARK

■ **On ground:**

- **BEFORE OPEN CRG DOORS:**
  PAX.....DISEMBARK

L2 *Note: For aircraft equipped with AFT Cargo Ventilation ◁, if the warning has been displayed temporarily, and agent has not been discharged, normal cargo ventilation may be recovered when ventilation is required for livestock transportation:*
C/B of CARGO VENT controller (S20 on 122VU, or C7 on 49VU, as installed for AFT CARGO) ..... PULL then PUSH

Continued on the following page

SMOKE AFT CARGO SMOKE ◁ (Cont'd)

Ident.: PRO-ABN-SMOKE-O-00018590.0002001 / 06 OCT 17

STATUS

- **In flight:**
  - **WHEN ON GROUND BEFORE OPEN CRG DOORS:**
    PAX..... DISEMBARK
- **On ground:**
  - **BEFORE OPEN CRG DOORS:**
    PAX..... DISEMBARK

INOP SYS

AFT CRG VENT ◁
AFT CRG HEAT ◁

SMOKE AFT CARGO SMOKE ◁

Applicable to: MSN 01920-02097, 02121-02204, 02457, 02670, 02804, 03071, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05155, 05190-06336, 06772, 06829, 06904, 06946, 07083-07192, 08455-08459, 08511-08541, 08558-08586, 08627-08654, 08688-08702

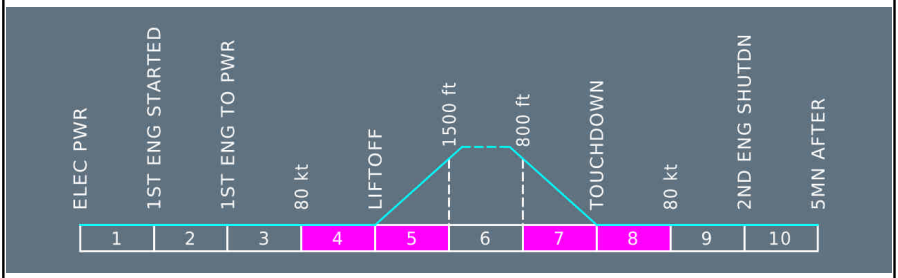
Ident.: PRO-ABN-SMOKE-O-00018698.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when smoke in the AFT cargo compartment is detected.

Flight Phase Inhibition:



Continued on the following page

SMOKE AFT CARGO SMOKE ✈ (Cont'd)

Ident.: PRO-ABN-SMOKE-O-00018589.0008001 / 06 OCT 17

23

LAND ASAP

AFT ISOL VALVE ✈ (IF NOT AUTOMATICALLY CLOSED).....OFF
CAB FANS.....OFF

- **IF AFT CRG CLOSED (displayed on ground only):**

L2 Order the ground crew not to open the door of the affected cargo compartment, unless the passengers have disembarked and fire services are present. Also ensure that the AFT cargo door is closed before discharging the extinguishing agent.

L1 AGENT 1.....DISCH

- **60 min after AGENT 1 discharge:**
  AGENT 2.....DISCH

L2 *Note: Expect the SMOKE warning to remain after agent discharge, even if the smoke source is extinguished. Gases from the smoke source are not evacuated, and smoke detectors are also sensitive to the extinguishing agent.*

L1 ■ **In flight:**

- **WHEN ON GROUND BEFORE OPEN CRG DOORS:**
  PAX.....DISEMBARK

■ **On ground:**

- **BEFORE OPEN CRG DOORS:**
  PAX.....DISEMBARK

L2 *Note: For aircraft equipped with AFT Cargo Ventilation ✈, if the warning has been displayed temporarily, and agent has not been discharged, normal cargo ventilation may be recovered when ventilation is required for livestock transportation:*
C/B of CARGO VENT controller (S20 on 122VU, or C7 on 49VU, as installed for AFT CARGO) ..... PULL then PUSH

Continued on the following page

SMOKE AFT CARGO SMOKE ◁ (Cont'd)

Ident.: PRO-ABN-SMOKE-O-00018590.0002001 / 06 OCT 17

STATUS

- **In flight:**
  - **WHEN ON GROUND BEFORE OPEN CRG DOORS:**
    PAX..... DISEMBARK
- **On ground:**
  - **BEFORE OPEN CRG DOORS:**
    PAX..... DISEMBARK

INOP SYS

AFT CRG VENT ◁
AFT CRG HEAT ◁

SMOKE AFT CRG DET FAULT ◁

Applicable to: ALL

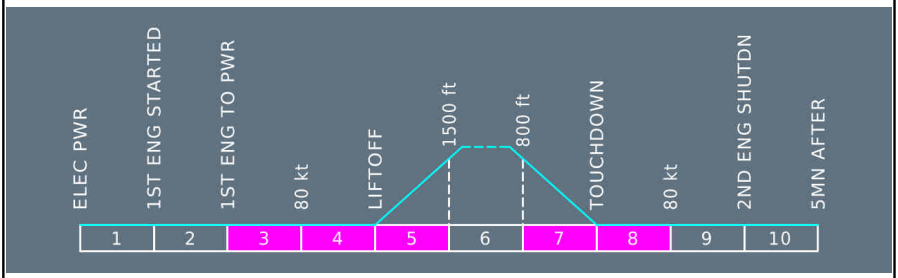
Ident.: PRO-ABN-SMOKE-P-00018699.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the AFT smoke detection is failed.

Flight Phase Inhibition:



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SMOKE AFT CRG DET FAULT (Cont'd)

Ident.: PRO-ABN-SMOKE-P-00018592.0001001 / 21 MAR 16

- **IF NO LIVE STOCK:**
  AFT ISOL VALVE ..... OFF

Ident.: PRO-ABN-SMOKE-P-00018593.0001001 / 21 MAR 16

STATUS	
	INOP SYS
	AFT CRG DET

SMOKE FWD CARGO SMOKE

Applicable to: MSN 01767, 02108, 02275-02443, 02482-02649, 02712-02737, 02908-02914, 03138-03264, 03330, 03750, 04294, 04314, 04393-04438, 04510, 05158, 06720-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252-08440, 08460-08492, 08557, 08587, 08655, 08710-09063

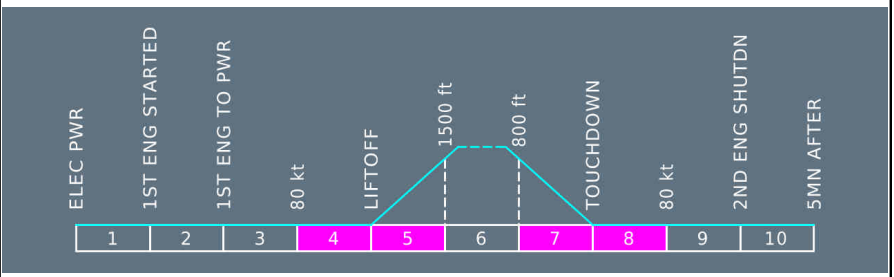
Ident.: PRO-ABN-SMOKE-E-00017408.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when smoke in the FWD cargo compartment is detected.

Flight Phase Inhibition:



Continued on the following page

SMOKE FWD CARGO SMOKE ◁ (Cont'd)

Ident.: PRO-ABN-SMOKE-E-00018287.0005001 / 06 OCT 17

24

LAND ASAP

FWD ISOL VALVE ◁ (IF NOT AUTOMATICALLY CLOSED)..... OFF
CAB FANS.....OFF

- **IF FWD CRG CLOSED (displayed on ground only):**

L2 Order the ground crew not to open the door of the affected cargo compartment, unless the passengers have disembarked and fire services are present. Also ensure that the FWD Cargo Door is closed before discharging the extinguishing agent.

L1 AGENT.....DISCH

L2 *Note: Expect the SMOKE warning to remain after agent discharge, even if the smoke source is extinguished. Gases from the smoke source are not evacuated, and smoke detectors are also sensitive to the extinguishing agent.*

L1 ■ **In flight:**

- **WHEN ON GROUND BEFORE OPEN CRG DOORS:**
  PAX.....DISEMBARK

■ **On ground:**

- **BEFORE OPEN CRG DOORS:**
  PAX.....DISEMBARK

L2 *Note: For aircraft equipped with FWD Cargo Ventilation ◁ , if the warning has been displayed temporarily, and agent has not been discharged, normal cargo ventilation may be recovered when ventilation is required for livestock transportation:*
C/B of CARGO VENT controller (T20 on 122VU, or C8 on 49VU, as installed for FWD CARGO) ..... PULL then PUSH

Continued on the following page

SMOKE FWD CARGO SMOKE (Cont'd)

Ident.: PRO-ABN-SMOKE-E-00018588.0002001 / 06 OCT 17

STATUS

- **In flight:**
  - **WHEN ON GROUND BEFORE OPEN CRG DOORS:**
    PAX..... DISEMBARK
- **On ground:**
  - **BEFORE OPEN CRG DOORS:**
    PAX..... DISEMBARK

INOP SYS

FWD CRG VENT
FWD CRG HEAT

SMOKE FWD CARGO SMOKE

Applicable to: MSN 01920-02097, 02121-02204, 02457, 02670, 02804, 03071, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05155, 05190-06336, 06772, 06829, 06904, 06946, 07083-07192, 08455-08459, 08511-08541, 08558-08586, 08627-08654, 08688-08702

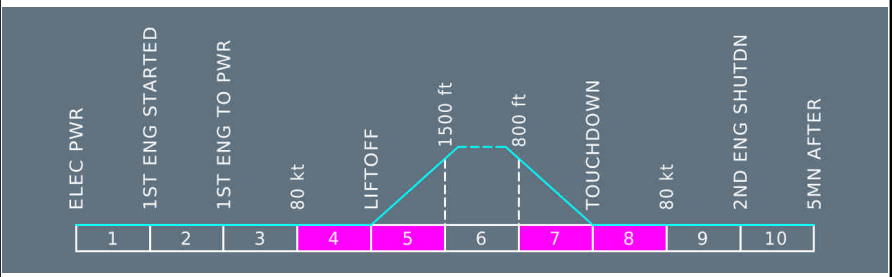
Ident.: PRO-ABN-SMOKE-E-00017408.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when smoke in the FWD cargo compartment is detected.

Flight Phase Inhibition:



Continued on the following page

SMOKE FWD CARGO SMOKE ◁ (Cont'd)

Ident.: PRO-ABN-SMOKE-E-00018287.0009001 / 06 OCT 17

25

LAND ASAP

FWD ISOL VALVE ◁ (IF NOT AUTOMATICALLY CLOSED)..... OFF
CAB FANS.....OFF

- **IF FWD CRG CLOSED (displayed on ground only):**

L2 Order the ground crew not to open the door of the affected cargo compartment, unless the passengers have disembarked and fire services are present. Also ensure that the FWD Cargo Door is closed before discharging the extinguishing agent.

L1 AGENT 1.....DISCH

- **60 min after AGENT 1 discharge:**
  AGENT 2.....DISCH

L2 *Note:* *Expect the SMOKE warning to remain after agent discharge, even if the smoke source is extinguished. Gases from the smoke source are not evacuated, and smoke detectors are also sensitive to the extinguishing agent.*

L1 ■ **In flight:**

- **WHEN ON GROUND BEFORE OPEN CRG DOORS:**
  PAX.....DISEMBARK

■ **On ground:**

- **BEFORE OPEN CRG DOORS:**
  PAX.....DISEMBARK

L2 *Note:* *For aircraft equipped with FWD Cargo Ventilation ◁, if the warning has been displayed temporarily, and agent has not been discharged, normal cargo ventilation may be recovered when ventilation is required for livestock transportation:*
C/B of CARGO VENT controller (T20 on 122VU, or C8 on 49VU, as installed for FWD CARGO) ..... PULL then PUSH

Continued on the following page

SMOKE FWD CARGO SMOKE ◁ (Cont'd)

Ident.: PRO-ABN-SMOKE-E-00018588.0002001 / 06 OCT 17

STATUS

INOP SYS

- **In flight:**
  - **WHEN ON GROUND BEFORE OPEN CRG DOORS:**
    PAX..... DISEMBARK
- **On ground:**
  - **BEFORE OPEN CRG DOORS:**
    PAX..... DISEMBARK

FWD CRG VENT ◁
FWD CRG HEAT ◁

SMOKE FWD(AFT) CRG BTL 1(2) FAULT

Applicable to: MSN 02443-02457, 02584-09063

Ident.: PRO-ABN-SMOKE-L-00017414.0001001 / 21 MAR 16

26

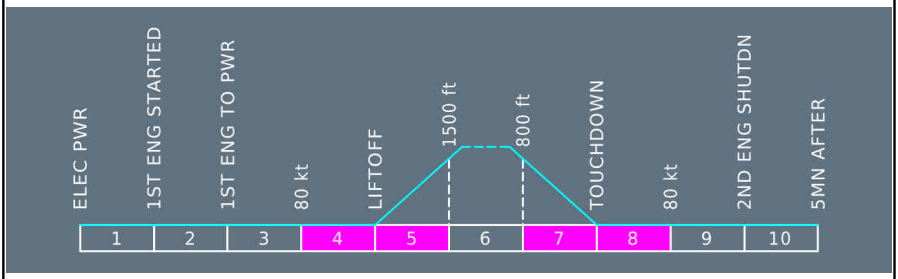
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- FWD or AFT bottle 1 (2) squib is failed, or
- FWD or AFT bottle 1 (2) is at low pressure.

Flight Phase Inhibition:



Ident.: PRO-ABN-SMOKE-L-00018325.0001001 / 21 MAR 16

27

L2 If bottle 1 is lost, fire extinguishing capability is lost in the FWD(AFT) cargo compartment.
If bottle 2 is lost, agent concentration will not be ensured after fire extinguishing.

L1 Crew awareness.

SMOKE FWD CRG DET FAULT

Applicable to: ALL

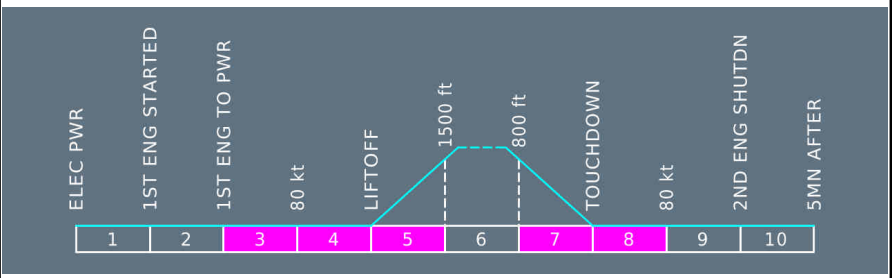
Ident.: PRO-ABN-SMOKE-F-00017689.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the FWD smoke detection is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-SMOKE-F-00018336.0001001 / 21 MAR 16

- **IF NO LIVE STOCK:**
  FWD ISOL VALVE ..... OFF

Ident.: PRO-ABN-SMOKE-F-00018337.0001001 / 21 MAR 16

STATUS

	INOP SYS
	FWD CRG DET

SMOKE DET FAULT

Applicable to: ALL

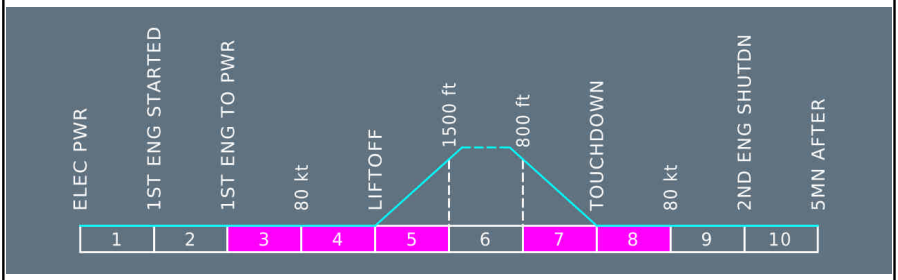
Ident.: PRO-ABN-SMOKE-G-00017400.0002001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when both SDCU or CIDS-SDF ◁ are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-SMOKE-G-00018423.0002001 / 21 MAR 16

- **IF NO LIVE STOCK:**

FWD ISOL VALVE ◁ ..... OFF
AFT ISOL VALVE ◁ ..... OFF

PAX SYS ◁ ..... OFF

Ident.: PRO-ABN-SMOKE-G-00012226.0011001 / 01 APR 11

STATUS

INOP SYS
SMOKE DET

SMOKE LAVATORY DET FAULT

Applicable to: MSN 01767-02405, 02482, 02712

Ident.: PRO-ABN-SMOKE-H-00017407.0001001 / 21 MAR 16

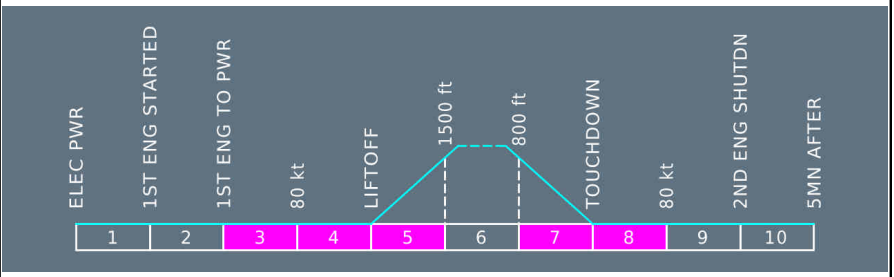
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:

- Lavatory smoke detection is failed, or
- Lavatory and galley fan are failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-SMOKE-H-00018724.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-SMOKE-H-00012228.0001001 / 18 AUG 10

STATUS

INOP SYS

LAV DET

SMOKE LAVATORY DET FAULT

Applicable to: MSN 02443-02457, 02584-02670, 02737-09063

Ident.: PRO-ABN-SMOKE-H-00017407.0002001 / 21 MAR 16

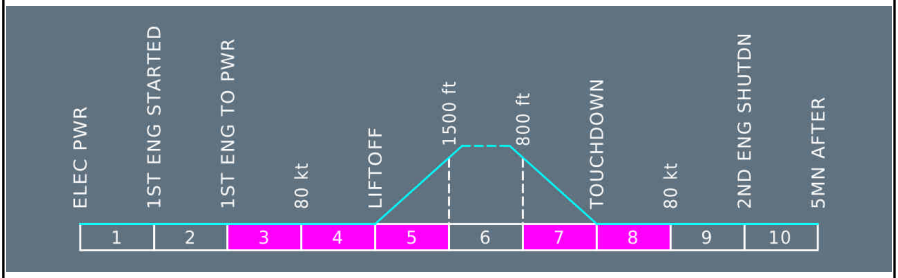
28

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the lavatory smoke detection is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-SMOKE-H-00018724.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-SMOKE-H-00012228.0001001 / 18 AUG 10

STATUS

INOP SYS
LAV DET

SMOKE LAVATORY SMOKE

Applicable to: ALL

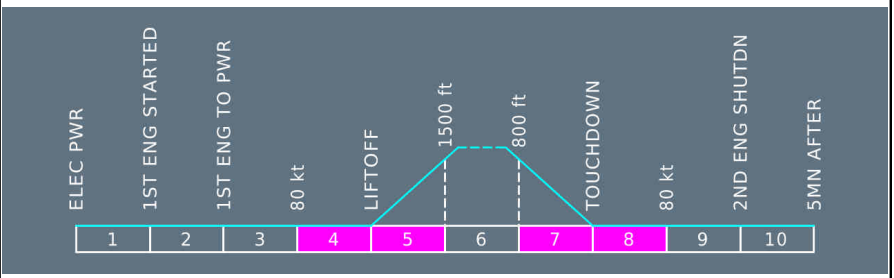
Ident.: PRO-ABN-SMOKE-N-00017406.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when smoke in one of the lavatory is detected.

Flight Phase Inhibition:



Ident.: PRO-ABN-SMOKE-N-00018427.0002001 / 21 MAR 17

L2 Communication must be established with the cabin crew in order to follow up on the smoke origin and dissipation.
Consider applying the SMOKE/FUMES/AVNCS SMOKE QRH procedure.

L1 CKPT/CAB COM.....ESTABLISH

[MEM] GPWS CAUTIONS

Ident.: PRO-ABN-SURV-00018751.0023001 / 04 DEC 18
Applicable to: MSN 04314, 04393-04399, 04438

■ **"TERRAIN TERRAIN" - "TOO LOW TERRAIN" - "CAUTION TERRAIN"**

■ **During night or IMC:**

Simultaneously:

AP	OFF
PITCH	PULL UP

L2 Pull to full backstick and maintain in that position.

L1

THRUST LEVERS	TOGA
SPEED BRAKES lever	CHECK RETRACTED
BANK	WINGS LEVEL or ADJUST

L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

L1 *Note: For some airports, the operator may define a specific procedure.*

DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

■ **During daylight and VMC, with terrain and obstacles clearly in sight:**

FLIGHT PATH	ADJUST

L2 Adjust pitch, bank and thrust to silence the alert.

L1 *Note: For some airports, the operator may define a specific procedure.*

■ **"SINK RATE"**

■ **Above 1 000 ft AAL in IMC or above 500 ft AAL in VMC:**

FLIGHT PATH	ADJUST

L2 Adjust pitch and thrust to silence the alert.

L1 ■ **Below 1 000 ft AAL in IMC or below 500 ft AAL in VMC:**

GO-AROUND	CONSIDER

■ **"DON'T SINK"**

FLIGHT PATH	ADJUST

Continued on the following page

[MEM] GPWS CAUTIONS (Cont'd)

L2 Adjust pitch and thrust to silence the alert.

L1 ■ **"TOO LOW GEAR" - "TOO LOW FLAPS"**

GO-AROUND.....PERFORM

■ **"GLIDESLOPE"**

■ **Above 1 000 ft AAL in IMC or above 500 ft AAL in VMC:**

FLIGHT PATH.....ADJUST

L2 Adjust pitch and thrust to reduce the vertical deviation from the glideslope.

L1 ● **When conditions require a deliberate approach below glideslope:**

G/S MODE.....OFF

■ **Below 1 000 ft AAL in IMC or below 500 ft AAL in VMC:**

GO-AROUND..... CONSIDER

[MEM] EGPWS CAUTIONS

Ident.: PRO-ABN-SURV-00018751.0009001 / 04 DEC 18
Applicable to: MSN 02204, 02359, 02482

■ "TERRAIN TERRAIN" - "TOO LOW TERRAIN" - "CAUTION TERRAIN" - "CAUTION OBSTACLE"

■ During night or IMC:

Simultaneously:

AP	OFF
PITCH	PULL UP

L2 Pull to full backstick and maintain in that position.

L1

THRUST LEVERS	TOGA
SPEED BRAKES lever	CHECK RETRACTED
BANK	WINGS LEVEL or ADJUST

L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

L1 *Note: For some airports, the operator may define a specific procedure.*

DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

■ During daylight and VMC, with terrain and obstacles clearly in sight:

FLIGHT PATH	ADJUST

L2 Adjust pitch, bank and thrust to silence the alert.

L1 *Note: For some airports, the operator may define a specific procedure.*

■ "SINK RATE"

■ Above 1 000 ft AAL in IMC or above 500 ft AAL in VMC:

FLIGHT PATH	ADJUST

L2 Adjust pitch and thrust to silence the alert.

L1

■ Below 1 000 ft AAL in IMC or below 500 ft AAL in VMC:

GO-AROUND	CONSIDER

■ "DON'T SINK"

FLIGHT PATH	ADJUST

Continued on the following page

[MEM] EGPWS CAUTIONS (Cont'd)

L2 Adjust pitch and thrust to silence the alert.

L1 ■ **"TOO LOW GEAR" - "TOO LOW FLAPS"**

GO-AROUND.....PERFORM

■ **"GLIDESLOPE"**

■ **Above 1 000 ft AAL in IMC or above 500 ft AAL in VMC:**

FLIGHT PATH.....ADJUST

L2 Adjust pitch and thrust to reduce the vertical deviation from the glideslope.

L1 ● **When conditions require a deliberate approach below glideslope:**

G/S MODE.....OFF

■ **Below 1 000 ft AAL in IMC or below 500 ft AAL in VMC:**

GO-AROUND..... CONSIDER

[MEM] EGPWS CAUTIONS

Ident.: PRO-ABN-SURV-00018751.0005001 / 04 DEC 18

1 **Applicable to: MSN 01920, 02108, 02135, 02139-02195, 02275-02334, 02388, 02443-02457, 02584-02712, 02804-02914, 03750, 04491, 04532, 04645, 05120, 05158, 05218, 06720-09063**

■ "TERRAIN TERRAIN" - "TOO LOW TERRAIN" - "TERRAIN AHEAD" - "OBSTACLE AHEAD"

■ During night or IMC:

Simultaneously:

AP	OFF
PITCH	PULL UP

L2 Pull to full backstick and maintain in that position.

L1

THRUST LEVERS	TOGA
SPEED BRAKES lever	CHECK RETRACTED
BANK	WINGS LEVEL or ADJUST

L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

L1 *Note: For some airports, the operator may define a specific procedure.*

DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

■ During daylight and VMC, with terrain and obstacles clearly in sight:

FLIGHT PATH	ADJUST

L2 Adjust pitch, bank and thrust to silence the alert.

L1 *Note: For some airports, the operator may define a specific procedure.*

■ "SINK RATE"

■ Above 1 000 ft AAL in IMC or above 500 ft AAL in VMC:

FLIGHT PATH	ADJUST

L2 Adjust pitch and thrust to silence the alert.

L1

■ Below 1 000 ft AAL in IMC or below 500 ft AAL in VMC:

GO-AROUND	CONSIDER

Continued on the following page

[MEM] EGPWS CAUTIONS (Cont'd)

■ **"DON'T SINK"**

FLIGHT PATH	ADJUST

L2 Adjust pitch and thrust to silence the alert.

L1 ■ **"TOO LOW GEAR" - "TOO LOW FLAPS"**

GO-AROUND	PERFORM

■ **"GLIDESLOPE"**

■ **Above 1 000 ft AAL in IMC or above 500 ft AAL in VMC:**

FLIGHT PATH	ADJUST

L2 Adjust pitch and thrust to reduce the vertical deviation from the glideslope.

L1 ● **When conditions require a deliberate approach below glideslope:**

G/S MODE	OFF

■ **Below 1 000 ft AAL in IMC or below 500 ft AAL in VMC:**

GO-AROUND	CONSIDER

[MEM] EGPWS CAUTIONS

Ident.: PRO-ABN-SURV-00018751.0002001 / 04 DEC 18
Applicable to: MSN 01767, 02737

■ **"TERRAIN TERRAIN" - "TOO LOW TERRAIN" - "TERRAIN AHEAD"**

■ **During night or IMC:**

Simultaneously:

AP	OFF
PITCH	PULL UP

L2 Pull to full backstick and maintain in that position.

L1

THRUST LEVERS	TOGA
SPEED BRAKES lever	CHECK RETRACTED
BANK	WINGS LEVEL or ADJUST

L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

L1 *Note: For some airports, the operator may define a specific procedure.*

DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

■ **During daylight and VMC, with terrain and obstacles clearly in sight:**

FLIGHT PATH	ADJUST

L2 Adjust pitch, bank and thrust to silence the alert.

L1 *Note: For some airports, the operator may define a specific procedure.*

■ **"SINK RATE"**

■ **Above 1 000 ft AAL in IMC or above 500 ft AAL in VMC:**

FLIGHT PATH	ADJUST

L2 Adjust pitch and thrust to silence the alert.

L1 ■ **Below 1 000 ft AAL in IMC or below 500 ft AAL in VMC:**

GO-AROUND	CONSIDER

■ **"DON'T SINK"**

FLIGHT PATH	ADJUST

Continued on the following page

[MEM] EGPWS CAUTIONS (Cont'd)

L2 Adjust pitch and thrust to silence the alert.

L1 ■ **"TOO LOW GEAR" - "TOO LOW FLAPS"**

GO-AROUND.....PERFORM

■ **"GLIDESLOPE"**

■ **Above 1 000 ft AAL in IMC or above 500 ft AAL in VMC:**

FLIGHT PATH.....ADJUST

L2 Adjust pitch and thrust to reduce the vertical deviation from the glideslope.

L1 ● **When conditions require a deliberate approach below glideslope:**

G/S MODE.....OFF

■ **Below 1 000 ft AAL in IMC or below 500 ft AAL in VMC:**

GO-AROUND..... CONSIDER

[MEM] EGPWS CAUTIONS

Ident.: PRO-ABN-SURV-00018751.0006001 / 04 DEC 18
Applicable to: MSN 02405

■ "TERRAIN TERRAIN" - "TOO LOW TERRAIN" - "CAUTION TERRAIN"

■ During night or IMC:

Simultaneously:

AP.....OFF
PITCH.....PULL UP

L2 Pull to full backstick and maintain in that position.

L1

THRUST LEVERS..... TOGA
SPEED BRAKES lever.....CHECK RETRACTED
BANK..... WINGS LEVEL or ADJUST

L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

L1 *Note: For some airports, the operator may define a specific procedure.*

DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

■ During daylight and VMC, with terrain and obstacles clearly in sight:

FLIGHT PATH.....ADJUST

L2 Adjust pitch, bank and thrust to silence the alert.

L1 *Note: For some airports, the operator may define a specific procedure.*

■ "SINK RATE"

■ Above 1 000 ft AAL in IMC or above 500 ft AAL in VMC:

FLIGHT PATH.....ADJUST

L2 Adjust pitch and thrust to silence the alert.

L1

■ Below 1 000 ft AAL in IMC or below 500 ft AAL in VMC:

GO-AROUND..... CONSIDER

■ "DON'T SINK"

FLIGHT PATH..... ADJUST

Continued on the following page

[MEM] EGPWS CAUTIONS (Cont'd)

L2 Adjust pitch and thrust to silence the alert.

L1 ■ **"TOO LOW GEAR" - "TOO LOW FLAPS"**

GO-AROUND.....PERFORM

■ **"GLIDESLOPE"**

■ **Above 1 000 ft AAL in IMC or above 500 ft AAL in VMC:**

FLIGHT PATH.....ADJUST

L2 Adjust pitch and thrust to reduce the vertical deviation from the glideslope.

L1 ● **When conditions require a deliberate approach below glideslope:**

G/S MODE.....OFF

■ **Below 1 000 ft AAL in IMC or below 500 ft AAL in VMC:**

GO-AROUND..... CONSIDER

[MEM] GPWS CAUTIONS

Ident.: PRO-ABN-SURV-00018751.0003001 / 04 DEC 18
Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03264-03618, 03782-04312, 04328-04384, 04433, 04481-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336

■ "TERRAIN TERRAIN" - "TOO LOW TERRAIN" - "TERRAIN AHEAD"

■ During night or IMC:

Simultaneously:

AP	OFF
PITCH	PULL UP

L2 Pull to full backstick and maintain in that position.

L1

THRUST LEVERS	TOGA
SPEED BRAKES lever	CHECK RETRACTED
BANK	WINGS LEVEL or ADJUST

L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

L1 *Note: For some airports, the operator may define a specific procedure.*

DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

■ During daylight and VMC, with terrain and obstacles clearly in sight:

FLIGHT PATH	ADJUST

L2 Adjust pitch, bank and thrust to silence the alert.

L1 *Note: For some airports, the operator may define a specific procedure.*

■ "SINK RATE"

■ Above 1 000 ft AAL in IMC or above 500 ft AAL in VMC:

FLIGHT PATH	ADJUST

L2 Adjust pitch and thrust to silence the alert.

L1

■ Below 1 000 ft AAL in IMC or below 500 ft AAL in VMC:

GO-AROUND	CONSIDER

■ "DON'T SINK"

FLIGHT PATH	ADJUST

Continued on the following page

[MEM] GPWS CAUTIONS (Cont'd)

L2 Adjust pitch and thrust to silence the alert.

L1 ■ **"TOO LOW GEAR" - "TOO LOW FLAPS"**

GO-AROUND.....PERFORM

■ **"GLIDESLOPE"**

■ **Above 1 000 ft AAL in IMC or above 500 ft AAL in VMC:**

FLIGHT PATH.....ADJUST

L2 Adjust pitch and thrust to reduce the vertical deviation from the glideslope.

L1 ● **When conditions require a deliberate approach below glideslope:**

G/S MODE.....OFF

■ **Below 1 000 ft AAL in IMC or below 500 ft AAL in VMC:**

GO-AROUND..... CONSIDER

[MEM] GPWS CAUTIONS

Ident.: PRO-ABN-SURV-00018751.0011001 / 04 DEC 18
Applicable to: MSN 03138

■ **"TERRAIN TERRAIN" - "TOO LOW TERRAIN" - "TERRAIN AHEAD" - "OBSTACLE AHEAD"**

■ **During night or IMC:**

Simultaneously:

AP	OFF
PITCH	PULL UP

L2 Pull to full backstick and maintain in that position.

L1

THRUST LEVERS	TOGA
SPEED BRAKES lever	CHECK RETRACTED
BANK	WINGS LEVEL or ADJUST

L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

L1 *Note: For some airports, the operator may define a specific procedure.*

DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

■ **During daylight and VMC, with terrain and obstacles clearly in sight:**

FLIGHT PATH	ADJUST

L2 Adjust pitch, bank and thrust to silence the alert.

L1 *Note: For some airports, the operator may define a specific procedure.*

■ **"SINK RATE"**

■ **Above 1 000 ft AAL in IMC or above 500 ft AAL in VMC:**

FLIGHT PATH	ADJUST

L2 Adjust pitch and thrust to silence the alert.

L1 ■ **Below 1 000 ft AAL in IMC or below 500 ft AAL in VMC:**

GO-AROUND	CONSIDER

■ **"DON'T SINK"**

FLIGHT PATH	ADJUST

Continued on the following page

[MEM] GPWS CAUTIONS (Cont'd)

L2 Adjust pitch and thrust to silence the alert.

L1 ■ **"TOO LOW GEAR" - "TOO LOW FLAPS"**

GO-AROUND.....PERFORM

■ **"GLIDESLOPE"**

■ **Above 1 000 ft AAL in IMC or above 500 ft AAL in VMC:**

FLIGHT PATH.....ADJUST

L2 Adjust pitch and thrust to reduce the vertical deviation from the glideslope.

L1 ● **When conditions require a deliberate approach below glideslope:**

G/S MODE.....OFF

■ **Below 1 000 ft AAL in IMC or below 500 ft AAL in VMC:**

GO-AROUND.....CONSIDER

[MEM] EGPWS WARNINGS

Ident.: PRO-ABN-SURV-00016878.0002001 / 04 DEC 18
Applicable to: MSN 01767, 02737

● **"PULL UP" - "TERRAIN AHEAD PULL UP"**

Simultaneously:

AP.....OFF
PITCH.....PULL UP

L2 Pull to full backstick and maintain in that position.

L1
THRUST LEVERS.....TOGA
SPEED BRAKES lever.....CHECK RETRACTED
BANK.....WINGS LEVEL or ADJUST

L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

L1 DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

[MEM] GPWS WARNINGS

Ident.: PRO-ABN-SURV-00016878.0016001 / 04 DEC 18
Applicable to: MSN 01957-02097, 02121, 02138, 03071, 03264-03618, 03782-04312, 04328-04384, 04433, 04481-04488, 04506-04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336

- **"PULL UP" - "TERRAIN AHEAD PULL UP" - "AVOID TERRAIN"**

  Simultaneously:

AP	OFF
PITCH	PULL UP

  L2 Pull to full backstick and maintain in that position.

  L1

THRUST LEVERS	TOGA
SPEED BRAKES lever	CHECK RETRACTED
BANK	WINGS LEVEL or ADJUST

  L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

  The "TERRAIN AHEAD PULL UP" aural alert may be followed by the "AVOID TERRAIN" aural alert. In this case, the flight crew must adjust bank as necessary.

  L1 DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

[MEM] GPWS WARNINGS

Ident.: PRO-ABN-SURV-00016878.0017001 / 04 DEC 18
Applicable to: MSN 03138

- **"PULL UP" - "TERRAIN AHEAD PULL UP" - "OBSTACLE AHEAD PULL UP" - "AVOID TERRAIN" - "AVOID OBSTACLE"**

Simultaneously:

AP	OFF
PITCH	PULL UP

L2 Pull to full backstick and maintain in that position.

L1

THRUST LEVERS	TOGA
SPEED BRAKES lever	CHECK RETRACTED
BANK	WINGS LEVEL or ADJUST

L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

The "TERRAIN AHEAD PULL UP" or "OBSTACLE AHEAD PULL UP" aural alert may be followed by the "AVOID TERRAIN" or "AVOID OBSTACLE" aural alert. In this case, the flight crew must adjust bank as necessary.

L1 DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

[MEM] EGPWS WARNINGS

Ident.: PRO-ABN-SURV-00016878.0018001 / 04 DEC 18
Applicable to: MSN 02405

- **"PULL UP" - "TERRAIN TERRAIN PULL UP"**

Simultaneously:

AP	OFF
PITCH	PULL UP

L2 Pull to full backstick and maintain in that position.

L1

THRUST LEVERS	TOGA
SPEED BRAKES lever	CHECK RETRACTED
BANK	WINGS LEVEL or ADJUST

L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

L1 DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

[MEM] EGPWS WARNINGS

Ident.: PRO-ABN-SURV-00016878.0019001 / 04 DEC 18

2 **Applicable to: MSN 01920, 02108, 02135, 02139-02195, 02275-02334, 02388, 02443-02457, 02584-02712, 02804-02914, 03750, 04491, 04532, 04645, 05120, 05158, 05218, 06720-09063**

- **"PULL UP" - "TERRAIN AHEAD PULL UP" - "OBSTACLE AHEAD PULL UP"**

Simultaneously:

AP	OFF
PITCH	PULL UP

L2 Pull to full backstick and maintain in that position.

L1

THRUST LEVERS	TOGA
SPEED BRAKES lever	CHECK RETRACTED
BANK	WINGS LEVEL or ADJUST

L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

L1 DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

[MEM] EGPWS WARNINGS

Ident.: PRO-ABN-SURV-00016878.0020001 / 04 DEC 18
Applicable to: MSN 02204, 02359, 02482

- **"PULL UP" - "TERRAIN TERRAIN PULL UP" - "OBSTACLE OBSTACLE PULL UP"**

Simultaneously:

AP	OFF
PITCH	PULL UP

L2 Pull to full backstick and maintain in that position.

L1

THRUST LEVERS	TOGA
SPEED BRAKES lever	CHECK RETRACTED
BANK	WINGS LEVEL or ADJUST

L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

L1 DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

[MEM] GPWS WARNINGS

Ident.: PRO-ABN-SURV-00016878.0023001 / 04 DEC 18
Applicable to: MSN 04314, 04393-04399, 04438

- **"PULL UP" - "TERRAIN TERRAIN PULL UP PULL UP" - "AVOID TERRAIN"**

Simultaneously:

AP	OFF
PITCH	PULL UP

L2 Pull to full backstick and maintain in that position.

L1

THRUST LEVERS	TOGA
SPEED BRAKES lever	CHECK RETRACTED
BANK	WINGS LEVEL or ADJUST

L2 Aircraft obtain the best climb performance when the wings are as level as possible. The flight crew can adjust bank while climbing, provided that turning is the safest action.

The "TERRAIN TERRAIN PULL UP" aural alert may be followed by the "AVOID TERRAIN" aural alert. In this case, the flight crew must adjust bank as necessary.

L1 DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL CLEAR OF OBSTACLE.

[MEM] TCAS WARNINGS

Ident.: PRO-ABN-SURV-00012455.0031001 / 17 MAR 17

3 **Applicable to: MSN 06904, 06946, 07083-07192, 07504-09063**

■ **Traffic Advisory (TA) alert:**

TCAS mode.....CHECK ARMED

Check that the TCAS flight guidance mode arms (TCAS blue). If not, the flight crew must be prepared to manually follow the Resolution Advisory orders.

● **If the A/THR is off:**

A/THR.....ON

The flight crew should set the A/THR to ON to avoid the triggering of the AUTO FLT A/THR LIMITED alert at the A/THR activation, in the case of a RA.

Do not perform a maneuver based on a TA alone.

■ **Resolution Advisory (RA) alert:**

■ **If TCAS flight guidance mode is available:**

The flight crew applies this procedure, when a RA is triggered, and the TCAS mode engages. The TCAS mode follows the RA orders.

● **If AP OFF:**

FD ORDERs..... FOLLOW

The AP can be engaged.

VERTICAL SPEED.....MONITOR

If a preventive RA was triggered: Check that the vertical speed remains out of the red area of the vertical speed scale.
If a corrective RA was triggered: Check that the vertical speed gets out of the red area, and remains in the green area of the vertical speed scale.

CAUTION	If for any reason during a RA, the aircraft vertical speed does not reach the green area of the vertical speed scale, the Pilot Flying (PF) should disconnect the AP, and override the FD orders, in order to lead the aircraft vertical speed out of the red area of the vertical speed scale. If necessary, the PF must use the full speed range between Vαmax and Vmax.

● **If any "CLIMB" aural alert sounds during the final approach:**

TCAS MODE ORDERs.....MONITOR/FOLLOW
GO-AROUND..... CONSIDER

If the flight crew performs a go-around, the TCAS mode disengages and the SRS mode engages. The AP/FD does no longer follow the RA orders. In any case, check

Continued on the following page

[MEM] TCAS WARNINGS (Cont'd)

that the vertical speed gets out of the red area, and remains in the green area of the vertical speed scale.

Respect STALL, GPWS or WINDSHEAR WARNING.
ATC.....NOTIFY

- **When "CLEAR OF CONFLICT" aural alert sounds:**

  If engaged, the TCAS mode disengages:

  AP/FD.....MONITOR/FOLLOW
  ATC.....NOTIFY
  LATERAL AND VERTICAL GUIDANCE.....ADJUST

  The flight crew should engage an appropriate vertical mode, or adjust the vertical speed target, in accordance with the latest ATC clearance.

  SPEED.....ADJUST

  The flight crew should adjust the speed target, and revert to managed speed, as appropriate.

■ **If TCAS flight guidance mode is NOT available:**

The flight crew applies this procedure, when a RA is triggered, and the TCAS mode does not engage.

AP (if engaged).....OFF
BOTH FDs.....OFF
Respond promptly and smoothly
VERTICAL SPEED.....ADJUST or MAINTAIN

Adjust or maintain the pitch as required, to reach the green area and/or avoid the red area of the vertical speed scale.

Note: *Avoid excessive maneuvers while attempting to maintain the vertical speed just outside the red area of the VSI, and within the green area. If necessary, use the full speed range between Vαmax and Vmax.*

- **If any "CLIMB" aural alert sounds during the final approach:**
  GO-AROUND.....PERFORM

Respect STALL, GPWS or WINDSHEAR WARNING:
ATC.....NOTIFY

- **When "CLEAR OF CONFLICT" aural alert sounds:**
  ATC.....NOTIFY
  LATERAL AND VERTICAL GUIDANCE.....ADJUST

Continued on the following page

[MEM] TCAS WARNINGS (Cont'd)

Adjust the lateral and vertical guidance to resume normal navigation, in accordance with ATC clearance;

AP/FD..... AS RQRD

If necessary, reengage the AP/FD.

[MEM] TCAS WARNINGS

Ident.: PRO-ABN-SURV-00012455.0022001 / 17 MAR 17

4 **Applicable to: MSN 01767-02204, 02359, 02457, 02584-02712, 02804, 02914-03541, 03750, 03943-04113, 04294-04328, 04393-04552, 04609-04630, 04645-04947, 04965-05036, 05080-05092, 05120-06868, 06914, 06952-07053, 07252-07396**

- **Traffic advisory: "TRAFFIC" messages:**
  Do not perform a maneuver based on a TA alone.

- **Resolution advisory: All "CLIMB" and "DESCEND" or "MAINTAIN VERTICAL SPEED MAINTAIN" or "LEVEL OFF, LEVEL OFF" or "MONITOR VERTICAL SPEED" type messages:**
  AP (if engaged).....OFF
  BOTH FDs..... OFF
  Respond promptly and smoothly to a RA by adjusting or maintaining the pitch, as required, to reach the green area and/or avoid the red area of the vertical speed scale.

  Note: *Avoid excessive maneuvers while aiming to keep the vertical speed just outside the red area of the VSI, and within the green area. If necessary, use the full speed range between Vαmax and VMAX.*

  Respect stall, GPWS, or windshear warning.
  Notify ATC.

  - **GO AROUND procedure must be performed when a RA "CLIMB" or "INCREASE CLIMB" is triggered on final approach:**

    Note: *Resolution Advisories (RA) are inhibited below 900 ft.*

- **When "CLEAR OF CONFLICT" is announced:**
  Resume normal navigation in accordance with ATC clearance.
  AP/FD can be reengaged as desired.

[MEM] TCAS WARNINGS

Ident.: PRO-ABN-SURV-00012455.0007001 / 17 MAR 17
Applicable to: MSN 02275-02334, 02388-02443, 02482, 02737, 02908, 03618, 03782-03863, 04156-04216, 04384, 04603, 04637, 04954, 05076, 05094

- **Traffic advisory: "TRAFFIC" messages:**
  Do not perform a maneuver based on a TA alone.

- **Resolution advisory: All "CLIMB" and "DESCEND" or "MAINTAIN VERTICAL SPEED MAINTAIN" or "ADJUST VERTICAL SPEED ADJUST" or "MONITOR VERTICAL SPEED" type messages:**
  AP (if engaged).....OFF
  BOTH FDs..... OFF
  Respond promptly and smoothly to a RA by adjusting or maintaining the pitch, as required, to reach the green area and/or avoid the red area of the vertical speed scale.

  Note: *Avoid excessive maneuvers while aiming to keep the vertical speed just outside the red area of the VSI, and within the green area. If necessary, use the full speed range between Vαmax and VMAX.*

  Respect stall, GPWS, or windshear warning.
  Notify ATC.

  - **GO AROUND procedure must be performed when a RA "CLIMB" or "INCREASE CLIMB" is triggered on final approach:**

    Note: *Resolution Advisories (RA) are inhibited below 900 ft.*

- **When "CLEAR OF CONFLICT" is announced:**
  Resume normal navigation in accordance with ATC clearance.
  AP/FD can be reengaged as desired.

[MEM] WINDSHEAR

Ident.: PRO-ABN-SURV-00012271.0002001 / 30 AUG 18
Applicable to: ALL

If Windshear is detected, both PFDs display a "WINDSHEAR" message with a red flag. An associated aural WINDSHEAR alert sounds three times.
If either the flight crew or the WX system detects WINDSHEAR, apply the following recovery technique:

- **At Takeoff:**
  - **If before V1:**

    The takeoff should be rejected only if significant airspeed variations occur below indicated V1 and the Captain decides that there is sufficient runway remaining to stop the airplane.

  - **If after V1:**

THR LEVERS	TOGA
REACHING VR	ROTATE
SRS ORDERS	FOLLOW

If necessary the flight crew may pull the sidestick fully back.

Note: If the FD bars are not displayed, move toward an initial pitch attitude of 17.5 °. Then, if necessary, to prevent a loss in altitude, increase the pitch attitude.

- **Airborne, initial climb or landing:**

THR LEVERS AT TOGA	SET OR CONFIRM
AP (if engaged)	KEEP ON
SRS ORDERS	FOLLOW

If necessary the flight crew may pull the sidestick fully back.

Note: 1. Autopilot disengages if the angle of attack value goes above α prot.
2. If the FD bars are not displayed, move toward an initial pitch attitude of 17.5 °. Then, if necessary, to prevent a loss in altitude, increase the pitch attitude.

DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL OUT OF WINDSHEAR.
CLOSELY MONITOR FLIGHT PATH AND SPEED.
RECOVER SMOOTHLY TO NORMAL CLIMB OUT OF WINDSHEAR.

[MEM] WINDSHEAR AHEAD

Ident.: PRO-ABN-SURV-00012272.0001001 / 04 SEP 18

5 **Applicable to: MSN 01767-02334, 02388, 02443-02457, 02584-09063**

The "W/S AHEAD" message is displayed on each PFD. The color of the message depends on the severity and location of the windshear

Note: *When a predictive windshear alert ("WINDSHEAR AHEAD" or "GO AROUND WINDSHEAR AHEAD") is triggered, the flight crew must carefully check that there is no hazard. If this is the case, the flight crew can disregard the alert, as long as both of the following apply:*

- *There are no other signs of possible windshear conditions*
- *The reactive windshear system is operational.*

Known cases of spurious predictive windshear alerts were reported at some airports, either during takeoff or landing, due to the specific obstacle environment.
However, always rely on any reactive windshear ("WINDSHEAR").

W/S AHEAD RED

■ **Takeoff**

Associated with an aural synthetic voice "WINDSHEAR AHEAD, WINDSHEAR AHEAD".

● **Before takeoff:**
Delay takeoff, or select the most favorable runway.

● **During the takeoff run:**

Reject takeoff.

Note: *Predictive windshear alerts are inhibited above 100 kt until 50 ft.*

● **When airborne:**

THR LEVERS.....TOGA

As usual, the slat/flap configuration can be changed, provided the windshear is not entered.

AP (if engaged).....KEEP ON SRS ORDERS..... FOLLOW

If necessary the flight crew may pull the sidestick fully back.

Note: *1. Autopilot disengages if the angle of attack value goes above α prot.*

Continued on the following page

[MEM] WINDSHEAR AHEAD (Cont'd)

2. If the FD bars are not displayed, move toward an initial pitch attitude of 17.5 °. Then, if necessary, to prevent a loss in altitude, increase the pitch attitude.

■ **Landing:**

Associated with an aural synthetic voice “GO AROUND, WINDSHEAR AHEAD”.

GO-AROUND	PERFORM
AP (if engaged)	KEEP ON

If necessary the flight crew may pull the sidestick fully back.

Note: 1. Autopilot disengages if the angle of attack value goes above α prot.
2. If the FD bars are not displayed, move toward an initial pitch attitude of 17.5 °. Then, if necessary, to prevent a loss in altitude, increase the pitch attitude.

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VENT AVNCS SYS FAULT

Applicable to: ALL

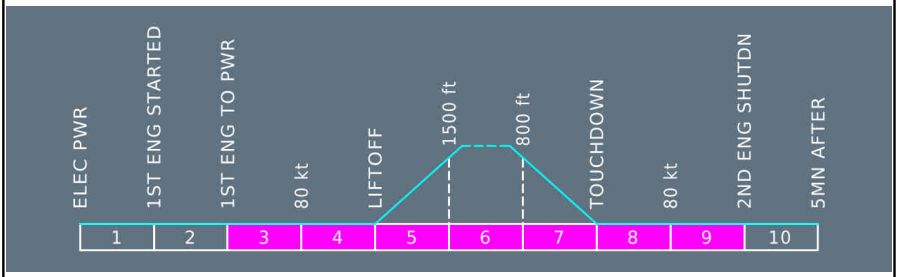
Ident.: PRO-ABN-VENT-AA-00017332.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- The power up test is not satisfactory, or
- The AEVC is not supplied, or
- The valve position disagrees with the commanded position.

Flight Phase Inhibition:



Ident.: PRO-ABN-VENT-AA-00018047.0001001 / 21 MAR 16

Crew awareness.

Ident.: PRO-ABN-VENT-AA-00010775.0001001 / 05 AUG 10

STATUS

INOP SYS

AVNCS VENT
VENT BLOWER (1)
VENT EXTRACT (1)

(1) *(If AEVC not supplied)*

VENT BLOWER FAULT

Applicable to: ALL

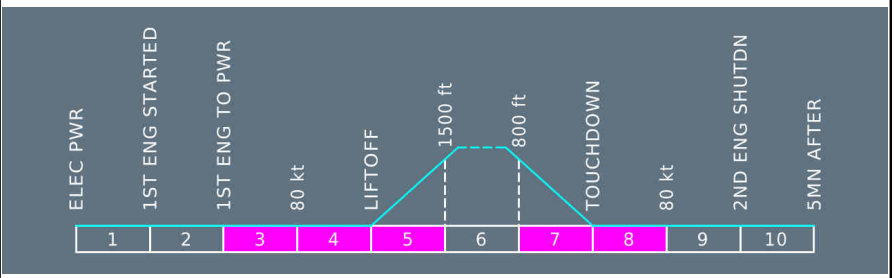
Ident.: PRO-ABN-VENT-X-00017329.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 The alert triggers when the blowing pressure is low or there is a duct overheat.

Flight Phase Inhibition:



Ident.: PRO-ABN-VENT-X-00010768.0005001 / 12 APR 16

■ **If NO DC ESS BUS FAULT:**

BLOWER.....OVRD

L2 *The ventilation system is in closed circuit configuration and air from air conditioning is added to the ventilation air.*

L1 ■ **If DC ESS BUS FAULT:**

LAND ASAP

Ident.: PRO-ABN-VENT-X-00010769.0005001 / 27 MAY 13

STATUS

INOP SYS

VENT BLOWER

VENT EXTRACT FAULT

Applicable to: ALL

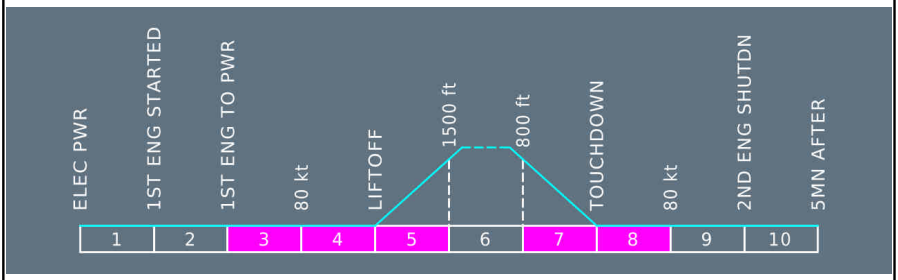
Ident.: PRO-ABN-VENT-Y-00017330.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the extract pressure is low.

Flight Phase Inhibition:



Ident.: PRO-ABN-VENT-Y-00010770.0001001 / 05 AUG 10

EXTRACT ..... OVRD

L2 *The ventilation system is in closed circuit configuration and air from air conditioning is added to the ventilation air.*

Ident.: PRO-ABN-VENT-Y-00010771.0001001 / 05 AUG 10

STATUS

INOP SYS

VENT EXTRACT

VENT SKIN VALVE FAULT

Applicable to: MSN 01767-02388, 02443-02626, 02670-03330, 03414-03453, 03541-04314, 04384, 04399, 04438, 04488-04645, 04757-04813, 04868-04947, 04965-05080, 05094-05291, 05365, 05437-05460, 05476-05507, 05577-05744, 05829-09063

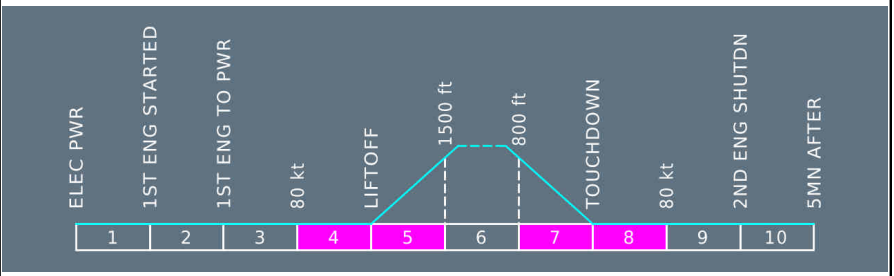
Ident.: PRO-ABN-VENT-Z-00017331.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- The extract valve is fully open in phase 3, or
- The extract valve is fully open in flight, or
- The inlet valve is not fully closed in flight.

Flight Phase Inhibition:



Continued on the following page

VENT SKIN VALVE FAULT (Cont'd)

Ident.: PRO-ABN-VENT-Z-00018941.0002001 / 21 MAR 16

1

- **If INLET valve not fully closed in flight:**

  Crew awareness.

L2 No action is required, since there is a non return valve in the air inlet.

L1 - **If EXTRACT valve affected:**

  BLOWER.....OVRD
  EXTRACT.....OVRD

L2 *These actions send additional closure signals to the inlet and extract valves.*
The weather radar image on both NDs may be lost, in case of insufficient ventilation.

L1 - **IF UNSUCCESSFUL:**

  MAX FL.....100/MEA-MORA
  CAB PR MODE SEL.....MAN
  MAN V/S CTL.....FULL UP

L2 *The aircraft is manually depressurized.*
It may take 10 s in manual mode before the crew notices a change of the outflow valve position.

Ident.: PRO-ABN-VENT-Z-00018942.0003001 / 21 MAR 16

2

STATUS

MAX FL: 100/MEA-MORA

MAN CAB PR CTL
TGT V/S: CLIMB 500 FT/MIN
TGT V/S: DESC 300 FT/MIN

A/C FL	CAB ALT TGT
390	8 000
350	7 000
300	5 500
250	3 000
< 200	0

INOP SYS

AVNCS VALVE

VENT SKIN VALVE FAULT

Applicable to: MSN 02405, 02649, 03357, 03457-03497, 04328, 04393-04397, 04433, 04481, 04752, 04818, 04954, 05090-05092, 05298-05313, 05411, 05473, 05537, 05807

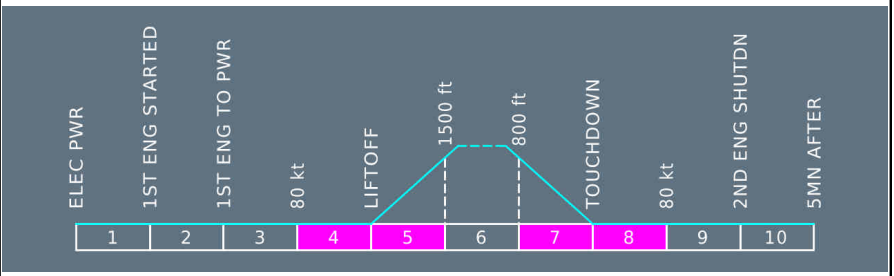
Ident.: PRO-ABN-VENT-Z-00017331.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when:
- The extract valve is fully open in phase 3, or
- The extract valve is fully open in flight, or
- The inlet valve is not fully closed in flight.

Flight Phase Inhibition:



Continued on the following page

VENT SKIN VALVE FAULT (Cont'd)

Ident.: PRO-ABN-VENT-Z-00018941.0001001 / 21 MAR 16

- **If INLET valve not fully closed in flight:**

  Crew awareness.

L2 No action is required, since there is a non return valve in the air inlet.

L1 - **If EXTRACT valve affected:**

  BLOWER.....OVRD
  EXTRACT..... OVRD

L2 *These actions send additional closure signals to the inlet and extract valves.*
The weather radar image on both NDs may be lost, in case of insufficient ventilation.

L1 - **IF UNSUCCESSFUL:**

  MAX FL.....100/MEA
  CAB PR MODE SEL.....MAN
  MAN V/S CTL.....FULL UP

L2 *The aircraft is manually depressurized.*
It may take 10 s in manual mode before the crew notices a change of the outflow valve position.

Ident.: PRO-ABN-VENT-Z-00018942.0002001 / 21 MAR 16

STATUS

MAX FL: 100/MEA

MAN CAB PR CTL
TGT V/S: CLIMB 500 FT/MIN
TGT V/S: DESC 300 FT/MIN

A/C FL	CAB ALT TGT
390	8 000
350	7 000
300	5 500
250	3 000
< 200	0

INOP SYS

AVNCS VALVE

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[QRH] WHEEL TIRE DAMAGE SUSPECTED

Ident.: PRO-ABN-WHEEL-00019841.0002001 / 12 SEP 17

Applicable to: MSN 02443-02457, 02584-09063

LDG DIST PROC.....APPLY

Performance impact of one burst tire is equivalent to one brake released.

TAXI WITH CARE

Refer to LIM-LG Taxi with Deflated or Damaged Tires

[QRH] WHEEL TIRE DAMAGE SUSPECTED

Ident.: PRO-ABN-WHEEL-00019841.0001001 / 10 OCT 17

Applicable to: MSN 01767-02405, 02482

LDG DIST PROC.....APPLY

Performance impact of one burst tire is equivalent to one brake released if EFB LDG PERF application is used..

Performance impact of one burst tire is equivalent to one tire damage if QRH is used.

TAXI WITH CARE

Refer to LIM-LG Taxi with Deflated or Damaged Tires

WHEEL HYD SEL FAULT

Applicable to: MSN 01767-02405, 02482

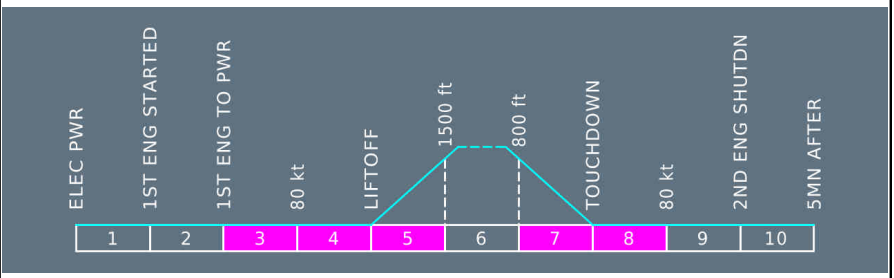
Ident.: PRO-ABN-WHEEL-AE-00017810.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the brake normal selector valve is failed, or the NWS selector valve is at open position.

Flight Phase Inhibition:



Ident.: PRO-ABN-WHEEL-AE-00018363.0001001 / 21 MAR 16

L2 - If the normal brake selector valve is failed open, full green hydraulic pressure is present at normal servovalves' entry.
Nosewheel steering remains available.
- On ground, do not tow the aircraft with the green hydraulic system pressurized: If the steering selector valve is failed open, nosewheel steering remains pressurized, and so towing may either break the towbar shear pin, or the nose gear (if towbarless towing).
- If the steering selector valve is failed open, setting A/SKID & N/W STRG sw to OFF will cause the nosewheel to go to maximum deflection.

L1 A/SKID & N/W STRG.....KEEP ON

L2 *As long as antiskid is operative, brake pressure is regulated by normal servovalves.*

WHEEL HYD SEL FAULT

Applicable to: MSN 02443-02457, 02584-09063

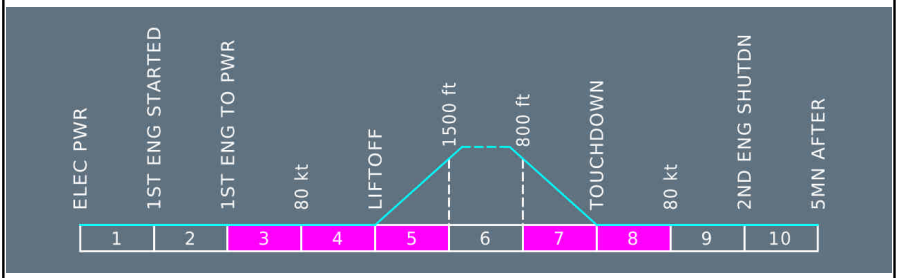
Ident.: PRO-ABN-WHEEL-AE-00017810.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the brake normal selector valve is failed, or the NWS selector valve is at open position.

Flight Phase Inhibition:



Ident.: PRO-ABN-WHEEL-AE-00018363.0003001 / 21 MAR 16

2

L2 - If the normal brake selector valve is failed open, full green hydraulic pressure is present at normal servovalves' entry.
Nosewheel steering remains available.
- On ground, do not tow the aircraft with the yellow hydraulic system pressurized: If the steering selector valve is failed open, nosewheel steering remains pressurized, and so towing may either break the towbar shear pin, or the nose gear (if towbarless towing).
- If the steering selector valve is failed open, setting A/SKID & N/W STRG sw to OFF will cause the nosewheel to go to maximum deflection.

L1 A/SKID & N/W STRG.....KEEP ON

L2 *As long as antiskid is operative, brake pressure is regulated by normal servovalves.*

WHEEL N/W STRG FAULT

Applicable to: ALL

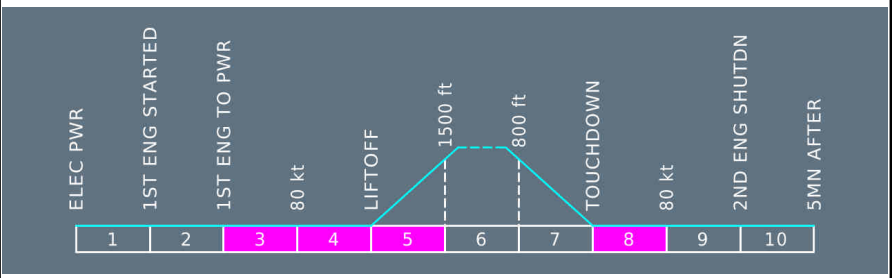
Ident.: PRO-ABN-WHEEL-AF-00017744.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the nose wheel steering system is failed.

Flight Phase Inhibition:



Ident.: PRO-ABN-WHEEL-AF-00018712.0001001 / 21 MAR 16

Crew awareness.

Continued on the following page

WHEEL N/W STRG FAULT (Cont'd)

Ident.: PRO-ABN-WHEEL-AF-00018713.0001001 / 21 MAR 16

L12

STATUS	INOP SYS
CAT 3 SINGLE ONLY *See* (1)	CAT 3 DUAL N/W STRG

(1)

Note:
1. *If the L/G SHOCK ABSORBER FAULT is also displayed, then the nose wheels may be at maximum deflection (turned 90 ° from center). During landing, delay nose wheel touchdown as long as possible.*
2. *Automatic rollout is not permitted (Refer to QRH/OPS Required Equipment for CAT2 and CAT3).*

WHEEL TYRE LO PR

Applicable to: ALL

Ident.: PRO-ABN-WHEEL-AG-00017824.0003001 / 21 MAR 16

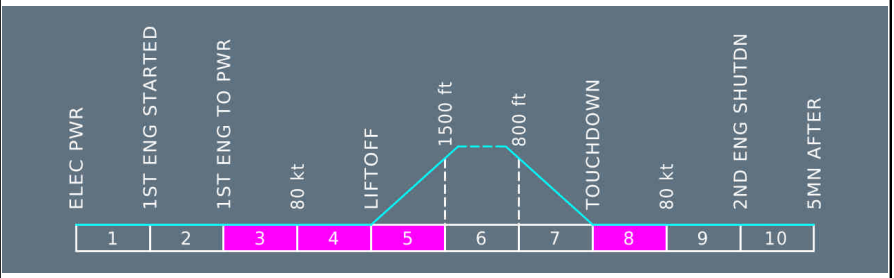
ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when one of the following cases occurs:

- One tire pressure is below:
  - 74% of nominal pressure between liftoff and engines shutdown, or
  - 89% of nominal pressure in other cases.
- There is difference of pressure between two wheels of the same axle that is above:
  - 21% of nominal pressure between liftoff and engines shutdown, or
  - 15% of nominal pressure in other cases.

Flight Phase Inhibition:



Ident.: PRO-ABN-WHEEL-AG-00018714.0001001 / 21 MAR 16

Crew awareness.

WING A.ICE L(R) HI PR

Applicable to: ALL

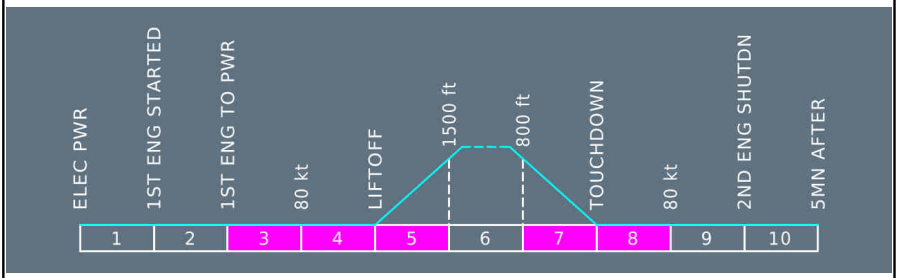
Ident.: PRO-ABN-W_A_ICE-Q-00017161.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the WING ANTI ICE pb-sw is set to ON and the pressure sensor (downstream of the valve) indicates a high pressure in the duct.

Flight Phase Inhibition:



Ident.: PRO-ABN-W_A_ICE-Q-00018328.0001001 / 21 MAR 16

THRUST LIM PENALTY

Ident.: PRO-ABN-W_A_ICE-Q-00018330.0001001 / 21 MAR 16

STATUS	INOP SYS
THRUST LIM PENALTY	WAI REGUL

WING A.ICE L(R) VALVE OPEN
(FAILURE DETECTED IN FLIGHT)

Applicable to: ALL

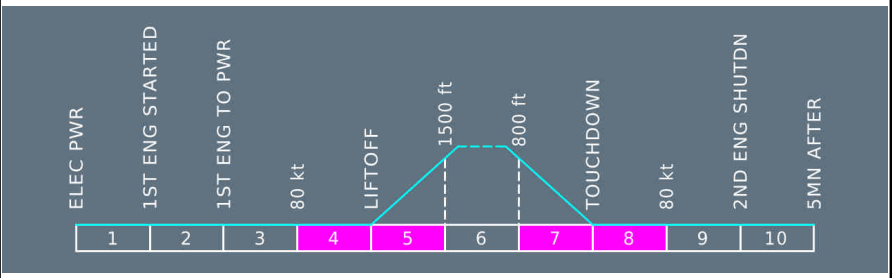
Ident.: PRO-ABN-W_A_ICE-N-00017160.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the WING ANTI ICE pb-sw is set to OFF and one wing anti ice valve remains open, in flight.

Flight Phase Inhibition:



Ident.: PRO-ABN-W_A_ICE-N-00018331.0001001 / 21 MAR 16

WAI AVAIL IN FLT
WING ANTI ICE.....AS RQRD

L2 *Wing anti-ice is available if needed and anyway is continually on, on failed side.*

L1 THRUST LIM PENALTY

- **After landing (automatic recall):**
  ENG BLEED (AFFECTED SIDE).....OFF
  X BLEED (IF NOT CLOSED).....SHUT
  APU BLEED (IF LEFT WING AFFECTED).....OFF
  WING ANTI ICE.....OFF

Continued on the following page

WING A.ICE L(R) VALVE OPEN (Cont'd)
(FAILURE DETECTED IN FLIGHT)

Ident.: PRO-ABN-W_A_ICE-N-00018332.0001001 / 21 MAR 16

STATUS	INOP SYS
● **In flight:** THRUST LIM PENALTY WAI AVAIL IN FLT	ENG 1(2) BLEED (On ground only) PACK 1(2) (On ground only)

WING A.ICE L(R) VALVE OPEN
(FAILURE DETECTED ON GROUND)

Applicable to: ALL

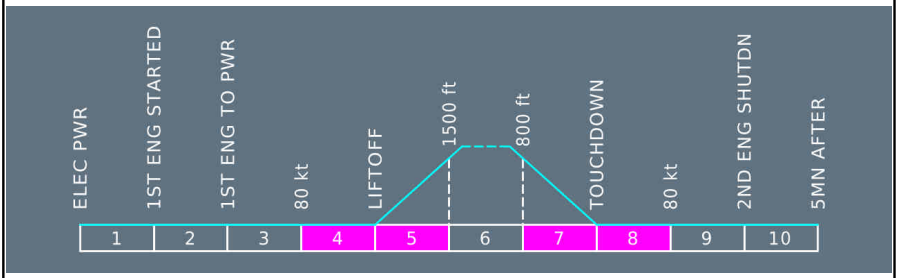
Ident.: PRO-ABN-W_A_ICE-M-00017495.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the WING ANTI ICE pb-sw is set to OFF and one wing anti ice valve remains open, on ground.

Flight Phase Inhibition:



Continued on the following page

WING A.ICE L(R) VALVE OPEN (Cont'd)
(FAILURE DETECTED ON GROUND)

Ident.: PRO-ABN-W_A_ICE-M-00018333.0001001 / 21 MAR 16

WING ANTI ICE..... OFF
ENG BLEED (AFFECTED SIDE)..... OFF
X BLEED (IF NOT CLOSED)..... SHUT
APU BLEED (IF LEFT WING AFFECTED AND IF APU RUNNING)..... OFF
WAI AVAIL IN FLT

■ **After takeoff when above 1 500 ft (automatic recall):**
WAI AVAIL IN FLT
ENG BLEED (AFFECTED SIDE)..... ON
WING ANTI ICE..... AS RQRD

L2 *Wing anti ice is available if needed and anyway is continually on, on failed side.*

L1 THRUST LIM PENALTY

■ **After landing (automatic recall):**
WING ANTI ICE..... OFF
ENG BLEED (AFFECTED SIDE)..... OFF
X BLEED (IF NOT CLOSED)..... SHUT
APU BLEED (IF LEFT WING AFFECTED)..... OFF

Ident.: PRO-ABN-W_A_ICE-M-00018334.0001001 / 21 MAR 16

STATUS

	INOP SYS
● **Before takeoff:** WAI AVAIL IN FLT ● **In flight:** THRUST LIM PENALTY	ENG 1 (2) BLEED (On ground only) PACK 1 (2) (On ground only)

WING A.ICE OPEN ON GND

Applicable to: ALL

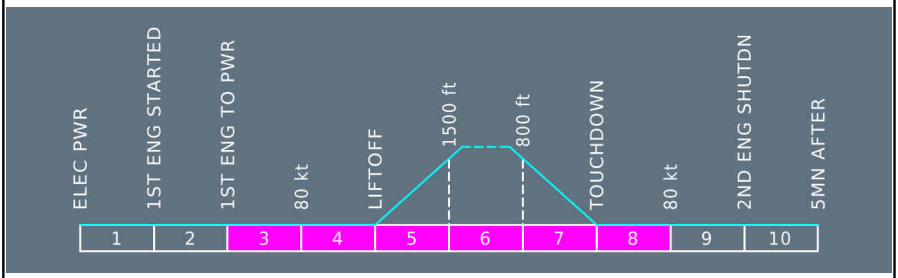
Ident.: PRO-ABN-W_A_ICE-O-00017158.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the aircraft is on ground and the wing anti ice valves remain open for more than 35 s after the WING ANTI ICE pb-sw is set to ON.

Flight Phase Inhibition:



Ident.: PRO-ABN-W_A_ICE-O-00018311.0001001 / 21 MAR 16

WING ANTI ICE..... OFF

Ident.: PRO-ABN-W_A_ICE-O-00018335.0001001 / 21 MAR 16

	STATUS
WAI AVAIL IN FLT	

WING A.ICE SYS FAULT
(ONE WING VALVE REMAINS CLOSED WHEN THE WING ANTI-ICE IS TURNED ON)

Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

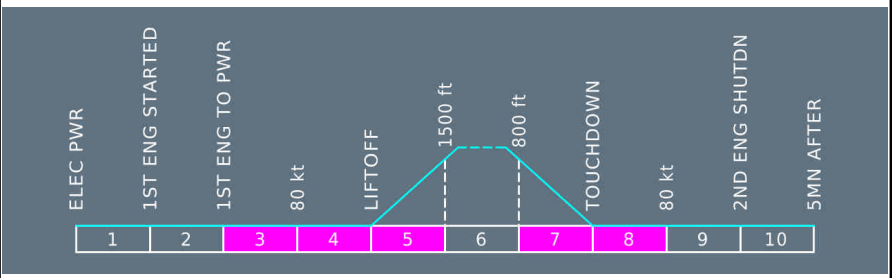
Ident.: PRO-ABN-W_A_ICE-P-00017159.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the WING ANTI ICE pb-sw is set to ON and one wing anti ice valve remains closed.

Flight Phase Inhibition:



Ident.: PRO-ABN-W_A_ICE-P-00018338.0002001 / 21 MAR 16

1

WING ANTI ICE..... OFF
AVOID ICING CONDITIONS

Continued on the following page

WING A.ICE SYS FAULT (Cont'd)
(ONE WING VALVE REMAINS CLOSED WHEN THE WING ANTI-ICE IS TURNED ON)

Ident.: PRO-ABN-W_A_ICE-P-00018339.0004001 / 17 MAR 17

L12

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION:**
  MIN SPD.....VLS +10/G DOT
  MANEUVER WITH CARE

  Note: *In the case of severe ice accretion, with wing anti-ice failed, the Angle-of-Attack (AOA) protections remain efficient. Manoeuvre with care: avoid large roll inputs at high AOA and high thrust setting. In the case of abnormal response in pitch or roll, release the backstick and reduce thrust.*

  LDG DIST PROC.....APPLY

INOP SYS

WING ANTI ICE

WING A.ICE SYS FAULT
(ONE WING VALVE REMAINS CLOSED WHEN THE WING ANTI-ICE IS TURNED ON)

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

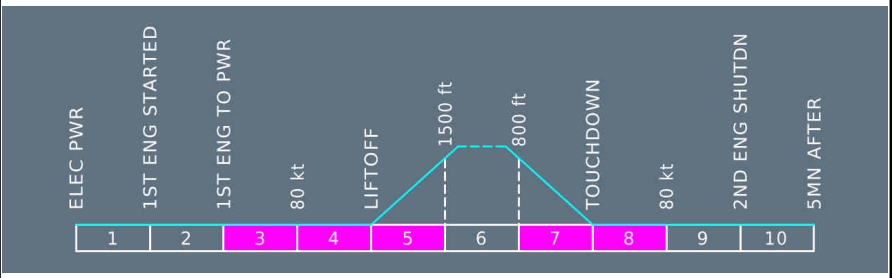
Ident.: PRO-ABN-W_A_ICE-P-00017159.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the WING ANTI ICE pb-sw is set to ON and one wing anti ice valve remains closed.

Flight Phase Inhibition:



Ident.: PRO-ABN-W_A_ICE-P-00018338.0003001 / 30 MAR 18

2

THRUST..... INCREASE

L2 *In case of WAI low bleed pressure, the alert may trigger although the WAI valve is opened. It is required to increase thrust in order to increase the bleed pressure and to clear the alert.*

L1 ● **IF UNSUCCESSFUL:**

WING ANTI ICE.....OFF

AVOID ICING CONDITIONS

Continued on the following page

WING A.ICE SYS FAULT (Cont'd)

(ONE WING VALVE REMAINS CLOSED WHEN THE WING ANTI-ICE IS TURNED ON)

Ident.: PRO-ABN-W_A_ICE-P-00018339.0004001 / 17 MAR 17

L12

STATUS

AVOID ICING CONDITIONS

- **IF SEVERE ICE ACCRETION:**

  MIN SPD.....VLS +10/G DOT

  MANEUVER WITH CARE

  Note: *In the case of severe ice accretion, with wing anti-ice failed, the Angle-of-Attack (AOA) protections remain efficient. Manoeuvre with care: avoid large roll inputs at high AOA and high thrust setting. In the case of abnormal response in pitch or roll, release the backstick and reduce thrust.*

  LDG DIST PROC.....APPLY

INOP SYS

WING ANTI ICE

WING A.ICE SYS FAULT
(THE WING ANTI-ICE IS TURNED ON AFTER ONE ENGINE SHUTDOWN OR AFTER THE LOSS OF ONE BLEED)

Applicable to: ALL

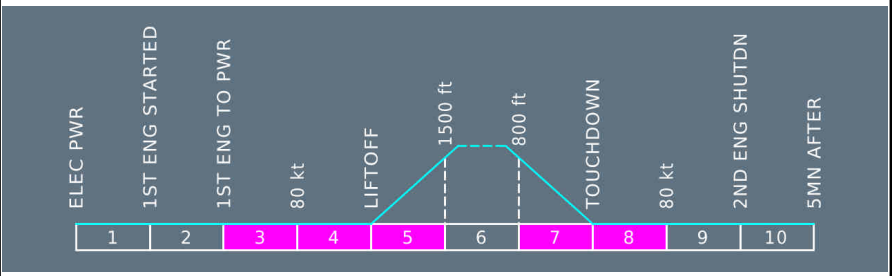
Ident.: PRO-ABN-W_A_ICE-AA-00017496.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the WING ANTI ICE pb-sw is set to ON and one wing anti ice valve remains closed.

Flight Phase Inhibition:



Ident.: PRO-ABN-W_A_ICE-AA-00018340.0001001 / 21 MAR 16

X BLEED..... OPEN

L2 *Note:* *The affected pack has to be selected OFF due to precooler performance.*

WINDSHEAR DET FAULT

Applicable to: MSN 02359, 02405, 02482

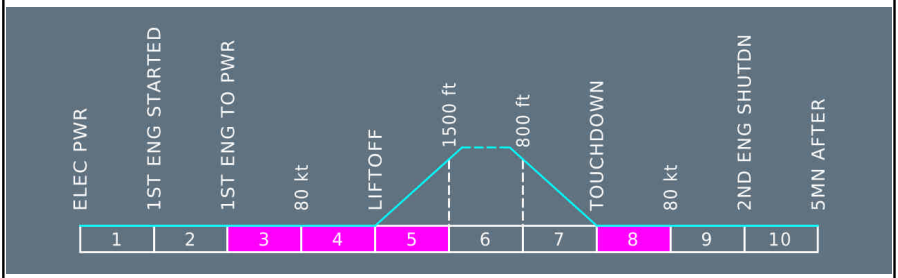
Ident.: PRO-ABN-W_S-M-00016997.0001001 / 21 MAR 16

ANNUNCIATIONS

Triggering Conditions:

L2 This alert triggers when the reactive windshear function is lost.

Flight Phase Inhibition:



Ident.: PRO-ABN-W_S-M-00010471.0001001 / 25 FEB 14

Crew awareness.

Ident.: PRO-ABN-W_S-M-00010472.0001001 / 05 JUN 18

STATUS

INOP SYS
WNDSHEAR DET

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GENERAL

Ident.: PRO-ABN-90-00010415.0001001 / 15 OCT 12
Applicable to: ALL

A successful outcome for an emergency situation depends, first of all, upon each crew member's perfect knowledge and execution of the duties assigned to him.
The captain should check frequently that all crew members know exactly their assigned positions and their specific duties, as well as the duties of the other crew members, in case of an abnormal or an emergency condition.
Since it is not possible to cover all the situations that may occur, the captain will be responsible for adapting the following instructions to obtain the best coordination of the emergency operation.
Should it be physically impossible for the captain to carry out his duties, another crew member will substitute for him according to the chain of command. The procedures in this manual are AIRBUS procedures and should be considered to be a reference.

COCKPIT-ASSIGNED DUTIES FOR EVACUATION

Ident.: PRO-ABN-90-00010416.0001001 / 05 AUG 10
Applicable to: ALL

■ **If it is NOT POSSIBLE to reach the passenger cabin:**

The cockpit crew should evacuate the aircraft via the cockpit clearview windows, by using the escape ropes.

On ground, each crewmember must help passengers, and direct them away from the aircraft.

■ **If it is POSSIBLE to reach the passenger cabin:**

CAPT	- Is the last person to leave the cockpit: Proceeds to the cabin, and helps with passenger evacuation, as necessary - Is the last person to leave the aircraft: Checks that all persons have evacuated the aircraft - Evacuates the aircraft, via the rear door, or any other available exit, if he/she cannot reach the rear door. - On ground, he/she takes command of operations until rescue units arrive.
F/O	- Proceeds to the cabin, and takes the emergency equipment. - Evacuates the aircraft, using any available exit. - Helps passengers on ground, and directs them away from the aircraft.

CABIN CREW-ASSIGNED AREAS FOR EVACUATION

Ident.: PRO-ABN-90-00010607.0004001 / 09 MAR 18

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CABIN CREW DESIGNATION	ASSIGNED DOOR	ASSIGNED JUMPSEAT	ASSIGNED AREA
1 PURSER	DOOR 1 LH	FWD INBOARD	FWD/MID
1 CABIN CREW	DOOR 1 LH/RH	FWD/MID	FWD/MID
1 CABIN CREW	DOOR 3	AFT/MID	MID/AFT
1 CABIN CREW	DOOR 4 LH	AFT LH	MID/AFT
1 CABIN CREW	DOOR 4 RH	AFT RH	MID/AFT

Note: These procedures are established for the minimum required number of 5 cabin crews. For customized seating configurations of 200 passenger seats or less, the minimum required cabin crew can be reduced to 4 (ORO.CC.100). However, one cabin crew must be seated on the center cabin attendant seat (if installed) to ensure the direct view.

CABIN CREW-ASSIGNED AREAS FOR EVACUATION

Ident.: PRO-ABN-90-00010607.0001001 / 27 FEB 18

2 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

CABIN CREW DESIGNATION	ASSIGNED DOOR	ASSIGNED JUMPSEAT	ASSIGNED AREA
1 PURSER	DOOR 1 LH	FWD OUTBOARD	FWD/MID
1 CABIN CREW	DOOR 1 RH/LH	FWD INBOARD	FWD/MID
1 CABIN CREW	DOOR 4 RH	AFT CENTER	MID/AFT
1 CABIN CREW	DOOR 4 LH	REARWARD	MID/AFT

Note: These procedures are established for the minimum required number of 4 cabin crews. At least, one crewmember must be seated on the center swivel cabin attendant seat (if installed).

COMMUNICATIONS

Ident.: PRO-ABN-90-00010418.0001001 / 27 FEB 18
Applicable to: ALL

1. EMERGENCY CALL

FROM	TO	COMMUNICATION METHOD(S)	REMARKS
COCKPIT	CABIN	- Press EMER pb-sw on the CALLS panel, or - Passenger Address (PA) System: "PURSER TO COCKPIT PLEASE!"	Purser must immediately go to the cockpit.
CABIN	COCKPIT	- Interphone: "PRIO CAPT"	Any cabin crewmember can make such a call. The cockpit crew must reply.

2. EMERGENCY ALERT

FROM	TO	COMMUNICATION METHOD(S)	REMARKS
COCKPIT	CABIN	- PA System: "ATTENTION CREW! AT STATIONS!"	The cockpit crew makes a short and precise announcement to warn that an emergency evacuation may soon be required. Cabin crews must proceed to their emergency stations.

3. NOTIFICATION TO PASSENGERS

FROM	TO	COMMUNICATION METHOD(S)	REMARKS
COCKPIT	CABIN	- SIGNS ON - PA System	For psychological reasons, the cockpit crew should be the first to inform of an intended emergency landing.
PURSER	CABIN	- CABIN LIGHTS 100 % - PA System	Purser informs passengers that they have to pay special attention to these warnings: - "FINISH PREPARATION" - "BRACE FOR IMPACT" - "EVACUATE, EVACUATE"

4. FINISH PREPARATION			
FROM	**TO**	**COMMUNICATION METHOD(S)**	**REMARKS**
COCKPIT	CABIN	- Passenger Address (PA) System: "FINISH PREPARATION"	The cockpit crew gives this order a short time before an emergency landing.

5. BRACE FOR IMPACT			
FROM	**TO**	**COMMUNICATION METHOD(S)**	**REMARKS**
COCKPIT	CABIN	- PA System: "BRACE FOR IMPACT!"	The cockpit crew announces to brace for impact approximately 1 min before landing.

6. INITIATE EVACUATION (RESTRICTED EXITS)			
FROM	**TO**	**COMMUNICATION METHOD(S)**	**REMARKS**
COCKPIT	CABIN	- PA System: "EVACUATE, EVACUATE" - Activate EVAC signals	The cockpit crew orders an immediate evacuation, and the cabin crew directs passengers to all available exists.
CABIN	COCKPIT AND CABIN	- EVAC SIGNAL SYSTEM on FWD ATTND panel (FAP) - PA System or megaphone	Used by the cabin crew, if there is no signal or order from the cockpit, and if it is unmistakably clear that the aircraft must be evacuated.
CABIN	CABIN	- Verbal	The cabin crew stands up and shouts: - "SEATBELTS OFF!" - "LEAVE EVERYTHING!" - "GET OUT!" - "COME THIS WAY!"

7. EVACUATION NOT REQUIRED			
FROM	**TO**	**COMMUNICATION METHOD(S)**	**REMARKS**
COCKPIT	CABIN	- PA System: "CABIN CREW and PASSENGERS REMAIN SEATED!"	When the Captain decides that an evacuation is not required, the cockpit crew makes an immediate announcement to this effect.

ON GROUND EVACUATION

Ident.: PRO-ABN-90-A-00010419.0001001 / 16 JAN 18

3 **Applicable to: MSN 01767-02334, 02388, 02443-02457, 02584-09063**

COCKPIT CREW PROCEDURES

The cockpit crew notifies the cabin crew of the nature of the emergency, and states intentions. The cockpit crew uses the Passenger Address system to make an appropriate announcement, such as: “EVACUATE, EVACUATE”, and presses the EVAC COMMAND pb.

Ident.: PRO-ABN-90-A-00010419.0002001 / 16 JAN 18
Applicable to: MSN 02359, 02405, 02482

COCKPIT CREW PROCEDURES

The cockpit crew notifies the cabin crew of the nature of the emergency, and states intentions.
The cockpit crew uses the Passenger Address system, to make an appropriate announcement, such as: “EVACUATE, EVACUATE”.

Ident.: PRO-ABN-90-A-00010420.0001001 / 26 JAN 18
Applicable to: ALL

CABIN CREW PROCEDURES

When the cabin receives the order to evacuate, each cabin crewmember must proceed as follows:

STAND UP AND SHOUT.....“UNFASTEN SEATBELTS”
OUTSIDE CONDITIONS.....CHECK

■ **If outside conditions are safe:**
DOOR IN ARMED POSITION.....OPEN FIRMLY
SHOUT.....“COME THIS WAY”

● **If the door does not open automatically:**
DOOR.....PUSH AND OPEN MANUALLY

SLIDE (or SLIDERAFT) DEPLOYMENT.....CHECK FULL DEPLOYMENT
It takes approximately 4 s for the slide (or slideraft) to deploy.

● **If the slide (or slideraft) does not automatically inflate:**
RED, MANUAL INFLATION HANDLE.....PULL
The red, manual inflation handle is located on the right-hand side of the slide (or slideraft) girt extension.

ORDER.....“EVACUATE, EVACUATE”
PASSENGER EVACUATION .....EXPEDITE

● **If the slide (or slideraft) becomes unserviceable:**
PASSENGER EVACUATION.....STOP
PASSENGERS TO ANOTHER USABLE EXIT.....REDIRECT

TOTAL ZONE EVACUATION.....CHECK
CABIN CREW.....EVACUATE
PASSENGERS AWAY FROM THE AIRCRAFT.....DIRECT

■ **If outside conditions are unsafe:**
EXIT DOOR.....BLOCK
PASSENGERS TO NEAREST USABLE EXIT.....REDIRECT

COCKPIT EVACUATION THROUGH WINDOW

Applicable to: ALL

Ident.: PRO-ABN-90-B-00010421.0001001 / 05 AUG 10

OPENING THE SLIDING WINDOW

HANDLE.....PUSH DOWN AND PULL BACK

Pulling the handle backwards, opens the sliding window.

Ident.: PRO-ABN-90-B-00010422.0001001 / 24 NOV 15

COCKPIT EVACUATION WITH ESCAPE ROPE

ESCAPE ROPE STOWAGE.....OPEN

The escape rope stowage is located above the sliding window, on either side of the overhead panel.

ESCAPE ROPE.....UNROLL

Unroll the escape rope, and throw it through the window.

SEAT.....STEP ON

ESCAPE ROPE.....GRASP

Grasp the escape rope firmly with both hands, and slide down along the rope.

EVACUATION ON WATER

Ident.: PRO-ABN-90-C-00010423.0001001 / 05 AUG 10

4 **Applicable to: MSN 01767-01920, 02108, 02359-02405, 02482-02626, 02737, 02908-02914, 03138, 03308, 03357-04312, 04328-04384, 04399-04488, 04506-04518, 04535-04637, 04965, 05080, 05094, 05155-05190, 05230-05727, 05829, 05952, 06720-08440, 08460-08492, 08557, 08587, 08655, 08710-09063**

CABIN CREW RESPONSIBLE FOR TYPE "I" DOORS

When the cabin receives the order to evacuate, each cabin crewmember must proceed as follows:

CHILDREN LIFEVESTS.....DISTRIBUTE

STAND UP AND SHOUT.....“UNFASTEN SEATBELTS – PUT ON YOUR LIFEVEST”

Inflate the lifevest, only once outside the aircraft.

ORDER.....“REMOVE SHOES”

- **If the Type I door is usable:**

  DOOR IN ARMED POSITION.....OPEN

  SLIDE.....DEPLOY

  RED, MANUAL INFLATION HANDLE.....PULL

  Do not wait for automatic inflation of the slide.

■ **If the water level is close to the door sill:**

The slide inflates on the water.

SLIDE.....LEAVE ATTACHED TO CABIN FLOOR
PASSENGER LIFEVESTS.....INFLATE WHEN EVACUATING AIRCRAFT
PASSENGERS.....EVACUATE

Evacuate passengers into the water. The slide is used as a flotation device.

TOTAL ZONE EVACUATION.....CHECK
LAST CREWMEMBER.....EVACUATE
SLIDE.....SEPARATE FROM DOOR SILL

The last crewmember must separate the slide from the door sill.

MOORING LINE.....CUT

■ **If the water level is too far away from the door sill:**

SLIDE.....DISCONNECT FROM DOOR SILL

The slide remains tied to the aircraft by a 6 m (20 ft) mooring line.

MOORING LINE.....HOLD

To keep the slide close to the exit, hold the mooring line.

PASSENGER LIFEVESTS.....INFLATE WHEN EVACUATING AIRCRAFT
PASSENGERS.....EVACUATE

Evacuate passengers into the water. The slide is used as a flotation device.

TOTAL ZONE EVACUATION.....CHECK
LAST CREWMEMBER.....EVACUATE
MOORING LINE.....CUT

Ident.: PRO-ABN-90-C-00010423.0002001 / 17 MAR 11

5 **Applicable to: MSN 01957-02097, 02121-02334, 02443-02457, 02649-02712, 02804, 03071, 03264, 03330, 04314, 04393-04397, 04491, 04532, 04645-04954, 05027-05076, 05090-05092, 05120, 05218, 05744-05807, 05893-05923, 05992-06336, 08455-08459, 08511-08541, 08558-08586, 08627-08654, 08688-08702**

CABIN CREW RESPONSIBLE FOR TYPE "I" DOORS

When the cabin receives the order to evacuate, each cabin crewmember must proceed as follows:

CHILDREN LIFEVESTS.....DISTRIBUTE
STAND UP AND SHOUT....."UNFASTEN SEATBELTS – PUT ON YOUR LIFEVEST"

Inflate the lifevest, only once outside the aircraft.

ORDER....."REMOVE SHOES"

● **If the Type I door is usable:**

DOOR IN ARMED POSITION.....OPEN
SLIDERAFT.....DEPLOY

RED, MANUAL INFLATION HANDLE..... PULL

Do not wait for automatic inflation of the slideraft.

■ **If the water level is close to the door sill:**

The slideraft inflates on the water.

SLIDERAFT.....LEAVE ATTACHED TO CABIN FLOOR
PASSENGER LIFEVESTS.....INFLATE WHEN BOARDING SLIDERAFT
PASSENGERS..... BOARD SLIDERAFT
TOTAL ZONE EVACUATION.....CHECK
LAST CREWMEMBER.....BOARD SLIDERAFT
SLIDERAFT..... SEPARATE FROM DOOR SILL

The last crewmember must separate the slideraft from the door sill, and board with all the necessary safety equipment.

MOORING LINE.....CUT
SURVIVAL KIT..... RETRIEVE

The survival kit is attached to the slideraft via a lanyard.

■ **If the water level is too far away from the door sill:**

SLIDERAFT.....DISCONNECT FROM DOOR SILL

The slideraft remains tied to the aircraft by a 6 m (20 ft) mooring line.

MOORING LINE..... HOLD

To keep the slideraft close to the exit, hold the mooring line.

PASSENGER LIFEVESTS.....INFLATE WHEN BOARDING SLIDERAFT
PASSENGERS..... BOARD SLIDERAFT
TOTAL ZONE EVACUATION.....CHECK
LAST CREWMEMBER.....BOARD SLIDERAFT

The last crewmember must board with all the necessary safety equipment.

MOORING LINE.....CUT
SURVIVAL KIT..... RETRIEVE

The survival kit is attached to the slideraft via a lanyard.

Note: *Evacuation is usually done through the passenger doors. However, if one of the passenger doors is not usable, the overwing exit may be used for evacuation. The cabin crew should install the lifeline to help passenger to stay on the wing. These passengers will, however, be obliged to wait on the wing until the slideraft arrives, and until all other passengers have evacuated from the passenger door exits, and have finished boarding the sliderafts.*

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NORMAL PROCEDURES

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Localization Title	Toc Index	ID	Reason
PRO-NOR-SOP-06 Overhead Panel - RCDR	B	3	Documentation update: Addition of "Overhead Panel - RCDR" documentary unit
PRO-NOR-SOP-06 Overhead Panel - RCDR	B	5	Documentation update: Addition of "Overhead Panel - RCDR" documentary unit
PRO-NOR-SOP-02 GPS PRIMARY Availability (If Installed)	D	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-04 Aircraft Power Up - Weather Radar	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-04 Aircraft Power Up - Weather Radar	B	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-04 FMGS Pre-Initialization - FM Database Validity	H	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-04 ECAM Pages	L	4	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-04 ECAM Pages	L	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-05 Exterior Walk-Around - LH FWD Fuselage	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-05 Exterior Walk-Around - LH FWD Fuselage	B	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-05 Exterior Walk-Around - Lower Center Fuselage	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-NOR-SOP-05 Exterior Walk-Around - Lower Center Fuselage	B	4	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SOP-05 Exterior Walk-Around - RH Center Wing	B	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-NOR-SOP-05 Exterior Walk-Around - RH Center Wing	B	6	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SOP-05 Exterior Walk-around - ENG 2 LH Side	B	7	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-05	B	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
Exterior Walk-around - ENG 2 LH Side			
PRO-NOR-SOP-05 Exterior Walk-around - ENG 2 RH Side	B	9	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-05 Exterior Walkaround - ENG 2 RH Side	B	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-05 Exterior Walk-Around - RH Wing Leading Edge	B	11	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SOP-05 Exterior Walk-Around - RH Wing Leading Edge	B	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-NOR-SOP-05 Exterior Walk-Around - RH Wing Leading Edge	B	13	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-05 Exterior Walk-Around - RH L/G and Fuselage	B	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-NOR-SOP-05 Exterior Walk-Around - RH L/G and Fuselage	B	15	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SOP-05 Exterior Walk-Around - LH Landing Gear	B	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-NOR-SOP-05 Exterior Walk-Around - LH Landing Gear	B	17	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SOP-05 Exterior Walk-Around - LH Wing Leading Edge	B	18	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SOP-05 Exterior Walk-Around - LH Wing Leading Edge	B	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-NOR-SOP-05 Exterior Walk-Around - LH Wing Leading Edge	B	20	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-05 Exterior Walk-around - ENG 1 LH Side	B	21	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-NOR-SOP-05 Exterior Walk-around - ENG 1 LH Side	B	22	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-05 Exterior Walk-around - ENG 1 RH Side	B	23	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-05 Exterior Walk-around - ENG 1 RH Side	B	24	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-05 Exterior Walk-Around - LH Center Wing	B	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-NOR-SOP-05 Exterior Walk-Around - LH Center Wing	B	26	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SOP-06 Overhead Panel - RCDR	B	2	Effectivity update: The information no longer applies to all MSN.
PRO-NOR-SOP-06 Overhead Panel - RCDR	B	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-NOR-SOP-06 Overhead Panel - EVAC	B	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-06 Overhead Panel - ADIRS	B	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-06 Overhead Panel - Air Cond	B	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-NOR-SOP-06 Overhead Panel - Air Cond	B	9	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SOP-06 Overhead Panel - Fuel	B	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-06 Overhead Panel - Fuel	B	11	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-06 Overhead Panel - ACT Control Panel	B	12	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SOP-06 CTR Instrument Panel - ISIS	C	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-NOR-SOP-06 FMGS Initialization - FM Database Validity	H	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-06 FMGS Initialization - ADIRS Position Initialization	H	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-06 FMGS Data Insertion - Gross Weight Insertion (INIT B PAGE)	H	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-06 Instrument Panels	K	17	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-07 At Start Clearance - NW STRG DISC	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-08 Automatic Engine Start	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-08 Automatic Engine Start	B	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-08 Automatic Engine Start	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-08 Ground Run Up - Danger Areas	C	4	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-08 Ground Run Up - Danger Areas	C	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-09 After Start - ENG Mode Selector	A	1	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-09 After Start - ENG Mode Selector	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-09 After Start - Dual Cooling	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-09 After Start - ENG Anti-Ice	A	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-09 After Start - ENG Anti-Ice	A	5	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-09 After Start - Flow Pattern	A	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-09 After Start - Flow Pattern	A	7	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-NOR-SOP-10 Taxi - Brakes	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-10 Radar	A	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-10 Radar	A	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-11 Before Takeoff - Exterior Lights	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-11 Before Takeoff - ENG Mode Selector	A	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-12 Takeoff - Thrust Setting	A	1	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-12 Takeoff - Thrust Setting	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-12 Takeoff - Below 80 Knots	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-12 Takeoff - Below 80 Knots	A	4	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-12 Takeoff - Above Acceleration Altitude (or Once in Climb Phase)	A	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-NOR-SOP-12 Takeoff - Above Acceleration Altitude (or Once in Climb Phase)	A	6	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SOP-13 After Takeoff - ENG MODE Selector	A	1	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-13 After Takeoff - Anti-Ice Protection	A	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-13 After Takeoff - Anti-Ice Protection	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-14 Climb - Initial Climb	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-14 Climb - Radar	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-15 Cruise - Radar Tilt	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-NOR-SOP-16 Descent Preparation - FMGS - PERF APPR - PERF GO AROUND	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-16 Descent Preparation - Anti-Ice Protection	A	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-16 Descent Preparation-Anti-Ice Protection	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-17 Descent Adjustment - BARO Ref	C	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-17 descent Adjustment - ENG MODE	C	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-18-A Stabilization Criteria	D	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-18-B Intermediate/Final Approach - At green dot speed	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-NOR-SOP-18-B Intermediate/Final Approach - At green dot speed	B	2	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SOP-18-B Intermediate/Final Approach - When Landing Gear is down	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-NOR-SOP-18-B Intermediate/Final Approach - When Landing Gear is down	B	4	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SOP-18-C Approach using FINAL APP Guidance - At Entered Minimum	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-18-C Approach using FPA Guidance - At Entered Minimum	C	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-18-C Visual Approach - General	F	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-19 Landing - Flare	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-NOR-SOP-20 Go Around with FD - Go Around Initiation	A	1	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-20 Go Around with FD - Go Around Initiation	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-21 After Landing - Radar	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-21 After Landing - Predictive Windshear	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-21 After Landing - Weather Radar	A	3	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-21 After Landing - Flaps	A	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-21 After Landing - Flaps	A	5	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-21 After Landing - Anti-Ice Protection	A	6	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-21 After Landing - Anti-Ice Protection	A	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-21 After Landing - Brake Temperature	A	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-NOR-SOP-21 After Landing - Brake Temperature	A	9	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SOP-22 Parking - ENG MASTER Levers	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-22 Parking - ENG MASTER Levers	A	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-22 Parking - Fuel Pumps	A	3	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SOP-22 Parking - Fuel Pumps	A	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SOP-23 Securing the Aircraft - EMER Lights and Signs	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SOP-90 Approach	G	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-NOR-SOP-90 Approach	G	2	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
PRO-NOR-SOP-90 Landing	G	3	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SOP-90 Landing	G	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-NOR-SOP-90 Summary for Each Phase - Taxi	I	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SUP-SUP Engine	A	1	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-SUP Engine	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-SUP Surveillance	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SUP-ADVWXR Takeoff	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-ADVWXR Takeoff	B	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-ADVWXR After Start	F	3	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-ENG Manual Engine Start - General	A	1	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-ENG Manual Engine Start - General	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-ENG Manual Engine Start - Procedure	A	3	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-ENG Manual Engine Start - Procedure	A	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-ENG Engine Start with External Pneumatic Power	B	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-ENG Engine Start with External Pneumatic Power	B	6	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-ENG Crossbleed Engine Start	C	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-ENG Crossbleed Engine Start	C	8	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-ENG	D	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
Air Conditioning during Automatic Engine Start			
PRO-NOR-SUP-ENG Engine Start Valve Manual Operation	E	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-ENG Engine Start Valve Manual Operation	E	11	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-ENG Engine Ventilation (Dry Cranking)	F	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-ENG Engine Ventilation (Dry Cranking)	F	13	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-ENG At Departure - General	H	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-ENG At Departure - General	H	15	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-ENG At Departure - Before Releasing Parking Brake	H	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SUP-ENG At Departure - Before Takeoff	H	17	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-ENG At Departure - Before Takeoff	H	18	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-ENG At Arrival - General	I	19	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-ENG At Arrival - General	I	20	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-ENG At Arrival - No Less Than 3 Minutes	I	21	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-ENG At Arrival - No Less Than 3 Minutes	I	22	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-FUEL Refueling - Automatic Refueling	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SUP-FUEL Refueling with One Engine Running	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-NOR-SUP-FUEL Refueling with One Engine Running	B	3	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SUP-FUEL Ground Fuel Transfer	C	4	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-FUEL Ground Fuel Transfer	C	5	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
PRO-NOR-SUP-FUEL Ground Fuel Transfer	C	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-NOR-SUP-FUEL Defueling	D	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-NOR-SUP-FUEL Defueling	D	8	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SUP-FUEL Defueling	D	9	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-LG-LG_DN Limitations	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-LG-LG_DN Limitations	B	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-LG-LG_DN Abnormal and Emergency Procedures	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-LG-LG_DN Abnormal and Emergency Procedures	C	4	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-LG-LG_DN Second Segment Conditions	D	5	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SUP-LG-LG_DN Second Segment Conditions	D	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-NOR-SUP-LG-LG_DN Second Segment Conditions	D	7	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-LG-LG_DN Final Segment Conditions	D	8	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SUP-LG-LG_DN Final Segment Conditions	D	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-NOR-SUP-LG-LG_DN Final Segment Conditions	D	10	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-LG-LG_DN Climb	F	11	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SUP-LG-LG_DN Climb	F	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-NOR-SUP-LG-LG_DN Climb	F	13	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-LG-LG_DN Cruise	G	14	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SUP-LG-LG_DN Cruise	G	15	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.

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PRO-NOR-SUP-LG-LG_DN Cruise	G	16	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-LG-LG_DN Holding	H	17	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SUP-LG-LG_DN Holding	H	18	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-NOR-SUP-LG-LG_DN Holding	H	19	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-LG-LG_DN Descent	I	20	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SUP-LG-LG_DN Descent	I	21	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-NOR-SUP-LG-LG_DN Descent	I	22	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-LG-LG_DN Go-Around	J	23	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SUP-LG-LG_DN Go-Around	J	24	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-NOR-SUP-LG-LG_DN Go-Around	J	25	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-LG-LG_DN Driftdown Net Flight Path - One Engine Inoperative	K	26	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SUP-LG-LG_DN Driftdown Net Flight Path - One Engine Inoperative	K	27	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-NOR-SUP-LG-LG_DN Driftdown Net Flight Path - One Engine Inoperative	K	28	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-LG-LG_DN Gross Ceilings - One Engine Inoperative	K	29	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SUP-LG-LG_DN Gross Ceilings - One Engine Inoperative	K	30	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-NOR-SUP-LG-LG_DN Gross Ceilings - One Engine Inoperative	K	31	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-MISC-D	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
Pushback with Power Push Unit via the Main Landing Gear - Procedure 2/2			
PRO-NOR-SUP-MISC-A Operation at or Above 9 200 ft	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-MISC-A Operation at or Above 9 200 ft	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-NOR-SUP-MISC-C General	A	1	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-MISC-C Consequences	B	2	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-MISC-C Procedures	D	3	Effectivity update: The information no longer applies to MSN 05449.
PRO-NOR-SUP-SURV Automatic Dependent Surveillance - Broadcast (ADS-B)	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-10 FMGS Initialization	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-10 Flight Plan Initialization - General	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-10 Flight Plan Initialization - Aligning IRS	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-10 Flight Plan Initialization - Lateral Flight Plan	B	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-10 Flight Plan Initialization - Vertical Flight Plan	B	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-10 FMGS Data Insertion - Climb Speed Preselection	C	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-10 FMGS Data Insertion - Cruise Mach (Speed) Preselection	C	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-15 Change of Runway	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-NOR-SRP-01-20 FMA Mode Check	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-30 Takeoff Using the Localizer of the Opposite Runway	F	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-40 Monitoring the Climb Phase	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-40 Expedite Climb	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-40 Immediate Return to Origin Airport	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-50 Monitoring the Navigation Accuracy - Position Discrepancy	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-50 Entering a Step Climb or a Step Descent	D	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-50 Immediate Change of Level in Cruise	E	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-50 Preparation for Descent and Approach - Revision of Lateral F-PLN	F	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-50 Preparation for Descent and Approach - Revision of Vertical Flight Plan	F	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-50 Preparation for Descent and Approach - Entering the Winds for Descent	F	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-50 Preparation for Descent and Approach - Preselecting a Managed Speed/Mach	F	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PRO-NOR-SRP-01-50 Preparation for Descent and Approach - Modification of the Cabin Rate	F	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-50 Preparation for Descent and Approach - Entering the Approach Data	F	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-60 Descent Monitoring - DES Mode Engaged	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-60 Too Steep Path	E	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-70 ILS Approach - Approach Mode Activation (LOC-G/S)	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-70 ILS/MLS Approach - Autoland	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-70 ILS/MLS Approach - Autoland	B	3	Effectivity update: The information now also applies to MSN 09063.
PRO-NOR-SRP-01-70 ILS Approach - Standard ILS Automatic Approach	B	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-70 Warnings for ILS Approach	E	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-80 MONITORING THE GO-AROUND	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-80 Go-Around Profile	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-80 Missed Approach: Try Again	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-NOR-SRP-01-80 Missed Approach: Divert	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

FOREWORD

Ident.: PRO-NOR-SOP-01-00010142.0001001 / 05 DEC 17
Applicable to: ALL

The procedures contained in this Chapter are recommended by Airbus, and are consistent with the other Chapters of this manual.

The Authorities do not certificate Standard Operating Procedures. The manufacturer presents them herein as the best way to proceed, from a technical and operational standpoint. They are continually updated and the revisions take into account Operator input, as well as manufacturer experience.

In addition, Operators may amend them, as needed. However, the manufacturer recommends that Operators using the FCOM as onboard operational manual submit suggested changes to expedite publication, and maintain consistency of the manual. The Operator should note that they may rewrite this Chapter, at their own responsibility; this could, however, make it difficult to update the manual and keep it consistent with the other Chapters.

The following sections contain expanded information on normal procedures.

Standard Operating Procedures consist of inspections, preparations, and normal procedures. All items of a given procedure are listed in a sequence that follows a standardized scan of the cockpit panels, unless that sequence goes against the action priority logic, to ensure that all actions are performed in the most efficient way.

These procedures assume that all systems are operating normally, and that all automatic functions are used normally.

Standard Operating Procedures consider that both pilots use Electronic Flight Bag (EFB). Airbus recommends operating with two EFBs in order to reduce the risk of erroneous inputs.

The FCOM also contains normal procedures that are non-routine procedures in the Supplementary Procedures chapter and in the Special Operations chapter.

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TECHNICAL CONDITION OF THE AIRCRAFT

Ident.: PRO-NOR-SOP-02-00010147.0001001 / 05 AUG 10
Applicable to: ALL

The crew will verify the technical state of the aircraft (deferred defect list), with regard to airworthiness, acceptability of malfunctions (MEL), and influence on the flight plan.

WEATHER BRIEFING

Ident.: PRO-NOR-SOP-02-00010148.0001001 / 05 AUG 10
Applicable to: ALL

- The crew will get a weather briefing
- The briefing should include:
  - Actual and expected weather conditions, including runway conditions for takeoff and climb-out
  - Significant weather enroute, including winds and temperatures
  - Terminal forecasts for destination and alternate airports
  - Actual weather for destination and alternates, for short range flights and recent past weather, if available
  - Survey of the meteorological conditions at airports along the planned route.

Weather can affect the choice of routing (for example, influence which route is quickest) and the choice of flight level. The flight crew must also consider the possibility of runways being contaminated at the departure and destination airfields. The flight crew must also verify ISA deviations and enroute icing conditions, and must consider the possibility of holding due to weather at the destination.

NOTAMS

Ident.: PRO-NOR-SOP-02-00010149.0002001 / 29 MAY 13
Applicable to: ALL

- The flight crew must examine NOTAMs for changes to routings, unserviceable navaids, availability of runways and approach aids etc, all of which may affect the final fuel requirement
- In order to prevent the risks of projection of debris towards the trimmable horizontal stabilizer and the elevators, it is not recommended to takeoff from runways in bad condition (loose surface, under repair, covered with debris...)

GPS PRIMARY AVAILABILITY (IF INSTALLED)

Ident.: PRO-NOR-SOP-02-00014998.0001001 / 20 MAR 17
Applicable to: MSN 02584, 02737

- **For RNP1 operations, RNAV(GNSS) approaches and RNAV(RNP) ⩤ approaches:**
  If required by operational regulation, an appropriate Ground-Based Prediction Program should be used to check the RAIM/AIME for each intended procedure (arrival, departure, alternate if required).

GPS PRIMARY AVAILABILITY (IF INSTALLED)

Ident.: PRO-NOR-SOP-02-00014998.0002001 / 20 MAR 17
1 **Applicable to: MSN 01767-02482, 02609-02712, 02804-09063**

- **For RNP1 operations, RNAV(GNSS) approaches and RNAV(RNP) ⩤ approaches:**
  RAIM/AIME has been demonstrated to be available 100% of the time with 24 healthy satellites.If required by operational regulation, for specific conditions (e.g RNAV(RNP), mountainous terrain or less than 24 satellites) an appropriate Ground-Based Prediction Program should be used to check the RAIM/AIME for each intended procedure (arrival, departure and alternate if required)

FLIGHT PLAN AND OPERATIONAL REQUIREMENTS

Ident.: PRO-NOR-SOP-02-00010150.0001001 / 18 MAR 11
Applicable to: ALL

- The crew will check the company flight plan for routing, altitudes, and flight time
- The Captain will check the ATC flight plan and ensure that:
  - It is filled in and filed, in accordance with the prescribed procedures
  - It agrees with the fuel flight plan routing.
- The crew will check the estimated load figures, and will calculate the maximum allowable takeoff and landing weights.

OPTIMUM FLIGHT LEVEL

Ident.: PRO-NOR-SOP-02-00010151.0001001 / 22 MAR 17
Applicable to: ALL

The flight crew should choose a flight level that is as close to the optimum as possible. To determine the optimum flight level, *Refer to QRH/PER-M Optimum & Maximum Altitudes (Paper Only)* or use the performance application of FlySmart with Airbus.
As a general rule, an altitude that is 4 000 ft below the optimum produces a significant penalty (approximately 5 % of fuel). Flight 8 000 ft below the optimum altitude produces a penalty of more than 10 % against trip fuel. (The usual contingency allowance is 5 %).

FUEL REQUIREMENTS

Ident.: PRO-NOR-SOP-02-00010152.0001001 / 05 AUG 10
Applicable to: ALL

COMPUTERIZED FLIGHT PLAN CHECK

In most cases the flight crew uses a computer-derived flight plan to obtain the correct fuel requirements. Although these computerized requirements are normally accurate, the flight crew must check them for gross errors.

The easiest way to do this is to use the "Quick Determination of F-PLN" tables (*Refer to PER-FPL-FLP-QFP-40 FLIGHT PLANNING M.78*). Although the aircraft will fly at ECON MACH that is based on the cost index, the M 0.78 table is accurate enough to permit the crew to check for gross error.

Ensure that both the captain and the first officer have verified that the fuel calculations and required fuel on board are correct and that the figure complies with the applicable regulations.

FUEL TRANSPORTATION

The flight crew must check the policy covering the "tankering" of fuel on sectors where there is a favourable fuel price differential or operational requirement.

Remember that carrying unnecessary extra fuel increases the fuel consumption for that sector and therefore reduces the economy of the operation (lower flex temperature, more tire and brake wear, more time in climb phase, lower optimum flight level etc).

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SAFETY EXTERIOR INSPECTION

Applicable to: ALL

Ident.: PRO-NOR-SOP-03-A-00010153.0001001 / 05 DEC 17

Items marked by asterisks (*) are the only steps to be completed after a transit stop without flight crew change. Otherwise, the new flight crew performs all the items.
This inspection ensures that the aircraft and its surroundings are safe for operations.
On arriving at the aircraft, check for obstructions in the vicinity, engineering activity, refueling, etc.

Ident.: PRO-NOR-SOP-03-A-00010154.0001001 / 04 MAR 14

* WHEEL CHOCKS..... CHECK

If the wheel chocks are not in position, the flight crew must check that the parking brake is set with sufficient accumulator pressure.

Ident.: PRO-NOR-SOP-03-A-00010155.0001001 / 18 MAR 11

* LANDING GEAR DOORS.....CHECK POSITION

WARNING	*Do not pressurize the green hydraulic system without clearance from ground personnel, if any gear door is open. Remember that the green hydraulic system is pressurized if the yellow system is pressurized and the PTU is on AUTO.*

Ident.: PRO-NOR-SOP-03-A-00010156.0001001 / 05 AUG 10

* APU AREA..... CHECK

Observe that the APU inlet and outlet are clear.

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GENERAL

Ident.: PRO-NOR-SOP-04-00010164.0001001 / 05 JUN 18
Applicable to: ALL

Items marked by asterisks (*) are the only steps to be completed after a transit stop without flight crew change. Otherwise, the new flight crew performs all the items.
The following procedure, ensures that all the required checks are performed before applying electrical power to avoid inadvertent operation of systems and danger to the aircraft and personnel. The APU start and the establishment of electrical and pneumatic power are included.

AIRCRAFT SETUP

Ident.: PRO-NOR-SOP-04-A-00021906.0001001 / 30 AUG 17
Applicable to: ALL

WARNING	Do not pressurize the hydraulic systems until clearance is obtained from ground personnel.

Ident.: PRO-NOR-SOP-04-A-00010165.0001001 / 03 MAR 14
Applicable to: ALL

ENG

ENG MASTERS 1, 2 ..... OFF
ENG MODE selector ..... NORM

Ident.: PRO-NOR-SOP-04-A-00011188.0001001 / 05 DEC 17
1 **Applicable to: MSN 01767-04393, 04399-04518, 04535-04637, 04752-05094, 05155-05190, 05230-09063**

WEATHER RADAR

* RADAR sw ..... OFF
* WINDSHEAR / PWS sw ..... OFF
* GAIN knob ..... AUTO/CAL
* MODE selector ..... AS RQRD

Ident.: PRO-NOR-SOP-04-A-00011188.0003001 / 05 DEC 17
2 **Applicable to: MSN 04394-04397, 04532, 04645, 05120, 05218**

WEATHER RADAR

* WXR/PWS sw ..... OFF
* CAPT DISPLAY mode selector ..... OFF
* F/O DISPLAY mode selector ..... OFF
* GAIN knob ..... AUTO
* TURB sw ..... AUTO

Ident.: PRO-NOR-SOP-04-A-00010166.0001001 / 03 MAR 14
Applicable to: ALL

L/G

L/G lever..... DOWN

Ident.: PRO-NOR-SOP-04-A-00010167.0001001 / 03 MAR 14
Applicable to: ALL

WIPERS

Both WIPER selectors..... OFF

BATTERY CHECK/SETUP

Ident.: PRO-NOR-SOP-04-00010168.0001001 / 30 AUG 17
Applicable to: ALL

■ **If the aircraft has not been electrically supplied for 6 h or more, perform the following check:**

BAT 1 pb and BAT 2 pb..... CHECK OFF
BAT 1 and 2 VOLTAGE..... CHECK ABOVE 25.5 V

Battery voltage above 25.5 V ensures a charge above 50 %.

■ **If the battery voltage is at or below 25.5 V:**

A charging cycle of about 20 min is required.

BAT 1 pb and BAT 2 pb.....AUTO
EXT PWR pb-sw..... ON

Check on ELEC SD page, that the battery contactor is closed and the batteries are charging.

● **After 20 min:**

BAT 1 + 2 pb..... OFF
BAT 1 and 2 VOLTAGE..... CHECK ABOVE 25.5 V
BAT 1 + 2 pb..... AUTO

■ **If the battery voltage is above 25.5 V:**

BAT 1 pb and BAT 2 pb.....AUTO

If the APU is started on batteries only, it should be started within 30 min after the selection of batteries to AUTO (35 min after battery selection to AUTO, the battery charge is less than 25 % of maximum capacity).

■ **If the aircraft has been electrically supplied during the last 6 h:**

BAT 1 pb and BAT 2 pb..... AUTO

● **If the AVAIL light is on:**
EXT PWR pb-sw.....ON

APU FIRE TEST/APU START

Applicable to: ALL

Ident.: PRO-NOR-SOP-04-B-00010170.0001001 / 09 FEB 18

APU FIRE

APU FIRE pb-sw.....CHECK IN and GUARDED
AGENT lights .....CHECK OFF
APU FIRE TEST pb.....PRESS and MAINTAIN

TEST RESULT

Check that the APU fire detection and extinguishing system is operative:

- APU FIRE warning on:
  - ECAM
  - CRC
  - MASTER WARN light (if AC Power available).
- APU FIRE pb-sw lighted red.
- SQUIB light and DISCH light on

Ident.: PRO-NOR-SOP-04-B-00010171.0015001 / 17 MAR 17

APU START

■ **If the EXT PWR pb-sw ON light is on:**
APU MASTER SW pb-sw.....ON
APU START pb-sw.....ON

Note: Wait at least 3 s before selecting APU START pb-sw.

For more information on the APU start, Refer to DSC-49-20 Overhead Panel - Illustration.

For more information on APU starter limitations and APU operations during refueling:
- *Refer to LIM-APU APU Start*
- *Refer to LIM-APU APU Start/Shutdown during Refueling/Defueling.*

EXT PWR pb-sw.....AS RQRD

The flight crew should keep ON the external power units to reduce the APU load, particularly in hot weather conditions.

■ **If the EXT PWR pb-sw ON light is off:**
APU MASTER SW pb-sw.....ON

APU START pb-sw..... ON

Note: Wait at least 3 s before selecting APU START pb-sw.

For more information on the APU start, Refer to DSC-49-20 Overhead Panel - Illustration.

For more information on APU starter limitations and APU operations during refueling:
- *Refer to LIM-APU APU Start*
- *Refer to LIM-APU APU Start/Shutdown during Refueling/Defueling.*

AIR COND

Ident.: PRO-NOR-SOP-04-00010177.0001001 / 14 OCT 15
Applicable to: ALL

AIR COND

● **When the APU is AVAIL:**

APU BLEED pb-sw..... ON

Do not use APU BLEED, if the ground personnel confirms that a LP or HP ground air unit is connected to the aircraft.
To determine if an HP ground air unit is connected, the flight crew should also check on the BLEED SD page, if there is pressure in the bleed air system.

ALL WHITE LIGHTS..... OFF
X BLEED selector..... AUTO
Zone temperature selectors.....AS RQRD

Full range temperature 24 ± 6 °C (75 ± 11 °F).

CARGO HEAT ⋖

Ident.: PRO-NOR-SOP-04-00010178.0001001 / 03 MAR 14
Applicable to: ALL

CARGO HEAT ⋖

TEMPERATURE selector ..... AS RQRD

COCKPIT LIGHTS

Ident.: PRO-NOR-SOP-04-00010172.0002001 / 23 JUN 15
Applicable to: ALL

COCKPIT LIGHTS

* COCKPIT LIGHTS.....AS RQRD

Set INT LT, FLOOD LT, INTEG LT (included glareshield and FCU).

EFB/ACARS (IF INSTALLED) INITIALIZATION

Ident.: PRO-NOR-SOP-04-C-00021913.0001001 / 05 DEC 17
Applicable to: ALL

EFB START

ALL EFB.....START

- **In accordance with the Operator's policy or if required by operational regulation:**
  EFB/eQRH VERSION.....CHECK
  If required, the flight crew performs this check unless a specific procedure is established as per Operator's policy to ensure that the correct version is onboard.
  On the EFB STATUS page and the eQRH My aircraft page, check the EFB VERSION number and compare it with the valid version number given as reference by the Operator (e.g. on the company flight plan).

Ident.: PRO-NOR-SOP-04-C-00021947.0001001 / 04 DEC 18
Applicable to: ALL

ACARS INITIALIZATION

* ACARS ◁ .....INITIALIZE

Initialize ACARS if not done automatically, as per company policy.

Ident.: PRO-NOR-SOP-04-C-00014422.0001001 / 04 DEC 18
Applicable to: ALL

FMGS PRE-INITIALIZATION

Perform FMGS Pre-Initialization in the case of ACARS ◁ operations or EFB operations with SYNCHRO AVIONICS ◁ .
At electrical power-up, the FMGSs and FCU run through various internal tests. Allow enough time (3 min) for tests' completion, and do not start to press pushbuttons until the tests are over. If the "PLEASE WAIT" message appears, do not press any MCDU key until the message clears.

Ident.: PRO-NOR-SOP-04-C-00014423.0001001 / 05 DEC 17
Applicable to: ALL

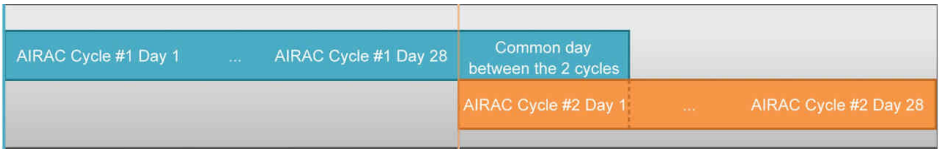
* ENGINE & AIRCRAFT TYPE.....CHECK

Ident.: PRO-NOR-SOP-04-C-00014424.0001001 / 04 DEC 18

3 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

* FM database validity..... CHECK

- *Check DATA BASE validity and stored WPT/NAVAIDS/RWY/ROUTES, if any. If applicable, review the stored data for deletion decision.*
- *On Honeywell FMS, the double AIRAC cycle of the NDB has one day in common (AIRAC Cycle #1 Day 29 / AIRAC Cycle #2 Day 1). From Day 2 of AIRAC Cycle #2, the active database is no longer valid and the message "CHECK DATA BASE CYCLE" will be triggered.*
  On the common day, select AIRAC Cycle #2 prior to the first flight of the day.



Ident.: PRO-NOR-SOP-04-C-00014424.0002001 / 04 DEC 18

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

* FM database validity..... CHECK

- *Check DATA BASE validity and stored WPT/NAVAIDS/RWY/ROUTES, if any. If applicable, review the stored data for deletion decision.*
- *On Thales FMS, if the "CHECK DATA BASE CYCLE" message triggers, the active database is no longer valid. Therefore, on Day 1 of AIRAC Cycle #2, select AIRAC Cycle #2 prior to the first flight of the day.*

Ident.: PRO-NOR-SOP-04-C-00014425.0001001 / 05 JUN 18

Applicable to: ALL

* FLT NBR..... INSERT/CHECK

L2 *Insert FLT NBR only if the company flight plan is not received via ACARS.*

L1 * FROM/TO..... INSERT/CHECK

L2 *Insert FROM/TO only if the company flight plan is not received via ACARS.*

Ident.: PRO-NOR-SOP-04-C-00021927.0001001 / 05 JUN 18
Applicable to: ALL

EFB FLT OPS STATUS PAGE

* EFB SYNCHRO AVIONICS ..... CLICK
* EFB FLT OPS STS page.....INSERT/CHECK

L2 On the FLT OPS STS page, each flight crewmember checks or, inserts and checks (if no EFB SYNCHRO AVIONICS):
- ACFT TYPE and ACFT REG
- FLT NBR and FROM/TO (in agreement with the FMS ACTIVE/INIT page).

ECAM/LOGBOOK CHECK

Ident.: PRO-NOR-SOP-04-00021915.0001001 / 05 DEC 17
Applicable to: ALL

* RCL pb .....PRESS 3 s

This action recalls all the warnings that the flight crew cleared or cancelled during the last flight

* LOGBOOK .....CHECK

- *In the logbook check the technical condition of the aircraft (deferred defect list) with regard to airworthiness, acceptability of the MEL, or the Configuration Deviation List (CDL), and influence on the flight plan.*
- *Crosscheck with ECAM recall.*

* MEL/CDL ITEMS (as appropriate)..... CHECK DISPATCH CONDITIONS

Access the MEL and CDL items via the Ops Library Browser.
As appropriate, check and activate MEL and CDL items. The activated MEL and CDL items are sent to the performance applications.

* AIRCRAFT ACCEPTANCE.....PERFORM

PRELIMINARY PERFORMANCE DETERMINATION

Ident.: PRO-NOR-SOP-04-00021916.0001001 / 05 DEC 17
Applicable to: ALL

For more information, *Refer to FCTM/PR-NP-SOP-PRELIMINARY COCKPIT PREPARATION-Preliminary Takeoff Performance Computation*

Each flight crewmember independently computes the preliminary performance data in accordance with the technical condition of the aircraft and/or any other criteria that may impact the aircraft performance (e.g. NOTAM, runway condition, aircraft configuration).

* AIRFIELD DATA.....OBTAIN

Obtain data needed for initializing the system, preparing the cockpit and for preliminary takeoff performance computation. The airfield data should include: RUNWAY IN USE, ALTIMETER SETTING, and WEATHER DATA.

- **If the LOADSHEET application is used :**
  * PRELIMINARY LOADING.....COMPUTE AND CROSSCHECK
- **If dispatch under MEL and in accordance with the logbook:**
  * MEL/CDL ITEMS (as appropriate)..... CHECK ACTIVATED

  As appropriate, check that the MEL and CDL items are activated in the applicable T.O PERF application.

* PRELIMINARY TAKEOFF PERF DATA.....COMPUTE

The PF and the PM independently compute the preliminary takeoff performance data.

* PRELIMINARY TAKEOFF PERF DATA..... CROSSCHECK

The PF and the PM compare and ensure that the computations are the same.

OPERATION ENGINEERING BULLETINS (OEB)

Ident.: PRO-NOR-SOP-04-00021914.0001001 / 05 DEC 17
Applicable to: ALL

* OEB..... CHECK

Go to the OEB section of the QRH and review all OEBs (particularly red OEBs) that are applicable to the aircraft.

Note: *If there is a transfer of duties during this flight, the flight crew must remind the incoming flight crew of the applicable OEB(s) during the briefing that is done when transferring the duties.*

BEFORE WALKAROUND

Ident.: PRO-NOR-SOP-04-E-00021917.0001001 / 05 JUN 18
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

ECAM PAGES

- **On the DOOR SD page:**
  * OXY.....CHECK PRESSURE
  - **If the OXY pressure is half boxed in amber:**
    MIN FLT CREW OXY CHART.....CHECK PRESSURE

    Verify that the pressure is sufficient for the scheduled flight (Refer to LIM-OXY Minimum Flight Crew Oxygen Pressure).

- **On the HYD SD page:**
  * RESERVOIR FLUID LEVEL.....CHECK WITH NORMAL RANGE

  Note: The volume of the hydraulic fluid in the reservoirs may change with Outside Air Temperature. As a result, the reservoir fluid level that appears on the HYD SD page may be outside of the normal range with no HYD RSVR LO AIR PR or HYD RSVR LO LVL warning. If the fluid level is outside of the normal range, contact maintenance to determine if service is required.

- **On the ENG SD page:**
  * ENG OIL QUANTITY..... CHECK NORMAL

  Check that the oil quantity is at or above 9.5 qt + estimated consumption (average estimated consumption ~ 0.5 qt/h).

Ident.: PRO-NOR-SOP-04-E-00021917.0002001 / 05 JUN 18

4 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

ECAM PAGES

- **On the DOOR SD page:**
  * OXY.....CHECK PRESSURE
    - **If the OXY pressure is half boxed in amber:**
      MIN FLT CREW OXY CHART.....CHECK PRESSURE

      Verify that the pressure is sufficient for the scheduled flight (Refer to LIM-OXY Minimum Flight Crew Oxygen Pressure).

- **On the HYD SD page:**
  * RESERVOIR FLUID LEVEL.....CHECK WITH NORMAL RANGE

  Note: The volume of the hydraulic fluid in the reservoirs may change with Outside Air Temperature. As a result, the reservoir fluid level that appears on the HYD SD page may be outside of the normal range with no HYD RSVR LO AIR PR or HYD RSVR LO LVL warning. If the fluid level is outside of the normal range, contact maintenance to determine if service is required.

- **On the ENG SD page:**
  * ENG OIL QUANTITY..... CHECK NORMAL

  Check that the oil quantity is at or above 11 qt + estimated consumption (average estimated consumption ~ 0.3 qt/h).

Ident.: PRO-NOR-SOP-04-E-00021917.0004001 / 05 JUN 18
5 **Applicable to: MSN 06720-09063**

ECAM PAGES

- **On the DOOR SD page:**
  * OXY.....CHECK PRESSURE
  - **If the OXY pressure is half boxed in amber:**
    MIN FLT CREW OXY CHART.....CHECK PRESSURE
    Verify that the pressure is sufficient for the scheduled flight (Refer to LIM-OXY Minimum Flight Crew Oxygen Pressure).

- **On the HYD SD page:**
  * RESERVOIR FLUID LEVEL.....CHECK WITH NORMAL RANGE

  Note: The volume of the hydraulic fluid in the reservoirs may change with Outside Air Temperature. As a result, the reservoir fluid level that appears on the HYD SD page may be outside of the normal range with no HYD RSVR LO AIR PR or HYD RSVR LO LVL warning. If the fluid level is outside of the normal range, contact maintenance to determine if service is required.

- **On the ENG SD page:**
  * ENG OIL QUANTITY..... CHECK NORMAL

  Note: If the engine oil quantity indication does not appear on the ENG SD page, set the ENG 1 and 2 FADEC GND PWR pb-sw on the overhead maintenance panel to ON. After the check of the engine oil quantity, set the ENG 1 and 2 FADEC GND PWR pb-sw to off.

  Check that the oil quantity is at, or above 14 quarts.

  - **If the OAT is colder than -30 °C:**

    Check that the oil quantity is at, or above 16.5 quarts.

Ident.: PRO-NOR-SOP-04-E-00010173.0001001 / 05 AUG 10
Applicable to: ALL

F/CTL

FLAPS.....CHECK POSITION

Check the upper ECAM display to confirm that the FLAPS position agrees with the handle position.

* SPEEDBRAKE lever.....CHECK RETRACTED and DISARMED

WARNING	*If flight control surface positions do not agree with the control handle positions, check with the maintenance crew before applying hydraulic power.*

Ident.: PRO-NOR-SOP-04-E-00010174.0001001 / 05 DEC 17
Applicable to: ALL

PARKING BRAKE

* ACCU PRESS indicator..... CHECK

The ACCU PRESS indication must be in the green band. If required use the electric pump on yellow hydraulic system to recharge the brake accumulator.

* PARKING BRAKE handle..... ON

When one brake temperature is above 500 °C, avoid applying the parking brake, unless operationally necessary.

* BRAKES PRESS indicator..... CHECK

Check for normal indications.

WARNING	Yellow and green hydraulic systems are pressurized from yellow electric pump. Get ground crew clearance before using the electric pump.

Ident.: PRO-NOR-SOP-04-E-00010175.0001001 / 30 JUN 15
Applicable to: MSN 01767-02405, 02482

ALTERNATE BRAKING SYSTEM

Note: The purpose of this check is to verify, before the first flight of the day, the efficiency of the alternate braking system (absence of "spongy pedals").

Y ELEC PUMP pb-sw.....CHECK OFF
CHOCKS..... CHECK IN PLACE
PARK BRK handle.....OFF
BRAKE PEDALS.....PRESS

Apply maximum pressure on both pedals.

BRAKE PRESSURE (on BRAKE press indicator).....CHECK

Pressure must build up without delay symmetrically on left and right sides for the same application simultaneously applied on left and right pedals. With full pedal deflection, the pressure must be between 2 000 and 2 700 PSI.

BRAKE PEDALS..... RELEASE
PARK BRK handle..... ON

The parking brake must be on during the exterior inspection to allow the flight crew to check brake wear indicators.

Ident.: PRO-NOR-SOP-04-E-00010206.0001001 / 23 JUN 15
Applicable to: ALL

EMERGENCY EQUIPMENT

EMER EQPT..... CHECK

Check the emergency equipments as follows:

- *Life jackets stowed*
- *Axe stowed*
- *Smoke hoods ◁ or portable oxygen equipment and full face masks ◁ stowed and serviceable*
- *Portable fire extinguisher lockwired and pressure in the green area*
- *Smoke goggles stowed (smoke hoods ◁)*
- *Oxygen masks stowed*
- *Flashlights stowed*
- *Escape ropes stowed*

Ident.: PRO-NOR-SOP-04-E-00010207.0001001 / 05 DEC 17
Applicable to: ALL

RAIN REPELLENT

RAIN RPLNT indicators ◁ .....CHECK PRESSURE and QUANTITY

CAUTION	*Never use rain repellent to wash the windshield and never use it on a dry windshield.*

Ident.: PRO-NOR-SOP-04-E-00010208.0001001 / 05 AUG 10
Applicable to: ALL

REAR AND OVERHEAD CIRCUIT BREAKERS PANELS

REAR and OVERHEAD CIRCUIT BREAKERS panels..... CHECK

Check that all circuit breakers are set. Reset as necessary.

Ident.: PRO-NOR-SOP-04-E-00010209.0001001 / 25 JAN 17
Applicable to: ALL

LANDING GEAR PINS AND COVERS

* GEAR PINS and COVERS..... CHECK ONBOARD and STOWED

Check that three are on board and stowed.

GENERAL

Ident.: PRO-NOR-SOP-05-00010360.0001001 / 17 MAY 17
Applicable to: ALL

The exterior walkaround ensures that the general condition of the aircraft is satisfactory and that the visible aircraft components and equipment are safe for the flight:

- There is no impact damage to the structure
- There is no evident fuel, oil, or hydraulic leak
- All ground access doors are closed.

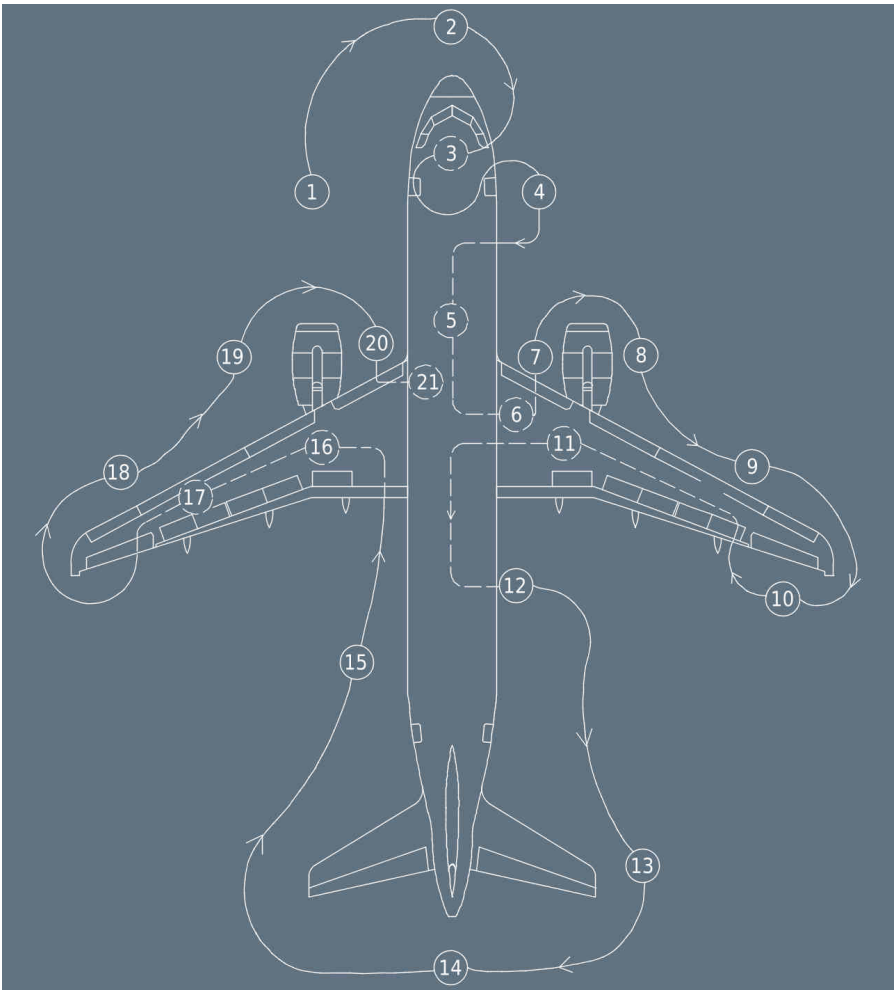
The flight crew must perform a complete walkaround before each flight.
The parking brake must be set to ON during the exterior walkaround, in order to enable the flight crew to check brake wear indicators.

WARNING	If any landing gear door is open, do not apply hydraulic power until clearance is obtained from ground personnel.

EXTERIOR WALKAROUND

Ident.: PRO-NOR-SOP-05-A-00010361.0001001 / 04 MAY 15
Applicable to: ALL

SCHEMATIC



(1) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - LH FWD Fuselage*

(2) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - Nose Section*

(3) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - Nose L/G*

(4) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - RH FWD Fuselage*

(5) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - Lower Center Fuselage*

(6) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - RH Center Wing*

(7) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - ENG 2 LH Side*

(8) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - ENG 2 RH Side*

(9) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - RH Wing Leading Edge*

(10) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - RH Wing Trailing Edge*

(11) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - RH L/G and Fuselage*

(12) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - RH AFT Fuselage*

(13) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - TAIL*

(14) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - APU*

(15) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - LH AFT Fuselage*

(16) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - LH Landing Gear*

(17) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - LH Wing Trailing Edge*

(18) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - LH Wing Leading Edge*

(19) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - ENG 1 LH Side*

(20) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - ENG 1 RH Side*

(21) *Refer to PRO-NOR-SOP-05 Exterior Walkaround - LH Center Wing*

Ident.: PRO-NOR-SOP-05-A-00010363.0002001 / 17 MAY 17

1 **Applicable to: MSN 06720-09063**

LH FWD FUSELAGE

AOA probes..... CONDITION
F/O and CAPT static ports..... CLEAR
Avionics equipment vent air inlet valve..... CONDITION
Oxygen bay..... CLOSED
Oxygen overboard discharge indicators..... GREEN
Toilet servicing door ◁ ..... CLOSED

Ident.: PRO-NOR-SOP-05-A-00010363.0001001 / 17 MAY 17
2 **Applicable to: MSN 01767-06336**

LH FWD FUSELAGE

AOA probes..... CONDITION
F/O and CAPT static ports..... CLEAR
Avionics equipment vent air inlet valve..... CONDITION
Oxygen bay..... CLOSED
Oxygen overboard discharge indicator..... GREEN
Toilet servicing door ◁ ..... CLOSED

Ident.: PRO-NOR-SOP-05-A-00010364.0001001 / 17 MAY 17
Applicable to: ALL

NOSE SECTION

Pitot probes..... CONDITION
STBY static ports..... CLEAR
TAT probes..... CONDITION
Radome and latches..... CONDITION/LATCHED
Forward avionics compartment door..... CLOSED
Ground electrical power door (if not required.)..... CLOSED

Ident.: PRO-NOR-SOP-05-A-00010365.0001001 / 17 MAY 17
Applicable to: ALL

NOSE L/G

Nose wheel chocks..... IN PLACE
Wheels and tires..... CONDITION
Nose gear structure..... CONDITION
Taxi, TO, turn-off lights..... CONDITION
Hydraulic lines and electrical wires..... CONDITION
Wheel well..... CHECK
Safety pin..... REMOVED

Ident.: PRO-NOR-SOP-05-A-00010366.0001001 / 17 MAY 17
Applicable to: ALL

RH FWD FUSELAGE

RH + AFT avionic compartment doors..... CLOSED
Avionic equipment vent air outlet valve..... CONDITION
F/O-CAPT static ports..... CLEAR
AOA probe..... CONDITION
Forward cargo door and selector panel..... CHECK

Ident.: PRO-NOR-SOP-05-A-00010367.0001001 / 20 DEC 16

3 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

LOWER CENTER FUSELAGE

Potable water drain panel ..... CLOSED
Antennas..... CONDITION
Drain mast..... CONDITION
Emergency ram air inlet flap..... CONDITION
LP and HP ground connection doors..... CLOSED
Anticollision light..... CHECK
CTR TK magnetic fuel level..... FLUSH
Pack air intakes and outlets..... CLEAR

Ident.: PRO-NOR-SOP-05-A-00010367.0002001 / 20 DEC 16

4 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

LOWER CENTER FUSELAGE

Potable water drain panel ..... CLOSED
Antennas..... CONDITION
Drain mast..... CONDITION
Emergency ram air inlet flap..... CONDITION
LP and HP ground connection doors..... CLOSED
Anticollision light..... CHECK
CTR TK magnetic fuel level..... FLUSH
Pack air intakes and outlets..... CLEAR

Ident.: PRO-NOR-SOP-05-A-00010368.0002001 / 17 MAY 17

5 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

RH CENTER WING

Yellow hydraulic bay door..... CLOSED
Fuel panel..... CLOSED
Inner tank magnetic fuel..... FLUSH
Fuel water drain valve inner tank..... NO LEAK
Landing light..... CONDITION
Slat 1..... CONDITION

Ident.: PRO-NOR-SOP-05-A-00010368.0003001 / 17 MAY 17

6 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

RH CENTER WING

Yellow hydraulic bay door..... CLOSED
Fuel panel..... CLOSED

Magnetic fuel level..... FLUSH
Fuel water drain valve tank..... NO LEAK
Landing light.....CONDITION
Slat 1.....CONDITION

Ident.: PRO-NOR-SOP-05-A-00010370.0020001 / 17 MAY 17
Applicable to: MSN 01767-01920, 02388, 02712, 03750, 04314, 04399-04433

ENG 2 LH SIDE

Oil fill access door.....CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors.....CLOSED/LATCHED
Drain mast.....CONDITION/NO LEAK
Engine inlet and fan blades..... CHECK
Safety pin.....REMOVED

Ident.: PRO-NOR-SOP-05-A-00010370.0015001 / 17 MAY 17
Applicable to: MSN 02584, 03138, 04294, 04393-04397, 04438, 04510

ENG 2 LH SIDE

Oil fill access door.....CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors.....CLOSED/LATCHED
Drain mast.....CONDITION/NO LEAK
Engine inlet and fan blades..... CHECK

Ident.: PRO-NOR-SOP-05-A-00010370.0011001 / 17 MAY 17
7 **Applicable to: MSN 01957-02359, 02405-02482, 02649-02670, 02908-03071, 03264, 03330-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

ENG 2 LH SIDE

Oil fill access door.....CLOSED
Master magnetic chip detector access door..... CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors.....CLOSED/LATCHED
Drain mast.....CONDITION/NO LEAK
Engine inlet and fan blades..... CHECK
Safety pin.....REMOVED

Ident.: PRO-NOR-SOP-05-A-00010370.0007001 / 17 MAY 17
8 **Applicable to: MSN 06720-09063**

ENG 2 LH SIDE

Engine oil tank access door.....CLOSED

Thrust reverser pressure relief door..... CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors.....CLOSED/LATCHED
Drain mast.....CONDITION/NO LEAK
Engine inlet and fan blades..... CHECK

Ident.: PRO-NOR-SOP-05-A-00010370.0005001 / 17 MAY 17
Applicable to: MSN 02609-02626, 02737-02804, 03308

ENG 2 LH SIDE

Oil fill access door.....CLOSED
Master magnetic chip detector access door.....CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors.....CLOSED/LATCHED
Drain mast.....CONDITION/NO LEAK
Engine inlet and fan blades..... CHECK

Ident.: PRO-NOR-SOP-05-A-00010371.0014001 / 17 MAY 17
Applicable to: MSN 01767-01920, 02388, 02712, 03750, 04314, 04399-04433

ENG 2 RH SIDE

Vent inlet..... CLEAR
Pressure-relief/Start valve handle access door..... CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors.....CLOSED/LATCHED
Turbine exhaust ..... CLEAR
Pylon/access panel..... CONDITION/CLOSED
Safety pin..... REMOVED

Ident.: PRO-NOR-SOP-05-A-00010371.0011001 / 17 MAY 17
9 **Applicable to: MSN 01957-02359, 02405-02482, 02649-02670, 02908-03071, 03264, 03330-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

ENG 2 RH SIDE

Pressure-relief/Start valve handle access door..... CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors.....CLOSED/LATCHED
Turbine exhaust ..... CLEAR
Pylon/access panel..... CONDITION/CLOSED
Safety pin..... REMOVED

Ident.: PRO-NOR-SOP-05-A-00010371.0010001 / 17 MAY 17

10 **Applicable to: MSN 06720-09063**

ENG 2 RH SIDE

Nacelle anti-ice valve access ports..... CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors..... CLOSED/LATCHED
Turbine exhaust ..... CLEAR
Pylon/access panel..... CONDITION/CLOSED
Interphone jack flapper door ..... CHECK/CLOSED

Ident.: PRO-NOR-SOP-05-A-00010371.0006001 / 17 MAY 17

Applicable to: MSN 02584, 03138, 04294, 04393-04397, 04438, 04510

ENG 2 RH SIDE

Vent inlet..... CLEAR
Pressure-relief/Start valve handle access door..... CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors..... CLOSED/LATCHED
Turbine exhaust ..... CLEAR
Pylon/access panel..... CONDITION/CLOSED

Ident.: PRO-NOR-SOP-05-A-00010371.0005001 / 17 MAY 17

Applicable to: MSN 02609-02626, 02737-02804, 03308

ENG 2 RH SIDE

Pressure-relief/Start valve handle access door..... CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors..... CLOSED/LATCHED
Turbine exhaust ..... CLEAR
Pylon/access panel..... CONDITION/CLOSED

Ident.: PRO-NOR-SOP-05-A-00010372.0005001 / 17 MAY 17

11 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

RH WING LEADING EDGE

Slats 2, 3, 4, 5..... CONDITION
Magnetic fuel level..... FLUSH
Fuel water drain valve..... NO LEAK
Refuel coupling..... CLOSED
Surge tank air inlet..... CLEAR
Fuel ventilation overpressure disc..... INTACT
Navigation and Strobe lights..... CONDITION

Sharklet..... CONDITION

Ident.: PRO-NOR-SOP-05-A-00010372.0004001 / 17 MAY 17

12 **Applicable to: MSN 05437-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

RH WING LEADING EDGE

Slats 2, 3, 4, 5..... CONDITION
Inner and outer cells magnetic fuel level..... FLUSH
Fuel water drain valve (outer cell, surge tank)..... NO LEAK
Refuel coupling..... CLOSED
Surge tank air inlet..... CLEAR
Fuel ventilation overpressure disc..... INTACT
Navigation and Strobe lights..... CONDITION
Sharklet..... CONDITION

Ident.: PRO-NOR-SOP-05-A-00010372.0001001 / 17 MAY 17

13 **Applicable to: MSN 01767-05411**

RH WING LEADING EDGE

Slats 2, 3, 4, 5..... CONDITION
Inner and outer cells magnetic fuel level..... FLUSH
Fuel water drain valve (outer cell, surge tank)..... NO LEAK
Refuel coupling..... CLOSED
Surge tank air inlet..... CLEAR
Fuel ventilation overpressure disc..... INTACT
Navigation light..... CONDITION
Wing tip..... CONDITION

Ident.: PRO-NOR-SOP-05-A-00010373.0001001 / 28 FEB 18
Applicable to: ALL

RH WING TRAILING EDGE

Static dischargers..... CHECK
Control surfaces..... CONDITION
Flaps and fairings..... CONDITION
Antennas on top of fuselage..... CHECK CONDITION

Ident.: PRO-NOR-SOP-05-A-00010374.0001001 / 17 MAY 17

14 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

RH L/G AND FUSELAGE

Chocks..... REMOVED
Wheels and tires..... CONDITION

Brakes and brake wear ind..... CONDITION
Torque link damper ◁ ..... CONDITION
Hydraulic lines..... CHECK
Landing gear structure..... CHECK
Downlock springs..... CHECK
Safety pin..... REMOVED
Ground hydraulic connection yellow..... CLOSED
Shroud fuel drain..... CONDITION/NO LEAK

Ident.: PRO-NOR-SOP-05-A-00010374.0002001 / 17 MAY 17
15 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

RH L/G AND FUSELAGE

Chocks..... REMOVED
Wheels and tires..... CONDITION
Brakes and brake wear ind..... CONDITION
Torque link damper..... CONDITION
Hydraulic lines..... CHECK
Landing gear structure..... CHECK
Downlock springs..... CHECK
Safety pin..... REMOVED
Ground hydraulic connection yellow..... CLOSED
Water drain mast ◁ ..... CONDITION
Shroud fuel drain..... CONDITION/NO LEAK

Ident.: PRO-NOR-SOP-05-A-00010375.0001001 / 17 MAY 17
Applicable to: ALL

RH AFT FUSELAGE

RA Antennas..... CONDITION

Check that the RA antennas are clean.

Cargo door and selector panel..... CHECK
Bulk door ◁ ..... CHECK
Toilet service access door..... CLOSED
Outflow valve..... CONDITION
Drain mast ..... CONDITION
Flight recorder access door ..... CLOSED

Ident.: PRO-NOR-SOP-05-A-00010376.0001001 / 17 MAY 17
Applicable to: ALL

TAIL

Stabilizer, elevator, fin, and rudder.....CONDITION
Static dischargers.....CHECK
Lower fuselage structure (tail impact on runway).....CONDITION

Ident.: PRO-NOR-SOP-05-A-00010377.0001001 / 05 AUG 10
Applicable to: ALL

APU

Access doors.....CLOSED
Air intake.....CONDITION
Drain.....CONDITION/NO LEAK
Oil cooler air outlet .....CLEAR
Exhaust.....CLEAR
Navigation light.....CONDITION
Fire extinguisher overpressure indication (red disc).....IN PLACE

Ident.: PRO-NOR-SOP-05-A-00010378.0001001 / 17 MAY 17
Applicable to: ALL

LH AFT FUSELAGE

Stabilizer, elevator, fin, and rudder.....CONDITION
Potable water service door.....CLOSED
Ground hydraulic connection blue door.....CLOSED
Ground hydraulic connection green and reservoir filling door.....CLOSED

Ident.: PRO-NOR-SOP-05-A-00010379.0001001 / 17 MAY 17
16 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

LH LANDING GEAR

Chocks.....REMOVED
Wheels and tires.....CONDITION
Brakes and brake wear indicator.....CONDITION
Torque link damper ◁ .....CONDITION
Hydraulic lines.....CHECK
Landing gear structure.....CHECK
Downlock springs.....CHECK
Safety pin.....REMOVED

Ident.: PRO-NOR-SOP-05-A-00010379.0002001 / 17 MAY 17

17 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

LH LANDING GEAR

Chocks..... REMOVED
Wheels and tires..... CONDITION
Brakes and brake wear indicator..... CONDITION
Torque link damper..... CONDITION
Hydraulic lines..... CHECK
Landing gear structure..... CHECK
Downlock springs..... CHECK
Safety pin..... REMOVED

Ident.: PRO-NOR-SOP-05-A-00010380.0001001 / 28 FEB 18

Applicable to: ALL

LH WING TRAILING EDGE

Flaps and fairing..... CONDITION
Control surfaces..... CONDITION
Static dischargers..... CHECK
Antennas on top of fuselage..... CHECK CONDITION

Ident.: PRO-NOR-SOP-05-A-00010381.0004001 / 17 MAY 17

18 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

LH WING LEADING EDGE

Sharklet..... CONDITION
Navigation and Strobe lights..... CONDITION
Surge tank air inlet..... CLEAR
Fuel ventilation overpressure disc..... INTACT
Fuel water drain valve..... NO LEAK
Magnetic fuel level..... FLUSH
Slats 2, 3, 4, 5..... CONDITION

Ident.: PRO-NOR-SOP-05-A-00010381.0003001 / 17 MAY 17

19 **Applicable to: MSN 05437-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

LH WING LEADING EDGE

Sharklet..... CONDITION
Navigation and Strobe lights..... CONDITION
Surge tank air inlet..... CLEAR
Fuel ventilation overpressure disc..... INTACT
Fuel water drain valve..... NO LEAK

Inner and outer cell magnetic fuel level.....FLUSH
Slats 2, 3, 4, 5.....CONDITION

Ident.: PRO-NOR-SOP-05-A-00010381.0001001 / 17 MAY 17

20 **Applicable to: MSN 01767-05411**

LH WING LEADING EDGE

Wing tip.....CONDITION
Navigation light.....CONDITION
Surge tank air inlet.....CLEAR
Fuel ventilation overpressure disc.....INTACT
Fuel water drain valve.....NO LEAK
Inner and outer cell magnetic fuel level.....FLUSH
Slats 2, 3, 4, 5.....CONDITION

Ident.: PRO-NOR-SOP-05-A-00010384.0015001 / 17 MAY 17

Applicable to: MSN 01767-01920, 02388, 02712, 03750, 04314, 04399-04433

ENG 1 LH SIDE

Oil fill access door.....CLOSED
Thrust reversers.....CLOSED/LATCHED
Fan cowl doors.....CLOSED/LATCHED
Drain mast.....CONDITION/NO LEAK
Engine inlet and fan blades.....CHECK
Safety pin.....REMOVED
Pylon/access panel.....CONDITION/CLOSED

Ident.: PRO-NOR-SOP-05-A-00010384.0012001 / 17 MAY 17

21 **Applicable to: MSN 01957-02359, 02405-02482, 02649-02670, 02908-03071, 03264, 03330-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

ENG 1 LH SIDE

Oil fill access door.....CLOSED
Master magnetic chip detector access door.....CLOSED
Thrust reversers.....CLOSED/LATCHED
Fan cowl doors.....CLOSED/LATCHED
Drain mast.....CONDITION/NO LEAK
Engine inlet and fan blades.....CHECK
Safety pin.....REMOVED
Pylon/access panel.....CONDITION/CLOSED

Ident.: PRO-NOR-SOP-05-A-00010384.0011001 / 17 MAY 17
22 **Applicable to: MSN 06720-09063**

ENG 1 LH SIDE

Engine oil tank access door.....CLOSED
Thrust Reverser pressure relief door.....CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors.....CLOSED/LATCHED
Drain mast.....CONDITION/NO LEAK
Engine inlet and fan blades..... CHECK
Pylon/access panel..... CONDITION/CLOSED

Ident.: PRO-NOR-SOP-05-A-00010384.0007001 / 17 MAY 17
Applicable to: MSN 02584, 03138, 04294, 04393-04397, 04438, 04510

ENG 1 LH SIDE

Oil fill access door.....CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors.....CLOSED/LATCHED
Drain mast.....CONDITION/NO LEAK
Engine inlet and fan blades..... CHECK
Pylon/access panel..... CONDITION/CLOSED

Ident.: PRO-NOR-SOP-05-A-00010384.0006001 / 17 MAY 17
Applicable to: MSN 02609-02626, 02737-02804, 03308

ENG 1 LH SIDE

Oil fill access door.....CLOSED
Master magnetic chip detector access door.....CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors.....CLOSED/LATCHED
Drain mast.....CONDITION/NO LEAK
Engine inlet and fan blades..... CHECK
Pylon/access panel..... CONDITION/CLOSED

Ident.: PRO-NOR-SOP-05-A-00010386.0015001 / 17 MAY 17
Applicable to: MSN 01767-01920, 02388, 02712, 03750, 04314, 04399-04433

ENG 1 RH SIDE

Vent inlet..... CLEAR
Pressure relief/Start valve handle access door..... CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors.....CLOSED/LATCHED

Turbine exhaust..... CLEAR
Safety pin..... REMOVED

Ident.: PRO-NOR-SOP-05-A-00010386.0012001 / 17 MAY 17
23 **Applicable to: MSN 01957-02359, 02405-02482, 02649-02670, 02908-03071, 03264, 03330-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

ENG 1 RH SIDE

Pressure relief/Start valve handle access door..... CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors..... CLOSED/LATCHED
Turbine exhaust..... CLEAR
Safety pin..... REMOVED

Ident.: PRO-NOR-SOP-05-A-00010386.0011001 / 17 MAY 17
24 **Applicable to: MSN 06720-09063**

ENG 1 RH SIDE

Nacelle anti-ice valve access ports..... CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors..... CLOSED/LATCHED
Turbine exhaust..... CLEAR
Interphone jack flapper door ◁ ..... CHECK/CLOSED

Ident.: PRO-NOR-SOP-05-A-00010386.0007001 / 17 MAY 17
Applicable to: MSN 02584, 03138, 04294, 04393-04397, 04438, 04510

ENG 1 RH SIDE

Vent inlet..... CLEAR
Pressure relief/Start valve handle access door..... CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors..... CLOSED/LATCHED
Turbine exhaust..... CLEAR

Ident.: PRO-NOR-SOP-05-A-00010386.0006001 / 17 MAY 17
Applicable to: MSN 02609-02626, 02737-02804, 03308

ENG 1 RH SIDE

Pressure relief/Start valve handle access door..... CLOSED
Thrust reversers..... CLOSED/LATCHED
Fan cowl doors..... CLOSED/LATCHED
Turbine exhaust..... CLEAR

Ident.: PRO-NOR-SOP-05-A-00010387.0001001 / 17 MAY 17

25 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

LH CENTER WING

Slat 1.....CONDITION
Wing leading edge ventilation intake ..... CLEAR
Fuel water drain valves.....NO LEAK
Inner tank magnetic fuel..... FLUSH
Landing lights.....CONDITION
Hydraulic reservoir pressurization door..... CLOSED
RAT doors..... CLOSED

Ident.: PRO-NOR-SOP-05-A-00010387.0002001 / 17 MAY 17

26 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

LH CENTER WING

Slat 1.....CONDITION
Wing leading edge ventilation intake ..... CLEAR
Fuel water drain valves.....NO LEAK
Magnetic fuel level..... FLUSH
Landing lights.....CONDITION
Hydraulic reservoir pressurization door..... CLOSED
RAT doors..... CLOSED

GENERAL

Ident.: PRO-NOR-SOP-06-00011153.0001001 / 05 DEC 17
Applicable to: ALL

Items marked by asterisks (*) are the only steps to be completed after a transit stop without flight crew change. Otherwise, the new flight crew performs all the items.
The PF and PM should perform the cockpit preparation according to the panel scan sequence defined below (*Refer to PRO-NOR-SOP-06 Flow Pattern*), and the task sharing defined in the QRH (*Refer to QRH/Normal Procedures - Cockpit Preparation*).

OVERHEAD PANEL

Ident.: PRO-NOR-SOP-06-A-00011155.0001001 / 31 JUL 13
Applicable to: ALL

WHITE LIGHTS ON THE OVERHEAD PANEL

- **During the scan sequence of the overhead panel:**
  * ALL WHITE LIGHTS..... EXTINGUISH

  It is a general rule to turn off all the white lights during the scan sequence; therefore, these actions are not listed here.

Ident.: PRO-NOR-SOP-06-A-00015476.0001001 / 05 DEC 17
1 **Applicable to: MSN 06720-09045**
Impacted by TDU: 00021691 Overhead Panel - RCDR

RCDR

* RCDR GND CTL pb-sw..... ON

In order to perform the test, ensure that the PARK BRK is on.

LOUDSPEAKER VOLUME knob..... OFF (BOTH SIDES)
ACP INT/RAD sw (CAPT and F/O)..... SET to INT
INTERPHONE VOLUME RECEPTION KNOB (CAPT and F/O)..... RELEASE

Turn down the volume to the minimum.

CVR TEST pb..... PRESS AND MAINTAIN

The CVR test is successful when an audio test signal is heard through the loudspeakers and the CVR TEST pb is pressed and maintained.
Depending on the CVR model, the audio test signal is:

- For CVR 30 minutes:

- A continuous tone, or
- A short tone.

- For CVR 120 minutes:

- A short tone, or
- A short tone and a beep every 4 s, or
- Two short tones and a beep every 4 s.

The audio test signal stops when the CVR TEST pb is released.

Note: - The flight crew may also hear an acoustic feedback (i.e. Larsen effect) during the test. The test is still valid even if this acoustic feedback (i.e. Larsen effect) is heard.
- If the flight crew cannot hear the audio test signal through the loudspeakers, and if the CVR maintenance headset (22RK headset) is available, the flight crew can perform the CVR TEST through the CVR maintenance headset.
- If an acoustic feedback (i.e. Larsen effect) is still heard, the flight crew can perform the CVR TEST using the 22RK headset and with the parking brake set to off. Before setting the parking brake to off, the flight crew must ensure that chocks are in place or brakes are applied. Set the parking brake to on when the CVR TEST is achieved.
- If no 22RK headset is available, the Larsen effect can also be reduced by preventing the cockpit ambient microphone from picking up the ambient sound (i.e. by temporarily covering it during the test).

Ident.: PRO-NOR-SOP-06-A-00015476.0001001 / 05 DEC 17

2 **Applicable to: MSN 01767-06336**

RCDR

* RCDR GND CTL pb-sw..... ON

In order to perform the test, ensure that the PARK BRK is on.

LOUDSPEAKER VOLUME knob..... OFF (BOTH SIDES)
ACP INT/RAD sw (CAPT and F/O).....SET to INT
INTERPHONE VOLUME RECEPTION KNOB (CAPT and F/O)..... RELEASE

Turn down the volume to the minimum.

CVR TEST pb.....PRESS AND MAINTAIN

The CVR test is successful when an audio test signal is heard through the loudspeakers and the CVR TEST pb is pressed and maintained.
Depending on the CVR model, the audio test signal is:

- *For CVR 30 minutes:*
  - *A continuous tone, or*
  - *A short tone.*
- *For CVR 120 minutes:*
  - *A short tone, or*
  - *A short tone and a beep every 4 s, or*
  - *Two short tones and a beep every 4 s.*

The audio test signal stops when the CVR TEST pb is released.

Note:
- *The flight crew may also hear an acoustic feedback (i.e. Larsen effect) during the test. The test is still valid even if this acoustic feedback (i.e. Larsen effect) is heard.*
- *If the flight crew cannot hear the audio test signal through the loudspeakers, and if the CVR maintenance headset (22RK headset) is available, the flight crew can perform the CVR TEST through the CVR maintenance headset.*
- *If an acoustic feedback (i.e. Larsen effect) is still heard, the flight crew can perform the CVR TEST using the 22RK headset and with the parking brake set to off. Before setting the parking brake to off, the flight crew must ensure that chocks are in place or brakes are applied. Set the parking brake to on when the CVR TEST is achieved.*
- *If no 22RK headset is available, the Larsen effect can also be reduced by preventing the cockpit ambient microphone from picking up the ambient sound (i.e. by temporarily covering it during the test).*

3 Ident.: PRO-NOR-SOP-06-A-00015476.0002001 / 17 JAN 18
Applicable to: MSN 09063
Impacted by TDU: 00021691 Overhead Panel - RCDR

RCDR

* RCDR GND CTL pb-sw.....ON
In order to perform the test, ensure that the PARK BRK is on.
LOUDSPEAKER VOLUME knob.....OFF (BOTH SIDES)
ACP INT/RAD sw (CAPT and F/O).....SET to INT
INTERPHONE VOLUME RECEPTION KNOB (CAPT and F/O).....RELEASE
Turn down the volume to the minimum.
CVR TEST pb.....PRESS AND MAINTAIN
The CVR test is successful when an audio test signal is heard through the loudspeakers and the CVR TEST pb is pressed and maintained.
Depending on the CVR model, the audio test signal is:

- *For CVR 30 minutes:*
  - *A continuous tone, or*
  - *A short tone.*
- *For CVR 120 minutes:*
  - *A short tone, or*
  - *A short tone and a beep every 4 s, or*
  - *Two short tones and a beep every 4 s.*

The audio test signal stops when the CVR TEST pb is released.

Ident.: TDU / PRO-NOR-SOP-06-A-00021691.0001001 / 05 DEC 17

4 **Applicable to: MSN 06720-09045**
Impacted DU: 00015476 Overhead Panel - RCDR

RCDR

* RCDR GND CTL pb-sw..... ON

Note: *Before engine start, the RCDR GND CTL pb-sw may revert to AUTO in the case of electrical transient between EXT PWR and APU GEN. In that case, the flight crew must set the RCDR GND CTL pb-sw back to ON.*

In order to perform the test, ensure that the PARK BRK is on.

LOUDSPEAKER VOLUME knob..... OFF (BOTH SIDES)
ACP INT/RAD sw (CAPT and F/O).....SET to INT
INTERPHONE VOLUME RECEPTION KNOB (CAPT and F/O)..... RELEASE

Turn down the volume to the minimum.

CVR TEST pb.....PRESS AND MAINTAIN

The CVR test is successful when an audio test signal is heard through the loudspeakers and the CVR TEST pb is pressed and maintained.
Depending on the CVR model, the audio test signal is:

- *For CVR 30 minutes:*
  - *A continuous tone, or*
  - *A short tone.*
- *For CVR 120 minutes:*
  - *A short tone, or*
  - *A short tone and a beep every 4 s, or*
  - *Two short tones and a beep every 4 s.*

The audio test signal stops when the CVR TEST pb is released.

Note:
- *The flight crew may also hear an acoustic feedback (i.e. Larsen effect) during the test. The test is still valid even if this acoustic feedback (i.e. Larsen effect) is heard.*
- *If the flight crew cannot hear the audio test signal through the loudspeakers, and if the CVR maintenance headset (22RK headset) is available, the flight crew can perform the CVR TEST through the CVR maintenance headset.*
- *If an acoustic feedback (i.e. Larsen effect) is still heard, the flight crew can perform the CVR TEST using the 22RK headset and with the parking brake set to off. Before setting the parking brake to off, the flight crew must ensure that chocks are in place or brakes are applied. Set the parking brake to on when the CVR TEST is achieved.*
- *If no 22RK headset is available, the Larsen effect can also be reduced by preventing the cockpit ambient microphone from picking up the ambient sound (i.e. by temporarily covering it during the test).*

5 Ident.: TDU / PRO-NOR-SOP-06-A-00021691.0003001 / 17 JAN 18
Applicable to: MSN 09063
Impacted DU: 00015476 Overhead Panel - RCDR

RCDR

* RCDR GND CTL pb-sw..... ON

Note: *Before engine start, the RCDR GND CTL pb-sw may revert to AUTO in the case of electrical transient between EXT PWR and APU GEN. In that case, the flight crew must set the RCDR GND CTL pb-sw back to ON.*

In order to perform the test, ensure that the PARK BRK is on.

LOUDSPEAKER VOLUME knob..... OFF (BOTH SIDES)
ACP INT/RAD sw (CAPT and F/O).....SET to INT
INTERPHONE VOLUME RECEPTION KNOB (CAPT and F/O)..... RELEASE

Turn down the volume to the minimum.

CVR TEST pb.....PRESS AND MAINTAIN

The CVR test is successful when an audio test signal is heard through the loudspeakers and the CVR TEST pb is pressed and maintained.
Depending on the CVR model, the audio test signal is:

- *For CVR 30 minutes:*
  - *A continuous tone, or*
  - *A short tone.*
- *For CVR 120 minutes:*
  - *A short tone, or*
  - *A short tone and a beep every 4 s, or*
  - *Two short tones and a beep every 4 s.*

The audio test signal stops when the CVR TEST pb is released.

Ident.: PRO-NOR-SOP-06-A-00011158.0001001 / 06 MAR 17
6 **Applicable to: MSN 01767-02334, 02388, 02443-02457, 02584-09063**

EVAC

CAPT & PURS/CAPT sw .....AS RQRD

Set the CAPT & PURS/CAPT sw on the EVAC panel as per Company Policy.

Ident.: PRO-NOR-SOP-06-A-00011159.0038001 / 09 NOV 17
Applicable to: MSN 02135, 02139-02204, 02359-02405, 02482, 04294, 04433, 04510

ADIRS

* All IR MODE selector..... NAV

Align or realign IRS as appropriate. *Refer to FCTM/PR-NP-SOP-60 ADIRS Operations.*

Note: *In order to prevent an erroneous data initialization, wait at least 12 min after power-up and then select the ADIRS to NAV.*

L2 A complete IRS alignment must be performed in the following cases:
- Before the first flight of the day, or
- When there is a crew change, or
- When the GPS is not available and the NAVAIDS coverage is poor on the expected route, or
- When the GPS is not available and the expected flight time is more than 3 h.

A fast IRS alignment must be performed if a complete IRS alignment is not necessary and the difference between the IRS position and the FMGC position is at or above 5 NM (see MCDU POSITION MONITOR page).
To perform an alignment, the aircraft must be stopped on ground. Any aircraft movement will automatically restart the IRS alignment.
Do not align IRS during engine start, or while the engines are running.

Ident.: PRO-NOR-SOP-06-A-00011159.0009001 / 09 NOV 17

7 **Applicable to: MSN 01767-02121, 02138, 02275-02334, 02443-02457, 02584-04216, 04312-04399, 04438-04506, 04518-09063**

ADIRS

* All IR MODE selector..... NAV

Align or realign IRS as appropriate. Refer to FCTM/PR-NP-SOP-60 ADIRS Operations.

L2 A complete IRS alignment must be performed in the following cases:
- Before the first flight of the day, or
- When there is a crew change, or
- When the GPS is not available and the NAVAIDS coverage is poor on the expected route, or
- When the GPS is not available and the expected flight time is more than 3 h.

A fast IRS alignment must be performed if a complete IRS alignment is not necessary and the difference between the IRS position and the FMGC position is at or above 5 NM (see MCDU POSITION MONITOR page).
To perform an alignment, the aircraft must be stopped on ground. Any aircraft movement will automatically restart the IRS alignment.
Do not align IRS during engine start, or while the engines are running.

Ident.: PRO-NOR-SOP-06-A-00011160.0001001 / 30 NOV 17
Applicable to: ALL

EXTERIOR LIGHTS

STROBE sw..... AUTO
BEACON sw..... OFF
NAV & LOGO ◁ sw..... AS RQRD

L2 *Set to NAV & LOGO 1 ◁ the NAV & LOGO sw ◁, as required, to turn on the navigation and logo lights (NAV & LOGO LT 2 ◁ is used only when NAV & LOGO LT 1 ◁ fails).*

L1 REMAINING EXTERIOR LIGHTS..... AS RQRD

Ident.: PRO-NOR-SOP-06-A-00011161.0001001 / 05 DEC 17
Applicable to: ALL

SIGNS

* SIGNS sw..... ON/AUTO
* EMER EXIT LT selector..... ARM

Note: Leaving the EXIT selector or NO SMOKING selector or NO PORTABLE/ELEC DEVICE selector ◁ ON prevents the emergency batteries from charging.
If the CIDS has been programmed (option) for a non-smoking flight, NO SMOKING or NO PORTABLE/ELEC DEVICE ◁ signs are permanently on, with the EXIT sw or NO SMOKING sw or NO PORTABLE/ELEC DEVICE sw ◁ at AUTO (with permanent charge of emergency batteries).

Ident.: PRO-NOR-SOP-06-A-00010176.0001001 / 03 MAR 14
Applicable to: ALL

PROBE/WINDOW HEAT

PROBE/WINDOW HEAT pb..... CHECK AUTO

Ident.: PRO-NOR-SOP-06-A-00011162.0001001 / 13 AUG 10
Applicable to: ALL

CABIN PRESS

LDG ELEV knob..... AUTO

Ident.: PRO-NOR-SOP-06-A-00011163.0010001 / 05 DEC 17
8 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

AIR COND

* PACK FLOW selector..... AS RQRD

Select:

LO : If the number of occupants is below 141.

HI : For abnormally hot and humid conditions.

NORM : For all other normal operating cases.

If the APU is supplying, pack controllers select HI flow automatically, independent of the selector position.

Ident.: PRO-NOR-SOP-06-A-00011163.0004001 / 05 DEC 17
9 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

AIR COND

* PACK FLOW selector..... AS RQRD

Select:

LO : If the number of occupants is below 168.

HI : For abnormally hot and humid conditions.

NORM : For all other normal operating cases.

If the APU is supplying, pack controllers select HI flow automatically, independent of the selector position.

Ident.: PRO-NOR-SOP-06-A-00011164.0001001 / 09 APR 15
Applicable to: ALL

ELEC

Scan and check that there are no amber lights, except GEN FAULT lights.
ELEC pb (on the ECAM Control Panel).....PRESS
BAT 1 pb-sw and BAT 2 pb-sw.....OFF then ON

This action initiates a charging cycle of the batteries.

10 s after setting all BAT pb-sw ON, check on the ELEC SD page that the current charge of the battery is below 60 A, and is decreasing.

- **If the charge of at least one battery is not below 60 A:**
  Wait until the end of the charging cycle of the batteries and perform this check again.

Ident.: PRO-NOR-SOP-06-A-00011166.0003001 / 05 DEC 17
10 **Applicable to: MSN 06208-09063**

FUEL

CAUTION	If the FUEL MODE SEL pb-sw is unduly left in the MAN position on ground, when the CTR TK L XFR pb-sw and CTR TK R XFR pb-sw are not in the OFF position: There is a possibility of fuel spillage. In this configuration, the center tank fuel transfer will not stop when the wing tanks become full.

* FUEL MODE SEL pb-sw.....CHECK AUTO

Ident.: PRO-NOR-SOP-06-A-00011166.0002001 / 05 DEC 17
11 **Applicable to: MSN 01767-06036**

FUEL

■ **If the center tank is less than 200 kg (440 lb) for the flight:**

Apply the following procedure, if your airline is affected by FUEL CTR TK PUMPS LO PR cautions on ground or in flight when the center tank is less than 200 kg (440 lb):

* FUEL MODE SEL pb-sw.....MAN
* CTR TK PUMP 1 pb-sw and CTR TK PUMP 2 pb-sw..... OFF

■ **If the center tank is NOT less than 200 kg (440 lb) for the flight:**

CAUTION	If the FUEL MODE SEL pb is unduly left in the MAN position on ground, when the CTR TK PUMP 1 pb & CTR TK PUMP 2 pb are not in the OFF position: There is a possibility of fuel spillage, if there are any hidden failures.

* FUEL MODE SEL pb.....CHECK AUTO

Ident.: PRO-NOR-SOP-06-A-00011167.0001001 / 09 FEB 18
Applicable to: ALL

ENG 1 - ENG 2 FIRE

ENG 1 FIRE pb-sw and ENG 2 FIRE pb-sw.....CHECK IN and GUARDED
AGENT 1 light and AGENT 2 light .....CHECK OFF
ENG 1 TEST pb and ENG 2 TEST pb..... PRESS and MAINTAIN

L2 *The flight crew should maintain the TEST pb pressed during the time of the test.*

L1 **TEST RESULT**

Check that all ENG FIRE detection and extinguishing systems are operative:
- The continuous repetitive chime (CRC) sounds
- The MASTER WARN lights flash
- The ECAM displays the ENG 1 FIRE, ENG 2 FIRE alerts
- All ENG FIRE pb-sw come on red
- All SQUIB lights of the AGENT pb come on
- All DISCH lights of the AGENT pb come on
- All FIRE lights on the ENG MASTER panel come on.

Ident.: PRO-NOR-SOP-06-A-00011169.0001001 / 14 SEP 12
Applicable to: ALL

AUDIO SWITCHING PANEL

AUDIO SWITCHING selector .....NORM

Ident.: PRO-NOR-SOP-06-A-00010185.0001001 / 26 MAY 14
Applicable to: ALL

VENT

ALL LIGHTS.....CHECK OFF

Ident.: PRO-NOR-SOP-06-A-00022544.0003001 / 04 SEP 18
12 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

ACT CONTROL PANEL

* ACT XFR rotary sel.....OFF

Ident.: PRO-NOR-SOP-06-A-00011174.0001001 / 14 SEP 12
Applicable to: ALL

THIRD OCCUPANT AUDIO CONTROL PANEL

PA knob .....RECEPT

- *This allows cabin attendant announcements to be recorded on the CVR.*
- *For proper recording, set volume at or above medium range.*

Ident.: PRO-NOR-SOP-06-A-00011176.0001001 / 14 SEP 12
Applicable to: ALL

MAINTENANCE PANEL

ALL LIGHTS.....CHECK OFF

CTR INSTRUMENT PANEL

Ident.: PRO-NOR-SOP-06-B-00011179.0001001 / 13 AUG 10
Applicable to: MSN 01767-01920, 02108, 02135, 02139-02195, 02359-02405, 02482, 02609-02626, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04954

CTR INSTRUMENT PANEL - STBY INSTRUMENT

* STBY ASI..... CHECK
* STBY ALTI (and STBY ALTI in meter ◁).....CHECK
* STBY HORIZON.....CHECK

Check no flag - Erect if necessary.

Ident.: PRO-NOR-SOP-06-B-00011184.0001001 / 21 MAR 16
13 **Applicable to: MSN 01957-02097, 02121, 02138, 02204-02334, 02443-02457, 02584, 02649-03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 04965-09063**

CTR INSTRUMENT PANEL - ISIS

* ISIS..... CHECK

- *Adjust brightness, check IAS, altimeter readings, altimeter settings and attitude display.*
- *Check no flags - Reset attitude, if necessary.*

Note: *Use of the ISIS bugs function is not recommended (Refer to DSC-34-NAV-20 Bugs Function)*

Ident.: PRO-NOR-SOP-06-B-00011185.0009001 / 05 DEC 17
Applicable to: ALL

CLOCK

* CLOCK.....CHECK/SET

Note: *1. If the date is incorrect, set the date manually then set and keep the clock mode to internal (INT) mode for the whole flight.*
2. To comply with the time precision requirement (+/-1 s UTC) for ATC datalink communication, the flight crew must either:

- *Use the clock in GPS mode, or*
- *Use the clock in INT mode and synchronize the clock with the GPS at least one time per day. This synchonization ensures that the UTC time drift is below +/- 1 s UTC.*

For more information on the setting of the clock, Refer to DSC-31-55-10 General.
For more information on the use of the internal (INT) mode, Refer to DSC-31-55-20 Operation in Internal Mode.

Ident.: PRO-NOR-SOP-06-B-00011186.0001001 / 13 AUG 10
Applicable to: ALL

NOSEWHEEL STEERING

* A/SKID & N/W STRG sw..... ON

PEDESTAL

Applicable to: ALL

Ident.: PRO-NOR-SOP-06-C-00011187.0001001 / 13 AUG 10

ACP

INT knob ..... PRESS OUT / VOLUME CHECK

Make sure that INT volume is turned up to permit contact with the ground crew.

VHF ..... CHECK

Check transmission and reception.

HF (if required for flight).....CHECK

- *Check transmission and reception.*
- *Do not transmit on HF during refueling.*

Ident.: PRO-NOR-SOP-06-C-00011191.0001001 / 23 JUN 15

COCKPIT DOOR

If required by local Airworthiness Authorities:

ANN LT selector..... TEST

Check that the OPEN and FAULT lights (on the pedestal), and the three LED lights (on the overhead panel) come on.

ANN LT selector..... BRT

Check that all lights go off.

CKPT DOOR.....CHECK CORRECT OPERATION

- *Set the COCKPIT DOOR sw to the UNLOCK position. Check that the door opens, and that the OPEN light comes on*
- *Then, with the door fully open, release the COCKPIT DOOR sw (check that it returns to NORM position). Close the door. Check that it is locked, and that the OPEN Indication goes off.*

CKPT DOOR MECHANICAL OVERRIDE..... CHECK

Check that the door opens normally, and that it closes when the mechanical override is used.

Ident.: PRO-NOR-SOP-06-C-00011189.0001001 / 14 SEP 12

SWITCHING PANEL

All selectors.....CHECK NORM

Ident.: PRO-NOR-SOP-06-C-00011192.0001001 / 05 DEC 17

ENG

* THRUST lever ..... IDLE
* ENG MASTER sw ..... OFF
* ENG MODE selector.....NORM

Ident.: PRO-NOR-SOP-06-C-00011195.0001001 / 05 DEC 17

PARKING BRK

* ACCU PRESS indicator..... CHECK

The ACCU PRESS indication must be in the green band. If required, use the electric pump on yellow hydraulic system to recharge the brake accumulator.

WARNING	Yellow and green hydraulic systems are pressurized from yellow electric pump. Get ground crew clearance before using the electric pump.

* PARK BRK handle..... CHECK ON
* BRAKES PRESS indicator.....CHECK

Check for normal indications.

- **If brakes are hot and chocks are in place:**

  * PARK BRK handle ..... OFF

  This action increases the brake cooling.

Ident.: PRO-NOR-SOP-06-C-00011198.0001001 / 07 FEB 11

GRAVITY GEAR EXTN

GRAVITY GEAR EXTN..... CHECK STOWED

Ident.: PRO-NOR-SOP-06-C-00011199.0001001 / 21 MAR 17

ATC

* ATC..... STBY

ATC and TCAS are on standby. To prevent possible interference to radar surveillance systems, TCAS should not be selected before the holding point/lining up.

ALT RPTG..... ON
ATC SYS 1..... SELECT

For RVSM operations (Refer to PRO-SPO-50 General), select SYS 1 if AP 1 is used, and SYS 2 if AP 2 is used.
Only system 1 is available, in emergency electrical configuration.

RMP

Ident.: PRO-NOR-SOP-06-00011202.0001001 / 30 JUN 14
Applicable to: ALL

RMP..... CHECK ON
Green NAV light..... CHECK OFF
SEL light..... CHECK OFF
COM FREQUENCIES..... TUNE

Use VHF 1 for ATC (only VHF 1 is available in emergency electrical configuration), VHF 2 for ATIS and company frequencies. VHF 3 is normally devoted to ACARS.

ATC DATALINK COMMUNICATION

Ident.: PRO-NOR-SOP-06-00013746.0002001 / 16 MAR 11
Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02275, 02359-02388, 02609-02649, 02804, 03138, 03308, 04294, 04433, 04510, 05158

* MSG RECORD..... ERASE

Press the ATC COMM key of the MCDU and display the MSG RECORD page. Then, erase the MSG RECORD file.

Note: *Erase the record of all CPDLC messages of the previous flight before starting a new flight where CPDLC will be used. This avoids confusing CPDLC messages from the previous flight with the ones of the current flight.*

NAV CHARTS

Ident.: PRO-NOR-SOP-06-00021888.0001001 / 05 DEC 17
Applicable to: ALL

* NAV CHARTS CLIPBOARD.....PREPARE

FMGS PREPARATION

Ident.: PRO-NOR-SOP-06-D-00011226.0001001 / 05 DEC 17
Applicable to: ALL

At electrical power-up, the FMGSs and FCU run through various internal tests. Allow enough time (3 min) for tests' completion, and do not start to press pushbuttons until the tests are over. If the "PLEASE WAIT" message appears, do not press any MCDU key until the message clears.

In the case of ACARS ◁⋇ operations, or EFB operations with SYNCHRO AVIONICS ◁⋇ , the following actions are already performed in the section "FMGS Pre-Initialization" of the PRELIMINARY COCKPIT PREPARATION procedure and do not need to be performed again:

- ENGINE & AIRCRAFT TYPE check
- FM database validity check
- Flight plan initialization:
  - FLT NBR insertion
  - FROM/TO insertion

Refer to PRO-NOR-SOP-04 EFB/ACARS Init - FMGS Pre-Initialization - General

Ident.: PRO-NOR-SOP-06-D-00011227.0001001 / 03 MAR 14
Applicable to: ALL

* ENGINE & AIRCRAFT TYPE..... CHECK

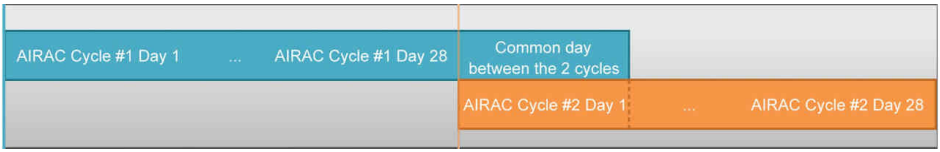
Press the DATA key, and display the STATUS page (if not displayed).

Ident.: PRO-NOR-SOP-06-D-00011228.0001001 / 04 DEC 18

14 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

* FM database validity..... CHECK

- *Check DATA BASE validity and stored WPT/NAVAIDS/RWY/ROUTES, if any. If applicable, review the stored data for deletion decision.*
- *On Honeywell FMS, the double AIRAC cycle of the NDB has one day in common (AIRAC Cycle #1 Day 29 / AIRAC Cycle #2 Day 1). From Day 2 of AIRAC Cycle #2, the active database is no longer valid and the message "CHECK DATA BASE CYCLE" will be triggered.*
  On the common day, select AIRAC Cycle #2 prior to the first flight of the day.



Ident.: PRO-NOR-SOP-06-D-00011228.0002001 / 04 DEC 18

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

* FM database validity..... CHECK

- *Check DATA BASE validity and stored WPT/NAVAIDS/RWY/ROUTES, if any. If applicable, review the stored data for deletion decision.*
- *On Thales FMS, if the "CHECK DATA BASE CYCLE" message triggers, the active database is no longer valid. Therefore, on Day 1 of AIRAC Cycle #2, select AIRAC Cycle #2 prior to the first flight of the day.*

Ident.: PRO-NOR-SOP-06-D-00011229.0001001 / 04 DEC 18

Applicable to: ALL

* NAVAID DESELECTION.....AS RQRD

If NOTAMs warn of any unreliable or unserviceable DME or VOR/DME, access the SELECTED NAVAIDS page, and deselect the related NAVAID.

Ident.: PRO-NOR-SOP-06-D-00011231.0003001 / 20 AUG 12
Applicable to: ALL

* FLIGHT PLAN INITIALIZATION.....COMPLETE

- *Press the INIT key*
- *Insert CO RTE or city pair, and check FROM/TO*
- *Check/modify ALTN/CO RTE*
- *Enter flight number*

  Note: *For ATC needs, the crew should enter exactly the entire flight number, as shown on the ICAO flight plan, without inserting any space, on the MCDU INIT page.*

- *Enter (and/or check) cost index*
- *Enter intended initial CRZ FL, or check if it was already supplied by the database. Modify it, if necessary, taking into account ATC constraints or expected gross weight*
- *Check and modify CRZ FL TEMP and tropopause level to agree with forecast*
- *Enter (and/or check) the expected ground temperature for take off (GND TEMP)* ◁
- *PRESS IRS INIT prompt*
- *Check alignment latitude/longitude.*

Ident.: PRO-NOR-SOP-06-D-00011232.0011001 / 09 NOV 17
Applicable to: MSN 01767, 02204-02388, 03264, 03330

* ADIRS POSITION INITIALIZATION.....AS APPROPRIATE

Confirm or insert position coordinates for the IRS alignment. *Refer to FCTM/PR-NP-SOP-60 FMGS Preparation.*

- Between latitude 73 ° and 82 °, the IRS alignment should last at least 15 min.
  After the start of the IRS alignment procedure, wait 15 min. Then press the ALIGN IRS prompt.

Ident.: PRO-NOR-SOP-06-D-00011232.0001001 / 09 NOV 17
15 **Applicable to: MSN 01920-02195, 02405-03138, 03308, 03357-09063**

* ADIRS POSITION INITIALIZATION.....AS APPROPRIATE

Confirm or insert position coordinates for the IRS alignment. *Refer to FCTM/PR-NP-SOP-60 FMGS Preparation.*

L2 IRS Alignment Based on GPS ◁ Position available:
The position initialization is automatic. The position for the initialization of the IRS is the GPS position. However, the flight crew can manually override the automatic position initialization. The IRS crosschecks the flight crew's manual entry with the GPS position.

IRS Alignment Based on GPS ◁ Position not available:
Apply the manual position initialization procedure.

Ident.: PRO-NOR-SOP-06-D-00011233.0015001 / 20 JUL 15
Applicable to: ALL

* F-PLN A page.....COMPLETE AND CHECK

If CO RTE has been inserted, the F-PLN should automatically include the preferential or probable takeoff runway approach and landing runway, associated SIDs, STARs, transition and en-route waypoints. However some databases will only include departure and arrival airport IDENTs and en-route waypoints.

The flight crew must check, modify, or insert (as applicable) the F-PLN in the following order, according to the data given by ATIS, ATC, or MET:

- *Lateral revision at departure airport. Select RWY, then SID, then TRANS using scroll keys.*

  Note: On the MCDU departure page, select only a runway associated with an ILS or NO NAVAIDS.

- *Lateral revision at WPT for ROUTE modification if needed. (Refer to DSC-22_20-30-10-05 Lateral Revisions).*
- *Vertical revision. Check or enter climb speed limit, constraints according to ATC clearance. Enter step altitude as appropriate.*

* WINDS.....AS APPROPRIATE

Choose between using trip wind and the forecast wind for CLB, CRZ and DES phases.(Refer to DSC-22_20-30-20-05 Flight Phases).

* F-PLN.....CHECK

- *Check the F-PLN using F-PLN page and ND PLAN mode versus the computer (paper) flight plan or navigation chart.*
- *Check DIST TO DEST along the F-PLN. Compare it with the total distance computed for the flight with the computer (paper) flight plan.*

Ident.: PRO-NOR-SOP-06-D-00011234.0001001 / 18 MAR 11
Applicable to: ALL

* SECONDARY FLIGHT PLAN..... AS APPROPRIATE

This is routinely a copy of the active flight plan. However, consideration may be given to the following:

a. *Copy the active F-PLN, but modify it at a suitable WPT for an immediate return to the departure airfield in the event of, for example, engine failure*
b. *If weather is below landings minima at the departure airfield, the secondary flight plan should be that required for a diversion immediately after takeoff*
c. *If there is a chance of a change in runway or SID during taxi, prepare for it by copying the active flight plan and making the necessary modifications.*

Ident.: PRO-NOR-SOP-06-D-00011235.0001001 / 04 SEP 18
Applicable to: ALL

* RADIO NAV.....CHECK

- *Check the VOR, ILS / GLS ◁ / MLS ◁ , and ADF ◁ tuned by the FMGC*
- *Modify them if required, and check that the correct identifier is displayed on the ND and PFD (VOR, ILS / GLS ◁ / MLS ◁). If unsatisfactory, go through the audio check. For GLS ◁ / MLS ◁ , no audio check is necessary.*

CAUTION	Do not enter an IDENT or channel associated with a MLS ◁ .

Ident.: PRO-NOR-SOP-06-D-00011238.0001001 / 05 DEC 17
16 **Applicable to: MSN 02108, 02275-02334, 02457, 02609-02670, 02737-02804, 04491, 04532, 04645, 05120, 05218, 06720-09063**

GROSS WEIGHT INSERTION (INIT B PAGE):

* ZFWCG/ZFW..... INSERT
* BLOCK FUEL.....INSERT

CAUTION	The characteristic speeds displayed on the MCDU (green dot, F, S, VLS) are computed from the ZFW and ZFWCG entered by the crew on the MCDU. Therefore, this data must be carefully checked (Captain's responsibility).

- The flight crew should insert the weights after completing all other insertions. This is to avoid cycles of prediction computations at each change in flight plan, constraints, etc.
- If ZFWCG and ZFW are unavailable, it is acceptable to enter the expected values in order to obtain predictions. Similarly, the flight crew may enter the expected fuel on board, if refueling has not been completed at that time.
- If ZFWCG, ZFW, and BLOCK FUEL are inserted, the FMS will provide all predictions, as well as the EXTRA fuel, if any.

Ident.: PRO-NOR-SOP-06-D-00011238.0003001 / 05 DEC 17
Applicable to: MSN 01767-02097, 02121-02204, 02359-02443, 02482-02584, 02712, 02908-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

GROSS WEIGHT INSERTION (INIT B PAGE):

* ZFW/ZFWCG..... INSERT
* BLOCK FUEL.....INSERT

CAUTION	The characteristic speeds displayed on the MCDU (green dot, F, S, VLS) are computed from the ZFW and ZFWCG entered by the crew on the MCDU. Therefore, this data must be carefully checked (Captain's responsibility).

- The flight crew should insert the weights after completing all other insertions. This is to avoid cycles of prediction computations at each change in flight plan, constraints, etc.
- If ZFW and ZFWCG are unavailable, it is acceptable to enter the expected values in order to obtain predictions. Similarly, the flight crew may enter the expected fuel on board, if refueling has not been completed at that time.
- If ZFW, ZFWCG, and BLOCK FUEL are inserted, the FMS will provide all predictions, as well as the EXTRA fuel, if any.

Ident.: PRO-NOR-SOP-06-D-00011240.0001001 / 31 AUG 18
Applicable to: ALL

TAKEOFF DATA INSERTION (PERF TAKEOFF PAGE):

The PF inserts the takeoff data in the PERF TAKEOFF page of the MCDU.

* T.O SHIFT.....INSERT AS RQRD

If the aircraft takes off from an intersection, insert a T.O shift value (even when GPS PRIMARY is active) to increase flight crew awareness of the runway length reduction.

* V1, VR, V2.....INSERT
* FLX TO TEMP.....INSERT
* THR RED/ACC altitude.....SET or CHECK
* ENG OUT ACC altitude.....SET or CHECK
* FLAPS/THS reminder.....INSERT

When entered in the MCDU, the THS value will be used to trigger the F/CTL PITCH TRIM/MCDU/CG DISAGREE ECAM caution, if appropriate.

Ident.: PRO-NOR-SOP-06-D-00011243.0001001 / 13 AUG 10
Applicable to: ALL

CLIMB, CRUISE, DESCENT, SPEED PRESELECTION

* PRESET SPEEDS.....AS RQRD

If the flight is cleared for a close-in turn or close-in altitude constraint, the flight crew may preselect green dot speed on the PERF CLB page. Once the CLB phase is active, the preselected speed will be displayed in the FCU speed window and on the PFD (blue symbol). Once the turn is completed or the altitude cleared, the pilot will resume the managed speed profile by pressing the SPD selector on the FCU.
Similarly the pilot may select a CRZ MACH number on the PERF CRZ page (constant CRZ Mach segment, for example). When the CRZ phase is active, the preselected CRZ MACH number will be displayed in the FCU speed window and on the PFD. When ECON MACH number may be resumed, the crew presses the FCU SPD selector.
In either of the above cases, the pilot may cancel the CLB or CRZ preselected SPD/MACH prior to activating the related phase, by selecting ECON on the PERF CLB or CRZ pages.

SPD LIM is defaulted to 250 kt below 10 000 ft in the managed speed profile. This may be either cleared or modified on the VERT REV page at the origin (or a climb waypoint).

Ident.: PRO-NOR-SOP-06-D-00015496.0001001 / 05 DEC 17
Applicable to: ALL

CHECK OF FMGS PREPARATION:

For more information, *Refer to FCTM/PR-NP-SOP-COCKPIT PREPARATION-FMGS Preparation*

* FMS PREPARATION..... CHECK

After the PF prepares the FMS, the PM checks all the data entered in the FMS. This check includes a crosscheck of performance data displayed on the PM's EFB with the FMS PERF T.O page.

* EFB/MCDU GREEN DOT.....COMPARE

The PM compares Green Dot speed computed by the FMGS and the Green Dot speed computed using the TAKEOFF application. A discrepancy indicates a difference in the TOW used in both systems (EFB/FMGS).

GLARESHIELD

Applicable to: ALL

Ident.: PRO-NOR-SOP-06-E-00020832.0001001 / 27 FEB 18

EFIS CONTROL PANEL

* BAROMETRIC REFERENCE..... SET

- *Set QNH (or QFE ◁) on the EFIS control panel and on the standby altimeter*
- *Check the barometric reference and altitude indications on the PFDs and on the standby altimeter.*
  The maximum difference is:
  ±20 ft between both PFDs
  And depending on the aircraft configuration:
  ±100 ft between ISIS ◁ and PFDs, or
  ±300 ft between mechanical standby altimeter and PFDs.

* FD..... CHECK ON
* ILS/LS.....AS RQRD
* ND MODE and RANGE .....AS RQRD
* ADF/VOR sw .....AS RQRD

Display VOR and ADF pointers as needed.

Ident.: PRO-NOR-SOP-06-E-00011248.0001001 / 05 DEC 17

FCU

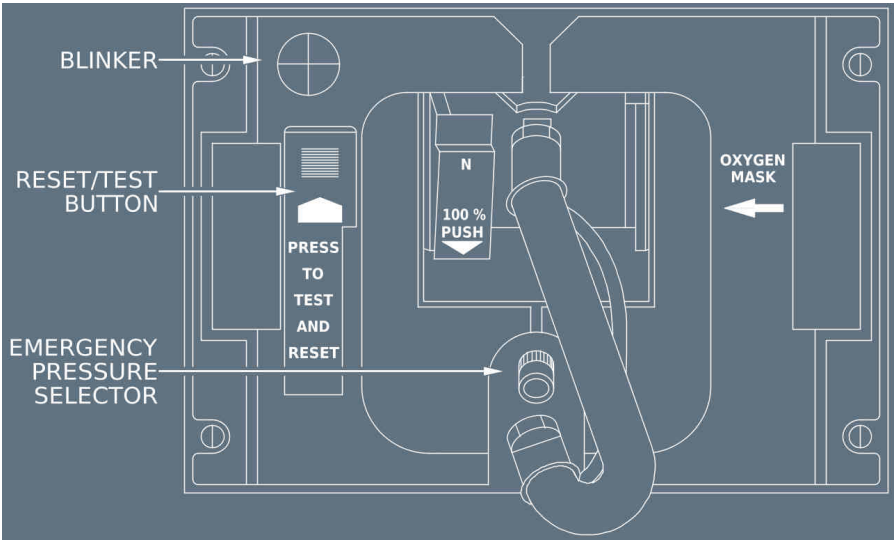
* SPD MACH window..... DASHED
* HDG V/S -TRK FPA pb..... HDG V/S
* ALT window..... INITIAL EXPECTED CLEARANCE ALT

Note: *Do not engage the autothrust on ground, as it may generate the AUTO FLT A/THR OFF warning at engine start.*

LATERAL CONSOLES

Ident.: PRO-NOR-SOP-06-00011249.0002001 / 23 JUN 15
Applicable to: ALL

OXYGEN MASK TEST



WARNING	To prevent hearing damage to ground mechanics connected to the intercom system, inform them that a loud noise may be heard in the headset when performing this test.

On the OXYGEN panel:

CREW SUPPLY pb..... CHECK ON

On the glareshield:

LOUDSPEAKERS.....ON

On the audio control panel:

INT reception knob..... PRESS OUT-ADJUST
INT/RAD sw.....INT

On the mask stowage box:

- Press and hold the reset/test button in the direction of the arrow.
  - Check that the blinker turns yellow for a short time, and then goes black.
- Hold the reset/test button down, and press the emergency pressure selector.
  - Check that the blinker turns yellow and remains yellow, as long as the emergency pressure selector is pressed.
  - Listen for oxygen flow through the loudspeakers. Warn any engineer, whose headset may be connected to the nose intercom, that a loud noise may be heard when performing this check.
- Check that the reset/test button returns to the up position and the N 100 % selector is in the 100 % position.
- Press the emergency pressure selector again, and check that the blinker does not turn yellow. This ensures that the mask is not supplied.

On the ECAM DOOR/OXY page:

REGUL LO PR message.....CHECK OFF

The crew must perform this check after having checked all masks. It ensures that the LP valve is open, (due to residual pressure between the LP valve and the oxygen masks, an LP valve failed in the closed position may not be detected during the oxygen mask test).

INSTRUMENT PANELS

Ident.: PRO-NOR-SOP-06-00011252.0001001 / 17 MAR 16
Applicable to: MSN 01767-04216, 04312, 04328-04384, 04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190

PFD and ND brightness knob.....AS RQRD

Check the ND outer ring is set to maximum brightness (radar/terrain display).

LOUDSPEAKER knob .....SET

Set the LOUDSPEAKER knob around the 1 o'clock position.

* PFD.....CHECK

- *Check PFD/ND not transferred.*
- *Check for correct display, when ATT and HDG are available.*
- *Check IAS, FMA, initial target ALT, altimeter readings, VSI, altimeter settings, heading and attitude display.*

* ND.....CHECK

- *Check for correct display.*
- *Crosscheck compass indication on the ND and DDRMI.*
- *Check heading, initial waypoint, VOR ADF indications.*

INSTRUMENT PANELS

Ident.: PRO-NOR-SOP-06-00011252.0002001 / 17 MAR 16

17 **Applicable to: MSN 04294, 04314, 04393-04397, 04433, 04491, 04510, 04532, 04645, 05120, 05218-09063**

PFD and ND brightness knob.....AS RQRD

Check the ND outer ring is set to maximum brightness (radar/terrain display).

LOUDSPEAKER knob .....SET

Set the LOUDSPEAKER knob around the 1 o'clock position.

* PFD.....CHECK

- *Check PFD/ND not transferred.*
- *Check for correct display, when ATT and HDG are available.*
- *Check IAS, FMA, initial target ALT, altimeter readings, VSI, altimeter settings, heading and attitude display.*

* ND.....CHECK

- *Check for correct display.*
- *Crosscheck compass indication on the ND.*
- *Check heading, initial waypoint, VOR ADF indications.*

ECAM CONTROL PANEL

Ident.: PRO-NOR-SOP-06-00011190.0001001 / 05 DEC 17

Applicable to: ALL

ECAM CONTROL PANEL

* PRESS pb.....PRESS

Check that the CAB PRESS page displays LDG ELEV AUTO, to confirm the correct position of the LDG ELEV knob.

* STS pb.....PRESS

Check that INOP SYS display is compatible with MEL.
If a message is displayed in MAINTENANCE STATUS, Refer to MMEL/MI-00-08 ECAM and MAINTENANCE STATUS.

ADIRS

Ident.: PRO-NOR-SOP-06-00011253.0002001 / 05 DEC 17
Applicable to: ALL

* IRS ALIGN.....CHECK

On the POSITION MONITOR page, check that the IRS are in NAV mode, and check that the distance between each IRS and the FMS position is lower than 5 NM. Select ND in ROSE-NAV or ARC mode, and confirm that the aircraft position is consistent with the position of the airport, the SID and the surrounding NAVAIDs.

TAKEOFF BRIEFING

Ident.: PRO-NOR-SOP-06-00011256.0001001 / 20 MAR 17
Applicable to: ALL

* TAKEOFF BRIEFING.....PERFORM

PC DEDICATED TO MAINTENANCE ⏢

Ident.: PRO-NOR-SOP-06-00011258.0001001 / 07 FEB 11
Applicable to: ALL

Check that the Personal Computer (PC) dedicated to maintenance use and located in front of lower stowage at RH rear corner is stowed.
Check that the light of its manual switch is off. If not, switch it off.
Check that its associated printer located in front of RH rear of the cockpit is stowed.

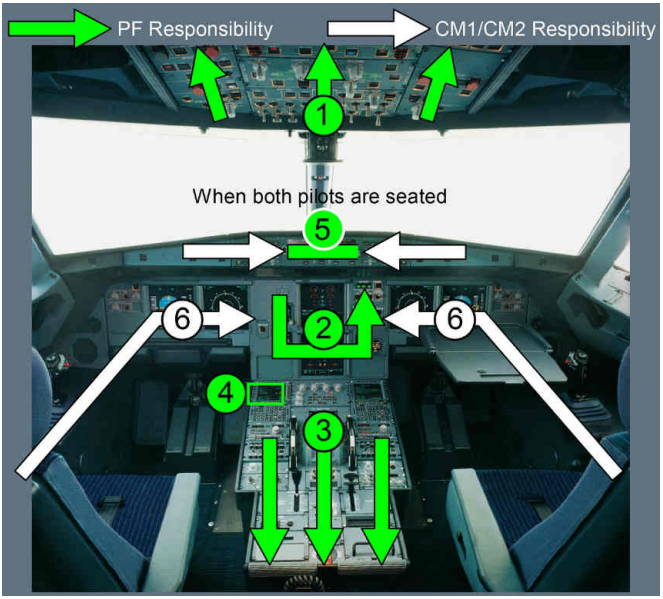
FLOW PATTERN

Ident.: PRO-NOR-SOP-06-00020280.0001001 / 17 MAR 17
Applicable to: ALL

COCKPIT PREPARATION - FLOW PATTERN

The scan pattern varies, depending on the pilot status, i.e PF, PM, CM1, or CM2, and the areas of responsibility:
1. Overhead panel
2. Center instrument panel
3. Pedestal
4. FMGS preparation, and when both pilots are seated:

5. Glareshield
6. Lateral consoles and CM1/CM2 panels.



BEFORE START CLEARANCE

Applicable to: ALL

Ident.: PRO-NOR-SOP-07-A-00021624.0001001 / 05 DEC 17

LOADSHEET

FINAL LOADSHEET.....CHECK

Both crew members carefully check the Load and Trim Sheet (LTS), particularly for gross errors. Make sure that the load sheet data is correct (e.g correct flight, correct aircraft, dry operating index, configuration, Fuel on Board,etc.).

ZFW/ZFWCG.....CHECK/REVISE

The PF compares the ZFW and the ZFWCG with the previously-entered data, and adjust if necessary.

ZFW/ZFWCG..... CROSSCHECK

The PM crosschecks the ZFW and the ZFWCG entered in the FMS

Check that the takeoff CG is within LTS operational limits.

Ident.: PRO-NOR-SOP-07-A-00011255.0009001 / 09 JUN 15

FOB..... CHECK

- *Check that ECAM fuel on board corresponds to the F-PLN.*
- *Check that fuel imbalance is within limits.*
- *Crosscheck that the sum of the Fuel On Board (FOB) recorded at the end of the last flight and the fuel uplift (if any) is consistent with the current FOB. If an abnormal discrepancy is found, a maintenance action is due.*

FOB after refuelling:	*Abnormal discrepancy above:*
Up to 6 tons (13200 lb)	*400 kg (900 lb)*
Between 6 tons (13200 lb) and 12 tons (26500 lb)	*500 kg (1100 lb)*
More than 12 tons (26500 lb)	*600 kg (1300 lb)*

Ident.: PRO-NOR-SOP-07-A-00010189.0002001 / 05 DEC 17

TAKEOFF DATA

- **If takeoff conditions changed:**
  For more information, *Refer to FCTM/PR-NP-SOP-BEFORE PUSHBACK OR START-Takeoff Data*

  FINAL TAKEOFF PERF DATA..... RECOMPUTE

  The PF and the PM independently compute again the takeoff performance data.

FMS TAKEOFF DATA..... REVISE

The PF revises the takeoff data in the FMS.
If the flight crew uses the optimum configuration option for the computation, they should pay specific attention to changes to the configuration of the slats/flaps at takeoff.

FMS REVISED TAKEOFF PERF DATA.....CROSSCHECK

The PM crosschecks the performance data displayed on the PM's EFB with the FMS PERF T.O page.

EFB/MCDU GREEN DOT..... COMPARE

The PM compares Green Dot speed computed by the FMGS and the Green Dot speed computed using the TAKEOFF application. A discrepancy indicates a difference in the TOW used in both systems (EFB/FMGS).

Ident.: PRO-NOR-SOP-07-A-00010190.0001001 / 04 MAR 14

SEATING POSITION

SEATING POSITION..... ADJUST

The seat is correctly adjusted, when the pilot's eyes are in line with the red and white balls.

Ident.: PRO-NOR-SOP-07-A-00010192.0001001 / 23 DEC 14

MCDU

FMS PERF TO page..... SELECT

It is recommended to display the PERF TO page on the PF side.

FMS F-PLN page..... SELECT

It is recommended to display the F-PLN page on the PM side

Ident.: PRO-NOR-SOP-07-A-00010193.0001001 / 17 MAR 16

ELEC

EXT PWR.....CHECK AVAIL

WARNING	Disconnection of the external power with the EXT PWR pb-sw ON may cause injury to the ground engineer. Request disconnection of the external power only with the EXT PWR pb-sw AVAIL.

EXT PWR DISCONNECTION..... REQUEST

Ident.: PRO-NOR-SOP-07-A-00010194.0001001 / 12 FEB 13

BEFORE START CHECKLIST DOWN TO THE LINE

BEFORE START CHECKLIST down to the line.....COMPLETE

AT START CLEARANCE

Ident.: PRO-NOR-SOP-07-B-00010197.0001001 / 04 MAR 14
Applicable to: ALL

PUSHBACK/START UP CLEARANCE

PUSHBACK/START CLEARANCE..... OBTAIN

Obtain ATC pushback/startup clearance.
Obtain ground crew clearance.

Ident.: PRO-NOR-SOP-07-B-00015568.0001001 / 20 JAN 15
Applicable to: ALL

ATC.....SET FOR OPERATION

ATC is set in accordance with airport requirements.

Ident.: PRO-NOR-SOP-07-B-00010199.0002001 / 04 MAR 14
Applicable to: ALL

WINDOWS AND DOORS

WINDOWS and DOORS.....CHECK CLOSED

- *To ensure that the sliding window is correctly closed and locked, push the handle of the sliding window fully forward to the closed position, and check that the red indicator is visible*
- *Check, on the ECAM lower display, that all the aircraft doors are closed*
- *When required by local airworthiness authorities, check that the cockpit door is closed and locked (no cockpit door open/fault indication).*
  If entry is requested, identify the person requesting entry before unlocking the door. With the cockpit door sw on NORM, the cockpit door is closed and locked. If entry is requested from the cabin, and if no further action is performed by the pilot, the cabin crew will be able to unlock the door by using the emergency access procedure. Except for crew entry/exit, the cockpit door should remain closed until engine shutdown.

SLIDES.....CHECK ARMED

- *Check, on the ECAM lower display, that all slides are armed.*

Ident.: PRO-NOR-SOP-07-B-00010200.0001001 / 04 MAR 14
Applicable to: ALL

EXTERIOR LIGHTS

BEACON sw.....ON

Ident.: PRO-NOR-SOP-07-B-00010201.0001001 / 04 MAR 14
Applicable to: ALL

THRUST LEVERS

THRUST LEVERS..... IDLE

CAUTION	*Engines will start, regardless of the thrust lever position; thrust will rapidly increase to the corresponding thrust lever position, causing a hazardous situation, if thrust levers are not at IDLE.*

Ident.: PRO-NOR-SOP-07-B-00016807.0001001 / 06 SEP 16
Applicable to: ALL

ACCU PRESSURE

ACCU PRESS indicator..... CHECK

The ACCU PRESS indication must be in the green band. If required, use the electric pump on yellow hydraulic system to recharge the brake accumulator.

WARNING	Yellow and green hydraulic systems are pressurized from yellow electric pump. Get ground crew clearance before using the electric pump.

Ident.: PRO-NOR-SOP-07-B-00010202.0002001 / 24 NOV 15
Applicable to: ALL

PARKING BRAKE AND NOSEWHEEL STEERING

- **If pushback is not required:**

  PARK BRK handle..... CHECK ON
  BRAKES PRESS indicator..... CHECK

  Check for normal indications.

  BEFORE START CHECKLIST below the line.....COMPLETE

Ident.: PRO-NOR-SOP-07-B-00010198.0001001 / 21 MAR 17
Applicable to: MSN 01767-02405, 02482

- **If pushback is required:**

  N/W STRG DISC MEMO..... CHECK DISPLAYED

  In case of pushback (conventional or towbarless), the nosewheel steering selector bypass pin must be in the tow position. The ECAM NW STRG DISC, or N WHEEL STEERG DISC memos indicate this to the flight crew.

CAUTION	*If the ECAM does not display the N WHEEL STEERG DISC memo, but the ground crew confirms that the tow pin is in the towing position, the flight crew should not start the engine during pushback. This is to avoid possible nose landing gear damage upon green hydraulic pressurization.* *To dispatch the aircraft in such a case, Refer to MMEL/MI-32-51 NWS Electrical Deactivation Box.*

In case of a powerpush by the main landing gear, the nosewheel steering selector should remain in the normal position to steer the aircraft (Refer to PRO-NOR-SUP-MISC-D Pushback with Power Push Unit via the Main Landing Gear - Procedure 1/2).

BEFORE START CHECKLIST below the line..... COMPLETE
PARK BRK handle..... OFF

CAUTION	*Do not use brakes during pushback, unless required due to an emergency.*

- **When pushback is completed:**
  PARK BRK handle..... ON
  BRAKE PRESS indicator..... CHECK
  Check for normal indications.
  Ask the ground crew for towbar disconnection.

Ident.: PRO-NOR-SOP-07-B-00010198.0002001 / 21 MAR 17
1 **Applicable to: MSN 02443-02457, 02584-09063**

- **If pushback is required:**
  N/W STRG DISC MEMO..... CHECK DISPLAYED

In case of pushback (conventional or towbarless), the nosewheel steering selector bypass pin must be in the tow position. The ECAM's NW STRG DISC, or N WHEEL STEERG DISC memos indicate this to the flight crew.

CAUTION	*If the ECAM does not display the N WHEEL STEERG DISC memo, but the ground crew confirms that the tow pin is in the towing position, the flight crew should not start the engine during pushback. This is to avoid possible nose landing gear damage upon yellow hydraulic pressurization.* *To dispatch the aircraft in such a case, Refer to MMEL/MI-32-51 NWS Electrical Deactivation Box.*

In case of a powerpush by the main landing gear, the nosewheel steering selector should remain in the normal position to steer the aircraft (Refer to PRO-NOR-SUP-MISC-D Pushback with Power Push Unit via the Main Landing Gear - Procedure 1/2).

BEFORE START CHECKLIST below the line..... COMPLETE

PARK BRK handle.....OFF

CAUTION	*Do not use the brakes during pushback, unless required due to an emergency.*

- **When pushback is completed:**

  PARK BRK handle.....ON
  BRAKE PRESS indicator.....CHECK

  Check for normal indications.
  Ask the ground crew for towbar disconnection.

AUTOMATIC ENGINE START

Ident.: TDU / PRO-NOR-SOP-08-00022757.0001001 / 04 DEC 18

1 **Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192, 07329-09063**
Impacted DU: 00010162 Automatic Engine Start

Use the automatic engine start procedure in most circumstances. However, if the start aborts due to insufficient starter inlet air pressure (e.g. on high airfields, or in case of low pressure from an external pneumatic power group), it is recommended to use the manual start procedure, instead the automatic procedure.
If, during the engine start, the ground crew reports a leak from the engine, abort the engine start sequence. Maintenance action is due before the flight.

ENG MODE selector..... IGN/START

The lower ECAM displays the ENG SD page. Depending on the engine thermal state, the FADEC can command an automatic dry cranking (engine cooling). In such case, when the ENG MODE selector is set to IGN/START, the indication COOLING is displayed on the E/WD for one, or both engines with the expected engine cooling time indicated. Refer to DSC-70-80-40 Engine Cooling

DUAL COOLING pb-sw..... AS RQRD

If dual cooling is required, wait at least 3 seconds before setting the DUAL COOLING pb-sw to ON after ENG MODE selector is set to IGN/START to allow for the cooling time calculation. Setting the DUAL COOLING pb-sw to ON enables to arm the dual cooling function: When the ENG MASTER lever is set to ON, the FADEC commands an automatic dry cranking on both engines simultaneously (if cooling is required). This enhances the overall time to start the engines when cooling is required. When this function is armed, the memoDUAL COOLING is displayed on the E/WD.

ENGINE 2 START.....ANNOUNCE

Engine 2 is usually started first. It powers the yellow hydraulic system, that pressurizes the parking brake.

ENG MASTER 2.....ON

- *Do not set the ENG MASTER 2 lever to ON before all amber crosses and messages have disappeared on the engine parameters (upper ECAM display).*
- *Parameter callouts are not mandatory.*
- *In case the electrical power supply is interrupted during the start sequence (indicated by the loss of ECAM DUs), abort the start by setting to OFF the ENG MASTER 2 lever. Then, perform a 30 s dry crank.*
- *Depending of the engine thermal state, the FADEC can command an automatic dry cranking (or engine cooling) with the associated COOLING indication displayed on the E/WD.*
  Refer to DSC-70-80-40 Engine Cooling

Note: *If the DUAL COOLING function is armed, the cooling will be performed on both engines simultaneously. In such case, the FADEC resumes the start sequence of ENG 2 once the cooling time indication is at zero for both engines.*

ON ECAM UPPER DISPLAY	ON ECAM LOWER DISPLAY
N2 increases	*Corresponding start valve inline.* *Bleed pressure indication green.* *Oil pressure increases.*
At approximately 18 % N2: *- FF increases.*	*Indication of the active igniter (A or B).*
20 s (maximum) after fuel is on *- EGT increases* *- N1 increases prior to 48 % N2.*	
At approximately 55 % N2	*Start valve crossline.* *Igniter indication off.*

Note: *When the FADEC detects an impending hot start or stall, the FADEC applies an automatic recovery sequence without an ECAM message. The flight crew notices that fuel will be commanded OFF, and then re-commanded ON. It is not necessary for the flight crew to shut down the engine.*

- **When idle is reached (AVAIL indication is displayed):**

  ENG IDLE PARAMETERS..... CHECK

  At ISA sea level : *N1 about 19 %*
  N2 about 59 %
  EGT about 550 °C
  FF about 270 kg/h (600 lb/h)

  ENGINE 1 START..... ANNOUNCE
  ENG MASTER 1..... ON

  Same procedure as for engine 2.

  Note:
  - *If dual cooling has been selected for engine start, the FADEC keeps in memory the cooling benefit for ENG 1 provided ENG 1 is started within 20 min after ENG 2 start. However, in any case, the FADEC commands an engine cooling before ENG 1 start.*
  - *A PTU FAULT is triggered, if the last engine is started within 40 s following the end of the cargo doors operation. .Refer to PRO-ABN-HYD HYD PTU FAULT*

AUTOMATIC ENGINE START

Ident.: PRO-NOR-SOP-08-00010162.0060001 / 31 AUG 17
Applicable to: MSN 01767, 02584, 03750, 04294, 04314, 04393-04438, 04510

Use the automatic engine start procedure in most circumstances. However, if the start aborts due to insufficient starter inlet air pressure (e.g. on high airfields, or in case of low pressure from an external pneumatic power group), it is recommended to use the manual start procedure, instead the automatic procedure.
If, during the engine start, the ground crew reports a fuel leak from the engine drain mast, run the engine at idle for 5 min. If the leak disappears during these 5 min, the aircraft can be dispatched without maintenance action. If the leak is still present after 5 min, shut down the engine and request the maintenance personnel to investigate the leakage source.

ENG MODE selector..... IGN/START

The lower ECAM displays the ENG SD page.

ENGINE 2 START.....ANNOUNCE

Engine 2 is usually started first. It powers the yellow hydraulic system, that pressurizes the parking brake.

ENG MASTER 2.....ON

- *Do not set the ENG MASTER 2 lever to ON before all amber crosses and messages have disappeared on the engine parameters (upper ECAM display).*
- *Parameter callouts are not mandatory.*
- *In case the electrical power supply is interrupted during the start sequence (indicated by the loss of ECAM DUs), abort the start by setting to OFF the ENG MASTER 2 lever. Then, perform a 30 s dry crank.*

ON ECAM UPPER DISPLAY	ON ECAM LOWER DISPLAY
N2 increases	*Corresponding start valve in line.* *Bleed pressure indication green.* *Oil pressure increases.*
At 16 % N2	*Indication of the active igniter (A or B).*
At 22 % N2 - *FF increases* *15 s (maximum) after fuel is on* - *EGT increases* - *N1 increases*	
At 50 % N2	*Start valve starts closing. (It is fully closed between 50 % and 56 % N2).* *Igniter indication off.*

- **When idle is reached (AVAIL indication is displayed):**

ENG IDLE PARAMETERS..... CHECK

At ISA sea level : N1 about 19.5 %
N2 about 58.5 %
EGT about 390 °C
FF about 275 kg/h (600 lb/h)

Grey background on N2 indication disappears.

ENGINE 1 START..... ANNOUNCE
ENG MASTER 1..... ON

Same procedure as for engine 2.
Both pack valves reopen with 30 s delay after the second engine N2 is above 50 %.

Note: A PTU FAULT is triggered, if the last engine is started within 40 s following the end of the cargo doors operation. Refer to PRO-ABN-HYD HYD PTU FAULT.

AUTOMATIC ENGINE START

Ident.: PRO-NOR-SOP-08-00010162.0002001 / 31 AUG 17
Applicable to: MSN 01920, 02388, 02712, 03138

Use the automatic engine start procedure in most circumstances. However, if the start aborts due to insufficient starter inlet air pressure (e.g. on high airfields, or in case of low pressure from an external pneumatic power group), it is recommended to use the manual start procedure, instead the automatic procedure.
If, during the engine start, the ground crew reports a fuel leak from the engine drain mast, run the engine at idle for 5 min. If the leak disappears during these 5 min, the aircraft can be dispatched without maintenance action. If the leak is still present after 5 min, shut down the engine and request the maintenance personnel to investigate the leakage source.

ENG MODE selector..... IGN/START

The lower ECAM displays the ENG SD page.

ENGINE 2 START.....ANNOUNCE

Engine 2 is usually started first. It powers the yellow hydraulic system, that pressurizes the parking brake.

ENG MASTER 2.....ON

- *Do not set the ENG MASTER 2 lever to ON before all amber crosses and messages have disappeared on the engine parameters (upper ECAM display).*
- *Parameter callouts are not mandatory.*
- *In case the electrical power supply is interrupted during the start sequence (indicated by the loss of ECAM DUs), abort the start by setting to OFF the ENG MASTER 2 lever. Then, perform a 30 s dry crank.*

ON ECAM UPPER DISPLAY	*ON ECAM LOWER DISPLAY*
N2 increases	*Corresponding start valve inline.* *Bleed pressure indication green.* *Oil pressure increases.*
At 16 % N2	*Indication of the active igniter (A or B).*
At 22 % N2 *- FF increases (1)* *15 s (maximum) after fuel is on* *- EGT increases* *- N1 increases*	
At 50 % N2	*Start valve starts closing. (It is fully closed between 50 % and 56 % N2).* *Igniter indication off.*

(1) With the current ECU standard, the FF indication may be crossed up to approximately 200 kg/h (440 lb/h).

ENG IDLE PARAMETERS.....CHECK

At ISA sea level : N1 about 19.5 %
N2 about 58.5 %
EGT about 390 °C
FF about 275 kg/h (600 lb/h)

Grey background on N2 indication disappears.

ENGINE 1 START.....ANNOUNCE
ENG MASTER 1.....ON

Same procedure as for engine 2.
Both pack valves reopen with 30 s delay after the second engine N2 is above 50 %.

Note: A PTU FAULT is triggered, if the last engine is started within 40 s following the end of the cargo doors operation. *Refer to PRO-ABN-HYD HYD PTU FAULT.*

AUTOMATIC ENGINE START

Ident.: PRO-NOR-SOP-08-00010162.0040001 / 31 AUG 17
Applicable to: MSN 02108, 02135, 02139-02359, 02405-02482, 02609-02670, 02804-02914, 03264-03618

Use the automatic engine start procedure in most circumstances. However, if the start aborts due to insufficient starter inlet air pressure (e.g. on high airfields, or in case of low pressure from an external pneumatic power group), it is recommended to use the manual start procedure, instead the automatic procedure.

ENG MODE selector..... IGN/START

The lower ECAM displays the ENG SD page.

ENGINE 2 START.....ANNOUNCE

Engine 2 is usually started first. It powers the yellow hydraulic system, that pressurizes the parking brake.

ENG MASTER 2.....ON

- *Do not set the ENG MASTER 2 lever to ON before all amber crosses, except on N1 and N2, and messages, have disappeared on the engine parameters (upper ECAM display).*
- *Parameter callouts are not mandatory.*
- *In case the electrical power supply is interrupted during the start sequence (indicated by the loss of ECAM DUs), abort the start by setting to OFF the ENG MASTER 2 lever. Then, perform a 30 s dry crank.*

ON ECAM UPPER DISPLAY	*ON ECAM LOWER DISPLAY*
N2 increases	*Corresponding start valve inline.* *Bleed pressure indication green.* *Oil pressure increases.*
30 s after ENG 2 MASTER sw is ON: *- FF increases.*	*Indication of the active igniter (A or B).*
20 s (maximum) after fuel is on *- EGT increases* *- N1 increases prior to 34 % N2.*	
At 43 % N2	*Igniter indication off.*
Slightly above 43 % N2	*Start valve crossline.*

Note: When the FADEC detects an impending hung start or hot start, the FADEC applies an automatic recovery sequence without an ECAM message. The crew will notice that dual ignition (A+B) is applied, and that fuel will be commanded OFF, and then re-commanded ON within 0.5 s. It is not necessary for the crew to shut down the engine.

ENG IDLE PARAMETERS.....CHECK

At ISA sea level : *N1 about 21.4 %*
N2 about 57.8 %
EPR about 1.01
EGT about 414 °C
FF about 350 kg/h (775 lb/h)

Grey background on N2 indication disappears.

ENGINE 1 START.....ANNOUNCE
ENG MASTER 1.....ON

Same procedure as for engine 2.
Both pack valves reopen with 30 s delay after the second engine N2 is above 50 %.

Note: A PTU FAULT is triggered, if the last engine is started within 40 s following the end of the cargo doors operation. *Refer to PRO-ABN-HYD HYD PTU FAULT.*

AUTOMATIC ENGINE START

Ident.: PRO-NOR-SOP-08-00010162.0056001 / 31 AUG 17

2 **Applicable to: MSN 01957-02097, 02121, 02138, 02737, 03071, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

Use the automatic engine start procedure in most circumstances. However, if the start aborts due to insufficient starter inlet air pressure (e.g. on high airfields, or in case of low pressure from an external pneumatic power group), it is recommended to use the manual start procedure, instead the automatic procedure.

ENG MODE selector..... IGN/START

The lower ECAM displays the ENG SD page.

ENGINE 2 START.....ANNOUNCE

Engine 2 is usually started first. It powers the yellow hydraulic system, that pressurizes the parking brake.

ENG MASTER 2.....ON

- *Do not set the ENG MASTER 2 lever to ON before all amber crosses, except on N1 and N2, and messages, have disappeared on the engine parameters (upper ECAM display).*
- *Parameter callouts are not mandatory.*
- *In case the electrical power supply is interrupted during the start sequence (indicated by the loss of ECAM DUs), abort the start by setting to OFF the ENG MASTER 2 lever. Then, perform a 30 s dry crank.*

ON ECAM UPPER DISPLAY	ON ECAM LOWER DISPLAY
N2 increases	*Corresponding start valve inline.* *Bleed pressure indication green.* *Oil pressure increases.*
30 s after ENG 2 MASTER sw is ON: *- FF increases.*	*Indication of the active igniter (A or B).*
20 s (maximum) after fuel is on *- EGT increases* *- N1 increases prior to 34 % N2.*	
At 43 % N2	*Igniter indication off.*
Slightly above 43 % N2	*Start valve crossline.*

Note: When the FADEC detects an impending hung start or hot start, the FADEC applies an automatic recovery sequence without an ECAM message. The crew will notice that dual ignition (A+B) is applied, and that fuel will be commanded OFF, and then re-commanded ON within 0.5 s. It is not necessary for the crew to shut down the engine.

- **When idle is reached (AVAIL indication is displayed):**

ENG IDLE PARAMETERS..... CHECK

At ISA sea level : EPR about 1.01
N1about 21.4 %
N2 about 57.8 %
EGT about 414 °C
FF about350 kg/h (775 lb/h)

ENGINE 1 START..... ANNOUNCE
ENG MASTER 1..... ON

Same procedure as for engine 2.

Note: A PTU FAULT is triggered, if the last engine is started within 40 s following the end of the cargo doors operation. Refer to PRO-ABN-HYD HYD PTU FAULT.

AUTOMATIC ENGINE START

Ident.: PRO-NOR-SOP-08-00010162.0065001 / 31 AUG 17

3 **Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192, 07329-09063**
Impacted by TDU: 00022757 Automatic Engine Start

Use the automatic engine start procedure in most circumstances. However, if the start aborts due to insufficient starter inlet air pressure (e.g. on high airfields, or in case of low pressure from an external pneumatic power group), it is recommended to use the manual start procedure, instead the automatic procedure.

If, during the engine start, the ground crew reports a leak from the engine, abort the engine start sequence. Maintenance action is due before the flight.

ENG MODE selector.....IGN/START

The lower ECAM displays the ENG SD page. Depending on the engine thermal state, the FADEC can command an automatic dry cranking (engine cooling). In such case, when the ENG MODE selector is set to IGN/START, the indication COOLING is displayed on the E/WD for one, or both engines with the expected engine cooling time indicated. Refer to DSC-70-80-40 Engine Cooling

DUAL COOLING pb-sw.....AS RQRD

Setting the DUAL COOLING pb-sw to ON enables to arm the dual cooling function. When the ENG MASTER lever is set to ON, the FADEC commands an automatic dry cranking on both engines simultaneously (if cooling is required). This enhances the overall time to start the engines when cooling is required. When this function is armed, the memo DUAL COOLING is displayed on the E/WD.

ENGINE 2 START.....ANNOUNCE

Engine 2 is usually started first. It powers the yellow hydraulic system, that pressurizes the parking brake.

ENG MASTER 2.....ON

- Do not set the ENG MASTER 2 lever to ON before all amber crosses and messages have disappeared on the engine parameters (upper ECAM display).
- Parameter callouts are not mandatory.
- In case the electrical power supply is interrupted during the start sequence (indicated by the loss of ECAM DUs), abort the start by setting to OFF the ENG MASTER 2 lever. Then, perform a 30 s dry crank.
- Depending of the engine thermal state, the FADEC can command an automatic dry cranking (or engine cooling) with the associated COOLING indication displayed on the E/WD. Refer to DSC-70-80-40 Engine Cooling

Note: If the DUAL COOLING function is armed, the cooling will be performed on both engines simultaneously. In such case, the FADEC resumes the start sequence of ENG 2 once the cooling time indication is at zero for both engines.

ON ECAM UPPER DISPLAY	ON ECAM LOWER DISPLAY
N2 increases	Corresponding start valve inline. Bleed pressure indication green. Oil pressure increases.
At approximately 18 % N2: - FF increases.	Indication of the active igniter (A or B).

Continued on the following page

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ON ECAM UPPER DISPLAY	*ON ECAM LOWER DISPLAY*
20 s (maximum) after fuel is on *- EGT increases* *- N1 increases prior to 48 % N2.*	
At approximately 55 % N2	*Start valve crossline.* *Igniter indication off.*

Note: When the FADEC detects an impending hot start or stall, the FADEC applies an automatic recovery sequence without an ECAM message. The flight crew notices that fuel will be commanded OFF, and then re-commanded ON. It is not necessary for the flight crew to shut down the engine.

- **When idle is reached (AVAIL indication is displayed):**

ENG IDLE PARAMETERS.....CHECK

At ISA sea level : N1 about 19 %
N2 about 59 %
EGT about 550 °C
FF about 270 kg/h (600 lb/h)

ENGINE 1 START.....ANNOUNCE
ENG MASTER 1.....ON

Same procedure as for engine 2.

Note: - If dual cooling has been selected for engine start, the FADEC keeps in memory the cooling benefit for ENG 1 provided ENG 1 is started within 20 min after ENG 2 start. However, in any case, the FADEC commands an engine cooling before ENG 1 start.
- A PTU FAULT is triggered, if the last engine is started within 40 s following the end of the cargo doors operation. Refer to PRO-ABN-HYD HYD PTU FAULT.

AUTOMATIC ENGINE START

Ident.: PRO-NOR-SOP-08-00010162.0066001 / 31 AUG 17
Applicable to: MSN 06720-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252

Use the automatic engine start procedure in most circumstances. However, if the start aborts due to insufficient starter inlet air pressure (e.g. on high airfields, or in case of low pressure from an external pneumatic power group), it is recommended to use the manual start procedure, instead the automatic procedure.

If, during the engine start, the ground crew reports a leak from the engine, abort the engine start sequence. Maintenance action is due before the flight.

ENG MODE selector..... IGN/START

The lower ECAM displays the ENG SD page. Depending on the engine thermal state, the FADEC can command an automatic dry cranking (engine cooling). In such case, when the ENG MODE selector is set to IGN/START, the indication COOLING is displayed on the E/WD for one, or both engines with the expected engine cooling time indicated. *Refer to DSC-70-80-40 Engine Cooling*

ENGINE 2 START.....ANNOUNCE

Engine 2 is usually started first. It powers the yellow hydraulic system, that pressurizes the parking brake.

ENG MASTER 2.....ON

- *Do not set the ENG MASTER 2 lever to ON before all amber crosses and messages have disappeared on the engine parameters (upper ECAM display).*
- *Parameter callouts are not mandatory.*
- *In case the electrical power supply is interrupted during the start sequence (indicated by the loss of ECAM DUs), abort the start by setting to OFF the ENG MASTER 2 lever. Then, perform a 30 s dry crank.*
- *Depending of the engine thermal state, the FADEC can command an automatic dry cranking (engine cooling) with the associated COOLING indication displayed on the E/WD.*
  Refer to DSC-70-80-40 Engine Cooling

ON ECAM UPPER DISPLAY	ON ECAM LOWER DISPLAY
N2 increases	*Corresponding start valve inline.* *Bleed pressure indication green.* *Oil pressure increases.*
At approximately 18 % N2: - *FF increases.*	*Indication of the active igniter (A or B).*
20 s (maximum) after fuel is on - *EGT increases* - *N1 increases prior to 48 % N2.*	
At approximately 55 % N2	*Start valve crossline.* *Igniter indication off.*

Note: When the FADEC detects an impending hot start or stall, the FADEC applies an automatic recovery sequence without an ECAM message. The flight crew notices that fuel will be commanded OFF, and then re-commanded ON. It is not necessary for the flight crew to shut down the engine.

- **When idle is reached (AVAIL indication is displayed):**

ENG IDLE PARAMETERS..... CHECK

At ISA sea level : *N1 about 19 %*
N2 about 59 %
EGT about 550 °C
FF about 270 kg/h (600 lb/h)

ENGINE 1 START..... ANNOUNCE
ENG MASTER 1..... ON

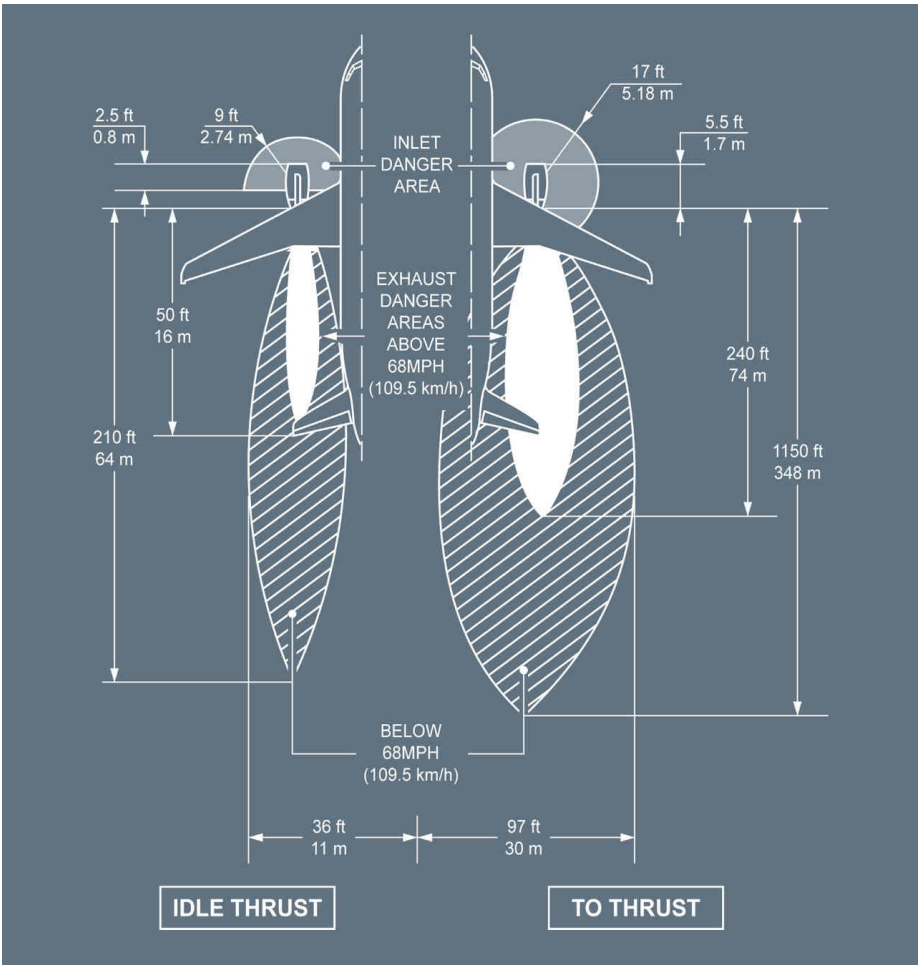
Same procedure as for engine 2.

Note: *A PTU FAULT is triggered, if the last engine is started within 40 s following the end of the cargo doors operation.* *Refer to PRO-ABN-HYD HYD PTU FAULT.*

GROUND RUN UP - DANGER AREAS

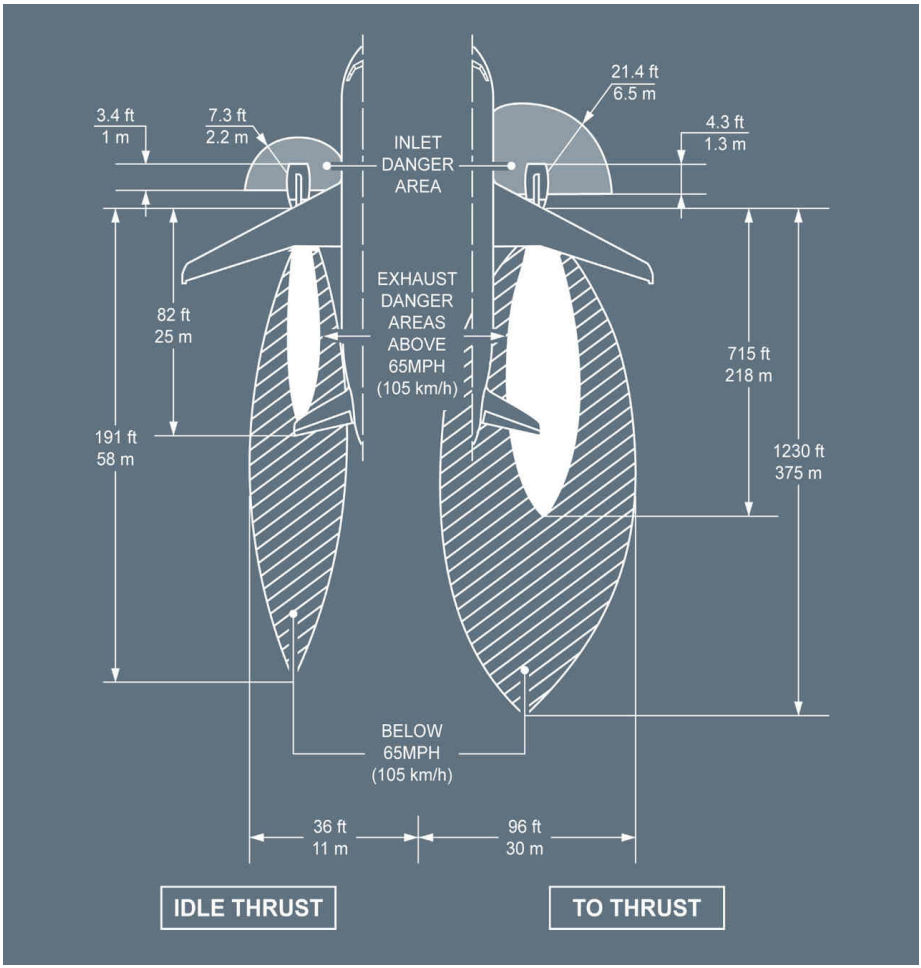
Ident.: PRO-NOR-SOP-08-00010163.0019001 / 06 JAN 16

4 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**



GROUND RUN UP - DANGER AREAS

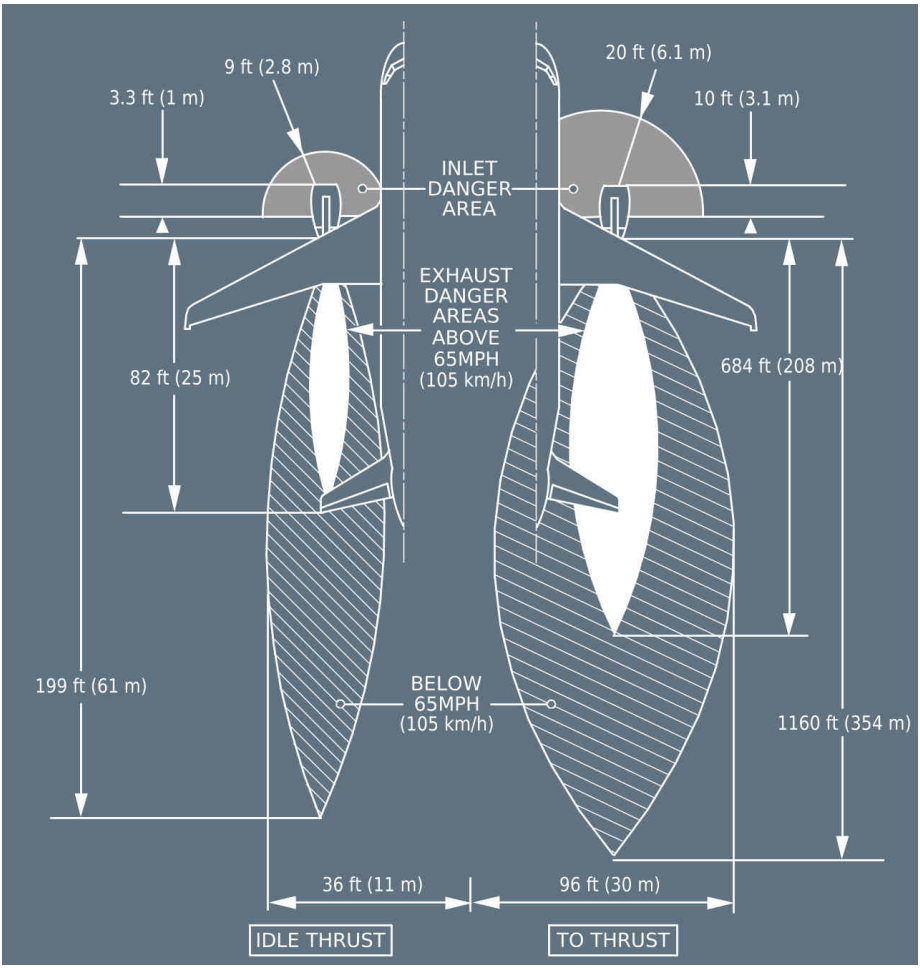
Ident.: PRO-NOR-SOP-08-00010163.0006001 / 06 JAN 16
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510



GROUND RUN UP - DANGER AREAS

Ident.: PRO-NOR-SOP-08-00010163.0018001 / 16 NOV 15

5 **Applicable to: MSN 06720-09063**



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AFTER START

Ident.: PRO-NOR-SOP-09-A-00010210.0002001 / 21 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

ENG MODE

ENG MODE selector.....NORM

For additional information on the automatic starting sequence, Refer to DSC-70-80-40 Sequence of the Automatic Start.

After start, to avoid thermal shock, the pilot should operate the engine at idle or near idle for at least 2 min before advancing the thrust lever to high power. Taxi time at idle may be included in the warm-up period.
The last engine started must run for at least 2 min before takeoff initiation, to ensure that takeoff is not initiated before the center tank pumps test is finished, since takeoff on center tank is prohibited.

Ident.: PRO-NOR-SOP-09-A-00010210.0003001 / 21 MAR 17
1 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06036**

ENG MODE

ENG MODE selector.....NORM

For additional information on the automatic starting sequence, Refer to DSC-70-80-40 Sequence of the Automatic Start.

After a shutdown period greater than 2 h, to avoid thermal shock, the pilot should operate the engine at idle or near idle for at least 5 min before advancing the thrust lever to high power. Taxi time at idle may be included in the warm-up period.
The last engine started must run for at least 2 min before takeoff initiation, to ensure that takeoff is not initiated before the center tank pumps test is finished, since takeoff on center tank is prohibited.

Ident.: PRO-NOR-SOP-09-A-00010210.0006001 / 21 MAR 17
2 **Applicable to: MSN 06208-09063**

ENG MODE

ENG MODE selector.....NORM

For additional information on the automatic starting sequence, Refer to DSC-70-80-40 Sequence of the Automatic Start.

After a shutdown period greater than 2 h, to avoid thermal shock, the pilot should operate the engine at idle or near idle for at least 5 min before advancing the thrust lever to high power. Taxi time at idle may be included in the warm-up period.

Ident.: PRO-NOR-SOP-09-A-00020192.0001001 / 21 OCT 16
3 **Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192, 07329-09063**

DUAL COOLING pb-sw.....OFF

Ident.: PRO-NOR-SOP-09-A-00010211.0001001 / 26 OCT 12
Applicable to: ALL

APU BLEED

APU BLEED pb-sw.....OFF

- *This action enables to avoid ingestion of engine exhaust gases.*
- *APU BLEED valve closes, ENG BLEED valves open.*

Ident.: PRO-NOR-SOP-09-A-00010212.0007001 / 04 DEC 18
4 **Applicable to: MSN 06720-09063**

ANTI-ICE

CAUTION	In icing conditions (*Refer to LIM-ICE_RAIN Definition of Icing Conditions*), the flight crew must turn on the engine anti-ice and should not wait until seeing ice building up.

ENG ANTI-ICE pb-sw..... AS RQRD

Engine anti-ice must be set to ON during all ground operations, when icing conditions exist or are anticipated.
During ground operation, when in icing conditions and the OAT is +3 °C or less, or if significant engine vibration occurs, the following procedure should be applied for ice shedding :

L2 *Note:*
1. *The flight crew must consider the taxi-in time from the previous flight and the taxi-out time of the current flight to determine the total taxi time.*
2. *If a maintenance task to de-ice the engines was performed before engine start, the taxi-in time of the previous flight must be disregarded.*
3. *For taxi-in time, Refer to PRO-NOR-SOP-22 Parking - Icing Conditions.*

L1

CAUTION	*If, during thrust increase, the aircraft starts to move, immediately retard the thrust levers to IDLE.*

If ground surface conditions and the environment permit, the flight crew should set parking brake to ON or brake with pedals and accelerate the engines to minimum 60 % of N1.
Engine accelerations should be performed at intervals not greater than:

- *30 min if OAT is below +3 °C but above -9 °C.*
- *120 min if OAT is below -9 °C.*

There is no requirement to maintain the high thrust settings.
In addition, this engine acceleration should also be performed just before take-off, with particular attention to engine parameters to ensure normal engine operation.
If the ground surface conditions or the environment do not permit, the flight crew must request maintenance action for manual engine deicing.

Ident.: PRO-NOR-SOP-09-A-00010212.0004001 / 04 DEC 18

5 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

ANTI-ICE

CAUTION	In icing conditions (*Refer to LIM-ICE_RAIN Definition of Icing Conditions*), the flight crew must turn on the engine anti-ice and should not wait until seeing ice building up.

ENG ANTI-ICE pb-sw..... AS RQRD

Engine anti-ice must be set to ON during all ground operations, when icing conditions exist or are anticipated.
During ground operation, when in icing conditions and the OAT is +3 °C or less, or if significant engine vibration occurs, the following procedure should be applied for ice shedding :

L2 *Note:*
1. *The flight crew must consider the taxi-in time from the previous flight and the taxi-out time of the current flight to determine the total taxi time.*
2. *If a maintenance task to de-ice the engines was performed before engine start, the taxi-in time of the previous flight must be disregarded.*
3. *For taxi-in time, Refer to PRO-NOR-SOP-22 Parking - Icing Conditions.*

L1

CAUTION	*If, during thrust increase, the aircraft starts to move, immediately retard the thrust levers to IDLE.*

If ground surface conditions and the environment permit, the flight crew should accelerate the engines to minimum 50 % of N1 at intervals not greater than 15 min. There is no requirement to maintain the high trust settings.
In addition, this engine acceleration should also be performed just before take-off, with particular attention to engine parameters to ensure normal engine operation.

Note: When performing the static run–up, the 61-74 % N1 range should be avoided.

If ENG ANTI ICE is selected ON and the valve(s) do not open (FAULT light(s) remain on), increase the N2 of the associated engine by about 5 %.
When the valves are open, retard the thrust lever(s) to idle.

If ENG ANTI ICE is switched on, the IGNITION memo appears on the ECAM because continuous ignition is automatically selected.

Ident.: PRO-NOR-SOP-09-A-00010212.0005001 / 04 DEC 18
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

ANTI-ICE

CAUTION	In icing conditions (*Refer to LIM-ICE_RAIN Definition of Icing Conditions*), the flight crew must turn on the engine anti-ice and should not wait until seeing ice building up.

ENG ANTI-ICE pb-sw..... AS RQRD

Engine anti-ice must be set to ON during all ground operation, when icing conditions exist or are anticipated.
During ground operation, when in icing conditions and the OAT is +3 °C or less for more than 30 min, the following procedure should be applied for ice shedding:

L2 *Note:*
1. *The flight crew must consider the taxi-in time from the previous flight and the taxi-out time of the current flight to determine the total taxi time.*
2. *If a maintenance task to de-ice the engines was performed before engine start, the taxi-in time of the previous flight must be disregarded.*
3. *For taxi-in time, Refer to PRO-NOR-SOP-22 Parking - Icing Conditions.*

L1

CAUTION	*If, during thrust increase, the aircraft starts to move, immediately retard the thrust levers to IDLE.*

If ground surface conditions and the environment permit, the flight crew should accelerate the engines to approximately 70 % of N1 for 30 s at intervals not greater than 30 min.
In addition, this engine acceleration should also be performed just before take-off, with particular attention to engine parameters to ensure normal engine operation. If ground surface or environment do not permit to accelerate the engine to 70 % N1, then power setting and dwell time should be as high as practical.
When operating in conditions of freezing rain, freezing drizzle, freezing fog or heavy snow, ice shedding may be enhanced, by additional run ups at intervals, to not exceed 10 min, advancing throttles to 70 % N1 momentarily (no hold time).

Ident.: PRO-NOR-SOP-09-A-00010213.0001001 / 21 MAR 17
Applicable to: ALL

WING ANTI-ICE pb-sw..... AS RQRD

When icing conditions are encountered:

- *The flight crew may turn on the wing anti-ice to prevent ice accretion on the wing leading edge.*
- *The flight crew must turn on the wing anti-ice if there is evidence of ice accretion, such as ice on the visual indicator, or on the wipers, or with the SEVERE ICE DETECTED alert. This is to remove any ice accumulation from the wing leading edge.*

Ident.: PRO-NOR-SOP-09-A-00010214.0001001 / 04 MAR 14
Applicable to: ALL

APU

- **If the APU is not required:**
  APU MASTER SW..... OFF

Ident.: PRO-NOR-SOP-09-A-00010215.0001001 / 26 OCT 12
Applicable to: ALL

GROUND SPOILERS

GROUND SPOILERS..... ARM

Ident.: PRO-NOR-SOP-09-A-00010216.0001001 / 26 OCT 12
Applicable to: ALL

RUDDER TRIM

RUD TRIM position indication..... CHECK ZERO

- **If the RUD TRIM position indication is not at zero:**
  RESET pb..... PRESS

  Note: *After the reset, the flight crew may observe an indication of up to 0.3 ° (L or R) in the RUD TRIM position indication.*

Ident.: PRO-NOR-SOP-09-A-00010217.0001001 / 26 OCT 12
Applicable to: ALL

FLAPS

FLAPS lever..... SET FOR TAKEOFF
FLAPS..... CHECK POSITION

Check the position of the flaps on the ECAM upper display.

- **If taxiing in icing conditions with rain, slush or snow:**
  Maintain the flaps retracted until the aircraft reaches the holding point of the takeoff runway.
  This action prevents contamination of the slats/flaps mechanism.

Ident.: PRO-NOR-SOP-09-A-00010218.0001001 / 26 OCT 12
Applicable to: ALL

PITCH TRIM

PITCH TRIM handwheel.....SET

Set takeoff CG on pitch trim handwheel.

Ident.: PRO-NOR-SOP-09-A-00010220.0001001 / 01 DEC 14
Applicable to: ALL

ECAM STATUS

STATUS REMINDER.....CHECK NOT DISPLAYED

- **If STS reminder is displayed:**

  STS pb.....PRESS

  Review the ECAM Status page.

Ident.: PRO-NOR-SOP-09-A-00015495.0001001 / 23 JUN 15
Applicable to: ALL

N/W STEER DISC MEMO

N/W STEER DISC MEMO.....CHECK NOT DISPLAYED

Ident.: PRO-NOR-SOP-09-A-00010221.0001001 / 05 NOV 15
Applicable to: ALL

GROUND CREW

CLEAR TO DISCONNECT.....ANNOUNCE

The ground crew:
- *Removes the chocks*
- *Disconnects the interphone*
- *Makes the hand signal on the left or right side.*

Ident.: PRO-NOR-SOP-09-A-00010222.0001001 / 26 OCT 12
Applicable to: ALL

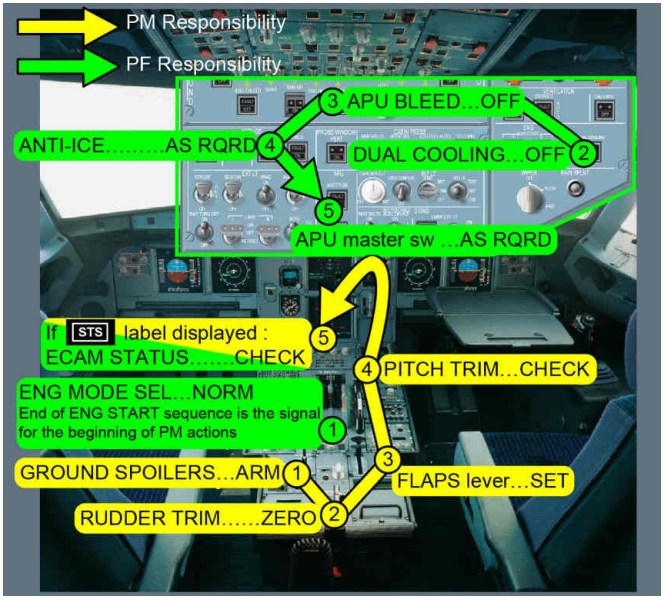
AFTER START CHECKLIST

AFTER START CHECKLIST.....COMPLETE

Ident.: PRO-NOR-SOP-09-A-00020074.0002001 / 17 MAR 17
6 **Applicable to: MSN 06772, 06829, 06904, 06946, 07083-07192, 07329-09063**

AFTER START - FLOW PATTERN

When the engines have started, the PF sets the ENG MODE selector to NORM to permit normal pack operation. At this time, the After Start Flow Pattern begins.

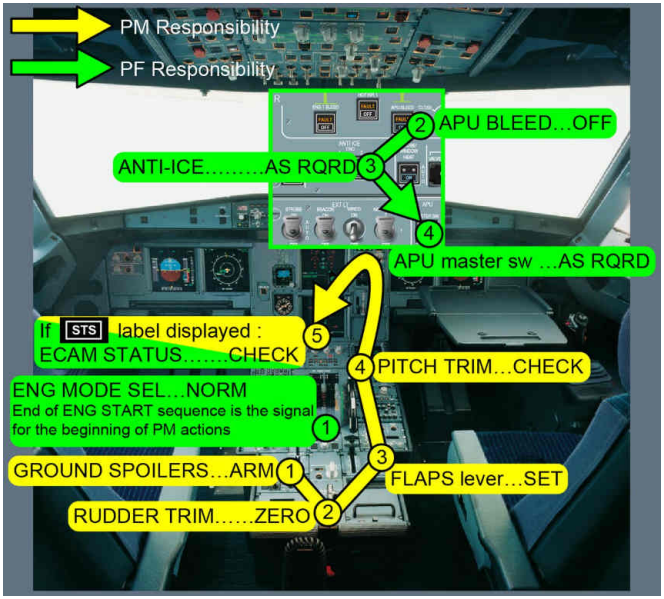


Ident.: PRO-NOR-SOP-09-A-00020074.0001001 / 17 MAR 17

7 **Applicable to: MSN 01767-06744, 06799-06819, 06849-06868, 06914, 06952-07053, 07252**

AFTER START - FLOW PATTERN

When the engines have started, the PF sets the ENG MODE selector to NORM to permit normal pack operation. At this time, the After Start Flow Pattern begins.


PM Responsibility
PF Responsibility
2 APU BLEED…OFF
ANTI-ICE……AS RQRD 3
4
APU master sw …AS RQRD
If STS label displayed :
ECAM STATUS…….CHECK 5
4 PITCH TRIM…CHECK
ENG MODE SEL…NORM
End of ENG START sequence is the signal for the beginning of PM actions
1
GROUND SPOILERS…ARM 1
3
FLAPS lever…SET
RUDDER TRIM……ZERO 2

TAXI

Ident.: PRO-NOR-SOP-10-A-00010226.0001001 / 15 MAY 13
Applicable to: ALL

TAXI CLEARANCE

TAXI clearance..... OBTAIN

Ident.: PRO-NOR-SOP-10-A-00010227.0001001 / 17 JAN 18
Applicable to: ALL

EXTERIOR LIGHTS

NOSE sw.....TAXI

- **When crossing a runway:**
  STROBE sw..... ON

RWY TURN OFF sw..... ON

L2 *The PF may ask the PM to set the exterior lights.*

Ident.: PRO-NOR-SOP-10-A-00010228.0001001 / 15 MAY 13
Applicable to: ALL

PARK BRK

PARK BRK handle.....OFF
BRAKES PRESSURE..... CHECK AT ZERO

The flight crew may observe slight residual pressure on the triple indicator for a short period of time.

Ident.: PRO-NOR-SOP-10-A-00010230.0001001 / 19 APR 17
Applicable to: ALL

THRUST LEVER

THRUST lever..... AS RQRD

The flight crew will need a little power above idle thrust to move the aircraft.

L2 For additional information on the thrust use during taxi, *Refer to FCTM/PR-NP-SOP-100 Taxi Roll and Steering*.

Ident.: PRO-NOR-SOP-10-A-00010231.0001001 / 17 MAR 17
Applicable to: MSN 01767-02405, 02482

BRAKES

CAUTION	If the aircraft was parked in wet conditions for a long time, the first brake application at low speed is less effective.

BRAKE PEDALS.....PRESS
BRAKES .....CHECK

If an arc is displayed above the brake temperature on the WHEEL SD page, set the brake fans to ON.

BRAKES PRESSURE.....CHECK AT ZERO

L2 For more information, *Refer to FCTM/PR-NP-SOP-100 Brake Check*.

Ident.: PRO-NOR-SOP-10-A-00010231.0002001 / 17 MAR 17
1 **Applicable to: MSN 02443-02457, 02584-09063**

BRAKES

CAUTION	If the aircraft was parked in wet conditions for a long time, the first brake application at low speed is less effective.

BRAKE PEDALS.....PRESS
BRAKES .....CHECK

If an arc is displayed above the brake temperature on the WHEEL SD page, set the brake fans to ON.

L2 For more information, *Refer to FCTM/PR-NP-SOP-100 Brake Check*.

Ident.: PRO-NOR-SOP-10-A-00016023.0001001 / 17 MAR 17
Applicable to: ALL

NOSEWHEEL STEERING

TILLER or RUDDER PEDALS..... USE AS RQRD

L2 *For information on the nosewheel steering limitation, Refer to FCTM/PR-NP-SOP-100 Taxi Roll and Steering.*

Ident.: PRO-NOR-SOP-10-A-00010243.0001001 / 22 MAR 17
Applicable to: ALL

FLIGHT CONTROLS

FLIGHT CONTROLS.....CHECK

L2 *For additional information on the flight controls check, Refer to FCTM/PR-NP-SOP-100 Flight Controls.*

Ident.: PRO-NOR-SOP-10-A-00010244.0001001 / 15 MAY 13
Applicable to: ALL

ATC CLEARANCE

ATC clearance.....CONFIRM

Ident.: PRO-NOR-SOP-10-A-00010248.0001001 / 05 DEC 17
Applicable to: ALL

TAKEOFF DATA/CONDITIONS

- **If takeoff conditions changed:**
  For more information, *Refer to FCTM/PR-NP-SOP-TAXI-Last Data Changes Before Takeoff*

  FINAL TAKEOFF PERF DATA..... RECOMPUTE
  The PF and the PM independently compute again the takeoff performance data.
  FMS TAKEOFF DATA..... REVISE
  The PM revises the takeoff data in the FMS.
  If the flight crew uses the optimum configuration option for the computation, they should pay specific attention to changes to the configuration of the slats/flaps at takeoff.
  FMS REVISED TAKEOFF PERF DATA.....CROSSCHECK
  The PF crosschecks the performance data displayed on the PF's EFB with the FMS PERF T.O page.
  EFB/MCDU GREEN DOT.....COMPARE
  The PF compares Green Dot speed computed by the FMGS and the Green Dot speed computed using the TAKEOFF application. A discrepancy indicates a difference in the TOW used in both systems (EFB/FMGS).
  FLAPS lever ..... AS APPROPRIATE
  Select takeoff position.

Ident.: PRO-NOR-SOP-10-A-00015301.0001001 / 17 MAR 17
Applicable to: ALL

AFS/FLIGHT INSTRUMENTS

F-PLN (SID,TRANS).....REVISE or CHECK
Carefully confirm that the ATC clearance agrees with the FMS, if NAV mode is to be used.
INITIAL CLIMB SPEED AND SPEED LIMIT..... MODIFY or CHECK
Use VERT REV at departure, or at a CLB waypoint.
CLEARED ALTITUDE ON FCU..... SET
HDG ON FCU.....IF REQUIRED, PRESET
If a heading is required by the ATC after takeoff, in case of a radar vector departure, preset the heading on the FCU. NAV mode will be disarmed.
RWY TRK mode will keep the aircraft on the runway track.
BOTH FD.....CHECK ON
PFD/ND.....CHECK

TAKEOFF BRIEFING.....CONFIRM

L2 *For additional information on the takeoff briefing confirmation, Refer to FCTM/PR-NP-SOP-100 Takeoff Briefing Confirmation.*

Ident.: TDU / PRO-NOR-SOP-10-A-00015299.0002001 / 03 AUG 17
Applicable to: MSN 02334, 03071, 03782, 04294, 04328, 04433-04438, 04488, 04506-04518, 04535, 04630, 05190, 05230-05259, 05313-05460, 05476, 05537-05577, 05683, 05727, 05829-05923, 06036-06336
Impacted DU: 00015298 Taxi - Radar

RADAR..... ON

To check the radar and the departure path, set the MULTISCAN sw to MAN. The flight crew can then set the radar to the AUTO position.
Gain must be manually set to +4, when MULTISCAN selector is set to AUTO and when flying below FL 200.

Note:
1. *If the weather is good, or not significant, in order to check that the radar is operating correctly: down tilt until displaying ground echoes*
2. *If the weather display is ambiguous or unexpected, in order to better analyze the weather situation, use manual tilt according to standard technique.*
3. *In particular below FL 200, for situations with low-level weather, weather with low reflectivity or in front of suspected active cells, the flight crew should switch to Manual mode and adjust the tilt setting downward until the weather is detected or the ground clutter appears on the upper part of the display.*
4. *In addition, the flight crew may increase the manual gain control to display lower reflectivity targets. The manual gain control can be increased in both AUTO and Manual modes to display lower levels of weather. In both cases, ground clutter may also be displayed as a result of low settings and/or increased gain.*

PREDICTIVE WINDSHEAR SYSTEM ◁ .....AUTO

Ident.: TDU / PRO-NOR-SOP-10-A-00015299.0001001 / 03 AUG 17
Applicable to: MSN 02737, 03308, 03750
Impacted DU: 00015298 Taxi - Radar

RADAR..... ON

To check the radar and the departure path, set the MULTISCAN sw to MAN. The flight crew can then set the radar to the AUTO position.
Gain must be manually set to +8, when MULTISCAN sw is set to AUTO and when flying below FL 150.

Note: 1. *MULTISCAN AUTO mode provides an efficient ground clutter rejection. During operation in good or non significant weather conditions, no weather pattern will be displayed on the ND's. In this case, the flight crew confirms correct radar operation, using temporarily MANUAL TILT.*
2. *The flight crew monitors the weather radar display in AUTO mode, and confirms any weather display that is ambiguous or unexpected using manual tilt according to standard techniques.*

PREDICTIVE WINDSHEAR SYSTEM ⋘ .....AUTO

Ident.: PRO-NOR-SOP-10-A-00015298.0005001 / 03 AUG 17
2 **Applicable to: MSN 04394-04397, 04532, 04645, 05120, 05218**

WXR/PWS (1 or 2 ⋘).....ON
RADAR CAPT DISPLAY mode sel.....ALL
RADAR F/O DISPLAY mode sel..... ALL

Ident.: PRO-NOR-SOP-10-A-00015298.0003001 / 03 AUG 17
Applicable to: MSN 02609-02626, 05158

RADAR..... ON
To check the radar and the departure path, set the TILT sw to MAN. The flight crew can then set the radar to the AUTO position.
PREDICTIVE WINDSHEAR SYSTEM ⋘ .....AUTO

Ident.: PRO-NOR-SOP-10-A-00015298.0002001 / 03 AUG 17
3 **Applicable to: MSN 02334, 02737, 03071, 03308, 03750-03782, 04294, 04328, 04433-04438, 04488, 04506-04518, 04535, 04630, 05190, 05230-05259, 05313-05460, 05476, 05537-05577, 05683, 05727, 05829-05923, 06036-06336**
Impacted by TDU: 00015299 Taxi - Radar

RADAR..... ON
To check the radar and the departure path, set the MULTISCAN sw to MAN. The flight crew can then set the radar to the AUTO position.
PREDICTIVE WINDSHEAR SYSTEM ⋘ .....AUTO

Ident.: PRO-NOR-SOP-10-A-00015298.0002001 / 03 AUG 17
4 **Applicable to: MSN 01957-02097, 02121, 02138, 02584, 02649, 03264, 03330-03618, 03863-04216, 04312, 04384, 04399, 04481, 04552-04614, 04637, 04752-05094, 05155, 05262-05298, 05473, 05507, 05641-05676, 05712, 05744-05807, 05952-06010, 06720-09063**

RADAR..... ON
To check the radar and the departure path, set the MULTISCAN sw to MAN. The flight crew can then set the radar to the AUTO position.
PREDICTIVE WINDSHEAR SYSTEM ⋘ .....AUTO

Ident.: PRO-NOR-SOP-10-A-00015298.0001001 / 03 AUG 17
Applicable to: MSN 01767-01920, 02108, 02135, 02139-02275, 02359-02482, 02670-02712, 02804-02914, 03138, 04314, 04393, 04491

RADAR..... ON
PREDICTIVE WINDSHEAR SYSTEM ◁❄ .....AUTO

Ident.: PRO-NOR-SOP-10-A-00010252.0001001 / 20 JAN 15
Applicable to: ALL

ATC

ATC code/mode.....CONFIRM/SET FOR TAKEOFF

Ident.: PRO-NOR-SOP-10-A-00010254.0001001 / 03 AUG 17
Applicable to: ALL

TERR ON ND

TERR ON ND ◁❄ .....AS RQRD

Consider selecting the radar display on the PF side, and TERR ON ND on the PM side only.

Ident.: PRO-NOR-SOP-10-A-00010264.0001001 / 15 MAY 13
Applicable to: ALL

AUTO BRK

AUTO BRK MAX pb-sw..... ON

Ident.: PRO-NOR-SOP-10-A-00010268.0001001 / 04 MAR 14
Applicable to: ALL

FINAL CHECK

T.O CONFIG pb.....TEST

Check that ECAM upper display shows "T.O CONFIG NORMAL".

T.O MEMO.....CHECK NO BLUE
CABIN REPORT..... RECEIVE

Obtain cabin report from the purser, as a minimum : "CABIN SECURED FOR TAKEOFF"

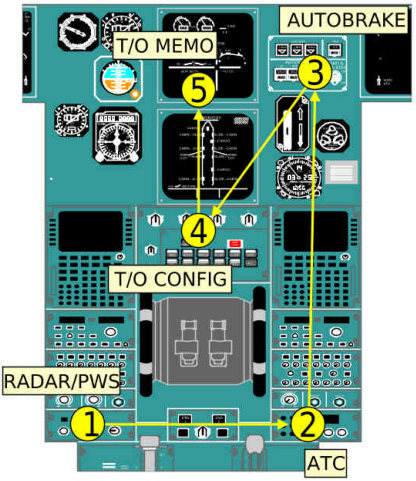
Ident.: PRO-NOR-SOP-10-A-00010271.0001001 / 15 MAY 13
Applicable to: ALL

BEFORE TAKEOFF CHECKLIST

BEFORE TAKEOFF CHECKLIST down to the line.....COMPLETE

Ident.: PRO-NOR-SOP-10-A-00020075.0001001 / 17 MAR 17
Applicable to: ALL

TAXI FLOW PATTERN



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BEFORE TAKEOFF

Ident.: PRO-NOR-SOP-11-A-00010396.0001001 / 05 MAR 18
Applicable to: ALL

BRAKE FANS

- **If the brake fans are running:**
  BRAKE TEMP.....CHECK
  - *If brake temperature is above 150 °C, delay takeoff.*
  - *If brake temperature is below 150 °C, select brake fans off.*

Ident.: PRO-NOR-SOP-11-A-00010388.0001001 / 05 MAR 18
Applicable to: ALL

LINE-UP CLEARANCE

LINE-UP CLEARANCE.....OBTAIN

Ident.: TDU / PRO-NOR-SOP-11-A-00014740.0001001 / 05 MAR 18
1 **Applicable to: MSN 05437-09063**
Impacted DU: 00010392 Before Takeoff - Exterior Lights

EXTERIOR LIGHTS

STROBE sw.....ON

Set the STROBE sw to ON when entering the runway.

Note: The flight crew can switch off the strobe lights if the lights cause any visual trouble during the flight.

Ident.: PRO-NOR-SOP-11-A-00010392.0002001 / 05 MAR 18
Applicable to: MSN 05437-09063
Impacted by TDU: 00014740 Before Takeoff - Exterior Lights

EXTERIOR LIGHTS

STROBE sw.....ON

Set the STROBE sw to ON when entering the runway.

Ident.: PRO-NOR-SOP-11-A-00010392.0002001 / 05 MAR 18
Applicable to: MSN 01767-05411

EXTERIOR LIGHTS

STROBE sw.....ON

Set the STROBE sw to ON when entering the runway.

Ident.: PRO-NOR-SOP-11-A-00010389.0001001 / 04 MAR 14
Applicable to: ALL

TCAS

TCAS ◁ Mode selector.....TA or TA/RA

L2 *The flight crew should use the TA/RA mode as the default mode of the TCAS.*
The flight crew may use the TA ONLY mode in specific airports, and for specific procedures (identified by Operators) that may provide resolution advisories that are neither wanted nor appropriate (e.g. closely-spaced parallel or converging runways).

Ident.: PRO-NOR-SOP-11-A-00010390.0001001 / 04 MAR 14
Applicable to: ALL

APPROACH PATH CLEARED OF TRAFFIC

APPROACH PATH.....CLEARED OF TRAFFIC

Check that the approach path is clear of traffic, visually and using TCAS display on ND.

Ident.: PRO-NOR-SOP-11-A-00010399.0001001 / 16 MAR 11
Applicable to: ALL

CABIN CREW.....ADVISE

Advise the cabin crew that takeoff is imminent.

Ident.: PRO-NOR-SOP-11-A-00010397.0002001 / 16 MAR 11
2 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

ENG MODE selector.....AS RQRD

Select IGN START, if heavy rain or severe turbulence is expected after takeoff.

Note: Continuous ignition is automatically selected, if the ENG 1 ANTI ICE pb and ENG 2 ANTI ICE pb are ON.

Ident.: PRO-NOR-SOP-11-A-00010397.0004001 / 16 MAR 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

ENG MODE selector.....AS RQRD

Select IGN, if:
- *The runway has standing water, or*
- *Heavy rain is falling, or*
- *Heavy rain or severe turbulence is expected after takeoff.*

Ident.: PRO-NOR-SOP-11-A-00010394.0001001 / 05 DEC 17
Applicable to: ALL

SLIDING TABLE/EFB

SLIDING TABLE.....STOW
ALL EFB transmitting mode.....AS RQRD

In accordance with the Operator's policy or, as required by operational regulations.

ALL EFB (with no mounted equipment)..... STOW

In flight, both flight crewmembers should not use at the same time Flysmart with Airbus applications.

Ident.: PRO-NOR-SOP-11-A-00010393.0001001 / 21 MAR 17
Applicable to: ALL

TAKEOFF RUNWAY.....CONFIRM

Confirm that the line up is performed on the intended runway. Useful aids are:

- *The runway markings,*
- *The runway lights,*
  Be careful that in low visibility, edge lights could be mixed up with the center line lights.
- *The ILS signal,*
  If the runway is ILS equipped, the flight crew can press the ILS pb (or LS pb): The LOC deviation should be centered after line up.
- *The runway symbol on the ND,*
- *The Runway Awareness and Advisory System* .

Ident.: PRO-NOR-SOP-11-A-00010391.0001001 / 05 AUG 10
Applicable to: ALL

PACK 1 and 2.....AS RQRD

Consider selecting packs OFF, or APU bleed ON.
This will improve performance when using TOGA thrust.
In case of a FLEX takeoff, selecting packs OFF or APU bleed ON will reduce takeoff EGT, and thus reduce maintenance costs.
The use of flex thrust may reduce maintenance costs. The effect is particularly significant with the first degrees of FLEX.
Use of APU bleed is not authorized, if wing anti-ice is to be used.

Ident.: PRO-NOR-SOP-11-A-00010400.0001001 / 16 MAR 11
Applicable to: ALL

BEFORE TAKEOFF CHECKLIST below the line..... COMPLETE

Read the checklist below the line, when line-up clearance is obtained.

Intentionally left blank

TAKEOFF

Ident.: PRO-NOR-SOP-12-A-00022130.0001001 / 05 MAR 18
Applicable to: ALL

TAKEOFF CLEARANCE

TAKEOFF CLEARANCE..... OBTAIN

Ident.: PRO-NOR-SOP-12-A-00022129.0001001 / 05 MAR 18
Applicable to: ALL

EXTERIOR LIGHTS

NOSE sw.....T.O
RWY TURN OFF sw.....ON
LAND lights sw.....ON

Ident.: PRO-NOR-SOP-12-A-00011560.0032001 / 05 MAR 18
1 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

THRUST SETTING

The below procedure is the standard takeoff procedure. However, rolling takeoff is permitted.

TAKEOFF..... ANNOUNCE
THRUST LEVERS.....50 % N1 (1.05 EPR)

- **If the crosswind is at or below 20 kt and there is no tailwind:**

  To counter the nose-up effect of setting engine takeoff thrust, apply half forward sidestick until the airspeed reaches 80 kt. Release the sidestick gradually to reach neutral at 100 kt.

  BRAKES.....RELEASE
  THRUST LEVERS..... FLX or TOGA

  Once the thrust levers are set to FLX or TOGA detent, the Captain keeps his hand on the thrust levers until the aircraft reaches V1.

- **In case of tailwind, or if crosswind is greater than 20 kt:**

  The PF applies full forward sidestick.

  BRAKES.....RELEASE

THRUST LEVERS..... FLX or TOGA

- *The PF increases thrust progressively to reach takeoff thrust by 40 kt ground speed, while maintaining sidestick full forward up to 80 kt. Release the sidestick gradually to reach neutral at 100 kt.*
- *Once the thrust levers are set to FLX or TOGA detent, the Captain keeps his hand on the thrust levers until the aircraft reaches V1.*

Note: 1. ENG SD page replaces WHEEL SD page on the ECAM lower display
2. The FADEC includes a keep-out zone, which is designed to avoid steady state operation inside a N1 range between 60 % and 74 % due to fan flutter phenomenon. This can result in discontinuous EPR increase during thrust setting (Refer to DSC-70-20 Functions).

DIRECTIONAL CONTROL..... USE RUDDER

At 130 kt (wheel speed), the connection between nosewheel steering and the rudder pedals is removed. Therefore, in strong crosswinds, more rudder input will be required at this point to prevent the aircraft from turning into the wind.

CHRONO.....START
PFD/ND..... MONITOR

1. Check the FMA on the PFD. The following modes are displayed: MAN TOGA (or MAN FLX xx) /SRS/RWY (or blank) / A/THR (in blue).

Note: If an ILS that corresponds to the departure runway is tuned, RWY mode appears. If not, no lateral mode appears until the aircraft lifts off.

2. Check the FMS position on the ND (aircraft on runway centerline).

Note: If GPS PRIMARY is not available, check the FMS position update.

FMA..... ANNOUNCE

Ident.: PRO-NOR-SOP-12-A-00011560.0006001 / 05 MAR 18
2 **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

THRUST SETTING

The below procedure is the standard takeoff procedure. However, rolling takeoff is permitted.

TAKEOFF..... ANNOUNCE
THRUST LEVERS.....50 % N1 (1.05 EPR)

- **If the crosswind is at or below 20 kt and there is no tailwind:**

  To counter the nose-up effect of setting engine takeoff thrust, apply half forward sidestick until the airspeed reaches 80 kt. Release the sidestick gradually to reach neutral at 100 kt.

  BRAKES.....RELEASE

THRUST LEVERS..... FLX or TOGA

Once the thrust levers are set to FLX or TOGA detent, the Captain keeps his hand on the thrust levers until the aircraft reaches V1.

- **In case of tailwind, or if crosswind is greater than 20 kt:**

The PF applies full forward sidestick.

BRAKES.....RELEASE
THRUST LEVERS..... FLX or TOGA

- *The PF rapidly increases thrust to about 70 % N1 (1.15 EPR) then progressively to reach takeoff thrust by 40 kt ground speed, while maintaining sidestick full forward up to 80 kt. Release the sidestick gradually to reach neutral at 100 kt.*
- *Once the thrust levers are set to FLX or TOGA detent, the Captain keeps his hand on the thrust levers until the aircraft reaches V1.*

Note: ENG SD page replaces WHEEL SD page on the ECAM lower display.

DIRECTIONAL CONTROL..... USE RUDDER

At 130 kt (wheel speed), the connection between nosewheel steering and the rudder pedals is removed. Therefore, in strong crosswinds, more rudder input will be required at this point to prevent the aircraft from turning into the wind.

CHRONO.....START
PFD/ND..... MONITOR

1. Check the FMA on the PFD. The following modes are displayed: MAN TOGA (or MAN FLX xx) /SRS/RWY (or blank) / A/THR (in blue).

Note: If an ILS that corresponds to the departure runway is tuned, RWY mode appears. If not, no lateral mode appears until the aircraft lifts off.

2. Check the FMS position on the ND (aircraft on runway centerline).

Note: If GPS PRIMARY is not available, check the FMS position update.

FMA..... ANNOUNCE

Ident.: PRO-NOR-SOP-12-A-00011561.0001001 / 04 MAR 14

3 **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

BELOW 80 KT

TAKEOFF N1..... CHECK

Check that the actual N1 of the individual engines has reached the N1 rating limit, before the aircraft reaches 80 kt. Check EGT.

THRUST SET.....ANNOUNCE

PFD and ENG indications.....MONITOR

Scan airspeed, N1, and EGT throughout the takeoff.

Ident.: PRO-NOR-SOP-12-A-00011561.0002001 / 04 MAR 14

4 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

BELOW 80 KT

TAKEOFF EPR.....CHECK

Check that the actual EPR of the individual engines has reached the EPR rating limit, before the aircraft reaches 80 kt. Check EGT.

THRUST SET.....ANNOUNCE
PFD and ENG indications.....MONITOR

Scan airspeed, EPR, and EGT throughout the takeoff.

Ident.: PRO-NOR-SOP-12-A-00011562.0001001 / 13 AUG 10
Applicable to: ALL

REACHING 100 KT

ONE HUNDRED KNOTS.....ANNOUNCE

- *The PF crosschecks and confirms the speed indicated on the PFD*
- *Below 100 kt the Captain may decide to abort the takeoff, depending on the circumstances*
- *Above 100 kt, rejecting the takeoff is a more serious matter.*

Ident.: PRO-NOR-SOP-12-A-00011563.0001001 / 13 AUG 10
Applicable to: ALL

AT V1

V1.....ANNOUNCE

Ident.: PRO-NOR-SOP-12-A-00011564.0001001 / 13 AUG 10
Applicable to: ALL

AT VR

ROTATION .....ORDER
ROTATION.....PERFORM

- *At VR, initiate the rotation to achieve a continuous rotation with a rate of about 3 °/s, towards a pitch attitude 15 ° (12.5 °, one engine is failed)*
- *Minimize the lateral inputs on ground and during the rotation, to avoid spoiler extension*
- *In strong crosswind conditions, small lateral stick inputs may be used, if necessary, to aim at maintaining wings level*
- *After lift-off, follow the SRS pitch command bar.*

CAUTION	If a tailstrike occurs, avoid flying at an altitude requiring a pressurized cabin, and return to the originating airport for damage assessment.

Ident.: PRO-NOR-SOP-12-A-00011565.0001001 / 04 MAR 14
Applicable to: ALL

WHEN POSITIVE CLIMB

POSITIVE CLIMB.....ANNOUNCE
L/G UP..... ORDER
L/G..... SELECT UP
AP.....AS RQRD

Above 100 ft AGL, AP 1 or 2 may be engaged.

Ident.: PRO-NOR-SOP-12-A-00011566.0002001 / 28 JUL 15
Applicable to: ALL

AT THRUST REDUCTION ALTITUDE

THRUST LEVERS.....CL

Move the thrust levers to the CL detent, when the flashing LVR CLB prompt appears on the FMA. A/THR is now active.
In manual flight, the pilot must anticipate the change in pitch attitude in order to prevent the speed from decaying when thrust is reduced.

PACK 1 and 2 (if applicable)..... ON

Select PACK 1 on after CLB thrust reduction.
Select PACK 2, at least 10 s after PACK 1 is selected on, for passenger comfort.

Note: *1. Selecting pack on before reducing takeoff thrust would result in an EGT increase.*
2. If packs are not switched on after the takeoff phase, an ECAM caution will be triggered.

Ident.: PRO-NOR-SOP-12-A-00011567.0002001 / 04 MAR 14
Applicable to: ALL

AT ACCELERATION ALTITUDE

Check the target speed change from V2 + 10 to the first CLB speed (either preselected or managed).

Note: *1. When THR RED and ACC ALT are equal, the FMA will change from MAN FLX/SRS/NAV to THR CLB/CLB/NAV.*
2. If FCU-selected altitude is equal to or close to the acceleration altitude, then the FMA will switch from SRS to ALT.*

Ident.: PRO-NOR-SOP-12-A-00011568.0001001 / 23 JUN 15

5 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

ABOVE ACCELERATION ALTITUDE (OR ONCE IN CLIMB PHASE)

The following procedure ensures that the aircraft is effectively accelerating toward climb speed.

- **At F speed:**

  Note: For takeoff in CONF 1 + F, "F" speed does not appear.

  FLAPS 1.....ORDER
  FLAPS 1.....SELECT

- **At S speed:**

  FLAPS 0.....ORDER
  FLAPS 0.....SELECT
  GND SPLRS.....DISARM
  NOSE sw.....OFF
  RWY TURN OFF sw.....OFF
  OTHER EXTERIOR LIGHTS.....AS RQRD

  The flight crew can maintain the LAND LIGHTS selector set to ON, according to airline policy or regulatory recommendations.

Note: The CRUISE SD page replaces the ENG SD page.

Ident.: PRO-NOR-SOP-12-A-00011568.0033001 / 31 AUG 17

6 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

ABOVE ACCELERATION ALTITUDE (OR ONCE IN CLIMB PHASE)

The following procedure ensures that the aircraft is effectively accelerating toward climb speed.

- **At F speed:**

  Note: For takeoff in CONF 1 + F, "F" speed does not appear.

  FLAPS 1.....ORDER
  FLAPS 1.....SELECT

- **At S speed:**

  Note: At heavy takeoff weight, the S speed on A321 may be higher than the MAX speed of configuration 1 + F (225 kt). Continue to accelerate and on reaching 210 kt the automatic flap retraction will occur and the MAX speed will move to 238 kt.

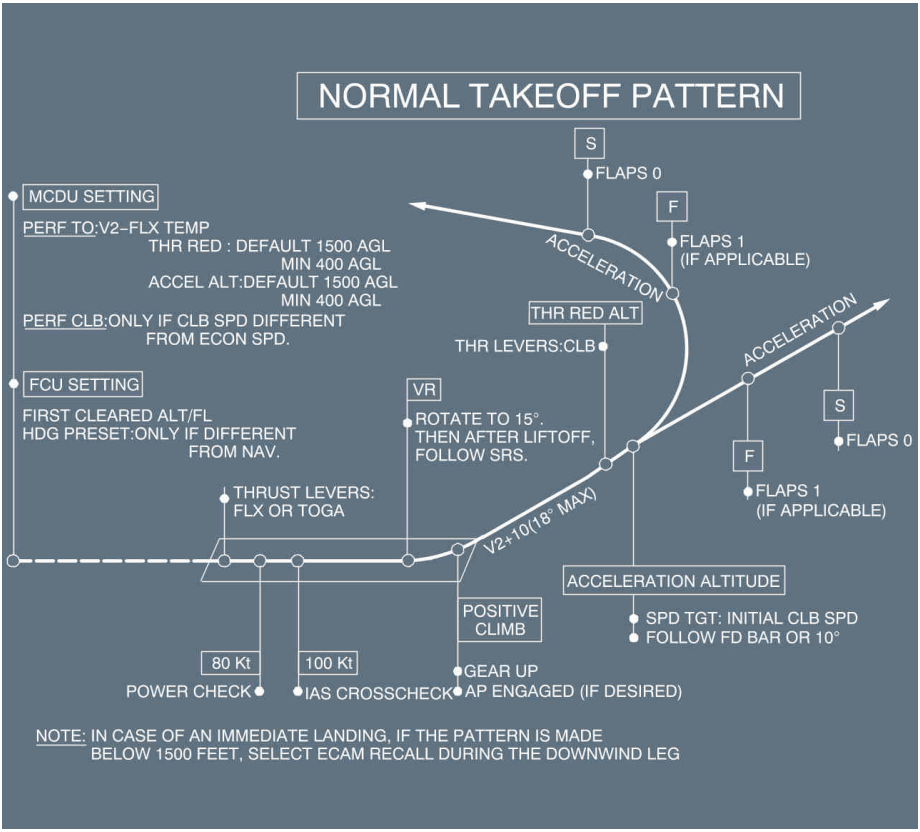
  FLAPS 0.....ORDER
  FLAPS 0.....SELECT
  GND SPLRS.....DISARM
  NOSE sw.....OFF

RWY TURN OFF sw.....OFF
OTHER EXTERIOR LIGHTS.....AS RQRD

The flight crew can maintain the LAND LIGHTS selector set to ON, according to airline policy or regulatory recommendations.

Note: The CRUISE SD page replaces the ENG SD page.

Ident.: PRO-NOR-SOP-12-A-00011570.0001001 / 18 DEC 12
Applicable to: ALL



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AFTER TAKEOFF

Ident.: PRO-NOR-SOP-13-A-00010157.0001001 / 21 MAR 17
Applicable to: ALL

APU BLEED pb.....AS RQRD

If the APU has been used to supply air conditioning during takeoff, set the APU BLEED pb to OFF. For use of the APU BLEED, Refer to LIM-APU Operational Envelope.

APU MASTER SW pb.....AS RQRD

Ident.: PRO-NOR-SOP-13-A-00010158.0001001 / 05 AUG 10
[1] **Applicable to: MSN 01767-06336**

ENG MODE selector.....AS RQRD

Select IGN, if severe turbulence or heavy rain is encountered.

Ident.: PRO-NOR-SOP-13-A-00010159.0001001 / 05 AUG 10
Applicable to: ALL

TCAS ◁ Mode selector .....TA/RA

Select TA/RA, if the takeoff has been performed with TA only.

Ident.: PRO-NOR-SOP-13-A-00010160.0001001 / 12 SEP 17
[2] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

ENG ANTI-ICE pb-sw.....AS RQRD

Engine anti-ice must be set to ON when icing conditions (Refer to LIM-ICE_RAIN Definition of Icing Conditions) exist or are anticipated, except during climb and cruise when the SAT is below -40 °C (-40 °F).

Note: *With ENG ANTI ICE ON, the FADEC automatically selects continuous ignition. The IGNITION memo appears on ECAM.*

WING ANTI-ICE pb-sw.....AS RQRD

When icing conditions are encountered:

- *The flight crew may turn on the wing anti-ice to prevent ice accretion on the wing leading edge.*
- *The flight crew must turn on the wing anti-ice if there is evidence of ice accretion, such as ice on the visual indicator, or on the wipers, or with the SEVERE ICE DETECTED ◁ alert. This is to remove any ice accumulation from the wing leading edge.*

Ident.: PRO-NOR-SOP-13-A-00010160.0002001 / 12 SEP 17

3 **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

ENG ANTI-ICE pb-sw..... AS RQRD

Engine anti-ice must be set to ON when icing conditions (Refer to LIM-ICE_RAIN Definition of Icing Conditions) exist or are anticipated, except during climb and cruise when the SAT is below -40 °C (-40 °F).

WING ANTI-ICE pb-sw..... AS RQRD

When icing conditions are encountered:

- *The flight crew may turn on the wing anti-ice to prevent ice accretion on the wing leading edge.*
- *The flight crew must turn on the wing anti-ice if there is evidence of ice accretion, such as ice on the visual indicator, or on the wipers, or with the SEVERE ICE DETECTED alert. This is to remove any ice accumulation from the wing leading edge.*

Ident.: PRO-NOR-SOP-13-A-00010161.0001001 / 05 AUG 10

Applicable to: ALL

AFTER TAKEOFF/CLIMB CHECKLIST down to the line..... COMPLETE

CLIMB

Ident.: PRO-NOR-SOP-14-A-00010245.0002001 / 05 DEC 17
Applicable to: MSN 01767-03071, 03264-04384, 04399-05365, 06720-09063
Impacted by TDU: 00013057 Climb - Initial Climb

Normal vertical mode is CLB or OP CLB with managed speed active.

PF MCDU.....PERF CLB

- *PF MCDU should be showing the PERF CLB page (allowing PF to monitor when the aircraft will reach the FCU selected altitude) but he may select other pages such as F-PLN page as may be tactically necessary.*
- *The MCDU PROG page displays OPT FL and MAX REC FL. It is worth noting that this OPT FL is a function of the cost index (CI).*
- *The displayed MAX REC FL gives the aircraft at least a 0.3 g buffet margin. The pilot may enter a cruise flight level above this level into the MCDU and the FMGS will accept it, provided that it does not exceed the level at which the margin is reduced to 0.2 g.*

PM MCDU.....F-PLN

PM MCDU should be showing the F-PLN page (allowing him to enter any ATC long-term revisions to the lateral or vertical flight plan).

CLIMB SPEED MODIFICATIONS

- **If ATC, turbulence or operational considerations lead to a speed change:**
  Select the new speed with FCU SPD knob and pull.

  Speed target is now "selected".

  To return to managed speed mode, push FCU SPD knob.

  The speed target is now "managed".

  Note: The best speed (and rate of climb) for long-term situations lies between green dot speed and ECON speed. At high altitude, acceleration from green dot to ECON speed can take a long time.

EXPEDITE CLIMB

- **If ATC requires a rapid climb through a particular level:**
  Push the EXP pb on the FCU.

  The target speed is now green dot speed. FMA :THR CLB /EXP CLB/NAV

Note: Use EXP ◁ only for short-term tactical situations. For the best overall economy fly at ECON IAS.

To return to ECON CLB speed:
Push ALT knob.
Check FMA: THR CLB/CLB/NAV

BAROMETRIC REFERENCE..... SET STD/CROSSCHECK

At transition altitude (baro setting flashing on PFD) set STD on the EFIS control panel and standby altimeter.
Cross-check baro settings and altitude readings.

CRZ FL..... SET AS RQRD

- *If ATC clears the aircraft to its intended CRZ FL or above, there is no need to modify the CRZ FL entered in the INIT A page during cockpit preparation. The MCDU will automatically take into account a higher CRZ FL selected with the FCU ALT knob.*
- *If ATC limits CRZ FL to a lower level than the one entered in the INIT A page (or present on the PROG page) the flight crew must insert this lower CRZ FL in the PROG page.*
  Otherwise there is no transition into CRZ phase : the managed speed targets and Mach are not modified, and SOFT ALT mode is not available. In that case FMA will display: MACH/ALT/NAV instead of MACH/ALT CRZ/NAV.

Ident.: PRO-NOR-SOP-14-A-00010245.0002001 / 05 DEC 17
Applicable to: MSN 03138, 04393-04397, 05411-06336

Normal vertical mode is CLB or OP CLB with managed speed active.

PF MCDU.....PERF CLB

- *PF MCDU should be showing the PERF CLB page (allowing PF to monitor when the aircraft will reach the FCU selected altitude) but he may select other pages such as F-PLN page as may be tactically necessary.*
- *The MCDU PROG page displays OPT FL and MAX REC FL. It is worth noting that this OPT FL is a function of the cost index (CI).*
- *The displayed MAX REC FL gives the aircraft at least a 0.3 g buffet margin. The pilot may enter a cruise flight level above this level into the MCDU and the FMGS will accept it, provided that it does not exceed the level at which the margin is reduced to 0.2 g.*

PM MCDU..... F-PLN

PM MCDU should be showing the F-PLN page (allowing him to enter any ATC long-term revisions to the lateral or vertical flight plan).

CLIMB SPEED MODIFICATIONS

- **If ATC, turbulence or operational considerations lead to a speed change:**
  Select the new speed with FCU SPD knob and pull.

  Speed target is now "selected".

  To return to managed speed mode, push FCU SPD knob.

  The speed target is now "managed".

  Note: *The best speed (and rate of climb) for long-term situations lies between green dot speed and ECON speed. At high altitude, acceleration from green dot to ECON speed can take a long time.*

EXPEDITE CLIMB

- **If ATC requires a rapid climb through a particular level:**
  Push the EXP pb on the FCU.

  The target speed is now green dot speed. FMA :THR CLB /EXP CLB/NAV

  Note: *Use EXP only for short-term tactical situations. For the best overall economy fly at ECON IAS.*

  To return to ECON CLB speed:
  Push ALT knob.
  Check FMA: THR CLB/CLB/NAV

BAROMETRIC REFERENCE..... SET STD/CROSSCHECK

At transition altitude (baro setting flashing on PFD) set STD on the EFIS control panel and standby altimeter.
Cross-check baro settings and altitude readings.

CRZ FL..... SET AS RQRD

- *If ATC clears the aircraft to its intended CRZ FL or above, there is no need to modify the CRZ FL entered in the INIT A page during cockpit preparation. The MCDU will automatically take into account a higher CRZ FL selected with the FCU ALT knob.*
- *If ATC limits CRZ FL to a lower level than the one entered in the INIT A page (or present on the PROG page) the flight crew must insert this lower CRZ FL in the PROG page.*
  Otherwise there is no transition into CRZ phase : the managed speed targets and Mach are not modified, and SOFT ALT mode is not available. In that case FMA will display: MACH/ALT/NAV instead of MACH/ALT CRZ/NAV.

Ident.: TDU / PRO-NOR-SOP-14-A-00013057.0006001 / 05 DEC 17
1 **Applicable to: MSN 01767-03071, 03264-04384, 04399-05365, 06720-09063**
Impacted DU: 00010245 Climb - Initial Climb

Normal vertical mode is CLB or OP CLB with managed speed active.
PF MCDU.....PERF CLB

- *PF MCDU should be showing the PERF CLB page (allowing PF to monitor when the aircraft will reach the FCU selected altitude) but he may select other pages such as F-PLN page as may be tactically necessary.*
- *The MCDU PROG page displays OPT FL and MAX REC FL. It is worth noting that this OPT FL is a function of the cost index (CI).*
- *The displayed MAX REC FL gives the aircraft at least a 0.3 g buffet margin. The pilot may enter a cruise flight level above this level into the MCDU and the FMGS will accept it, provided that it does not exceed the level at which the margin is reduced to 0.2 g.*

PM MCDU..... F-PLN

PM MCDU should be showing the F-PLN page (allowing him to enter any ATC long-term revisions to the lateral or vertical flight plan).

CLIMB SPEED MODIFICATIONS

- **If ATC, turbulence or operational considerations lead to a speed change:**
  Select the new speed with FCU SPD knob and pull.

  Speed target is now “selected”.

  To return to managed speed mode, push FCU SPD knob.

  The speed target is now “managed”.

  Note: *The best speed (and rate of climb) for long-term situations lies between green dot speed and ECON speed. At high altitude, acceleration from green dot to ECON speed can take a long time.*

EXPEDITE CLIMB ⩤

- **If ATC requires a rapid climb through a particular level:**
  Push the EXP pb on the FCU.

  The target speed is now green dot speed. FMA :THR CLB /EXP CLB/NAV

  Note: *Use EXP ⩤ only for short-term tactical situations. For the best overall economy fly at ECON IAS.*

  To return to ECON CLB speed:
  Push ALT knob.
  Check FMA: THR CLB/CLB/NAV

BAROMETRIC REFERENCE..... SET STD/CROSSCHECK

At transition altitude (baro setting flashing on PFD) set STD on the EFIS control panel and standby altimeter.
Cross-check baro settings and altitude readings.

Note: When STD is set on the EFIS control panel, the transponder does not transmit to the Air Traffic Control (ATC) the standard barometric reference but the last QNH or QFE previously selected. The transmitted aircraft altitude is not affected. Only the FCU selected altitude, if used by the ATC, may be misinterpreted.
Upon ATC notification of an incorrect barometric reference value, the flight crew can select manually a barometric reference of 1 013 hPa and set again STD on the EFIS control panel.

CRZ FL..... SET AS RQRD

- *If ATC clears the aircraft to its intended CRZ FL or above, there is no need to modify the CRZ FL entered in the INIT A page during cockpit preparation. The MCDU will automatically take into account a higher CRZ FL selected with the FCU ALT knob.*
- *If ATC limits CRZ FL to a lower level than the one entered in the INIT A page (or present on the PROG page) the flight crew must insert this lower CRZ FL in the PROG page.*
  Otherwise there is no transition into CRZ phase : the managed speed targets and Mach are not modified, and SOFT ALT mode is not available. In that case FMA will display: MACH/ALT/NAV instead of MACH/ALT CRZ/NAV.

Ident.: PRO-NOR-SOP-14-A-00010257.0001001 / 05 AUG 10
Applicable to: ALL

AFTER TAKEOFF/CLIMB CHECKLIST below the line..... COMPLETE

Ident.: PRO-NOR-SOP-14-A-00010258.0001001 / 12 SEP 17
Applicable to: ALL

ENG ANTI-ICE pb-sw..... AS RQRD

Engine anti-ice must be set to ON when icing conditions (Refer to LIM-ICE_RAIN Definition of Icing Conditions) exist or are anticipated, except during climb and cruise when the SAT is below - 40 °C (-40 °F).

Ident.: TDU / PRO-NOR-SOP-14-A-00013047.0003001 / 03 MAR 14
Applicable to: MSN 02334, 03071, 03782, 04294, 04328, 04433-04438, 04488, 04506-04518, 04535, 04630, 05190, 05230-05259, 05313-05460, 05476, 05537-05577, 05683, 05727, 05829-05923, 06036-06336
Impacted DU: 00010259 Climb - Radar

RADAR..... AS APPROPRIATE

Gain must be manually set to +4, when MULTISCAN selector is set to AUTO and when flying below FL 200.

Note:
1. *If the weather is good, or not significant, in order to check that the radar is operating correctly: down tilt until displaying ground echoes.*
2. *If the weather display is ambiguous or unexpected, in order to better analyze the weather situation, use manual tilt according to standard technique.*
3. *In particular below FL 200, for situations with low-level weather, weather with low reflectivity or in front of suspected active cells, the flight crew should switch to Manual mode and adjust the tilt setting downward until the weather is detected or the ground clutter appears on the upper part of the display.*
4. *In addition, the flight crew may increase the manual gain control to display lower reflectivity targets. The manual gain control can be increased in both AUTO and Manual modes to display lower levels of weather. In both cases, ground clutter may also be displayed as a result of low settings and/or increased gain.*

Ident.: TDU / PRO-NOR-SOP-14-A-00013047.0001001 / 23 JUN 15
Applicable to: MSN 02737, 03308, 03750
Impacted DU: 00010259 Climb - Radar

RADAR..... AS APPROPRIATE

Gain must be manually set to +8 when, MULTISCAN sw is set to AUTO and when flying below FL 150.

Note:
1. *MULTISCAN AUTO mode provides an efficient ground clutter rejection. During operation in good or non significant weather conditions, no weather pattern will be displayed on the ND's. In this case, the flight crew confirms correct radar operation, using temporarily MANUAL TILT.*
2. *The flight crew monitors the weather radar display in AUTO mode, and confirms any weather display that is ambiguous or unexpected using manual tilt according to standard techniques.*

Ident.: PRO-NOR-SOP-14-A-00010259.0001001 / 16 MAR 11
Applicable to: MSN 01767-01920, 02108, 02135, 02139-02275, 02359-02482, 02670-02712, 02804-02914, 03138, 04314, 04393, 04491

RADAR TILT..... ADJUST

Ident.: PRO-NOR-SOP-14-A-00010259.0002001 / 16 MAR 11
2 **Applicable to: MSN 02334, 02737, 03071, 03308, 03750-03782, 04294, 04328, 04433-04438, 04488, 04506-04518, 04535, 04630, 05190, 05230-05259, 05313-05460, 05476, 05537-05577, 05683, 05727, 05829-05923, 06036-06336**
Impacted by TDU: 00013047 Climb - Radar

RADAR..... AS APPROPRIATE

Ident.: PRO-NOR-SOP-14-A-00010259.0002001 / 16 MAR 11
3 **Applicable to: MSN 01957-02097, 02121, 02138, 02584-02649, 03264, 03330-03618, 03863-04216, 04312, 04384, 04394-04399, 04481, 04532, 04552-04614, 04637-05158, 05218, 05262-05298, 05473, 05507, 05641-05676, 05712, 05744-05807, 05952-06010, 06720-09063**

RADAR..... AS APPROPRIATE

Ident.: PRO-NOR-SOP-14-A-00010260.0001001 / 04 MAR 14
Applicable to: ALL

AT 10.000FT

LAND LIGHTS selector.....RETRACT
SEAT BELTS sw.....AS RQRD
EFIS option.....AS RQRD

Select CSTR on one side, for grid MORA (if available), and ARPT on the other side.

ECAM MEMO..... REVIEW
NAVAIDS.....CLEAR

Clear manually tuned VORs from MCDU RAD NAV page.

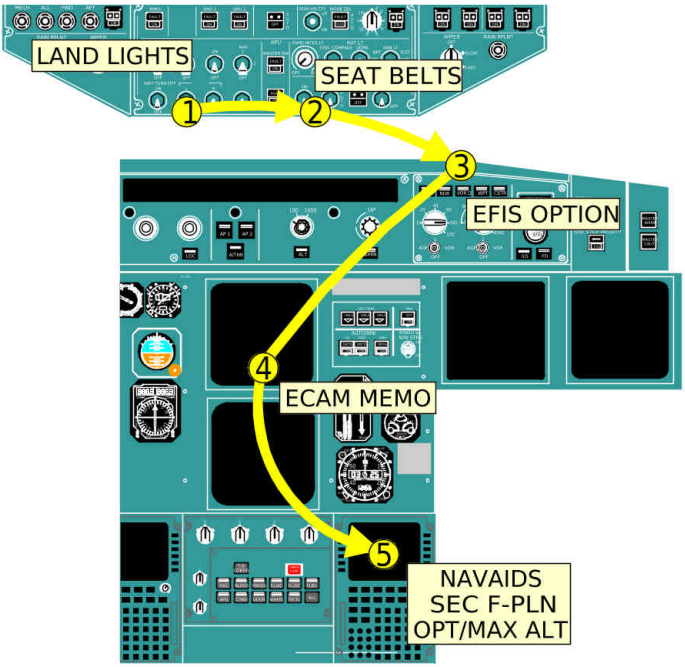
SEC F-PLN page..... AS RQRD

Recopy the active flight plan in the secondary if an immediate return flight plan has been constructed previously.

OPT/MAX ALT.....CHECK

Ident.: PRO-NOR-SOP-14-A-00020076.0001001 / 17 MAR 17
Applicable to: ALL

10 000 ft FLOW PATTERN



EFIS Option:

The PF will select CSTR for grid MORA

The PM will select ARPT

CRUISE

Ident.: PRO-NOR-SOP-15-A-00010287.0001001 / 25 AUG 16
Applicable to: ALL

ECAM MEMO..... REVIEW
ECAM SD PAGES.....REVIEW

Periodically review system display pages and, in particular:

ENG : Oil pressure and temperature
BLEED : BLEED parameters
ELEC : Parameters, GEN loads
HYD : A slight decrease in quantity is normal.
Fluid contraction during cold soak can be expected.
Green system is lower than on ground, following landing gear retraction.
FUEL : Fuel distribution.
COND : Duct temperature, compared with zone temperature.
Avoid large differences for passenger comfort.
FLT CTL : Note any unusual control surface position.
DOOR : Oxygen pressure.

Ident.: PRO-NOR-SOP-15-A-00010288.0001001 / 17 MAR 17
Applicable to: ALL

FLIGHT PROGRESS..... CHECK

Monitor flight progress in the conventional way.

When overflying a waypoint:

- *Check track and distance to the next waypoint.*

When overflying the waypoint, or at least every 30 min:

- *Check FUEL : Check FOB (ECAM), and fuel prediction (FMGC), and compare with the computer flight plan or the in-cruise quick-check table (Refer to QRH/PER-M In Cruise Quick Check at a Given Mach Number (Paper Only) or use the performance application of FlySmart with Airbus). Check that the sum of the fuel on board and the fuel used is consistent with the fuel on board at departure. If the sum is unusually greater than the fuel on board at departure, suspect a fuel quantity over read. If the sum is unusually smaller than the fuel on board at departure, or if it decreases, suspect a fuel leak.*
  For more information about fuel leak, Refer to FCTM/PR-AEP-FUEL Fuel Leak.

CAUTION	*This check must also be performed each time a FUEL IMBALANCE procedure is necessary. Perform the check before applying the FUEL IMBALANCE procedure. If a fuel leak is confirmed, apply the FUEL LEAK procedure.*

Ident.: PRO-NOR-SOP-15-A-00010289.0001001 / 01 DEC 14
Applicable to: ALL

STEP FLIGHT LEVEL.....AS APPROPRIATE

Ident.: PRO-NOR-SOP-15-A-00010290.0001001 / 21 MAR 17
Applicable to: ALL

NAV ACCURACY.....MONITOR

On aircraft equipped with GPS primary, no navigation accuracy check is required, as long as GPS PRIMARY is available.

Otherwise, a navigation accuracy check must be performed especially when any of the following occurs:

- *GPS PRIMARY LOST appears on the ND (GPS ◁)*
- *IRS only navigation*
- *The PROG page displays LOW accuracy*
- *"NAV ACCUR DOWNGRAD" appears on the MCDU.*

Refer to DSC-22_20-20-20 Estimated Position Uncertainty.

Note: Methods for checking accuracy:

- ***If the check is positive (error ≤ 3 N.m): FM position is reliable.***
  Use ND (ARC or NAV) and managed lateral guidance.
- ***If the check is negative (error > 3 N.m): FM position is not reliable.***
  Use raw data for navigation and monitor it.
  - ***If there is a significant mismatch between the display and the real position:***
    Disengage MANAGED NAV mode and use raw data navigation (possibly switching to ROSE VOR, so as not to be misled by FM data).

Ident.: TDU / PRO-NOR-SOP-15-A-00013068.0001001 / 23 JUN 15
Applicable to: MSN 02737, 03308, 03750
Impacted DU: 00010291 Cruise - Radar Tilt

RADAR .....AS APPROPRIATE

Gain must be manually set to +8, when MULTISCAN sw is set to AUTO and when flying below FL 150.

Note:

1. *MULTISCAN AUTO mode provides an efficient ground clutter rejection. During operation in good or non significant weather conditions, no weather pattern will be displayed on the ND's. In this case, the flight crew confirms correct radar operation, using temporarily MANUAL TILT.*
2. *The flight crew monitors the weather radar display in AUTO mode, and confirms any weather display that is ambiguous or unexpected using manual tilt according to standard techniques.*

Ident.: TDU / PRO-NOR-SOP-15-A-00013068.0006001 / 20 SEP 16
Applicable to: MSN 02334, 03071, 03782, 04294, 04328, 04433-04438, 04488, 04506-04518, 04535, 04630, 05190, 05230-05259, 05313-05460, 05476, 05537-05577, 05683, 05727, 05829-05923, 06036-06336
Impacted DU: 00010291 Cruise - Radar Tilt

RADAR .....AS APPROPRIATE

Gain must be manually set to +4, when MULTISCAN selector is set to AUTO and when flying below FL 200.

Note:
1. *If the weather is good, or not significant, in order to check that the radar is operating correctly: down tilt until displaying ground echoes.*
2. *If the weather display is ambiguous or unexpected, in order to better analyze the weather situation, use manual tilt according to standard technique.*
3. *In particular below FL 200, for situations with low-level weather, weather with low reflectivity or in front of suspected active cells, the flight crew should switch to Manual mode and adjust the tilt setting downward until the weather is detected or the ground clutter appears on the upper part of the display.*
4. *In addition, the flight crew may increase the manual gain control to display lower reflectivity targets. The manual gain control can be increased in both AUTO and Manual modes to display lower levels of weather. In both cases, ground clutter may also be displayed as a result of low settings and/or increased gain.*

Ident.: PRO-NOR-SOP-15-A-00010291.0001001 / 07 MAR 13
Applicable to: MSN 01767-01920, 02108, 02135, 02139-02275, 02359-02482, 02670-02712, 02804-02914, 03138, 04314, 04393, 04491

RADAR TILT.....ADJUST

Ident.: PRO-NOR-SOP-15-A-00010291.0002001 / 07 MAR 13
1 **Applicable to: MSN 02334, 02737, 03071, 03308, 03750-03782, 04294, 04328, 04433-04438, 04488, 04506-04518, 04535, 04630, 05190, 05230-05259, 05313-05460, 05476, 05537-05577, 05683, 05727, 05829-05923, 06036-06336**
Impacted by TDU: 00013068 Cruise - Radar Tilt

RADAR .....AS APPROPRIATE

Ident.: PRO-NOR-SOP-15-A-00010291.0002001 / 07 MAR 13
2 **Applicable to: MSN 01957-02097, 02121, 02138, 02584-02649, 03264, 03330-03618, 03863-04216, 04312, 04384, 04394-04399, 04481, 04532, 04552-04614, 04637-05158, 05218, 05262-05298, 05473, 05507, 05641-05676, 05712, 05744-05807, 05952-06010, 06720-09063**

RADAR .....AS APPROPRIATE

Ident.: PRO-NOR-SOP-15-A-00010296.0001001 / 21 MAR 16
Applicable to: ALL

- **If the oxygen mask has been used:**

  OXYGEN MASK .....CHECK

  Check that the oxygen mask has been properly stowed, Refer to DSC-35-20-10 General.

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DESCENT PREPARATION

Ident.: PRO-NOR-SOP-16-A-00011551.0001001 / 30 JUN 14
Applicable to: ALL

Descent preparation and approach briefing should be completed before top of descent.

Ident.: PRO-NOR-SOP-16-A-00011552.0006001 / 20 MAR 17
Applicable to: ALL

WEATHER AND LANDING INFORMATION.....OBTAIN

Check weather reports at ALTERNATE and DESTINATION airports. Airfield data should include runway in use for arrival.

Note: *When operating in cold weather conditions, consider altitude correction. Refer to PER-OPD-GEN ALTITUDE TEMPERATURE CORRECTION.*

NAV CHARTS CLIPBOARD.....PREPARE

Ident.: PRO-NOR-SOP-16-A-00014394.0001001 / 05 DEC 17
Applicable to: ALL

LDG PERFORMANCE..... CHECK

Perform an in-flight landing performance assessment if the landing conditions changed compared with the landing computation at dispatch, or with a previous computation (e.g. runway, weather conditions, in-flight failure affecting performance, diversion).

Note:
1. *If the weather conditions are expected to change at the landing airport, or in the event of significant precipitation, the flight crew should consider a second calculation of the in-flight landing distance with the worst possible runway condition.*
2. *The selection of REV MAX is the standard practice for landing.*
   However, on dry runways the flight crew may select REV IDLE.
   On WET runways (runway surface condition GOOD), the flight crew may select REV IDLE, if all the following conditions are satisfied:
   - *A landing distance assessment has been made with the following parameters:*
     - *MEDIUM TO POOR landing performance level for the in-flight landing distance computation*
     - *No reverser credit*
   - *The result of this landing distance assessment is within the LDA.*

- **If landing conditions changed:**

LDG PERFORMANCE..... COMPUTE

In the LDG PERF application, modify the selections in accordance with the estimated arrival conditions:

- *In the AIRPORT/RUNWAY part, select the applicable runway*
- *In the CONDITIONS part, enter the estimated landing conditions*
- *In the AIRCRAFT STATUS part, check the selected items, if any*
- *Launch the computation and check the results versus Airline policy or applicable regulations.*

LDG PERFORMANCE.....CHECK

Ident.: PRO-NOR-SOP-16-A-00020100.0001001 / 17 MAY 17
Applicable to: ALL

ARRIVAL page..... COMPLETE/CHECK

Insert APPR, STAR, APPR VIA and TRANS if applicable. (Access by lateral revision at destination.)

F-PLN A page..... CHECK

- *Ensure that the inserted F-PLN agrees with planned approach and missed approach.*
- *Use the scroll key to check the F-PLN thoroughly, using ND in PLAN mode as necessary.*

Tracks and distances between waypoints are displayed on the second line from the top of the MCDU. Approach and Missed Approach tracks and distances must be checked from the appropriate navigation charts.

- *Check speed constraints. Add new speed constraints if required.*
- *Check altitude constraints. Add new altitude constraints if required.*

  Note: *The FMS may have deleted the altitude constraints that are at or above the CRZ FL, or at or above any previous lower CRZ FL in the case of step climbs (Refer to DSC-22_20-30-20-05 Vertical Constraints (Speed, Altitude, Time)).*

  In that case,
  - *Insert again the affected procedures (STAR, APPR VIA or TRANS)*
    The FMS keeps the altitude constraints that are below the CRZ FL, and deletes again the altitude constraints that are above current CRZ FL. The FMS may also delete the altitude constraints that are at current CRZ FL, and the altitude constraint windows that have a constraint at or above current CRZ FL.
  - *Manually enter the altitude constraints that are below current CRZ FL using the MCDU Vertical Revision pages.*
    It is not possible to enter an altitude constraint at the CRZ FL.
    In the case of an "AT" or "AT OR ABOVE" altitude constraint at the CRZ FL, the flight crew must select the DES mode only after the aircraft reaches the position of the altitude constraint to prevent an early descent..

- *In all cases, do not modify the final approach (FAF to runway or MAP), including altitude constraints.*
- *Identify the position and the altitude of Final Descent Point (FDP) and check the value of the FPA after this FDP,*
- *If a TOO STEEP PATH message is displayed after the FDP, do not use FINAL APP guidance for approach.*
- *Identify the Missed Approach Point.*

Ident.: PRO-NOR-SOP-16-A-00020101.0001001 / 20 SEP 16
Applicable to: ALL

DES WIND page..... CHECK

Enter winds for descent before T/D.

Note: *With DPO ◁ , as the idle thrust margins are reduced, accurate winds have to be entered to be able to follow the computed vertical profile and thus maximize the benefits of DPO ◁ . Refer to DSC-22_20-60-150 Descent Profile Optimization (if installed).*

PERF CRUISE page..... CHECK

Modify the cabin descent rate if different pressure rate is required.

PERF DES page..... CHECK

Prior to descent, access PERF DES page and check ECON MACH/SPD. If a speed other than ECON is required, insert that MACH or SPD into the ECON field. This new MACH or SPD is now the one for the descent path and T/D computation, and it will be used for the managed speed descent profile (instead of ECON).
A speed limit of 250 kt below 10 000 ft is the defaulted speed, in the managed speed descent profile. The flight crew may delete or modify it if necessary on the VERT REV at DEST page.

Ident.: PRO-NOR-SOP-16-A-00020102.0001001 / 01 MAR 18
Applicable to: MSN 01920, 02108, 02135, 02139-02359, 02584, 03264, 03330, 05120, 05158

PERF APPR page..... COMPLETE/CHECK

Enter the QNH, temperature, and wind at destination.

L13

Note: Insert the average wind given by the ATC or ATIS. Do not insert the gust value. During approach, the Ground Speed Mini function (manage speed mode) takes into account the instantaneous gust.
For more information: Refer to Ground Speed Mini Function
For example, if the wind is 15020G35KT, insert 150/20.

Insert the minimum.

Note: To avoid undershooting the published minimum during go-around, due to aircraft inertia during pull-up, some Authorities may require Operators to add a specific number of feet to the published minimum.

CAUTION	*If the QNH altimeter setting is used for an aircraft with the QFE option ◁, consider FCOM - Aircraft Systems - Flight Management - How to - Insertion of Approach Minima - QNH use for aircraft equipped with QFE option.*

Note: Changing the RWY or the type of approach automatically erases the previous minimum.

Note: After the activation of the SEC F-PLN, check the VAPP, and modify if necessary.

Check or modify the landing configuration. Always select the landing configuration on the PERF APP page: CONF FULL in the normal landing configuration. CONF 3 should be considered, depending on the available runway length and go-around performance, or if windshear/severe turbulence is considered possible during approach.
Check or modify the transition altitude.

PERF GO-AROUND page..... CHECK/MODIFY

Check THR RED ALT and ACC ALT, and modify, if necessary.

Ident.: PRO-NOR-SOP-16-A-00020102.0002001 / 01 MAR 18

1 **Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02388-02482, 02609-03138, 03308, 03357-05094, 05155, 05190-09063**

PERF APPR page..... COMPLETE/CHECK

Enter the QNH, temperature, and wind at destination.

L13

Note: *Insert the average wind given by the ATC or ATIS. Do not insert the gust value. During approach, the Ground Speed Mini function (manage speed mode) takes into account the instantaneous gust.*
For more information: Refer to Ground Speed Mini Function
For example, if the wind is 15020G35KT, insert 150/20.

Insert the minimum.

Note: *To avoid undershooting the published minimum during go-around, due to aircraft inertia during pull-up, some Authorities may require Operators to add a specific number of feet to the published minimum.*

CAUTION	*If the QNH altimeter setting is used for an aircraft with the QFE option ◁, consider FCOM - Aircraft Systems - Flight Management - How to - Insertion of Approach Minima - QNH use for aircraft equipped with QFE option.*

Note: *Changing the RWY or the type of approach automatically erases the previous minimum.*

Note: *After the activation of the SEC F-PLN, check the VAPP, and modify if necessary.*

Check or modify the landing configuration. Always select the landing configuration on the PERF APP page: CONF FULL in the normal landing configuration. CONF 3 should be considered, depending on the available runway length and go-around performance, or if windshear/severe turbulence is considered possible during approach.
If the forecasted tailwind at landing is greater than 10 kt , refer to "LIM-12-Airport Operations and Wind Limitations" for the recommended/required landing configuration.
Check or modify the transition altitude.

PERF GO-AROUND page..... CHECK/MODIFY

Check THR RED ALT and ACC ALT, and modify, if necessary.

Ident.: PRO-NOR-SOP-16-A-00020103.0001001 / 20 SEP 16
Applicable to: ALL

RAD NAV page.....CHECK

- *Set navaids, as required, and check idents on the NDs (VOR-ADF) and PFDs (ILS, GLS ◁, MLS ◁). If a VOR/DME exists close to the airfield, select it and enter its ident in the BRG/DIST field of the PROG page, for NAV ACCY monitoring during descent.*
- *When the flight plan calls for an NDB approach, the system automatically tunes the ADF, only when the aircraft is passing the first fix of the approach. Therefore, it is convenient to manually tune the ADF earlier (before activating the approach phase).*

Ident.: PRO-NOR-SOP-16-A-00020104.0001001 / 20 SEP 16
Applicable to: ALL

SEC F-PLN page.....AS RQRD

Before the top of descent, the SEC F-PLN should either be set to an alternate runway for destination, or to the landing runway in case of circling. In all cases, routing to the alternate should be available. If there is a last-minute runway change, then the flight crew only needs to activate the secondary F-PLN , without forgetting to check/set the new minimum and navaids.

Ident.: PRO-NOR-SOP-16-A-00011554.0001001 / 03 MAR 14
Applicable to: ALL

GPWS LDG FLAP 3 pb-sw.....AS RQRD

If the pilot plans on landing in FLAPS 3 configuration, the GPWS LDG FLAP 3 pb-sw should be set to ON.

Ident.: PRO-NOR-SOP-16-A-00015490.0001001 / 03 MAR 14
Applicable to: ALL

LDG ELEV.....CHECK

Check that the LDG ELEV AUTO green is displayed on the ECAM CRUISE page, and check the associated value.

Ident.: PRO-NOR-SOP-16-A-00011556.0001001 / 17 MAR 17
Applicable to: ALL

AUTO BRK.....AS RQRD

Use of autobrake is preferable.
Use of MAX mode is not recommended at landing.
On short or contaminated runways, use MED mode.
On long runways, LO mode is recommended.

L2 *For more information, Refer to FCTM/PR-NP-SOP-160 Brakes Oxidation.*

L1 *Note: If, on very long runways, the flight crew anticipates that braking will not be needed, use of the autobrake is not necessary.*

Firmly press the appropriate pushbutton, according to the runway length and condition, and check that the related ON light comes on.

Ident.: PRO-NOR-SOP-16-A-00011555.0001001 / 10 JUL 14
Applicable to: ALL

APPROACH BRIEFING.....PERFORM

Ident.: PRO-NOR-SOP-16-A-00011547.0001001 / 23 JUN 15
Applicable to: ALL

TERR ON ND ◁✻ .....AS RQRD

- *In mountainous areas, consider displaying terrain on ND.*
- *If use of radar is required, consider selecting the radar display on the PF side, and TERR ON ND on the PM side only.*
- *If NAV ACCURACY is LOW, do not use TERR on ND.*

Ident.: TDU / PRO-NOR-SOP-16-A-00013353.0003001 / 03 MAR 14
Applicable to: MSN 02334, 03071, 03782, 04294, 04328, 04433-04438, 04488, 04506-04518, 04535, 04630, 05190, 05230-05259, 05313-05460, 05476, 05537-05577, 05683, 05727, 05829-05923, 06036-06336
Impacted DU: 00011545 Descent Preparation - Radar

RADAR.....ADJUST AS APPROPRIATE

Gain must be manually set to +4, when MULTISCAN selector is set to AUTO and when flying below FL 200.

Note:
1. *If the weather is good, or not significant, in order to check that the radar is operating correctly: down tilt until displaying ground echoes.*
2. *If the weather display is ambiguous or unexpected, in order to better analyze the weather situation, use manual tilt according to standard technique.*
3. *In particular below FL 200, for situations with low-level weather, weather with low reflectivity or in front of suspected active cells, the flight crew should switch to Manual mode and adjust the tilt setting downward until the weather is detected or the ground clutter appears on the upper part of the display.*
4. *In addition, the flight crew may increase the manual gain control to display lower reflectivity targets. The manual gain control can be increased in both AUTO and Manual modes to display lower levels of weather. In both cases, ground clutter may also be displayed as a result of low settings and/or increased gain.*

Ident.: TDU / PRO-NOR-SOP-16-A-00013353.0001001 / 23 JUN 15
Applicable to: MSN 02737, 03308, 03750
Impacted DU: 00011545 Descent Preparation - Radar

RADAR.....ADJUST AS APPROPRIATE

Gain must be manually set to +8 when, MULTISCAN sw is set to AUTO and when flying below FL 150.

Note: 1. *MULTISCAN AUTO mode provides an efficient ground clutter rejection. During operation in good or non significant weather conditions, no weather pattern will be displayed on the ND's. In this case, the flight crew confirms correct radar operation, using temporarily MANUAL TILT.*
2. *The flight crew monitors the weather radar display in AUTO mode, and confirms any weather display that is ambiguous or unexpected using manual tilt according to standard techniques.*

Ident.: PRO-NOR-SOP-16-A-00011545.0001001 / 03 MAR 14
Applicable to: MSN 02334, 02737, 03071, 03308, 03750-03782, 04294, 04328, 04433-04438, 04488, 04506-04518, 04535, 04630, 05190, 05230-05259, 05313-05460, 05476, 05537-05577, 05683, 05727, 05829-05923, 06036-06336
Impacted by TDU: 00013353 Descent Preparation - Radar

RADAR.....ADJUST AS APPROPRIATE

Ident.: PRO-NOR-SOP-16-A-00011545.0001001 / 03 MAR 14
Applicable to: MSN 01767-02275, 02359-02712, 02804-02914, 03138-03264, 03330-03618, 03863-04216, 04312-04314, 04384-04399, 04481, 04491, 04532, 04552-04614, 04637-05158, 05218, 05262-05298, 05473, 05507, 05641-05676, 05712, 05744-05807, 05952-06010, 06720-09063

RADAR.....ADJUST AS APPROPRIATE

Ident.: PRO-NOR-SOP-16-A-00011558.0001001 / 02 MAY 17
2 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

CAUTION	In icing conditions (*Refer to LIM-ICE_RAIN Definition of Icing Conditions*), the flight crew must turn on the engine anti-ice and should not wait until seeing ice building up.

ENG ANTI-ICE pb-sw.....AS RQRD

Engine anti-ice must be set to ON before and during descent, even If the SAT is below -40 °C (-40 °F).
When ENG ANTI ICE is ON, the FADEC automatically controls continuous ignition and selects a higher idle thrust which gives better protection against flame-out. The IGNITION memo appears on the ECAM.

WING ANTI ICE pb-sw.....AS RQRD

When icing conditions are encountered:
- *The flight crew may turn on the wing anti-ice to prevent the ice accretion on the wing leading edge.*
- *The flight crew must turn on the wing anti-ice if there is evidence of ice accretion, such as ice on the visual indicators, or on the wipers, or with the SEVERE ICE DETECTED alert. This is to remove any ice accumulation on the wing leading edge.*

ANTI ICE ON reduces the descent path angle (when the engines are at idle). The pilot can compensate for this by increasing the descent speed, or by extending up to half speedbrakes.

Ident.: PRO-NOR-SOP-16-A-00011558.0004001 / 02 MAY 17

3 **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

CAUTION	In icing conditions (*Refer to LIM-ICE_RAIN Definition of Icing Conditions*), the flight crew must turn on the engine anti-ice and should not wait until seeing ice building up.

ENG ANTI-ICE pb-sw..... AS RQRD

Engine anti-ice must be set to ON before and during descent, event if the SAT is below -40 °C (-40 °F).

When ENG ANTI ICE is ON, the FADEC selects a higher idle thrust which gives better protection against flame-out.

WING ANTI ICE pb-sw..... AS RQRD

When icing conditions are encountered:

- *The flight crew may turn on the wing anti-ice to prevent ice accretion on the wing leading edge.*
- *The flight crew must turn on the wing anti-ice if there is evidence of ice accretion, such as ice on the visual indicators, or on the wipers, or with the SEVERE ICE DETECTED alert. This is to remove any ice accumulation from the wing leading edge.*

ANTI ICE ON reduces the descent path angle (when the engines are at idle). The pilot can compensate for this by increasing the descent speed, or by extending up to half speedbrakes.

Ident.: PRO-NOR-SOP-16-A-00011557.0001001 / 03 MAR 14

Applicable to: ALL

DESCENT CLEARANCE.....OBTAIN
CLEARED ALTITUDE ON FCU..... SET

When clearance is obtained, set the ATC-cleared altitude (FL) on the FCU (also considering what is the safe altitude).

If the lowest safe altitude is higher than the ATC-cleared altitude, check with the ATC that this constraint applies.

If it is confirmed, set the FCU altitude to the safe altitude, until it is safe to go to the ATC-cleared altitude.

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DESCENT INITIATION

Ident.: PRO-NOR-SOP-17-00011541.0001001 / 03 NOV 14
Applicable to: ALL

DESCENT..... INITIATE

The normal method of initiating the descent is to select DES mode at the FMGS calculated top of descent (T/D).

■ **If ATC requires an early descent:**

Use DES mode which will guide the aircraft down at a lower vertical speed in order to converge on the required descent path. (The pilot may use a V/S of -1 000 ft/min).

■ **If ATC delays the descent:**

Beyond T/D, the PFD and the MCDU display either "DECELERATE" or "T/D REACHED" message. This suggests to the crew that it starts reducing speed towards green dot speed (with ATC permission). When cleared to descend, select DES mode with managed speed active.

DESCENT MONITORING

Ident.: PRO-NOR-SOP-17-00011542.0003001 / 23 DEC 14
Applicable to: ALL

PF MCDU.....PROG/PERF DES

PF MCDU should be set to PROG or PERF DES page:
- *PROG page in order to get VDEV or RQD DIST TO LAND/DIRECT DIST TO DEST information*
- *PERF DES in order to get predictions down to any inserted altitude in DES/OP DES modes and EXP mode* ◁ .

PM MCDU..... F-PLN
DESCENT..... MONITOR/ADJUST

Refer to PRO-NOR-SRP-01-60 Descent Monitoring - DES Mode Engaged

- *When flying in NAV mode, use DES mode.*
  The aircraft descends along the descent flight path: the PFD and PROG page display VDEV, and so it can be monitored. All constraints of the flight plan are taken into account for the guidance.
- *When the aircraft is flying in HDG or TRK mode, and thus out of the lateral F-PLN, DES mode is not available.*
  The NDs show a level-off symbol along the flight path. Its position is based on the current active modes .AP/FD and A/THR
  The flight crew can use this symbol to monitor the descent.
  MCDU predictions assume a return to the lateral F-PLN and descent flight path.
  Note that whenever the lateral mode is changed from NAV to HDG/TRK the vertical mode reverts to V/S at the value pertaining at the time of the mode change.
- *From time to time during stabilized descent, the flight crew may select FPA to check that the remaining distance to destination is approximately the altitude change required divided by the FPA in degrees.*

FPA (°) = ΔFL/DIST (NM)

DESCENT ADJUSTMENT

Ident.: PRO-NOR-SOP-17-A-00011543.0002001 / 09 MAR 15
Applicable to: ALL

To increase the rate of descent:

- Increase descent speed (by use of selected speed) if comfort and ATC permit. It is economically better (Time/Fuel) than the following procedures.
- Maintain high speed as long as possible. (SPD LIM may be suspended, subject to ATC clearance).
- If the aircraft is high and at high speed, it is more efficient to keep the high speed to ALT* and decelerate, rather than to mix descent and deceleration.
- If the aircraft goes below the desired profile, use SPEED and the V/S mode to adjust the rate of descent.

Note: *EXPEDITE DESCENT.*
If a high rate of descent is required, push the EXPED pushbutton on the FCU. The target speed for the descent now becomes M 0.8 or 340 kt, whichever is lower. The FMA will display THRIDLE/EXP DES/NAV.
To return to DES mode, push the FCU ALT knob.
To return to SPEED/V/S modes, pull the FCU V/S knob.
In all cases, monitor the FMA to ensure that the mode engages properly.

Ident.: PRO-NOR-SOP-17-A-00011544.0001001 / 03 MAR 14
Applicable to: ALL

If engine anti-ice is selected in descent, the flight idle is increased. So, to maintain the rate of descent that the airplane had before engine anti-ice selection it may be necessary to use up to half speedbrakes to maintain the required rate of descent, in OPEN DES vertical mode. If the rate of descent has to be increased, full speedbrakes may be used.
In DES mode: If the aircraft is on, or below, the flight path and the ATC requires a higher rate of descent, do not use speedbrakes because the rate of descent is dictated by the planned flight path. Thus, the A/THR may increase thrust to compensate for the increase in drag. In this case, use OPEN DES with speedbrakes.

Note: *1. If speedbrakes are used above 315 kt/M .75, with the AP engaged, their rate of retraction is low (total time for retraction from full extension is approximately 25 s). The ECAM memo page displays SPD BRAKES in amber until retraction is complete.*
2. In order to avoid overshooting the altitude, due to speedbrake retraction in ALT mode, retract the speedbrakes at least 2 000 ft before the selected altitude.*

Ident.: PRO-NOR-SOP-17-A-00011546.0001001 / 14 JAN 16
1 **Applicable to: MSN 01920-02097, 02121-02204, 02359-02626, 02670-09063**

BAROMETRIC REFERENCE.....SET

Set QNH on the EFIS control panel and on the standby altimeter, when approaching the transition level and when cleared for an altitude.
Crosscheck BARO settings and altitude readings.

Ident.: PRO-NOR-SOP-17-A-00011546.0002001 / 14 JAN 16
Applicable to: MSN 01767, 02108, 02275-02334, 02649

BAROMETRIC REFERENCE.....SET

Set QNH (or QFE) on the EFIS control panel and on the standby altimeter, when approaching the transition level and when cleared for an altitude.
Crosscheck BARO settings and altitude readings.

Ident.: PRO-NOR-SOP-17-A-00011548.0001001 / 13 AUG 10
Applicable to: ALL

ECAM STATUS.....CHECK

- *Check that there is no status reminder on the upper ECAM display.*
- *If there is a status reminder, check the aircraft STATUS.*
- *Check the ECAM status page before completing the approach checks. Take particular note of any degradation in landing capability, or any other aspect affecting the approach and landing.*

Ident.: PRO-NOR-SOP-17-A-00021715.0001001 / 04 SEP 17
Applicable to: ALL

AT 10 000 FT

LAND lights selector..... SET

LAND lights may be switched ON, according to the airline policy/regulatory recommendations.

SEAT BELTS sw..... ON

EFIS option pb..... CSTR

Select CSTR on both sides.

ILS/LS pb.....AS RQRD

Press the ILS/LS pb, if one of the following approaches is planned:
- *ILS, GLS ◁ , MLS ◁*
- *ILS G/S out, LOC only or LOC B/C ◁*
- *Approach with the FLS function ◁*

The flight crew checks that:
- *Deviation scales are displayed on the PFD*
- *The IDENT is properly displayed on the PFD*

RAD NAVAIDS.....SELECTED/IDENTIFIED

Ensure that appropriate radio NAVAIDS are tuned and identified.
For NDB approaches, manually select the reference NAVAID.

Ident.: PRO-NOR-SOP-17-A-00015500.0001001 / 03 MAR 14
2 **Applicable to: MSN 01767-06336**

ENG MODE selector.....AS RQRD

- *Select IGN if the runway is covered with standing water, or if heavy rain or severe turbulence is expected during approach or go-around area.*

Ident.: PRO-NOR-SOP-17-A-00015501.0001001 / 03 MAR 14
Applicable to: ALL

NAV ACCURACY.....CHECK

On aircraft equipped with GPS primary, no navigation accuracy check is required, as long as GPS PRIMARY function is available.
Otherwise, crosscheck NAV ACCURACY using the PROG page (BRG/DIST computed data), and the ND (VOR/DME raw data).

APPROACH CHECKLIST

Ident.: PRO-NOR-SOP-17-00014491.0001001 / 03 MAR 14
Applicable to: ALL

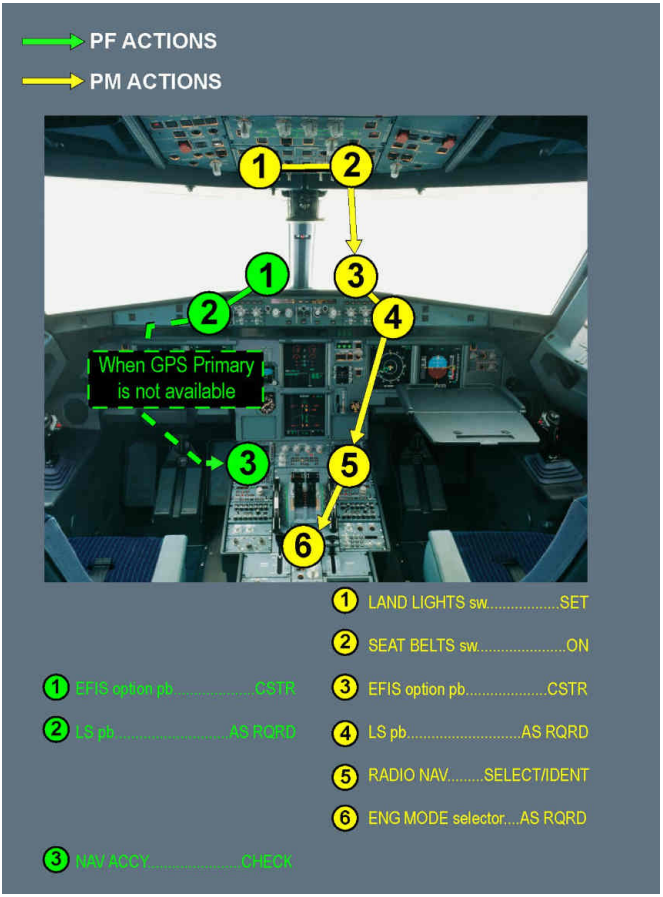
APPROACH CHECKLIST

APPROACH CHECKLIST.....PERFORMED

10 000 FT FLOW PATTERN

Ident.: PRO-NOR-SOP-17-00020073.0001001 / 17 MAR 17
Applicable to: ALL

10 000 ft FLOW PATTERN



Approach General

INTRODUCTION

Ident.: PRO-NOR-SOP-18-A-00014490.0001001 / 29 MAY 13
Applicable to: ALL

The APPROACH section provides the standard operating procedures for the following approach types:

- ILS / MLS ◁ / GLS ◁ approaches
- Conventional approaches: VOR, VOR-DME, NDB, NDB-DME
- Approaches based on a LOC signal without any G/S signal: LOC ONLY, ILS G/S OUT, LOC B/C
- RNAV approaches including:
  - RNAV(GNSS) approaches with LNAV minimum or LNAV/VNAV minimum
  - RNAV(RNP) approaches for which Authorization is Required (AR) - If capability installed.

Note: *In relation to the names in the ICAO Performance-Based Navigation (PBN) Manual:*
- *"RNP APCH operations" corresponds to RNAV(GNSS) approaches*
- *"RNP AR APCH operations" corresponds to RNAV(RNP) approaches.*

CROSS-REFERENCE TABLE

Ident.: PRO-NOR-SOP-18-A-00014489.0001001 / 29 MAY 13
Applicable to: ALL

This table provides Guidance Modes that may be used depending on the Approach Types.

	Guidance Modes per Approach Types				
	LOC G/S	**FINAL APP**	**LOC FPA**	**NAV FPA**	**TRK FPA**
ILS / MLS ◁ / GLS ◁	*Refer to APPR using LOC G/S*	N/A	N/A	N/A	N/A
LOC ONLY ILS G/S OUT	N/A	N/A	*Refer to APPR using FPA Guidance*	N/A	N/A
LOC B/C	N/A	N/A	N/A	N/A	*Refer to APPR using FPA Guidance*
RNAV(GNSS) with LNAV/VNAV minima	N/A	*Refer to APPR using FINAL APP*	N/A	Not Authorized	Not Authorized
RNAV(GNSS) with LNAV minima	N/A	*Refer to APPR using FINAL APP(1)*	N/A	*Refer to APPR using FPA Guidance*	Not Authorized

Continued on the following page

Continued from the previous page

	Guidance Modes per Approach Types				
	LOC G/S	**FINAL APP**	**LOC FPA**	**NAV FPA**	**TRK FPA**
RNAV(GNSS) with LPV minima	N/A	Not Authorized	N/A	Not Authorized	Not Authorized
VOR VOR-DME NDB NDB-DME	N/A	*Refer to APPR using FINAL APP(1)*	N/A	*Refer to APPR using FPA Guidance*	*Refer to APPR using FPA Guidance*

(1) The FINAL APP is the recommended guidance mode for this type of approach.

For Visual Approach, *Refer to Visual Approach*
For Circling Approach, *Refer to Circling Approach*

FLYING REFERENCE

Ident.: PRO-NOR-SOP-18-A-00014488.0001001 / 29 MAY 13
Applicable to: ALL

Use the following recommended flying reference:
- In vertical managed modes: HDG-V/S reference associated with the FD crossbars
- In vertical selected modes: TRK-FPA reference associated with FPD.

STABILIZATION CRITERIA

Ident.: PRO-NOR-SOP-18-A-00014487.0001001 / 09 FEB 18
Applicable to: MSN 01920, 02108, 02135, 02139-02359, 02584, 03264, 03330, 05120, 05158

The stabilization height is defined as one of the following:
- 1 000 ft above airfield elevation (AAL)in Instrument Meteorological Conditions (IMC), or
- 500 ft above airfield elevation (AAL) in Visual Meteorological Conditions (VMC), or
- Any other height defined in Operator policies or regulations.

In order for the approach to be stabilized, all of the following conditions must be satisfied before, or at the stabilization height:
- The aircraft is on the correct lateral and vertical flight path
- The aircraft is in the desired landing configuration

- The thrust is stabilized, usually above idle, and the aircraft is at target speed for approach

  Note: *In IMC, a later speed and thrust stabilization can be acceptable provided that:*
  - *It is in accordance with Operator policies and regulations*
  - *The aircraft is in deceleration toward the target approach speed*
  - *The flight crew stabilizes speed and thrust as soon as possible and not later than 500 ft AAL.*

- The flight crew does not detect any excessive flight parameter deviation.

If one of the above-mentioned conditions is not satisfied, the flight crew must initiate a go-around, unless they estimate that only small corrections are required to recover stabilized approach conditions.

STABILIZATION CRITERIA

Ident.: PRO-NOR-SOP-18-A-00014487.0002001 / 09 FEB 18

1 **Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02388-02482, 02609-03138, 03308, 03357-05094, 05155, 05190-09063**

The stabilization height is defined as one of the following:
- 1 000 ft above airfield elevation (AAL)in Instrument Meteorological Conditions (IMC), or
- 500 ft above airfield elevation (AAL) in Visual Meteorological Conditions (VMC), or
- Any other height defined in Operator policies or regulations.

In order for the approach to be stabilized, all of the following conditions must be satisfied before, or at the stabilization height:
- The aircraft is on the correct lateral and vertical flight path
- The aircraft is in the desired landing configuration
- The thrust is stabilized, usually above idle, and the aircraft is at target speed for approach

  Note: *In IMC, a later speed and thrust stabilization can be acceptable provided that:*
  - *It is in accordance with Operator policies and regulations*
  - *The aircraft is in deceleration toward the target approach speed*
  - *The flight crew stabilizes speed and thrust as soon as possible and not later than 500 ft AAL.*

- The flight crew does not detect any excessive flight parameter deviation.

If one of the above-mentioned conditions is not satisfied, the flight crew must initiate a go-around, unless they estimate that only small corrections are required to recover stabilized approach conditions.

Note: *If the predicted tailwind at landing is greater than 10 kt, decelerated approach is not permitted, and the aircraft speed should be stabilized at around VREF + 5 kt in final.*

APPROACH SPEED TECHNIQUE

Ident.: PRO-NOR-SOP-18-A-00014485.0001001 / 29 MAY 13
Applicable to: ALL

DECELERATED APPROACH

The decelerated approach with FD or AP/FD guidance is the standard flying technique for ILS / MLS ◁ / GLS ◁ approaches and approaches using FLS ◁ or FINAL APP guidance.

EARLY STABILIZED APPROACH

Under certain circumstances, the flight crew may decide to reduce the speed down to VAPP in the landing configuration at the Final Descent Point (i.e. approach via selected guidance, high glide path angle, low altitude intermediate approach, etc.). In order to obtain a valuable deceleration pseudo waypoint and to ensure a timely deceleration, the flight crew should enter VAPP as a speed constraint at the Final Descent Point.

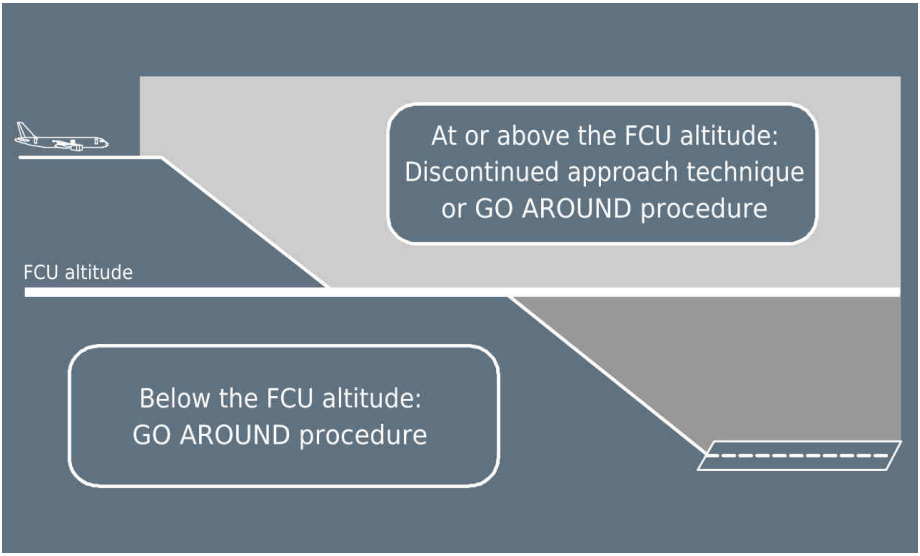
DISCONTINUED APPROACH

Ident.: PRO-NOR-SOP-18-A-00015226.0001001 / 03 DEC 13
Applicable to: ALL

In order to discontinue an approach when the aircraft is at or above the altitude selected on the FCU, the flight crew can either:

- Apply the GO AROUND procedure, or
- Apply the discontinued approach technique.

When the aircraft is below the FCU altitude, the flight crew must apply the GO AROUND procedure.



- **If at or above the FCU altitude:**
  Announce "CANCEL APPROACH".
  To disarm any AP/FD approach mode, press APPR pb or LOC pb.

  Note: *Valid only for ILS / MLS ◁ / GLS ◁ / FLS ◁ or FINAL APP guidance.*

  Select lateral mode as required (NAV or HDG mode).
  Select vertical mode as required (level off or adjust V/S).
  Select SPEED and adjust.

- **If F-PLN has no destination anymore:**
  Perform a LAT REV at the last waypoint and redefine the destination in the NEW DEST field.

Note: *1. The FMS does not automatically string the previous flown approach in the active F-PLN when the aircraft overflies the last waypoint. The FMS has no more destination in the F-PLN.*
2. Because the thrust levers are not set to TOGA detent, the FMS remains in approach phase.

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Aircraft Configuration Management

INITIAL APPROACH

Ident.: PRO-NOR-SOP-18-B-A-00014494.0001001 / 29 MAY 13
Applicable to: ALL

GENERAL

The initial approach procedure described here is a general guidance whatever the type of approach expected.

Ident.: PRO-NOR-SOP-18-B-A-00014493.0001001 / 03 MAR 14
Applicable to: ALL

INITIAL APPROACH

F-PLN SEQUENCING.....ADJUST

- *The NAV mode will be available after GO AROUND if the F-PLN is properly sequenced. A good cue to monitor the proper F-PLN sequencing is the TO waypoint on the upper right side of the ND, which should remain meaningful.*
- *In NAV mode, the F-PLN will sequence automatically.*
- *In HDG/TRK mode, the F-PLN will sequence automatically only if the aircraft flies close to the F-PLN route.*

APPROACH PHASE.....CHECK/ACTIVATE

- *If the aircraft overflies the DECEL pseudo waypoint in NAV mode, the APPR phase activates automatically.*
- *If the aircraft is in HDG/TRK mode, approximately 15 NM from touchdown, activate and confirm APPROACH phase on the MCDU (PERF DES page).*

MANAGED SPEED..... CHECK

- *If ATC requires a particular speed, use selected speed. When the ATC speed constraint no longer applies, return to managed speed.*

FLIGHT PATH.....MONITOR

- *In NAV mode, use VDEV information on the PFD and PROG page.*
- *In HDG/TRK mode, use the energy circle on ND representing the required distance to land.*

SPEED BRAKES lever.....AS RQRD

- *If the flight crew uses the speed brakes to increase the rate of deceleration or to increase the rate of descent, the VLS will increase as well:*
  - *The flight crew should ensure that appropriate speed margin exists before the extension of the speed brakes*
  - *If the speed brakes are extended, the flight crew should ensure that appropriate speed margin exists before the beginning of a turn.*

  This will avoid the activation of the Alpha-Floor protection.

  Note: In clean configuration, the VLS with speed brakes fully extended may be higher than green dot speed or VFE FLAP 1.

Ident.: TDU / PRO-NOR-SOP-18-B-A-00014648.0002001 / 23 JUN 15
Applicable to: MSN 02737, 03308, 03750
Impacted DU: 00014647 Initial Approach - Radar

RADAR

RADAR.....ADJUST AS APPROPRIATE

- *Gain must be manually set to +8 when MULTISCAN selector is set to AUTO and when flying below FL 150.*
- *MULTISCAN AUTO mode provides an efficient ground clutter rejection. During operations in good or non significant weather conditions, no weather pattern will be displayed on the NDs. In this case, the flight crew confirms correct radar operation, using temporarily MANUAL TILT.*
- *The flight crew monitors the weather radar display in AUTO mode, and confirms any weather display that is ambiguous or unexpected using manual tilt according to standard techniques.*

Ident.: TDU / PRO-NOR-SOP-18-B-A-00014648.0003001 / 03 MAR 14
Applicable to: MSN 02334, 03071, 03782, 04294, 04328, 04433-04438, 04488, 04506-04518, 04535, 04630, 05190, 05230-05259, 05313-05460, 05476, 05537-05577, 05683, 05727, 05829-05923, 06036-06336
Impacted DU: 00014647 Initial Approach - Radar

RADAR

RADAR.....ADJUST AS APPROPRIATE

- *Gain must be manually set to +4 when MULTISCAN selector is set to AUTO and when flying below FL 200.*
- *If the weather is good, or not significant, in order to check that the radar is operating correctly: down tilt under displaying ground echoes.*
- *If the weather display is ambiguous or unexpected, in order to better analyze the weather situation, use manual tilt according to standard technique.*

- *In particular below FL 200, for situations with low level weather, weather with low reflectivity or in front of suspected active cells, the flight crew should switch to manual mode and adjust the tilt setting downward until the weather is detected or the ground clutter appears on the upper part of the display.*
- *In addition, the flight crew may increase the manual gain control to display lower reflectivity targets. The manual gain control can be increased in both AUTO and manual modes to display lower levels of weather. In both cases, ground clutter may also be displayed as a result of low settings and/or increased gain.*

Ident.: PRO-NOR-SOP-18-B-A-00014647.0001001 / 29 MAY 13
Applicable to: MSN 02334, 02737, 03071, 03308, 03750-03782, 04294, 04328, 04433-04438, 04488, 04506-04518, 04535, 04630, 05190, 05230-05259, 05313-05460, 05476, 05537-05577, 05683, 05727, 05829-05923, 06036-06336
Impacted by TDU: 00014648 Initial Approach - Radar

RADAR

RADAR.....ADJUST AS APPROPRIATE

Ident.: PRO-NOR-SOP-18-B-A-00014647.0001001 / 29 MAY 13
Applicable to: MSN 01767-02275, 02359-02712, 02804-02914, 03138-03264, 03330-03618, 03863-04216, 04312-04314, 04384-04399, 04481, 04491, 04532, 04552-04614, 04637-05158, 05218, 05262-05298, 05473, 05507, 05641-05676, 05712, 05744-05807, 05952-06010, 06720-09063

RADAR

RADAR.....ADJUST AS APPROPRIATE

Ident.: PRO-NOR-SOP-18-B-A-00014492.0001001 / 29 MAY 13
Applicable to: ALL

NAVIGATION ACCURACY

NAV ACCURACY.....MONITOR

- *When GPS PRIMARY is available, no NAV ACCURACY monitoring is required.*
- *If GPS PRIMARY is lost, or GPS not installed, check on PROG page that the required navigation accuracy is appropriate to the phase of flight.*
- *If NAV ACCURACY is LOW, at least one ND must be in ROSE LS/VOR depending on the approach.*

INTERMEDIATE/FINAL APPROACH

Ident.: PRO-NOR-SOP-18-B-B-00014501.0001001 / 29 MAY 13
Applicable to: ALL

GENERAL

The intermediate and final approach procedure described here is general guidance whatever the type of approach expected.

Ident.: PRO-NOR-SOP-18-B-B-00014500.0001001 / 17 MAR 17

1 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

AT GREEN DOT SPEED

CAUTION	The flight crew should avoid extended flight in icing conditions with the slats extended.

FLAPS 1..... ORDER
FLAPS 1.....SELECT

- *FLAPS 1 should be selected more than 3 NM before the Final Descent Point.*
- *Check deceleration toward "S" speed.*
- *For decelerated approaches, the aircraft must reach or be established on the final descent with FLAPS 1 and "S" speed at or above 2 000 ft AGL.*
- *If the aircraft does not decelerate on the flight path or aircraft speed is significantly higher than "S" speed, extend the landing gear in order to slow down. The use of speedbrakes is possible. The flight crew should be aware that the use of speedbrakes causes an increase in VLS.*

TCAS Mode selector.....TA or TA/RA

- *FAA recommends to select TA only mode:*
  - *In case of known nearby traffic which is in visual contact*
  - *At particular airports and during particular procedures identified by an Operator as having a significant potential for unwanted or inappropriate resolution advisories (closely spaced parallel runways, converging runway, low terrain along the final approach, etc.).*

Ident.: PRO-NOR-SOP-18-B-B-00014500.0002001 / 17 MAR 17

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

AT GREEN DOT SPEED

CAUTION	The flight crew should avoid extended flight in icing conditions with the slats extended.

FLAPS 1..... ORDER
FLAPS 1.....SELECT

- *At high weights, if the green dot speed is close to VFE NEXT, the flight crew may select a lower speed.*
- *FLAPS 1 should be selected more than 3 NM before the Final Descent Point.*
- *Check deceleration toward "S" speed.*

- *For decelerated approaches, the aircraft must reach or be established on the final descent with FLAPS 1 and "S" speed at or above 2 000 ft AGL.*
- *If the aircraft does not decelerate on the flight path or aircraft speed is significantly higher than "S" speed, extend the landing gear in order to slow down. The use of speedbrakes is possible. The flight crew should be aware that the use of speedbrakes causes an increase in VLS.*

TCAS Mode selector.....TA or TA/RA

- *FAA recommends to select TA only mode:*
  - *In case of known nearby traffic which is in visual contact*
  - *At particular airports and during particular procedures identified by an Operator as having a significant potential for unwanted or inappropriate resolution advisories (closely spaced parallel runways, converging runway, low terrain along the final approach, etc.).*

Ident.: PRO-NOR-SOP-18-B-B-00014499.0001001 / 09 MAR 15
Applicable to: ALL

AT 2 000 FT AGL MINIMUM

FLAPS 2..... ORDER
FLAPS 2.....SELECT

- *Check deceleration toward "F" speed.*
- *For ILS / MLS ◁ / GLS ◁ and approaches using FLS ◁, if the aircraft intercepts the flight path below 2 000 ft AGL, select FLAPS 2 at one dot below the flight path.*
- *If the aircraft speed is significantly higher than "F" speed on the flight path, or the aircraft does not decelerate on the flight path, extend the landing gear in order to slow down the aircraft. The use of speed brakes is not recommended.*
- *When the speed brakes are deployed, extending the flaps beyond FLAPS 1 may induce a slight roll movement, and in calm conditions a small lateral control asymmetry may remain until disturbed by a control input or by an atmospheric disturbance.*

Ident.: PRO-NOR-SOP-18-B-B-00014498.0001001 / 05 MAR 18
Applicable to: ALL

WHEN FLAPS ARE AT 2

L/G DOWN .....ORDER
L/G lever.....SELECT DOWN
AUTO BRK .....CONFIRM

- *If the runway conditions have changed from the approach briefing, consider another braking mode.*

GROUND SPOILERS .....ARM

EXTERIOR LIGHTS

NOSE sw.....T.O
RWY TURN OFF sw..... ON

Ident.: PRO-NOR-SOP-18-B-B-00014497.0001001 / 05 DEC 17
Applicable to: MSN 01767-02405, 02482

WHEN LANDING GEAR IS DOWN

FLAPS 3.....ORDER
FLAPS 3.....SELECT
ECAM WHEEL SD page ..... CHECK

- *WHEEL SD page appears below 15 500 ft when landing gear is extended.*
- *Check for three green indications on the landing gear indicator panel. At least one green triangle on each landing gear strut on the WHEEL SD page is sufficient to indicate that the landing gear is downlocked. Rely also on the "LDG GEAR DN" green LDG MEMO message to confirm that the landing gear is downlocked.*

● **If residual pressure is indicated on the triple indicator:**
RESIDUAL BRAKING PROC..... APPLY

FLAPS FULL.....ORDER
FLAPS FULL.....SELECT

- *Retract the speed brakes before selecting FLAPS FULL to prevent a pitch down when the speed brakes automatically retract.*
- *Check deceleration towards VAPP.*
- *Check correct TO waypoint on the ND.*

A/THR.....CHECK IN SPEED MODE OR OFF
WING ANTI-ICE pb-sw.....OFF

- *Switch the WING ANTI ICE pb-sw to ON, only in severe icing conditions.*

SLIDING TABLE.....STOW
ALL EFB (with no mounted equipment)..... STOW
LDG MEMO.....CHECK NO BLUE
CABIN REPORT..... RECEIVE
CABIN CREW.....ADVISE
LANDING CHECKLIST..... COMPLETE

FLIGHT PARAMETERS.....MONITOR

- *The PF announces any FMA modification.*
- *The PM calls out, if:*
  - *The speed goes lower than the speed target -5 kt , or greater than the speed target +10 kt*
  - *The pitch attitude goes lower than -2.5 °, or greater than +10 ° nose up*
  - *The bank angle becomes greater than 7 °*
  - *The descent rate becomes greater than 1 000 ft/min*
- *Following PM flight parameter exceedance callout, the suitable PF response will be:*
  - *Acknowledge the PM callout, for proper crew coordination purposes*
  - *Take immediate corrective action to control the exceeded parameter back into the defined stabilized conditions*
  - *Assess whether stabilized conditions will be recovered early enough prior to landing, otherwise initiate a go-around.*

Ident.: PRO-NOR-SOP-18-B-B-00014497.0002001 / 05 DEC 17

3 **Applicable to: MSN 02443-02457, 02584-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

WHEN LANDING GEAR IS DOWN

FLAPS 3.....ORDER
FLAPS 3.....SELECT
ECAM WHEEL SD page ..... CHECK

- *WHEEL SD page appears below 15 500 ft when landing gear is extended.*
- *Check for three green indications on the landing gear indicator panel. At least one green triangle on each landing gear strut on the WHEEL SD page is sufficient to indicate that the landing gear is downlocked. Rely also on the "LDG GEAR DN" green LDG MEMO message to confirm that the landing gear is downlocked.*

● **If residual pressure is indicated on the triple indicator:**
RESIDUAL BRAKING PROC..... APPLY

- *Due to the accomplishment of the alternate braking functional test after the landing gear is downlocked, brief brake pressure indications may be observed on BRAKES PRESS.*

FLAPS FULL.....ORDER
FLAPS FULL.....SELECT

- *Retract the speed brakes before selecting FLAPS FULL to prevent a pitch down when the speed brakes automatically retract.*
- *Check deceleration towards VAPP.*
- *Check correct TO waypoint on the ND.*

A/THR.....CHECK IN SPEED MODE OR OFF

WING ANTI-ICE pb-sw.....OFF

- *Switch the WING ANTI ICE pb-sw to ON, only in severe icing conditions.*

SLIDING TABLE.....STOW
ALL EFB (with no mounted equipment)..... STOW
LDG MEMO.....CHECK NO BLUE
CABIN REPORT..... RECEIVE
CABIN CREW.....ADVISE
LANDING CHECKLIST..... COMPLETE
FLIGHT PARAMETERS.....MONITOR

- *The PF announces any FMA modification.*
- *The PM calls out, if:*
  - *The speed goes lower than the speed target -5 kt , or greater than the speed target +10 kt*
  - *The pitch attitude goes lower than -2.5 °, or greater than +10 ° nose up*
  - *The bank angle becomes greater than 7 °*
  - *The descent rate becomes greater than 1 000 ft/min*
- *Following PM flight parameter exceedance callout, the suitable PF response will be:*
  - *Acknowledge the PM callout, for proper crew coordination purposes*
  - *Take immediate corrective action to control the exceeded parameter back into the defined stabilized conditions*
  - *Assess whether stabilized conditions will be recovered early enough prior to landing, otherwise initiate a go-around.*

Ident.: PRO-NOR-SOP-18-B-B-00014497.0006001 / 05 DEC 17

4 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

WHEN LANDING GEAR IS DOWN

FLAPS 3.....ORDER
FLAPS 3.....SELECT

- *Retract the speed brakes before selecting FLAPS 3 to prevent a pitch down when the speed brakes automatically retract.*

ECAM WHEEL SD page ..... CHECK

- *WHEEL SD page appears below 15 500 ft when landing gear is extended.*
- *Check for three green indications on the landing gear indicator panel. At least one green triangle on each landing gear strut on the WHEEL SD page is sufficient to indicate that the landing gear is downlocked. Rely also on the "LDG GEAR DN" green LDG MEMO message to confirm that the landing gear is downlocked.*

- **If residual pressure is indicated on the triple indicator:**
  RESIDUAL BRAKING PROC..... APPLY

  - *Due to the accomplishment of the alternate braking functional test after the landing gear is downlocked, brief brake pressure indications may be observed on BRAKES PRESS.*

FLAPS FULL.....ORDER
FLAPS FULL.....SELECT

- *Check deceleration towards VAPP.*
- *Check correct TO waypoint on the ND.*

A/THR.....CHECK IN SPEED MODE OR OFF
WING ANTI-ICE pb-sw.....OFF

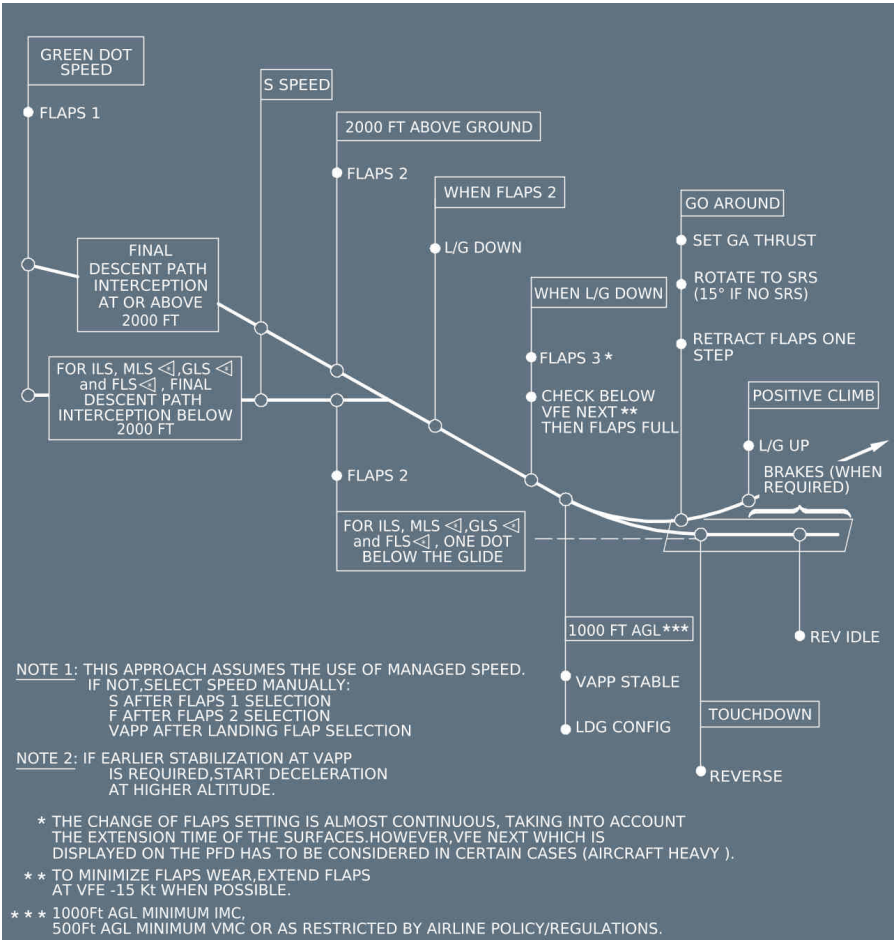
- *Switch the WING ANTI ICE pb-sw to ON, only in severe icing conditions.*

SLIDING TABLE.....STOW
ALL EFB (with no mounted equipment)..... STOW
LDG MEMO.....CHECK NO BLUE
CABIN REPORT..... RECEIVE
CABIN CREW.....ADVISE
LANDING CHECKLIST..... COMPLETE
FLIGHT PARAMETERS.....MONITOR

- *The PF announces any FMA modification.*
- *The PM calls out, if:*
  - *The speed goes lower than the speed target -5 kt , or greater than the speed target +10 kt*
  - *The pitch attitude goes lower than -2.5 °, or greater than +7.5 ° nose up*
  - *The bank angle becomes greater than 7 °*
  - *The descent rate becomes greater than 1 000 ft/min*
- *Following PM flight parameter exceedance callout, the suitable PF response will be:*
  - *Acknowledge the PM callout, for proper crew coordination purposes*
  - *Take immediate corrective action to control the exceeded parameter back into the defined stabilized conditions*
  - *Assess whether stabilized conditions will be recovered early enough prior to landing, otherwise initiate a go-around.*

Ident.: PRO-NOR-SOP-18-B-B-00014495.0001001 / 29 MAY 13
Applicable to: ALL

PATTERN (DECELERATED)



Aircraft Guidance Management

APPROACH USING LOC G/S GUIDANCE

Applicable to: ALL

Ident.: PRO-NOR-SOP-18-C-A-00014508.0001001 / 29 MAY 13

GENERAL

The following items are to be performed in addition to previous SOP chapters for ILS / MLS ◁ / GLS ◁ approach.

Ident.: PRO-NOR-SOP-18-C-A-00020896.0001001 / 20 MAR 17

DESCENT PREPARATION

APPROACH MINIMUM.....DETERMINE

- *For CATII, CATIII approaches, always choose the lowest achievable minimum. The approach minimum is limited by:*
  - *Crew qualification*
  - *Airline Operating Manual requirement*
  - *Aircraft technical status*
  - *Airport status*
- *For CATIII with no DH, the flight crew should enter "NO" in the DH field of the MCDU to avoid false "HUNDRED ABOVE" or "MINIMUM" auto callouts which would not be applicable.*

APPROACH BRIEFING.....PERFORM

For CATII, CATIII approaches, review the following items on top of the usual briefing:

- *Task sharing and callouts*
- *Management of degraded guidance*
- *Low visibility procedures at the airport*

Ident.: PRO-NOR-SOP-18-C-A-00014509.0001001 / 09 FEB 16

INITIAL/INTERMEDIATE APPROACH

APPR pb on FCU..... PRESS

- *Press the APPR pb when:*
  - *Cleared for the approach*
  - *On the intercept trajectory for the final approach course*
  - *LOC deviation is available.*

  This arms the LOC and G/S modes.

  Note: In NAV mode, the aircraft may leave the F-PLN to capture the LOC.
- *LOC and/or G/S capture modes will engage no sooner than 3 s after being armed.*
- *ICAO defines the envelope where the quality of the G/S signal ensures a normal capture. This envelope is within 10 NM, ±8 ° of the centerline of the ILS glide path and up to 1.75 θ and down to 0.3 θ (θ = nominal glide path angle). When arming the approach well outside of the normal G/S capture envelope, a spurious G/S* engagement may occur due to a wrong G/S deviation signal. Whenever the pilot notices the pitch movement, or the spurious G/S*, or the trajectory deviation, he will immediately disconnect the AP, if engaged, to re-establish a normal attitude and will disengage APPR mode. It is then recommended to arm/rearm APPR (ILS) mode within the normal capture zone.*

BOTH APs..... ENGAGE

- *When APPR mode is selected, AP1 and AP2 should be engaged.*
- *Above 5 000 ft AGL, the FMA displays CAT 1.*
- *Below 5 000 ft AGL, the FMA displays the correct approach capability for the intended approach.*

LOC..... CHECK ARMED
G/S..... CHECK ARMED
LOC CAPTURE.....MONITOR
G/S CAPTURE.....MONITOR
GO AROUND ALTITUDE..... SET

Ident.: PRO-NOR-SOP-18-C-A-00014510.0002001 / 03 MAR 14

GLIDE INTERCEPTION FROM ABOVE

The following procedure should only be applied when established on the localizer. The flight crew must react without delay to meet the stabilization criteria.

In order to get the best rate of descent when cleared by ATC and below the limiting speeds, the flight crew should lower the landing gear and select flaps as required (at least CONF 2 should be selected to ensure that the aircraft speed will not increase).

- **If above the glideslope:**

  APPR mode ..... ARM / CHECK ARMED
  FCU ALTITUDE..... SET ABOVE A/C ALTITUDE
  V/S MODE..... SELECT

  - *Select V/S 1 500 ft/min initially. V/S in excess of 2 000 ft/min will result in the speed increasing towards VFE.*
  - *When reaching VFE, the AP maintains VFE and reduces the V/S without MODE REVERSION.*

Ident.: PRO-NOR-SOP-18-C-A-00014511.0001001 / 04 JUL 17

FINAL APPROACH

FLIGHT PARAMETERS.....MONITOR

- *The PM calls out if excessive deviation occurs:*
  - *LOC: ½ dot*
  - *GLIDE: ½ dot*

  Refer to PRO-NOR-SOP-90 Approach

AT 350 ft RA

LAND mode..... CHECK ENGAGED/ANNOUNCE

If no LAND mode, autoland is not authorized.

FOR CAT I, CAT II, CAT III WITH DH APPROACH

AT ENTERED MINIMUM +100 ft

ONE HUNDRED ABOVE.....MONITOR OR ANNOUNCE

AT ENTERED MINIMUM

MINIMUM.....MONITOR OR ANNOUNCE

Below minimum, the visual references must be the primary reference until landing.
For more information regarding transition to visual references, *Refer to FCTM/PR-NP-SOP-250 Transition to Visual References*.

- **If visual references are sufficient:**

  CONTINUE.....ANNOUNCE
  AP.....AS RQRD

  For Minimum Use Height of the AP Refer to LIM-AFS-10 Flight Management Function

For Manual Landing and Autoland procedure *Refer to PRO-NOR-SOP-19 Landing - Flare*

■ **If visual references are not sufficient:**
GO AROUND..... ANNOUNCE
Initiate a go around.

FOR CAT III WITHOUT DH APPROACH

At 100 ft (Alert Height) if no failure

CONTINUE..... ANNOUNCE

Ident.: PRO-NOR-SOP-18-C-A-00021062.0002001 / 31 AUG 17

MANAGEMENT OF DEGRADED GUIDANCE

EARLY/UNTIMELY FLARE MODE ENGAGEMENT

- Perform a go around (thrust levers set to TOGA), or
- Disconnect AP, set both FDs to OFF and continue the approach using raw data or external visual references.

In association to an early/untimely FLARE mode engagement on the FMA, the following effects may occur:

- On the Primary Flight Display (PFD):
  - The RA height indication may be frozen at a positive or negative value,
  - Discrepancies between both PFDs may happen on the following indications:
    - RA heights,
    - FD orders,
    - FMA indications when both APs are engaged.
- Warnings and/or Callouts:
  - Untimely activation of the AUTOLAND warning light. *Refer to DSC-22_30-30 Autoland Warning*,
  - Untimely Terrain Awareness and Warning System (TAWS) alerts,
  - Untimely or absence of “RETARD" callout,
  - Untimely L/G GEAR NOT DOWN ECAM warning,
  - Absence or interruption of RA automatic callout (height announcement),
- On the System Display (SD): A pulsing cabin differential pressure advisory may appear on the ECAM - CAB PRESS PAGE

Note: *This ECAM advisory has no consequence on the real cabin pressure.*

FOR CAT II, CAT III OPERATIONS

- **In the case of:**

  - Amber caution (single chime), or
  - Landing capability degradation.

  Above 1000 ft:

  ECAM / QRH PROCEDURE..... COMPLETE
  REQUIRED EQUIPMENT..... CHECK

  Refer to QRH/OPS Required Equipment for CAT2 and CAT3

  APPROACH AND LANDING CAPABILITY..... CHECK

  If required:

  RVR..... CHECK
  DH..... ADJUST
  BRIEFING..... CONFIRM

  - **If the flight crew does not complete all the above actions at 1 000 ft:**
    GO AROUND..... PERFORM

  Below 1000 ft:

  - **If external visual references are not sufficient:**
    GO AROUND..... PERFORM

  Below 100 ft (Alert Height) for CAT 3 DUAL:

  Approach may be continued unless autoland light comes on.

- **In the case of Autoland warning light:**

  - **Visual references not sufficient:**
    GO AROUND..... PERFORM

  - **Visual references sufficient:**

    Approach may be continued manually

APPROACH USING FINAL APP GUIDANCE

Ident.: PRO-NOR-SOP-18-C-C-00014521.0002001 / 29 MAY 13
Applicable to: ALL

GENERAL

The following items are to be performed in addition to previous SOP chapters in the following cases:

- RNAV(GNSS) approaches with LNAV and LNAV/VNAV minima
- Conventional approaches based on VOR or NDB using FINAL APP guidance.

Ident.: PRO-NOR-SOP-18-C-C-00014522.0003001 / 09 SEP 14
Applicable to: ALL

AIRCRAFT EQUIPMENT

For RNAV(GNSS) approaches, *Refer to PRO-SPO-51 RNP APCH / RNAV(GNSS) - Required RNP APCH Equipment*

Ident.: PRO-NOR-SOP-18-C-C-00015860.0001001 / 09 SEP 14
Applicable to: ALL

FLIGHT PREPARATION

For RNAV(GNSS) approaches, GPS PRIMARY availability should be confirmed.
Refer to PRO-NOR-SOP-02 GPS PRIMARY Availability (If Installed)

Ident.: PRO-NOR-SOP-18-C-C-00014524.0002001 / 08 AUG 17
Applicable to: ALL

DESCENT PREPARATION

WEATHER AND LANDING INFORMATION.....OBTAIN

- *The FMS vertical profile does not take into account the effect of low OAT. Therefore, vertical managed guidance:*
  - *Must not be used when the actual OAT is below the minimum temperature indicated on the approach chart or defined by the Operator, or*
  - *May not be used when temperature corrections are required (FINAL APP mode may not engage).*
- *For RNAV (GNSS) approach with LNAV VNAV minima, use of QNH from a remote station is prohibited.*

F-PLN A page..... CHECK

- *If a TOO STEEP PATH is displayed after the Final Descent Point (FDP), do not use FINAL APP guidance for approach. Use NAV FPA, TRK FPA or FLS for approach.*
- *0.1 degree of difference between the MCDU and the charted final vertical path is acceptable*
- *1 degree of difference between the MCDU and the charted final lateral track is acceptable*

  Note: *A higher lateral track value can be acceptable if the navigation database has been validated to exclude potential coding error.*

- *3 degree of difference between the MCDU and the charted final lateral track is acceptable for conventional radio NAVAID approach.*

PROG page.....COMPLETE

- *Insert the reference RWY threshold in the BRG/DIST field for position monitoring during approach.*

GO AROUND STRATEGY..... REVIEW

- *The briefing should include a review of the "Management of Degraded Navigation" chapter.*

Ident.: PRO-NOR-SOP-18-C-C-00014525.0003001 / 23 JUN 15
Applicable to: ALL

DESCENT

At 10 000 ft:

NAV ACCURACY.....CHECK

- *If NAV accuracy is LOW, use TRK FPA mode for approach (Refer to APPR using FPA guidance).*

● **For RNAV(GNSS) approach:**
GPS PRIMARY.....CHECK

- *GPS PRIMARY must be available on at least 1 FMS.*

BARO REF.....SET

- *The vertical guidance requires a precise baro setting. The maximum acceptable discrepancy between altimeters is 100 ft.*

Ident.: PRO-NOR-SOP-18-C-C-00014526.0002001 / 08 AUG 17
Applicable to: ALL

INITIAL/INTERMEDIATE/FINAL APPROACH

POSITION..... MONITOR

- *Check that ATC clearances allow the aircraft to fly through the capture area of vertical profile. After a radar vectoring, consider a DIR TO RDL IN to sequence the F-PLN.*

APPR pb on FCU..... PRESS

Press the APPR pb when all of the following conditions are satisfied:
- *The aircraft is cleared for approach*
- *TO waypoint is the Final Descent Point.*

APP NAV..... CHECK ARMED or ENGAGED
FINAL..... CHECK ARMED

- *Check that the V/DEV scale is displayed on the PFD.*
- *At the Final Descent Point, a blue arrow on ND indicates that FINAL APP engagement conditions are met.*

At the Final Descent Point:

FINAL APP..... CHECK ENGAGED
GO AROUND ALTITUDE..... SET
FLIGHT PARAMETERS..... MONITOR

- *Monitor XTK error on ND.*
- *Monitor V/DEV on PFD.*
- *Crosscheck distances versus altitudes as published on the charts.*
- *If approaching on a conventional radio NAVAID procedure, monitor the lateral and vertical guidance using raw data.*
- *The PM calls out if excessive deviation occurs:*
  - *XTK > 0.1 NM*
  - *V/DEV > ½ dot*

L2 *On the vertical scale, one dot corresponds to 100 ft. Thus ½ dot is 50 ft.*

L1 *Refer to PRO-NOR-SOP-90 Approach*

Ident.: PRO-NOR-SOP-18-C-C-00015015.0001001 / 29 MAY 13
Applicable to: ALL

AT ENTERED MINIMUM +100 FT

ONE HUNDRED ABOVE..... MONITOR OR ANNOUNCE

Ident.: PRO-NOR-SOP-18-C-C-00014527.0008001 / 04 JUL 17

[1] **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02649-02737, 02908-03264, 03330-04216, 04312-04384, 04399, 04438-04506, 04518-09063**

AT ENTERED MINIMUM

MINIMUM.....MONITOR OR ANNOUNCE

Below minimum, the visual references must be the primary references until landing.
For more information regarding transition to visual references, *Refer to FCTM/PR-NP-SOP-250 Transition to Visual References*.

■ **If visual references are sufficient:**

CONTINUE.....ANNOUNCE

At the latest at the MAP or Minimum Use Height of the AP (whichever occurs first):

AP.....OFF

- *For Minimum Use Height of the AP, Refer to LIM-AFS-10 Autopilot Function*
- *At minimum -50 ft, if the AP is still engaged, the message DISCONNECT AP FOR LDG pulses on the FMA to remind the flight crew that automatic landing is not available.*

FD..... AS RQRD

CAUTION	- *From minima down to the MAP the FD provides an additional guidance. The FD must be switched off if the guidance is not relevant or not followed.* - *After the MAP, disregard the FD as it reverts to HDG V/S.*

■ **If visual references are not sufficient:**

GO AROUND.....ANNOUNCE

- *Initiate a go around.*

Ident.: PRO-NOR-SOP-18-C-C-00014527.0010001 / 04 JUL 17
Applicable to: MSN 01767-01920, 02108, 02195-02405, 02482-02626, 02804, 03308, 04294, 04433, 04510

AT ENTERED MINIMUM

MINIMUM.....MONITOR OR ANNOUNCE

Below minimum, the visual references must be the primary references until landing.
For more information regarding transition to visual references, *Refer to FCTM/PR-NP-SOP-250 Transition to Visual References*.

■ **If visual references are sufficient:**

CONTINUE.....ANNOUNCE

At the latest at the MAP or Minimum Use Height of the AP (whichever occurs first):

AP.....OFF

- *For Minimum Use Height of the AP, Refer to LIM-AFS-10 Autopilot Function*

FD.....AS RQRD

CAUTION	- *From minima down to the MAP the FD provides an additional guidance. The FD must be switched off if the guidance is not relevant or not followed.* - *After the MAP, disregard the FD as it reverts to HDG V/S.*

■ **If visual references are not sufficient:**

GO AROUND.....ANNOUNCE

- *Initiate a go around.*

Ident.: PRO-NOR-SOP-18-C-C-00014527.0009001 / 04 JUL 17
Applicable to: MSN 04393-04397

AT ENTERED MINIMUM

MINIMUM.....MONITOR OR ANNOUNCE

Below minimum, the visual references must be the primary references until landing.
For more information regarding transition to visual references, *Refer to FCTM/PR-NP-SOP-250 Transition to Visual References*.

■ **If visual references are sufficient:**

CONTINUE.....ANNOUNCE

At the latest at the MAP or Minimum Use Height of the AP (whichever occurs first):

AP.....OFF

- *For Minimum Use Height of the AP, Refer to LIM-AFS-10 Autopilot Function*
- *The AP will automatically disengage at the MAP.*
- *At minimum -50 ft, if the AP is still engaged, the message DISCONNECT AP FOR LDG pulses on the FMA to remind the flight crew that automatic landing is not available.*

FD.....AS RQRD

CAUTION	- *From minima down to the MAP the FD provides an additional guidance. The FD must be switched off if the guidance is not relevant or not followed.* - *After the MAP, disregard the FD as it reverts to HDG V/S.*

■ **If visual references are not sufficient:**

GO AROUND.....ANNOUNCE

- *Initiate a go around.*

Ident.: PRO-NOR-SOP-18-C-C-00014528.0002001 / 23 JUN 15
Applicable to: ALL

MANAGEMENT OF DEGRADED NAVIGATION

- **For VOR and NDB approaches, be prepared to continue the approach with reference to appropriate raw data by reverting to:**
  - NAV FPA, if the vertical guidance is not satisfactory
  - TRK FPA, if the lateral guidance is not satisfactory.
- **For RNAV(GNSS) approaches with LNAV minima and LNAV/VNAV minima:**
  - Use the appropriate remaining AP/FDin the following cases:
    - GPS PRIMARY LOST on one ND
    - NAV ACCUR DOWNGRAD on one FMGS.
  - Discontinue the approach in the following cases, if external visual references are not sufficient to proceed visually:
    - GPS PRIMARY LOST on both NDs
    - XTK > 0.3 NM
    - NAV FM/GPS POS DISAGREE on ECAM
    - NAV ACCUR DOWNGRAD on both FMGS.
- **For RNAV(GNSS) approaches with LNAV/VNAV minima:**
  - Discontinue the approach in the case of deviation of 75 ft below the vertical path (V/DEV>¾ dot).

APPROACH USING FPA GUIDANCE

Ident.: PRO-NOR-SOP-18-C-E-00014561.0002001 / 29 MAY 13
Applicable to: ALL

GENERAL

The following items are to be performed in addition to previous SOP chapters in the following cases:
- RNAV(GNSS) approaches using mixed NAV FPA guidance with LNAV minima only
- Conventional approaches based on VOR and NDB using selected TRK FPA or mixed NAV FPA guidance
- ILS G/S OUT, LOC ONLY and back course localizer approaches.

The approach is flown in TRK FPA when:
- The approach is not stored in the database or
- NAV accuracy is LOW.

Ident.: PRO-NOR-SOP-18-C-E-00014560.0003001 / 09 SEP 14
Applicable to: ALL

AIRCRAFT EQUIPMENT

For RNAV(GNSS) approaches, *Refer to PRO-SPO-51 RNP APCH / RNAV(GNSS) - Required RNP APCH Equipment*

Ident.: PRO-NOR-SOP-18-C-E-00015861.0001001 / 09 SEP 14
Applicable to: ALL

FLIGHT PREPARATION

For RNAV(GNSS) approaches, GPS PRIMARY availability should be confirmed.
Refer to PRO-NOR-SOP-02 GPS PRIMARY Availability (If Installed)

Ident.: PRO-NOR-SOP-18-C-E-00014558.0002001 / 20 SEP 16
Applicable to: ALL

DESCENT PREPARATION

F-PLN A page..... CHECK

- *If a TOO STEEP PATH message is displayed after the Final Descent Point (FDP), disregard the V/DEV or yoyo information on the PFD.*
- *For approaches using NAV FPA:*
  - *1 degree of difference between the MCDU and the charted final lateral track is acceptable.*
  - *3 degree of difference between the MCDU and the charted final lateral track is acceptable for conventional radio NAVAID approach.*
- *In all other cases, use TRK FPA mode for approach.*

PROG page.....COMPLETE

- *Insert the reference RWY threshold in the BRG/DIST field for position monitoring during approach.*

GO AROUND STRATEGY..... REVIEW

- *The briefing should include a review of the "Management of Degraded Navigation" chapter.*

Ident.: PRO-NOR-SOP-18-C-E-00014557.0003001 / 03 MAR 14
Applicable to: ALL

DESCENT

At 10 000 ft:

NAV ACCURACY..... CHECK

- *If NAV accuracy is LOW, use TRK mode for approach.*

- **For RNAV(GNSS) approach:**
  GPS PRIMARY.....CHECK

  - *GPS PRIMARY must be available on at least 1 FMS.*

Ident.: PRO-NOR-SOP-18-C-E-00014556.0002001 / 21 MAR 17
Applicable to: ALL

INITIAL/INTERMEDIATE/FINAL APPROACH

LATERAL GUIDANCE MODE.....SET FOR APPROACH

- *Arm NAV or LOC mode as appropriate.*

- **For LOC ONLY and ILS G/S OUT:**
  LOC pb-sw.....PRESS

  - *Press the LOC pb-sw when cleared for approach and on the intercept trajectory for the final approach course.*

    Note: In NAV mode, the aircraft may leave the F-PLN to capture the LOC.

  LOC.....CHECK ARMED

CAUTION	Do not press the APPR pb

- **For back course localizer approaches:**
  TRK FPA MODE.....USE FOR APPROACH

  - *Refer to FCTM/PR-NP-SOP-190-GUI Back Course Localizer Approach.*

LATERAL PATH.....INTERCEPT

- *Monitor NAV or LOC engagement as appropriate.*

TRK FPA pb (Bird).....SELECT
FPA FOR FINAL APPROACH.....SET

At 0.3 nm from the Final Descent Point:

FPA selector.....PULL
FPA MODE.....CHECK ENGAGED

- *Check NAV FPA, TRK FPA or LOC FPA is engaged.*

POSITION/FLIGHT PATH .....MONITOR/ADJUST
GO AROUND ALTITUDE.....SET

- *Set when below the go around altitude to avoid unexpected altitude capture.*

FLIGHT PARAMETERS.....MONITOR

- *Crosscheck distances versus altitudes as published on the charts.*
- *If approaching on a conventional radio NAVAID procedure, monitor the lateral and vertical guidance using raw data.*
- *For approaches using NAV FPA, monitor XTK error on ND to check the lateral guidance.*
- *The PM calls out if excessive lateral deviation occurs:*
  - *Approach using NAV MODE: XTK > 0.1 NM*
  - *Approach using LOC MODE: LOC ½ dot*
  - *Approach using TRK MODE:*
    - *VOR: ½ dot or 2.5 °*
    - *NDB: 5 °*

Refer to PRO-NOR-SOP-90 Flight Parameters in Approach

Ident.: PRO-NOR-SOP-18-C-E-00015017.0001001 / 29 MAY 13
Applicable to: ALL

AT ENTERED MINIMUM +100 FT

ONE HUNDRED ABOVE.....MONITOR OR ANNOUNCE

Ident.: PRO-NOR-SOP-18-C-E-00014555.0002001 / 04 JUL 17
Applicable to: MSN 01767-01920, 02108, 02195-02405, 02482-02626, 02804, 03308, 04294, 04433, 04510

AT ENTERED MINIMUM

MINIMUM.....MONITOR OR ANNOUNCE

Below minimum, the visual references must be the primary references until landing.
For more information regarding transition to visual references, *Refer to FCTM/PR-NP-SOP-250 Transition to Visual References*.

■ **If visual references are sufficient:**

CONTINUE.....ANNOUNCE
AP.....OFF
FD.....OFF

- *The PF orders the PM to set both FDs OFF.*

RUNWAY TRACK.....CHECK/SET

- *If needed, the PF orders the PM to set the runway track.*

■ **If visual references are not sufficient:**

GO AROUND.....ANNOUNCE

- *Initiate a go around.*

Ident.: PRO-NOR-SOP-18-C-E-00014555.0013001 / 04 JUL 17

2 **Applicable to: MSN 01957-02097, 02121-02139, 02443-02457, 02649-02737, 02908-03264, 03330-04216, 04312-04399, 04438-04506, 04518-09063**

AT ENTERED MINIMUM

MINIMUM.....MONITOR OR ANNOUNCE

Below minimum, the visual references must be the primary references until landing.
For more information regarding transition to visual references, *Refer to FCTM/PR-NP-SOP-250 Transition to Visual References*.

■ **If visual references are sufficient:**

CONTINUE.....ANNOUNCE
AP.....OFF

- *At minimum -50 ft, if the AP is still engaged, the message DISCONNECT AP FOR LDG pulses on the FMA to remind the flight crew that automatic landing is not available.*

FD.....OFF

- *The PF orders the PM to set both FDs OFF.*

RUNWAY TRACK.....CHECK/SET

- *If needed, the PF orders the PM to set the runway track.*

■ **If visual references are not sufficient:**

GO AROUND.....ANNOUNCE

- *Initiate a go around.*

Ident.: PRO-NOR-SOP-18-C-E-00014554.0002001 / 23 JUN 15
Applicable to: ALL

MANAGEMENT OF DEGRADED NAVIGATION

● **For VOR and NDB approaches in NAV FPA, if lateral guidance is not satisfactory:**

- Be prepared to continue the approach with reference to appropriate raw data by reverting to TRK FPA.

- **For RNAV(GNSS) approaches, with LNAV minima:**
  - Use the appropriate remaining AP FD in the following cases:
    - GPS PRIMARY LOST on one ND
    - NAV ACCUR DOWNGRAD on one FMGS
  - Discontinue the approach in the following cases, if external visual references are not sufficient to proceed visually:
    - GPS PRIMARY LOST on both NDs
    - XTK > 0.3 NM
    - NAV FM/GPS POS DISAGREE on ECAM
    - NAV ACCUR DOWNGRAD on both FMGS

CIRCLING APPROACH

Applicable to: ALL

Ident.: PRO-NOR-SOP-18-C-F-00014570.0001001 / 29 MAY 13

GENERAL

The circling approach is the visual phase of an instrument approach to bring an aircraft into position for landing on a runway which is not suitably located for a straight-in approach.

CAUTION	The flight crew must conduct the flight within the circling area, while maintaining required visual references at all times.

Ident.: PRO-NOR-SOP-18-C-F-00014569.0001001 / 29 MAY 13

APPROACH PREPARATION

For a circling approach, the approach preparation should include the following additional items in the FMS programming.

F-PLN

Introduce the instrument approach procedure, including the missed approach procedure for instrument approach.

SEC F-PLN

The landing runway must be inserted into the SEC F-PLN.

Update the SEC F-PLN as follows:
- Copy the active F-PLN
- Revise the landing runway.

Ident.: PRO-NOR-SOP-18-C-F-00014568.0001001 / 29 MAY 13

INSTRUMENT APPROACH

The flight crew flies a stabilized approach at "F" speed, configuration 3 and landing gear down.

Ident.: PRO-NOR-SOP-18-C-F-00014567.0001001 / 29 MAY 13

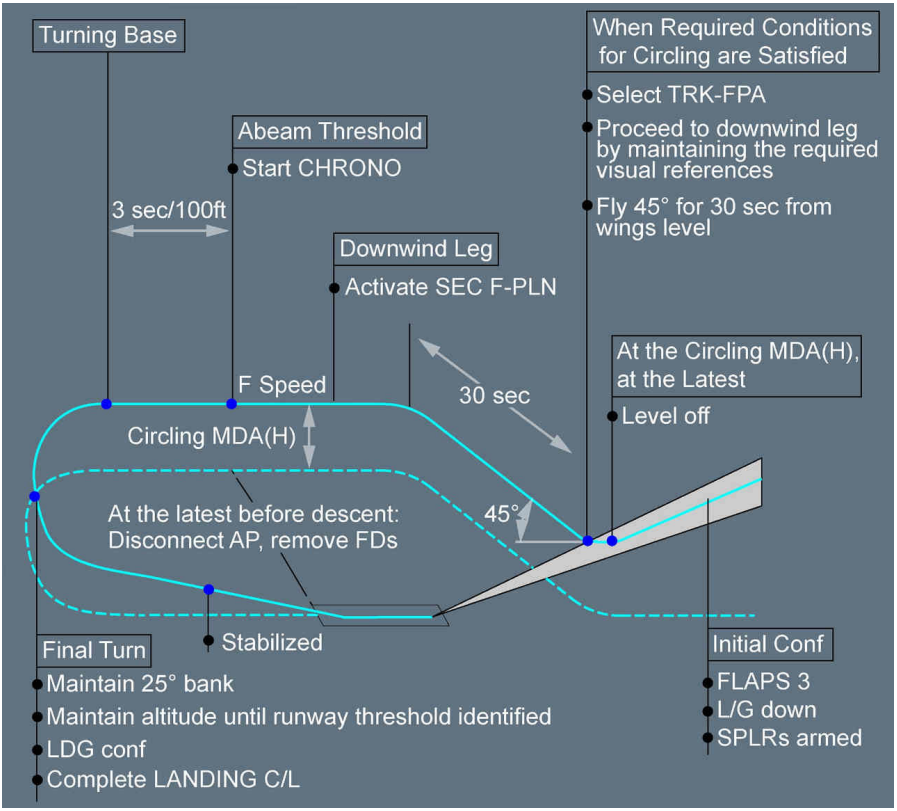
CIRCLING APPROACH

- **At the Circling MDA(H) at the latest:**
  Perform a level off
- **At MAP, if the flight crew finds no visual reference:**
  Initiate a go around
- **When required conditions for circling are satisfied:**
  Select TRK FPA
  Proceed to downwind leg
  At any time in the downwind leg, activate the SEC F-PLN
  Disconnect the AP and remove the FDs at the latest before starting the descent toward the runway
  Set the landing configuration when appropriate, but ensure early stabilization in final.

If, at any time during the circling procedure, the required visual references are lost, initiate a go around following the missed approach of the initial instrument approach (unless otherwise specified).

Ident.: PRO-NOR-SOP-18-C-F-00014566.0001001 / 30 JUN 16

CIRCLING APPROACH PATTERN



RNAV VISUAL APPROACH

Applicable to: ALL

Ident.: PRO-NOR-SOP-18-C-G-00016048.0001001 / 23 DEC 14

GENERAL

The aircraft navigates using the RNAV system, but the position is monitored by visual reference to the ground, obstacles and other traffic.
RNAV visual approach must be stored and retrievable from the Navigation Database.

Ident.: PRO-NOR-SOP-18-C-G-00016049.0001001 / 23 DEC 14

EQUIPMENT REQUIRED

- 1 FMS
- 1 GPS or 2 DME to update FM position
- Additional requirement if indicated on the approach chart.

Ident.: PRO-NOR-SOP-18-C-G-00016050.0001001 / 17 MAR 17

FMGC GUIDANCE MODE

- **If no required accuracy is published:**

  The use of FMGC guidance mode is at flight crew discretion.

- **If RNAV 1 or RNP 1 is required on the published approach chart:**

  The flight crew should use adequate FMGC guidance modes.

Note: *The use of lateral and vertical managed guidance modes reduces the crew workload and improves energy management.*

For RNAV VISUAL approach including RF legs, *Refer to FCTM/PR-NP-SP-30 General* for RF leg flying technic.

Ident.: PRO-NOR-SOP-18-C-G-00016051.0001001 / 23 DEC 14

DESCENT PREPARATION

For approach data insertion in the FMS, keep the BARO/MDA field empty on the PERF APPR Page.

Ident.: PRO-NOR-SOP-18-C-G-00016052.0001001 / 23 DEC 14

DESCENT

For RNAV VISUAL approaches requiring GPS, check that GPS PRIMARY is available on at least 1 FMS.

Ident.: PRO-NOR-SOP-18-C-G-00016053.0001001 / 21 MAR 17

FINAL APPROACH

The flight crew must disconnect the AP at the latest at the Minimum Use Height of the AP.
Refer to LIM-AFS-10 Autopilot Function

VISUAL APPROACH

Ident.: PRO-NOR-SOP-18-C-H-00014574.0001001 / 29 MAY 13
Applicable to: MSN 01920, 02108, 02135, 02139-02359, 02584, 03264, 03330, 05120, 05158

GENERAL

Perform the approach on a nominal 3 ° glideslope using visual references. Approach to be stabilized by 500 ft AGL on the correct approach path, in the landing configuration, at VAPP.

Method:
- The AP is not used
- Both FDs are OFF
- FPV use is recommended
- A/THR use is recommended with managed speed.

Bear in mind the possible risk of optical illusions due to hindered night vision.

Ident.: PRO-NOR-SOP-18-C-H-00014574.0002001 / 29 MAY 13
3 **Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02388-02482, 02609-03138, 03308, 03357-05094, 05155, 05190-09063**

GENERAL

Perform the approach on a nominal 3 ° glideslope using visual references. Approach to be stabilized by 500 ft AGL on the correct approach path, in the landing configuration, at VAPP.

Method:
- The AP is not used
- Both FDs are OFF
- FPV use is recommended
- A/THR use is recommended with managed speed.

Bear in mind the possible risk of optical illusions due to hindered night vision.

Note: *If the forecasted tailwind at landing is greater than 10 kt, decelerated approach is not allowed, and the speed should be stabilized around VREF + 5 kt in final.*

Ident.: PRO-NOR-SOP-18-C-H-00014573.0001001 / 08 AUG 13
Applicable to: ALL

INITIAL/INTERMEDIATE APPROACH

The flight plan selected on the MCDU should include the selection of the landing runway. The downwind leg may also be part of the flight plan. This may be a useful indication of the aircraft position in the circuit on the ND.
However, visual references must be used.
Therefore, at the beginning of the downwind leg:

Manually ACTIVATE APPR

Select FDs to OFF
Select TRK FPA to have FPV displayed
Check A/THR active.

Extend the downwind leg to 3 s/100 ft (± 1 s/1 kt of headwind / tailwind).
Turn into base leg with a maximum of 30 ° of bank. Descent with approximate FPA, in FLAPS 2, at F speed.

Ident.: PRO-NOR-SOP-18-C-H-00014572.0001001 / 29 MAY 13
Applicable to: ALL

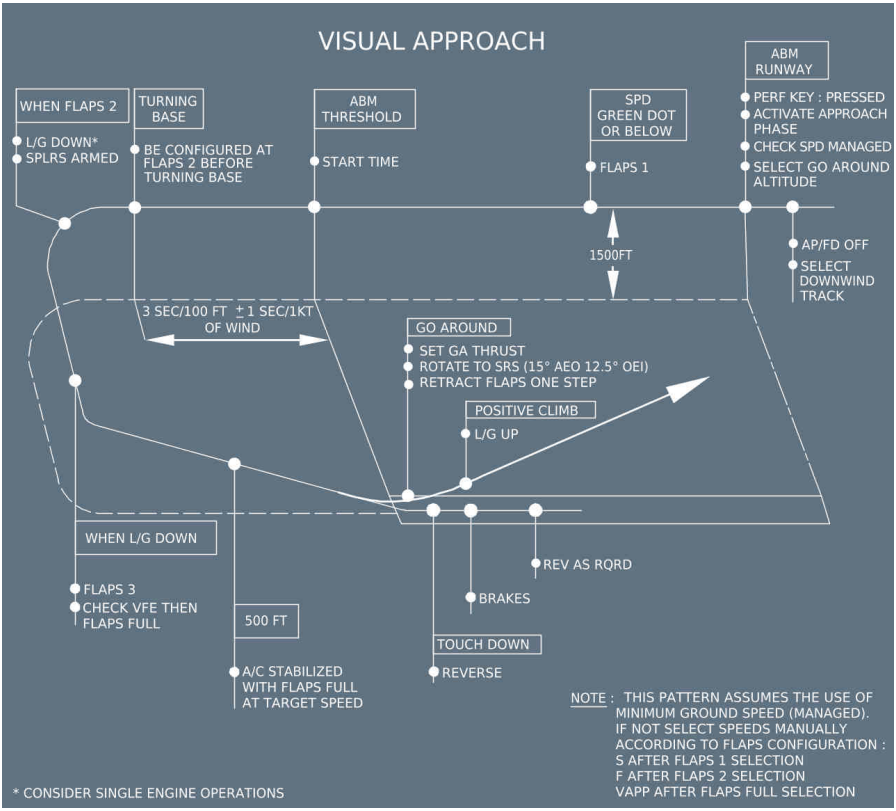
FINAL APPROACH

The speed trend arrow and FPV help the flight crew make timely and correct thrust settings (if in manual thrust), and approach path corrections.

Avoid descending through the correct approach path with idle thrust. (Late recognition of this situation without a prompt thrust increase may lead to considerable speed decay and altitude loss).Ensure that the aircraft is stabilized on the final descent path at VAPP (or ground speed mini) in the landing configuration with the thrust stabilized (usually above idle) at 500 ft above airfield elevation or as restricted by Operator policies/regulations. If the aircraft is not stabilized, the flight crew must initiate a go around, unless they think that only small corrections are necessary to rectify minor deviations from stabilized conditions due, amongst others, to external perturbations.
Avoid any tendency to “duck under” in the late stages of the approach.
Avoid destabilizing the approach in the last 100 ft, in order to have the best chance of performing a good touchdown at the desired position.

Ident.: PRO-NOR-SOP-18-C-H-00014571.0001001 / 08 DEC 14
Applicable to: ALL

VISUAL APPROACH (1 OR 2 ENGINES) PATTERN



MANUAL LANDING

Ident.: PRO-NOR-SOP-19-A-00010351.0001001 / 25 APR 17
Applicable to: MSN 03750, 04393

FLARE

The cockpit cut-off angle is 20 °.

- **In stabilized approach conditions, the flare height is approximately 30 ft:**
  FLARE..... PERFORM

  Avoid flaring high. Refer to Ground Clearance Diagram.

  ATTITUDE..... MONITOR
  THRUST levers..... IDLE

  If autothrust is engaged, it automatically disconnects when the pilot sets both thrust levers to the IDLE detent.
  In manual landing conditions, the "RETARD" callout is triggered at 20 ft radio height, in order to remind the pilot to retard the thrust levers.

  Note: *If one or both thrust levers remain above the IDLE detent, ground spoilers extension is inhibited.*

Ident.: PRO-NOR-SOP-19-A-00010351.0011001 / 25 APR 17
[1] **Applicable to: MSN 01767-03618, 03782-04384, 04394-09063**

FLARE

The cockpit cut-off angle is 20 °.

- **In stabilized approach conditions, the flare height is approximately 30 ft:**
  FLARE..... PERFORM

  Avoid flaring high. Refer to Ground Clearance Diagram.

  ATTITUDE..... MONITOR
  THRUST levers..... IDLE

  If autothrust is engaged, it automatically disconnects when the pilot sets both thrust levers to the IDLE detent.
  In manual landing conditions, the "RETARD" callout is triggered at 20 ft radio height, in order to remind the pilot to retard the thrust levers.

  Note: *The ground spoilers extension is inhibited if:*
  - *Both thrust levers remain above the idle detent, or*
  - *One thrust lever is above idle and one thrust lever is at idle detent.*

AT TOUCHDOWN

DEROTATION..... INITIATE

- *Lower the nosewheel without undue delay.*
- *The PM continues to monitor the attitude.*

ALL THRUST LEVERS..... REV MAX or REV IDLE

The flight crew must select reverse thrust immediately after main landing gear touchdown.

The flight crew must immediately select REV MAX, if any of the following occurs at any time during the landing:

- *An emergency*
- *The deceleration is not as expected*
- *A failure affects the landing performance*
- *A long flare or a long touchdown*
- *An unexpected tailwind.*

A small pitch up may occur during thrust reversers deployment before nose landing gear touchdown. However, the flight crew can easily control this pitch up.
As soon as the flight crew selects reverse thrust, they must perform a full-stop landing.

GROUND SPOILERS..... CHECK/ANNOUNCE

Check that the WHEEL SD page displays the ground spoilers extended after touchdown.

If no ground spoilers are extended:

- *Verify and confirm that both thrust levers are set to IDLE or REV detent.*
- *Set both thrust reverser levers to REV MAX, and fully press the brake pedals.*

Note: If ground spoilers are not armed, ground spoilers extend at reverser thrust selection.

REVERSERS..... CHECK/ANNOUNCE

Check that the ECAM E/WD displays that the reverse deployment is as expected (REV green).

DIRECTIONAL CONTROL.....MONITOR/ENSURE

- *Monitor directional control, if the rollout is automatic.*
- *Ensure directional control, if rollout is manual. Use rudder pedals for directional control.*
- *Do not use the nosewheel steering control handle before reaching taxi speed.*
- *During rollout, the flight crew should avoid sidestick inputs (either lateral or longitudinal).*
- *If directional control problems are encountered, the flight crew should reduce thrust to reverse idle until directional control is satisfactory.*

BRAKES..... AS RQRD

- *Monitor the autobrake, if it is ON. When required, brake with the pedals*
- *Although the green hydraulic system supplies the braking system, if pedals are pressed rapidly, a brake pressure indication appears briefly on the BRAKE PRESS indicator.*
- *Braking may begin before the nosewheel has touched down, if required for performance reasons. However, when comfort is the priority, the flight crew should delay braking until the nosewheel has touched down.*

Note: *If no ground spoilers are extended, the autobrake is not activated.*

DECELERATION..... CHECK/ANNOUNCE

The deceleration is felt by the flight crew, and confirmed by the speed trend on the PFD.

Ident.: PRO-NOR-SOP-19-A-00010353.0001001 / 17 JUL 13
Applicable to: ALL

AT 70 KT

SEVENTY KNOTS..... ANNOUNCE
BOTH THRUST LEVERS..... REV IDLE

It is better to reduce thrust when passing 70 kt. However, high levels of reverse thrust may be used in order to control aircraft speed in the case of an emergency.

CAUTION	*Avoid the use of high levels of reverse thrust at low airspeed, unless required due to an emergency. The distortion of the airflow, caused by gases reentering the compressor, can cause engine stalls that may result in excessive EGT.*

Ident.: PRO-NOR-SOP-19-A-00010354.0001001 / 05 JUN 18
Applicable to: ALL

AT TAXI SPEED

REVERSERS.....STOW

L2
- *When the aircraft reaches the taxi speed, and before it leaves the runway, stow the reversers.*
- *On snow-covered grounds, the reversers should be stowed when the aircraft speed reaches 25 kt.*
- *When deselecting the reversers, be careful not to apply forward thrust by moving the thrust levers beyond the FWD IDLE position.*

L1

CAUTION	*Except in an emergency, do not use the reverse thrust to control the aircraft speed while on taxiways.*

L2 *On taxiways, the use of reversers, even restricted to idle thrust, would have the following effects:*
- *The engines may ingest fine sand and debris that may be detrimental to the engines and airframe systems.*
- *On snow–covered areas, snow will recirculate into the air inlet, and may cause an engine flameout or rollback.*

Ident.: PRO-NOR-SOP-19-A-00010355.0001001 / 30 MAR 15
Applicable to: ALL

BEFORE 20 KT

AUTO BRK..... DISENGAGE

Disengage the autobrake to avoid some brake jerks at low speed.
The flight crew should use brake pedals to disengage the autobrake.

AUTOLAND

Applicable to: ALL

Ident.: PRO-NOR-SOP-19-B-00020897.0001001 / 20 MAR 17

The following items must be performed in addition to previous *Refer to PRO-NOR-SOP-APPROACH USING LOC G/S*.

Ident.: PRO-NOR-SOP-19-B-00020898.0001001 / 20 MAR 17

AT 350 FT RA

ILS/GLS ◁ /MLS ◁ COURSE on PFD..... CHECK

If the ILS/GLS ◁ /MLS ◁ course pointer and the runway track differ by more than 5 °, autoland is not authorized.

Ident.: PRO-NOR-SOP-19-B-00020899.0001001 / 20 MAR 17

AT 40 FT RA

FLARE mode..... CHECK ENGAGED/ANNOUNCE

Monitor flare by flight instrument.
If NO FLARE mode at 30 ft, discontinue the approach or perform a manual landing if visual references are acquired.

Ident.: PRO-NOR-SOP-19-B-00020900.0001001 / 20 MAR 17

AT 30 FT RA

THRUST IDLE..... CHECK

Monitor thrust reduction.

Ident.: PRO-NOR-SOP-19-B-00020901.0001001 / 20 MAR 17

AT 10 FT RA

BOTH THRUST LEVERS..... IDLE

Retard thrust levers at the "RETARD" autocallout.

LATERAL GUIDANCE..... MONITOR

Monitor the lateral guidance by using external references.

Ident.: PRO-NOR-SOP-19-B-00020902.0001001 / 11 JUL 17

AT TOUCHDOWN

Note: In the case of NWS or Anti-Skid failure, set the AP OFF at touchdown.

ROLL OUT mode.....CHECK ENGAGED/ANNOUNCE

BOTH THRUST LEVERS.....REV MAX or REV IDLE

The flight crew must select reverse thrust immediately after main landing gear touchdown.

The flight crew must immediately select REV MAX, if any of the following occurs at any time during the landing:

- *An emergency*
- *The deceleration is not as expected*
- *A failure affects the landing performance*
- *A long flare or a long touchdown*
- *An unexpected tailwind.*

A small pitch up may occur during thrust reversers deployment before nose landing gear touchdown. However, the auto-flight system will control this pitch up.
As soon as the flight crew selects reverse thrust, they must perform a full-stop landing.

GROUND SPOILERS..... CHECK/ANNOUNCE

Check that the WHEEL SD page displays the ground spoilers extended after touchdown.

If no ground spoilers are extended:

- *Verify and confirm that both thrust levers are set to IDLE or REV detent.*
- *Set both thrust reverser levers to REV MAX, and fully press the brake pedals.*

Note: If ground spoilers are not armed, ground spoilers extend at reverser thrust selection.

REVERSERS..... CHECK/ANNOUNCE

Check that the ECAM E/WD displays that the reverse deployment is as expected (REV green).

DIRECTIONAL CONTROL.....MONITOR/ENSURE

- *Monitor directional control, if the rollout is automatic.*
- *Ensure directional control, if rollout is manual. Use rudder pedals for directional control.*

- *Do not use the nosewheel steering control handle before reaching taxi speed.*
- *During rollout, the flight crew should avoid sidestick inputs (either lateral or longitudinal).*
- *If directional control problems are encountered, the flight crew should reduce thrust to reverse idle until directional control is satisfactory.*

BRAKES..... AS RQRD

- *Monitor the autobrake, if it is ON. When required, brake with the pedals*
- *Although the green hydraulic system supplies the braking system, if pedals are pressed rapidly, a brake pressure indication appears briefly on the BRAKE PRESS indicator.*
- *Braking may begin before the nosewheel has touched down, if required for performance reasons. However, when comfort is the priority, the flight crew should delay braking until the nosewheel has touched down.*

Note: *If no ground spoilers are extended, the autobrake is not activated.*

DECELERATION..... CHECK/ANNOUNCE

The deceleration is felt by the flight crew, and confirmed by the speed trend on the PFD.

Ident.: PRO-NOR-SOP-19-B-00020904.0001001 / 11 JUL 17

AT 70 KT

SEVENTY KNOTS..... ANNOUNCE
BOTH THRUST LEVERS..... REV IDLE

It is better to reduce thrust when passing 70 kt. However, high levels of reverse thrust may be used in order to control aircraft speed in the case of an emergency.

CAUTION	*Avoid the use of high levels of reverse thrust at low airspeed, unless required due to an emergency. The distortion of the airflow, caused by gases reentering the compressor, can cause engine stalls that may result in excessive EGT.*

Ident.: PRO-NOR-SOP-19-B-00020905.0001001 / 20 MAR 17

BEFORE 20 KT

AUTO BRK..... DISENGAGE

Disengage autobrake before 20 kt to avoid some brake jerks at low speed.
The flight crew should use brake pedals to disengage the autobrake.

END OF ROLL OUT

REVERSERS.....STOW

L2 - *When the aircraft reaches the taxi speed, and before it leaves the runway, stow the reversers.*
- *On snow-covered grounds, the reversers should be stowed when the aircraft speed reaches 25 kt.*
- *When deselecting the reversers, be careful not to apply forward thrust by moving the thrust levers beyond the FWD IDLE position.*

L1

CAUTION	*Except in an emergency, do not use the reverse thrust to control the aircraft speed while on taxiways.*

L2 *On taxiways, the use of reversers, even restricted to idle thrust, would have the following effects:*
- *The engines may ingest fine sand and debris that may be detrimental to the engines and airframe systems.*
- *On snow–covered areas, snow will recirculate into the air inlet, and may cause an engine flameout or rollback.*

L1 AP.....OFF

Disengage the APs at the end of the roll out (when leaving the runway at the latest).

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GO AROUND WITH FD

Ident.: PRO-NOR-SOP-20-A-00011576.0006001 / 30 JUN 15
Applicable to: MSN 01920, 02204, 02457, 02649, 02712, 02914, 03264, 03330

Apply the following three actions simultaneously:

THRUST LEVERS.....TOGA

If TOGA thrust is not required, set the thrust levers to TOGA detent then retard the thrust levers as required. This enables to engage the GO-AROUND phase, with associated AP/FD modes.
The flight crew may use CL detent to have benefit of A/THR.

Note: If the thrust levers are not set briefly to TOGA detent, the FMS does not engage the GO-AROUND phase, and flying over, or close to the airport will sequence the Destination waypoint in the F-PLN.

ROTATION.....PERFORM

Initiate rotation towards 15 ° of pitch with all engines operative (approximately 12.5 ° if one engine is out) to get a positive rate of climb, then follow the SRS Flight Director pitch bars orders.
When near the ground, avoid excessive rotation rate in order to prevent a tail strike.

GO AROUND .....ANNOUNCE
FLAPS lever.....SELECT AS RQRD

Retract one step of flaps.

FMA.....ANNOUNCE

The following modes are displayed: MAN TOGA / SRS / GA TRK / A/THR (in blue).

POSITIVE CLIMB .....ANNOUNCE
L/G UP .....ORDER
L/G.....SELECT UP
NAV or HDG mode.....AS RQRD

Reselect NAV or HDG, as required (minimum height 100 ft).

AP.....AS RQRD

Note: Go-around may be flown with both autopilots engaged. Whenever any other mode engages, AP 2 disengages.

Ident.: PRO-NOR-SOP-20-A-00011576.0014001 / 30 JUN 15
1 **Applicable to: MSN 01767, 01957-02195, 02275-02443, 02482-02626, 02670, 02737-02908, 03071-03138, 03308, 03357-06336**

Apply the following three actions simultaneously:

THRUST LEVERS.....TOGA

If TOGA thrust is not required, set the thrust levers to TOGA detent then retard the thrust levers as required. This enables to engage the GO-AROUND phase, with associated AP/FD modes.
The flight crew may use CL detent to have benefit of A/THR.

Note: *If the thrust levers are not set briefly to TOGA detent, the FMS does not engage the GO-AROUND phase, and flying over, or close to the airport will sequence the Destination waypoint in the F-PLN.*

ROTATION.....PERFORM

Initiate rotation towards 15 ° of pitch with all engines operative (approximately 12.5 ° if one engine is out) to get a positive rate of climb, then follow the SRS Flight Director pitch bars orders.
When near the ground, avoid excessive rotation rate in order to prevent a tail strike.

GO AROUND .....ANNOUNCE
FLAPS lever.....SELECT AS RQRD

Retract one step of flaps.

FMA.....ANNOUNCE

The following modes are displayed: MAN TOGA / SRS / GA TRK or NAV / A/THR (in blue).
Depending on the guidance modes during approach, NAV mode is either automatically armed or automatically engaged.

POSITIVE CLIMB .....ANNOUNCE
L/G UP .....ORDER
L/G.....SELECT UP
NAV or HDG mode.....AS RQRD

Reselect NAV or HDG, as required (minimum height 100 ft).

AP.....AS RQRD

Note: *Go-around may be flown with both autopilots engaged. Whenever any other mode engages, AP 2 disengages.*

Ident.: PRO-NOR-SOP-20-A-00011576.0043001 / 04 DEC 17
2 **Applicable to: MSN 06720-09063**

Simultaneously apply the following three actions:

THRUST LEVERS..... TOGA THEN FLX/MCT

Set the thrust levers to the TOGA detent to ensure engagement of SRS GA mode. Then, set the thrust levers to FLX/MCT to engage the GA SOFT mode.
At any time, if TOGA thrust is desired, set the thrust levers to TOGA detent.

Note: *If the thrust levers are not set briefly to TOGA detent, the FMS does not engage the GO-AROUND phase, and flying over, or close to the airport will sequence the Destination waypoint in the F-PLN.*

ROTATION.....PERFORM

Initiate rotation towards 15 ° of pitch with all engines operative (approximately 12.5 ° if one engine is out) to get a positive rate of climb, then follow the SRS Flight Director pitch bars orders.

When near the ground, avoid excessive rotation rate in order to prevent a tail strike.

GO AROUND ..... ANNOUNCE
FLAPS lever..... SELECT AS RQRD

Retract one step of flaps.

FMA..... CHECK/ANNOUNCE

The following modes are displayed: MAN GA SOFT / SRS / GA TRK or NAV / A/THR (in blue).
If the FMA does not display MAN GA SOFT or MAN TOGA, immediately set the thrust levers to the TOGA detent.
Depending on the guidance modes during approach, NAV mode is either automatically armed or automatically engaged.

POSITIVE CLIMB ..... ANNOUNCE
L/G UP ..... ORDER
L/G..... SELECT UP
NAV or HDG mode..... AS RQRD

Reselect NAV or HDG, as required (minimum height 100 ft).

AP..... AS RQRD

Note: Go-around may be flown with both autopilots engaged. Whenever any other mode engages, AP 2 disengages.

Ident.: PRO-NOR-SOP-20-A-00011579.0002001 / 13 AUG 10
Applicable to: ALL

AT GO-AROUND THRUST REDUCTION ALTITUDE

THRUST levers..... CL

LVR CLB flashing on FMA.

Ident.: PRO-NOR-SOP-20-A-00011581.0001001 / 23 JUN 15
Applicable to: ALL

AT GO-AROUND ACCELERATION ALTITUDE

Monitor that the target speed increases to green dot.

- **If the target speed does not increase to green dot:**
  ALT knob..... CHECK and PULL
- **At F speed:**
  FLAPS 1..... ORDER
  FLAPS 1..... SELECT
- **At S speed:**
  FLAPS 0..... ORDER
  FLAPS 0..... SELECT

GND SPLRS.....DISARM
NOSE sw.....OFF
RWY TURN OFF sw.....OFF
OTHER EXTERIOR LIGHTS.....AS RQRD

The flight crew can maintain the LAND LIGHTS selector set to ON, according to airline policy or regulatory recommendations.

Note: *Consider the next step:*

- *Engage NAV mode, to follow the published missed approach procedure, or*
- *Prepare for a second approach by selecting the ACTIVATE APP PHASE, and CONFIRM on the PERF page.*

AFTER TAKEOFF/CLIMB CHECKLIST down to the line..... COMPLETE

AFTER LANDING

Ident.: PRO-NOR-SOP-21-A-00011841.0001001 / 06 DEC 16
Applicable to: ALL

GRND SPLRS.....DISARM

Ident.: PRO-NOR-SOP-21-A-00011840.0001001 / 05 MAR 18
Applicable to: ALL

EXTERIOR LIGHTS

LAND lights sw..... RETRACT

- **When leaving the runway:**
  STROBE sw..... AUTO
  NOSE sw.....TAXI

- **When crossing a runway:**
  STROBE sw.....ON

OTHER EXTERIOR LIGHTS..... AS RQRD

L2 *During taxi, the PF may ask the PM to set the exterior lights.*

Ident.: PRO-NOR-SOP-21-A-00011842.0001001 / 22 APR 16
1 **Applicable to: MSN 01767-04393, 04399-04518, 04535-04637, 04752-05094, 05155-05190, 05230-09063**

RADAR.....OFF

Ident.: PRO-NOR-SOP-21-A-00011843.0001001 / 06 JAN 16
2 **Applicable to: MSN 01767-04393, 04399-04518, 04535-04637, 04752-05094, 05155-05190, 05230-09063**

PREDICTIVE WINDSHEAR SYSTEM ⋘ .....OFF

Switching the radar and predictive windshear system to OFF after landing avoids risk of radiating persons at the gate area.

Ident.: PRO-NOR-SOP-21-A-00013145.0001001 / 06 JAN 16
3 **Applicable to: MSN 04394-04397, 04532, 04645, 05120, 05218**

WXR/PWS switch..... OFF
CAPT DISPLAY mode selector.....OFF
F/O DISPLAY mode selector.....OFF

Switching the radar and radar display to OFF after landing avoids risk of radiating persons at the gate area.

Ident.: PRO-NOR-SOP-21-A-00011844.0001001 / 13 DEC 10
Applicable to: ALL

ENG MODE selector.....NORM

Ident.: PRO-NOR-SOP-21-A-00011845.0002001 / 05 JUN 18

4 **Applicable to: MSN 08414-09063**

FLAPS..... RETRACT

Set the FLAPS lever to position 0.

If the approach was made in icing conditions, or if the runway was contaminated with slush or snow, do not retract the flaps and slats until after engine shutdown and after the ground crew has confirmed that flaps and slats are clear of obstructing ice.

On ground, hot weather conditions may cause overheating to be detected around the bleed ducts in the wings, resulting in "AIR L (R) WING LEAK" warnings. Such warnings may be avoided during transit by keeping the slats in Configuration 1 when the OAT is above 30 °C.

Ident.: PRO-NOR-SOP-21-A-00011845.0001001 / 08 AUG 13

5 **Applicable to: MSN 01767-08397**

FLAPS..... RETRACT

Set the FLAPS lever to position 0.

If the approach was made in icing conditions, or if the runway was contaminated with slush or snow, do not retract the flaps and slats until after engine shutdown and after the ground crew has confirmed that flaps and slats are clear of obstructing ice.

On ground, hot weather conditions may cause overheating to be detected around the bleed ducts in the wings, resulting in "AIR L (R) WING LEAK" warnings. Such warnings may be avoided during transit by keeping the slats in Configuration 1 when the OAT is above 30 °C.

To avoid damage on the RTLU (Rudder Travel Limit Unit) mechanical stop, the SLATS/FLAPS should be retracted before all ADIRS are set to OFF simultaneously.

Ident.: PRO-NOR-SOP-21-A-00011846.0001001 / 04 JUL 17

Applicable to: ALL

TCAS..... STBY

Ident.: PRO-NOR-SOP-21-A-00011847.0001001 / 20 JAN 15

Applicable to: ALL

ATC..... AS RQRD

ATC is set in accordance with airport requirements.

Ident.: PRO-NOR-SOP-21-A-00011848.0001001 / 17 MAR 15

Applicable to: ALL

APU..... START

APU START may be delayed until just prior to engine shutdown.

Note: Prolonged use of the APU may cause a fuel imbalance. Pay particular attention to the fuel imbalance limitation for the next take-off.

Ident.: PRO-NOR-SOP-21-A-00011849.0005001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CAUTION	In icing conditions (*Refer to LIM-ICE_RAIN Definition of Icing Conditions*), the flight crew must turn on the engine anti-ice and should not wait until seeing ice building up.

ANTI ICE..... AS RQRD

- *If engine anti-ice is used, take care to control taxi speed, especially on wet or slippery surfaces. (N1 ground idle is increased).*
- *During ground operation, when in icing conditions for more than 30 min, the following procedure should be applied for ice shedding:*

CAUTION	*If, during thrust increase, the aircraft starts to move, immediately retard the thrust levers to IDLE.*

If ground surface conditions and the environment permit, the flight crew should accelerate the engines to approximately 70 % of N1 for 30 s at intervals not greater than 30 min.
If ground surface or environment do not permit to accelerate the engine to 70 % N1, then power setting and dwell time should be as high as practical.
When operating in conditions of freezing rain, freezing drizzle, freezing fog or heavy snow, ice shedding may be enhanced, by additional run ups at intervals, to not exceed 10 min, advancing throttles to 70 % N1 momentarily (no hold time).

Ident.: PRO-NOR-SOP-21-A-00011849.0002001 / 27 FEB 18
6 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

CAUTION	In icing conditions (*Refer to LIM-ICE_RAIN Definition of Icing Conditions*), the flight crew must turn on the engine anti-ice and should not wait until seeing ice building up.

ANTI ICE..... AS RQRD

- *If engine anti-ice is used, take care to control taxi speed, especially on wet or slippery surfaces. (N1 ground idle is increased).*
- *During ground operation, when in icing conditions and the OAT is plus 3 °C or less, the following procedure should be applied for ice shedding:*

CAUTION	*If, during thrust increase, the aircraft starts to move, immediately retard the thrust levers to IDLE.*

If ground surface conditions and the environment permit, the flight crew should accelerate the engines to minimum 50 % of N1 at intervals not greater than 15 min. There is no requirement to maintain the high thrust settings.

Ident.: PRO-NOR-SOP-21-A-00011849.0003001 / 17 MAR 17

7 **Applicable to: MSN 06720-09063**

CAUTION	In icing conditions (*Refer to LIM-ICE_RAIN Definition of Icing Conditions*), the flight crew must turn on the engine anti-ice and should not wait until seeing ice building up.

ANTI ICE.....AS RQRD

- *If engine anti-ice is used, take care to control taxi speed, especially on wet or slippery surfaces. (N1 ground idle is increased).*
- *During ground operation, when in icing conditions and the OAT is plus 3 °C or less, the following procedure should be applied for ice shedding:*

CAUTION	*If, during thrust increase, the aircraft starts to move, immediately retard the thrust levers to IDLE.*

If ground surface conditions and the environment permit, the flight crew should accelerate the engines to minimum 60 % of N1 at intervals not greater than 30 min. There is no requirement to maintain the high thrust settings.

Ident.: PRO-NOR-SOP-21-A-00011850.0001001 / 17 OCT 17

8 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

BRAKE TEMPERATURE.....CHECK

- *Check brake temperature on the WHEEL SD page for discrepancies and high temperature*
- *Maintenance action is due in the following cases:*
  - *The temperature difference between two brakes of a gear is more than 150 °C, and the temperature of one of these brakes is above or equal to 600 °C, or*
  - *The temperature difference between two brakes of a gear is more than 150 °C, and the temperature of one of these brakes is below or equal to 60 °C, or*
  - *The difference between the average temperature of the left gear brakes and right brakes is above or equal to 200 °C, or*
  - *The temperature of one brake exceeds 900 °C.*

BRK FAN pb-sw ◁❄ .....AS REQUIRED

When the turnaround time is short or if the temperature of any brake is likely to exceed 500 °C, use the brake fans without delay. In other cases, the flight crew should delay brake fans selection to 5 min after landing, or approaching the gate, whichever occurs first.

L2 *For more information, Refer to FCTM/PR-NP-SOP-270 Use of Brake Fans.*

Ident.: PRO-NOR-SOP-21-A-00011850.0003001 / 17 OCT 17

9 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

BRAKE TEMPERATURE..... CHECK

- *Check brake temperature on the WHEEL SD page for discrepancies and high temperature*
- *Maintenance action is due in the following cases:*
  - *The temperature difference between two brakes of a gear is more than 150 °C, and the temperature of one of these brakes is above or equal to 600 °C, or*
  - *The temperature difference between two brakes of a gear is more than 150 °C, and the temperature of one of these brakes is below or equal to 60 °C, or*
  - *The difference between the average temperature of the left gear brakes and right brakes is above or equal to 200 °C, or*
  - *The temperature of one brake exceeds 800 °C.*

BRK FAN pb-sw ..... AS REQUIRED

When the turnaround time is short or if the temperature of any brake is likely to exceed 500 °C, use the brake fans without delay. In other cases, the flight crew should delay brake fans selection to 5 min after landing, or approaching the gate, whichever occurs first.

L2 *For more information, Refer to FCTM/PR-NP-SOP-270 Use of Brake Fans.*

Ident.: PRO-NOR-SOP-21-A-00011851.0001001 / 10 AUG 10

Applicable to: ALL

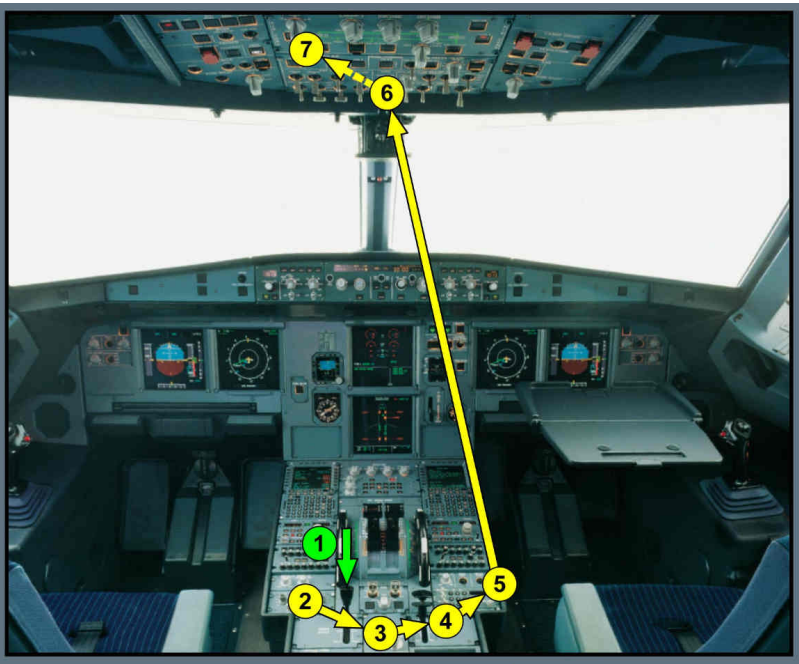
AFTER LANDING CHECKLIST..... COMPLETE

Ensure that the after-landing checks are completed, once the aircraft has cleared the runway.

Ident.: PRO-NOR-SOP-21-A-00020077.0001001 / 17 MAR 17
Applicable to: ALL

AFTER LANDING - FLOW PATTERN

After Landing Flow Pattern



PF ACTIONS

1. GRND SPLRS.....DISARM

PM ACTIONS

2. RADAR/PREDICTIVE WINDSHEAR....OFF
3. ENG MODE SEL.....NORM
4. FLAPS.....RETRACT
5. ATC.....AS RQRD
   TCAS.....SET on standby
6. APU.....START
7. ANTI ICE.....AS RQRD

PARKING

Ident.: PRO-NOR-SOP-22-A-00011852.0001001 / 21 MAR 17
Applicable to: ALL

Prior to performing this check, consider “GROUND OPERATIONS IN HEAVY RAIN” (*Refer to PRO-NOR-SUP-ADVWXR Ground Operations in Heavy Rain*).

Ident.: PRO-NOR-SOP-22-A-00011853.0003001 / 20 JUL 15
Applicable to: ALL

ACCU PRESS indicator..... CHECK

The ACCU PRESS indication must be in the green band. In case of low accumulator pressure, chocks are required before engine 1 shutdown.

PARKING BRAKE handle..... ON

When one brake temperature is above 500 °C (or 350 °C with brake fans ◁ ON), avoid applying the parking brake, unless operationally necessary.

BRAKES PRESS indicator..... CHECK

Check for normal indications.

Ident.: PRO-NOR-SOP-22-A-00011854.0001001 / 13 AUG 10
Applicable to: ALL

ANTI-ICE..... OFF

Ident.: PRO-NOR-SOP-22-A-00011855.0001001 / 04 DEC 18
Applicable to: ALL

APU BLEED pb-sw..... ON

Select APU bleed ON, just before engine shutdown, to minimize odors of engine exhaust fumes in air conditioning.

Ident.: PRO-NOR-SOP-22-A-00011856.0008001 / 17 MAR 17
[1] **Applicable to: MSN 06720-09063**

- **If the APU is not available:**
  EXT PWR pb..... ON
- **No less than 3 min after high thrust operations:**
  ALL ENG MASTERS..... OFF

  Check that engine parameters decrease.

  The DOOR/OXY SD page is displayed on the lower ECAM display.

L2 *Note:* *The flight crew must operate the engines at or near idle thrust for a cooling period of 3 min before engine shutdown, in order to thermally stabilize the engines.*

Idle reverse thrust and normal thrust to maneuver during taxi (i.e. at or near idle), are not considered as high thrust operations. Therefore, both of the following applies:

- *If the flight crew uses idle reverse thrust for landing and normal thrust to maneuver during taxi after landing, the cooling period starts when the flight crew retards the thrust lever during the flare*
- *If the flight crew uses maximum reverse for landing, the cooling period starts when the flight crew sets the thrust lever to idle reverse during the landing rollout.*

Before engine shutdown, routine cooling periods that last less than the required time, can result in engine degradation.

Ident.: PRO-NOR-SOP-22-A-00011856.0005001 / 17 MAR 17

2 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

- **If the APU is not available:**
  EXT PWR pb..... ON
- **No less than 3 min after high thrust operations:**
  ALL ENG MASTERS ..... OFF

Check that engine parameters decrease.

The DOOR/OXY SD page is displayed on the lower ECAM display.

L2 *Note:* *The flight crew should operate the engines at or near idle thrust for a cooling period of 3 min before engine shutdown, in order to thermally stabilize the engines.*

Idle reverse thrust and normal thrust to maneuver during taxi (i.e. at or near idle), are not considered as high thrust operations. Therefore, both of the following applies:

- *If the flight crew uses idle reverse thrust for landing and normal thrust to maneuver during taxi after landing, the cooling period starts when the flight crew retards the thrust lever during the flare*
- *If the flight crew uses maximum reverse for landing, the cooling period starts when the flight crew sets the thrust lever to idle reverse during the landing rollout.*

However, if operationally necessary, all engines can be shut down when the aircraft arrives at the gate, regardless of the time necessary for landing.
Before engine shutdown, routine cooling periods that last less than the recommended time, can result in engine degradation.

Ident.: PRO-NOR-SOP-22-A-00011856.0004001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

- **If the APU is not available:**
  EXT PWR pb..... ON
- **No less than 3 min after high thrust operations:**
  ALL ENG MASTERS ..... OFF

CAUTION	*If JP4 fuel is used at ambient temperatures higher than 10 °C, dry motor the engines for 2 min after engine shutdown. This dry motor period should start approximately 90 s after the master lever is selected OFF.*

Check that engine parameters decrease.

The DOOR/OXY SD page is displayed on the lower ECAM display.

L2 *Note:* *The flight crew should operate the engines at or near idle thrust for a cooling period of 3 min before engine shutdown, in order to thermally stabilize the engines.*

Idle reverse thrust and normal thrust to maneuver during taxi (i.e. at or near idle), are not considered as high thrust operations. Therefore, both of the following applies:

- *If the flight crew uses idle reverse thrust for landing and normal thrust to maneuver during taxi after landing, the cooling period starts when the flight crew retards the thrust lever during the flare*
- *If the flight crew uses maximum reverse for landing, the cooling period starts when the flight crew sets the thrust lever to idle reverse during the landing rollout.*

However, if operationally necessary, all engines can be shut down when the aircraft arrives at the gate, regardless of the time necessary for landing.
Before engine shutdown, routine cooling periods that last less than the recommended time, can result in engine degradation.

Ident.: PRO-NOR-SOP-22-A-00011858.0001001 / 04 MAR 14
Applicable to: ALL

SLIDES..... CHECK DISARMED

Check slides disarmed on the DOOR/OXY SD page. Warn the cabin crew, if any slide is not disarmed.

Ident.: PRO-NOR-SOP-22-A-00011860.0001001 / 04 MAR 14
Applicable to: ALL

SEAT BELTS sw..... OFF

Ident.: PRO-NOR-SOP-22-A-00011859.0001001 / 23 JUN 15
Applicable to: ALL

BEACON lights..... OFF

Turn off the BEACON lights, when all engines are spooled down.

OTHER EXTERIOR LIGHTS..... AS RQRD

Ident.: PRO-NOR-SOP-22-A-00011857.0001001 / 13 AUG 10
Applicable to: ALL

GROUND CONTACT..... ESTABLISH

Establish ground communication.
Check chocks in place.

Ident.: PRO-NOR-SOP-22-A-00011862.0001001 / 13 AUG 10
3 **Applicable to: MSN 01767-06036**

FUEL PUMPS..... OFF

Ident.: PRO-NOR-SOP-22-A-00011862.0002001 / 13 MAY 16
4 **Applicable to: MSN 06208-09063**

FUEL PUMPS/ CTR XFR VALVES..... OFF

Switch off the fuel pumps and the center tank transfer valves.

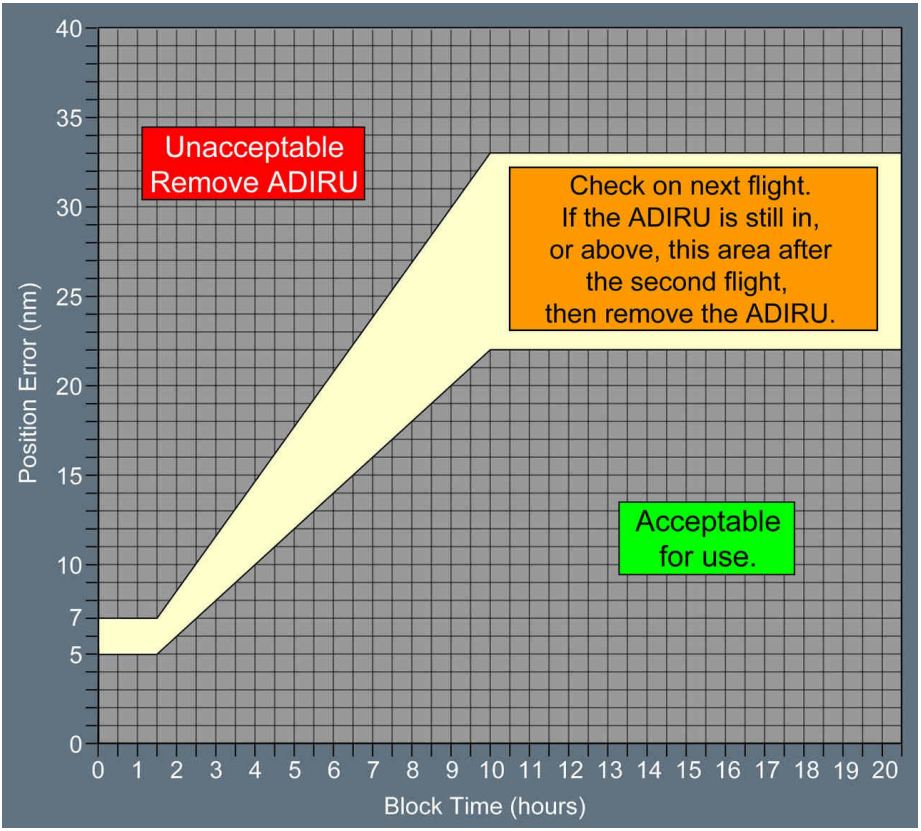
Ident.: PRO-NOR-SOP-22-A-00011864.0001001 / 04 JUL 17
Applicable to: ALL

ATC..... STBY

Ident.: PRO-NOR-SOP-22-A-00011865.0001001 / 20 OCT 16
Applicable to: ALL

IRS PERFORMANCE..... CHECK

- *The NAV TIME is the cumulated block time since the latest IRS alignment (fast or complete).*
- *On the MCDU POSITION MONITOR page, read the deviation of each IRS position from the FMGC position and check that the value does not exceed the following:*



Ident.: PRO-NOR-SOP-22-A-00011866.0001001 / 13 AUG 10
Applicable to: ALL

FUEL QUANTITY..... CHECK

Check that the sum of the fuel on board and the fuel used is consistent with the fuel on board at departure. If an unusual discrepancy is found, maintenance action is due.

Ident.: PRO-NOR-SOP-22-A-00011867.0001001 / 24 FEB 15
Applicable to: ALL

STS pb (ECAM Control panel)..... PRESS

Check the STATUS page.

Ident.: PRO-NOR-SOP-22-A-00011868.0001001 / 13 AUG 10
Applicable to: ALL

(BRAKE FAN ◁✱)..... OFF

Switch off, when not required.

Ident.: PRO-NOR-SOP-22-A-00011869.0002001 / 13 AUG 10
Applicable to: ALL

PARKING BRAKE..... AS RQRD

The parking brake should be released after chocks are in place, if one brake temperature is above 300 °C (or above 150 °C with brake fans ◁✱ ON).
Releasing the parking brake prevents the critical structures from being exposed to high temperature levels for an extended time. However, if operational conditions dictate (e.g. slippery tarmac), the parking brake may remain applied.
When parking with a flat tire on the nose gear, keep the parking brake on, to avoid aircraft yawing at parking brake release.

Ident.: PRO-NOR-SOP-22-A-00011870.0001001 / 13 AUG 10
Applicable to: ALL

DUs..... DIM

Dim EFIS, ECAM and MCDU display units.

Ident.: PRO-NOR-SOP-22-A-00022328.0001001 / 04 DEC 18
Applicable to: ALL

- **Icing conditions identified with OAT +3 °C (37 °F) or below**

  TAXI-IN TIME..... Record in the LOGBOOK

  Record the taxi-in time, or the taxi-in time after last ice shedding if performed, to determine the remaining allowed taxi-out time for the next flight.

L2 *Note:*
1. *When the engines are running on ground at idle in icing conditions and OAT +3 °C (37 °F) or below, ice may accumulate on the engine fans.*
2. *The quantity of ice accretion depends on the total taxi time that includes taxi-in and taxi-out time.*
3. *For the ice shedding procedure, Refer to PRO-NOR-SOP-09 After Start - ENG Anti-Ice.*

Ident.: PRO-NOR-SOP-22-A-00014395.0001001 / 05 DEC 17
Applicable to: ALL

EFB

ALL EFB transmitting mode..... AS RQRD

In accordance with the Operator's policy or, as required by operational regulations.

- **If performing transit stop:**
  eQRH My Aircraft/FLIGHT..... CLEAR

Ident.: PRO-NOR-SOP-22-A-00011873.0001001 / 13 AUG 10
Applicable to: ALL

PARKING CHECKLIST.....COMPLETE

Ident.: PRO-NOR-SOP-22-A-00011874.0001001 / 13 AUG 10
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

REPORT SEVERE ICING CONDITIONS

Report severe icing conditions in the log book, requiring inspections of the fan accoustic panels of the engines during the walkaround.

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SECURING THE AIRCRAFT

Ident.: PRO-NOR-SOP-23-A-00010336.0001001 / 05 JUN 18
Applicable to: ALL

GENERAL

The flight crew should apply the following procedure as per company policy.
Airbus recommends performing the following procedure when the aircraft is left unattended: i.e. no qualified flight crew or ground crew are in the cockpit to supervise and monitor the aircraft systems.

Prior to performing this check, the following SUP Adverse Weather procedures should be taken into account when appropriate:

- Securing the aircraft for cold soak (*Refer to PRO-NOR-SUP-ADVWXR Securing the Aircraft for Cold Soak*).
- Water system draining (*Refer to PRO-NOR-SUP-ADVWXR For Draining Water Procedure - Introduction*).
- Ground operations in heavy rain (*Refer to PRO-NOR-SUP-ADVWXR Ground Operations in Heavy Rain*).
- Operations on contaminated airports (*Refer to PRO-NOR-SUP-ADVWXR Parking*).
- Operations with volcanic ash, sand or dust (*Refer to PRO-NOR-SUP-ADVWXR Securing the Aircraft*).

Ident.: PRO-NOR-SOP-23-A-00010337.0001001 / 30 JUN 15
Applicable to: ALL

PARKING BRAKE

PARK BRK handle.....CHECK ON

To reduce hydraulic leak rate in the brake accumulator, keep the parking brake on.

Ident.: PRO-NOR-SOP-23-A-00010338.0001001 / 05 AUG 10
Applicable to: ALL

OXYGEN CREW SUPPLY

OXYGEN CREW SUPPLY pb.....OFF

Ident.: PRO-NOR-SOP-23-A-00010339.0001001 / 21 AUG 15
Applicable to: ALL

ADIRS

ALL IR MODE selectors.....OFF

After the shutdown of the ADIRS, the flight crew must wait 10 s before the shutdown of the electrical supply. This time ensures that the ADIRS memorize the most recent data.

Ident.: PRO-NOR-SOP-23-A-00010340.0001001 / 05 AUG 10
Applicable to: ALL

EXTERIOR LIGHTS

EXTERIOR LIGHTS.....OFF

Ident.: PRO-NOR-SOP-23-A-00010341.0001001 / 05 AUG 10
Applicable to: ALL

MAINTENANCE BUS

MAINT BUS sw.....AS RQRD

Should electrical power be required for the crew or servicing personnel, consider setting the overhead MAINT BUS sw (in the forward cabin) to the ON position, prior to setting aircraft power to off.

Ident.: PRO-NOR-SOP-23-A-00010342.0001001 / 04 MAR 14
Applicable to: ALL

APU

APU BLEED pb-sw.....OFF
APU MASTER SW.....OFF

Switch off the APU after the passengers have disembarked.

Ident.: PRO-NOR-SOP-23-A-00010343.0002001 / 04 MAR 14
1 **Applicable to: MSN 01767-03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 05120, 05158, 05218, 06720-09063**

EMER EXIT LT sw.....OFF
SIGNS sw.....OFF

Ident.: PRO-NOR-SOP-23-A-00010343.0004001 / 04 MAR 14
Applicable to: MSN 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336

EMER LIGHTS AND SIGNS

EMER EXIT LT sw.....OFF
NO PORTABLE/ELEC DEVICE sw.....OFF

Ident.: PRO-NOR-SOP-23-A-00010344.0001001 / 05 AUG 10
Applicable to: ALL

EXTERNAL POWER

EXT PWR pb.....AS RQRD

Ident.: PRO-NOR-SOP-23-A-00010345.0001001 / 05 AUG 10
Applicable to: ALL

BAT 1 AND 2

BAT 1 pb-sw and BAT 2 pb-sw.....OFF

Wait until the APU flap is fully closed (about 2 min after the APU AVAIL light goes out), before switching off the batteries. Switching the batteries off before the APU flap is closed may cause smoke in the cabin during the next flight.
If the batteries are off while the APU is running, APU fire extinguishing is not available.

Ident.: PRO-NOR-SOP-23-A-00010346.0001001 / 05 AUG 10
Applicable to: ALL

SECURING THE AIRCRAFT CHECKLIST

SECURING THE AIRCRAFT CHECKLIST.....COMPLETE

Ident.: PRO-NOR-SOP-23-A-00014412.0001001 / 05 DEC 17
Applicable to: ALL

EFB

EFB APPLICATIONS.....CLOSE
ALL EFB.....SWITCH OFF

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COMMUNICATIONS AND STANDARD TERMS

Ident.: PRO-NOR-SOP-90-00011900.0001001 / 13 AUG 10
Applicable to: ALL

Standard phraseology is essential to ensure effective crew communication. The phraseology should be concise and exact. The following Chapter lists the callouts that should be used as standard. They supplement the callouts identified in the SOP.
These standard Airbus callouts are also designed to promote situational awareness, and to ensure crew understanding of systems and their use in line operation.

CHECKLIST CALLOUTS

Ident.: PRO-NOR-SOP-90-00011901.0001001 / 20 DEC 10
Applicable to: ALL

- "CHECK": A command for the other pilot to check an item.
- "CHECKED": A response that an item has been checked.
- "CROSSCHECKED": A callout verifying information from both pilot stations.

If a checklist needs to be interrupted, announce: "HOLD CHECKLIST AT ___" and "RESUME CHECKLIST AT ___" for the continuation.
Upon completion of a checklist announce: "__CHECKLIST COMPLETE".

ACTIONS COMMANDED BY PF

Applicable to: ALL

Ident.: PRO-NOR-SOP-90-A-00011902.0001001 / 13 AUG 10

GENERAL

The following commands do not necessarily initiate a guidance mode change, eg.: selected to managed/managed to selected. The intent is to ensure clear, consistent, standard communication between crewmembers.
All actions performed on the FCU and MCDU must be checked on the PFD and ND (eg.: "FL 350 blue", "FL 200 magenta"). Ensure that the correct FCU knob is used, then verify indications on the PFD/ND.

Ident.: PRO-NOR-SOP-90-A-00011904.0001001 / 09 JUN 15

SET

The "SET" command means using an FCU knob to set a value, but not to change a mode.
SET is accomplished by only rotating the appropriate selection knob.

Example:
- "SET GO AROUND ALTITUDE__FT"
- "SET FL __"
- "SET HDG __"

Ident.: PRO-NOR-SOP-90-A-00011905.0001001 / 20 DEC 10

MANAGE/PULL

The "MANAGE" command means pushing an FCU knob to engage, or arm, a managed mode or target.

The "PULL" command means pulling an FCU knob to engage a selected mode or target. Example:
- "PULL HDG 090" (HDG/TRK knob is pulled and turned).
- "MANAGE NAV" (HDG/TRK knob is pushed).
- "FL 190 PULL" (ALT knob is turned and pulled).
- "FL 190 MANAGE" (ALT knob is turned and pushed).
- "PULL SPEED 250 KNOTS" (SPD/MACH knob is pulled and turned).
- "MANAGE SPEED" (SPD/MACH knob is pushed).

Note: If the value was previously set, there is no requirement to repeat the figure. Simply call e.g. PULL HDG: PULL SPEED: FL PULL.

The VS/FPA knob has no managed function. The standard callouts for the use of this knob are as follows:
V/S Plus (or Minus) 700 PULL, or

FPA Minus 3 ° PULL (V/S/FPA knob is turned and pulled)

PUSH TO LEVEL OFF (V/S/FPA knob is pushed)

Ident.: PRO-NOR-SOP-90-A-00011906.0001001 / 13 AUG 10

ARM

The "ARM __" command means arming a system by pushing the specified FCU button.
e.g. : "ARM APPROACH"
e.g. : "ARM LOC."

Ident.: PRO-NOR-SOP-90-A-00011907.0001001 / 13 AUG 10

ON/OFF

The simple ON or OFF command is used for the autopilot, flight directors, autothrust and the bird (flight path vector).
e.g.: BIRD ON (The HDG-V/S / TRK-FPA pb is pushed.)

FMA

Ident.: PRO-NOR-SOP-90-00011908.0001001 / 23 DEC 14
Applicable to: ALL

The PF should call out any FMA change, unless specified differently (e.g. CAT II & III task sharing). Therefore, the PF should announce:

- All armed modes with the associated color (e.g. blue, magenta): "G/S blue", "LOC blue".
- All active modes without the associated color (e.g. green, white): "NAV", "ALT".

The PM should check and respond, "CHECKED" to all FMA changes called out by the PF.

ALTITUDE

Ident.: PRO-NOR-SOP-90-00011909.0001001 / 23 DEC 14
Applicable to: ALL

The PM calls out "one thousand to go" when passing 1 000 ft before the cleared altitude or FL, and the PF calls out "checked".

FLAPS OR GEAR CALLOUTS

Applicable to: ALL

Ident.: PRO-NOR-SOP-90-B-00011910.0001001 / 23 DEC 14

FLAPS' CALLOUTS

FLAPS' CONFIGURATION	CALLOUT
1	"FLAPS ONE"
1 + F	"FLAPS ONE"
0	"FLAPS ZERO"

The reply will be given when selecting the new flap position.
e.g.:

	CALLOUT	REMARK
PF	"FLAPS ONE"	
PM	"SPEED CHECKED"	PM checks the speed: - Above the S or F speed and accelerating (Takeoff) - Below VFE next and decelerating (Approach)
	"FLAPS ONE"	PM selects the FLAPS lever position and replies after checking the blue number on the ECAM flaps indicator to confirm the correct selection has been made.

Ident.: PRO-NOR-SOP-90-B-00011911.0001001 / 23 DEC 14

GEAR CALLOUTS

	CALLOUT	REMARKS
PF	"GEAR UP (DOWN)"	
PM	"GEAR UP (DOWN)"	The PM selects the L/G lever position and replies after checking the red lights on the LDG GEAR indicator to confirm gear operation.

FLIGHT PARAMETERS

Ident.: PRO-NOR-SOP-90-C-00011912.0001001 / 22 MAR 17

1 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

APPROACH

During approach, the PM announces:

- "SPEED" if the speed decreases below the speed target -5 kt or increases above the speed target +10 kt.
- "SINK RATE" when the descent rate exceeds 1 000 ft/min
- "BANK" when bank angle becomes greater than 7 °
- "PITCH" when pitch attitude becomes lower than -2.5 ° or higher than +10 °
- "LOC" or "GLIDE" when either localizer or glide slope deviation is:
  - ½ dot LOC
  - ½ dot GS.
- "CROSS TRACK" when the XTK is greater than 0.1 NM
- "V/DEV" when the vertical deviation is greater than ½ dot
- "COURSE" when greater than ½ dot or 2.5 ° (VOR) or 5 ° (ADF).
- "__ FT HIGH (LOW)" at altitude checks points.

Note: *The PM announces the attitude deviations until landing.*

Ident.: PRO-NOR-SOP-90-C-00011912.0002001 / 22 MAR 17

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

APPROACH

During approach, the PM announces:

- "SPEED" if the speed decreases below the speed target -5 kt or increases above the speed target +10 kt
- "SINK RATE" when the descent rate exceeds 1 000 ft/min
- "BANK" when bank angle becomes greater than 7 °
- "PITCH" when pitch attitude becomes lower than -2.5 ° or higher than +7.5 °

- "LOC" or "GLIDE" when either localizer or glide slope deviation is:
  - ½ dot LOC
  - ½ dot GS.
- "CROSS TRACK" when the XTK is greater than 0.1 NM
- "V/DEV" when the vertical deviation is greater than ½ dot
- "COURSE" when greater than ½ dot or 2.5 ° (VOR) or 5 ° (ADF)
- "__ FT HIGH (LOW)" at altitude checks points.

Note: The PM announces the attitude deviations until landing.

Ident.: PRO-NOR-SOP-90-C-00021570.0004001 / 22 MAR 17

[3] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

LANDING

During landing, the PM announces:
- "PITCH PITCH", if the pitch attitude approaches the tail strike pitch limit indicator , or reaches 7.5 °
- "BANK BANK", if the bank angle reaches 7 °.

Ident.: PRO-NOR-SOP-90-C-00021570.0001001 / 22 MAR 17

[4] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

LANDING

During landing, the PM announces:
- "PITCH PITCH", if the pitch attitude approaches the tail strike pitch limit indicator , or reaches 10 °
- "BANK BANK", if the bank angle reaches 7 °.

Ident.: PRO-NOR-SOP-90-C-00011913.0001001 / 22 MAR 17

Applicable to: ALL

GO-AROUND

During a go-around, the PM announces:
- "BANK", if the bank angle becomes greater than 7 °
- "PITCH", if the pitch attitude becomes greater than 20 ° up or less than 10 ° up
- "SINK RATE", if there is no climb rate.

PF/PM DUTIES TRANSFER

Ident.: PRO-NOR-SOP-90-00011914.0001001 / 23 DEC 14
Applicable to: ALL

To transfer control, flight crewmembers must use the following callouts:

- To give control: The pilot calls out "YOU HAVE CONTROL". The other pilot accepts this transfer by calling out "I HAVE CONTROL", before assuming PF duties.
- To take control: The pilot calls out "I HAVE CONTROL". The other pilot accepts this transfer by calling out "YOU HAVE CONTROL", before assuming PM duties.

SUMMARY FOR EACH PHASE

Ident.: PRO-NOR-SOP-90-D-00011917.0001001 / 23 DEC 14
Applicable to: ALL

TO REMOVE GROUND SUPPLY		
EVENT	**PF or PM**	**GND Mech**
Initial ground contact	GROUND (from) COCKPIT	COCKPIT (from) GROUND
External __ disconnection	REMOVE EXTERNAL __	EXTERNAL__ REMOVED

Ident.: PRO-NOR-SOP-90-D-00011918.0001001 / 23 DEC 14
Applicable to: ALL

BEFORE ENGINE START/PUSH BACK		
EVENT	**PF**	**PM**
Before start up clearance received	BEFORE START C/L	DOWN TO THE LINE
After start up clearance received	BELOW THE LINE	BEFORE START C/L COMPLETE

Ident.: PRO-NOR-SOP-90-D-00011919.0001001 / 17 MAR 16
Applicable to: ALL

PUSH BACK/ENGINE START		
EVENT	**PF**	**GND Mech.**
When ready for pushback, and pushback clearance received from ATC	GROUND (from) COCKPIT, CLEARED FOR PUSH	COCKPIT (from) GROUND, RELEASE BRAKES
Start of push	BRAKES RELEASED READY TO PUSH	
When ready to start engines	CLEAR TO START ? STARTING ENG(S)__	CLEAR TO START

Continued on the following page

Continued from the previous page

PUSH BACK/ENGINE START		
EVENT	**PF**	**GND Mech.**
When pushback completed	BRAKES SET	SET BRAKES
When ready to disconnect (after engine started, and parameters are stabilized)	CLEAR TO DISCONNECT (hand signals on left/right)	DISCONNECTING (hand signals on left/right)

Ident.: PRO-NOR-SOP-90-D-00011920.0001001 / 23 DEC 14
Applicable to: ALL

AFTER ENGINE START		
EVENT	**PF**	**PM**
All engines started and stabilized and GND is disconnected	AFTER START C/L	AFTER START C/L COMPLETE

Ident.: PRO-NOR-SOP-90-D-00011921.0001001 / 23 DEC 14
Applicable to: MSN 01767-02405, 02482

TAXI		
EVENT	**PF**	**PM**
When taxi clearance obtained	CLEAR LEFT (RIGHT) SIDE	CLEAR RIGHT (LEFT) SIDE
Brake transfer check	BRAKE CHECK	PRESSURE ZERO
Flight control check in the following sequence (can be done before start of taxi)	FLIGHT CONTROL CHECK	
1. Elevators		FULL UP, FULL DOWN, NEUTRAL
2. Ailerons/Spoilers		FULL LEFT, FULL RIGHT, NEUTRAL
3. Rudder(1)	RUDDER	FULL LEFT, FULL RIGHT, NEUTRAL
During taxi	BEFORE TAKEOFF C/L	DOWN TO THE LINE
Lining up on the runway	BELOW THE LINE	BEFORE TAKEOFF C/L COMPLETE

(1) *The PM should follow pedal movement with his/her feet*

Ident.: PRO-NOR-SOP-90-D-00011921.0002001 / 23 DEC 14
5 **Applicable to: MSN 02443-02457, 02584-09063**

TAXI		
EVENT	**PF**	**PM**
When taxi clearance obtained	CLEAR LEFT (RIGHT) SIDE	CLEAR RIGHT (LEFT) SIDE

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TAXI		
EVENT	**PF**	**PM**
Brake check	BRAKE CHECK	
Flight control check in the following sequence (the check is possible before the start of taxi)	FLIGHT CONTROL CHECK	
1. Elevators		FULL UP, FULL DOWN, NEUTRAL
2. Ailerons/Spoilers		FULL LEFT, FULL RIGHT, NEUTRAL
3. Rudder(1)	RUDDER	FULL LEFT, FULL RIGHT, NEUTRAL
During taxi	BEFORE TAKEOFF C/L	DOWN TO THE LINE
Line up on the runway	BELOW THE LINE	BEFORE TAKEOFF C/L COMPLETE

(1) *The PM should follow pedal movement with his/her feet*

Ident.: PRO-NOR-SOP-90-D-00011922.0001001 / 23 DEC 14
Applicable to: ALL

TAKEOFF		
EVENT	**PF**	**PM**
Setting thrust levers to initial stabilization value	TAKEOFF	
Before passing 80 kt		THRUST SET
At 100 kt	CHECKED	ONE HUNDRED KNOTS
At V1		V1
At VR		ROTATE
Gear retraction	GEAR UP	POSITIVE CLIMB GEAR UP
If AP is engaged by PM	AP 1(2) ON	
Checklist	AFTER TAKEOFF/CLIMB C/L	DOWN TO THE LINE
At transition altitude	BELOW THE LINE	AFTER TAKEOFF/CLIMB C/L COMPLETE

Ident.: PRO-NOR-SOP-90-D-00011923.0001001 / 17 MAR 16
Applicable to: ALL

MALFUNCTION BEFORE V1 AT TAKEOFF		
EVENT	**CAPT**	**F/O**
If GO decision	GO	
If RTO decision - REV green on EWD - Deceleration	STOP	 REVERSE GREEN(1) DECEL(2)

(1) *If the reverse deployment is not as expected, call NO REVERSE ENGINE__or NO REVERSE, as appropriate*

(2) *In case of failure or no positive deceleration, NO DECEL*
DECEL callout means that the deceleration is felt by the crew, and confirmed by the speed trend on the PFD.

Ident.: PRO-NOR-SOP-90-D-00011924.0001001 / 12 MAY 16
Applicable to: ALL

ALTIMETER SETTING CHANGES TO/FROM QNH/QFE-STD		
EVENT	**PF**	**PM**
Barometric setting change and subsequent altimeter cross-check	SET STANDARD (SET QNH/QFE) CHECKED	 STANDARD (QNH/QFE) CROSS-CHECKED PASSING FL__(__FT) NOW

Ident.: PRO-NOR-SOP-90-D-00011925.0001001 / 03 APR 18
Applicable to: ALL

APPROACH AND LANDING		
EVENT	**PF**	**PM**
Approach checklist	APPROACH C/L	 APPROACH C/L COMPLETE
Activation of approach Phase	ACTIVATE APPROACH PHASE	 APPROACH PHASE ACTIVATED
RA alive	 CHECKED	RADIO ALTIMETER ALIVE(1)(2)

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APPROACH AND LANDING		
EVENT	**PF**	**PM**
At F-G/S*, G/S*, FINAL APP or below the go-around altitude for approach with FPA guidance	● **If the PF requests the PM to set the go-around altitude:** SET GA ALTITUDE_FT	GA ALTITUDE_SET
	● **If the PF sets the go-around altitude:** GA ALTITUDE_SET	CHECKED
FDP	CHECKED	PASSING__(Fix Name),__ FT,
Landing checklist	LANDING C/L	LANDING C/L COMPLETE
1 000 ft RA	CHECKED	ONE THOUSAND(2)
100 ft above MDA/DH	CHECKED	ONE HUNDRED ABOVE(2)
MDA/DH visual reference	CONTINUE	MINIMUM(2)
MDA/DH no visual reference	GO AROUND-FLAPS	MINIMUM(2)
		ONE HUNDRED(2) FIFTY(2)
After touchdown Ground spoilers extended REV green on EWD		SPOILERS(3) REVERSE GREEN(4)
Deceleration		DECEL(5)
At 70 kt	CHECKED	SEVENTY KNOTS

(1) *Crew awareness, crew should now keep RA in scan to landing*

(2) *PM monitors pin-programmed auto callout, or announces if inoperative.*

(3) *If the spoilers are not extended, call NO SPOILERS*

(4) *If the reverse deployment is not as expected, call NO REVERSE ENGINE__ or NO REVERSE, as appropriate.*

(5) *DECEL Callout means that the deceleration is felt by the crew, and confirmed by the speed trend on the PFD.If no positive deceleration, NO DECEL.*

Ident.: PRO-NOR-SOP-90-D-00015353.0001001 / 23 DEC 14
Applicable to: ALL

DISCONTINUED APPROACH		
EVENT	**PF**	**PM**
DISCONTINUED APPROACH decision	CANCEL APPROACH	

Ident.: PRO-NOR-SOP-90-D-00011926.0001001 / 17 MAR 16
Applicable to: ALL

GO AROUND		
EVENT	**PF**	**PM**
GO AROUND decision	GO AROUND - FLAPS	
Flaps retraction		FLAPS__
Gear retraction	GEAR UP	POSITIVE CLIMB GEAR UP
Checklist	AFTER TAKEOFF/CLIMB C/L	DOWN TO THE LINE
At transition altitude	BELOW THE LINE	AFTER TAKEOFF/CLIMB C/L COMPLETE

Ident.: PRO-NOR-SOP-90-D-00011927.0001001 / 23 DEC 14
Applicable to: ALL

AFTER LANDING		
EVENT	**PF**	**PM**
Checklist	AFTER LANDING C/L	AFTER LANDING C/L COMPLETE

Ident.: PRO-NOR-SOP-90-D-00011928.0001001 / 23 DEC 14
Applicable to: ALL

PARKING		
EVENT	**PF**	**PM**
Checklist	PARKING C/L	PARKING C/L COMPLETE

Ident.: PRO-NOR-SOP-90-D-00011929.0001001 / 23 DEC 14
Applicable to: ALL

SECURING THE AIRCRAFT		
EVENT	**PF**	**PM**
Checklist	SECURING THE AIRCRAFT C/L	SECURING THE AIRCRAFT C/L COMPLETE

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SUPPLEMENTARY PROCEDURES

Ident.: PRO-NOR-SUP-SUP-SUP-00-00020244.0001001 / 17 MAR 17
Applicable to: ALL

ADVERSE WEATHER
- [SUP] AIRFRAME DEICING/ANTI-ICING PROCEDURE ON GROUND (*Refer to procedure*)
- [SUP] GROUND OPERATIONS IN COLD WEATHER CONDITIONS (*Refer to procedure*)
- [SUP] GROUND OPERATION IN HEAVY RAIN (*Refer to procedure*)
- [SUP] MINIMUM SPEED WITH ICE ACCRETION (*Refer to procedure*)
- [SUP] OPERATIONS ON CONTAMINATED AIRPORTS (*Refer to procedure*)
- [SUP] OPERATIONS WITH VOLCANIC ASH, SAND OR DUST (*Refer to procedure*)
- [SUP] SECURING THE AIRCRAFT FOR COLD SOAK (*Refer to procedure*)
- [SUP] FOR DRAINING WATER PROCEDURE (*Refer to procedure*)
- [SUP] WATER SYSTEM DRAINING (*Refer to procedure*)

Ident.: PRO-NOR-SUP-SUP-SUP-00-00020248.0001001 / 17 MAR 17
1 **Applicable to: MSN 01767-06336**

ENGINE
- [SUP] MANUAL ENGINE START (*Refer to procedure*)
- [SUP] ENGINE START WITH EXTERNAL PNEUMATIC POWER (*Refer to procedure*)
- [SUP] CROSSBLEED ENGINE START (*Refer to procedure*)
- [SUP] ENGINE START VALVE MANUAL OPERATION (*Refer to procedure*)
- [SUP] ENGINE VENTILATION (DRY CRANKING) (*Refer to procedure*)
- [SUP] ONE ENGINE TAXI (*Refer to procedure*)

Ident.: PRO-NOR-SUP-SUP-SUP-00-00020248.0006001 / 17 MAR 17
2 **Applicable to: MSN 06720, 06772, 06829, 06904-09063**

ENGINE
- [SUP] MANUAL ENGINE START (*Refer to procedure*)
- [SUP] ENGINE START WITH EXTERNAL PNEUMATIC POWER (*Refer to procedure*)
- [SUP] CROSSBLEED ENGINE START (*Refer to procedure*)
- [SUP] AIR CONDITIONING DURING AUTOMATIC ENGINE START (*Refer to procedure*)
- [SUP] ENGINE START VALVE MANUAL OPERATION (*Refer to procedure*)
- [SUP] ENGINE VENTILATION (DRY CRANKING) (*Refer to procedure*)
- [SUP] ONE ENGINE TAXI (*Refer to procedure*)

Ident.: PRO-NOR-SUP-SUP-SUP-00-00020248.0007001 / 17 MAR 17
Applicable to: MSN 06744, 06799-06819, 06849-06868

ENGINE
- [SUP] MANUAL ENGINE START (*Refer to procedure*)
- [SUP] ENGINE START WITH EXTERNAL PNEUMATIC POWER (*Refer to procedure*)

[SUP] CROSSBLEED ENGINE START (*Refer to procedure*)
[SUP] AIR CONDITIONING DURING AUTOMATIC ENGINE START (*Refer to procedure*)
[SUP] ENGINE VENTILATION (DRY CRANKING) (*Refer to procedure*)
[SUP] ONE ENGINE TAXI (*Refer to procedure*)

Ident.: PRO-NOR-SUP-SUP-SUP-00-00020249.0001001 / 17 MAR 17
Applicable to: ALL

FUEL
[SUP] REFUELING (*Refer to procedure*)
[SUP] REFUELING WITH ONE ENGINE RUNNING (*Refer to procedure*)
[SUP] GROUND FUEL TRANSFER (*Refer to procedure*)
[SUP] DEFUELING (*Refer to procedure*)

Ident.: PRO-NOR-SUP-SUP-SUP-00-00020251.0001001 / 17 MAR 17
Applicable to: ALL

LANDING GEAR
[SUP] OPERATION WITH NOSEWHEEL STEERING OFFSET (*Refer to procedure*)
[SUP] FLIGHT WITH GEAR DOWN (*Refer to procedure*)

Ident.: PRO-NOR-SUP-SUP-SUP-00-00020254.0001001 / 17 MAR 17
Applicable to: ALL

MISCELLANEOUS
[SUP] MISCELLANEOUS (*Refer to procedure*)

Ident.: PRO-NOR-SUP-SUP-SUP-00-00020253.0011001 / 17 MAR 17
3 **Applicable to: MSN 02135, 02139, 02457, 02584-02626, 02670-02712, 02908-03071, 03357-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-09063**

SURVEILLANCE
[SUP] AUTOMATIC DEPENDENT SURVEILLANCE - BROADCAST (ADS-B) (*Refer to procedure*)

Ident.: PRO-NOR-SUP-SUP-SUP-00-00020253.0010001 / 17 MAR 17
Applicable to: MSN 01920, 02195

SURVEILLANCE
[SUP] AUTOMATIC DEPENDENT SURVEILLANCE - BROADCAST (ADS-B) (*Refer to procedure*)
[SUP] (ENHANCED) GROUND PROXIMITY WARNING SYSTEM (EGPWS/GPWS) (*Refer to procedure*)

Ident.: PRO-NOR-SUP-SUP-SUP-00-00020253.0002001 / 17 MAR 17
Applicable to: MSN 01767, 02108, 02275-02359, 02405, 02482, 02737-02804

SURVEILLANCE
[SUP] (ENHANCED) GROUND PROXIMITY WARNING SYSTEM (EGPWS/GPWS) (*Refer to procedure*)

AIRFRAME DEICING/ANTI-ICING PROCEDURE ON GROUND

Applicable to: ALL

Ident.: PRO-NOR-SUP-ADVWXR-A-00020694.0001001 / 21 MAR 17

BEFORE FLUID SPRAYING

In all situations, it is the captain's responsibility to decide if the ground crew must deice/anti-ice the aircraft, and/or if additional deicing/anti-icing treatment are required.

CAUTION	- Make sure that the low or high-pressure ground connectors do not supply any external air to the aircraft. - If it is necessary for the ground crew to repeatedly anti-ice the aircraft, they must deice the surfaces with a hot fluid mixture before applying a new layer of anti-icing fluid.

COMMUNICATION WITH GROUND CREW.....ESTABLISH

L2 Establish communication with the crew that will apply the procedure.

L1 DEICING/ANTI-ICING FLUIDS TYPE..... CHECK APPROPRIATE

L2 Check that the ground crew uses the correct deicing/anti-icing fluids, in accordance with the applicable operator requirements and aircraft maintenance manual (AMM).

L1 DO NOT START THE ENGINES DURING FLUID SPRAYING

L2 Engines and APU can be either stopped or running during deicing/anti-icing.

L1

CAUTION	- The ground crew should take care when spraying deicing fluid, and make sure that the engines and APU do no ingest any fluid. - Do not move flaps, slats, ailerons, spoilers or elevators if they are not free of ice. - Always ensure that both left and right side of the aircraft receive the same complete and symmetrical deicing/anti-icing treatment.

L2

Note: *In case of frost formation on one or several areas of the wing, the Captain can request a local deicing application only on the affected areas. The Captain shall take care that both wings receive the same symmetrical treatment, even if frost formation does not affect both wing symmetrically. For more information, refer to AMM.*

L1 CAB PRESS MODE SEL.....CHECK AUTO
ENG 1 BLEED.....OFF
ENG 2 BLEED.....OFF
APU BLEED.....OFF

DITCHING pb..... ON

L2 *Outflow valve, pack valves, and avionic ventilation inlet and extract valves close.*
This prevents deicing/anti-icing fluid from entering the aircraft. Avionic ventilation is in a closed circuit with both fans running. In view of the low OAT, there is no time limit for this configuration.

L1 *Note: For passenger comfort reason, it is not recommended to operate on ground with both PACKS set to OFF for more than 20 min.*

Note: If the "VENT AVNCS SYS FAULT" alert appears, reset the AEVC circuit breaker at the end of the aircraft deicing/anti-icing procedure.
AIR COND/AVNCS VENT/CTL D06 on 49VU.
AIR COND/AVNCS/VENT/MONG Y17 on 122 VU.

THRUST LEVERS.....CHECK IDLE
"AIRCRAFT PREPARED FOR SPRAYING"..... INFORM GROUND CREW

Ident.: PRO-NOR-SUP-ADVWXR-A-00002311.0001001 / 20 SEP 16

UPON COMPLETION OF THE SPRAYING OPERATION

DITCHING pb.....OFF
OUTFLOW VALVE.....CHECK OPEN

On the ECAM PRESS page, confirm that the outflow valve indication reaches the open green position to avoid any unexpected aircraft pressurization.

ENG BLEED 1 + 2.....ON
PITOTS and STATICS (ground crew).....CHECK

CAUTION	When the OAT is low (below -5 °C) during snow/freezing rain precipitations , melted snow or raindrops may drip from the cockpit windshields and freeze on the fuselage below. This could create ice build up on the forward fuselage that could possibly disturb the airflow around the static/pitot/angle-of-attack probes, and result in unreliable air data measurements during takeoff. Therefore, during taxi out before takeoff, beware of this possible build up of ice. The area around static/pitot/angle-of-attack probes must be free of ice/snow before starting takeoff.

GROUND EQUIPMENT..... REMOVE
DEICING/ANTI-ICING REPORT.....RECEIVED

The information from ground personnel, who performed the deicing/anti-icing and post-application check, must include (ANTI-ICING CODE):

- *Type of fluid used*
- *The mix ratio of fluid to water (for example 75/25)*
- *When the holdover time began.*

- **At least 5 minutes after completion of spraying operation:**
  APU BLEED.....AS RQRD

  Note: *There is a risk of de-icing fluid ingestion by the APU air intake, resulting in specific odors, or smoke warnings. Therefore:*

  - *Keep the APU running with the APU BLEED OFF for 5 min after spraying completion before setting the APU BLEED to ON (if required),*
  - *Consider APU BLEED OFF for takeoff.*

NORMAL PROCEDURE..... RESUME

Apply appropriate normal procedures. Pay special attention to the flight control check. In freezing precipitation, perform the appropriate checks to evaluate aircraft icing. Base the decision on whether to takeoff, or to re-protect the aircraft, on the amount of ice that has built up on the critical surfaces since the last deicing/anti-icing, as revealed by a personal inspection from the inside and outside of the aircraft. Make this inspection before the holdover time expires, or just before takeoff.

GROUND OPERATIONS IN COLD WEATHER CONDITIONS

Ident.: PRO-NOR-SUP-ADVWXR-B-00020703.0001001 / 21 MAR 17
Applicable to: ALL

GENERAL

For ground operations on contaminated runways, *Refer to PER-TOF-CTA-10 GENERAL* and *Refer to PRO-NOR-SUP-ADVWXR General*.

The following procedures supplement the normal operating procedures.

Ident.: PRO-NOR-SUP-ADVWXR-B-00020698.0001001 / 13 DEC 17
Applicable to: ALL

SAFETY EXTERIOR INSPECTION

PROTECTIVE COVERS.....REMOVED
APU INTAKE.....CHECK FREE OF SNOW AND ICE
PACKS INLET/OUTLET DOORS.....CHECK FREE OF SNOW AND ICE
OUTFLOW VALVES..... CHECK FREE OF SNOW AND ICE
ABOVE ITEMS.....DEICE IF NECESSARY

Ident.: PRO-NOR-SUP-ADVWXR-B-00020699.0001001 / 21 MAR 17
Applicable to: ALL

PRELIMINARY COCKPIT PREPARATION

PRELIMINARY COCKPIT PREPARATION - SOP.....COMPLETED

L2 APU is started and the air conditioning is on.

Note: - *Ground power should be used to start the APU if the OAT is -15 °C (5 °F) or below.*
- *With cockpit temperatures below -15 °C (5 °F), the display units may not be available.*

L1 ● **If the avionics bay is cold soaked:**

L2 The aircraft was parked without electrical ground supply or without air conditioning.

L1 IRS.....INITIATE ALIGNMENT

L2 For temperatures at or below -15 °C (5 °F) in the avionics bay, the IRS alignment requires 15 min.

L1 WINDSHIELD AND UPPER COCKPIT FUSELAGE.....ICE/SNOW REMOVED

CAUTION	With ice or snow accumulated on the windshield and/or the upper cockpit fuselage, and if the PROBE/WINDOW HEAT is on, melted ice or snow running down from these areas could re-freeze on the fuselage area below, if the temperature is very low. This could create ice build-up on the forward fuselage that could possibly disturb the airflow around the static/pitot/angle-of-attack probes.

PROBE COVERS..... CHECK REMOVED

L2 Ensure that the probe covers are removed in order to prevent the covers from melting.

L1 PROBE/WINDOW HEAT.....ON

Ident.: PRO-NOR-SUP-ADVWXR-B-00020700.0001001 / 05 JUN 18
Applicable to: ALL

EXTERIOR WALKAROUND

SURFACES ..... CHECK FREE OF FROST, ICE AND SNOW

L2 Check critical surfaces: leading edges, upper wing surfaces, vertical and horizontal stabilizers, all control surfaces, slats and flaps.

Note: *Thin hoarfrost is acceptable on the upper surface of the fuselage.* *Refer to LIM-ICE_RAIN Definition of Thin Hoarfrost*

On the underside of the wing tank areas, a maximum layer of 3 mm (0.125 in) of frost is acceptable.

L1 LANDING GEAR.....CHECK FREE OF FROST, ICE AND SNOW

L2 Check gear assemblies, lever locks, tires and doors

L1 ENGINES.....CHECK FREE OF FROST, ICE AND SNOW

L2 Check inlets, inlet lips, fans, spinners, fan exhaust ducts, reversers assemblies.

L1 ENGINE FANS.....CHECK FREE ROTATION

L2 Check that engine fans are not stuck and can rotate freely.

L1 DRAINS, BLEEDS, PROBES.....CHECK FREE OF FROST, ICE AND SNOW

L2 Probes: pitot tubes, static ports, TAT sensors and AOA sensors.

L1 FUEL TANK VENTS..... CHECK FREE OF FROST, ICE AND SNOW
RADOME..... CHECK FREE OF FROST, ICE AND SNOW
Lower part of the NOSE FUSELAGE..... CHECK FREE OF FROST, ICE AND SNOW
WATER SUPPLIES..... CHECK NOT FROZEN AND REFILLED

L2 Commercial water supplies should have been previously emptied prior to aircraft cold soak.

Ident.: PRO-NOR-SUP-ADVWXR-B-00020701.0001001 / 21 MAR 17
Applicable to: ALL

AFTER START

- **After first engine start:**
  PROBE/WINDOW HEAT.....AUTO

L2 Heating will continue to operate automatically.

L1 NORMAL PROCEDURE.....RESUME

Ident.: PRO-NOR-SUP-ADVWXR-B-00021770.0001001 / 13 JUN 17
1 **Applicable to: MSN 06720-09063**

TAKEOFF

- **If OAT below -40 °C (-40 °F), perform the following action before takeoff:**
  THRUST REVERSERS..... PERFORM 5 CYCLES

L2 To perform 1 cycle, put the thrust levers to REV IDLE and maintain until the REV indication on the Engine/Warning display becomes green. Then put the thrust levers back to IDLE and wait for the REV indication to disappear before the next cycle.

Note: *1. Takeoff has to be initiated within one minute after the last thrust reversers cycle.*
2. If the takeoff is not performed within one minute after the last thrust reversers cycle, repeat each time the 5 thrust reversers cycles.

Ident.: PRO-NOR-SUP-ADVWXR-B-00021770.0002001 / 23 FEB 18
2 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

TAKEOFF

- **If OAT below -40 °C (-40 °F), perform the following action before takeoff:**
  THRUST REVERSERS..... PERFORM 6 CYCLES

L2 To perform 1 cycle, put the thrust levers to REV IDLE and maintain until the REV indication on the Engine/Warning display becomes green. Then put the thrust levers back to IDLE and wait for the REV indication to disappear before the next cycle.

Note: *1. Takeoff has to be initiated within one minute after the last thrust reversers cycle.*
2. If the takeoff is not performed within one minute after the last thrust reversers cycle, repeat each time the 6 thrust reversers cycles.

GROUND OPERATIONS IN HEAVY RAIN

Ident.: PRO-NOR-SUP-ADVWXR-00020720.0001001 / 21 MAR 17
Applicable to: ALL

On ground (Aircraft taxiing or parked) in case of heavy rain, water may enter the avionics ventilation system via the skin air inlet valve.

- **When on ground:**

EXTRACT.....OVRD

L2 This closes the skin air inlets, preventing rainwater from entering the avionics bay.

L1 PACK 1 ON..... CHECK
PACK 2 ON..... CHECK

L2 Air conditioning compensates the avionics cooling reduction when the skin air inlet is closed.

L1 - **If air conditioning not available:**

L2 When the aircraft avionics are powered, closing the skin air inlet valve reduces avionics cooling capability. With air conditioning not available, the reduced cooling is efficient for a limited period of time, depending on the outside temperature.

L1 Aircraft should not remain powered more than:
- OAT ≤ 39 °C (102 °F): no limit
- 39 °C (102 °F) < OAT ≤ 45 °C (113 °F): 3 h
- 45 °C (113 °F) < OAT: 30 min

- **After takeoff:**

EXTRACT..... AUTO

MINIMUM SPEED WITH ICE ACCRETION

Ident.: PRO-NOR-SUP-ADVWXR-00020722.0002001 / 21 MAR 17
Applicable to: ALL

Evidence of ice accretion can be ice on the visual indicator (between the two cockpit windshields) or on the windshield wipers.

CAUTION	Extended flight in icing conditions with the slats extended should be avoided.

- **If wing anti ice is operative:**
  - **In CONF clean, 1, 2 or 3:**
    MIN SPEED: VLS + 10 kt
  - **In CONF FULL:**
    MIN SPEED: VLS + 5 kt

  The minimum speed takes into account ice accretion on non-heated structure.

- **If wing anti ice is not operative:**
  MIN SPEED: VLS + 10 kt/GREEN DOT

  The minimum speed takes into account ice accretion on the entire airframe when anti-ice is inoperative.

OPERATIONS ON CONTAMINATED AIRPORTS

Applicable to: ALL

Ident.: PRO-NOR-SUP-ADVWXR-C-00020729.0001001 / 21 MAR 17

GENERAL

If the ground surfaces are not contaminated but the weather corresponds to icing conditions with falling rain, slush or snow, anticipate a probable resulting runway/surfaces contamination.
There is a low probability of fluid ingestion by the engines which should anyway not degrade the safety. The risk of ingestion is independent of the depth of the contaminant.

Ident.: PRO-NOR-SUP-ADVWXR-C-00020726.0002001 / 21 MAR 17

SPURIOUS ALERTS

The radio altimeter indication may fluctuate on contaminated surfaces and trigger auto callouts or GPWS warnings. These alerts can be disregarded.

Note: Spurious GPWS warnings may trigger at the apron, during taxi, takeoff and landing runs.

The radio altimeter may also not compute valid data:
- On surfaces covered with snow, ice or deicing fluid, and/or
- Due to deicing fluid on the antenna.

Note: As a result, the "NAV RA 1(2)(1+2) FAULT" ECAM alert may be triggered. This alert may disappear when the radio altimeter provides valid data again, when:

- The aircraft is on a non-contaminated surface, or
- The antenna is cleaned, or
- A period of time elapses after deicing, allowing the fluid covering the antenna to dry. The taxi time between deicing spot and holding point may be sufficient.

In case of invalid LGCIU information, disregard the following alerts if triggered:
- ENG DUAL FAILURE
- ANTI-ICE CAPT(F/O) TAT FAULT
- L/G SHOCK ABSORBER FAULT

Ident.: PRO-NOR-SUP-ADVWXR-C-00020725.0001001 / 21 MAR 17

PARKING

● **After engine shutdown and before shutting down electrical supply:**

FLAPS/SLATS..... CONFIRM FREE OF CONTAMINATION

L2 Perform a visual inspection to determine if the flaps/slats mechanism is free of contamination. If necessary, perform decontamination.

L1 YELLOW ELEC PUMP pb..... ON
BLUE ELEC PUMP pb..... AUTO
BLUE PUMP OVRD pb..... ON
SLATS/FLAPS..... RETRACT

L2 *Monitor slats/flaps retraction on ECAM upper display.*

L1 ● **When slats and flaps are retracted:**

YELLOW ELEC PUMP pb..... OFF
BLUE PUMP OVRD pb..... OFF
NORMAL PROCEDURE..... RESUME

OPERATIONS WITH VOLCANIC ASH, SAND OR DUST

Ident.: PRO-NOR-SUP-ADVWXR-G-00020733.0001001 / 21 MAR 17
Applicable to: ALL

PRELIMINARY COCKPIT PREPARATION

APU..... AVOID USE

L2 *Request ground power for air conditioning and electricity. If ground power is not available, the APU should be used only to start the engines.*

L1 WINDSHIELD WIPERS..... DO NOT USE

L2 *Do not use the windshield wipers to remove ash, sand or dust.*

L1 ● **For takeoff performance:**

BRAKING PERFORMANCE MAY BE DEGRADED

L2 A layer of volcanic ash, sand or dust on the runway may degrade the braking efficiency.

Ident.: PRO-NOR-SUP-ADVWXR-G-00020734.0001001 / 21 MAR 17
Applicable to: ALL

EXTERIOR WALKAROUND

SURFACES AND EQUIPMENT.....CHECK FREE OF DEPOSITS

L2 *Ground maintenance should remove ash, sand or dust that has settled on exposed lubricated surfaces and could penetrate seals or enter the engine gas path, air conditioning system, air data probes, access doors and panels and other orifices on the aircraft.*

L1 ENGINE/APU INLETS..... CHECK FREE OF DEPOSITS

L2 Inspect the inlets and order them cleaned of deposit. Have the area within 8 m (25 ft) of the engine inlet cleaned of volcanic ash, as much as practical.

Ident.: PRO-NOR-SUP-ADVWXR-G-00020735.0001001 / 27 FEB 18
Applicable to: ALL

ENGINE START

Use external pneumatic supply, if available, to start the engines. *Refer to PRO-NOR-SUP-ENG Engine Start with External Pneumatic Power.*

ENGINE..... CRANK

L2 *Before starting the engines, ventilate them by dry cranking at maximum motoring speed for two minutes. This will blow away any contaminant ash that may have entered the booster area. Refer to PRO-NOR-SUP-ENG Engine Ventilation (Dry Cranking)*

Ident.: PRO-NOR-SUP-ADVWXR-G-00022532.0002001 / 16 OCT 18
3 **Applicable to: MSN 01767-06336**

AFTER START

ENG ANTI-ICE pb-sw.....ON for 10 s

L2 *Engine anti-ice should be operated on both engines for about 10 s after the first engine start of the day in order to flush any sand and/or dust which could affect later operation of Engine Anti-Ice system.*

Ident.: PRO-NOR-SUP-ADVWXR-G-00020736.0001001 / 21 MAR 17
Applicable to: ALL

TAXI

ONE ENGINE TAXI.....DO NOT PERFORM

L2 *Minimize the thrust during taxi.*

L1 ENG 1 BLEED.....OFF
ENG 2 BLEED.....OFF

L2 Keep engine bleed valves closed for taxiing, especially in volcanic ash.

L1 FOR 180 ° TURN ON RUNWAY: INITIATE THE TURN DOWNWIND

L2 In order to prevent ash, sand or dust ingestion.

Ident.: PRO-NOR-SUP-ADVWXR-G-00020737.0001001 / 21 MAR 17
Applicable to: ALL

TAKEOFF

ASH, SAND OR DUST..... ALLOW TO SETTLE

L2 *Allow ash, sand or dust to settle on runway before starting the takeoff roll.*

L1 PACK OFF TAKEOFF..... CONSIDER

L2 *This will prevent air conditioning system contamination.*

L1 ROLLING TAKEOFF.....CONSIDER

Ident.: PRO-NOR-SUP-ADVWXR-G-00020738.0001001 / 21 MAR 17
Applicable to: ALL

AFTER TAKEOFF

MINIMIZE TIME IN SAND OR DUST CLOUD

L2 *Climb to quickly exit the sand/dust cloud. If possible, altitude constraints may be disregarded in coordination with ATC.*

L1 ENG 1 BLEED.....ON
ENG 2 BLEED.....ON

Ident.: PRO-NOR-SUP-ADVWXR-G-00020739.0001001 / 21 MAR 17
Applicable to: ALL

IN FLIGHT

AVOID ASH, SAND OR DUST CLOUD

- **If sand or dust cloud encounter:**

  MINIMIZE TIME IN SAND OR DUST CLOUD

L2 *If possible and in coordination with ATC, adapt flight path (route and altitude) to exit the cloud.*

L1 ● **If ash cloud encounter:**
VOLCANIC ASH ENCOUNTER PROCEDURE..... APPLY

Refer to PRO-ABN-MISC [QRH] VOLCANIC ASH ENCOUNTER .

Ident.: PRO-NOR-SUP-ADVWXR-G-00020740.0001001 / 21 MAR 17
Applicable to: ALL

DESCENT PREPARATION

AUTOLAND RECOMMENDED

L2 *Deposits on the windshield and landing lights may significantly reduce visibility during approach and landing. Consider a diversion to an airport where autoland is possible.*

L1 ● **For landing performance:**
CONSIDER IDLE REVERSE
BRAKING PERFORMANCE MAY BE DEGRADED

L2 *A layer of volcanic ash, sand or dust on the runway may degrade the braking efficiency.*

Ident.: PRO-NOR-SUP-ADVWXR-G-00020741.0001001 / 21 MAR 17
Applicable to: ALL

DESCENT

AVOID LEVEL FLIGHT IN ASH, SAND OR DUST CLOUD

If possible and in coordination with ATC, perform holding patterns and last level off before final descent outside of the cloud.

Ident.: PRO-NOR-SUP-ADVWXR-G-00020742.0001001 / 21 MAR 17
Applicable to: ALL

LANDING

● **Before Landing:**
ENG 1 BLEED..... OFF
ENG 2 BLEED..... OFF
PACK 1 and 2..... AS REQUIRED

L2 *Consider to set the packs OFF in order to avoid contamination of the air conditioning system.*

L1 ● **During Landing:**
REVERSERS.....AS REQUIRED

L2 *If it appears that maximum reverse thrust is needed, apply reverse thrust when the main landing gear touches down. Limit the use of reverse thrust as much as possible, because reverse flow may throw up ash, sand or dust and impair visibility.*

Ident.: PRO-NOR-SUP-ADVWXR-G-00020744.0001001 / 21 MAR 17
Applicable to: ALL

AFTER LANDING

ONE ENGINE TAXI.....DO NOT PERFORM

L2 *Minimize thrust during taxi.*

L1 APU.....AVOID USE

FOR 180 ° TURN ON RUNWAY: INITIATE THE TURN DOWNWIND

Ident.: PRO-NOR-SUP-ADVWXR-G-00020745.0001001 / 21 MAR 17
Applicable to: ALL

SECURING THE AIRCRAFT

If the aircraft is parked at an airport covered with volcanic ash, sand or dust, install engine inlet covers and other protective covers and plugs.
In addition:

- **After switching off all bleeds and before switching off the electrical AC power:**
  DITCHING pb.....ON

L2 *This closes the outflow valve, pack valves and avionics ventilation inlet and extract valves.*

L1
- **After switching off the electrical AC power and the batteries:**
  DITCHING pb.....OFF

L2 *All the applicable valves will open at the next power-up.*

L1 PROTECTIVE COVERS.....INSTALL

L2 Request ground crew to install protective covers and plugs, in order to protect the aircraft and engines from volcanic ash, sand or dust.

L1 LOGBOOK..... REPORT ASH, SAND OR DUST CLOUD ENCOUNTER

SECURING THE AIRCRAFT FOR COLD SOAK

Ident.: PRO-NOR-SUP-ADVWXR-00020772.0001001 / 21 MAR 17
Applicable to: ALL

WHEN SECURING THE AIRCRAFT

- **After switching off all bleeds and before switching off the electrical AC power:**
  DITCHING pb.....ON

L2 *This closes the outflow valve, pack valves and avionics ventilation inlet and extract valves.*

L1 ● **When the chocks are in place:**
PARKING BRAKE pb.....OFF

L2 *Releasing the parking brake prevents the brakes from freezing.*

L1 ● **After switching off the electrical AC power and the batteries:**
DITCHING pb.....OFF

L2 *All the applicable valves will open at the next power-up.*

L1 PROTECTIVE COVERS.....INSTALL

L2 *Request ground crew to install protective covers and plugs, in order to protect the wheels, the engines and the probes from snow and ice.*

L1 WATER SYSTEM DRAINING.....REQUEST

L2 *Request maintenance actions to drain the water system for cold soak prevention purposes.*
Refer to PRO-NOR-SUP-ADVWXR Water System Draining.

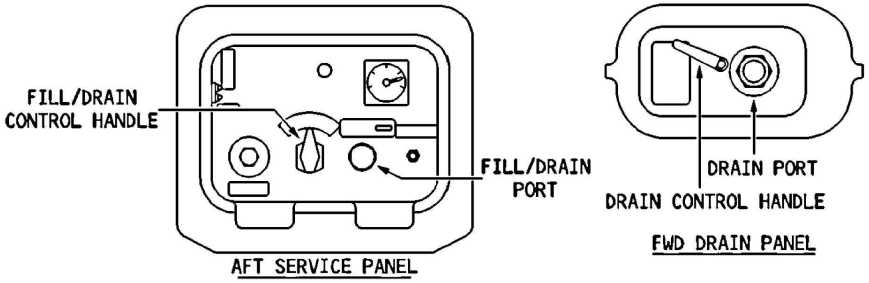
FOR DRAINING WATER PROCEDURE

Applicable to: ALL

Ident.: PRO-NOR-SUP-ADVWXR-D-00002313.0001001 / 21 MAR 17

INTRODUCTION

This procedure uses electrical power.



ACCESS PLATFORM(S).....PUT IN POSITION
SHUTOFF VALVE IN GALLEYS/TOILETS..... CHECK OPEN
FWD/AFT ACCESS PANEL DOORS.....OPEN
DRAIN PORT CAPS..... REMOVE

Remove drain port caps on forward drain and aft service panels.

DRAIN HOSES.....CONNECT

Connect drain hoses to :

- *the drain port on the forward drain panel.*
- *the full/drain port on the aft service panel.*

Ident.: PRO-NOR-SUP-ADVWXR-D-00002314.0001001 / 21 MAR 17

ON THE FORWARD DRAIN PANEL

DRAIN CONTROL HANDLE.....TURN LEFT

Turn the control handle to drain.

Ident.: PRO-NOR-SUP-ADVWXR-D-00002315.0001001 / 21 MAR 17

ON THE AFT SERVICE PANEL

FILL/DRAIN CONTROL HANDLE.....TURN TO “DRAIN” AND PULL

Turn the handle to the “DRAIN” position and pull it out to its mechanical stop to drain.
The indicator light comes on.

Ident.: PRO-NOR-SUP-ADVWXR-D-00002316.0001001 / 21 MAR 17

WHEN THE WATER SYSTEM IS DRAINED

In freezing conditions, the drain valves must stay open to prevent damage to the system. Do not put on the caps and leave the access door open.

DRAIN HOSES.....DISCONNECT
PANELS..... CLEAN AND DRY
ACCESS PLATFORM(S)..... REMOVE

WATER SYSTEM DRAINING

Ident.: PRO-NOR-SUP-ADVWXR-00002205.0001001 / 21 MAR 17
Applicable to: ALL

Drain the water system, if the OAT requires it, as shown below :

Configuration			Exposure time	Water tank drain
Air Conditioning	Cabin temperature	Outside Air Temperature		
ON	Above 10 °C (50 °F)	Between 0 °C and -15 °C (32 °F and 5 °F)	None	Not required
		Below -15 °C (5 °F)	1 h 15 min	Required
OFF		Between 0 °C and -7 °C (32 °F and 19.4 °F)	1 h 30 min	
		Between -7 °C and -15 °C (19.4 °F and 5 °F)	0 h 30 min	
		Below -15 °C (5 °F)	Any	

Intentionally left blank

MANUAL ENGINE START

Ident.: PRO-NOR-SUP-ENG-A-00009443.0004001 / 25 FEB 14
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04314, 04393-04438, 04510

Pilots normally use automatic starting to start an engine.

However, manual starting is recommended in the following cases:

- **After aborting a start, because of:**
  - Engine stall
  - Engine EGT overlimit
  - Low start air pressure
- **When expecting a start abort, because of:**
  - Degraded bleed performance, due to hot conditions, or at a high-altitude airfields.
  - An engine with a reduced EGT margin, in hot conditions, or at a high-altitude airfields.
  - Marginal performance of the external pneumatic power group.
  - Intermittent ECAM ENG 1(2) IGN A(B) FAULT alert, during the first start of the day.

Ident.: PRO-NOR-SUP-ENG-A-00009443.0002001 / 21 MAR 17
1 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

Pilots normally use automatic starting to start an engine.

However, manual starting is recommended in the following cases :

- **After aborting a start, because of :**
  - Engine stall, or Engine EGT overlimit, or LO START AIR PRESS, or No N1 rotation, or Hung start.
- **When expecting a start abort, because of :**
  - Degraded bleed performance, due to hot conditions, or at a high-altitude airfields.
  - An engine with a reduced EGT margin, in hot conditions, or at a high-altitude airfields.
  - Marginal performance of the external pneumatic power group.
  - Tailwind greater than 10 kt
    Starting in tailwind may fail due to N1 counterrotation, hot gas black flow. Fuel should be set to ON at N2 max motoring speed, provided N1 has stopped, and turn clockwise. (confirmation by the ground crew).

Ident.: PRO-NOR-SUP-ENG-A-00009443.0001001 / 21 MAR 17
Applicable to: MSN 04294

Pilots normally use automatic starting to start an engine.

However, manual starting is recommended in the following cases:

- **After aborting a start, because of:**
  - Engine stall
  - Engine EGT overlimit
  - Low start air pressure
- **When expecting a start abort, because of:**
  - Degraded bleed performance, due to hot conditions, or at a high-altitude airfields.
  - An engine with a reduced EGT margin, in hot conditions, or at a high-altitude airfields.
  - Marginal performance of the external pneumatic power group.

Ident.: PRO-NOR-SUP-ENG-A-00009443.0005001 / 12 SEP 17

2 **Applicable to: MSN 06720-09063**

Pilots normally use automatic starting to start an engine.

However, manual starting is recommended in the following cases:

- **After aborting a start, because of:**
  - Engine stall
  - Engine EGT overlimit
  - Low start air pressure
  - Hung start
- **When expecting a start abort, because of:**
  - Degraded bleed performance, due to hot conditions, or at a high-altitude airfields.
  - An engine with a reduced EGT margin, in hot conditions, or at a high-altitude airfields.
  - Marginal performance of the external pneumatic power group.

Ident.: PRO-NOR-SUP-ENG-A-00020858.0048001 / 19 DEC 17

3 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

MANUAL ENGINE START PROCEDURE

Note: During a manual engine start, if the flight crew suspects an engine start malfunction, or if an engine-related ECAM alert is triggered, the PF must abort the start sequence as follows:

- *Before the ENG MASTER lever is set to ON, the PF must set the ENG MAN START pb-sw to OFF*
- *After the ENG MASTER lever is set to ON, the PF must set the ENG MASTER lever to OFF, and then the ENG MAN START pb-sw to OFF.*
  In that case, the flight crew should consider a dry crank cycle of the affected engine before they perform another start attempt (Refer to PRO-NOR-SUP-ENG Engine Ventilation (Dry Cranking)).

Then, in the case of an ECAM alert, the PF must announce "ECAM actions", in accordance with the ECAM management philosophy.

THR LEVERS.....IDLE

CAUTION	The engines start regardless of the thrust lever position. If the thrust levers are not set to IDLE, the thrust rapidly increases to the corresponding thrust lever position, causing a hazardous situation.

ENG MODE sel..... NORM THEN IGN/START

L2 *The lower ECAM displays the engine page.*

L1 *Note: If both engines are started manually, the following procedure applies one engine at a time.*

- **When all engines parameters (except N1 and N2) are available on the upper ECAM display (no amber crosses displayed):**
  ENG MAN START pb-sw..... ON
  START VALVE.....CHECK IN-LINE
  N2 INCREASE..... CHECK
  OIL PRESS INCREASE..... CHECK
  - **If the N2 does not reach 16 %:**
    PACK VALVES.....CHECK CLOSED
    - **If the APU bleed is used for engine start and the pack valves are closed, shed the APU electrical loads as follows:**

L2 Shedding APU electrical loads enables to increase bleed air pressure.

L1 GALY & CAB.....OFF

- **If needed, shed also:**

  BLUE ELEC PUMP (on ground only).....OFF
  FUEL X FEED.....ON
  FUEL PUMPS (except R TK PUMP 2).....OFF
  BLOWER.....OVRD
  CAB FANS.....OFF

  - **If additional shedding is required:**

    HYD ENG PUMP.....OFF

    Return the hydraulic engine pump to ON for second engine start, to permit PTU auto test.

- **When N2 reaches the maximum motoring speed (16 % minimum) and 30 s after selection of the ENG MAN START pb-sw:**

  Note: *The maximum motoring speed is reached when a significant decrease in N2 acceleration is observed.*
  Do not attempt to start unless N2 is at least 16 %.

  In hot weather conditions (OAT at or above 40 °C / 104 °F):
  - If the residual EGT is above 100 °C, perform a 2 min dry crank in order to reduce the residual EGT to the minimum achievable. *Refer to PRO-NOR-SUP-ENG Engine Ventilation (Dry Cranking)*. Following the dry crank if the residual EGT is below 250 °C, the manual start can be attempted after a 15 s wait time for starter lubrication.
  - Starting with a residual EGT above 250 °C is not recommended.

  ENG MASTER.....ON
  CHRONO.....START

L2 *The PM starts the timing in order to monitor the light-up duration.*

L1 IGNITERS A AND B.....CHECK ON
FUEL FLOW INCREASE.....CHECK

L2 *With current EEC standard, fuel flow indication spiking occurs at fuel on.*

L1 - **20 s maximum after fuel flow increase:**

  EGT INCREASE.....CHECK
  N1 INCREASE (before 34 % N2).....CHECK

  If the electrical power supply is interrupted during the start sequence (indicated by the loss of ECAM displays), abort the start by setting the ENG MASTER lever to OFF. Then perform a 30 s dry crank *Refer to PRO-NOR-SUP-ENG Engine Ventilation (Dry Cranking)*.

- **When N2 reaches 43 %:**

  IGNITERS A AND B (at 43 % N2).....CHECK OFF
  START VALVE (slightly above 43 % N2).....CHECK CROSS LINE

MAIN ENG PARAMETERS.....CHECK NORMAL
SECONDARY ENG PARAMETERS.....CHECK NORMAL

L2 *The gray background on the N2 indication disappears.*

L1 ENG MAN START pb-sw.....OFF
ENG MODE sel.....NORM

- **When no other engine requires to be started manually:**
  SHEDDED SYSTEMS.....RESTORE
  SOP - ENGINE START.....RESUME

Ident.: PRO-NOR-SUP-ENG-A-00020858.0003001 / 19 DEC 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

MANUAL ENGINE START PROCEDURE

Note: During a manual engine start, if the flight crew suspects an engine start malfunction, or if an engine-related ECAM alert is triggered, the PF must abort the start sequence as follows:

- *Before the ENG MASTER lever is set to ON, the PF must set the ENG MAN START pb-sw to OFF*
- *After the ENG MASTER lever is set to ON, the PF must set the ENG MASTER lever to OFF, and then the ENG MAN START pb-sw to OFF.*
  In that case, the flight crew should consider a dry crank cycle of the affected engine before they perform another start attempt (Refer to PRO-NOR-SUP-ENG Engine Ventilation (Dry Cranking)).

Then, in the case of an ECAM alert, the PF must announce "ECAM actions", in accordance with the ECAM management philosophy.

THR LEVERS.....IDLE

CAUTION	The engines start regardless of the thrust lever position. If the thrust levers are not set to IDLE, the thrust rapidly increases to the corresponding thrust lever position, causing a hazardous situation.

ENG MODE sel..... NORM THEN IGN/START

L2 *The lower ECAM displays the engine page.*

L1 *Note: If both engines are started manually, the following procedure applies one engine at a time.*

- **When all engines parameters are available on the upper ECAM display (no amber crosses displayed):**
  ENG MAN START pb-sw..... ON
  START VALVE.....CHECK IN-LINE
  N2 INCREASE..... CHECK

OIL PRESS INCREASE..... CHECK

- **If the N2 does not reach 20 %:**

  PACK VALVES.....CHECK CLOSED

  - **If the APU bleed is used for engine start and the pack valves are closed, shed the APU electrical loads as follows:**

L2 Shedding APU electrical loads enables to increase bleed air pressure.

L1 GALY & CAB.....OFF

  - **If needed, shed also:**

    BLUE ELEC PUMP (on ground only).....OFF
    FUEL X FEED..... ON
    FUEL PUMPS (except R TK PUMP 2)..... OFF
    BLOWER..... OVRD
    CAB FANS.....OFF

- **When N2 reaches 22 % or the maximum motoring speed (20 % minimum):**

  Note: The maximum motoring speed is defined as the speed at which N2 acceleration is less than 1 % in approximately 5 s.

ENG MASTER..... ON
CHRONO..... START

L2 *The PM starts the timing in order to monitor the light-up duration.*

L1 IGNITERS A AND B..... CHECK ON
FUEL FLOW INCREASE.....CHECK

- **15 s maximum after fuel flow increase:**

  EGT INCREASE..... CHECK
  N1 INCREASE..... CHECK

  If the electrical power supply is interrupted during the start sequence (indicated by loss of ECAM displays), abort the start by setting the ENG MASTER lever to OFF. Then perform a 30 s dry crank (*Refer to PRO-NOR-SUP-ENG Engine Ventilation (Dry Cranking)*).

- **When N2 reaches 50 %:**

  START VALVE (between 50 and 56 % N2)..... CHECK CROSS LINE
  IGNITERS A AND B.....CHECK OFF
  MAIN ENG PARAMETERS.....CHECK NORMAL
  SECONDARY ENG PARAMETERS..... CHECK NORMAL

L2 *The gray background on the N2 indication disappears.*

L1

Note: *CFM 56-5B1/B2 engines, N2 accelerates slowly from 50 % to idle. Start abort is not required as long as N2 increases.*

ENG MAN START pb-sw.....OFF
ENG MODE sel.....NORM

- **When no other engine requires to be started manually:**
  SHEDDED SYSTEMS.....RESTORE
  SOP - ENGINE START.....RESUME

Ident.: PRO-NOR-SUP-ENG-A-00020858.0009001 / 19 DEC 17

4 **Applicable to: MSN 06720-09063**

MANUAL ENGINE START PROCEDURE

Note: *During a manual engine start, if the flight crew suspects an engine start malfunction, or if an engine-related ECAM alert is triggered, the PF must abort the start sequence as follows:*

- *Before the ENG MASTER lever is set to ON, the PF must set the ENG MAN START pb-sw to OFF*
- *After the ENG MASTER lever is set to ON, the PF must set the ENG MASTER lever to OFF, and then the ENG MAN START pb-sw to OFF.*
  In that case, the flight crew should consider a dry crank cycle of the affected engine before they perform another start attempt (Refer to PRO-NOR-SUP-ENG Engine Ventilation (Dry Cranking)).

Then, in the case of an ECAM alert, the PF must announce "ECAM actions", in accordance with the ECAM management philosophy.

THR LEVERS.....IDLE

CAUTION	The engines start regardless of the thrust lever position. If the thrust levers are not set to IDLE, the thrust rapidly increases to the corresponding thrust lever position, causing a hazardous situation.

ENG MODE sel.....NORM THEN IGN/START

L2 *The lower ECAM displays the engine page.*

L1

Note: *If both engines are started manually, the following procedure applies one engine at a time.*

- **When all engines parameters are available on the upper ECAM display (no amber crosses displayed):**
  ENG MAN START pb-sw.....ON
  START VALVE.....CHECK IN-LINE
  N2 INCREASE.....CHECK

OIL PRESS INCREASE..... CHECK

Depending on the thermal state of the engine, the FADEC can command an automatic dry cranking (or engine cooling) with the associated COOLING displayed on the E/WD. *Refer to DSC-70-80-40 Engine Cooling.*

- **If the N2 does not reach 18 % % and associated COOLING memo is no longer displayed:**
  PACK VALVES.....CHECK CLOSED
  - **If the APU bleed is used for engine start and the pack valves are closed, shed the APU electrical loads as follows:**

L2 Shedding APU electrical loads enables to increase bleed air pressure.

L1 GALY & CAB.....OFF

- **If needed, shed also:**
  BLUE ELEC PUMP (on ground only).....OFF
  FUEL X FEED..... ON
  FUEL PUMPS (except R TK PUMP 2)..... OFF
  BLOWER..... OVRD
  CAB FANS.....OFF
  - **If additional shedding is required:**
    HYD ENG PUMP..... OFF
    Return the hydraulic engine pump to ON for second engine start, to permit PTU auto test.

- **When N2 reaches the maximum motoring speed (or at 18 % minimum):**

Note: *The maximum motoring speed is reached when a significant decrease in N2 acceleration is observed.*
Do not attempt to start unless N2 is at least 18 %.

ENG MASTER..... ON
CHRONO..... START

L2 *The PM starts the timing in order to monitor the light-up duration.*

L1 IGNITERS A AND B..... CHECK ON
FUEL FLOW INCREASE.....CHECK

- **20 s maximum after fuel flow increase:**
  EGT INCREASE..... CHECK
- **Before 48 % N2:**
  N1 INCREASE.....CHECK

If the electrical power supply is interrupted during the start sequence (indicated by the loss of ECAM displays), abort the start by setting the ENG MASTER lever to OFF. Then perform a 30 s dry crank *Refer to PRO-NOR-SUP-ENG Engine Ventilation (Dry Cranking).*

- **When N2 reaches 55 %:**

IGNITERS A AND B (at 55 % N2).....CHECK OFF
START VALVE (slightly above 55 % N2).....CHECK CROSS LINE
MAIN ENG PARAMETERS.....CHECK NORMAL
SECONDARY ENG PARAMETERS.....CHECK NORMAL

L2 *The gray background on the N2 indication disappears.*

L1 ENG MAN START pb-sw.....OFF
ENG MODE sel.....NORM

- **When no other engine requires to be started manually:**

SHEDDED SYSTEMS.....RESTORE
SOP - ENGINE START.....RESUME

ENGINE START WITH EXTERNAL PNEUMATIC POWER

Ident.: PRO-NOR-SUP-ENG-00020859.0005001 / 04 DEC 18

5 **Applicable to: MSN 06720-09063**

- **Before connecting external pneumatic power :**

PACK 1.....OFF
PACK 2.....OFF

L2 Packs are selected off to prevent any possible contamination of the packs by the external pneumatic power.

L1 APU BLEED.....OFF
ENG 1 BLEED.....OFF
ENG 2 BLEED.....OFF
X BLEED.....OPEN

EXTERNAL PNEUMATIC POWER CONNECTION.....REQUEST

- **When cleared to start :**

ENG 2.....START

Note: As necessary, engine 1 can also be started by using the external pneumatic power. If engine 1 is started first, check the brake ACCU pressure prior to engine start. The minimum recommended starter air supply pressure is 30 PSI, when the start valve is open.

● **After Engine 2 is started :**

EXT PWR.....CHECK AVAIL

WARNING	Disconnection of the external power with the EXT PWR pb-sw ON may cause injury to the ground engineer. Request disconnection of the external power only with the EXT PWR pb-sw AVAIL.

EXT PWR DISCONNECTION.....REQUEST

Note: The external electrical power can be removed after the second engine start.

■ **If external pneumatic power is used to start engine 1 :**

ENG 1.....START

● **When engine 1 is started:**

EXTERNAL PNEUMATIC POWER REMOVAL.....REQUEST
X BLEED.....AUTO
ENG 1 BLEED.....ON
ENG 2 BLEED.....ON
PACK 1.....ON
PACK 2.....ON

■ **If the crossbleed engine start procedure is used to start engine 1 :**

EXTERNAL PNEUMATIC POWER REMOVAL.....REQUEST
X BLEED.....AUTO

Note: The X BLEED selector must be set to AUTO before the selection of the packs and bleed. This is in order to prevent the increase of ground idle of engine 2.

PACK 1.....ON
PACK 2.....ON
ENG 2 BLEED.....ON
CROSSBLEED ENGINE START PROC.....APPLY

Refer to PRO-NOR-SUP-ENG Crossbleed Engine Start

ENGINE START WITH EXTERNAL PNEUMATIC POWER

Ident.: PRO-NOR-SUP-ENG-00020859.0002001 / 04 DEC 18
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

● **Before connecting external pneumatic power :**

PACK 1.....OFF
PACK 2.....OFF

L2

Packs are selected off to prevent any possible contamination of the packs by the external pneumatic power.

L1 APU BLEED.....OFF
ENG 1 BLEED.....OFF
ENG 2 BLEED.....OFF
X BLEED.....OPEN

EXTERNAL PNEUMATIC POWER CONNECTION.....REQUEST

- **When cleared to start :**

  ENG 2.....START

  Note: As necessary, engine 1 can also be started by using the external pneumatic power. If engine 1 is started first, check the brake ACCU pressure prior to engine start. The minimum recommended starter air supply pressure is 30 PSI, when the start valve is open.

- **After Engine 2 is started :**

  EXT PWR.....CHECK AVAIL

WARNING	Disconnection of the external power with the EXT PWR pb-sw ON may cause injury to the ground engineer. Request disconnection of the external power only with the EXT PWR pb-sw AVAIL.

  EXT PWR DISCONNECTION.....REQUEST

  Note: The external electrical power can be removed after the second engine start.

■ **If external pneumatic power is used to start engine 1 :**

ENG 1.....START

- **When engine 1 is started:**

  EXTERNAL PNEUMATIC POWER REMOVAL.....REQUEST
  X BLEED.....AUTO
  ENG 1 BLEED.....ON
  ENG 2 BLEED.....ON
  PACK 1.....ON
  PACK 2.....ON

■ **If the crossbleed engine start procedure is used to start engine 1 :**

EXTERNAL PNEUMATIC POWER REMOVAL.....REQUEST
PACK 1.....ON
PACK 2.....ON
ENG 2 BLEED.....ON
CROSSBLEED ENGINE START PROC.....APPLY

Refer to PRO-NOR-SUP-ENG Crossbleed Engine Start

ENGINE START WITH EXTERNAL PNEUMATIC POWER

Ident.: PRO-NOR-SUP-ENG-00020859.0001001 / 04 DEC 18

6 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

● **Before connecting external pneumatic power :**

PACK 1.....OFF
PACK 2.....OFF

L2 Packs are selected off to prevent any possible contamination of the packs by the external pneumatic power.

L1 APU BLEED.....OFF
ENG 1 BLEED.....OFF
ENG 2 BLEED.....OFF
X BLEED.....OPEN

EXTERNAL PNEUMATIC POWER CONNECTION.....REQUEST

● **When cleared to start :**

ENG 2.....START

Note: As necessary, engine 1 can also be started by using the external pneumatic power. If engine 1 is started first, check the brake ACCU pressure prior to engine start. The minimum recommended starter air supply pressure is 25 PSI, when the start valve is open.

● **After Engine 2 is started :**

EXT PWR.....CHECK AVAIL

WARNING	Disconnection of the external power with the EXT PWR pb-sw ON may cause injury to the ground engineer. Request disconnection of the external power only with the EXT PWR pb-sw AVAIL.

EXT PWR DISCONNECTION.....REQUEST

Note: The external electrical power can be removed after the second engine start.

■ **If external pneumatic power is used to start engine 1 :**

ENG 1.....START

● **When engine 1 is started:**

EXTERNAL PNEUMATIC POWER REMOVAL.....REQUEST
X BLEED.....AUTO
ENG 1 BLEED.....ON
ENG 2 BLEED.....ON
PACK 1.....ON

PACK 2.....ON

■ **If the crossbleed engine start procedure is used to start engine 1 :**

EXTERNAL PNEUMATIC POWER REMOVAL.....REQUEST
PACK 1.....ON
PACK 2.....ON
ENG 2 BLEED.....ON
CROSSBLEED ENGINE START PROC.....APPLY

Refer to PRO-NOR-SUP-ENG Crossbleed Engine Start

CROSSBLEED ENGINE START

Ident.: PRO-NOR-SUP-ENG-00020860.0004001 / 17 MAR 17

7 **Applicable to: MSN 06720-09063**

CAUTION	Do not perform the crossbleed engine start procedure during pushback. Simultaneous use of engine bleed supply and external pneumatic power supply is prohibited.

One engine must be running in order to supply air for other engine start.

● **Before second engine start :**

APU BLEED.....OFF

L2 *The BLEED valve of the supplying engine reopens and the cross bleed valve closes.*

L1 ENG BLEED (supplying engine).....ON
ENG BLEED (receiving engine).....OFF

L2 *The bleed valve of receiving engine is closed to avoid reverse flow leakage.*

L1 X BLEED.....OPEN

● **When cleared to start :**

AREA CLEAR OF OBSTACLES.....CONFIRM

L2 *Ensure increased power jet wake does not constitute any hazard to people or installation behind the aircraft.*

L1 THR LEVER (supplying engine).....ADJUST FOR BLEED PRESSURE

Adjust thrust of supplying engine to obtain an engine bleed pressure of 30 PSI before start initiation and during the entire start sequence.
If the thrust required to obtain the appropriate engine bleed pressure exceeds 40 % N1, pay particular attention to the surrounding area.

RECEIVING ENGINE.....START

Apply the normal engine start procedure.

Depending on the engine thermal state, the FADEC can command an automatic dry cranking (or engine cooling) with the associated COOLING indication displayed on the EWD. *Refer to DSC-70-80-40 Engine Cooling*.

- **After start :**

THR LEVER (supplying engine)..... IDLE
X BLEED..... AUTO
ENG BLEED (receiving engine)..... ON
PACK 1..... ON
PACK 2..... ON

CROSSBLEED ENGINE START

Ident.: PRO-NOR-SUP-ENG-00020860.0002001 / 17 MAR 17

8 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

CAUTION	Do not perform the crossbleed engine start procedure during pushback. Simultaneous use of engine bleed supply and external pneumatic power supply is prohibited.

One engine must be running in order to supply air for other engine start.

- **Before second engine start :**

APU BLEED..... OFF

L2 *The BLEED valve of the supplying engine reopens and the cross bleed valve closes.*

L1 ENG BLEED (supplying engine).....ON
ENG BLEED (receiving engine).....OFF

L2 *The bleed valve of receiving engine is closed to avoid reverse flow leakage.*

L1 X BLEED..... OPEN

- **When cleared to start :**

AREA CLEAR OF OBSTACLES.....CONFIRM

L2 *Ensure increased power jet wake does not constitute any hazard to people or installation behind the aircraft.*

L1 THR LEVER (supplying engine)..... ADJUST FOR BLEED PRESSURE

Adjust thrust of supplying engine to obtain an engine bleed pressure of 30 PSI before start initiation, and at least 25 PSI during the start sequence.
If the thrust required to obtain the appropriate engine bleed pressure exceeds 40 % N1, pay particular attention to the surrounding area.

RECEIVING ENGINE..... START

Apply the normal engine start procedure.

- **After start :**

  THR LEVER (supplying engine)..... IDLE
  X BLEED..... AUTO
  ENG BLEED (receiving engine)..... ON
  PACK 1..... ON
  PACK 2..... ON

CROSSBLEED ENGINE START

Ident.: PRO-NOR-SUP-ENG-00020860.0001001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CAUTION	Do not perform the crossbleed engine start procedure during pushback. Simultaneous use of engine bleed supply and external pneumatic power supply is prohibited.

One engine must be running in order to supply air for other engine start.

- **Before second engine start :**

  APU BLEED..... OFF

L2 *The BLEED valve of the supplying engine reopens and the cross bleed valve closes.*

L1 ENG BLEED (supplying engine)..... ON
ENG BLEED (receiving engine)..... OFF

L2 *The bleed valve of receiving engine is closed to avoid reverse flow leakage.*

L1 X BLEED..... OPEN

- **When cleared to start :**

  AREA CLEAR OF OBSTACLES..... CONFIRM

L2 *Ensure increased power jet wake does not constitute any hazard to people or installation behind the aircraft.*

L1 THR LEVER (supplying engine)..... ADJUST FOR BLEED PRESSURE

Adjust thrust of supplying engine to obtain an engine bleed pressure of 30 PSI before start initiation, and at least 25 PSI during the start sequence.
If the thrust required to obtain the appropriate engine bleed pressure exceeds 40 % N1, pay particular attention to the surrounding area.

Note: If the supplying engine is a DAC engine, preset a 30 % N1 before launching the start sequence.

RECEIVING ENGINE..... START

Apply the normal engine start procedure.

- **After start :**

  THR LEVER (supplying engine)..... IDLE
  X BLEED..... AUTO
  ENG BLEED (receiving engine)..... ON
  PACK 1..... ON
  PACK 2..... ON

AIR CONDITIONING DURING AUTOMATIC ENGINE START

Ident.: PRO-NOR-SUP-ENG-00021159.0002001 / 04 MAY 18

9 **Applicable to: MSN 06720-09063**

During automatic engine start, the FADEC commands a dry crank that may significantly extend the engine start duration. This procedure enables to use the air conditioning during the start sequence of the engine 1 in order to enhance passenger's comfort.
This procedure can only be used if engine 2 is started before engine 1, as per Standard Operating Procedures, with APU bleed or external pneumatic power.

ENG 2..... START

- **When idle is reached (AVAIL indication is displayed):**

  XBLEED.....SHUT

L2 *The PACK 2 Flow Control Valve will automatically open.*

L1 ENG 1..... START

- **When idle is reached (AVAIL indication is displayed):**

  XBLEED.....AUTO

NORMAL PROCEDURE..... RESUME

ENGINE START VALVE MANUAL OPERATION

Ident.: PRO-NOR-SUP-ENG-00020861.0010001 / 17 MAR 17

10 **Applicable to: MSN 06720, 06772, 06829, 06904-09063**

BEFORE ENGINE START

Before the manual override of the start valve, respect the below minimum time after the last engine shutdown:

Airport Elevation (ft above Sea Level)	Minimum Engine Shutdown Time (h) (1)
4 000 and below	9
4 001 to 5 000	9.5

Continued on the following page

Continued from the previous page

Airport Elevation (ft above Sea Level)	Minimum Engine Shutdown Time (h) (1)
5 001 to 10 000	10
Above 10 000	10.5

(1) *These times apply only for engines that have performed normal flight operations and have followed the recommended 3 min idle cool down prior to shutdown. If not operated in this manner, 12 h must be observed.*

Advise ground crew to prepare for manual engine start valve operation.

WARNING	To ensure safety of the ground crew when starting an engine with manual operation of the start valve, the flight crew should start the affected engine first.

ENGINE START

AUDIO CONTROL PANEL.....CAB
GROUND CREW CLEARANCE.....OBTAIN

■ **If the start valve is failed closed:**

● **When the ground crew is ready:**
"ENGINE 1(2) START".....ANNOUNCE
ENG MODE sel..... IGN/START

Apply the following two actions simultaneously:

ENG MAN START pb-sw.....ON

L2 *During an automatic start, the EEC detects that the start valve is failed closed and aborts the start. The EEC does not abort the start sequence during a manual start when a start valve is failed closed.*

L1 "OPEN START VALVE AND KEEP OPEN".....ORDER

L2 *If not opened when the ENG MAN START pb-sw is set to ON, the ENG 1(2) START FAULT - STARTER SHAFT SHEAR alert may be triggered. This alert is automatically cleared when idle is reached.*
If not maintained in the OPEN position by the ground crew, the start valve closes.

Note: if the SAV is failed closed due to an electrical failure, the ENG 1(2) START VALVE FAULT alert may be triggered. This alert is automatically cleared when idle is reached.

L1 ● **When N2 reaches the maximum motoring speed (Minimum 18 %):**
ENG MASTER.....ON

● **When N2 is slightly above 55 %:**
"CLOSE START VALVE".....ORDER

- **When idle is reached (AVAIL indication displayed):**
  ENG MAN START pb-sw.....OFF

■ **If the start valve is failed open:**

- **When the ground crew is ready:**
  "ENGINE 1(2) START".....ANNOUNCE
  ENG MODE sel.....IGN/START
  ENG MASTER.....ON
- **When N2 is slightly above 55 %:**
  "CLOSE START VALVE".....ORDER

SOP – ENGINE START.....RESUME

ENGINE START VALVE MANUAL OPERATION

Ident.: PRO-NOR-SUP-ENG-00020861.0001001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

BEFORE ENGINE START

Advise ground crew to prepare for manual engine start valve operation.

WARNING	To ensure safety of the ground crew when starting an engine with manual operation of the start valve, the flight crew should start the affected engine first.

ENGINE START

AUDIO CONTROL PANEL.....CAB
GROUND CREW CLEARANCE.....OBTAIN

- **When the ground crew is ready:**
  "ENGINE 1(2) START".....ANNOUNCE
  ENG MODE sel.....IGN/START
  ENG MASTER.....ON
  "OPEN START VALVE AND KEEP OPEN".....ORDER
  If not maintained in the OPEN position by the ground crew, the start valve closes.
- **When N2 at 50 %:**
  "CLOSE START VALVE".....ORDER
  SOP – ENGINE START.....RESUME

ENGINE START VALVE MANUAL OPERATION

Ident.: PRO-NOR-SUP-ENG-00020861.0002001 / 17 MAR 17

11 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

BEFORE ENGINE START

Advise ground crew to prepare for manual engine start valve operation.

WARNING	To ensure safety of the ground crew when starting an engine with manual operation of the start valve, the flight crew should start the affected engine first.

ENGINE START

AUDIO CONTROL PANEL.....CAB
GROUND CREW CLEARANCE.....OBTAIN

- **When the ground crew is ready:**
  "ENGINE 1(2) START"..... ANNOUNCE
  ENG MODE sel.....IGN/START
  ENG MASTER..... ON
  "OPEN START VALVE AND KEEP OPEN".....ORDER
  If not maintained in the OPEN position by the ground crew, the start valve closes.

- **When N2 at 43 %:**
  "CLOSE START VALVE"..... ORDER
  SOP – ENGINE START..... RESUME

ENGINE VENTILATION (DRY CRANKING)

Ident.: PRO-NOR-SUP-ENG-00020943.0003001 / 17 MAR 17

12 **Applicable to: MSN 06720-09063**

On ground, after:
- An unsuccessful manual engine start, or
- An unsuccessful automatic start not followed by an automatic dry crank,

the flight crew can perform a dry crank cycle on the affected engine to remove the fuel vapors.

- **Before dry crank:**
  ENG MASTER (affected engine)..... CHECK OFF
  ENG MODE sel..... CHECK NORM
  ENG MAN START pb-sw (affected engine).....CHECK OFF

- **Dry crank:**
  ENG MODE sel..... CRANK
  ENG MAN START pb-sw (affected engine).....ON

Note: *To clear fuel vapors, a 30 seconds dry crank cycle is the minimum required.*

L2 Note: *A manual start sequence can be initiated following a dry crank cycle (Refer to PRO-NOR-SUP-ENG Manual Engine Start - Procedure). The flight crew should consider the starter limitations (Refer to LIM-ENG Starter).*

Note: *Depending on the engine thermal state, the FADEC can command an automatic dry cranking (or engine cooling) with the associated COOLING indication displayed on the E/WD. Refer to DSC-70-80-40 Engine CoolingAfter approximately 2 min, the automatic bowed rotor protection cranking stops, the N2 value is no longer limited at around 10% and increases up to the maximum motoring speed. At the same time, the COOLING indication disappears from the E/WD.*

L1 ● **When the dry crank is completed:**

ENG MAN START pb-sw (affected engine)..... OFF
ENG MODE sel..... NORM

ENGINE VENTILATION (DRY CRANKING)

Ident.: PRO-NOR-SUP-ENG-00020943.0001001 / 17 MAR 17

13 **Applicable to: MSN 01767-06336**

On ground, after:
- An unsuccessful manual engine start, or
- An unsuccessful automatic start not followed by an automatic dry crank,

the flight crew can perform a dry crank cycle on the affected engine to remove the fuel vapors.

● **Before dry crank:**

ENG MASTER (affected engine)..... CHECK OFF
ENG MODE sel..... CHECK NORM
ENG MAN START pb-sw (affected engine)..... CHECK OFF

● **Dry crank:**

ENG MODE sel..... CRANK
ENG MAN START pb-sw (affected engine)..... ON

Note: *To clear fuel vapors, a 30 seconds dry crank cycle is the minimum required.*

L2 Note: *A manual start sequence can be initiated following a dry crank cycle (Refer to PRO-NOR-SUP-ENG Manual Engine Start - Procedure). The flight crew should consider the starter limitations (Refer to LIM-ENG Starter).*

L1 ● **When the dry crank is completed:**

ENG MAN START pb-sw (affected engine)..... OFF

ENG MODE sel.....NORM

ONE ENGINE TAXI - GENERAL

Applicable to: ALL

Ident.: PRO-NOR-SUP-ENG-CA-00021004.0001001 / 17 MAR 17

Except in some operational conditions (e.g. uphill slopes, slippery taxiways or high gross weights), brake life and fuel savings may govern company policy on permitting aircraft to taxi with one engine shut down.

Before applying this procedure, the flight crew should be aware of the following:

- Taxi with one engine shut down may require higher thrust than usual. Caution must therefore be exercised to avoid excessive jet-blast and the risk of Foreign Object Damage (FOD)
- Slow or tight turns in the direction of the operating engine may not be possible at high gross weights
- When one engine taxi is planned, pay particular attention to the fuel imbalance limitation for the next take-off.

ONE ENGINE TAXI - AT DEPARTURE

Ident.: PRO-NOR-SUP-ENG-CB-00021005.0003001 / 17 MAR 17

14 **Applicable to: MSN 06720-09063**

BRAKE ACCU PRESS.....CHECK

L2 *If necessary, use the Y ELEC PUMP to pressurize the brake accumulator.*

L1 ENG 1..... START

L2 *Engine 1 pressurizes the green hydraulic system, providing normal braking.*

L1 APPLY THE “AFTER START” NORMAL PROCEDURE, BUT:

- The APU can be kept running. In that case, switch the APU BLEED to OFF.

L2 The APU generator provides power to prevent electrical transients and enable galley and IFE operation. Closing the APU BLEED prevents engine exhaust gases ingestion in the air conditioning system.

L1 - If the APU is shut down, the remaining engine should be started using the Crossbleed Engine Start procedure (*Refer to PRO-NOR-SUP-ENG Crossbleed Engine Start*).

- Delay the ECAM STATUS check and the wing anti-ice setting until all engines are started.

Ident.: PRO-NOR-SUP-ENG-CB-00021005.0002001 / 09 APR 18

15 **Applicable to: MSN 02443-02457, 02584-06336**

BRAKE ACCU PRESS.....CHECK

L2 *If necessary, use the Y ELEC PUMP to pressurize the brake accumulator.*

L1 ENG 1..... START

L2 *Engine 1 pressurizes the green hydraulic system, providing normal braking.*

L1 X BLEED.....OPEN

L2 *Open the cross bleed valve in order to supply both packs with engine 1.*

L1 APPLY THE "AFTER START" NORMAL PROCEDURE, BUT:
- Keep the APU running and switch the APU BLEED to OFF.

L2 The APU generator provides power to the engine fire extinguisher, prevents electrical transients and enables galley and IFE operation. Closing the APU BLEED prevents engine exhaust gases ingestion in the air conditioning system.

L1 - Delay the ECAM STATUS check and the wing anti-ice setting until all engines are started.

Ident.: PRO-NOR-SUP-ENG-CB-00021005.0001001 / 09 APR 18
Applicable to: MSN 01767-02405, 02482

BRAKE ACCU PRESS.....CHECK

L2 *If necessary, use the Y ELEC PUMP to pressurize the brake accumulator.*

L1 ENG 1..... START

L2 *Engine 1 pressurizes the green hydraulic system, providing nosewheel steering and normal braking without using the PTU.*

L1 X BLEED.....OPEN

L2 *Open the cross bleed valve in order to supply both packs with engine 1.*

L1 APPLY THE "AFTER START" NORMAL PROCEDURE, BUT:
- Keep the APU running and switch the APU BLEED to OFF.

L2 The APU generator provides power to the engine fire extinguisher, prevents electrical transients and enables galley and IFE operation. Closing the APU BLEED prevents engine exhaust gases ingestion in the air conditioning system.

L1 - Delay the ECAM STATUS check and the wing anti-ice setting until all engines are started.

Ident.: PRO-NOR-SUP-ENG-CB-00021007.0002001 / 17 MAR 17
16 **Applicable to: MSN 02443-02457, 02584-09063**

BEFORE RELEASING THE PARKING BRAKE

Y ELEC PUMP..... ON

L2 *This pressurizes the yellow hydraulic system, providing nosewheel steering without using the PTU.*

L1 APPLY THE "TAXI" NORMAL PROCEDURE, BUT:
- Delay the flight controls check until all engines are started
- Arm the autobrake after the flight controls check.

Ident.: PRO-NOR-SUP-ENG-CB-00021007.0001001 / 17 MAR 17
Applicable to: MSN 01767-02405, 02482

BEFORE RELEASING THE PARKING BRAKE

Y ELEC PUMP..... ON

L2 *This pressurizes the yellow hydraulic system.*

L1 APPLY THE "TAXI" NORMAL PROCEDURE, BUT:
- Delay the flight controls check until all engines are started
- Arm the autobrake after the flight controls check.

Ident.: PRO-NOR-SUP-ENG-CB-00021008.0006001 / 01 JUN 17
17 **Applicable to: MSN 01767-06336**

BEFORE TAKEOFF

ENGINE WARM-UP TIME BEFORE TAKEOFF (remaining engine).....CONSIDER

The second engine must be started soon enough before takeoff, in order to take into account the engine start time and ensure the applicable engine warm-up time (Refer to PRO-NOR-SOP-09 After Start - ENG Mode Selector).

- **For ENG 2 start and when taxiing in a straight line:**

  Note: *During the engine start, a slight jerk forward may occur if the brakes are applied while the aircraft is moving.*

  Note: *Maintain taxi in a straight line during at least 5 s after the selection of the ENG 2 master lever to ON, in order to ensure the PTU auto-test is completed.*

  Y ELEC PUMP.....OFF

L2 *The yellow electric pump must be set to OFF to enable PTU automatic test during engine 2 start.*

L1 APU BLEED.....ON
ENG 2.....START

APU..... AS RQRD
X BLEED.....AUTO

APPLY THE "AFTER START" NORMAL PROCEDURE, INCLUDING:
- ECAM STATUS check
- Selection of the ENG 2 anti-ice and wing anti-ice, as required.

AFTER START CHECKLIST..... COMPLETE
FLIGHT CONTROLS.....CHECK
AUTO BRK.....MAX

Ident.: PRO-NOR-SUP-ENG-CB-00021008.0004001 / 01 JUN 17

18 **Applicable to: MSN 06720-09063**

BEFORE TAKEOFF

ENGINE WARM-UP TIME BEFORE TAKEOFF (remaining engine).....CONSIDER

The second engine must be started soon enough before takeoff, in order to take into account the engine start time and ensure the applicable engine warm-up time (Refer to PRO-NOR-SOP-09 After Start - ENG Mode Selector).

- **For ENG 2 start, and when taxiing in a straight line:**

  Note: During the engine start, a slight jerk forward may occur if the brakes are applied while the aircraft is moving.

  Note: Maintain taxi in a straight line during at least 5 s after the selection of the ENG 2 master lever to ON, in order to ensure the PTU auto-test is completed.

  Y ELEC PUMP.....OFF

L2 *The yellow electric pump must be set to OFF to enable PTU automatic test during engine 2 start.*

L1 ■ **If the APU bleed is available:**

  APU BLEED..... ON
  ENG 2..... START

■ **If the APU bleed is not available:**

  CROSSBLEED ENGINE START.....PERFORM
  Refer to PRO-NOR-SUP-ENG Crossbleed Engine Start.

APU..... AS RQRD

APPLY THE “AFTER START” NORMAL PROCEDURE, INCLUDING:
- ECAM STATUS check
- Selection of the ENG 2 anti-ice and wing anti-ice, as required.

AFTER START CHECKLIST..... COMPLETE
FLIGHT CONTROLS.....CHECK
AUTO BRK.....MAX

ONE ENGINE TAXI - AT ARRIVAL

Ident.: PRO-NOR-SUP-ENG-CC-00021009.0002001 / 17 MAR 17

19 **Applicable to: MSN 06720-09063**

APU..... AS RQRD

L2 *If necessary, the APU can be started while taxiing and before shutting down one engine, in order to avoid additional electrical transients and enable galley and IFE operation.*

Ident.: PRO-NOR-SUP-ENG-CC-00021009.0001001 / 09 APR 18

20 **Applicable to: MSN 01767-06336**

APU..... START

L2 *Start the APU before shutting down one engine, in order to provide power to the engine fire extinguisher, avoid electrical transients and enable galley and IFE operation.*

Ident.: PRO-NOR-SUP-ENG-CC-00021010.0002001 / 17 MAR 17

21 **Applicable to: MSN 06720-09063**

- **After high thrust operations:**
  ENGINE MINIMUM COOLING TIME..... CONSIDER
  Refer to PRO-NOR-SOP-22 Parking - ENG MASTER Levers.

- **When taxiing in a straight line:**

  Note: *During engine shutdown, a slight jerk forward may occur if the brakes are applied while the aircraft is moving.*

  ENG 2..... SHUT DOWN
  Y ELEC PUMP.....ON

L2 *This avoids running the PTU.*

Ident.: PRO-NOR-SUP-ENG-CC-00021010.0001001 / 17 MAR 17

22 **Applicable to: MSN 01767-06336**

- **After high thrust operations:**
  ENGINE MINIMUM COOLING TIME..... CONSIDER
  Refer to PRO-NOR-SOP-22 Parking - ENG MASTER Levers.

- **When the APU indicates AVAIL and taxiing in a straight line:**

  Note: *During engine shutdown, a slight jerk forward may occur if the brakes are applied while the aircraft is moving.*

  ENG 2..... SHUT DOWN
  Y ELEC PUMP.....ON

L2 *This avoids running the PTU.*

Ident.: PRO-NOR-SUP-ENG-CC-00021011.0001001 / 17 MAR 17
Applicable to: ALL

- **At parking:**
  Y ELEC PUMP.....OFF
  ENG 1.....SHUT DOWN

REFUELING

Ident.: PRO-NOR-SUP-FUEL-A-00021256.0002001 / 25 JUL 17
Applicable to: ALL

WARNING	1. Prior initiation of any ground fuel operations, obey the below fuel safety precautions. This will prevent injury to people and/or damage to the aircraft. 2. Do not request or perform any ground fuel operations if a fire or engine overheat warning is displayed. 3. f the APU fails during any ground fuel operations, do not restart the APU. For APU use during refueling/defueling *Refer to LIM-APU APU Start/Shutdown during Refueling/Defueling*. 4. Do not refuel in bad weather conditions and electrical storms.

PREPARATION

SAFETY PRECAUTIONS.....APPLY

During refueling operations, ensure that:
- *HF transmission (including HF transmission via the HF DATA LINK pb) is not performed*
- *The aircraft is properly bonded to the tanker*
- *The tanker and the aircraft grounding requirement is based on local regulations. Always connect the ground cable to the parking ground point (or to the tanker) before connecting it to the aircraft.*
- *The external lighting is not operated (except for NAV & LOGO).*

In the cockpit, check that the PARK BRK is ON and that the ACCU PRESS has sufficient pressure. If the PARK BRK cannot be set to ON, check that the chocks are in place.

ACCESS PLATFORM.....IN POSITION
MAX REFUELING PRESSURE: 50 PSI (3.5 bar)

- **On refueling control panel:**

  TEST sw..... LTS

  Lights on the panel come on. FUEL QTY and the PRESELECTED and ACTUAL displays show 8's.

  TEST sw.....HI.LVL

  HI LVL lights change state if the high level sensors and their circuits are serviceable.

Ident.: PRO-NOR-SUP-FUEL-A-00021257.0002001 / 21 MAR 17
Applicable to: MSN 01767, 02108, 02388, 03138

AUTOMATIC REFUELING

- **On cockpit refueling control panel:**

REFUEL PWR pb-sw.....ON

Cockpit panel takes priority. The CKPT light comes on and REFUELG is displayed on the ECAM MEMO.

[PRESELECTOR sw] REQUESTED BLOCK FUEL..... SET
REFUEL CTL pb-sw..... ON

Refueling starts. When refueling is finished, the END light comes on.

REFUEL CTL pb-sw.....OFF
REFUEL PWR pb-sw.....OFF

- **On refueling control panel:**

REFUEL VALVES sel.....CHECK NORM and GUARDED
[PRESELECTOR sw] REQUESTED BLOCK FUEL..... SET
MODE SELECT sw.....REFUEL
START REFUELING

When the refueling is finished the END light comes on.

ACTUAL QUANTITY.....CHECK

The actual quantity must be within 100 kg (220 lb) of the preselected quantity.

MODE SELECT sw.....OFF and GUARDED

Ident.: PRO-NOR-SUP-FUEL-A-00021257.0001001 / 21 MAR 17
1 **Applicable to: MSN 01920-02097, 02121-02359, 02405-03071, 03264-09063**

AUTOMATIC REFUELING

REFUEL VALVES sel.....CHECK NORM and GUARDED
[PRESELECTOR sw] REQUESTED BLOCK FUEL.....SET
MODE SELECT sw..... REFUEL
START REFUELING

When the refueling is finished the END light comes on.

ACTUAL QUANTITY..... CHECK

The actual quantity must be within 100 kg (220 lb) of the preselected quantity.

MODE SELECT sw.....OFF and GUARDED

Ident.: PRO-NOR-SUP-FUEL-A-00021260.0001001 / 21 MAR 17
Applicable to: ALL

MANUAL REFUELING

REFUEL VALVES sel..... SHUT
MODE SELECT sw..... REFUEL
REFUEL VALVES sel (tanks to be filled).....OPEN
START REFUELING
FUEL QTY.....MONITOR

- **When the contents of the tanks reach the required level :**
  Corresponding REFUEL VALVES sel..... SHUT
  MODE SELECT sw.....OFF and GUARDED
  REFUEL VALVES sel..... NORM and GUARDED

REFUELING WITH ONE ENGINE RUNNING

Ident.: PRO-NOR-SUP-FUEL-00001677.0003001 / 21 MAR 17
2 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

- Refuel with one engine running only at airports where no external ground pneumatic power is available and only when APU is unserviceable.
- Only the RH fuel couplings can be used.
- Overwing gravity filling is not permitted.
- Disembark all passengers.
- Obtain airport authorization.
  The Airport Fire Department should standby at the aircraft during the entire refueling procedure.
- Point the aircraft into the wind at a location where the slope is negligible.
  Set the parking brake and check its pressure.
  Run engine n° 1 at ground idle with its generator connected.
- Do not start engine n° 2, do not shut down engine n° 1 or do not attempt to start the APU before all fueling operations have been completed.
- Position the fuel truck under the extremity of the right wing. Its pressure should not exceed 30 PSI.
- Follow manual refueling procedure.

OPERATION MONITORING

DURING THE ENTIRE REFUELING PROCEDURE :

- Monitor the fuel truck shut off valve.
- Be sure that the fueling company is keeping permanent control of the emergency fuel shut off device.
- Have a flight crew member in the cockpit monitoring all systems and the running engine.

- Have a qualified ground crew member at the fueling station to operate the refuel valve switches.
- Monitor the refueling closely and be prepared to close the refuel valves in order not to exceed the following fuel quantities :

DENSITY (kg/l)	0.77	0.78	0.79	0.8	0.81	0.82	0.83
L(R) WING (kg)	5 710	5 780	5 860	5 930	6 005	6 080	6 160
CENTER (kg)	6 030	6 110	6 190	6 270	6 350	6 430	6 500

AFTER SECOND ENGINE START :

- **Reset the 3DMCs in order to reinitialize the fuel used values :**
  DMC 1 SPLY C/B (E11 on 49VU)..... PULL
  DMC 2 SPLY C/B (Q8 on 121 VU).....PULL
  DMC 3 SPLY C/B (Q9 on 121 VU).....PULL
  DMC 3 SPLY STBY (E10 on 49 VU).....PULL
  - **After 5 s :**
    All C/B's.....PUSH

    Note: The T.O MEMO does not appear automatically since one engine is kept running.

REFUELING WITH ONE ENGINE RUNNING

Ident.: PRO-NOR-SUP-FUEL-00001677.0011001 / 16 JAN 18

3 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

- Refuel with one engine running only at airports where no external ground pneumatic power is available and only when APU is unserviceable.
- Only the RH fuel couplings can be used.
- Overwing gravity filling is not permitted.
- Disembark all passengers.
- Obtain airport authorization.
  The Airport Fire Department should standby at the aircraft during the entire refueling procedure.
- Point the aircraft into the wind at a location where the slope is negligible.
  Set the parking brake and check its pressure.
  Run engine n° 1 at ground idle with its generator connected.
- Do not start engine n° 2, do not shut down engine n° 1 or do not attempt to start the APU before all fueling operations have been completed.
- Position the fuel truck under the extremity of the right wing. Its pressure should not exceed 30 PSI.
- Follow manual refueling procedure.

OPERATION MONITORING

DURING THE ENTIRE REFUELING PROCEDURE :

- Monitor the fuel truck shut off valve.
- Be sure that the fueling company is keeping permanent control of the emergency fuel shut off device.
- Have a flight crew member in the cockpit monitoring all systems and the running engine.
- Have a qualified ground crew member at the fueling station to operate the refuel valve switches.
- Monitor the refueling closely and be prepared to close the refuel valves in order not to exceed the following fuel quantities :

DENSITY (kg/l)	0.77	0.78	0.79	0.8	0.81	0.82	0.83
L(R) WING (kg)	5 660	5 730	5 810	5 880	5 950	6 030	6 100
CENTER (kg)	5 990	6 070	6 150	6 220	6 300	6 380	6 460

AFTER SECOND ENGINE START :

- **Reset the 3DMCs in order to reinitialize the fuel used values :**

  DMC 1 SPLY C/B (E10 on 49VU)..... PULL
  DMC 2 SPLY C/B (Q8 on 121 VU).....PULL
  DMC 3 SPLY C/B (Q9 on 121 VU).....PULL
  DMC 3 SPLY STBY (E09 on 49 VU).....PULL

  - **After 5 s :**

    All C/B's.....PUSH

    Note: *The T.O MEMO does not appear automatically since one engine is kept running.*

GROUND FUEL TRANSFER

Ident.: PRO-NOR-SUP-FUEL-00021258.0001001 / 25 JUL 17

4 **Applicable to: MSN 01767-06036**

WARNING	1. Prior initiation of any ground fuel operations, obey the below fuel safety precautions. This will prevent injury to people and/or damage to the aircraft. 2. Do not request or perform any ground fuel operations if a fire or engine overheat warning is displayed. 3. If the APU fails during any ground fuel operations, do not restart the APU. For APU use during refueling/defueling *Refer to LIM-APU APU Start/Shutdown during Refueling/Defueling*.

SAFETY PRECAUTIONS.....APPLY

During ground operations, ensure that:
- *HF transmission is not performed (including HF transmission via the HF DATA LINK ◁ pb)*
- *If connected :*
  - *The aircraft is properly bonded to the tanker*
  - *The tanker and the aircraft grounding requirement is based on local regulations. Always connect the ground cable to the parking ground point (or to the tanker) before connecting it to the aircraft*
- *The external lighting is not operated (except for NAV & LOGO).*

In the cockpit, check that the PARK BRK is ON and that the ACCU PRESS has sufficient pressure. If the PARK BRK cannot be set to ON, check that the chocks are in place.

ACCESS PLATFORM.....IN POSITION

● **On cockpit overhead FUEL panel:**

PUMPS (of the tanks not to be defueled)..... OFF
MODE SEL pb-sw..... MAN
PUMPS (of the tank to be defueled)..... ON

● **if left wing and/or center tanks is (are) to be defueled :**

X FEED.....ON

OPEN light comes on.

● **On refueling control panel :**

REFUEL VALVES sel (of tanks not to be filled)..... SHUT
REFUEL VALVES sel (of tanks to be filled)..... OPEN
MODE SELECT sw.....DEFUEL/XFR

OPEN light comes on.

FUEL QTY..... MONITOR

● **When the tank contents reach the required level :**

Corresponding REFUEL VALVES sel..... SHUT
MODE SELECT sw..... OFF and GUARDED

OPEN light goes out.

REFUEL VALVES sel.....NORM and GUARDED
Set cockpit FUEL panel to normal configuration.

GROUND FUEL TRANSFER

Ident.: PRO-NOR-SUP-FUEL-00021258.0002001 / 25 JUL 17

5 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

WARNING

1. Prior initiation of any ground fuel operations, obey the below fuel safety precautions. This will prevent injury to people and/or damage to the aircraft.
2. Do not request or perform any ground fuel operations if a fire or engine overheat warning is displayed.
3. If the APU fails during any ground fuel operations, do not restart the APU. For APU use during refueling/defueling *Refer to LIM-APU APU Start/Shutdown during Refueling/Defueling*.

SAFETY PRECAUTIONS.....APPLY

During ground operations, ensure that:

- *HF transmission is not performed (including HF transmission via the HF DATA LINK ◁ pb)*
- *If connected :*
  - *The aircraft is properly bonded to the tanker*
  - *The tanker and the aircraft grounding requirement is based on local regulations. Always connect the ground cable to the parking ground point (or to the tanker) before connecting it to the aircraft*
- *The external lighting is not operated (except for NAV & LOGO).*

In the cockpit, check that the PARK BRK is ON and that the ACCU PRESS has sufficient pressure. If the PARK BRK cannot be set to ON, check that the chocks are in place.

ACCESS PLATFORM.....IN POSITION

- **On cockpit overhead FUEL panel:**

  PUMPS (of the tanks not to be defueled).....OFF
  MODE SEL pb-sw.....MAN
  PUMPS (of the tank to be defueled).....ON

  - **if left wing and/or center tanks is (are) to be defueled :**

    X FEED.....ON

    OPEN light comes on.

- **On refueling control panel :**

  REFUEL VALVES sel (of tanks not to be filled).....SHUT
  REFUEL VALVES sel (of tanks to be filled).....OPEN
  MODE SELECT sw.....DEFUEL/XFR

  OPEN light comes on.

  FUEL QTY.....MONITOR

  - **When the tank contents reach the required level :**

    Corresponding REFUEL VALVES sel.....SHUT

MODE SELECT sw.....OFF and GUARDED

OPEN light goes out.

REFUEL VALVES sel.....NORM and GUARDED

Set cockpit FUEL panel to normal configuration.

- **From ACTs to center tank :**
  - **On cockpit refuelling control panel (if fitted) :**

    REFUEL PWR pb-sw .....ON

    or

    REFUEL/DEFUEL Control panel access door..... OPEN
  - **On cockpit overhead FUEL panel:**

    ACT XFR MODE SEL pb-sw.....MAN
    ACT XFR selector..... ACT TO BE EMPTIED
    FUEL QTY..... MONITOR
    - **When the tank contents reach the required level :**

      Either select another ACT or :

      REFUEL PWR pb-sw.....OFF

      or

      REFUEL/DEFUEL control panel access door..... CLOSE
      ACT XFR MODE SEL pb-sw..... AUTO
      ACT XFR selector.....OFF

GROUND FUEL TRANSFER

Ident.: PRO-NOR-SUP-FUEL-00021258.0004001 / 25 JUL 17

6 **Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

WARNING	1. Prior initiation of any ground fuel operations, obey the below fuel safety precautions. This will prevent injury to people and/or damage to the aircraft. 2. Do not request or perform any ground fuel operations if a fire or engine overheat warning is displayed. 3. If the APU fails during any ground fuel operations, do not restart the APU. For APU use during refueling/defueling *Refer to LIM-APU APU Start/Shutdown during Refueling/Defueling*.

SAFETY PRECAUTIONS.....APPLY

During ground operations, ensure that:
- *HF transmission is not performed (including HF transmission via the HF DATA LINK ◁ pb)*
- *If connected :*
  - *The aircraft is properly bonded to the tanker*
  - *The tanker and the aircraft grounding requirement is based on local regulations. Always connect the ground cable to the parking ground point (or to the tanker) before connecting it to the aircraft*
- *The external lighting is not operated (except for NAV & LOGO).*

In the cockpit, check that the PARK BRK is ON and that the ACCU PRESS has sufficient pressure. If the PARK BRK cannot be set to ON, check that the chocks are in place.

ACCESS PLATFORM.....IN POSITION

● **From one wing to the other wing or to the center tank :**

● **On cockpit overhead FUEL panel:**

PUMPS (of the tank not to be defueled).....OFF
PUMPS (of the tank to be defueled).....ON
X FEED.....ON

OPEN light comes on.

● **On refueling control panel :**

REFUEL VALVES sel (of tanks not to be filled).....SHUT
REFUEL VALVES sel (of tanks to be filled).....OPEN
MODE SELECT sw.....DEFUEL/XFR

OPEN light comes on.

FUEL QTY.....MONITOR

● **When the tank contents reach the required level:**

Corresponding REFUEL VALVES sel.....SHUT
MODE SELECT sw.....OFF and GUARDED

OPEN light goes out.

REFUEL VALVES sel.....NORM and GUARDED
Set cockpit FUEL panel to normal configuration.

● **From center tank to the L (R) inner tank :**

L(R) TK PUMPS.....ON
CTR TK L(R) XFR.....ON

When the inner tank is full or if the center tank is empty the center tank transfer valve will automatically close.

DEFUELING

Ident.: PRO-NOR-SUP-FUEL-00021259.0004001 / 22 MAR 18

7 **Applicable to: MSN 06208-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

WARNING

1. Prior initiation of any ground fuel operations, obey the below fuel safety precautions. This will prevent injury to people and/or damage to the aircraft.
2. Do not request or perform any ground fuel operations if a fire or engine overheat warning is displayed.
3. If the APU fails during any ground fuel operations, do not restart the APU. For APU use during refueling/defueling *Refer to LIM-APU APU Start/Shutdown during Refueling/Defueling*.
4. Do not defuel in bad weather conditions and electrical storms.
5. Defueling by suction is not possible. Fuel can be removed from inner tank only. To defuel center tank, first transfer fuel to the inner tanks.

SAFETY PRECAUTIONS.....APPLY

During defueling operations, ensure that:

- *HF transmission (including HF transmission via the HF DATA LINK ◁ pb) is not performed*
- *The aircraft is properly bonded to the tanker*
- *The tanker and the aircraft grounding requirement is based on local regulations. Always connect the ground cable to the parking ground point (or to the tanker) before connecting it to the aircraft*
- *The external lighting is not operated (except for NAV & LOGO).*

In the cockpit, check that the PARK BRK is ON and that the ACCU PRESS has sufficient pressure. If the PARK BRK cannot be set to ON, check that the chocks are in place.

ACCESS PLATFORM.....IN POSITION

- **On cockpit overhead FUEL panel:**
  PUMPS.....OFF
- **On refueling control panel:**
  REFUEL VALVES sel.....NORM
  MODE SELECT sw.....DEFUEL/XFR
  OPEN light comes on
- **On cockpit overhead FUEL panel :**
  PUMPS (of the tank(s) to be defueled).....ON
  X FEED.....ON
  OPEN light comes on
  FUEL QTY.....MONITOR
  - **When tank contents reach required level**
    Corresponding PUMPS.....OFF

- **On refueling control panel:**

  MODE SELECT sw..... OFF and GUARDED

  OPEN light goes out

  REFUEL VALVES sel..... NORM and GUARDED

  Set cockpit FUEL panel to normal configuration.

DEFUELING

Ident.: PRO-NOR-SUP-FUEL-00021259.0002001 / 22 MAR 18

8 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

WARNING	1. Prior initiation of any ground fuel operations, obey the below fuel safety precautions. This will prevent injury to people and/or damage to the aircraft. 2. Do not request or perform any ground fuel operations if a fire or engine overheat warning is displayed. 3. If the APU fails during any ground fuel operations, do not restart the APU. For APU use during refueling/defueling *Refer to LIM-APU APU Start/Shutdown during Refueling/Defueling*. 4. Do not defuel in bad weather conditions and electrical storms. 5. Defueling by suction is not possible. Fuel can be removed from wing tank only. To defuel center tank, first transfer fuel to the wing tanks.

SAFETY PRECAUTIONS.....APPLY

During defueling operations, ensure that:

- *HF transmission (including HF transmission via the HF DATA LINK pb) is not performed*
- *The aircraft is properly bonded to the tanker*
- *The tanker and the aircraft grounding requirement is based on local regulations. Always connect the ground cable to the parking ground point (or to the tanker) before connecting it to the aircraft*
- *The external lighting is not operated (except for NAV & LOGO).*

In the cockpit, check that the PARK BRK is ON and that the ACCU PRESS has sufficient pressure. If the PARK BRK cannot be set to ON, check that the chocks are in place.

ACCESS PLATFORM.....IN POSITION

- **On cockpit overhead FUEL panel:**

  PUMPS.....OFF

- **On refueling control panel:**

  REFUEL VALVES sel..... NORM

  MODE SELECT sw.....DEFUEL/XFR

  OPEN light comes on

- **On cockpit overhead FUEL panel :**

  PUMPS (of the tank(s) to be defueled).....ON
  X FEED.....ON

  OPEN light comes on

  FUEL QTY.....MONITOR

  - **When tank contents reach required level**

    Corresponding PUMPS..... OFF

- **On refueling control panel:**

  MODE SELECT sw..... OFF and GUARDED

  OPEN light goes out

  REFUEL VALVES sel.....NORM and GUARDED

  Set cockpit FUEL panel to normal configuration.

DEFUELING

Ident.: PRO-NOR-SUP-FUEL-00021259.0001001 / 22 MAR 18

9 **Applicable to: MSN 01767-06036**

WARNING	1. Prior initiation of any ground fuel operations, obey the below fuel safety precautions. This will prevent injury to people and/or damage to the aircraft. 2. Do not request or perform any ground fuel operations if a fire or engine overheat warning is displayed. 3. If the APU fails during any ground fuel operations, do not restart the APU. For APU use during refueling/defueling *Refer to LIM-APU APU Start/Shutdown during Refueling/Defueling*. 4. Do not defuel in bad weather conditions and electrical storms. 5. Defueling by suction is not possible

SAFETY PRECAUTIONS.....APPLY

During defueling operations, ensure that:

- *HF transmission (including HF transmission via the HF DATA LINK pb) is not performed*
- *The aircraft is properly bonded to the tanker*
- *The tanker and the aircraft grounding requirement is based on local regulations. Always connect the ground cable to the parking ground point (or to the tanker) before connecting it to the aircraft*
- *The external lighting is not operated (except for NAV & LOGO).*

In the cockpit, check that the PARK BRK is ON and that the ACCU PRESS has sufficient pressure. If the PARK BRK cannot be set to ON, check that the chocks are in place.

ACCESS PLATFORM.....IN POSITION

- **On cockpit overhead FUEL panel:**
  PUMPS.....OFF

- **On refueling control panel:**
  REFUEL VALVES sel..... NORM
  MODE SELECT sw.....DEFUEL/XFR
  OPEN light comes on

- **On cockpit overhead FUEL panel :**
  MODE SEL pb-sw.....MAN
  PUMPS (of the tank(s) to be defueled).....ON
  X FEED.....ON
  OPEN light comes on
  FUEL QTY.....MONITOR
  - **When tank contents reach required level**
    Corresponding PUMPS..... OFF

- **On refueling control panel:**
  MODE SELECT sw..... OFF and GUARDED
  OPEN light goes out
  REFUEL VALVES sel.....NORM and GUARDED
  Set cockpit FUEL panel to normal configuration.

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Flight with Landing Gear Down

GENERAL

Ident.: PRO-NOR-SUP-LG-LG_DN-00001997.0001001 / 04 SEP 17
Applicable to: ALL

It is possible to perform a flight with the landing gear locked down and the doors closed.

This chapter applies to either of the following two situations:
- The dispatch of an aircraft with the landing gear down, or
- The continuation of the flight when a landing gear retraction failure happens after takeoff.

The limitations, procedures and performance associated to a flight with the landing gear down are described below.

LIMITATIONS

Ident.: PRO-NOR-SUP-LG-LG_DN-00001999.0003001 / 04 DEC 17
1 **Applicable to: MSN 06720-09063**

For a flight with the landing gear down, all of the following supplementary limitations apply:
- Consider a VMO/MMO of 235 kt/M 0.60
- Landing gear doors must be closed
- Avoid icing conditions
- Do not use managed speeds, except during the approach
- Do not use CLB and DES autopilot modes
- Disregard FMS fuel, altitude, speed, and time prediction. Time prediction is valid on waypoints in cruise only
- Use the TCAS in TA ONLY mode
- The ALTITUDE ALERT feature is not available
- Do not perform ETOPS flight.
- Apply only TOGA thrust for go-around (soft go-around function is not designed to be used with the L/G in the extended position, the flight crew must select TOGA thrust for go-around).

Note: *Ditching with the landing gear down is not assessed.*

LIMITATIONS

Ident.: PRO-NOR-SUP-LG-LG_DN-00001999.0002001 / 04 SEP 17
2 **Applicable to: MSN 01767-06336**

For a flight with the landing gear down, all of the following supplementary limitations apply:
- Consider a VMO/MMO of 235 kt/M 0.60
- Landing gear doors must be closed

- Avoid icing conditions
- Do not use managed speeds, except during the approach
- Do not use CLB and DES autopilot modes
- Disregard FMS fuel, altitude, speed, and time prediction. Time prediction is valid on waypoints in cruise only
- Use the TCAS in TA ONLY mode
- The ALTITUDE ALERT feature is not available
- Do not perform ETOPS flight.

Note: *Ditching with the landing gear down is not assessed.*

PROCEDURES

Ident.: PRO-NOR-SUP-LG-LG_DN-B-00002000.0002001 / 04 SEP 17
Applicable to: ALL

PREFLIGHT

In addition to the SOPs apply the following:

- **VMO/MMO setting:**
  VMO-MMO sw.....L/G DOWN

L2 *The switch is located in the avionics compartment (on the 188VU panel). This switch changes the VMO/MMO to 235 kt/M 0.60. As a result, an alert is triggered if the speed exceeds the flight with gear down speed limitation.*

L1

CAUTION	*In the case of continuation of the flight after a gear retraction failure, the flight crew can not access the VMO/MMO switch. Therefore, the airspeed/Mach number must be carefully monitored in order not to exceed 235 kt/M 0.60 as there is no alert if the aircraft exceeds this limitation.*

Ident.: PRO-NOR-SUP-LG-LG_DN-B-00002003.0051001 / 04 SEP 17
3 **Applicable to: MSN 06720-09063**

FLIGHT CONTROLS

Failure cases, which would normally lead to ALTN law, will degrade F/CTL laws down to DIRECT law, if the landing gear is extended (except for the Yaw Damper loss where the controls remain in alternate law).

FAILURE OF BOTH ENGINES

When both engines are failed, to ease the management of all the different ECAM procedures that result from this all engine flame out situation, it is recommended to use the ALL ENGINES FAILURE QRH procedure, and if time permits, to clear the ECAM.

Follow all the steps of the QRH procedure, except those that are modified by the procedure below :

■ **If the APU is not available**

- Attempt an APU start
- If the APU start is unsuccessful, a windmill relight can be performed, as long as the speed is above 260 kt. In this case, increase the aircraft speed and disregard the VMO warning.

■ **If APU is available :**

- Perform an assisted relight, when below FL 200.

Flight controls are in direct laws. Use manual pitch trim as necessary (not indicated on PFD if APU GEN is not available).

Ident.: PRO-NOR-SUP-LG-LG_DN-B-00002003.0048001 / 04 SEP 17
Applicable to: MSN 05437-06336

FLIGHT CONTROLS

Failure cases, which would normally lead to ALTN law, will degrade F/CTL laws down to DIRECT law, if the landing gear is extended (except for the Yaw Damper loss where the controls remain in alternate law).

FAILURE OF BOTH ENGINES

When both engines are failed, to ease the handling of all the different ECAM procedures resulting from this all engine flame out situation, it is recommended to use the ENG DUAL FAILURE QRH procedure, and if time permits, to clear the ECAM.
Follow all the steps of the QRH procedure, except those that are modified by the procedure below :

■ **If APU is not available**

- Attempt an APU start
- . If APU start is unsuccessful, a windmilling relight can be performed, as long as the speed is above 260 kt (corresponding N2 above 18 %). In this case, increase the aircraft speed and disregard VMO warning.

■ **If APU is available**
: perform an assisted relight, when below FL 200.

- Flight controls are in direct laws. Use manual pitch trim as necessary (not indicated on PFD if APU GEN not available).

Ident.: PRO-NOR-SUP-LG-LG_DN-B-00002003.0012001 / 04 SEP 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

FLIGHT CONTROLS

Failure cases, which would normally lead to ALTN law, will degrade F/CTL laws down to DIRECT law, if the landing gear is extended.

FAILURE OF BOTH ENGINES

When both engines are failed, to ease the handling of all the different ECAM procedures resulting from this all engine flame out situation, it is recommended to use the ENG DUAL FAILURE QRH procedure, and if time permits, to clear the ECAM.
Follow all the steps of the QRH procedure, except those that are modified by the procedure below :

■ **If APU is not available**

- Attempt an APU start
- . If APU start is unsuccessful, a windmilling relight can be performed, as long as the speed is above 300 kt (corresponding N2 above 12 %). In this case, increase the aircraft speed and disregard VMO warning.

■ **If APU is available :**
perform an assisted relight, when below FL 200.

- Flight controls are in direct laws. Use manual pitch trim as necessary (not indicated on PFD if APU GEN not available).

Ident.: PRO-NOR-SUP-LG-LG_DN-B-00002003.0013001 / 04 SEP 17
4 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

FLIGHT CONTROLS

Failure cases, which would normally lead to ALTN law, will degrade F/CTL laws down to DIRECT law, if the landing gear is extended.

FAILURE OF BOTH ENGINES

When both engines are failed, to ease the handling of all the different ECAM procedures resulting from this all engine flame out situation, it is recommended to use the ENG DUAL FAILURE QRH procedure, and if time permits, to clear the ECAM.
Follow all the steps of the QRH procedure, except those that are modified by the procedure below :

■ **If APU is not available**

- Attempt an APU start
- . If APU start is unsuccessful, a windmilling relight can be performed, as long as the speed is above 260 kt (corresponding N2 above 18 %). In this case, increase the aircraft speed and disregard VMO warning.

■ **If APU is available**

: perform an assisted relight, when below FL 200.

- Flight controls are in direct laws. Use manual pitch trim as necessary (not indicated on PFD if APU GEN not available).

TAKEOFF

Ident.: PRO-NOR-SUP-LG-LG_DN-C-00021928.0006001 / 04 SEP 17
Applicable to: ALL

GENERAL

The recommended takeoff configuration is 1 + F, as this provides the best climb gradient.
It is not recommended to takeoff with tailwind.
To take into account the most limiting aspects of the takeoff, the second segment condition and the final segment condition are considered.
Once the takeoff weight determined, read the corresponding speeds in the RTOW chart.

Ident.: PRO-NOR-SUP-LG-LG_DN-C-00002006.0041001 / 04 SEP 17
5 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

SECOND SEGMENT CONDITIONS

The MTOW for a flight with gear down can be determined with use of the basic RTOW chart published for a normal flight.
To simplify calculations, a weight reduction percentage is applied for each configuration, regardless of the limitation. This weight reduction takes into account the most critical case which is obstacle clearance.

Takeoff configuration	1 + F	2	3
Weight reduction	14 %	12 %	10 %

MTOW DETERMINATION

Enter the basic RTOW chart with the runway conditions (temperature, pressure, etc.) desired aircraft configuration, and obtain the basic MTOW.
Obtain the weight reduction percentage corresponding to the desired takeoff configuration from the above table.

Reduce the previous basic MTOW by this percentage to obtain the MTOW, limited by the second segment condition.

Ident.: PRO-NOR-SUP-LG-LG_DN-C-00002006.0037001 / 04 SEP 17

6 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

SECOND SEGMENT CONDITIONS

The MTOW for a flight with gear down can be determined with use of the basic RTOW chart published for a normal flight.
To simplify calculations, a weight reduction percentage is applied for each configuration, regardless of the limitation. This weight reduction takes into account the most critical case which is obstacle clearance.

Takeoff configuration	1 + F	2	3
Weight reduction	19 %	17 %	16 %

MTOW DETERMINATION

Enter the basic RTOW chart with the runway conditions (temperature, pressure, etc.) desired aircraft configuration, and obtain the basic MTOW.
Obtain the weight reduction percentage corresponding to the desired takeoff configuration from the above table.
Reduce the previous basic MTOW by this percentage to obtain the MTOW, limited by the second segment condition.

Ident.: PRO-NOR-SUP-LG-LG_DN-C-00002006.0020001 / 04 SEP 17

7 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

SECOND SEGMENT CONDITIONS

The MTOW for a flight with gear down can be determined with use of the basic RTOW chart published for a normal flight.
To simplify calculations, a weight reduction percentage is applied for each configuration, regardless of the limitation. This weight reduction takes into account the most critical case which is obstacle clearance.

Takeoff configuration	1 + F	2	3
Weight reduction	22 %	18 %	18 %

MTOW DETERMINATION

Enter the basic RTOW chart with the runway conditions (temperature, pressure, etc.) desired aircraft configuration, and obtain the basic MTOW.
Obtain the weight reduction percentage corresponding to the desired takeoff configuration from the above table.

Reduce the previous basic MTOW by this percentage to obtain the MTOW, limited by the second segment condition.

Ident.: PRO-NOR-SUP-LG-LG_DN-C-00002006.0017001 / 04 SEP 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

SECOND SEGMENT CONDITIONS

The MTOW for a flight with gear down can be determined with use of the basic RTOW chart published for a normal flight.
To simplify calculations, a weight reduction percentage is applied for each configuration, regardless of the limitation. This weight reduction takes into account the most critical case which is obstacle clearance.

Takeoff configuration	1 + F	2	3
Weight reduction	22 %	19 %	19 %

MTOW DETERMINATION

Enter the basic RTOW chart with the runway conditions (temperature, pressure, etc.) desired aircraft configuration, and obtain the basic MTOW.
Obtain the weight reduction percentage corresponding to the desired takeoff configuration from the above table.
Reduce the previous basic MTOW by this percentage to obtain the MTOW, limited by the second segment condition.

Ident.: PRO-NOR-SUP-LG-LG_DN-C-00002006.0022001 / 04 SEP 17
Applicable to: MSN 05437-06336

SECOND SEGMENT CONDITIONS

The MTOW for a flight with gear down can be determined with use of the basic RTOW chart published for a normal flight.
To simplify calculations, a weight reduction percentage is applied for each configuration, regardless of the limitation. This weight reduction takes into account the most critical case which is obstacle clearance.

Takeoff configuration	1 + F	2	3
Weight reduction	16 %	13 %	14 %

MTOW DETERMINATION

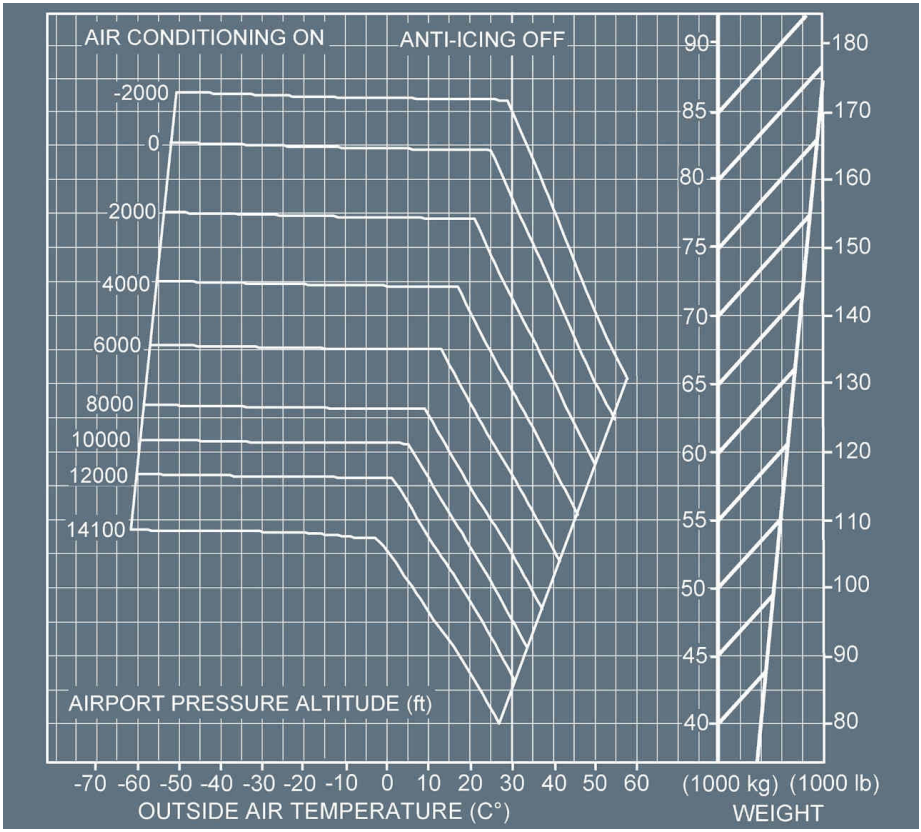
Enter the basic RTOW chart with the runway conditions (temperature, pressure, etc.) desired aircraft configuration, and obtain the basic MTOW.
Obtain the weight reduction percentage corresponding to the desired takeoff configuration from the above table.

Reduce the previous basic MTOW by this percentage to obtain the MTOW, limited by the second segment condition.

Ident.: PRO-NOR-SUP-LG-LG_DN-C-00002007.0723001 / 25 JAN 18

8 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

FINAL SEGMENT CONDITIONS - LANDING GEAR DOWN - ONE ENGINE INOP	
MAX. CLIMB THRUST SPEED VLS AIR CONDITIONING ON ANTI ICING OFF	GROSS GRADIENT 1.2 %



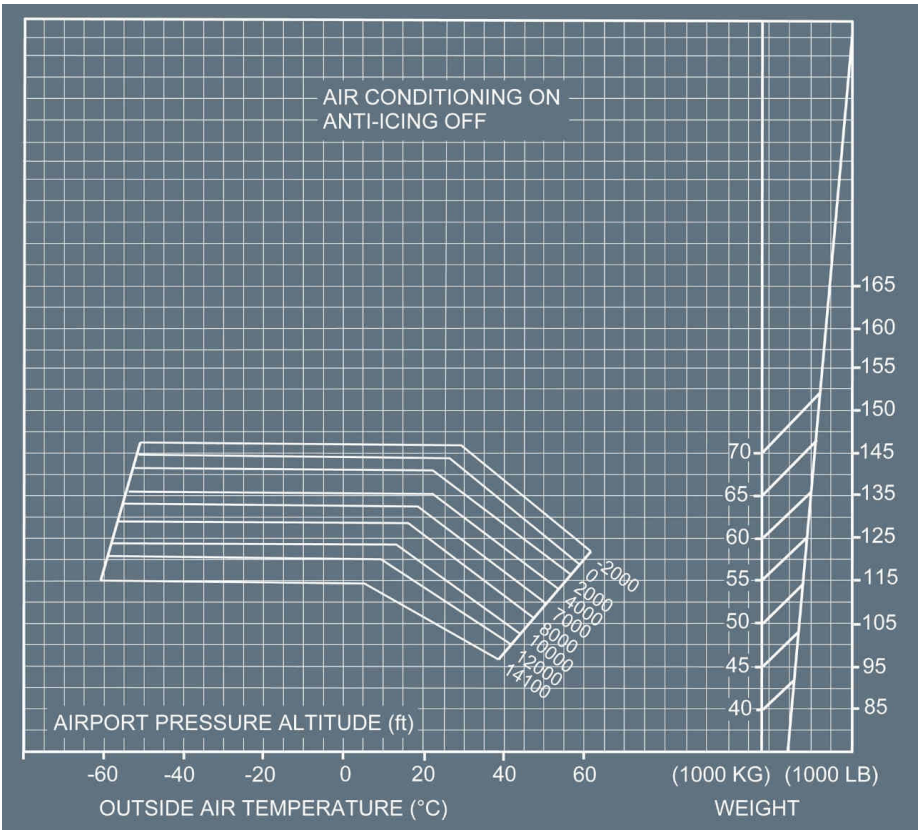
MTOW DETERMINATION

Enter the chart with the airport's OAT. Move up to the position corresponding to the airport's pressure altitude. Then, move right and obtain the MTOW limited by the final segment condition.

Ident.: PRO-NOR-SUP-LG-LG_DN-C-00002007.0720001 / 04 SEP 17

9 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

FINAL SEGMENT CONDITIONS - LANDING GEAR DOWN - ONE ENGINE INOP		
MAX. CLIMB THRUST SPEED VLS AIR CONDITIONING ON ANTI ICING OFF	CG 25 %	GROSS GRADIENT 1.2 %

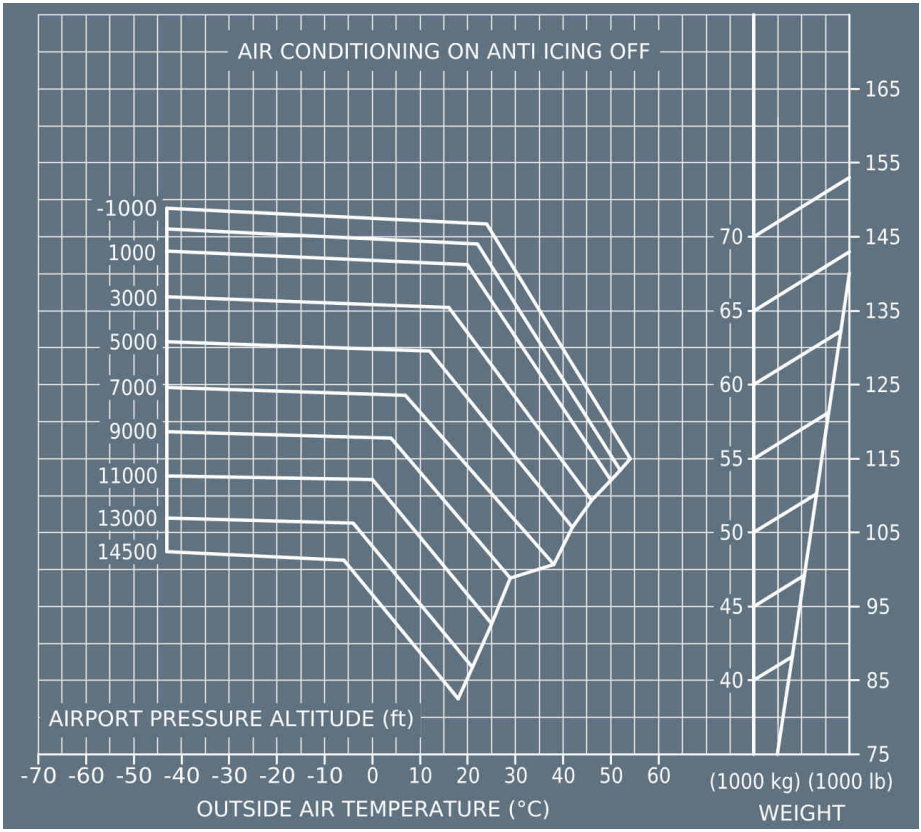


MTOW DETERMINATION

Enter the chart with the airport's OAT. Move up to the position corresponding to the airport's pressure altitude. Then, move right and obtain the MTOW limited by the final segment condition. In the case of CG forward of 25 %, decrease the obtained weight by 600 kg (1 300 lb).

Ident.: PRO-NOR-SUP-LG-LG_DN-C-00002007.0025001 / 04 SEP 17
Applicable to: MSN 02388, 02584

FINAL SEGMENT CONDITIONS - LANDING GEAR DOWN - ONE ENGINE INOP		
MAX. CLIMB THRUST SPEED VLS AIR CONDITIONING ON ANTI ICING OFF	CG 25 %	GROSS GRADIENT 1.2 %



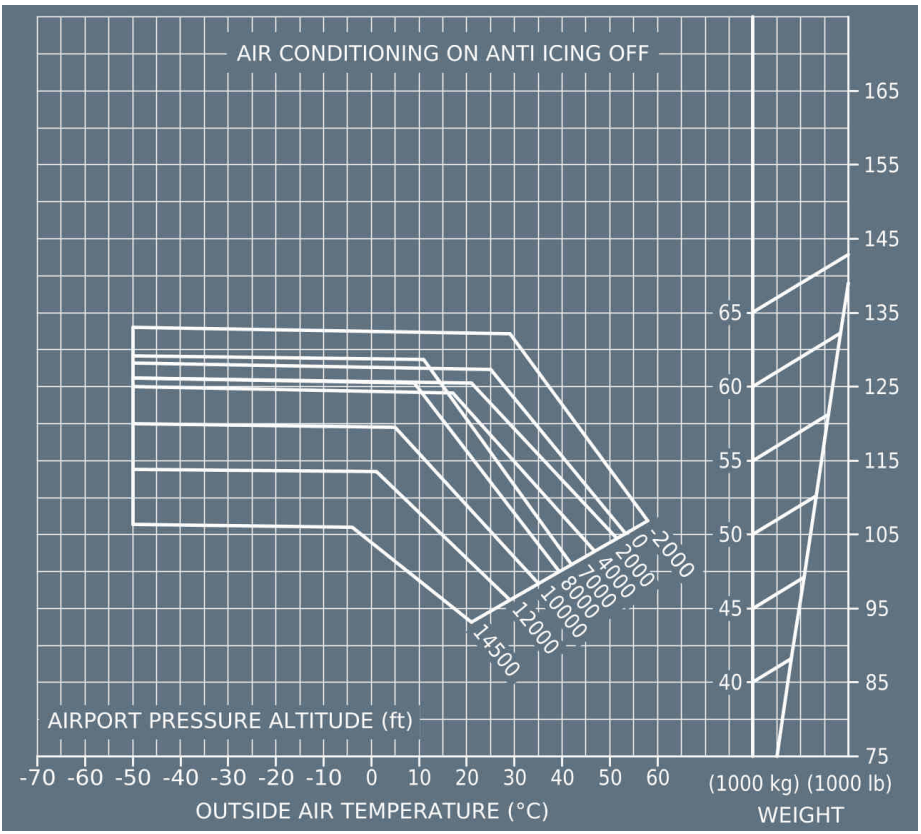
MTOW DETERMINATION

Enter the chart with the airport's OAT. Move up to the position corresponding to the airport's pressure altitude. Then, move right and obtain the MTOW limited by the final segment condition. In the case of CG forward of 25 %, decrease the obtained weight by 500 kg (1 100 lb).

Ident.: PRO-NOR-SUP-LG-LG_DN-C-00002007.0038001 / 04 SEP 17

10 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

FINAL SEGMENT CONDITIONS - LANDING GEAR DOWN - ONE ENGINE INOP		
MAX. CLIMB THRUST SPEED VLS AIR CONDITIONING ON ANTI ICING OFF	CG 25 %	GROSS GRADIENT 1.2 %

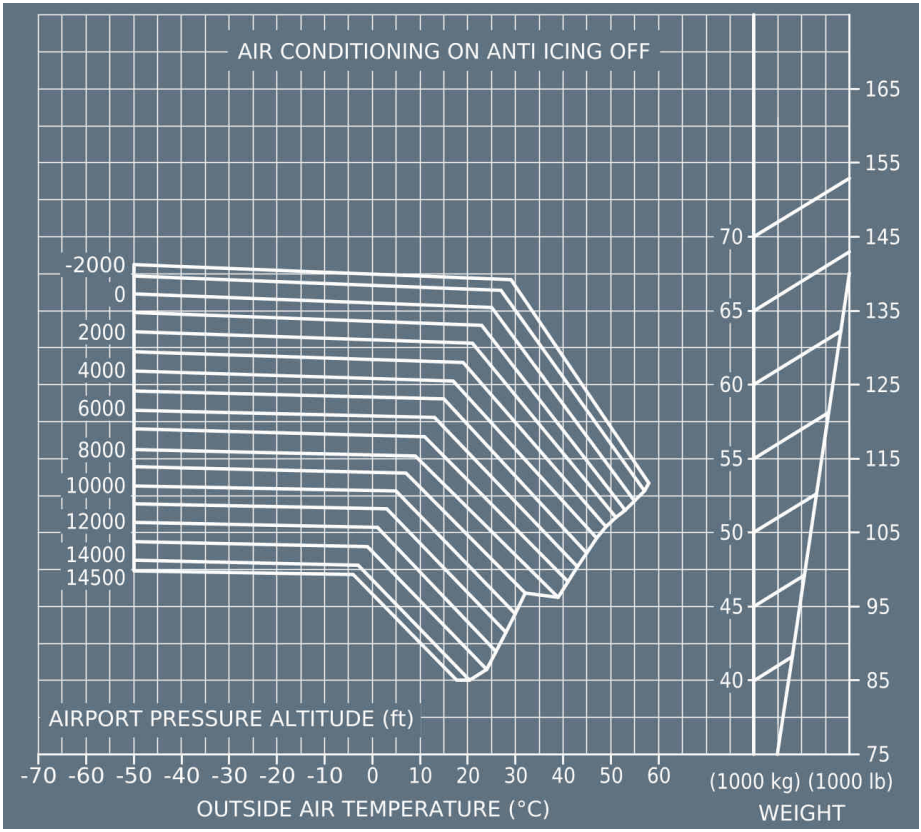


MTOW DETERMINATION

Enter the chart with the airport's OAT. Move up to the position corresponding to the airport's pressure altitude. Then, move right and obtain the MTOW limited by the final segment condition. In the case of CG forward of 25 %, decrease the obtained weight by 600 kg (1 350 lb).

Ident.: PRO-NOR-SUP-LG-LG_DN-C-00002007.0405001 / 04 SEP 17
Applicable to: MSN 01767-01920, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

FINAL SEGMENT CONDITIONS - LANDING GEAR DOWN - ONE ENGINE INOP		
MAX. CLIMB THRUST SPEED VLS AIR CONDITIONING ON ANTI ICING OFF	CG 25 %	GROSS GRADIENT 1.2 %

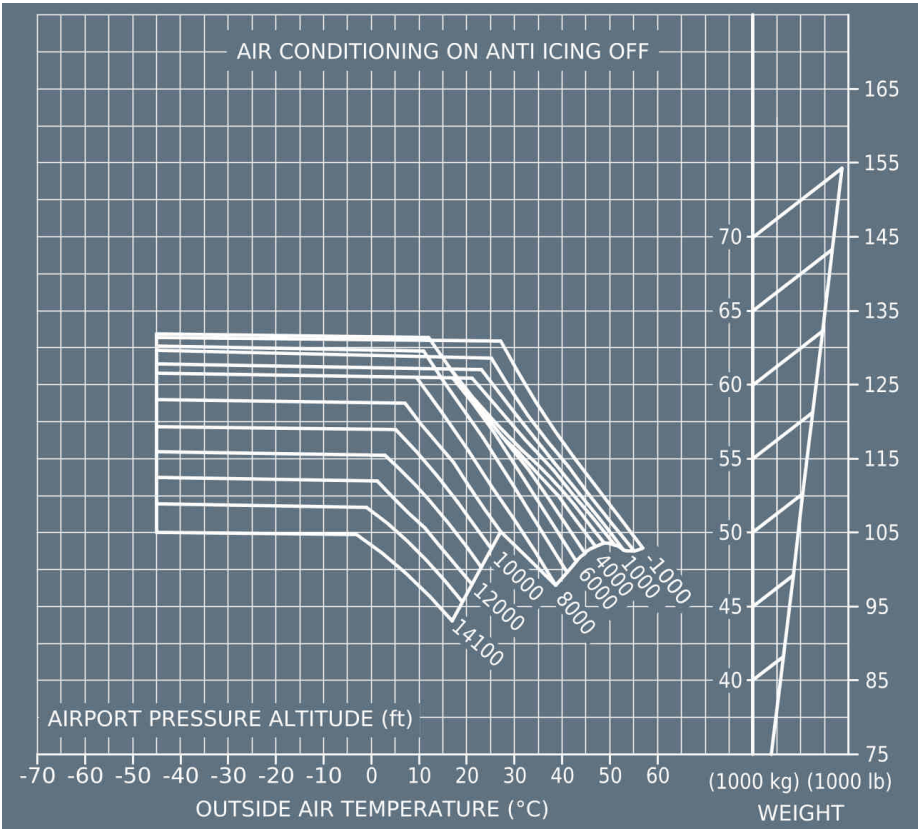


MTOW DETERMINATION

Enter the chart with the airport's OAT. Move up to the position corresponding to the airport's pressure altitude. Then, move right and obtain the MTOW limited by the final segment condition. In the case of CG forward of 25 %, decrease the obtained weight by 400 kg (900 lb).

Ident.: PRO-NOR-SUP-LG-LG_DN-C-00002007.0688001 / 04 SEP 17
Applicable to: MSN 05437-06336

FINAL SEGMENT CONDITIONS - LANDING GEAR DOWN - ONE ENGINE INOP		
MAX. CLIMB THRUST SPEED VLS AIR CONDITIONING ON ANTI ICING OFF	CG 25 %	GROSS GRADIENT 1.2 %



MTOW DETERMINATION

Enter the chart with the airport's OAT. Move up to the position corresponding to the airport's pressure altitude. Then, move right and obtain the MTOW limited by the final segment condition. In the case of CG forward of 25 %, decrease the obtained weight by 600 kg (1 350 lb).

FLIGHT PLANNING

Ident.: PRO-NOR-SUP-LG-LG_DN-00002011.0001001 / 04 SEP 17
Applicable to: ALL

GENERAL

Flying with the gear down induces additional drag and therefore deteriorates aircraft performance. This drag affects all phases of the flight where the landing gear is normally retracted.

MAXIMUM TAKEOFF WEIGHT DETERMINATION

The MTOW for the flight with gear down is determined by keeping the lowest of the weights given by:

- The second segment condition
- The final segment condition
- The en-route conditions
- The go-around conditions.

To determine the MTOW for a flight with the gear down, perform all following steps:

1. Determine the MTOW limited by the second segment condition (*Refer to PRO-NOR-SUP-LG-LG_DN Second Segment Conditions*).
2. Determine the MTOW limited by the final segment condition (*Refer to PRO-NOR-SUP-LG-LG_DN Final Segment Conditions*).
3. Keep the lowest of the above weights as the MTOW.
4. With the MTOW determined in step 3, check the obstacle clearance along the planned route (en-route).

   To determine the One Engine Inoperative (OEI) obstacle clearance:
   - *Refer to PRO-NOR-SUP-LG-LG_DN Driftdown Net Flight Path - One Engine Inoperative*
   - *Refer to PRO-NOR-SUP-LG-LG_DN Gross Ceilings - One Engine Inoperative*.

   If necessary, reduce the takeoff weight, in order to obtain the appropriate obstacle clearance.
5. Determine the go-around limiting weight (*Refer to PRO-NOR-SUP-LG-LG_DN Go-Around*). If necessary, reduce the MTOW to comply with this requirement.
6. Keep the lowest MTOW from steps 3, 4, and 5.

FLIGHT PLAN

The flight planning can be performed with the use of the tables provided in this procedure, or with a planning software (PEP, FlySmart, etc.).

FUEL BURN CORRECTION

The climb, cruise, and descent tables are determined for ISA conditions. For each degree Celsius above ISA and per nautical mile of air distance, add a fuel burn correction of 0.05 kg/°C/NM air distance (0.11 lb/°C/NM air distance).

CLIMB

Climb at 230 kt/M 0.50 with the use of maximum climb thrust.
Refer to PRO-NOR-SUP-LG-LG_DN Climb.

CRUISE

The recommended cruise speed is 230 kt/M 0.50.
Refer to PRO-NOR-SUP-LG-LG_DN Cruise.

HOLDING

The holding configuration is CONF 1.
Refer to PRO-NOR-SUP-LG-LG_DN Holding.

DESCENT

The recommended descent speed is 230 kt/M 0.50.
Refer to PRO-NOR-SUP-LG-LG_DN Descent.

GO-AROUND

Refer to PRO-NOR-SUP-LG-LG_DN Go-Around.

LANDING

The landing is standard.

ENGINE FAILURE

In case of engine failure, select maximum continuous thrust (MCT) on the remaining engine and adopt the specified driftdown speed.

For obstacle clearance and depending on the chosen strategy:
- *Refer to PRO-NOR-SUP-LG-LG_DN Driftdown Net Flight Path - One Engine Inoperative*
- *Refer to PRO-NOR-SUP-LG-LG_DN Gross Ceilings - One Engine Inoperative.*

Note: The OEI required obstacle clearances are 1 000 ft in climb or level flight, and 2 000 ft in descent.

For fuel burn calculations with one engine inoperative and landing gear down, use the standard OEI cruise fuel flow and apply the fuel penalty as per QRH/OPERATIONAL DATA/FUEL PENALTY FACTORS.

CLIMB

Ident.: PRO-NOR-SUP-LG-LG_DN-00002012.0151001 / 30 OCT 18

11 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CLIMB - 230KT/M.50 - ALL ENGINES - L/G DOWN

MAX. CLIMB THRUST
NORMAL AIR CONDITIONING
ANTI ICE OFF

ISA
CG=25.0%

FROM BRAKE RELEASE
TIME (MIN) **FUEL (KG)**
DISTANCE (NM) **TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)											
	58	62	66	70	74	78	82	86	90	94	98	100
290	161281 74 278	181451 85 279	211666 99 281	261963 120283	332453 157285							
270	141162 64 275	161300 72 276	181466 82 277	211673 96 279	241952 114281	312381 144284						
250	121054 55 271	131170 61 272	151303 69 274	171463 78 275	201660 90 277	231918 107279	282293 131282					
240	111002 51 269	131110 57 270	141231 63 271	161373 71 273	181544 81 274	201760 94 276	242050 112279	302489 141282				
220	10 904 43 264	11 996 48 265	121098 53 266	131213 59 267	151347 67 269	171507 75 270	191706 87 272	221965 102275	272330 124278	342924 162282		
200	9 809 37 258	9 888 40 259	10 974 45 260	111070 49 261	131179 55 262	141304 61 263	161451 69 265	181632 78 267	201862 91 269	242155 107272	292595 133275	332926 153278
180	7 709 30 250	8 776 33 250	9 848 36 251	9 927 40 252	101015 44 253	111113 48 254	131226 54 255	141359 60 257	161517 68 259	181701 77 261	201939 89 263	222087 97 264
160	6 617 25 241	7 674 27 242	7 735 29 242	8 801 32 243	9 873 35 244	9 953 39 245	101042 43 247	111145 47 248	131261 52 249	141395 58 251	161556 66 253	171650 70 254
140	5 535 20 233	6 583 22 233	6 635 24 234	7 690 26 235	7 749 28 236	8 814 31 237	9 886 34 238	9 967 37 239	101058 41 241	111159 45 242	121277 50 244	131344 53 245
120	4 459 16 224	5 500 17 224	5 543 19 225	5 589 21 226	6 638 22 227	6 691 24 228	7 749 27 229	8 814 29 230	8 885 32 232	9 963 35 233	101052 39 235	101102 41 236
100	4 389 13 214	4 423 14 215	4 458 15 215	4 496 16 216	5 536 18 217	5 580 19 218	6 626 21 220	6 677 23 221	7 733 25 223	7 794 27 224	8 862 29 226	8 899 31 227
50	2 227 6 181	2 247 6 181	2 267 7 182	2 288 7 183	3 310 8 185	3 333 9 186	3 357 9 188	3 383 10 190	3 410 11 192	4 439 12 194	4 470 13 196	4 487 13 197
15	1 122 2 125	1 133 2 125	1 143 2 126	1 154 3 127	1 165 3 129	1 176 3 131	1 187 3 133	2 199 3 135	2 210 4 138	2 222 4 140	2 234 4 143	2 240 4 144

CLIMB

Ident.: PRO-NOR-SUP-LG-LG_DN-00002012.0143001 / 16 NOV 15

12 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

CLIMB - 230KT/M.50 - ALL ENGINES - L/G DOWN

MAX. CLIMB THRUST	ISA	**FROM BRAKE RELEASE**
NORMAL AIR CONDITIONING	CG=25.0%	**TIME (MIN)** **FUEL (KG)**
ANTI ICE OFF		**DISTANCE (NM)** **TAS (KT)**

	WEIGHT AT BRAKE RELEASE (1000KG)								
FL	**50**	**52**	**54**	**56**	**58**	**60**	**62**	**64**	**66**
290	15 1073 67 276	16 1137 72 277	17 1206 76 277	18 1281 82 278	19 1363 87 278	20 1454 94 279	22 1557 102 280	24 1677 111 281	26 1821 122 282
270	13 987 59 273	14 1043 63 274	15 1102 66 274	15 1165 70 275	16 1233 75 275	17 1305 80 276	18 1385 85 277	20 1473 91 277	21 1572 98 278
250	12 907 52 270	12 956 55 271	13 1008 58 271	14 1062 61 271	14 1120 65 272	15 1181 68 272	16 1247 73 273	17 1318 77 274	18 1396 82 274
240	11 867 48 268	11 914 51 269	12 963 54 269	13 1014 57 269	13 1067 60 270	14 1124 64 270	15 1185 67 271	16 1250 71 272	17 1320 76 272
220	10 788 42 264	10 829 44 264	11 872 47 264	11 917 49 265	12 963 52 265	12 1012 54 265	13 1064 57 266	14 1118 60 267	14 1177 64 267
200	8 706 36 257	9 742 37 258	9 780 39 258	10 818 41 258	10 858 44 259	11 900 46 259	11 944 48 259	12 990 51 260	12 1038 53 261
180	7 616 29 249	7 647 30 249	8 678 32 249	8 711 34 249	8 745 35 250	9 779 37 250	9 816 39 250	10 853 41 251	10 893 43 251
160	6 535 24 240	6 561 25 240	6 588 26 240	7 616 27 241	7 644 28 241	7 673 30 241	8 704 31 242	8 735 33 242	8 768 34 243
140	5 463 19 231	5 485 20 231	5 508 21 232	6 531 22 232	6 556 23 232	6 580 24 233	6 606 25 233	7 632 26 233	7 659 27 234
120	4 397 15 222	4 416 16 222	5 435 17 223	5 455 18 223	5 475 18 223	5 496 19 223	5 517 20 224	6 539 21 224	6 561 22 225
100	3 335 12 212	4 351 13 213	4 367 13 213	4 383 14 213	4 400 15 213	4 417 15 214	4 435 16 214	5 453 16 214	5 472 17 215
50	2 194 6 179	2 203 6 178	2 213 6 178	2 222 6 179	2 232 7 179	2 241 7 179	2 251 7 180	3 261 8 180	3 271 8 181
15	1 103 2 124	1 108 2 123	1 113 2 122	1 118 2 122	1 123 2 122	1 128 2 122	1 133 3 122	1 138 3 123	1 143 3 123

CLIMB

Ident.: PRO-NOR-SUP-LG-LG_DN-00002012.0009001 / 14 FEB 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CLIMB 230KT/M.50 - ALL ENGINES - L/G DOWN

MAX. CLIMG THRUST LIMITS NORMAL AIR CONDITIONING ANTI-ICING OFF				ISA CG=25.0%		FROM BRAKE RELEASE TIME (MIN) FUEL (KG) DISTANCE (NM) TAS (KT)			
	WEIGHT AT BRAKE RELEASE (1000KG)								
FL	50	52	54	56	58	60	62	64	66
290	21 1651 98 279	23 1778 106 280	25 1921 116 281	27 2085 127 282	30 2277 140 283	33 2507 156 284			
270	18 1500 85 277	20 1607 92 278	21 1725 99 279	23 1858 108 279	25 2009 117 280	27 2183 129 281	30 2389 143 282		
250	16 1356 74 274	17 1447 79 275	19 1546 85 275	20 1655 92 276	21 1778 99 277	23 1915 107 278	25 2073 117 279	28 2257 129 280	31 2475 143 282
240	15 1285 68 272	16 1369 73 273	17 1459 78 273	18 1559 84 274	20 1669 91 275	21 1792 98 276	23 1932 106 277	25 2091 116 278	27 2277 128 279
220	13 1143 58 267	14 1214 62 268	15 1289 66 268	16 1371 70 269	17 1461 75 270	18 1559 81 271	19 1668 87 272	21 1790 94 273	22 1928 102 274
200	11 999 48 260	12 1057 51 260	12 1119 54 261	13 1185 57 262	14 1256 61 263	15 1333 65 263	16 1417 69 264	17 1509 74 265	18 1610 80 266
180	9 845 37 250	9 892 40 250	10 940 42 251	11 992 44 251	11 1047 47 252	12 1105 50 253	12 1167 53 253	13 1233 56 254	14 1304 59 255
160	7 718 29 240	8 756 31 240	8 795 33 241	9 837 35 241	9 880 37 242	10 926 38 242	10 975 41 243	11 1026 43 244	11 1080 45 244
140	6 611 23 230	6 642 25 231	7 675 26 231	7 709 27 232	7 744 29 232	8 781 30 233	8 820 32 233	9 861 34 234	9 904 35 234
120	5 517 19 220	5 543 20 221	6 570 21 221	6 598 22 222	6 627 23 222	6 657 24 223	7 689 25 223	7 722 26 224	7 756 28 224
100	4 432 14 209	4 454 15 210	5 475 16 211	5 498 17 211	5 522 18 212	5 546 18 212	5 572 19 213	6 598 20 213	6 626 21 214
50	2 243 6 171	2 254 7 172	2 266 7 173	3 278 7 173	3 290 8 174	3 303 8 175	3 317 9 175	3 330 9 176	3 344 9 177
15	1 123 2 108	1 128 2 109	1 133 2 110	1 139 2 110	1 145 3 111	1 151 3 112	1 157 3 113	2 163 3 113	2 170 3 114

11.0-08F0A320-214 CFM56-5B4/P SA2110100OC5KG250 0 018590 0 0 2 1.0 500.0 300.00 1 02230.000 .500.000 0 FCOM-N0-02-04-25-007-140

CLIMB

Ident.: PRO-NOR-SUP-LG-LG_DN-00002012.0018001 / 14 FEB 11

13 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

CLIMB 230KT/M.50 - ALL ENGINES - L/G DOWN

MAX. CLIMG THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=25.0%

FROM BRAKE RELEASE
TIME (MIN) FUEL (KG)
DISTANCE (NM) TAS (KT)

	WEIGHT AT BRAKE RELEASE (1000KG)								
FL	50	52	54	56	58	60	62	64	66
290	22 1759 104 280	24 1889 113 281	26 2037 123 281	29 2206 135 282	31 2404 148 283				
270	20 1604 91 277	21 1713 98 278	23 1835 105 279	24 1972 114 280	27 2129 124 281	29 2314 137 282	32 2532 151 283		
250	17 1456 79 274	18 1550 84 275	20 1651 90 276	21 1763 97 277	23 1890 105 277	25 2036 114 278	27 2206 125 279	29 2404 137 280	
240	16 1384 73 272	17 1469 78 273	18 1562 83 274	20 1664 89 275	21 1778 96 275	23 1909 104 276	24 2058 113 277	27 2231 124 278	29 2433 136 280
220	14 1234 62 268	15 1306 66 268	16 1383 70 269	17 1466 74 269	18 1557 79 270	19 1661 85 271	20 1776 92 272	22 1906 99 273	24 2052 107 274
200	12 1082 51 261	12 1142 54 261	13 1205 57 262	14 1272 60 262	15 1345 64 263	16 1426 68 264	17 1515 73 264	18 1612 78 265	19 1719 84 266
180	10 921 40 251	10 969 42 251	11 1020 45 252	11 1073 47 252	12 1130 50 253	13 1193 53 253	13 1260 56 254	14 1332 59 255	15 1410 63 255
160	8 785 32 241	8 825 34 242	9 866 35 242	9 910 37 243	10 956 39 243	10 1006 41 244	11 1059 44 244	11 1115 46 245	12 1175 49 245
140	7 668 25 232	7 702 27 232	7 736 28 233	8 772 29 233	8 810 31 234	8 850 33 234	9 893 34 235	9 938 36 235	10 985 38 236
120	5 565 20 222	6 593 21 223	6 621 22 223	6 651 23 224	7 682 24 224	7 715 26 225	7 750 27 225	8 787 28 226	8 824 30 226
100	4 472 16 212	5 494 16 213	5 518 17 213	5 542 18 214	5 567 19 214	6 594 20 215	6 622 21 215	6 652 22 216	6 682 23 216
50	2 261 7 175	3 273 7 176	3 285 8 177	3 298 8 178	3 311 9 178	3 325 9 179	3 340 9 180	3 355 10 180	3 370 10 181
15	1 123 2 108	1 128 2 109	1 133 2 110	1 139 2 110	1 145 3 111	1 151 3 112	1 157 3 113	2 163 3 113	2 170 3 114

11.0-08F0A320-232 IAE V2527-A5 21101000C5KG250 0 018590 0 0 2 1.0 500.0 300.00 1 02230.000 .500 .000 0 FCOM-N0-02-04-25-007-160

CRUISE

Ident.: PRO-NOR-SUP-LG-LG_DN-00002014.0080001 / 20 DEC 16

14 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CRUISE - 230KT/M.50 - ALL ENGINES - L/G DOWN

MAX. CRUISE THRUST LIMITS	ISA	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=25.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL100		FL180		FL200		FL220		FL240		FL270	
50	71.1	.417	79.3	.485	80.8	.500	80.7	.500	80.7	.500	81.0	.500
	1583	230	1585	230	1573	228	1468	219	1374	210	1256	197
	84.0	266	94.7	300	97.6	307	103.8	305	110.0	302	118.8	298
54	71.5	.417	79.7	.485	81.2	.500	81.2	.500	81.3	.500	81.8	.500
	1601	230	1609	230	1598	228	1497	219	1408	210	1301	197
	83.0	266	93.4	300	96.1	307	101.8	305	107.3	302	114.7	298
58	71.9	.417	80.1	.485	81.6	.500	81.7	.500	82.0	.500	82.8	.500
	1622	230	1635	230	1626	228	1530	219	1448	210	1352	197
	82.0	266	91.9	300	94.4	307	99.6	305	104.3	302	110.4	298
62	72.4	.417	80.6	.485	82.1	.500	82.4	.500	82.8	.500	83.8	.500
	1645	230	1665	230	1659	228	1569	219	1494	210	1412	197
	80.8	266	90.2	300	92.6	307	97.1	305	101.2	302	105.7	298
66	73.0	.417	81.1	.485	82.7	.500	83.0	.500	83.6	.500	84.9	.500
	1671	230	1700	230	1696	228	1612	219	1545	210	1475	197
	79.5	266	88.4	300	90.6	307	94.5	305	97.8	302	101.2	298
70	73.6	.417	81.6	.485	83.3	.500	83.8	.500	84.6	.500	86.1	.500
	1701	230	1739	230	1737	228	1661	219	1605	210	1546	197
	78.2	266	86.4	300	88.4	307	91.7	305	94.2	302	96.5	298
74	74.2	.417	82.3	.485	84.0	.500	84.6	.500	85.5	.500	87.5	.500
	1739	230	1782	230	1784	228	1717	219	1667	210	1629	197
	76.4	266	84.3	300	86.1	307	88.7	305	90.7	302	91.6	298
78	74.9	.417	83.0	.485	84.7	.500	85.5	.500	86.6	.500		
	1783	230	1831	230	1836	228	1779	219	1733	210		
	74.6	266	82.0	300	83.7	307	85.7	305	87.2	302		
82	75.7	.417	83.7	.485	85.5	.500	86.4	.500	87.7	.500		
	1830	230	1886	230	1894	228	1841	219	1811	210		
	72.7	266	79.7	300	81.1	307	82.8	305	83.4	302		

CRUISE

Ident.: PRO-NOR-SUP-LG-LG_DN-00002014.0074001 / 16 NOV 15

15 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

CRUISE - 230KT/M.50 - ALL ENGINES - L/G DOWN

MAX. CRUISE THRUST LIMITS	ISA	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=25.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL100		FL200		FL220		FL240		FL270		FL290	
48	69.8	.417	80.2	.500	80.0	.500	79.9	.500	79.9	.500	80.3	.500
	1479	230	1521	228	1412	219	1314	210	1184	197	1114	188
	89.9	266	100.9	307	107.9	305	115.0	302	126.0	298	132.9	296
50	70.0	.417	80.4	.500	80.2	.500	80.1	.500	80.3	.500	80.7	.500
	1489	230	1532	228	1424	219	1326	210	1201	197	1134	188
	89.3	266	100.3	307	107.0	305	113.9	302	124.3	298	130.5	296
52	70.2	.417	80.5	.500	80.4	.500	80.4	.500	80.7	.500	81.2	.500
	1499	230	1542	228	1436	219	1340	210	1219	197	1156	188
	88.7	266	99.6	307	106.1	305	112.8	302	122.4	298	128.0	296
54	70.4	.417	80.7	.500	80.6	.500	80.7	.500	81.2	.500	81.8	.500
	1510	230	1553	228	1448	219	1355	210	1240	197	1181	188
	88.1	266	98.9	307	105.2	305	111.5	302	120.3	298	125.3	296
56	70.6	.417	80.9	.500	80.9	.500	81.0	.500	81.6	.500	82.4	.500
	1521	230	1565	228	1462	219	1370	210	1262	197	1207	188
	87.4	266	98.1	307	104.2	305	110.3	302	118.3	298	122.6	296
58	70.8	.417	81.1	.500	81.1	.500	81.3	.500	82.1	.500	83.0	.500
	1533	230	1578	228	1476	219	1389	210	1285	197	1235	188
	86.7	266	97.3	307	103.2	305	108.8	302	116.1	298	119.8	296
60	71.0	.417	81.3	.500	81.4	.500	81.7	.500	82.6	.500	83.6	.500
	1545	230	1591	228	1492	219	1408	210	1311	197	1265	188
	86.0	266	96.5	307	102.1	305	107.3	302	113.8	298	117.0	296
62	71.2	.417	81.5	.500	81.7	.500	82.1	.500	83.2	.500	84.3	.500
	1558	230	1605	228	1509	219	1430	210	1338	197	1296	188
	85.3	266	95.7	307	101.0	305	105.7	302	111.5	298	114.1	296
64	71.5	.417	81.8	.500	82.0	.500	82.5	.500	83.8	.500	85.0	.500
	1572	230	1621	228	1528	219	1452	210	1367	197	1330	188
	84.6	266	94.8	307	99.7	305	104.0	302	109.1	298	111.2	296
66	71.7	.417	82.0	.500	82.4	.500	83.0	.500	84.4	.500	85.7	.500
	1587	230	1637	228	1549	219	1476	210	1398	197	1368	188

Continued on the following page

Continued from the previous page

CRUISE - 230KT/M.50 - ALL ENGINES - L/G DOWN

MAX. CRUISE THRUST LIMITS	ISA	**N1 (%)**	**MACH**
NORMAL AIR CONDITIONING	CG=25.0%	**FUEL FLOW (KG/H/ENG)**	**IAS (KT)**
ANTI ICE OFF		**SR (NM/1000KG)**	**TAS (KT)**

WEIGHT (1000KG)	FL100		FL200		FL220		FL240		FL270		FL290	
	83.8	266	93.8	307	98.4	305	102.4	302	106.8	298	108.2	296
	72.0	.417	82.3	.500	82.8	.500	83.4	.500	85.0	.500		
68	1603	230	1654	228	1571	219	1502	210	1430	197		
	82.9	266	92.8	307	97.0	305	100.6	302	104.4	298		

CRUISE

Ident.: PRO-NOR-SUP-LG-LG_DN-00002014.0009001 / 14 FEB 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CRUISE - 230KT/M.50 - ALL ENGINES - L/G DOWN

MAX. CRUISE THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=25.0%

N1 (%)
KG/H/ENG
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL200		FL220		FL240		FL270		FL290	
48	73.9	.417	83.4	.500	83.2	.500	83.2	.500	83.3	.500	83.5	.500
	1768	230	1810	228	1687	219	1577	210	1435	197	1359	188
	75.2	266	84.8	307	90.3	305	95.8	302	104.0	298	108.9	296
50	74.2	.417	83.6	.500	83.5	.500	83.5	.500	83.6	.500	84.0	.500
	1781	230	1825	228	1704	219	1596	210	1459	197	1387	188
	74.6	266	84.1	307	89.4	305	94.7	302	102.3	298	106.7	296
52	74.4	.417	83.8	.500	83.7	.500	83.8	.500	84.0	.500	84.5	.500
	1795	230	1841	228	1722	219	1616	210	1485	197	1417	188
	74.1	266	83.4	307	88.5	305	93.5	302	100.5	298	104.4	296
54	74.6	.417	84.0	.500	84.0	.500	84.1	.500	84.5	.500	85.1	.500
	1810	230	1857	228	1741	219	1638	210	1513	197	1454	188
	73.4	266	82.7	307	87.5	305	92.3	302	98.6	298	101.7	296
56	74.9	.417	84.3	.500	84.3	.500	84.4	.500	84.9	.500	85.7	.500
	1826	230	1875	228	1761	219	1662	210	1543	197	1497	188
	72.8	266	81.9	307	86.5	305	90.9	302	96.7	298	98.9	296
58	75.1	.417	84.5	.500	84.6	.500	84.8	.500	85.4	.500	86.3	.500
	1843	230	1894	228	1782	219	1687	210	1574	197	1541	188
	72.1	266	81.1	307	85.5	305	89.6	302	94.8	298	96.0	296
60	75.4	.417	84.8	.500	84.9	.500	85.1	.500	86.0	.500		
	1861	230	1914	228	1805	219	1714	210	1616	197		
	71.5	266	80.2	307	84.4	305	88.2	302	92.3	298		
62	75.7	.417	85.1	.500	85.2	.500	85.5	.500	86.6	.500		
	1879	230	1935	228	1829	219	1742	210	1660	197		
	70.8	266	79.4	307	83.3	305	86.8	302	89.9	298		
64	76.0	.417	85.3	.500	85.5	.500	85.9	.500				
	1898	230	1957	228	1856	219	1772	210				
	70.0	266	78.5	307	82.1	305	85.3	302				
66	76.3	.417	85.6	.500	85.9	.500	86.3	.500				
	1918	230	1981	228	1883	219	1804	210				
	69.3	266	77.5	307	80.9	305	83.7	302				
68	76.6	.417	85.9	.500	86.2	.500						
	1939	230	2005	228	1912	219						
	68.6	266	76.6	307	79.7	305						

CRUISE

Ident.: PRO-NOR-SUP-LG-LG_DN-00002014.0018001 / 14 FEB 11

16 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

CRUISE - 230KT/M.50 - ALL ENGINES - L/G DOWN

MAX. CRUISE THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=25.0%

EPR
KG/H/ENG
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL200		FL220		FL240		FL270		FL290	
48	1.162	.417	1.320	.500	1.329	.500	1.340	.500	1.366	.500	1.390	.500
	1864	230	1849	228	1717	219	1599	210	1453	197	1370	188
	71.3	266	83.1	307	88.7	305	94.5	302	102.7	298	108.0	296
50	1.164	.417	1.323	.500	1.333	.500	1.347	.500	1.376	.500	1.402	.500
	1880	230	1861	228	1731	219	1618	210	1475	197	1396	188
	70.7	266	82.5	307	88.0	305	93.4	302	101.2	298	106.0	296
52	1.166	.417	1.327	.500	1.338	.500	1.354	.500	1.386	.500	1.414	.500
	1897	230	1874	228	1747	219	1639	210	1499	197	1422	188
	70.1	266	81.9	307	87.2	305	92.2	302	99.5	298	104.0	296
54	1.168	.417	1.331	.500	1.344	.500	1.362	.500	1.397	.500	1.427	.500
	1914	230	1888	228	1766	219	1660	210	1525	197	1449	188
	69.5	266	81.3	307	86.3	305	91.0	302	97.8	298	102.1	296
56	1.171	.417	1.336	.500	1.351	.500	1.370	.500	1.408	.500	1.440	.500
	1934	230	1904	228	1786	219	1682	210	1551	197	1478	188
	68.8	266	80.7	307	85.3	305	89.8	302	96.2	298	100.1	296
58	1.174	.417	1.341	.500	1.358	.500	1.378	.500	1.419	.500		
	1957	230	1922	228	1808	219	1706	210	1578	197		
	67.9	266	79.9	307	84.3	305	88.6	302	94.6	298		
60	1.177	.417	1.347	.500	1.365	.500	1.388	.500				
	1982	230	1942	228	1830	219	1731	210				
	67.1	266	79.1	307	83.3	305	87.3	302				
62	1.180	.417	1.353	.500	1.373	.500						
	2009	230	1963	228	1852	219						
	66.2	266	78.2	307	82.2	305						
64	1.184	.417	1.360	.500								
	2036	230	1985	228								
	65.3	266	77.4	307								
66	1.187	.417										
	2064	230										
	64.4	266										
68	1.191	.417										
	2084	230										
	63.8	266										

11.0-08F0A320-232 IAE V2527-A5 12101000C5KG250 0 018590 0 0 1 1.0 .0 .00 0 02230.000 .500 .000 0 FCOM-N0-02-04-25-008-160

HOLDING

Ident.: PRO-NOR-SUP-LG-LG_DN-00002017.0077001 / 30 OCT 18

[17] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

RACE TRACK HOLDING PATTERN - S SPEED - ALL ENGINES - L/G DOWN

MAX. CRUISE THRUST LIMITS
CONFIGURATION 1
NORMAL AIR CONDITIONING
ANTI ICE OFF

ISA
CG=25.0%

N1 (%)
FF (KG/H/ENG)

WEIGHT (1000KG)	FL15	FL50	FL100	FL120	FL140	FL160	FL180	FL200
58	58.9 1307	62.0 1315	66.6 1323	68.4 1325	70.3 1324	72.4 1320	74.6 1308	76.5 1304
62	60.8 1400	64.0 1409	68.6 1419	70.4 1420	72.3 1420	74.5 1413	76.5 1400	78.4 1404
66	62.7 1495	65.9 1506	70.4 1515	72.3 1515	74.2 1518	76.3 1511	78.4 1497	80.2 1514
70	64.5 1590	67.7 1603	72.2 1610	74.1 1614	76.0 1620	78.0 1613	80.1 1605	81.9 1629
74	66.2 1689	69.3 1700	73.9 1710	75.8 1716	77.6 1725	79.6 1720	81.7 1718	83.6 1747
78	67.8 1787	70.9 1799	75.5 1812	77.3 1820	79.2 1832	81.2 1830	83.3 1834	85.2 1866
82	69.3 1885	72.4 1896	77.0 1915	78.8 1927	80.7 1937	82.7 1943	84.8 1954	
86	70.7 1983	73.8 1998	78.4 2022	80.3 2033	82.2 2045	84.2 2059		
90	72.0 2086	75.2 2100	79.8 2130	81.7 2139	83.6 2156	85.7 2177		
94	73.4 2184	76.6 2205	81.2 2235	83.1 2248	85.0 2269			
98	74.6 2289	77.9 2311	82.5 2341	84.4 2359				
100	75.3 2342	78.5 2365	83.1 2395	85.0 2416				

HOLDING

Ident.: PRO-NOR-SUP-LG-LG_DN-00002017.0072001 / 04 SEP 17

18 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

RACE TRACK HOLDING PATTERN - S SPEED - ALL ENGINES - L/G DOWN

MAX. CRUISE THRUST LIMITS CONFIGURATION 1 NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=25.0%	**N1 (%)** **FF (KG/H/ENG)**

WEIGHT (1000KG)	FL15	FL50	FL100	FL120	FL140	FL160	FL180	FL200
46	51.6 971	54.2 982	58.4 989	60.2 989	62.0 983	64.1 984	65.9 987	67.8 984
48	52.6 1013	55.3 1025	59.6 1032	61.4 1029	63.2 1023	65.3 1028	67.1 1032	69.1 1022
50	53.6 1056	56.4 1069	60.8 1075	62.6 1069	64.4 1064	66.4 1071	68.3 1072	70.4 1062
52	54.6 1100	57.5 1113	61.9 1115	63.7 1110	65.6 1107	67.5 1117	69.5 1112	71.6 1101
54	55.6 1144	58.5 1156	63.0 1155	64.8 1151	66.6 1150	68.6 1160	70.7 1151	72.7 1141
56	56.6 1189	59.5 1200	64.0 1196	65.9 1194	67.7 1198	69.6 1202	71.8 1192	73.8 1183
58	57.6 1233	60.6 1244	65.1 1237	66.9 1237	68.7 1244	70.7 1245	72.9 1232	74.8 1225
60	58.5 1278	61.6 1287	66.1 1281	67.8 1285	69.7 1291	71.7 1289	73.9 1274	75.8 1270
62	59.4 1323	62.5 1328	67.0 1323	68.8 1332	70.6 1337	72.7 1332	74.9 1316	76.7 1315
64	60.3 1367	63.5 1369	67.9 1371	69.7 1379	71.6 1384	73.7 1378	75.8 1360	77.6 1362
66	61.3 1413	64.4 1412	68.8 1419	70.6 1426	72.5 1431	74.6 1424	76.7 1406	78.5 1411
68	62.1 1456	65.2 1453	69.7 1466	71.5 1473	73.4 1478	75.5 1470	77.5 1452	79.3 1460
70	63.0 1498	66.1 1495	70.5 1514	72.4 1521	74.3 1527	76.3 1517	78.4 1500	80.2 1511
72	63.8 1540	66.9 1539	71.3 1562	73.2 1569	75.1 1575	77.1 1564	79.2 1549	81.0 1562
74	64.6	67.7	72.2	74.1	76.0	77.9	80.0	81.8

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Continued from the previous page

RACE TRACK HOLDING PATTERN - S SPEED - ALL ENGINES - L/G DOWN

MAX. CRUISE THRUST LIMITS CONFIGURATION 1 NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=25.0%	**N1 (%)** **FF (KG/H/ENG)**

WEIGHT (1000KG)	FL15	FL50	FL100	FL120	FL140	FL160	FL180	FL200
	1583	1583	1610	1617	1623	1611	1599	1613
76	65.4 1624	68.5 1630	73.0 1659	74.9 1666	76.7 1669	78.7 1660	80.8 1651	82.6 1662
78	66.2 1666	69.3 1680	73.8 1707	75.7 1715	77.5 1716	79.4 1709	81.5 1703	83.3 1712
79	66.6 1687	69.6 1705	74.2 1731	76.1 1740	77.8 1739	79.8 1733	81.9 1729	83.7 1737

HOLDING

Ident.: PRO-NOR-SUP-LG-LG_DN-00002017.0009001 / 04 SEP 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

RACE TRACK HOLDING PATTERN - S SPEED - ALL ENGINES - L/G DOWN

MAX. CRUISE THRUST LIMITS
CONFIGURATION 1
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=25.0%

N1 (%)
FF (KG/H/ENG)

WEIGHT (1000KG)	FL 15	FL 50	FL100	FL120	FL140	FL160	FL180	FL200
46	56.3 1248	59.1 1223	62.9 1206	64.7 1202	66.5 1198	68.3 1194	70.1 1192	71.9 1187
48	57.4 1297	60.3 1274	64.1 1260	66.0 1255	67.8 1251	69.5 1248	71.3 1243	73.2 1239
50	58.6 1347	61.3 1327	65.3 1313	67.2 1308	69.0 1304	70.7 1300	72.5 1296	74.4 1293
52	59.7 1398	62.3 1380	66.6 1366	68.3 1361	70.1 1357	71.8 1353	73.7 1348	75.5 1347
54	60.8 1449	63.3 1434	67.7 1419	69.5 1415	71.1 1410	72.9 1405	74.8 1402	76.7 1402
56	61.7 1501	64.3 1488	68.8 1472	70.5 1467	72.2 1463	74.0 1458	75.9 1457	77.8 1457
58	62.6 1554	65.4 1541	69.8 1525	71.5 1520	73.2 1516	75.1 1512	77.0 1512	78.9 1514
60	63.5 1607	66.4 1594	70.8 1578	72.4 1573	74.2 1569	76.1 1567	78.0 1568	79.8 1571
62	64.4 1659	67.4 1645	71.7 1631	73.4 1626	75.2 1622	77.1 1622	79.0 1624	80.8 1627
64	65.3 1713	68.4 1699	72.6 1684	74.4 1680	76.2 1677	78.1 1678	79.9 1681	81.7 1684
66	66.3 1766	69.3 1753	73.5 1738	75.3 1734	77.1 1733	79.1 1735	80.8 1738	82.6 1743
68	67.2 1819	70.2 1806	74.4 1792	76.2 1789	78.1 1789	80.0 1792	81.7 1796	83.4 1804
70	68.1 1872	71.1 1859	75.3 1847	77.1 1845	79.0 1846	80.8 1850	82.6 1854	84.2 1865
72	69.0 1926	71.9 1913	76.2 1901	78.0 1901	79.9 1904	81.6 1908	83.3 1914	85.0 1928
74	69.8 1981	72.7 1967	77.0 1957	78.9 1958	80.7 1962	82.4 1966	84.1 1975	85.7 1990
76	70.6 2033	73.4 2021	77.8 2013	79.7 2015	81.5 2019	83.2 2024	84.8 2036	
78	71.4 2085	74.2 2075	78.6 2069	80.5 2073	82.2 2077	83.9 2084	85.5 2099	

HOLDING

Ident.: PRO-NOR-SUP-LG-LG_DN-00002017.0018001 / 04 SEP 17

19 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

RACE TRACK HOLDING PATTERN - S SPEED - ALL ENGINES - L/G DOWN

MAX. CRUISE THRUST LIMITS
CONFIGURATION 1
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=25.0%

EPR
FF (KG/H/ENG)

WEIGHT (1000KG)	FL 15	FL 50	FL100	FL120	FL140	FL160	FL180	FL200
46	1.060 1239	1.074 1245	1.100 1252	1.113 1249	1.129 1240	1.147 1237	1.166 1242	1.188 1249
48	1.064 1299	1.079 1306	1.107 1312	1.122 1303	1.138 1296	1.157 1295	1.177 1304	1.200 1310
50	1.069 1360	1.084 1367	1.115 1367	1.130 1357	1.148 1354	1.167 1358	1.188 1365	1.212 1370
52	1.073 1421	1.090 1429	1.122 1420	1.139 1413	1.157 1411	1.177 1421	1.199 1427	1.225 1424
54	1.078 1482	1.095 1489	1.130 1474	1.147 1471	1.166 1474	1.187 1482	1.211 1489	1.238 1478
56	1.082 1544	1.101 1549	1.138 1531	1.156 1528	1.175 1538	1.197 1544	1.222 1543	1.251 1533
58	1.087 1606	1.107 1609	1.146 1589	1.164 1590	1.184 1599	1.207 1608	1.234 1598	1.264 1590
60	1.092 1668	1.113 1665	1.154 1646	1.173 1656	1.194 1662	1.218 1664	1.246 1652	1.278 1643
62	1.097 1728	1.120 1720	1.161 1705	1.181 1717	1.203 1724	1.229 1718	1.258 1710	1.292 1696
64	1.102 1789	1.126 1774	1.169 1771	1.190 1779	1.213 1785	1.240 1772	1.271 1763	1.307 1749
66	1.107 1850	1.133 1829	1.177 1834	1.198 1842	1.223 1840	1.251 1829	1.283 1818	1.321 1801
68	1.113 1906	1.139 1887	1.185 1897	1.207 1906	1.233 1896	1.262 1886	1.296 1871	1.336 1853
70	1.119 1963	1.146 1944	1.193 1960	1.216 1963	1.243 1949	1.274 1940	1.310 1924	1.351 1907
72	1.124 2018	1.152 2001	1.201 2023	1.225 2019	1.254 2008	1.286 1994	1.323 1976	1.366 1961
74	1.130 2072	1.158 2059	1.209 2087	1.235 2075	1.264 2064	1.298 2048	1.337 2029	
76	1.136 2128	1.165 2124	1.218 2143	1.244 2128	1.275 2118	1.310 2101	1.351 2083	
78	1.141 2184	1.171 2191	1.226 2199	1.254 2187	1.286 2172	1.322 2153		

DESCENT

Ident.: PRO-NOR-SUP-LG-LG_DN-00002016.0145001 / 20 DEC 16

20 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

DESCENT - M.50/230KT - ALL ENGINES - L/G DOWN

IDLE THRUST NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=25.0%	**MAXIMUM CABIN RATE OF DESCENT 350FT/MIN**

	WEIGHT (1000KG)								
	60				80				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1 (%)	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1 (%)	IAS (KT)
290	8.5	73	39	IDLE	9.7	85	45	IDLE	188
270	7.8	69	36	IDLE	9.1	80	42	IDLE	197
250	7.2	64	33	IDLE	8.5	75	39	IDLE	205
240	7.0	62	32	IDLE	8.2	73	37	IDLE	210
220	6.4	58	29	IDLE	7.6	69	34	IDLE	219
200	5.9	55	26	IDLE	7.0	64	31	IDLE	228
180	5.4	50	24	IDLE	6.3	59	28	IDLE	230
160	4.8	46	21	IDLE	5.7	54	24	IDLE	230
140	4.2	41	18	IDLE	4.9	48	21	IDLE	230
120	3.6	35	15	IDLE	4.2	42	18	IDLE	230
100	2.9	30	12	IDLE	3.5	35	14	IDLE	230
50	1.3	13	5	IDLE	1.5	16	6	IDLE	230
15	0.0	0	0	IDLE	0.0	0	0	IDLE	230

DESCENT

Ident.: PRO-NOR-SUP-LG-LG_DN-00002016.0139001 / 16 NOV 15

[21] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

DESCENT - M.50/230KT - ALL ENGINES - L/G DOWN

IDLE THRUST NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=25.0%	**MAXIMUM CABIN RATE OF DESCENT 350FT/MIN**

	WEIGHT (1000KG)									
	45					55				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1 (%)	IAS (KT)	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1 (%)	IAS (KT)
290	7.1	58	32	IDLE	188	8.3	68	38	IDLE	188
270	6.5	54	30	IDLE	197	7.6	63	35	IDLE	197
250	6.0	50	27	IDLE	205	7.1	59	32	IDLE	205
240	5.8	49	26	IDLE	210	6.8	57	31	IDLE	210
220	5.3	45	24	IDLE	219	6.3	54	28	IDLE	219
200	4.9	42	22	IDLE	228	5.8	50	26	IDLE	228
180	4.5	39	19	IDLE	230	5.3	46	23	IDLE	230
160	4.0	36	17	IDLE	230	4.7	42	20	IDLE	230
140	3.5	31	15	IDLE	230	4.1	37	17	IDLE	230
120	3.0	27	12	IDLE	230	3.5	32	15	IDLE	230
100	2.5	23	10	IDLE	230	2.9	27	12	IDLE	230
50	1.1	10	4	IDLE	230	1.2	12	5	IDLE	230
15	0.0	0	0	IDLE	230	0.0	0	0	IDLE	230

DESCENT

Ident.: PRO-NOR-SUP-LG-LG_DN-00002016.0021001 / 14 FEB 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

DESCENT - M.50/230KT - ALL ENGINES - L/G DOWN

IDLE THRUST
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=25.0%

MAXIMUM CABIN RATE OF DESCENT 350FT/MIN

WEIGHT (1000KG)	45				55				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1	IAS (KT)
290	7.1	67	33	IDLE	8.2	77	38	IDLE	188
270	6.6	63	30	IDLE	7.6	74	35	IDLE	197
250	6.1	60	28	IDLE	7.1	70	32	IDLE	205
240	5.8	58	26	IDLE	6.8	68	31	IDLE	210
220	5.4	55	24	IDLE	6.3	64	28	IDLE	219
200	4.9	51	22	IDLE	5.8	60	26	IDLE	228
180	4.5	47	20	IDLE	5.2	55	23	IDLE	230
160	4.0	41	17	IDLE	4.6	48	20	IDLE	230
140	3.4	34	15	IDLE	4.0	40	17	IDLE	230
120	2.9	28	12	IDLE	3.4	32	14	IDLE	230
100	2.3	21	10	IDLE	2.7	25	11	IDLE	230
50	1.0	9	4	IDLE	1.2	10	5	IDLE	230
15	.0	0	0	IDLE	.0	0	0	IDLE	230

11.0-08F0A320-214 CFM56-5B4/P 23101000C5KG250 0 018590 0 0-1-350.0 15.0 .00 0 02 .500230.000 .000 0 FCOM-N0-02-04-25-009-170

DESCENT

Ident.: PRO-NOR-SUP-LG-LG_DN-00002016.0010001 / 14 FEB 11

22 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

DESCENT - M.50/230KT - ALL ENGINES - L/G DOWN

IDLE THRUST
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=25.0%

MAXIMUM CABIN RATE OF DESCENT 350FT/MIN

WEIGHT (1000KG)	45				55				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	EPR	TIME (MIN)	FUEL (KG)	DIST. (NM)	EPR	IAS (KT)
290	7.6	83	35	IDLE	8.9	97	41	IDLE	188
270	7.0	77	32	IDLE	8.2	91	38	IDLE	197
250	6.4	72	29	IDLE	7.6	84	34	IDLE	205
240	6.2	69	28	IDLE	7.3	81	33	IDLE	210
220	5.7	64	25	IDLE	6.7	76	30	IDLE	219
200	5.2	59	23	IDLE	6.2	70	27	IDLE	228
180	4.7	55	21	IDLE	5.6	64	25	IDLE	230
160	4.2	49	18	IDLE	5.0	58	22	IDLE	230
140	3.7	43	16	IDLE	4.3	51	19	IDLE	230
120	3.1	37	13	IDLE	3.7	44	16	IDLE	230
100	2.6	31	11	IDLE	3.0	36	13	IDLE	230
50	1.1	14	4	IDLE	1.3	16	5	IDLE	230
15	.0	0	0	IDLE	.0	0	0	IDLE	230

GO-AROUND

Ident.: PRO-NOR-SUP-LG-LG_DN-00002010.0031001 / 04 SEP 17

23 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Refer to PER-GOA-GEN GENERAL for go-around requirements.
Further decrease the basic limiting weight by 11 %.

GO-AROUND

Ident.: PRO-NOR-SUP-LG-LG_DN-00002010.0027001 / 04 SEP 17

[24] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Refer to PER-GOA-GEN GENERAL for go-around requirements.
Further decrease the basic limiting weight by 11 %.

GO-AROUND

Ident.: PRO-NOR-SUP-LG-LG_DN-00002010.0001001 / 04 SEP 17

[25] **Applicable to: MSN 01767-05411**

Refer to PER-GOA-GEN GENERAL for go-around requirements.
Further decrease the basic limiting weight by 15 %.

GO-AROUND

Ident.: PRO-NOR-SUP-LG-LG_DN-00002010.0007001 / 04 SEP 17

Applicable to: MSN 05437-06336

Refer to PER-GOA-GEN GENERAL for go-around requirements.
Further decrease the basic limiting weight by 18 %.

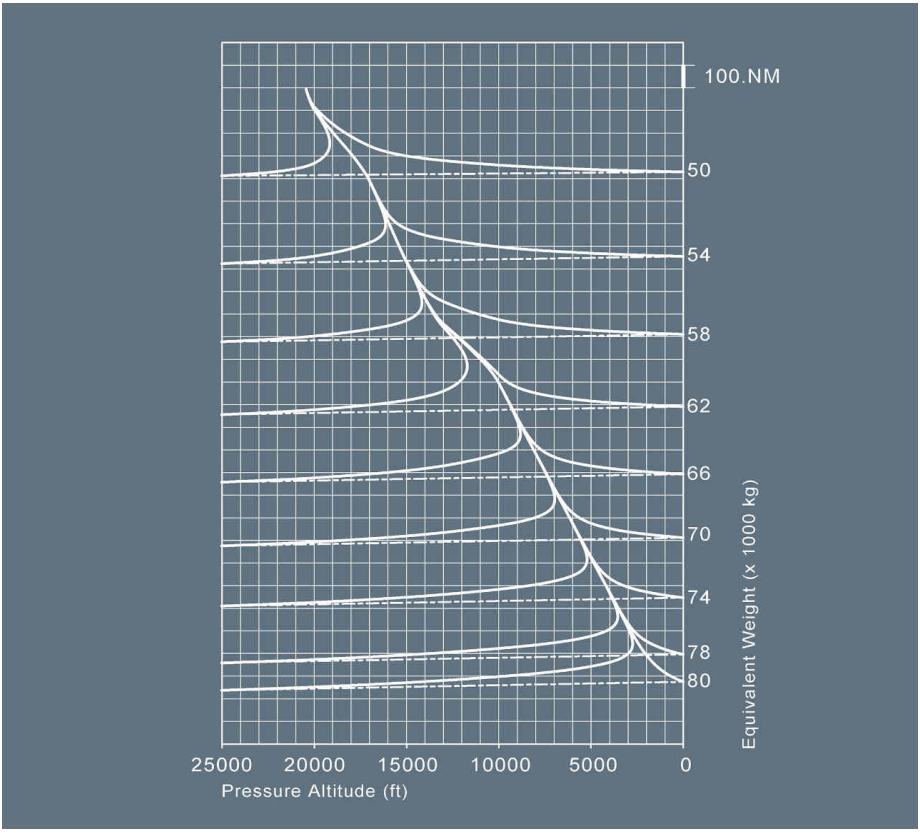
ONE ENGINE INOPERATIVE

Ident.: PRO-NOR-SUP-LG-LG_DN-D-00002019.0095001 / 04 SEP 17

26 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

EN ROUTE NET FLIGHT PATH - L/G DOWN - ONE ENGINE INOP

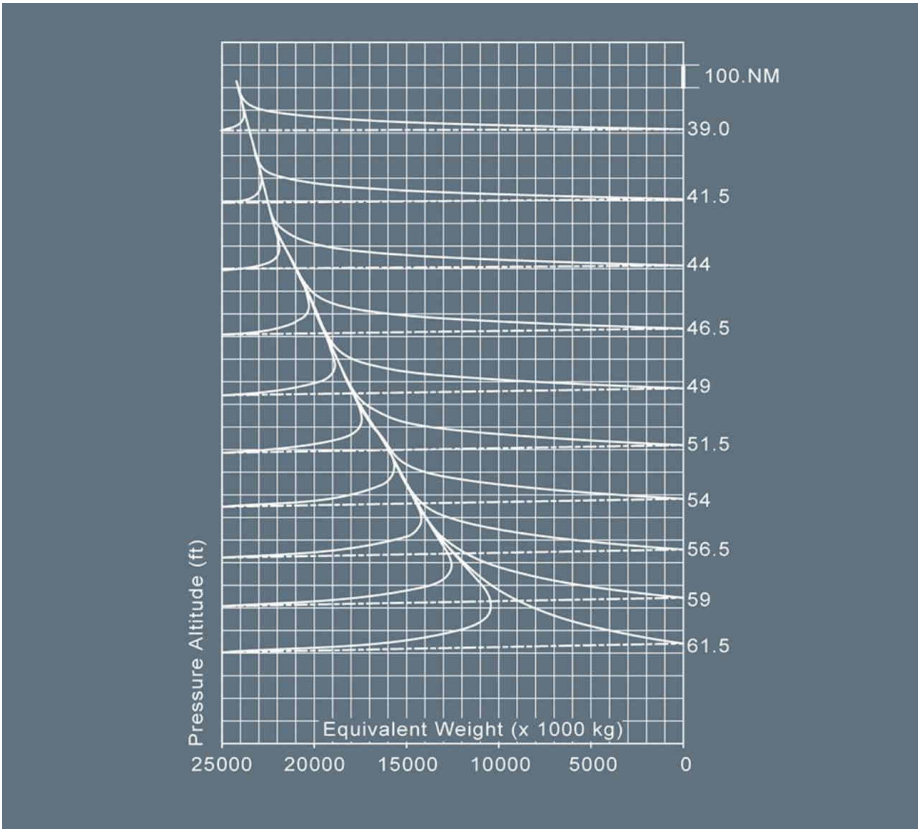
MAX. CONTINUOUS THRUST GREEN DOT SPEED HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG = 25 %	MINIMUM ENGINE



Ident.: PRO-NOR-SUP-LG-LG_DN-D-00002019.0090001 / 04 SEP 17

27 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

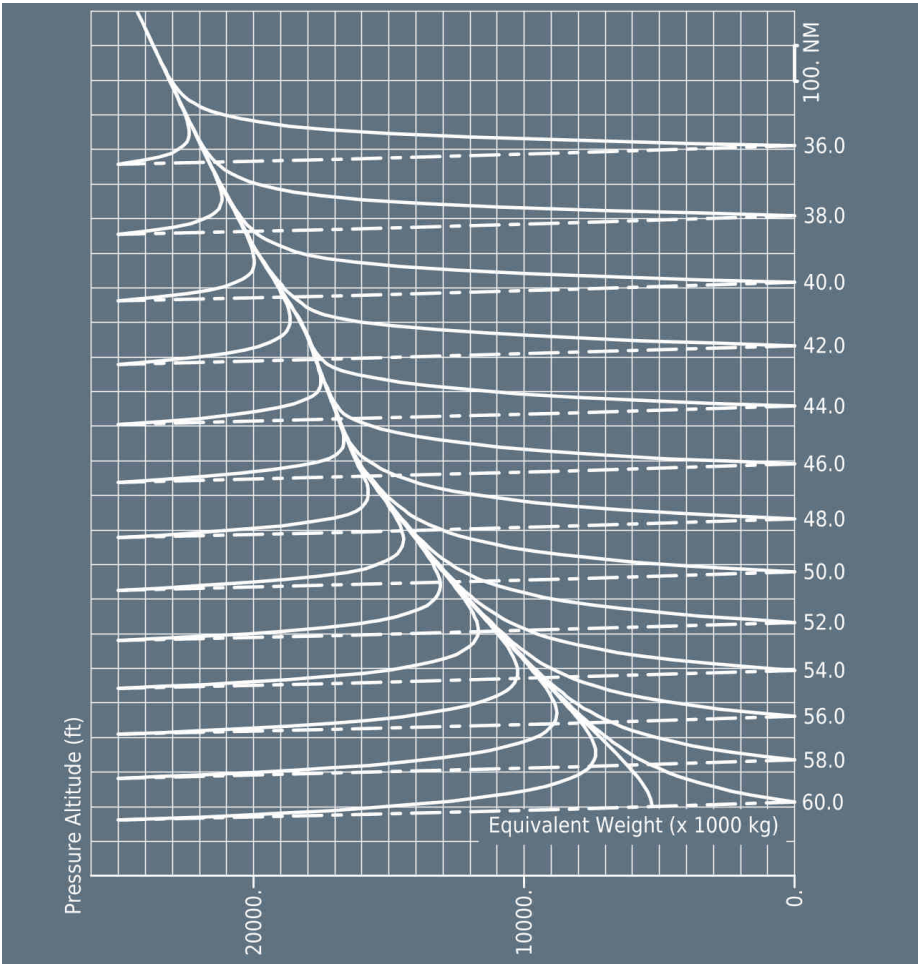
EN ROUTE NET FLIGHT PATH - L/G DOWN - ONE ENGINE INOP		
MAX. CONTINUOUS THRUST GREEN DOT SPEED HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG = 25 %	MINIMUM ENGINE



Ident.: PRO-NOR-SUP-LG-LG_DN-D-00002019.0013001 / 04 SEP 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

EN ROUTE NET FLIGHT PATH - L/G DOWN - ONE ENGINE INOP

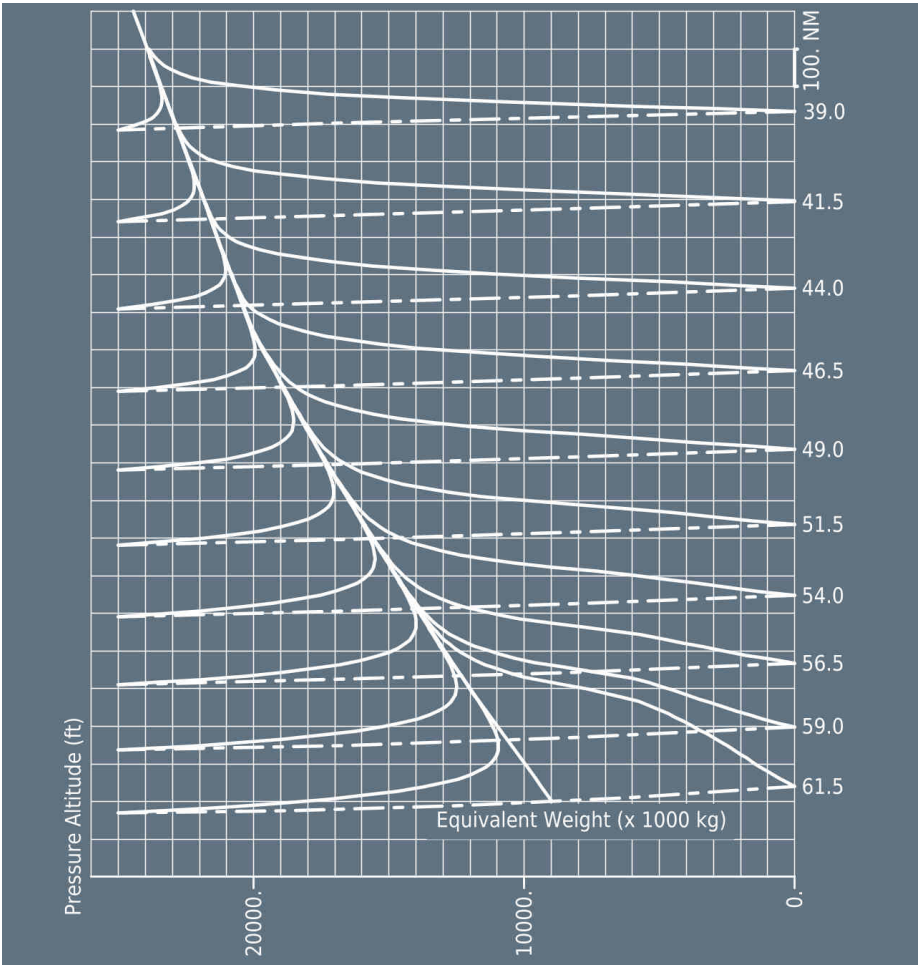
MAX. CONTINUOUS THRUST GREEN DOT SPEED HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG = 23 %	MINIMUM ENGINE



Ident.: PRO-NOR-SUP-LG-LG_DN-D-00002019.0037001 / 04 SEP 17

28 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

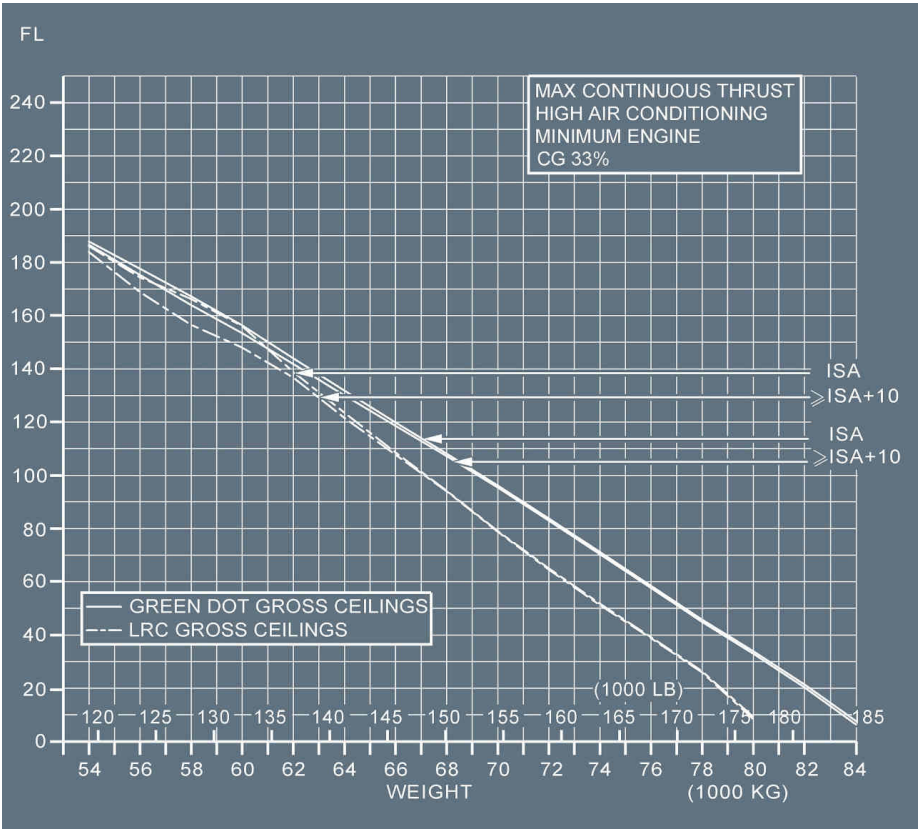
EN ROUTE NET FLIGHT PATH - L/G DOWN - ONE ENGINE INOP		
MAX. CONTINUOUS THRUST GREEN DOT SPEED HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG = 23 %	MINIMUM ENGINE



Ident.: PRO-NOR-SUP-LG-LG_DN-D-00004080.0037001 / 05 JUN 18

29 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

GROSS CEILINGS - ONE ENGINE INOPERATIVE



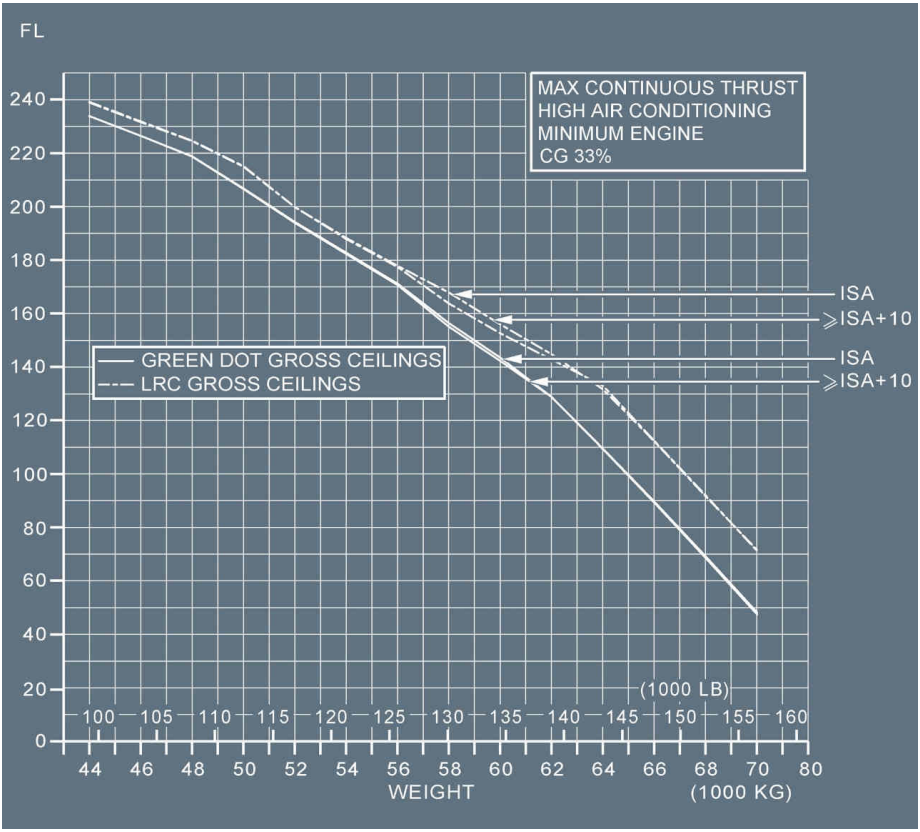
BLEED CORRECTIONS

		ISA	≥ ISA +10
LONG RANGE	ENGINE ANTI ICE ON	0 ft	-600 ft
	TOTAL ANTI ICE ON	0 ft	-2 100 ft
GREEN DOT	ENGINE ANTI ICE ON	0 ft	-400 ft
	TOTAL ANTI ICE ON	0 ft	-1 700 ft

Ident.: PRO-NOR-SUP-LG-LG_DN-D-00004080.0032001 / 05 JUN 18

30 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

GROSS CEILINGS - ONE ENGINE INOPERATIVE

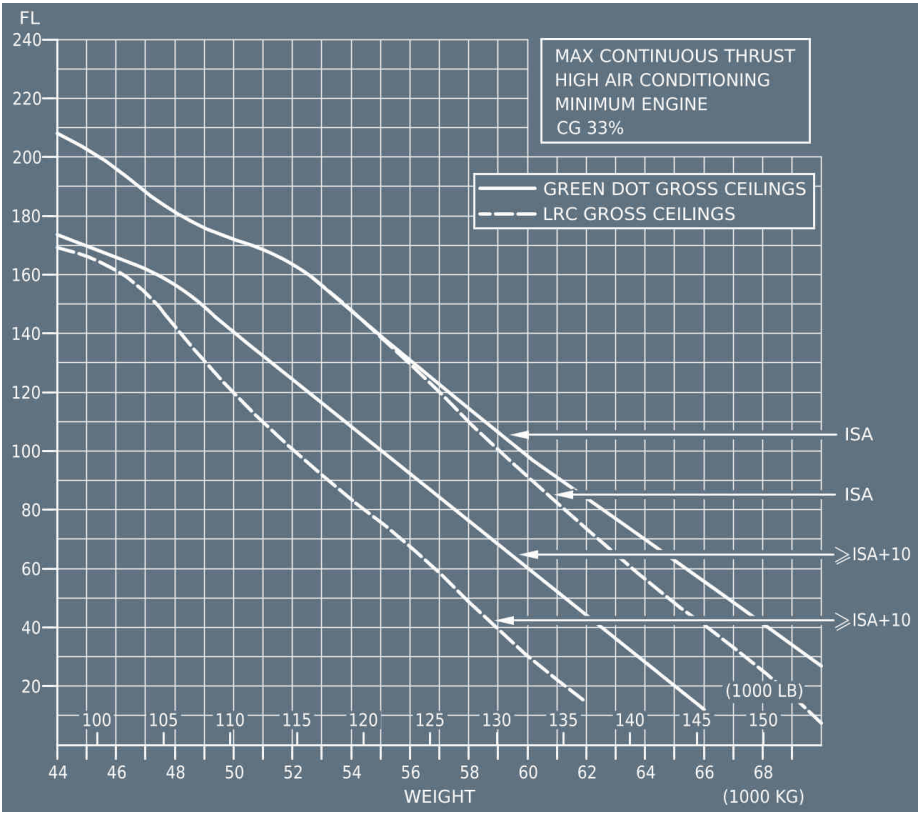


BLEED CORRECTIONS

		ISA	≥ ISA +10
LONG RANGE	ENGINE ANTI ICE ON	0 ft	-700 ft
	TOTAL ANTI ICE ON	-100 ft	-9 600 ft
GREEN DOT	ENGINE ANTI ICE ON	0 ft	-500 ft
	TOTAL ANTI ICE ON	-100 ft	-6 600 ft

Ident.: PRO-NOR-SUP-LG-LG_DN-D-00004080.0005001 / 05 JUN 18
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

GROSS CEILINGS - ONE ENGINE INOPERATIVE



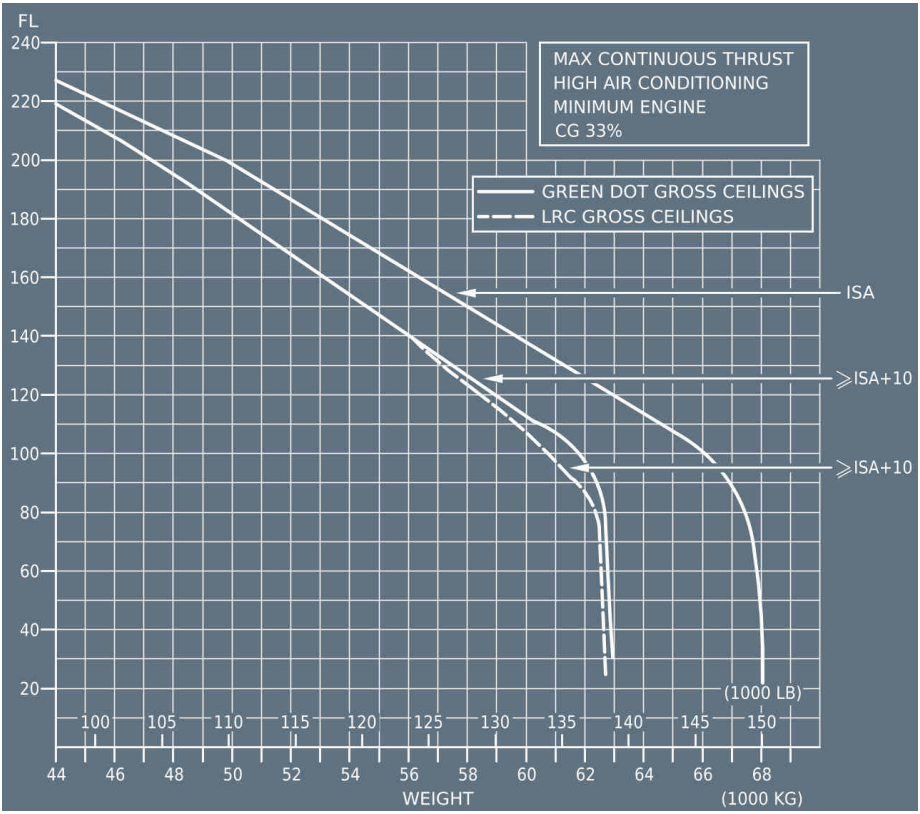
BLEED CORRECTIONS

		ISA	≥ ISA +10
LONG RANGE	ENGINE ANTI ICE ON	-500 ft	-2 800 ft
	TOTAL ANTI ICE ON	-1 300 ft	-4 600 ft
GREEN DOT	ENGINE ANTI ICE ON	-200 ft	-1 700 ft
	TOTAL ANTI ICE ON	-1 200 ft	-3 500 ft

Ident.: PRO-NOR-SUP-LG-LG_DN-D-00004080.0016001 / 05 JUN 18

31 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

GROSS CEILINGS - ONE ENGINE INOPERATIVE

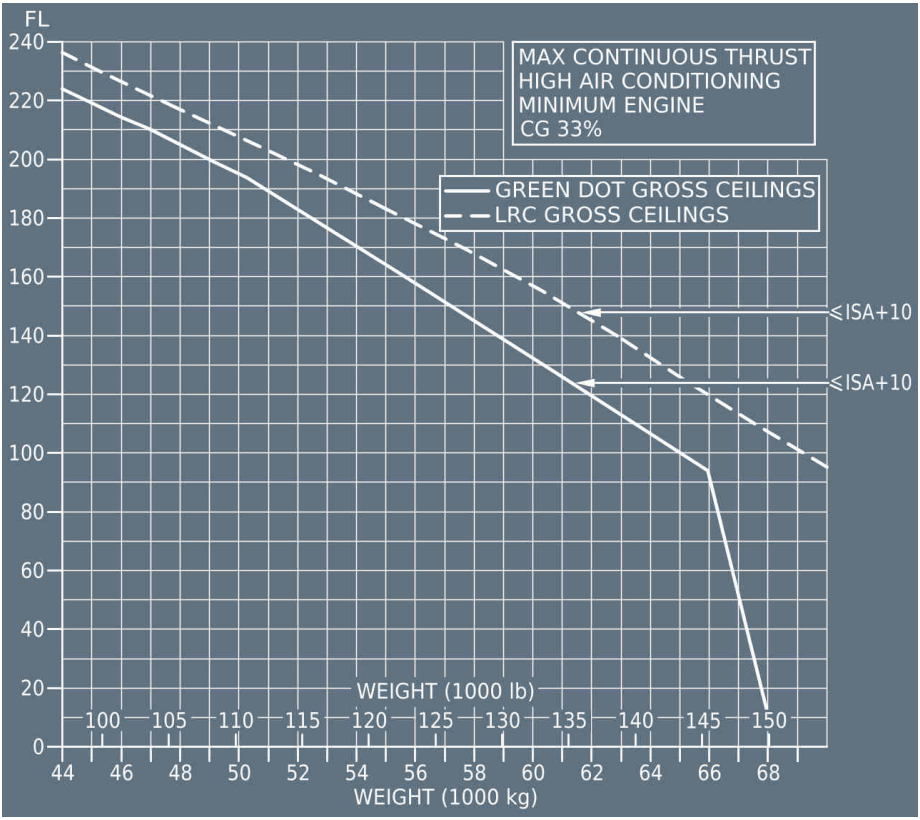


BLEED CORRECTIONS

		ISA	≥ ISA +10
LONG RANGE	ENGINE ANTI ICE ON	-9 200 ft	-9 200 ft
	TOTAL ANTI ICE ON	-10 500 ft	-10 500 ft
GREEN DOT	ENGINE ANTI ICE ON	-1 200 ft	-1 600 ft
	TOTAL ANTI ICE ON	-9 100 ft	-9 700 ft

Ident.: PRO-NOR-SUP-LG-LG_DN-D-00004080.0024001 / 05 JUN 18
Applicable to: MSN 05437-06336

GROSS CEILINGS - ONE ENGINE INOPERATIVE



BLEED CORRECTIONS

		ISA	≥ ISA +10
LONG RANGE	ENGINE ANTI ICE ON	-1 300 ft	-1 400 ft
	TOTAL ANTI ICE ON	-2 600 ft	-2 700 ft
GREEN DOT	ENGINE ANTI ICE ON	-8 100 ft	-8 100 ft
	TOTAL ANTI ICE ON	-9 400 ft	-9 400 ft

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Operation with Nosewheel Steering Offset

OPERATION WITH NOSEWHEEL STEERING OFFSET

Applicable to: ALL

Ident.: PRO-NOR-SUP-LG-LG-A-00020945.0001001 / 17 MAR 17

During taxi in a straight line, the crew may notice aircraft veering tendency. This can be due to external conditions (crosswind, slope....), or to a nosewheel steering offset.
A nosewheel steering offset is usually notified through consecutive crew reports. The NWS offset value is determined regarding the necessary rudder trim input used to cancel the veering tendency.

Ident.: PRO-NOR-SUP-LG-LG-A-00020946.0001001 / 17 MAR 17

When the NWS offset is within admissible limits, the flight crew can operate the aircraft as follows:

CAUTION	A rudder trim reset must be performed before takeoff. When the rudder trim adjustment is above the maintenance tolerance (±0.5 ° NWS offset corresponding to ±3 ° rudder trim necessary to taxi straight), the flight crew must systematically and accurately report the rudder trim value in the logbook.

NWS Offset	Necessary Rudder Trim Input	Procedure
Offset ≤ 0.5 °	Trim ≤ 3 °	● **Taxi:** RUDDER TRIM.....ADJUST Adjust trim until the aircraft taxies in a straight line. Check input value. ● **Before takeoff:** RUDDER TRIM.....RESET
0.5 ° < Offset ≤ 1.5 °	3 ° < Trim ≤ 8.8 °	● **Taxi:** RUDDER TRIM.....ADJUST Adjust trim until the aircraft taxies in a straight line. Check input value. ● **Before takeoff:** RUDDER TRIM.....RESET ● **Landing:** ● **For autoland:** MAX CROSSWIND.....10 kt
Offset > 1.5 °	Trim > 8.8 °	MAINTENANCE ACTION.....REQUEST Do not attempt takeoff. Request for troubleshooting.

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Pushback with Power Push Unit

PUSHBACK WITH POWER PUSH UNIT VIA THE MAIN LANDING GEAR

Ident.: PRO-NOR-SUP-MISC-D-A-00020472.0002001 / 28 NOV 17
Applicable to: ALL

When pushback is performed with a Power Push Unit (PPU) via the main landing gear, this procedure replaces the BEFORE PUSHBACK OR START SOP.

- **Before start clearance**

SOP - BEFORE START CLEARANCE.....PERFORM

L2 *Refer to PRO-NOR-SOP-07 Before Start Clearance.*

L1 BEFORE START CHECKLIST down to the line.....COMPLETE
NW STRG DISC MEMO.....CHECK NOT DISPLAYED

L2 *The ground crew should check that the towing lever is in the normal position.*

L1 - **At start clearance**

PUSHBACK/START CLEARANCE.....OBTAIN

L2 *Obtain ATC pushback/start clearance.*
Obtain ground crew clearance.

L1 ATC.....SET FOR OPERATION

L2 *ATC is set in accordance with airport requirements.*

L1 WINDOWS AND DOORS.....CHECK CLOSED

L2 *- To ensure that the sliding window is correctly closed, push the handle of the sliding window fully forward to the closed position, and check that the red indicator is visible.*
- Check, on the ECAM lower display, that all the aircraft doors are closed.
- When required by local airworthiness authorities, check that the cockpit door is closed and locked (no cockpit door open/fault indication).
If entry is requested, identify the person requesting entry before unlocking the door. With the cockpit door sw on NORM, the cockpit door is closed and locked. If entry is requested from the cabin, and if no further action is performed by the pilot, the cabin crew will be able to unlock the door by using the emergency access procedure. Except for crew entry/exit, the cockpit door should remain closed until engine shutdown.

L1 SLIDES.....CHECK ARMED

L2 *- Check, on the ECAM lower display, that all slides are armed.*

L1 BEACON sw.....ON

THRUST LEVERS.....IDLE

CAUTION	*Engines will start, regardless of the thrust lever position; thrust will rapidly increase to the corresponding thrust lever position, causing a hazardous situation, if thrust levers are not at IDLE.*

ACCU PRESS indicator.....CHECK

L2 *The ACCU PRESS indication must be in the green band. If required, use the electric pump on yellow hydraulic system to recharge the brake accumulator.*

L1 PARK BRK handle.....CHECK ON
BRAKES PRESS indicator..... CHECK

L2 *Check for normal indication.*

L1 BEFORE START CHECKLIST below the line..... COMPLETE

Ident.: PRO-NOR-SUP-MISC-D-A-00020473.0002001 / 17 MAR 17
1 **Applicable to: MSN 02443-02457, 02584-09063**

ENG 2..... START

L2 *Engine 2 is usually started first to pressurize the yellow hydraulic system, making the nosewheel steering and parking brake available.*

Ident.: PRO-NOR-SUP-MISC-D-A-00020473.0001001 / 17 MAR 17
Applicable to: MSN 01767-02405, 02482

ENG 2..... START

L2 *Engine 2 is usually started first to pressurize the yellow hydraulic system, making the parking brake available.*

L1 PTU..... CHECK AUTO

L2 *The green hydraulic system is pressurized via PTU, making the nosewheel steering available.*

Ident.: PRO-NOR-SUP-MISC-D-A-00020474.0001001 / 17 MAR 17
Applicable to: ALL

PUSHBACK

Due to a face-to-face situation between the ground personnel and the flight crew, a clear understanding of directional phraseology is essential.

PARK BRK handle.....OFF
BRAKES PRESS indicator.....CHECK ZERO

L2 *A slight residual pressure may remain for a short period of time on the triple indicator. Advise the ground crew that the parking brake is off and that the pushback can be started.*

L1

CAUTION	*Do not use the brakes during pushback, except in case of emergency.* *Do not move flight controls or flap lever.*

L2 *In case of emergency, order the ground crew to separate the PPU and move it away from the evacuation areas. Nevertheless, evacuation is possible with the PPU in place.*

L1 STEERING HANDWHEEL.....AS REQUIRED

L2 *Steer the aircraft using guidance from the ground crew.*

L1

- **When pushback is completed:**
  PARK BRK handle.....ON
  BRAKES PRESS indicator..... CHECK
  GROUND CREW..... ADVISED TO REMOVE PPU

- **When PPU is removed and ground crew clearance obtained:**
  ENG 1.....START
  SOP - AFTER START..... RESUME
  Refer to PRO-NOR-SOP-09 After Start

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High Altitude Airport Operations

HIGH ALTITUDE AIRPORT OPERATIONS

Ident.: PRO-NOR-SUP-MISC-A-A-00020648.0002001 / 20 MAR 17
Applicable to: MSN 02204

CAB PRESS SYSTEM

- **If the CAB PR EXCESS CAB ALT alert triggers:**

L2 - During descent (when cabin altitude is above 9 550 ft ± 350).
- On ground after electrical power application (if cabin altitude is above 9 550 ft ± 350).

L1 Use the «CLR pb» to cancel the alert.

HYD SYSTEM

- **If the HYD Y(B)(G) RSVR LO AIR PR alert triggers on ground:**
  Before engine start: SWITCH OFF AFFECTED HYD PUMP.

Ident.: TDU / PRO-NOR-SUP-MISC-A-A-00021551.0022001 / 05 JUN 18
Applicable to: MSN 03750
Impacted DU: 00020650 Operation at or Above 9 200 ft

TAKEOFF ON AIRPORT WITH AN ELEVATION OF 9 200 FT OR ABOVE

COCKPIT PREPARATION

HIGH ALT LDG pb-sw (for all on ground operation).....ON

BEFORE PUSHBACK OR START

ACCU PRESS..... CHECK

L2 If required, use the HYD YELLOW ELEC PUMP to recharge the brake accumulator.

L1 GEN 1..... OFF
GEN 2..... OFF
G ENG PUMP.....OFF
Y ENG PUMP..... OFF

ENGINE START

- **When idle is reached**
  GEN 1..... ON
  GEN 2..... ON
  G ENG PUMP.....ON
  Y ENG PUMP..... ON

TAKEOFF

Note: For A/C operating under FAA requirements, as long as the cabin altitude is above 12 000 ft in flight, at least one pilot must use the oxygen mask continuously.

APU BLEED..... AS RQRD

L2 Packs may be supplied for takeoff by the engine bleed, or by the APU bleed up to 17 000 ft depending on the takeoff performance requirement.

L1 **CRUISE**

LDG ELEV AUTO [CRUISE page].....CHECK

- **When cabin altitude below 12 000 ft and decreasing:**
  HIGH ALT LDG pb-sw..... OFF
  CHECK THAT CABIN ALTITUDE DECREASES BELOW 9 550 ft +/- 350 ft

L2 This will allow the CAB PR EXCESS CAB ALT alert to trigger again if necessary despite the clear action.

L1 **LANDING ON AIRPORTS WITH AN ELEVATION OF 9 200 FT OR ABOVE**

CRUISE

- **If CAB ALT exceeds 8 000 ft:**
  LDG ELEV: 8 000 ft:..... SET

L2 Manually selecting a landing field elevation overrides the FMGS landing field elevation for the remaining time of cruise.

L1 *Note: A step descent or turbulence conditions may trigger an early CPC descent mode detection, leading the CPC to start controlling to the landing field elevation pressure.*

DESCENT PREPARATION

Note: For A/C operating under FAA requirements, at least one pilot must use the oxygen mask continuously until landing.

HIGH ALT LDG pb-sw.....ON

L2 Passengers oxygen masks would drop when cabin altitude is above 14 000 ft +250/-750 ft if HIGH ALT LDG pushbutton switch is OFF.

L1 *Note: Passengers oxygen masks drop above 16 000 ft +250/-750 ft cabin altitude if HIGH ALT LDG pushbutton switch is ON.*

LDG ELEV.....AUTO

L2 CPC starts controlling the pressure to the landing field elevation at beginning of descent.

L1 **DESCENT**

- **After descent initiation when cabin altitude has reached 8 500 ft :**
  MODE SEL pb.....MAN
  MODE SEL pb.....AUTO

  Note: CPC changeover after descent initiation will force the CPC in standby mode to become operational in cruise mode and to limit the cabin altitude to 8 000 ft.

AFTER LANDING

HIGH ALT LDG pb-sw (for all on ground operation).....ON

Ident.: TDU / PRO-NOR-SUP-MISC-A-A-00021551.0025001 / 05 JUN 18

1 **Applicable to: MSN 02443, 02670, 02908-02914, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336, 06744-06829, 06904, 06946, 07053-09063**
Impacted DU: 00020650 Operation at or Above 9 200 ft

TAKEOFF ON AIRPORT WITH AN ELEVATION OF 9 200 FT OR ABOVE

TAKEOFF

Note: For A/C operating under FAA requirements, as long as the cabin altitude is above 12 000 ft in flight, at least one pilot must use the oxygen mask continuously.

APU BLEED..... AS RQRD

Depending on the takeoff performance requirements, both engine bleeds can be set to OFF, and;
- Both packs running, supplied by APU bleed up to 17 000 ft.
- One pack running, supplied by APU bleed up to 20 000 ft.

CRUISE

LDG ELEV AUTO [CRUISE page].....CHECK

LANDING ON AIRPORTS WITH AN ELEVATION OF 9 200 FT OR ABOVE

CRUISE

- **If CAB ALT exceeds 8 000 ft:**
  LDG ELEV: 8 000 ft:..... SET

L2 Manually selecting a landing field elevation overrides the FMGS landing field elevation for the remaining time of cruise.

L1 *Note: A step descent or turbulence conditions may trigger an early CPC descent mode detection, leading the CPC to start controlling to the landing field elevation pressure.*

DESCENT PREPARATION

Note: For A/C operating under FAA requirements, at least one pilot must use the oxygen mask continuously until landing.

HIGH ALT LDG pb-sw.....ON

L2 Passengers oxygen masks would drop when cabin altitude is above 14 000 ft +250/-750 ft if HIGH ALT LDG pushbutton switch is OFF.

L1 *Note: Passengers oxygen masks drop above 16 000 ft +250/-750 ft cabin altitude if HIGH ALT LDG pushbutton switch is ON.*

LDG ELEV.....AUTO

L2 CPC starts controlling the pressure to the landing field elevation at beginning of descent.

L1 **DESCENT**

- **After descent initiation when cabin altitude has reached 8 500 ft :**
  MODE SEL pb.....MAN
  MODE SEL pb.....AUTO

  Note: CPC changeover after descent initiation will force the CPC in standby mode to become operational in cruise mode and to limit the cabin altitude to 8 000 ft.

APPROACH

- **If performance requires:**

  Approach can be performed with both engine bleeds set to OFF, and:
  - Both packs supplied by APU bleed below 17 000 ft, or
  - One single pack supplied by APU bleed below 20 000 ft.

Ident.: PRO-NOR-SUP-MISC-A-A-00020650.0017001 / 20 MAR 17
Applicable to: MSN 03750
Impacted by TDU: 00021551 Operation at or Above 9 200 ft

TAKEOFF ON AIRPORT WITH AN ELEVATION OF 9 200 FT OR ABOVE

COCKPIT PREPARATION

HIGH ALT LDG pb-sw (for all on ground operation).....ON

BEFORE PUSHBACK OR START

ACCU PRESS.....CHECK

L2 If required, use the HYD YELLOW ELEC PUMP to recharge the brake accumulator.

L1 GEN 1 ..... OFF
GEN 2 ..... OFF
G ENG PUMP ..... OFF
Y ENG PUMP ..... OFF

ENGINE START

- **When idle is reached**

GEN 1 ..... ON
GEN 2 ..... ON
G ENG PUMP ..... ON
Y ENG PUMP ..... ON

TAKEOFF

Note: For A/C operating under FAA requirements, as long as the cabin altitude is above 12 000 ft in flight, at least one pilot must use the oxygen mask continuously.

APU BLEED ..... AS RQRD

L2 Packs may be supplied for takeoff by the engine bleed, or by the APU bleed up to 17 000 ft depending on the takeoff performance requirement.

L1 **CRUISE**

LDG ELEV AUTO [CRUISE page] ..... CHECK

- **When cabin altitude below 12 000 ft and decreasing:**

HIGH ALT LDG pb-sw ..... OFF
CHECK THAT CABIN ALTITUDE DECREASES BELOW 9 550 ft +/- 350 ft

L2 This will allow the CAB PR EXCESS CAB ALT alert to trigger again if necessary despite the clear action.

L1 **LANDING ON AIRPORTS WITH AN ELEVATION OF 9 200 FT OR ABOVE**

CRUISE

- **If CAB ALT exceeds 8 000 ft:**

LDG ELEV: 8 000 ft: ..... SET

L2 Manually selecting a landing field elevation overrides the FMGS landing field elevation for the remaining time of cruise.

L1 *Note: A step descent or turbulence conditions may trigger an early CPC descent mode detection, leading the CPC to start controlling to the landing field elevation pressure.*

DESCENT PREPARATION

Note: For A/C operating under FAA requirements, at least one pilot must use the oxygen mask continuously until landing.

HIGH ALT LDG pb-sw.....ON

L2

Passengers oxygen masks would drop when cabin altitude is above 14 000 ft +250/-750 ft if HIGH ALT LDG pushbutton switch is OFF.

L1

Note: Passengers oxygen masks drop above 16 000 ft +250/-750 ft cabin altitude if HIGH ALT LDG pushbutton switch is ON.

LDG ELEV.....AUTO

L2

CPC starts controlling the pressure to the landing field elevation at beginning of descent.

L1

AFTER LANDING

HIGH ALT LDG pb-sw (for all on ground operation).....ON

Ident.: PRO-NOR-SUP-MISC-A-A-00020650.0025001 / 05 JUN 18

2 **Applicable to: MSN 02443, 02670, 02908-02914, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336, 06744-06829, 06904, 06946, 07053-09063**
Impacted by TDU: 00021551 Operation at or Above 9 200 ft

TAKEOFF ON AIRPORT WITH AN ELEVATION OF 9 200 FT OR ABOVE

TAKEOFF

Note: For A/C operating under FAA requirements, as long as the cabin altitude is above 12 000 ft in flight, at least one pilot must use the oxygen mask continuously.

APU BLEED.....AS RQRD

Depending on the takeoff performance requirements, both engine bleeds can be set to OFF, and;
- Both packs running, supplied by APU bleed up to 17 000 ft.
- One pack running, supplied by APU bleed up to 20 000 ft.

CRUISE

LDG ELEV AUTO [CRUISE page].....CHECK

LANDING ON AIRPORTS WITH AN ELEVATION OF 9 200 FT OR ABOVE

CRUISE

- **If CAB ALT exceeds 8 000 ft:**
  LDG ELEV: 8 000 ft.....SET

L2 Manually selecting a landing field elevation overrides the FMGS landing field elevation for the remaining time of cruise.

L1 *Note: A step descent or turbulence conditions may trigger an early CPC descent mode detection, leading the CPC to start controlling to the landing field elevation pressure.*

DESCENT PREPARATION

Note: For A/C operating under FAA requirements, at least one pilot must use the oxygen mask continuously until landing.

HIGH ALT LDG pb-sw.....ON

L2 Passengers oxygen masks would drop when cabin altitude is above 14 000 ft +250/-750 ft if HIGH ALT LDG pushbutton switch is OFF.

L1 *Note: Passengers oxygen masks drop above 16 000 ft +250/-750 ft cabin altitude if HIGH ALT LDG pushbutton switch is ON.*

LDG ELEV.....AUTO

L2 CPC starts controlling the pressure to the landing field elevation at beginning of descent.

L1 **APPROACH**

- **If performance requires:**

  Approach can be performed with both engine bleeds set to OFF, and:
  - Both packs supplied by APU bleed below 17 000 ft, or
  - One single pack supplied by APU bleed below 20 000 ft.

Intentionally left blank

Operations at QNH Above 1050 hPa

GENERAL

Ident.: PRO-NOR-SUP-MISC-C-00002100.0026001 / 21 MAR 17

1 **Applicable to: MSN 01957-02097, 02121, 02138, 02204-02334, 02443-02457, 02649-02670, 02737-03071, 03264, 03330, 04491, 04532, 04645, 04965-06336**

Operators may occasionally experience high barometric settings above 1 050 hPa (31.0 inHg), due to polar anticyclonic air mass conditions. These conditions mainly occur during winter in the upper northern region.
The FCU, ISIS, PFD, and CPCS are capable of operating at QNH/QFE up to 1 100 hPa (32.48 hPa).
The FMGS is currently limited to 1 050 hPa for DEST QNH entry on the MCDU PERF APPR page.
Due to engine limitations on the nacelle and thrust reverser, the flight envelope is limited to -1 000 ft STD. Therefore, for departure and arrival, the flight crew must ensure that the aircraft remains within its flight envelope.

CAUTION	When the QNH exceeds 1 050 hPa, the aircraft standard altitude might be outside of its flight envelope (below -1 000 ft STD), depending on the airfield elevation. Operations at QNH above 1 050 hPa are only authorized within the flight envelope of the aircraft.

EXAMPLE

- Airfield Elevation : 400 ft
- QNH : 1 058 hPa

- We approximately consider that 1 hPa = 27 ft

Determination of the flight level of this aircraft :
- (QNH - 1013.25) x 27 + Airfield Elevation = - (1058-1013.25) x 27+ 400 = -808 ft
In this example, during takeoff or landing the aircraft is within the flight envelope at an altitude of: -808 ft STD > -1 000 ft STD.
Therefore with these conditions, operations at QNH = 1 058 hPa are authorized.

GENERAL

Ident.: PRO-NOR-SUP-MISC-C-00002100.0023001 / 21 MAR 17
Applicable to: MSN 02108, 02135, 02139-02195, 02359, 02405, 02482, 02609-02626, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04954

Operators may occasionally experience high barometric settings above 1 050 hPa (31.0 inHg), due to polar anticyclonic air mass conditions. These conditions mainly occur during winter in the upper northern region.
The FCU, PFD, and CPCS are capable of operating at QNH/QFE up to 1 100 hPa (32.48 inHg).

The standby altimeter barometric setting is limited to 1 050 hPa.
The FMGS is currently limited to 1 050 hPa for DEST QNH entry on the MCDU PERF APPR page.
Due to engine limitations on the nacelle and thrust reverser, the flight envelope is limited to -1 000 ft STD. Therefore, for departure and arrival, the flight crew must ensure that the aircraft remains within its flight envelope.

CAUTION	When the QNH exceeds 1 050 hPa, the aircraft standard altitude might be outside of its flight envelope (below -1 000 ft STD), depending on the airfield elevation. Operations at QNH above 1 050 hPa are only authorized within the flight envelope of the aircraft.

EXAMPLE

- Airfield Elevation : 400 ft
- QNH : 1 058 hPa

- We approximately consider that 1 hPa = 27 ft

Determination of the flight level of this aircraft :
- (QNH - 1013.25) x 27 + Airfield Elevation = - (1058-1013.25) x 27+ 400 = -808 ft
In this example, during takeoff or landing the aircraft is within the flight envelope at an altitude of: -808 ft STD > -1 000 ft STD.
Therefore with these conditions, operations at QNH = 1 058 hPa are authorized.

GENERAL

Ident.: PRO-NOR-SUP-MISC-C-00002100.0008001 / 03 FEB 11
Applicable to: MSN 01767

Some airlines may occasionally experience high barometric correction settings above 1 050 hPa, or 31.0 inHg on some airfields, due to polar anticyclonic air mass conditions occuring near the polar area during winter.
The FMS, FCU, PFD, and CPCS are capable of operating at QNH/QFE up to 1 100 hPa, or 32.48 inHg.
The standby altimeter barometric setting is also limited to 1 050 hPa. In addition, the ATC/TCAS operates only up to 1 050 hPa (that is as long as the aircraft altitude remains above -1 000 ft standard pressure altitude).
Therefore, when using QNH, or QFE for QFE pin-programmed aircraft, for departure and arrival, the crew should be aware of the following consequences, and should apply the following procedures.
It is necessary for the airline to obtain operational approval from its national airworthiness authorities.

GENERAL

Ident.: PRO-NOR-SUP-MISC-C-00002100.0015001 / 03 FEB 11
Applicable to: MSN 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Some airlines may occasionally experience high barometric correction settings above 1 050 hPa, or 31.0 inHg on some airfields, due to polar anticyclonic air mass conditions occuring near the polar area during winter.
The FMS, FCU, ISIS instrument, PFD, and CPCS are capable of operating at QNH/QFE up to 1 100 hPa, or 32.48 inHg.
However, the ATC/TCAS operates only up to 1050 hPa (i.e. as long as the aircraft altitude remains above –1000 feet standard pressure altitude).
Therefore, when using QNH, or QFE for QFE pin-programmed aircraft, for departure and arrival, the crew should be aware of the following consequences, and should apply the following procedures.
It is necessary for the airline to obtain operational approval from its national airworthiness authorities.

CONSEQUENCES

Ident.: PRO-NOR-SUP-MISC-C-00002102.0076001 / 23 JUN 15
2 **Applicable to: MSN 02097, 02121, 02138, 02204-02334, 02443-02457, 02649-02670, 02737-02914, 04491, 04532, 04645, 05120, 05158, 05218**

ON CABIN PRESSURIZATION:

The CPCS normally uses the MCDU DEST QNH value to regulate cabin pressure during descent. However, since DEST QNH entries on the MCDU are limited to 1 050 hPa, no DEST QNH value should be entered during descent preparation, in order to avoid incorrect cabin pressure regulation. As a backup, the CPCS will use the actual FCU barometric setting (when switching from STD to Baro reference). In case of QFE use at arrival, the CPCS will erroneously use the FCU-selected QFE as a QNH setting. To ensure correct re-pressurization of the cabin when QFE is used, the Landing Field Elevation must be manually set to 0.

Note: As no DEST QNH is entered, the FMS initially assumes that Standard barometric reference will be kept down to destination for descent flight path calculations. When QNH is set on the FCU, the aircraft and cabin altitude will be higher than expected (the aircraft altitude can be up to 2 000 ft higher than expected). This will lead to a higher descent rate, with a possible "CAB PR LO DIFF PR" ECAM caution, and possible opening of the cabin pressure safety valve.

ON THE FMS:

- Descent profile :
  In the descent phase, when the crew switches from Standard to Barometric reference, the FMS tries to catch up with an altitude increase induced by the baro reference change.
  This altitude difference may be up to +2 000 ft, depending on the QNH value.
  However, the FMS predictions and the VDEV remain unchanged. Consequently, an altitude constraint, just below the Descent Transition Level, may still be predicted as “satisfied”, and actually flown with a positive error. This altitude difference will gradually be zeroed, as the aircraft catches up with the descent profile.

  Note: *As no DEST QNH value is entered on the MCDU PERF APPR page, the FMS is unable to compute the Descent Transition Level. So, the “STD” baro reference on the PFD will not flash when descending through the Transition Level.*

CONSEQUENCES

Ident.: PRO-NOR-SUP-MISC-C-00002102.0071001 / 23 JUN 15
Applicable to: MSN 02108, 02135, 02139-02195, 02359, 02609-02626

ON THE STANDBY ALTIMETER:

The barometric setting of the standby altimeter is limited to 1 050 hPa. When operating with QNH above 1 050 hPa, the crew shall use the Standby Altitude Correction table (*Refer to PRO-NOR-SUP-MISC-C Standby Altitude Correction*) for altitude crosschecks between the PFD and the standby altimeter.

ON CABIN PRESSURIZATION:

The CPCS normally uses the MCDU DEST QNH value to regulate cabin pressure during descent. However, since DEST QNH entries on the MCDU are limited to 1 050 hPa, no DEST QNH value should be entered during descent preparation, in order to avoid incorrect cabin pressure regulation. As a backup, the CPCS will use the actual FCU barometric setting (when switching from STD to Baro reference). In case of QFE use at arrival, the CPCS will erroneously use the FCU-selected QFE as a QNH setting. To ensure correct re-pressurization of the cabin when QFE is used, the Landing Field Elevation must be manually set to 0.

Note: *As no DEST QNH is entered, the FMS initially assumes that Standard barometric reference will be kept down to destination for descent flight path calculations.*
When QNH is set on the FCU, the aircraft and cabin altitude will be higher than expected (the aircraft altitude can be up to 2 000 ft higher than expected). This will lead to a higher descent rate, with a possible "CAB PR LO DIFF PR" ECAM caution, and possible opening of the cabin pressure safety valve.

ON THE FMS:

- Descent profile :
  In the descent phase, when the crew switches from Standard to Barometric reference, the FMS tries to catch up with an altitude increase induced by the baro reference change.
  This altitude difference may be up to +2 000 ft, depending on the QNH value.
  However, the FMS predictions and the VDEV remain unchanged. Consequently, an altitude constraint, just below the Descent Transition Level, may still be predicted as “satisfied”, and actually flown with a positive error. This altitude difference will gradually be zeroed, as the aircraft catches up with the descent profile.

  Note: As no DEST QNH value is entered on the MCDU PERF APPR page, the FMS is unable to compute the Descent Transition Level. So, the “STD” baro reference on the PFD will not flash when descending through the Transition Level.

CONSEQUENCES

Ident.: PRO-NOR-SUP-MISC-C-00002102.0070001 / 21 MAR 17
Applicable to: MSN 01957, 03071, 03264, 03330, 04965-05094, 05155, 05190, 05230-06336

ON CABIN PRESSURIZATION:

The CPCS normally uses the MCDU DEST QNH value to regulate cabin pressure during descent. However, since DEST QNH entries on the MCDU are limited to 1 050 hPa, no DEST QNH value should be entered during descent preparation, in order to avoid incorrect cabin pressure regulation. As a backup, the CPCS will use the actual FCU barometric setting (when switching from STD to Baro reference). In case of QFE use at arrival, the CPCS will erroneously use the FCU-selected QFE as a QNH setting. To ensure correct re-pressurization of the cabin when QFE is used, the Landing Field Elevation must be manually set to 0.

Note: As no DEST QNH is entered, the FMS initially assumes that Standard barometric reference will be kept down to destination for descent flight path calculations.
When QNH is set on the FCU, the aircraft and cabin altitude will be higher than expected (the aircraft altitude can be up to 2 000 ft higher than expected). This will lead to a higher descent rate, with a possible "CAB PR LO DIFF PR" ECAM caution, and possible opening of the cabin pressure safety valve.

ON THE FMS:

- Descent profile :
  In the descent phase, when the crew switches from Standard to Barometric reference, the FMS tries to catch up with an altitude increase induced by the baro reference change.
  This altitude difference may be up to +2 000 ft, depending on the QNH value.
  However, the FMS predictions and the VDEV remain unchanged. Consequently, an altitude constraint, just below the Descent Transition Level, may still be predicted as "satisfied", and actually flown with a positive error. This altitude difference will gradually be zeroed, as the aircraft catches up with the descent profile.

  Note: As no DEST QNH value is entered on the MCDU PERF APPR page, the FMS is unable to compute the Descent Transition Level. So, the "STD" baro reference on the PFD will not flash when descending through the Transition Level.

ON THE EGPWS (ONLY FOR QFE USE AT DESTINATION):

For QFE use at landing, the EGPWS enhanced functions use the MCDU DEST QNH to compute the aircraft altitude. Due to the fact that no DEST QNH is entered in the MCDU PERF APPR page (see impact on cabin pressurization), the EGPWS enhanced functions will be inhibited in approach ("TERR STBY" displayed on ECAM).

Note: If an incorrect DEST QNH is entered on the MCDU, the EGPWS may generate erroneous terrain alarms.

CONSEQUENCES

Ident.: PRO-NOR-SUP-MISC-C-00002102.0067001 / 21 MAR 17
Applicable to: MSN 02405, 02482, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04954

ON THE STANDBY ALTIMETER:

The barometric setting of the standby altimeter is limited to 1 050 hPa. When operating with QNH above 1 050 hPa, the crew shall use the Standby Altitude Correction table (*Refer to PRO-NOR-SUP-MISC-C Standby Altitude Correction*) for altitude crosschecks between the PFD and the standby altimeter.

ON CABIN PRESSURIZATION:

The CPCS normally uses the MCDU DEST QNH value to regulate cabin pressure during descent. However, since DEST QNH entries on the MCDU are limited to 1 050 hPa, no DEST QNH value should be entered during descent preparation, in order to avoid incorrect cabin pressure regulation. As a backup, the CPCS will use the actual FCU barometric setting (when switching from STD to Baro reference). In case of QFE use at arrival, the CPCS will erroneously use the

FCU-selected QFE as a QNH setting. To ensure correct re-pressurization of the cabin when QFE is used, the Landing Field Elevation must be manually set to 0.

Note: As no DEST QNH is entered, the FMS initially assumes that Standard barometric reference will be kept down to destination for descent flight path calculations. When QNH is set on the FCU, the aircraft and cabin altitude will be higher than expected (the aircraft altitude can be up to 2 000 ft higher than expected). This will lead to a higher descent rate, with a possible "CAB PR LO DIFF PR" ECAM caution, and possible opening of the cabin pressure safety valve.

ON THE FMS:

- Descent profile :
  In the descent phase, when the crew switches from Standard to Barometric reference, the FMS tries to catch up with an altitude increase induced by the baro reference change.
  This altitude difference may be up to +2 000 ft, depending on the QNH value.
  However, the FMS predictions and the VDEV remain unchanged. Consequently, an altitude constraint, just below the Descent Transition Level, may still be predicted as “satisfied”, and actually flown with a positive error. This altitude difference will gradually be zeroed, as the aircraft catches up with the descent profile.

  Note: As no DEST QNH value is entered on the MCDU PERF APPR page, the FMS is unable to compute the Descent Transition Level. So, the “STD” baro reference on the PFD will not flash when descending through the Transition Level.

ON THE EGPWS (ONLY FOR QFE USE AT DESTINATION):

For QFE use at landing, the EGPWS enhanced functions use the MCDU DEST QNH to compute the aircraft altitude. Due to the fact that no DEST QNH is entered in the MCDU PERF APPR page (see impact on cabin pressurization), the EGPWS enhanced functions will be inhibited in approach (“TERR STBY” displayed on ECAM).

Note: If an incorrect DEST QNH is entered on the MCDU, the EGPWS may generate erroneous terrain alarms.

CONSEQUENCES

Ident.: PRO-NOR-SUP-MISC-C-00002102.0058001 / 04 OCT 13
Applicable to: MSN 01767

ON THE ATC-TCAS:

For takeoff, approach and landing, the ATC altitude reporting and the TCAS TA/RA function may generate erroneous altitude information and nuisance TCAS alerts for other aircraft, if the aircraft standard altitude is below -1 000 ft standard pressure altitude.

To avoid this, it is recommended to set ALT RPTG to OFF when the QNH exceeds 1 050 hPa, and to inform the ATC. As a consequence the TCAS reverts to STBY mode.

ON THE STANDBY ALTIMETER:

The barometric setting of the standby altimeter is limited to 1 050 hPa. When operating with QNH above 1 050 hPa, the crew shall use the Standby Altitude Correction table (*Refer to PRO-NOR-SUP-MISC-C Standby Altitude Correction*) for altitude crosschecks between the PFD and the standby altimeter.

CONSEQUENCES

Ident.: PRO-NOR-SUP-MISC-C-00002102.0038001 / 17 MAR 11
Applicable to: MSN 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

ON THE ATC-TCAS:

For takeoff, approach and landing, the ATC altitude reporting and the TCAS TA/RA function may generate erroneous altitude information and nuisance TCAS alerts for other aircraft, if the aircraft standard altitude is below -1 000 ft standard pressure altitude.
To avoid this, it is recommended to set ALT RPTG to OFF when the QNH exceeds 1 050 hPa, and to inform the ATC. As a consequence the TCAS reverts to STBY mode.

STANDBY ALTITUDE CORRECTION

Ident.: PRO-NOR-SUP-MISC-C-00002103.0001001 / 22 MAR 17
Applicable to: MSN 01767, 02108, 02135, 02139-02195, 02359, 02405, 02482, 02609-02626, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04954

The Standby Altitude Correction table below provides the baro setting that should be used on the standby altimeter, and the correction that should be applied to the altimeter indications, for each QNH between 1 050 hPa and 1 089 hPa:

Barometric Reference (hPa)	Stby Altimeter Baro Setting (hPa)	Correction (feet)
1 050	1 050	0
1 051	1 047	100
1 052	1 048	100
1 053	1 049	100
1 054	1 046	200
1 055	1 047	200
1 056	1 048	200
1 057	1 049	200
1 058	1 046	300
1 059	1 047	300
1 060	1 048	300
1 061	1 049	300
1 062	1 047	400
1 063	1 048	400
1 064	1 049	400
1 065	1 050	400
1 066	1 047	500
1 067	1 048	500
1 068	1 049	500
1 069	1 050	500
1 070	1 047	600
1 071	1 048	600
1 072	1 049	600
1 073	1 050	600
1 074	1 047	700
1 075	1 048	700

Barometric Reference (hPa)	Stby Altimeter Baro Setting (hPa)	Correction (feet)
1 076	1 049	700
1 077	1 046	800
1 078	1 047	800
1 079	1 048	800
1 080	1 049	800
1 081	1 046	900
1 082	1 047	900
1 083	1 048	900
1 084	1 049	900
1 085	1 047	1 000
1 086	1 048	1 000
1 087	1 049	1 000
1 088	1 050	1 000
1 089	1 047	1 100

Standby Altitude Correction Tables

HOW TO USE

Set the baro reference of the standby altimeter to the appropriate value. Then :

- To obtain the correct altitude, add the correction to the altimeter indication.
- To fly at a desired altitude, subtract the correction from the desired altitude.

EXAMPLE

If the QNH of the day is 1 072 hPa, the baro setting on the standby altimeter would be 1 049 hPa. When reading an altitude on the standby altimeter, it is necessary to add 600 ft to obtain the actual altitude of the aircraft.

Therefore, in this example, the indicated altitude on the standby altimeter should be 1 400 ft, in order to fly at 2 000 ft QNH.

PROCEDURES

Ident.: PRO-NOR-SUP-MISC-C-00002104.0025001 / 20 MAR 17

3 **Applicable to: MSN 01957-02097, 02121, 02138, 02204-02334, 02443-02457, 02649-02670, 02737-03071, 03264, 03330, 04491, 04532, 04645, 04965-06336**

BEFORE TAKEOFF

ALT RPTG ..... OFF

L2 *ALT RPTG OFF memo and TCAS STBY memo appear on the WD.*

L1 ATC..... NOTIFY

L2 *Notify the ATC that the altitude reporting is not available.*

L1 TAKEOFF

- **Above 1 000 ft, when time permits:**

  ALT RPTG ..... ON

L2 *As a result, the TCAS automatically reverts to its previous setting.*

L1 DESCENT PREPARATION

DO NOT INSERT a DEST QNH value on the MCDU PERF APPR page.

- **For QFE use:**

  LDG ELEV ..... SET TO 0

APPROACH

- **Before final approach:**

  ATC..... NOTIFY

L2 *Notify the ATC that the altitude reporting will be turned off.*

L1 ALT RPTG ..... OFF

Note: Perform non-precision approaches using selected lateral and vertical guidance, and raw data reference.

PROCEDURES

Ident.: PRO-NOR-SUP-MISC-C-00002104.0022001 / 20 MAR 17
Applicable to: MSN 02108, 02135, 02139-02195, 02359, 02405, 02482, 02609-02626, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04954

BEFORE TAKEOFF

[STBY ALTIMETER] BARO SETTING..... SET

See Standby Altitude Correction Tables.

USE THE CORRECTION VALUE FOR ALTITUDE READINGS

To obtain the correct altitude flown by the aircraft, add the correction value to the standby altimeter indication.

DESCENT PREPARATION

DO NOT INSERT a DEST QNH value on the MCDU PERF APPR page.

- **For QFE use:**
  LDG ELEV ..... SET TO 0

DESCENT

- **When approaching transition level:**
  [STBY ALTIMETER] BARO SETTING..... SET

  See Standby Altitude Correction Tables.

  USE THE CORRECTION VALUE FOR ALTITUDE READINGS

PROCEDURES

Ident.: PRO-NOR-SUP-MISC-C-00002104.0008001 / 20 MAR 17
Applicable to: MSN 01767

BEFORE TAKEOFF

[STBY ALTIMETER] BARO SETTING..... SET

See Standby Altitude Correction Tables.

USE THE CORRECTION VALUE FOR ALTITUDE READINGS

To obtain the correct altitude flown by the aircraft, add the correction value to the standby altimeter indication.

ALT RPTG ..... OFF

L2 *ALT RPTG OFF memo and TCAS STBY memo appear on the WD.*

L1 ATC..... NOTIFY

L2 *Notify the ATC that the altitude reporting is not available.*

L1 **TAKEOFF**

- **Above 1 000 ft, when time permits:**
  ALT RPTG ..... ON

L2 *As a result, the TCAS automatically reverts to its previous setting.*

L1 **DESCENT**

- **When approaching transition level:**
  [STBY ALTIMETER] BARO SETTING..... SET
  See Standby Altitude Correction Tables.
  USE THE CORRECTION VALUE FOR ALTITUDE READINGS

APPROACH

- **Before final approach:**
  ATC..... NOTIFY

L2 *Notify the ATC that the altitude reporting will be turned off.*

L1 ALT RPTG ..... OFF

PROCEDURES

Ident.: PRO-NOR-SUP-MISC-C-00002104.0015001 / 20 MAR 17
Applicable to: MSN 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

BEFORE TAKEOFF

ALT RPTG ..... OFF

L2 *ALT RPTG OFF memo and TCAS STBY memo appear on the WD.*

L1 ATC..... NOTIFY

L2 *Notify the ATC that the altitude reporting is not available.*

L1 **TAKEOFF**

- **Above 1 000 ft, when time permits:**
  ALT RPTG ..... ON

L2 *As a result, the TCAS automatically reverts to its previous setting.*

L1 **APPROACH**

- **Before final approach:**
  ATC..... NOTIFY

L2 *Notify the ATC that the altitude reporting will be turned off.*

L1 ALT RPTG ..... OFF

AUTOMATIC DEPENDENT SURVEILLANCE - BROADCAST (ADS-B)

Ident.: PRO-NOR-SUP-SURV-00020957.0001001 / 17 MAR 17

[1] **Applicable to: MSN 01920, 02135, 02139-02195, 02457, 02584-02626, 02670-02712, 02908-03071, 03357-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-09063**

ADS-B OUT:

In some cases, the ATC ground stations can receive non valid data from the ADS-B function. Therefore, the air traffic controller may ask the flight crew to stop the transmission of the ADS-B data (e.g. the air traffic controller requests "STOP ADS-B TRANSMISSION" or "STOP ADS-B ALTITUDE TRANSMISSION").
The flight crew cannot switch off the ADS-B automatic data transmission independently of the XPDR.
Therefore, do not switch off the ATC transponder or the altitude reporting, in order to maintain TCAS operations or Air Traffic Controller radar surveillance.
In such cases, the flight crew must refer to local Aeronautical Information Publication (AIP) to apply alternate procedure when the air traffic controller requests to stop ADS-B transmission.

ADS-B IN:

The ATSAW ◁ enables the reception of ADS-B information from other aircraft in the vicinity. Refer to the ATSAW section.

ENHANCED GROUND PROXIMITY WARNING SYSTEM (EGPWS)

Ident.: PRO-NOR-SUP-SURV-00020960.0004001 / 17 MAR 17
Applicable to: MSN 01767-01920, 02108, 02195, 02275-02359, 02405, 02482, 02737-02804

During climb, descent, approach and go-around phases:

- **If GPS PRIMARY ◁ is not available and FMS navigation accuracy check prevents the flight crew from using NAV mode in a phase of flight:**
  TERR pb-sw.....OFF

  Note: When the TERR pb-sw is switched OFF, the ECAM message "NAV GPWS TERR DET FAULT" is displayed.
  Only the basic GPWS modes 1 to 5 remain operative.

Intentionally left blank

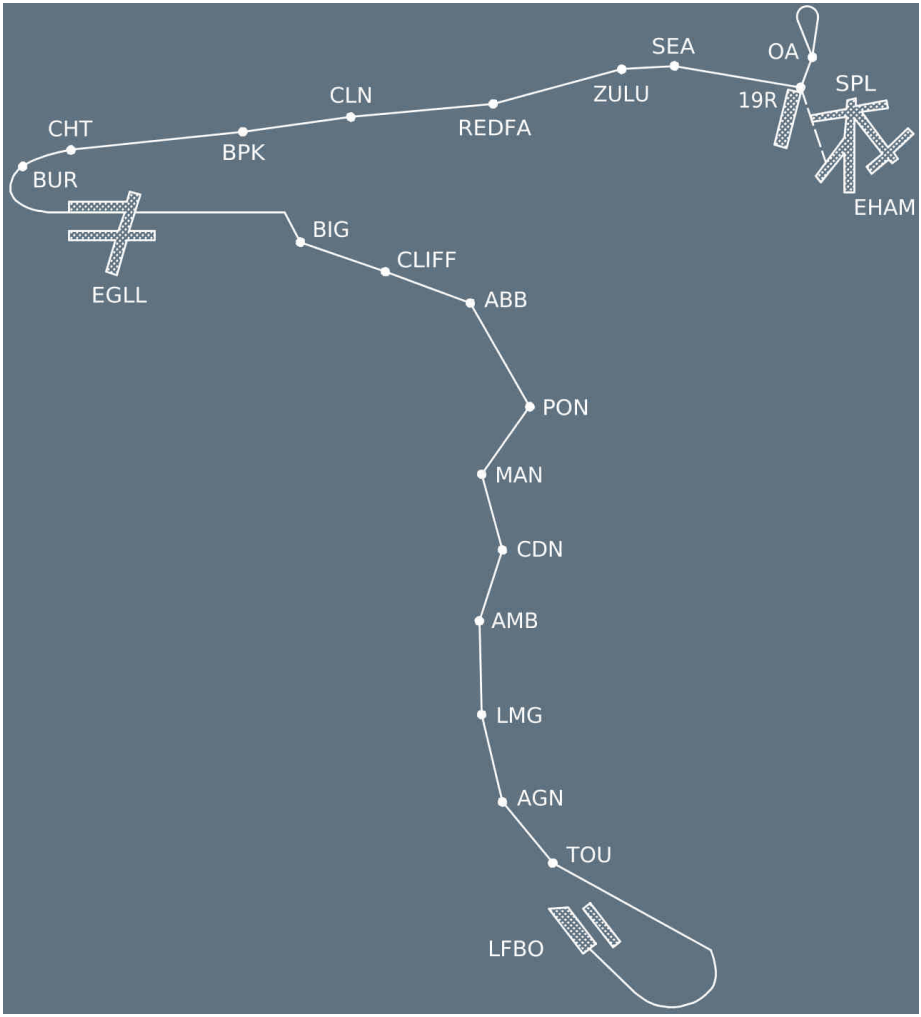
Introduction

INTRODUCTION

Ident.: PRO-NOR-SRP-01-05-00003959.0001001 / 09 OCT 12
Applicable to: ALL

Note: This chapter is an amplification of the SOP. Anytime it was feasible, the same chapters and the same titles of paragraph were retained.

The following discussion of the FMGS uses this flight plan as an example.


SEA
OA
SPL
19R
ZULU
CLN
CHT
REDFA
BPK
BUR
EHAM
BIG
EGLL
CLIFF
ABB
PON
MAN
CDN
AMB
LMG
AGN
TOU
LFBO

Cockpit Preparation

FMGS INITIALIZATION

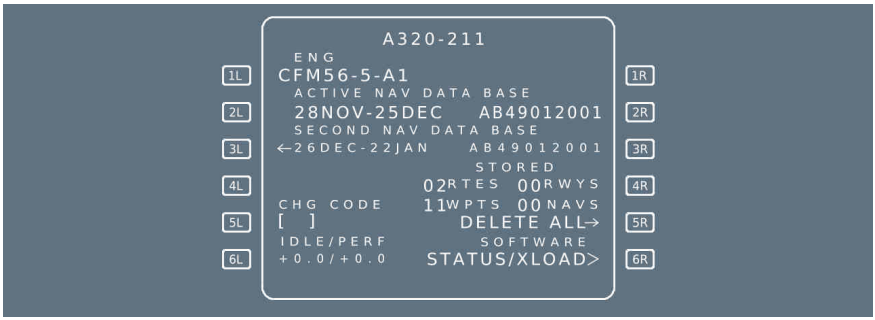
Ident.: PRO-NOR-SRP-01-10-00003960.0002001 / 22 MAY 12

[1] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

CHECKING THE CLOCK DATE

CHECK the CLOCK DATE and ADJUST, if necessary.

If the date in the active database does not match the clock date, the MCDU displays "CHECK DATA BASE CYCLE". If this message appears, check the period of validity in the second database and select it, if required.



CAUTION	*Cycling the navigation database deletes the active and secondary flight plans. Do not cycle it while airborne because doing so will delete the flight plan, eliminate all speed predictions, and blank the ND. If the aircraft is in managed speed, Green Dot becomes the speed target.*

CHECKING STORED WAYPOINTS, NAVAIDS, RUNWAYS, OR ROUTES

PRESS the DATA key.
PRESS the next page key.

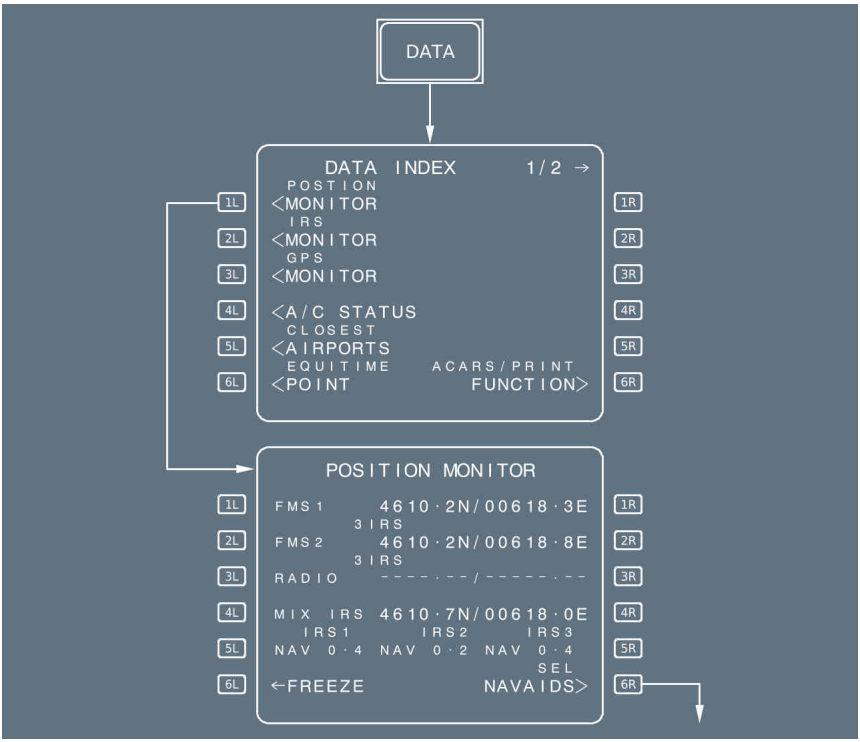
SELECT, successively, as required:
- STORED WAYPOINT
- STORED NAVAIDS
- STORED RUNWAYS
- STORED ROUTES

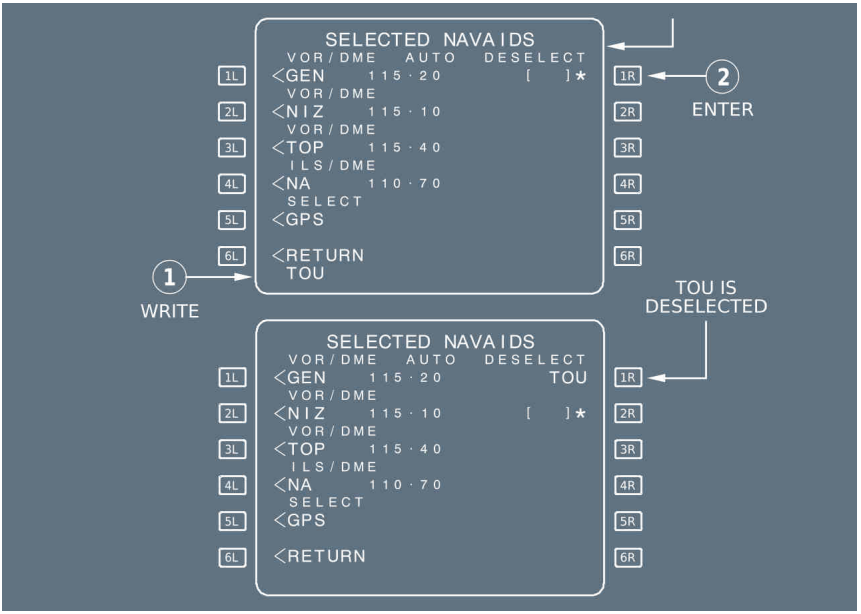
CHECK the contents of each of these data storages and DELETE items, as appropriate.

NAVAIDS DESELECTION

- **If NOTAMS indicate that selected NAVAIDs are unreliable or unserviceable, deselect them as follows:**
  PRESS the DATA key.
  SELECT the POSITION MONITOR page.
  SELECT the SELECTED NAVAIDS page.
  Under “DESELECT”, INSERT the NAVAID identifier in the brackets.

  The pilot can only make six deselections.





FMGS INITIALIZATION

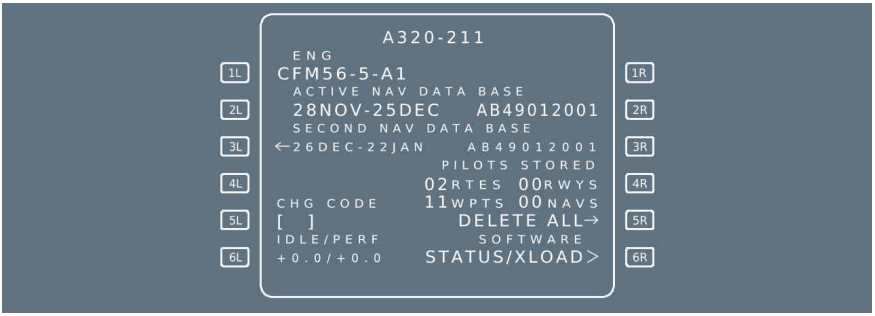
Ident.: PRO-NOR-SRP-01-10-00003960.0008001 / 22 MAY 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

CHECKING THE DATABASE CYCLE

CHECK the CLOCK DATE and ADJUST, if necessary.

If the date in the active database does not match the clock date, the MCDU displays "CHECK DATA BASE CYCLE". If this message appears, check the period of validity in the second database and select it, if required.



CAUTION	*Cycling the navigation database deletes the active and secondary flight plans. Do not cycle it while airborne because doing so will delete the flight plan, eliminate all speed predictions, and blank the ND. If the aircraft is in managed speed, Green Dot becomes the speed target.*

CHECKING PILOT'S WAYPOINTS, NAVAIDS, RUNWAYS, OR ROUTES

PRESS the DATA key.
PRESS the next page key.

SELECT, successively, as required:
- PILOTS WAYPOINTS
- PILOTS NAVAIDS
- PILOTS RUNWAYS
- PILOTS ROUTES

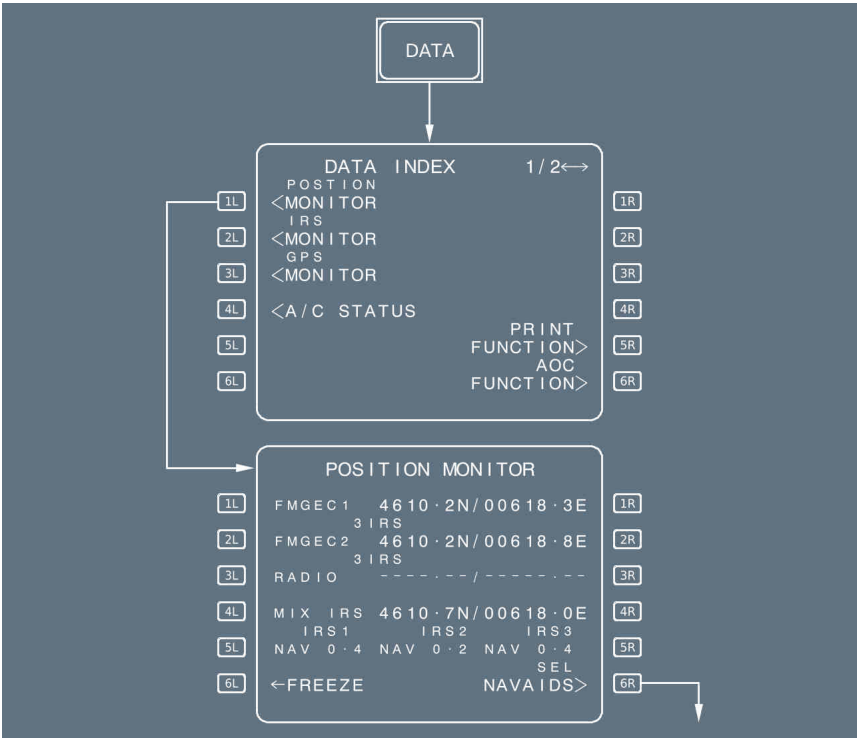
CHECK the contents of each of these data storages and DELETE items, as appropriate.

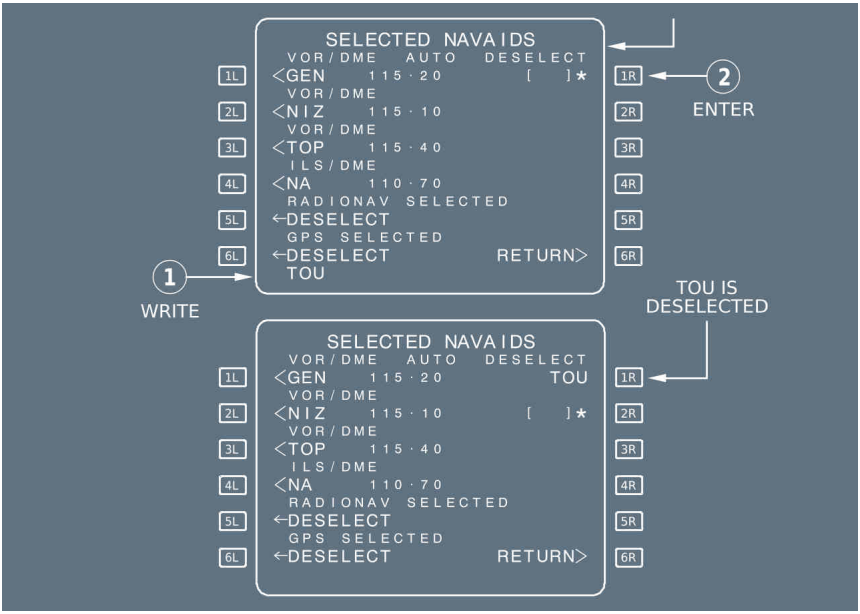
NAVAIDS DESELECTION

- **The flight crew can manually deselect all the RADIO NAVAIDs as follows:**
  PRESS the DATA key.
  SELECT the POSITION MONITOR page.
  SELECT the SELECTED NAVAIDS page.
  Press [5L] to DESELECT all the Radio NAVAIDs.

- **If NOTAMS indicate that selected NAVAIDs are unreliable or unserviceable, deselect them as follows:**
  PRESS the DATA key.
  SELECT the POSITION MONITOR page.
  SELECT the SELECTED NAVAIDS page.
  Under “DESELECT”, INSERT the NAVAID identifier in the brackets.

The flight crew can only make four deselections.





Note: *When a NAVAID is deselected, it is no more used for navigation by the FMGC during the rest of the flight. However a deselected NAVAID can still be manually tuned on the RAD NAV page and displayed on ND.*

FLIGHT PLAN INITIALIZATION

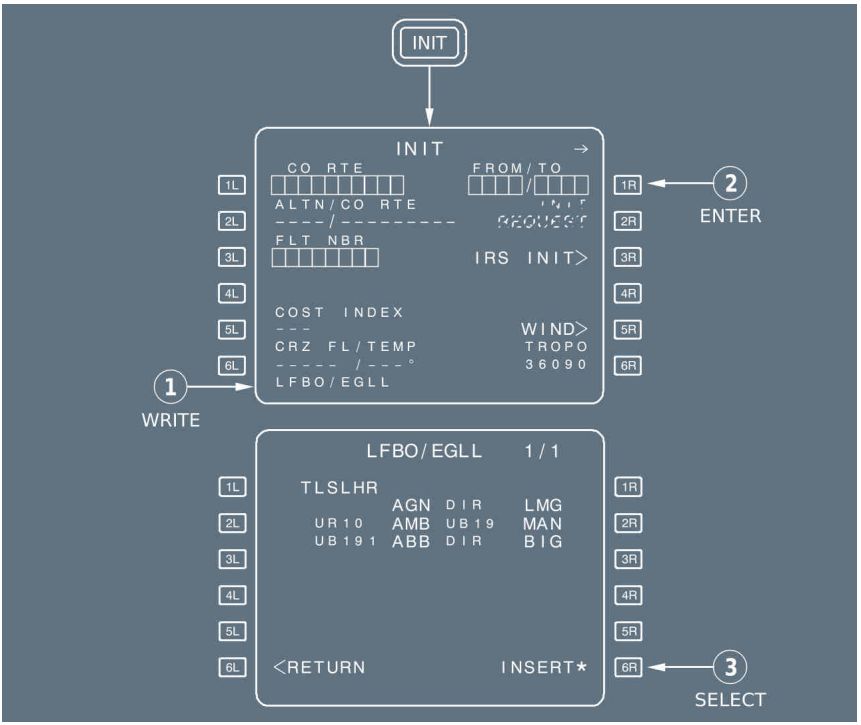
Ident.: PRO-NOR-SRP-01-10-A-00003961.0025001 / 22 MAY 12

[2] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

GENERAL

Follow SOP instructions, when the route is a company route stored in the database.

- **If the company route is unknown, proceed as follows:**



WRITE a “FROM/TO” city pair, then ENTER it:

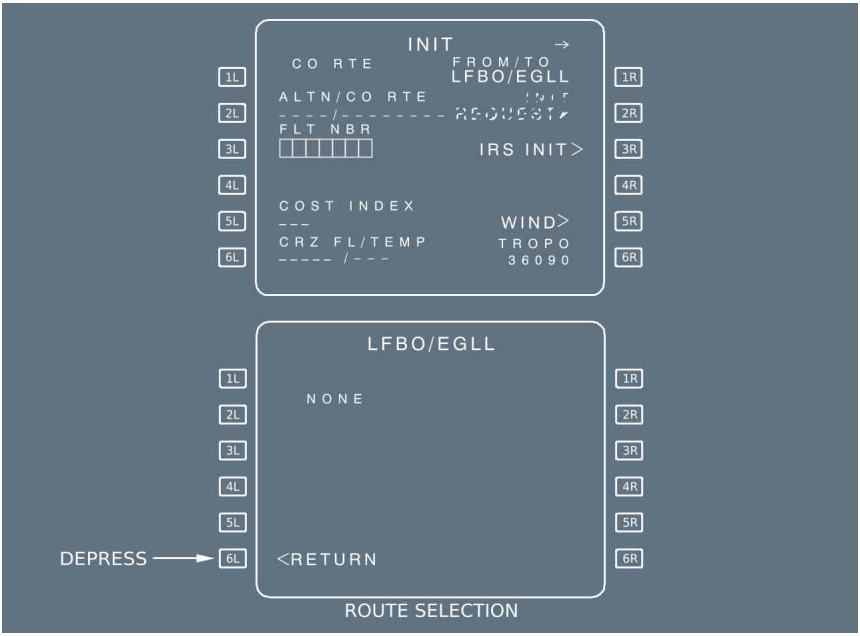
If one or more company routes run between the cities, the ROUTE SELECTION page appears and defines them.

INSERT the preferred company route.

- **If the database does not contain a company route:**

The flight plan must be constructed manually:

PRESS the INIT key
ENTER a city pair in the FROM/TO field.
The ROUTE SELECTION page comes up with “NONE”
SELECT RETURN [6L] key then construct the flight plan manually.



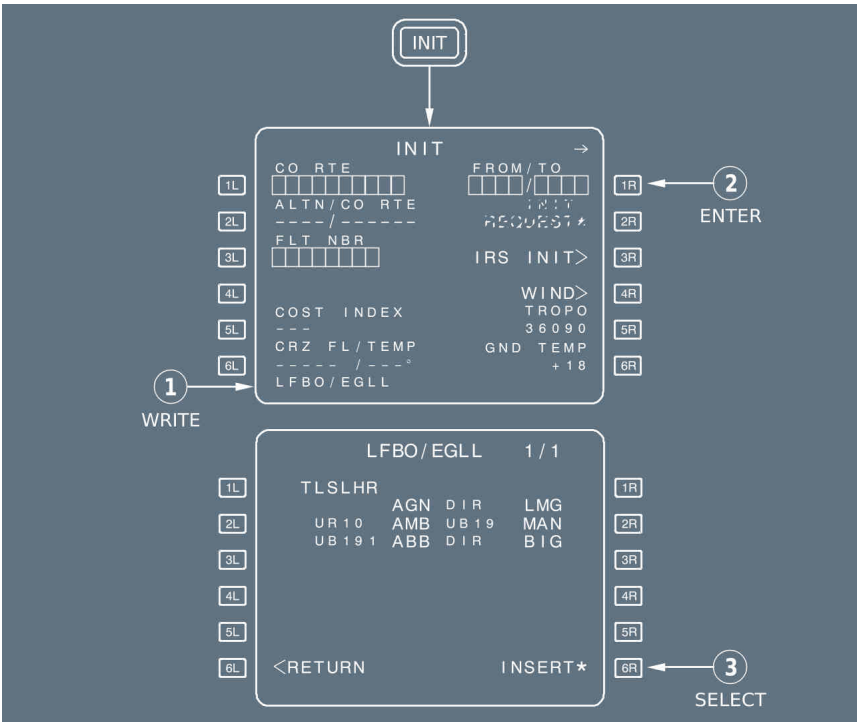
If waypoints, NAVAIDs or airports are not in the NAV database, the crew must define and store them manually, using the “data stored” function.

Ident.: PRO-NOR-SRP-01-10-A-00003961.0062001 / 22 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

GENERAL

Follow SOP instructions, when the route is a company route stored in the database.

- **If the company route is unknown, proceed as follows:**



WRITE a “FROM/TO” city pair, then ENTER it:

If one or more company routes run between the cities, the ROUTE SELECTION page appears and defines them.

INSERT the preferred company route.
Check COST INDEX.
Check/modify GND TEMP.

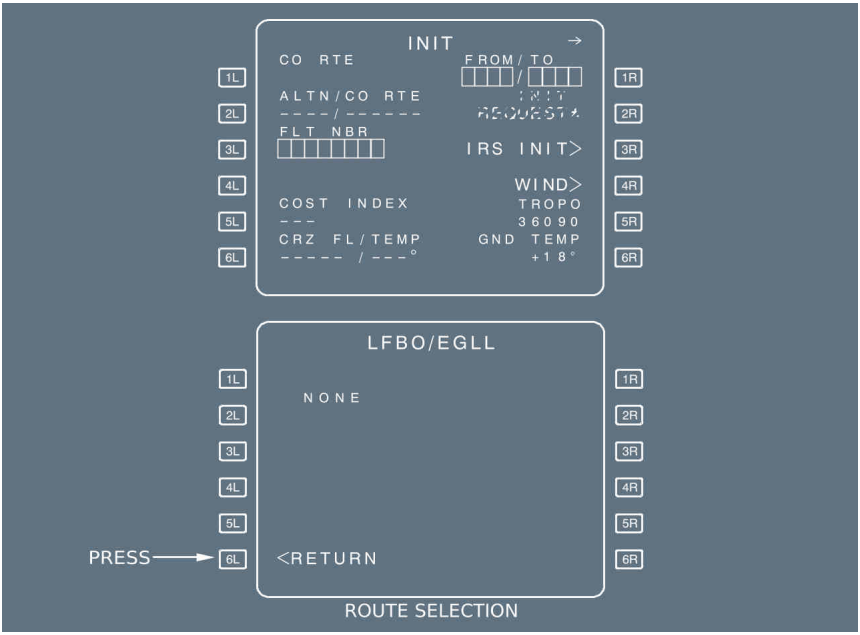
- **If the database does not contain a company route:**

The flight plan must be constructed manually:

PRESS the INIT key
ENTER a city pair in the FROM/TO field.

The ROUTE SELECTION page comes up with “NONE”

SELECT RETURN [6L] key then construct the flight plan manually.



If waypoints, NAVAIDs or airports are not in the NAV database, the crew must define and store them manually, using the “data stored” function.

Ident.: PRO-NOR-SRP-01-10-A-00003962.0037001 / 23 JUN 15
Applicable to: MSN 01767-01920, 02108, 02204-02388, 02443-02457, 02584-02914, 03264-03618, 03782-03943

ALIGNING IRS

PRESS the INIT key, and then the IRS INIT prompt.

IRS INIT page is displayed with the airport reference point as default coordinates.

If necessary, PRESS [1L] and/or [1R] and use scroll keys to adjust the latitude and/or longitude values.

For example, this can be used to enter the gate precise coordinates when the aircraft is intended to fly without GPS on long segments without radio coverage.

PRESS the ALIGN ON REF prompt and CONFIRM ALIGN* prompt.

The displayed coordinates are sent to ADIRS for initialization.
The alignment status changes to ALIGNING ON REF.

- **If the "CHECK IRS/AIRPORT POS" or "REF/GPS POS DIF" or "REF/LAST IRS POS DIF" message is displayed:**
  CHECK the departure airport on INIT A page and CORRECT it if necessary.
  REALIGN the IRS per the procedure described previously.
- **If a new FROM or a new CO RTE is entered after IRS alignment is already completed, the ALIGN ON REF prompt is displayed in [6R]:**
  REALIGN the IRS per the procedure described previously.

Ident.: PRO-NOR-SRP-01-10-A-00003962.0046001 / 23 JUN 15

[3] **Applicable to: MSN 01957-02097, 02121-02195, 02405, 02482, 03071-03138, 03750, 04008-09063**

ALIGNING IRS

The alignment phase is completed, when the ADIRS is initialized to an appropriate position. If the GPS is available, initialization is automatic, using the GPS position. Flight crew intervention is not necessary.
However, automatic initialization may be manually overriden by flight crew entry, at any moment during the alignment phase. In this case, perform the following procedure as soon as possible, to prevent delays if an alignment error occurs:

PRESS the INIT key, and then the IRS INIT prompt.

IRS INIT page is displayed with the airport reference point as default coordinates.

If necessary, PRESS [1L] and/or [1R] and use scroll keys to adjust the latitude and/or longitude values.

For example, this can be used to enter the gate precise coordinates when the aircraft is intended to fly without GPS on long segments without radio coverage.

PRESS the ALIGN ON REF prompt and CONFIRM ALIGN* prompt.

The displayed coordinates are sent to ADIRS for initialization.
The alignment status changes to ALIGNING ON REF.

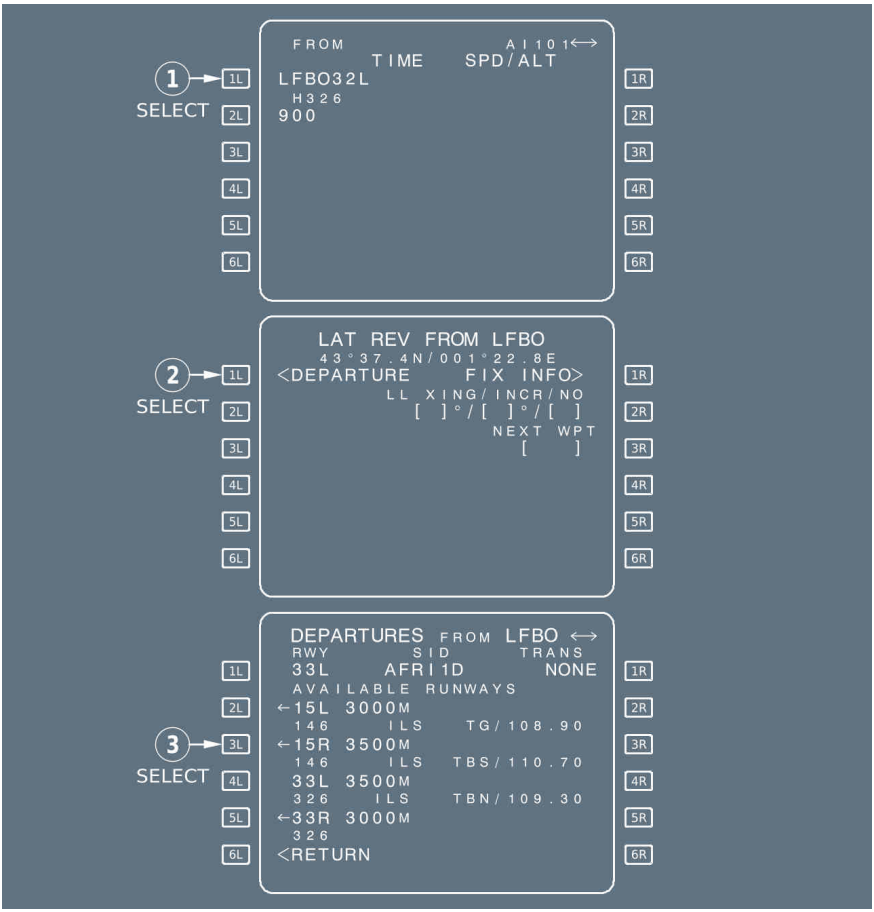
- **If the "CHECK IRS/AIRPORT POS" or "REF/GPS POS DIF" or "REF/LAST IRS POS DIF" message is displayed:**
  CHECK the departure airport on INIT A page and CORRECT it if necessary.
  REALIGN the IRS per the procedure described previously.
- **If a new FROM or a new CO RTE is entered after IRS alignment is already completed, the ALIGN ON REF prompt is displayed in [6R]:**
  REALIGN the IRS per the procedure described previously.

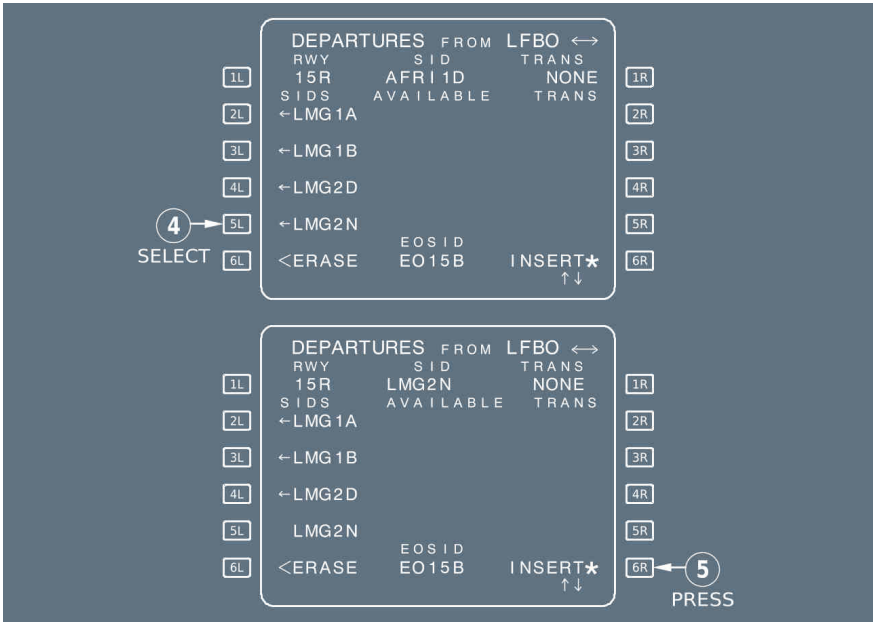
Ident.: PRO-NOR-SRP-01-10-A-00003963.0010001 / 22 MAY 12

4 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

LATERAL FLIGHT PLAN

SELECTING A DEPARTURE





You may use the "NEXT PAGE" ⏩, or the "←" or "→" keys to gain access to the listings of runways, SIDs, and transitions.

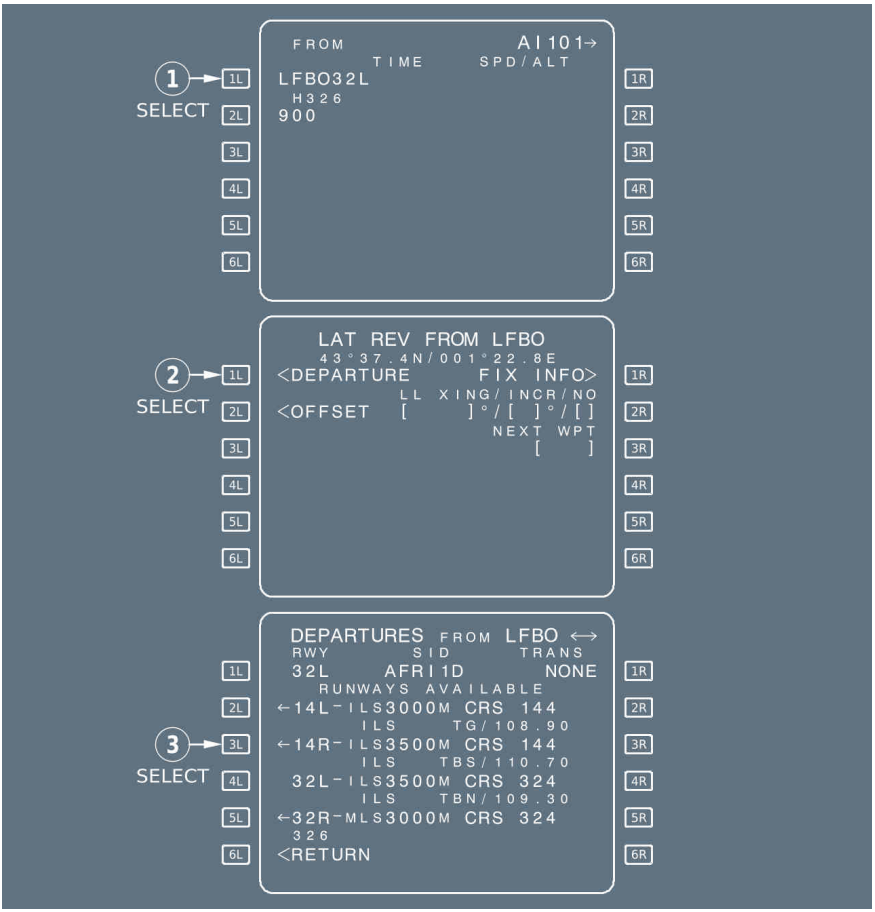
Procedure

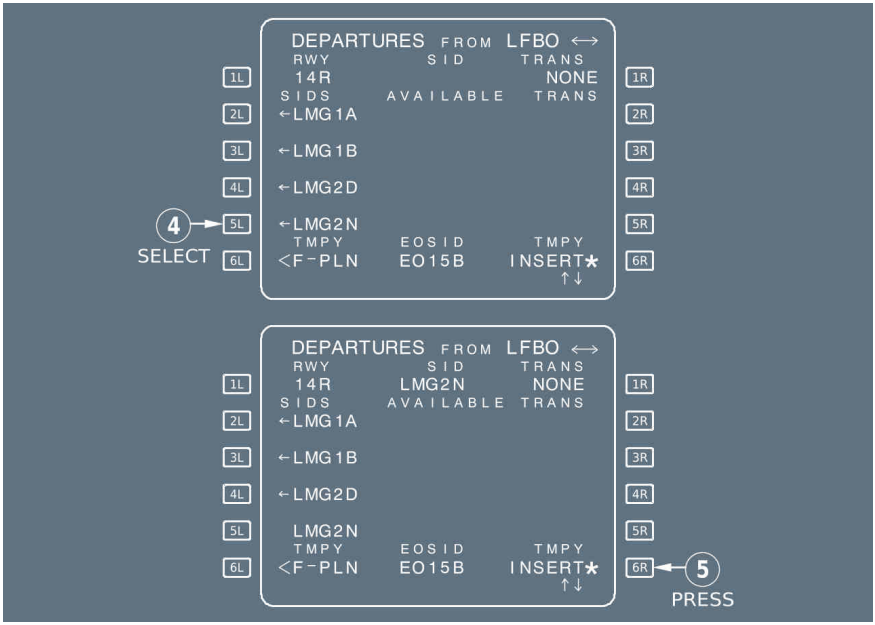
PRESS the F-PLN key on MCDU
SELECT the DEPARTURE prompt [1L] key
SELECT the RWY in USE, SID and TRANS
CHECK the resulting temporary F-PLN
If it is correct, INSERT it using [6R] key.
If it is not correct, ERASE it using [6L] key.

Ident.: PRO-NOR-SRP-01-10-A-00003963.0026001 / 22 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

LATERAL FLIGHT PLAN

SELECTING A DEPARTURE





You may use the "←" or "→" keys to gain access to the listings of runways, or the one of SIDs, and transitions.

Procedure

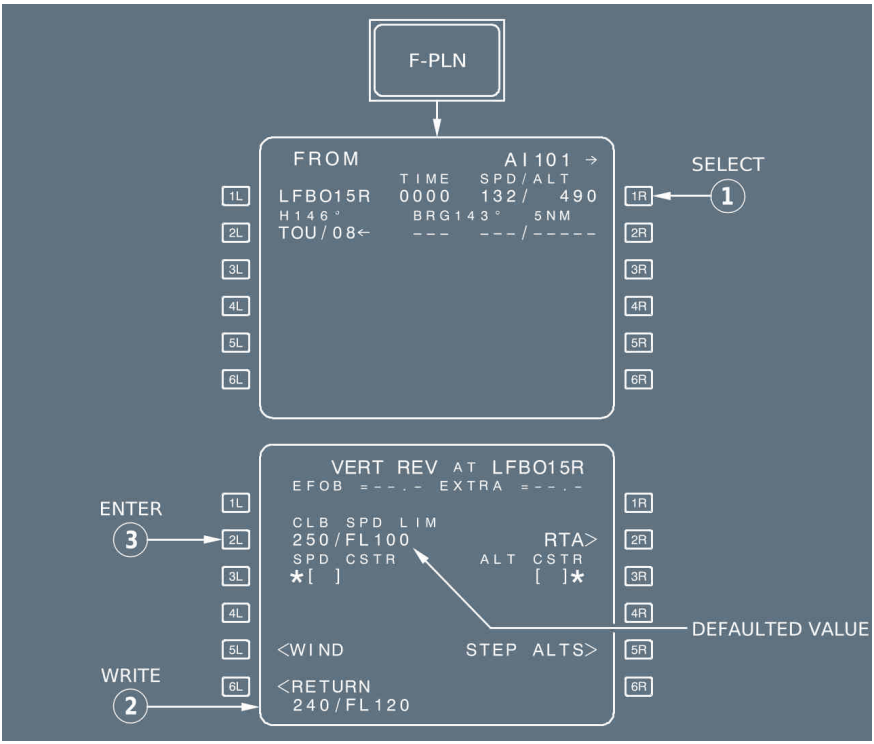
PRESS the F-PLN key on MCDU
SELECT the DEPARTURE prompt [1L] key
SELECT the RWY in USE, SID and TRANS
CHECK and INSERT the TMPY F-PLN or continue with next revision.

Ident.: PRO-NOR-SRP-01-10-A-00003964.0004001 / 22 MAY 12

5 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

VERTICAL FLIGHT PLAN

ENTERING/MODIFYING A SPEED LIMIT

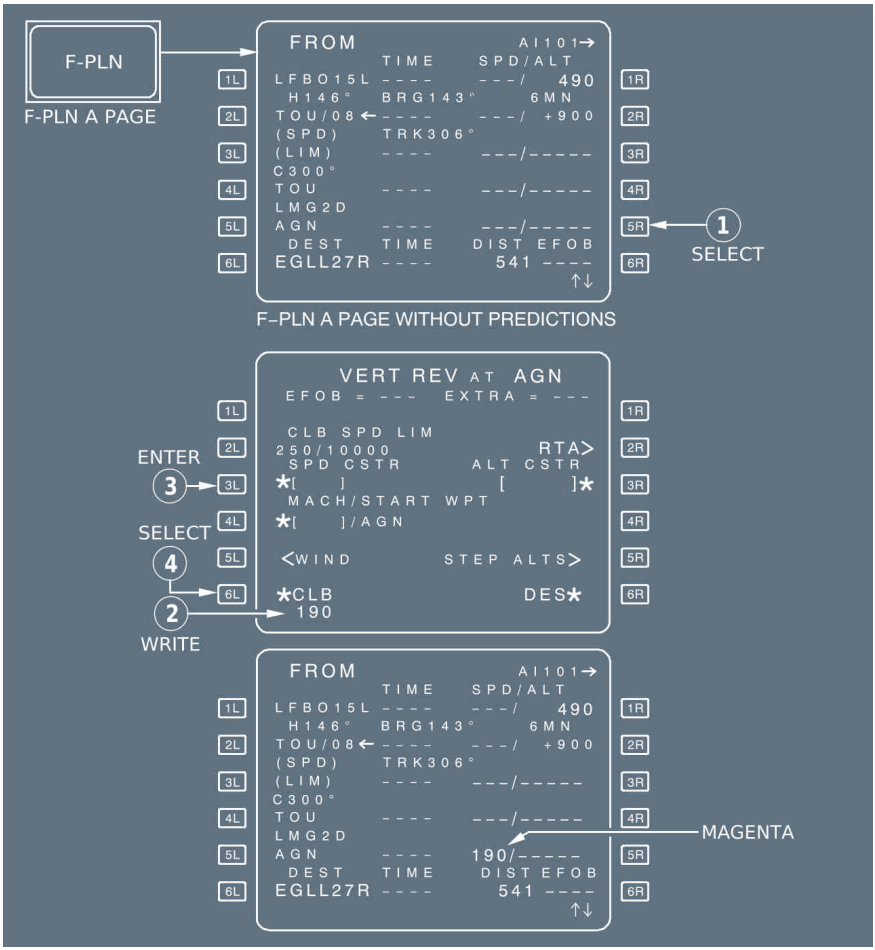


PRESS the F-PLN key on the MCDU.
SELECT VERTICAL REVISION at the FROM waypoint.
WRITE a new speed limit/altitude and ENTER.

The crew can insert one climb speed limit and one descent speed limit into the vertical flight plan, or modify or clear the limits that are already in it.
The speed limit is defined by a speed and an altitude (for example, 230/9 000), which means that the managed speed target will be limited by the speed limit when the aircraft flies below the specified altitude.

In both climb and descent, 250 kt at 10 000 ft is the default speed limit in the vertical flight plan.
The vertical revision page presents the climb speed (CLB SPD) limit if the revised waypoint is between departure and top of descent.
The vertical revision page shows the descent speed (DES SPD) limit, if the revised waypoint is between top of descent and destination.
It can be deleted by a clear action, the field reverts to brackets. It can also be cleared directly on the F-PLN A page by clearing the SPD LIM pseudo-waypoint.

ENTERING A SPEED CONSTRAINT



Procedure

PRESS the F-PLN key on the MCDU.
SELECT the VERT REV page at the revised waypoint.
WRITE the speed constraint value into the scratchpad and ENTER it in 3L.
INSERT the constraint using the appropriate *CLB or DES* prompt when displayed. If CLB and DES are not displayed, insertion occurs when the value is entered in 3L.

The system displays the climb (CLB) or the descent (DES) prompt at [6L] or [6R] when the predictions are not yet available or when the waypoint is part of the cruise phase as originally defined.
When predictions are not yet available, the constraints are displayed on the F-PLN A page in magenta.

When predictions are available, the speed constraint is highlighted by a star (*).
** If the predicted speed matches the constraint, the star is magenta.*
** If the prediction is that the aircraft will miss the speed constraint, the star is amber.*
If a speed constraint cannot be met (by more than 10 kt), the FMGS generates the message "SPD ERROR AT WPT XX".

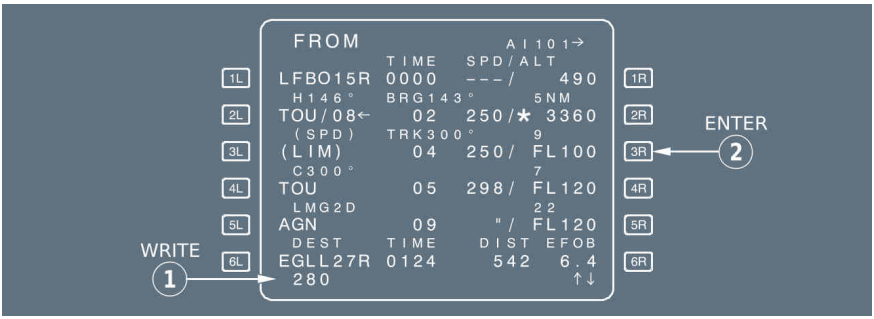
A speed constraint may be assigned to any waypoint in the climb or the descent phase except the FROM, origin, or destination waypoints, and any pseudo waypoint.

When a speed constraint is assigned to a waypoint, the constraint will limit the managed speed target as follows:
- *In takeoff or climb phase until you pass the constrained waypoint.*
- *In descent an approach phase, after passing the constrained waypoint.*

Speed constraints are observed by the FMGS when NAV mode and speed managed are active.

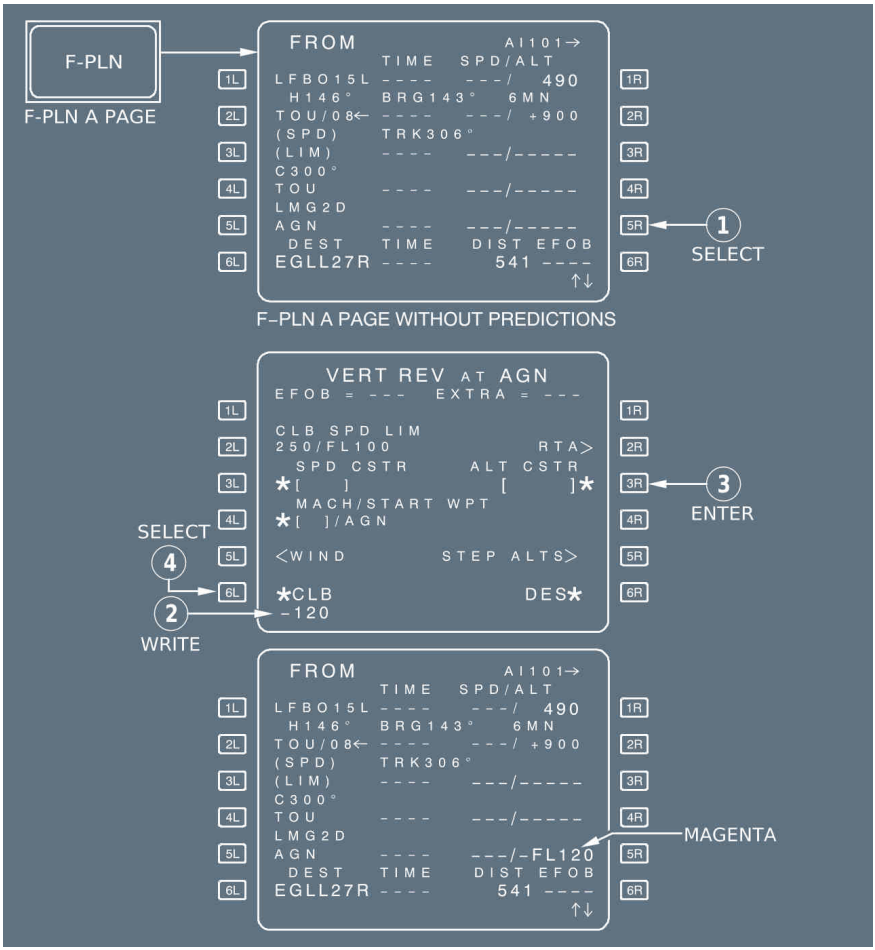
ENTERING A SPEED CONSTRAINT THROUGH F-PLN A PAGE

You may also enter a speed constraint through the F-PLN A page.



Note: *You may delete the constraint using the clear key on the relevant right hand key. However if there is an altitude constraint assigned at that point, the clear action deletes it too.*

ENTERING AN ALTITUDE CONSTRAINT



Procedure

PRESS the F-PLN key on the MCDU.

SELECT the "VERT REV" page at the revised waypoint.
WRITE an altitude constraint in the scratchpad and ENTER it in 3R.
INSERT the constraint using *CLB or DES* prompt when it is displayed. Otherwise the value is inserted when it is entered in 3R field.

*The system displays the *CLB or DES* prompt, when the predictions are not yet available, or when the waypoint is part of the cruise phase as originally defined.*

Note: *In case of QFE operations, the altitude constraints must be converted and entered as an altitude in feet.*

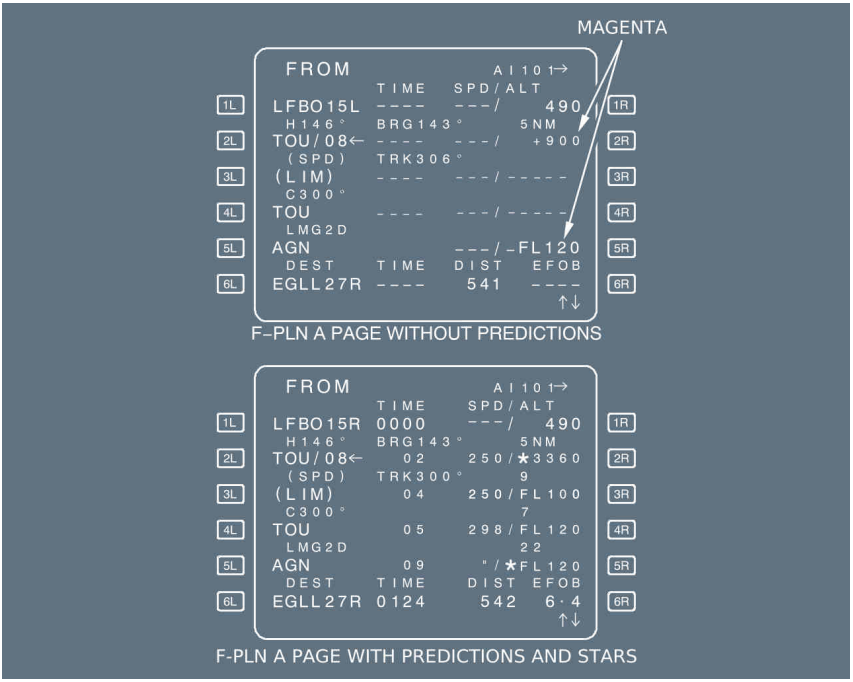
You or the database may assign an altitude constraint to any waypoint in the climb or descent phases except the FROM, origin, or destination waypoints, or any pseudo waypoint.
An altitude constraint may be defined as an "at", an "at or above", or an "at or below" constraint. In certain procedures, the database may define an altitude constraint as a window in which the aircraft should fly.

Enter "AT" constraints with no sign.
Enter "AT or ABOVE" constraints preceded by a + sign (+FL 130, for example).
Enter "AT or BELOW" constraints preceded by a – sign (-15 000, for example).
enter four or five-digit number when entering altitude. Include the lead zero (0 500 ft , for example).

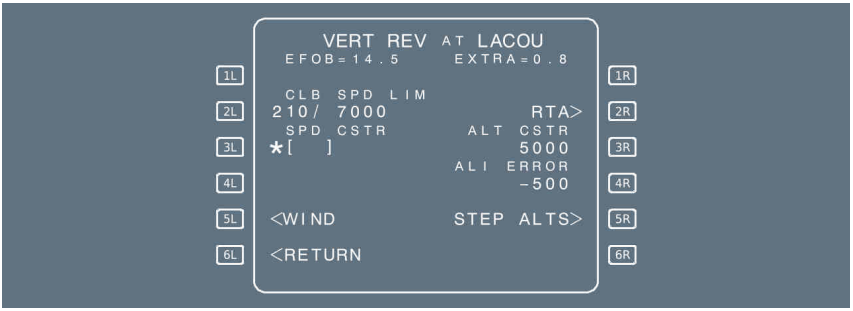
For flight level, enter a two- or three-digit number, with or without the letters "FL". The lead zero is optional. (Examples : +FL 120 or +120 ; -FL 090 or -90 or -090)

Enter the altitude value as either altitude or flight level ; the MCDU displays the selected value as an "ALT" or "FL," as appropriate for the transition altitude.

The constraint must be higher than the thrust reduction altitude and lower than the cruise flight level.
Once inserted in the flight plan, the altitude constraint (ALT CSTR) is displayed in magenta as long as predictions are not available.
When predictions are available, the altitude constraints are replaced by the predicted altitude at relevant waypoints highlighted by a star.
** If the predicted altitude matches the constraint the star is magenta. If the predicted altitude is missed (by more than 250 ft), the star is amber.*



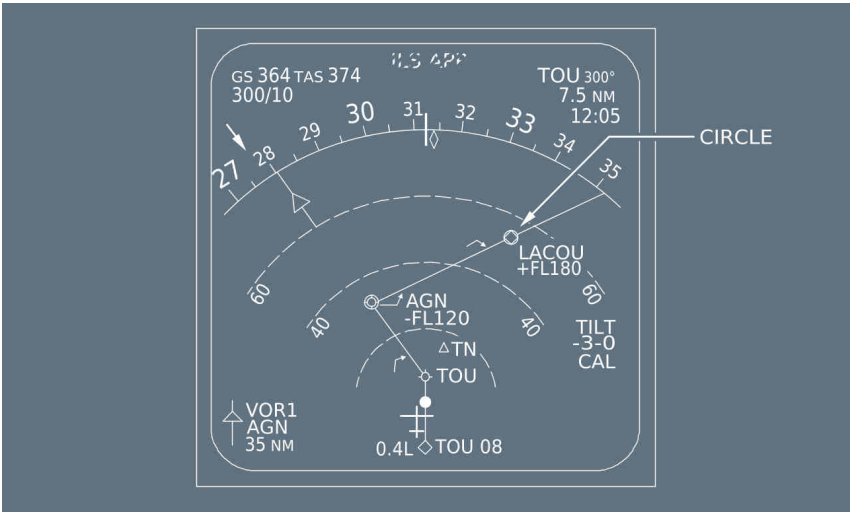
The vertical revision page displays “ALT ERROR”, along with the difference between the constraint and the predicted altitude at the revised waypoint.



ND Display

An altitude-constrained waypoint is marked by a circle (◯) on the navigation display.

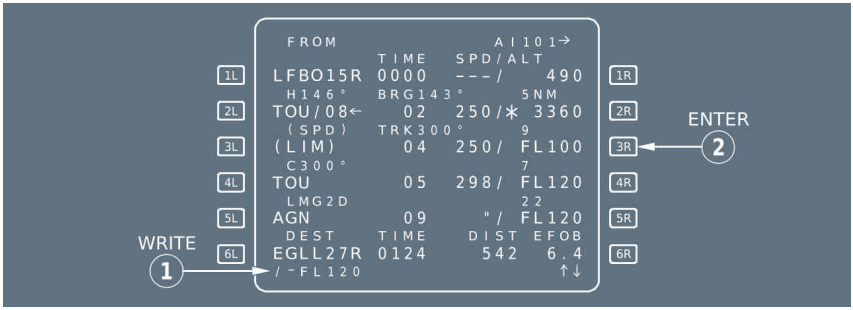
This circle is white when the guidance does not take the altitude constraint into account. It is magenta if the guidance system takes the altitude constraint into account and predicts that it will be matched.
It is amber if the guidance system takes the altitude constraint into account and predicts that it will not be matched.



The aircraft should be at or below FL 120 at AGN and above FL 180 at LACOU.

Entering an Altitude Constraint Through F-PLN A Page

The pilot may also enter an altitude constraint directly through the F-PLN A page.
When entering the value into the scratchpad do not forget the slash e.g. /-120 or /-FL 120.
If the slash is omitted the value will be considered as a speed constraint if it is within the range value.



Use CLR to delete them directly from the flight plan page, as well. However, if there is also a speed constraint assigned at that waypoint, the clear action deletes it too.

ENTERING AN ESTIMATED TIME OF TAKEOFF (ETT)

In Preflight Phase:

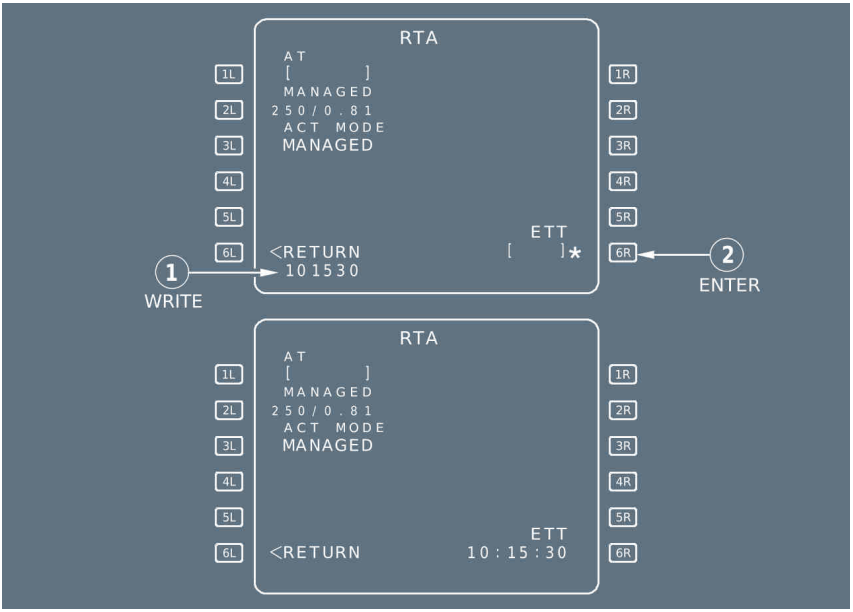
SELECT the SEC F-PLN key on the MCDU.
SELECT a VERT REV at any waypoint.
SELECT the Required Time of Arrival (RTA) prompt (2R).

The MCDU displays the RTA page.

ENTER the Estimated Takeoff Time in the [6R] field.

The format is HHMMSS (entry of seconds is not mandatory).

ENTER it in the 6R field



If the aircraft has not taken off by the time entered as estimated takeoff time, the MCDU displays the “CLK IS TAKE OFF TIME” message, meaning that the system will replace your estimated takeoff time with the actual time.

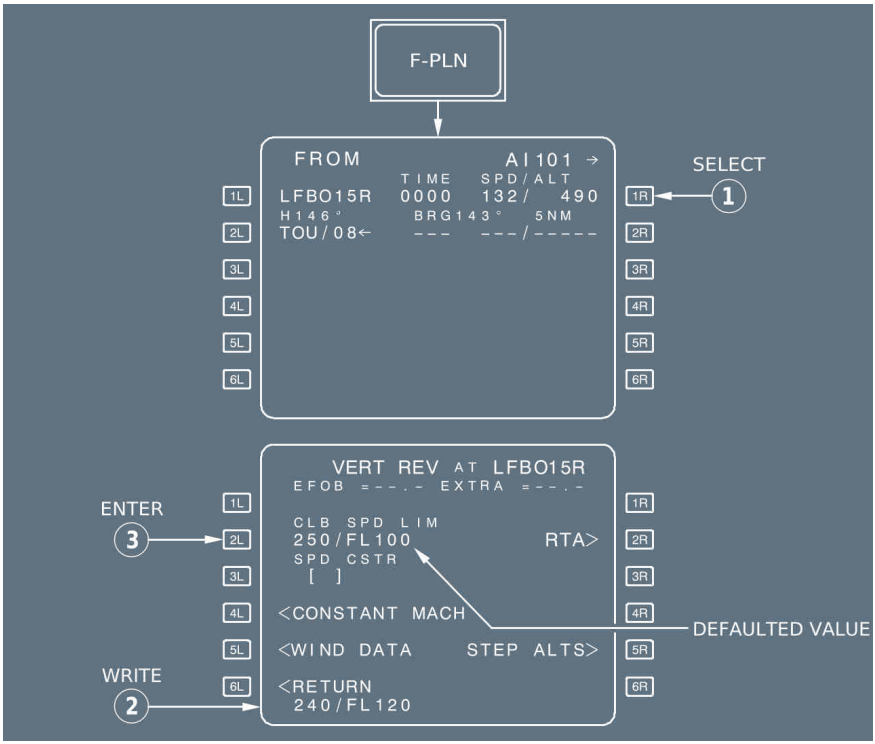
When beginning the takeoff roll, the system automatically adopts that clock time as the takeoff time.

If the origin airport is changed, or the clock time is invalid, the system automatically deletes the estimated takeoff time.

Ident.: PRO-NOR-SRP-01-10-A-00003964.0039001 / 22 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

VERTICAL FLIGHT PLAN

ENTERING/MODIFYING A SPEED LIMIT



PRESS the F-PLN key on the MCDU.
SELECT VERTICAL REVISION at the FROM waypoint.
WRITE a new speed limit/altitude and ENTER.

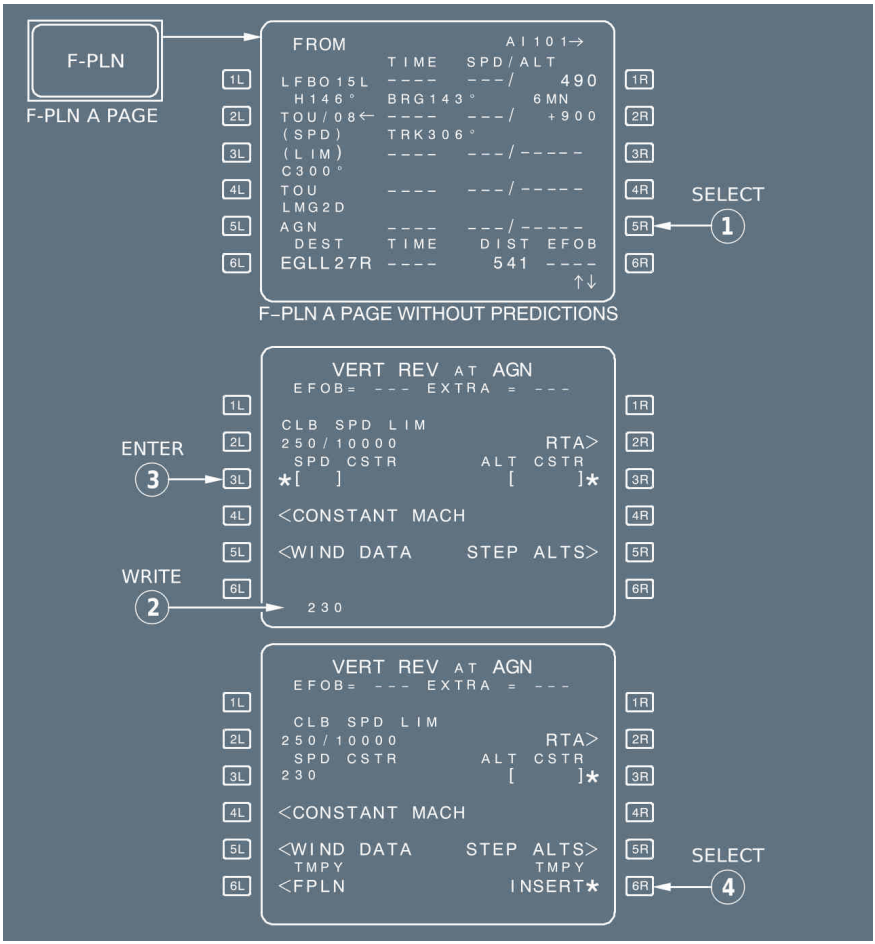
The crew can insert one climb speed limit and one descent speed limit into the vertical flight plan, or modify or clear the limits that are already in it.
The speed limit is defined by a speed and an altitude (for example, 230/9 000), which means that the managed speed target will be limited by the speed limit when the aircraft flies below the specified altitude.

In both climb and descent, 250 kt at 10 000 ft is the default speed limit in the vertical flight plan.
The vertical revision page presents the climb speed (CLB SPD) limit if the revised waypoint is between departure and top of descent.
The vertical revision page shows the descent speed (DES SPD) limit, if the revised waypoint is between top of descent and destination.
It can be deleted by a clear action, the field reverts to brackets. It can also be cleared directly on the F-PLN A page by clearing the SPD LIM pseudo-waypoint.

CHECK and INSERT the TMPY F-PLN or continue with next revision.

Note: *The speed limit cannot be cleared in the temporary flight plan. If the crew inadvertly tries to clear the SPD LIM in the TMPY F-PLN, the message "NOT ALLOWED" is displayed in the scratchpad.*

ENTERING A SPEED CONSTRAINT



Procedure

PRESS the F-PLN key on the MCDU.
SELECT the VERT REV page at the revised waypoint.
WRITE the speed constraint value into the scratchpad and ENTER it in 3L.
CHECK and INSERT the TMPY F-PLN or continue with next revision.

Note: A speed constraint can also be entered directly on F-PLN page, without using VERT REV page.

When predictions are not yet available, the constraints are displayed on the F-PLN A page in magenta.

When predictions are available, the speed constraint is highlighted by a star (*).
** If the predicted speed matches the constraint, the star is magenta.*
** If the prediction is that the aircraft will miss the speed constraint, the star is amber.*
If a speed constraint cannot be met (by more than 10 kt), the FMGS generates the message "SPD ERROR AT WPT XX".

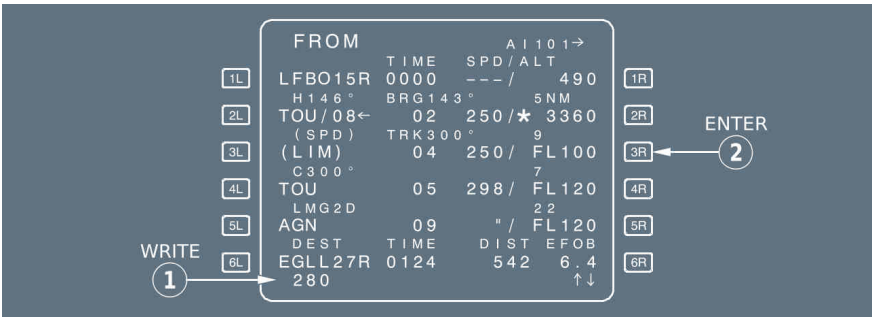
A speed constraint may be assigned to any waypoint in the climb or the descent phase except the FROM, origin, or destination waypoints, and any pseudo waypoint.

When a speed constraint is assigned to a waypoint, the constraint will limit the managed speed target as follows:
- *In takeoff or climb phase until you pass the constrained waypoint.*
- *In descent an approach phase, after passing the constrained waypoint.*

Speed constraints are observed by the FMGS when NAV mode and speed managed are active.

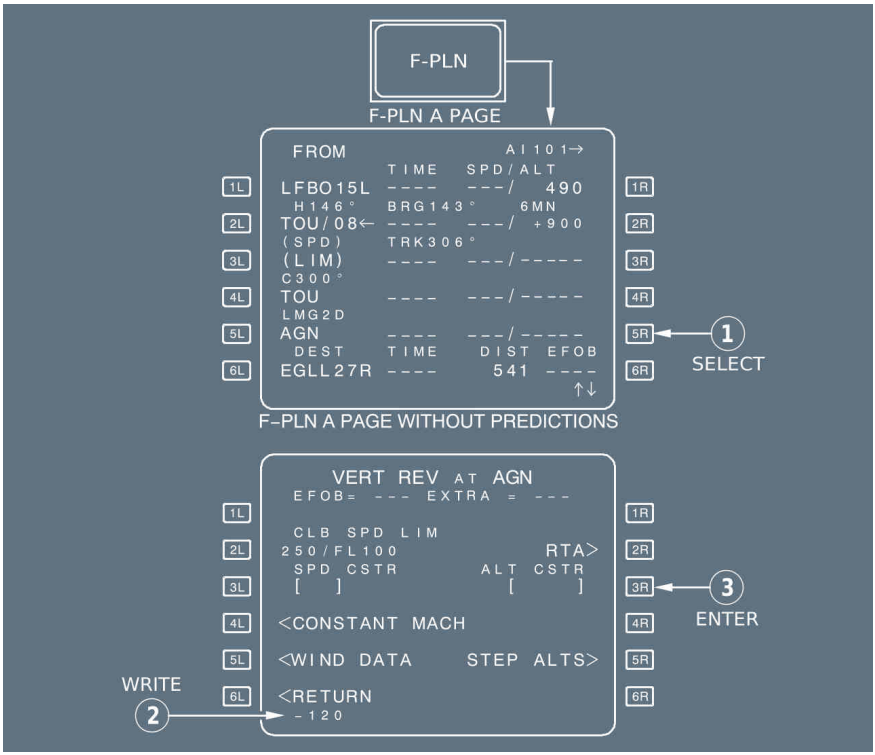
ENTERING A SPEED CONSTRAINT THROUGH F-PLN A PAGE

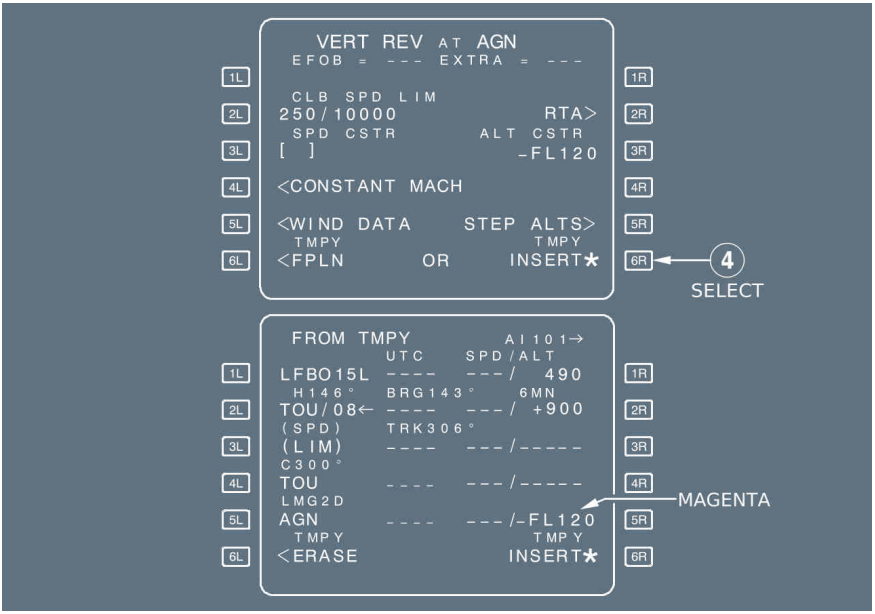
You may also enter a speed constraint through the F-PLN A page.



Note: You may delete the constraint using the clear key on the relevant right hand key. However if there is an altitude constraint assigned at that point, the clear action deletes it too.

ENTERING AN ALTITUDE CONSTRAINT





Procedure

PRESS the F-PLN key on the MCDU.
SELECT the "VERT REV" page at the revised waypoint.
WRITE an altitude constraint in the scratchpad and ENTER it in 3R.
If ← CLB and DES → prompt are displayed, SELECT the type of constraint.

The system displays the ← CLB or DES → prompt, when the predictions are not yet available, or when the waypoint is part of the cruise phase as originally defined.

CHECK and INSERT the TMPY F-PLN or continue with next revision

Note: *1. In case of QFE operations, the altitude constraints defined in heights (QFE) must be converted and entered in the FMS as altitudes (QNH).*
2. An altitude constraint can also be entered directly on F-PLN page, without using VERT REV page.

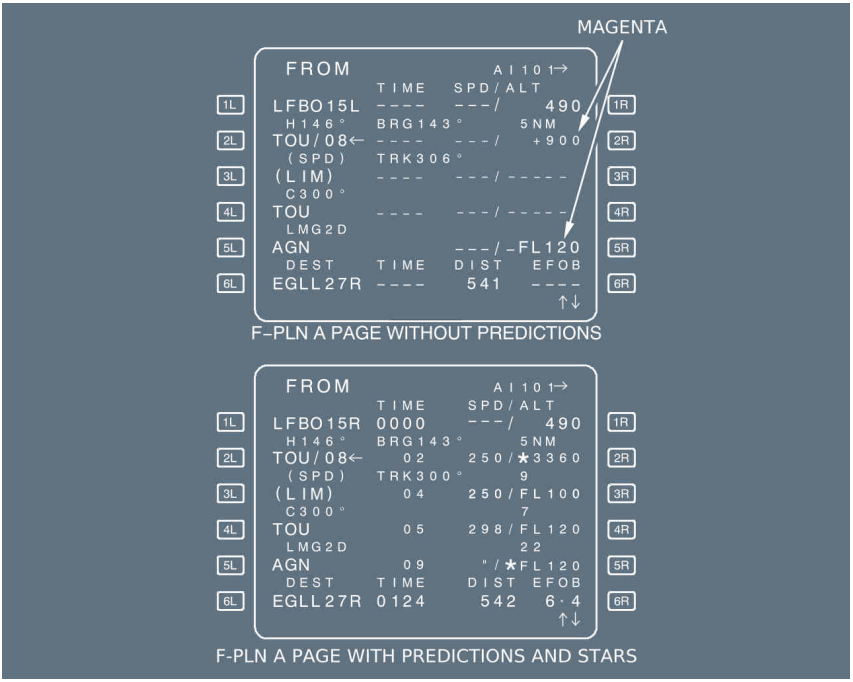
You or the database may assign an altitude constraint to any waypoint in the climb or descent phases except the FROM, origin, or destination waypoints, or any pseudo waypoint.
An altitude constraint may be defined as an "at", an "at or above", or an "at or below" constraint. In certain procedures, the database may define an altitude constraint as a window in which the aircraft should fly.

Enter “AT” constraints with no sign.
Enter “AT or ABOVE” constraints preceded by a + sign (+FL 130, for example).
Enter “AT or BELOW” constraints preceded by a – sign (-15 000, for example).
enter four or five-digit number when entering altitude. Include the lead zero (0 500 ft , for example).

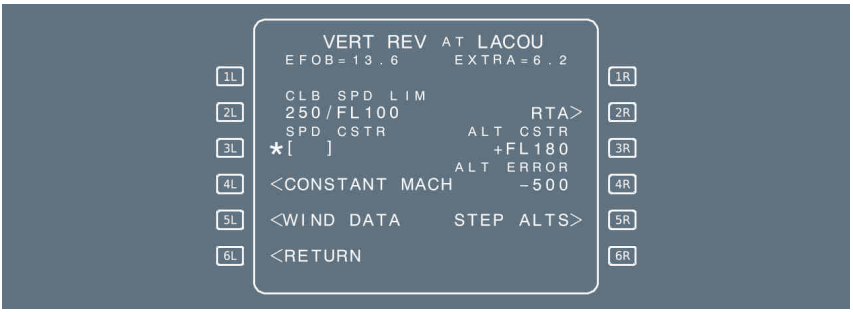
For flight level, enter a two- or three-digit number, with or without the letters “FL”. The lead zero is optional. (Examples : +FL 120 or +120 ; -FL 090 or -90 or -090)

Enter the altitude value as either altitude or flight level ; the MCDU displays the selected value as an “ALT” or “FL,” as appropriate for the transition altitude.

The constraint must be higher than the thrust reduction altitude and lower than the cruise flight level.
Once inserted in the flight plan, the altitude constraint (ALT CSTR) is displayed in magenta as long as predictions are not available.
When predictions are available, the altitude constraints are replaced by the predicted altitude at relevant waypoints highlighted by a star.
** If the predicted altitude matches the constraint the star is magenta. If the predicted altitude is missed (by more than 250 ft), the star is amber.*



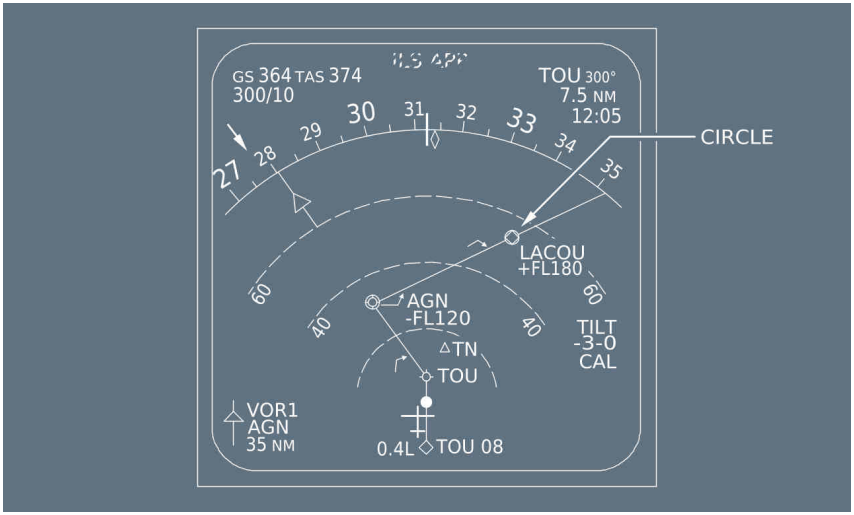
The vertical revision page displays “ALT ERROR”, along with the difference between the constraint and the predicted altitude at the revised waypoint.



ND Display

An altitude-constrained waypoint is marked by a circle (◯) on the navigation display.

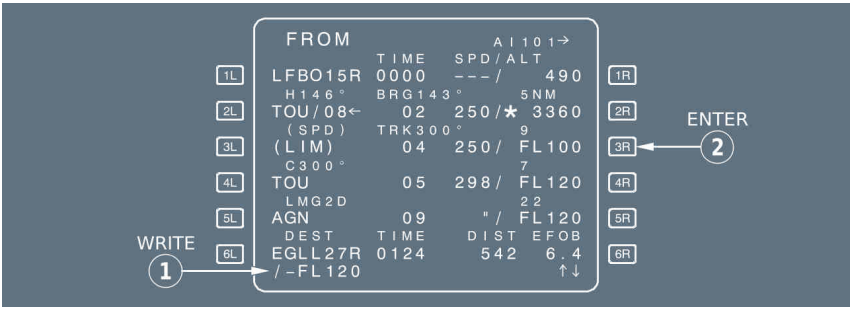
This circle is white when the guidance does not take the altitude constraint into account. It is magenta if the guidance system takes the altitude constraint into account and predicts that it will be matched.
It is amber if the guidance system takes the altitude constraint into account and predicts that it will not be matched.



The aircraft should be at or below FL 120 at AGN and above FL 180 at LACOU.

Entering an Altitude Constraint Through F-PLN A Page

The pilot may also enter an altitude constraint directly through the F-PLN A page.
When entering the value into the scratchpad do not forget the slash e.g. /-120 or /-FL 120.
If the slash is omitted the value will be considered as a speed constraint if it is within the range value.



Use CLR to delete them directly from the flight plan page, as well. However, if there is also a speed constraint assigned at that waypoint, the clear action deletes it too.

ENTERING AN ESTIMATED TAKEOFF TIME (ETT)

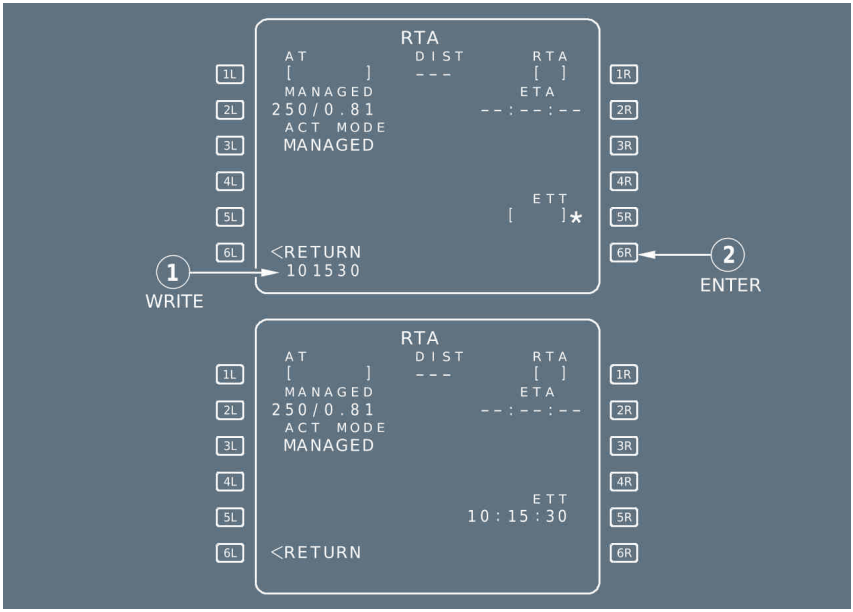
In Preflight Phase:

SELECT the SEC F-PLN key on the MCDU.
SELECT a VERT REV at any waypoint.
SELECT the Required Time of Arrival (RTA) prompt (2R).

The MCDU displays the RTA page.

ENTER the Estimated Takeoff Time in the [5R] field.

The format is HHMMSS (entry of seconds is not mandatory).



If the aircraft has not taken off by the time entered as estimated takeoff time, the MCDU displays the "CLK IS TAKE OFF TIME" message, meaning that the system will replace your estimated takeoff time with the actual time.
When beginning the takeoff roll, the system automatically adopts that clock time as the takeoff time.
If the origin airport is changed, or the clock time is invalid, the system automatically deletes the estimated takeoff time.

Ident.: PRO-NOR-SRP-01-10-A-00003965.0001001 / 15 FEB 11
Applicable to: ALL

FLIGHT PLAN CHECK

CHECK the EOSID on the ND plan mode (yellow line).

Note: *If the details of the EOSID require review, select the EOSID as a TMPY F-PLN and review it as TMPY. Then ERASE it.*

Ident.: PRO-NOR-SRP-01-10-A-00003966.0001001 / 09 DEC 09
Applicable to: ALL

SECONDARY F-PLN

For details : *Refer to DSC-22_20-60-50 Secondary Flight Plan*.

Ident.: PRO-NOR-SRP-01-10-A-00003967.0001001 / 15 FEB 11
Applicable to: ALL

RADIO NAV

Whenever a NAVAID IDENT is correctly decoded, in agreement with that published, no audio check is necessary.
Morse decoding is displayed on the ND for VOR/DME, VOR/TAC, DME, ADF, and on the PFD for ILS.
Preferably use the identifier for NAVAID entry.
If the ADF IDENT is not in the database, be sure to include a decimal point when tuning the frequency (e.g 315. or 325.7).

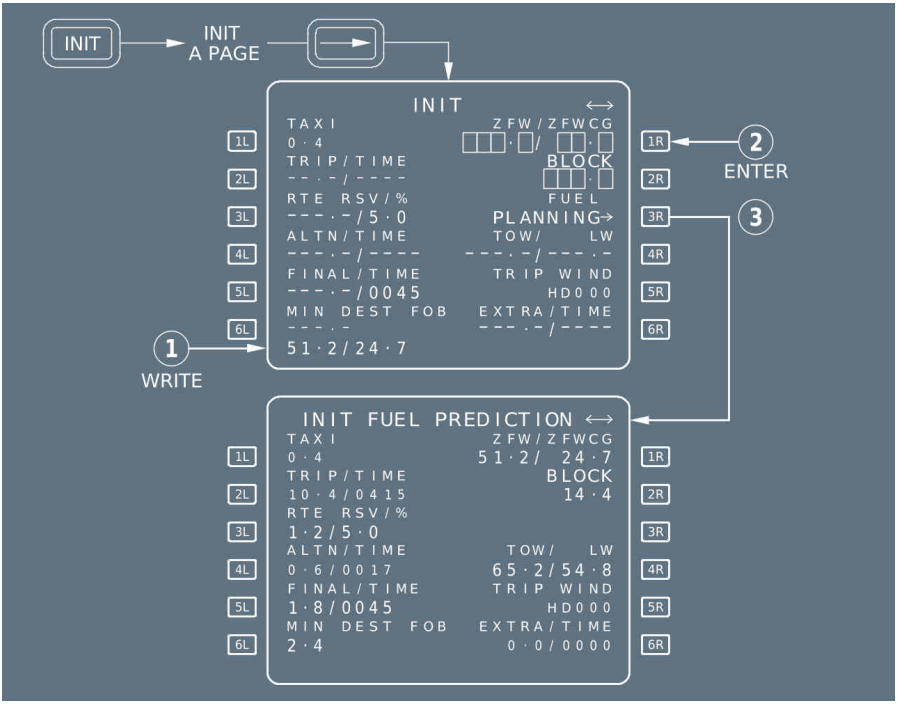
Note: *Whenever, the runway ILS is intented to be retained for guidance after the takeoff phase, it is recommended to manually tune the ILS by its identifier.*

FMGS DATA INSERTION

Ident.: PRO-NOR-SRP-01-10-B-00003968.0024001 / 05 OCT 16
Applicable to: ALL

WEIGHT/CG INSERTION AND FUEL PLANNING

The flight crew must enter the Zero Fuel Weight (ZFW) and Zero Fuel Weight Center of Gravity (ZFWCG) values on the INIT B page, to allow the FMS to perform the fuel planning computations.



PROCEDURE

PRESS the INIT key, and the Next ("→") key to access the INIT B page.
ENTER the ZFW and ZFWCG value in the [1R] field.
The "FUEL PLANNING →" prompt appears in the [3R] field.

Note: *As long as the final Load and Trim Sheet is not available, the crew should insert the estimated ZFW/ZFWCG in order to get fuel estimates. The ZFW and ZFWCG values must be updated with the final Load and Trim Sheet values.*

CHECK/MODIFY the TAXI [1L], RTE RSV [3L] and FINAL TIME [5L] values.
The TAXI, RTE RSV and FINAL TIME fields display the default values specified in the AMI file (for example, "0.4 t" for TAXI, "5.0 %" for RTE RSV and "0045" for FINAL TIME). The flight crew may modify these values.

Note: *At takeoff, the RTE RSV field will automatically be reset to 0. The RTE RSV fuel is then added to the EXTRA fuel, which ensures that the EXTRA fuel and MIN DEST FOB values are consistent in flight.*

ENTER an ALTN fuel value in the [4L] field, as necessary.

The flight crew may enter the ALTN fuel value planned on the Computerized Flight Plan (CFP), as necessary.

ENTER a MIN DEST FOB value in the [6L] field, as necessary.

Note: *MIN DEST FOB (equal to ALTN + FINAL) can be increased at flight crew discretion (e.g. when HOLD is expected at destination).*

ENTER the TRIP WIND value in the [5R] field, as necessary.

In no wind profile has been entered in the F-PLN, the crew may enter an average TRIP WIND in this field, to obtain more realistic fuel/time predictions before departure.

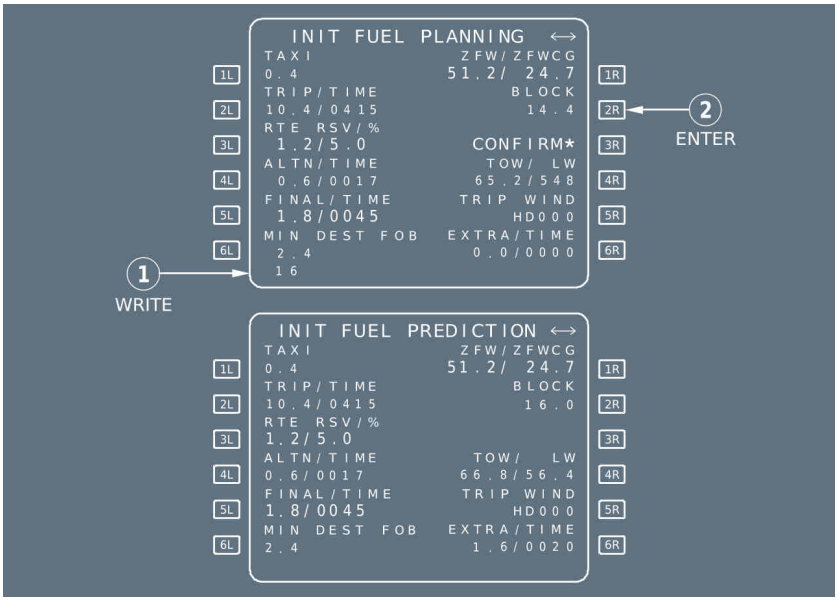
Note:
1. *The flight crew should only enter a TRIP WIND to obtain realistic fuel/time predictions, on ground. Then, the flight crew should enter a wind profile using the WIND pages, for fuel/time predictions in flight. As soon as flight crew has entered a wind profile on the WIND pages, the TRIP WIND will be erased.*
2. *If the crew has already defined a wind profile, even partially (such as climb wind), it is not possible to enter a TRIP WIND.*

ENTER the planned BLOCK fuel, as indicated in the computerized flight plan (CFP)

If the planned BLOCK fuel is not available, the crew may obtain a prediction of the minimum BLOCK fuel required for the flight by pressing the FUEL PLANNING prompt [3R].
Pressing this prompt makes the FMS compute the minimum required BLOCK fuel, which is the BLOCK fuel required to have EXTRA fuel = 0, based on the parameters entered on the INIT and F-PLN pages.
The computed BLOCK fuel value is displayed in the [2R] field, and a BLOCK CONFIRM prompt appears in the [3R] field.

Note: *In order to obtain a realistic fuel computation, the flight crew should ensure that the F-PLN initialization has been completed (including insertion of the ALTN F-PLN and/or ALTN fuel and/or MIN DEST FOB if necessary), and that flight parameters, such as CRZ FL, steps climbs (if any), and winds, have been inserted.*

- **When the final Load and Trim Sheet (LTS) data are available:**



ENTER the final ZFW/ZFWCG [1R], and the required BLOCK fuel [2R].

The FMS computes the predictions, based on the entered BLOCK fuel, and estimates the EXTRA fuel value.

CHECK the resulting computed data, against the data planned on the CFP: TRIP fuel, RTE RSV fuel, ALTN fuel, FINAL and EXTRA fuel values.

If necessary, the flight crew may modify the ALTN or FINAL fuel values.

PRINT the PREFLIGHT REPORT, if necessary.

When the final Load and Trim Sheet values (ZFW/ZFWCG/BLOCK) have been entered, the crew may print the pre-flight report, which provides a copy of the F-PLN with the associated FMS predictions.

Ident.: PRO-NOR-SRP-01-10-B-00003969.0010001 / 15 FEB 11
Applicable to: ALL

TAKEOFF WITH NO WEIGHT/CG DATA

If the crew does not enter ZFW/ZFWCG data prior takeoff, or if the FMGC looses these values due to a power interruption, the following will occur:

- At takeoff, the Speed Reference System (SRS) mode is available (provided a V2 has been inserted)
- When the aircraft leaves the SRS mode, the target speed becomes the current speed and reverts to selected.

Note: If the AP/FD has reverted to ALT or V/S (FPA) mode, the associated A/THR mode is SPEED. In this case, the system will probably reduce thrust, because the speed will be equal to, or greater than, the target speed.

- **When appropriate, to regain FMS predictions and associated managed modes:**
  INSERT the ZFW/ZFWCG values on the FUEL PRED page.

Ident.: PRO-NOR-SRP-01-10-B-00003970.0007001 / 15 FEB 11
Applicable to: ALL

INSERTING WEIGHT/CG DATA AFTER ENGINE START

The flight crew must enter the ZFW/ZFWCG values on INIT B page prior to engine start. If these data have not been entered at engine start, the MCDU displays the “INITIALIZE WEIGHTS” amber message in the scratchpad. After engine start, the crew should enter the ZFW/ZFWCG values on the FUEL PRED page.

PRESS to the FUEL PRED key.
INSERT the ZFW/ZFWCG values in the [4R] field.

This allows predictions and performance computation.

CHECK the resulting computed data, against the data planned on the CFP: TRIP fuel, RTE RSV fuel, ALTN fuel, FINAL and EXTRA fuel values.

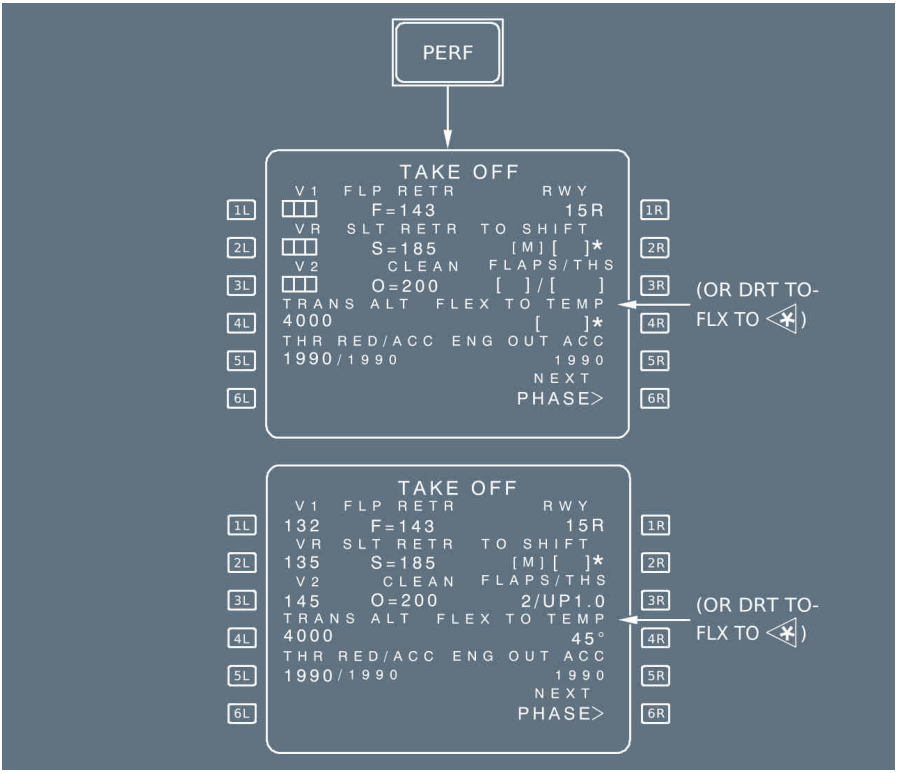
If necessary, the flight crew may modify the ALTN or FINAL fuel values.

PRINT the PREFLIGHT REPORT, if necessary.

When the final load sheet values (ZFW/ZFWCG/BLOCK) have been entered, the crew may print the pre-flight report, which provides a copy of the F-PLN with the associated FMS predictions.

Ident.: PRO-NOR-SRP-01-10-B-00003971.0001001 / 22 MAR 16
Applicable to: ALL

TAKEOFF DATA INSERTION



PROCEDURE

PRESS the PERF key on the MCDU.
WRITE successively and ENTER : V1, VR, V2.
WRITE and ENTER FLX TEMP or DRT TO .
CHECK/MODIFY the THR RED ALT (Thrust reduction altitude) See *.
CHECK/MODIFY the ACC ALT (acceleration altitude) See *.
CHECK/MODIFY the ENG OUT ACC (engine out acceleration altitude) See *.
CHECK/MODIFY the TRANS ALT (transition altitude) See *
WRITE and ENTER T.O. SHIFT.

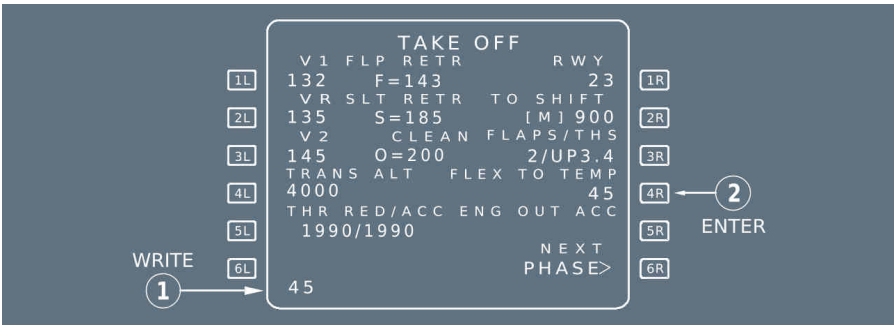
CHECK V1, V2 on PFD See **

* *Altitudes less than 400 ft above airfield elevation cannot be selected.*

** *If the PFD does not display V2 at the top of its speed scale, check that at least one FD is ON.*

ENTERING A FLEX TEMPERATURE

WRITE the desired flex temperature in the scratchpad and ENTER using the [4R] key.



Ident.: PRO-NOR-SRP-01-10-B-00003972.0003001 / 22 MAY 12

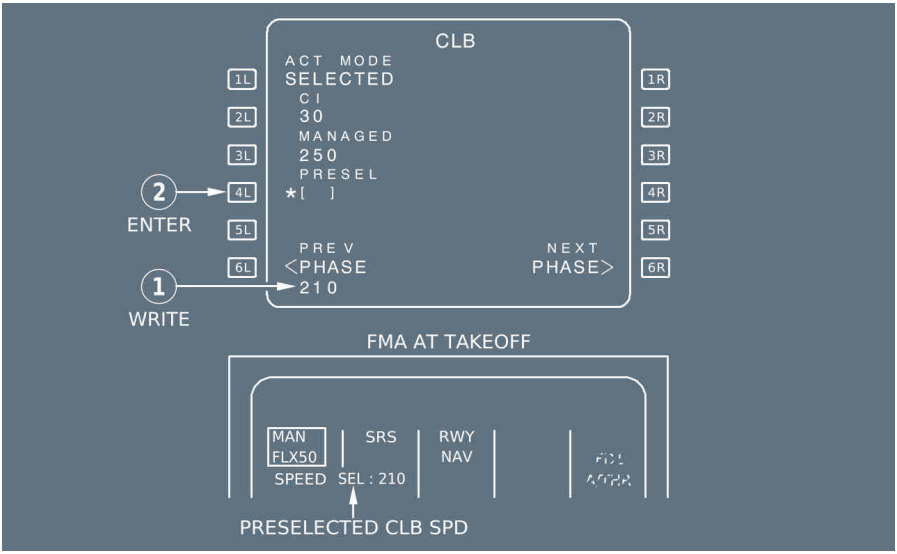
6 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

CLIMB SPEED PRESELECTION

If the managed speeds for the initial climb are not suitable, the pilot can preselect an appropriate climb speed on the “PERF CLB” page, as long as the climb phase is not active.

The CLB SPD preselection applies, when the:

- ATC specifies an initial climb speed.
- Initial climb speed must be lower than normal because:
  - There are to be turns greater than 120 ° in the initial climb out.
  - Obstacle clearance, or some other situation, requires a high climb angle.
  - The airfield has a risk area to be quickly cleared (birds reported, for example).



PROCEDURE

PRESS the PERF key on the MCDU.

The PERF TAKE OFF page is displayed.

SELECT the "NEXT PHASE" [6R] key to display the CLB page.
WRITE a climb speed and ENTER it.
To revert to managed speed, select MANAGED by pressing [3L].

When the aircraft is transitioning into the climb phase, the preselected value becomes the target speed:

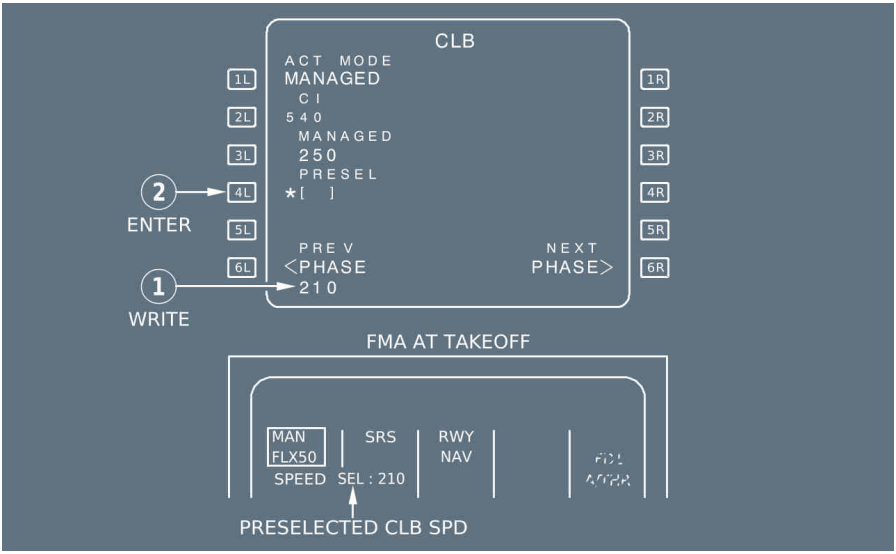
- The selected speed target is active.
- The primary flight display shows the target speed in blue.
- The FCU's speed window displays the new speed or Mach number.

Ident.: PRO-NOR-SRP-01-10-B-00003972.0011001 / 22 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

CLIMB SPEED PRESELECTION

If the managed speeds for the initial climb are not suitable, the pilot can preselect an appropriate climb speed on the "PERF CLB" page, as long as the climb phase is not active.

The CLB SPD preselection applies, when the:
- ATC specifies an initial climb speed.
- Initial climb speed must be lower than normal because:
  - There are to be turns greater than 120 ° in the initial climb out.
  - Obstacle clearance, or some other situation, requires a high climb angle.
  - The airfield has a risk area to be quickly cleared (birds reported, for example).



PROCEDURE

PRESS the PERF key on the MCDU.

The PERF TAKE OFF page is displayed.

SELECT the PERF CLB page by pressing [6 R] (“NEXT PHASE” prompt).
WRITE a climb speed and ENTER it.
To revert to managed speed, select MANAGED by pressing [3L].

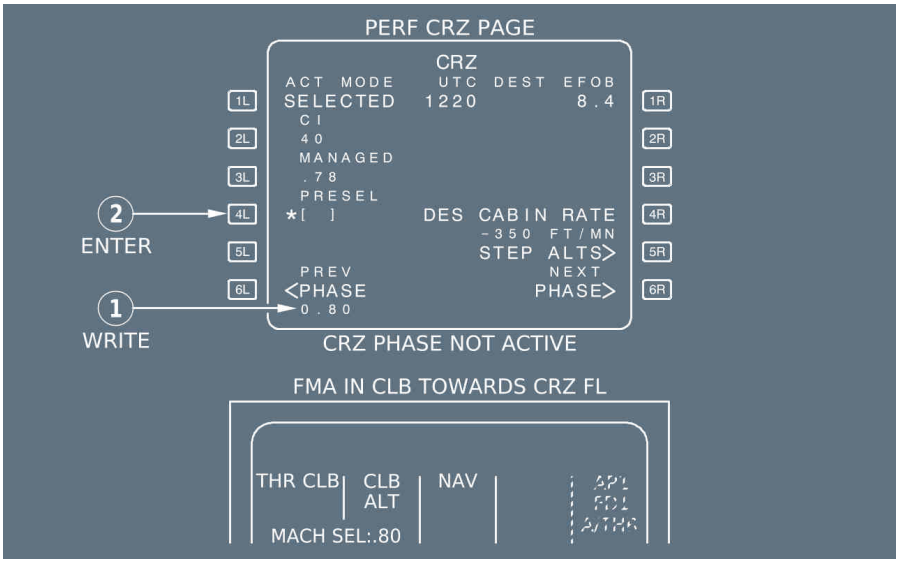
When the aircraft is transitioning into the climb phase, the preselected value becomes the target speed:
- The selected speed target is active.
- The primary flight display shows the target speed in blue.
- The FCU’s speed window displays the new speed or Mach number.

Ident.: PRO-NOR-SRP-01-10-B-00003973.0003001 / 09 OCT 12

7 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

CRUISE MACH (SPEED) PRESELECTION

The pilot preselects a cruise Mach, when a Mach number other than the ECON cruise Mach number is required.
When the aircraft transitions to the cruise phase, the speed target symbol goes to the preselected value and “SELECTED” becomes the active speed mode (blue target on PFD, target MACH shown in the speed/Mach window of the FCU).



PROCEDURE

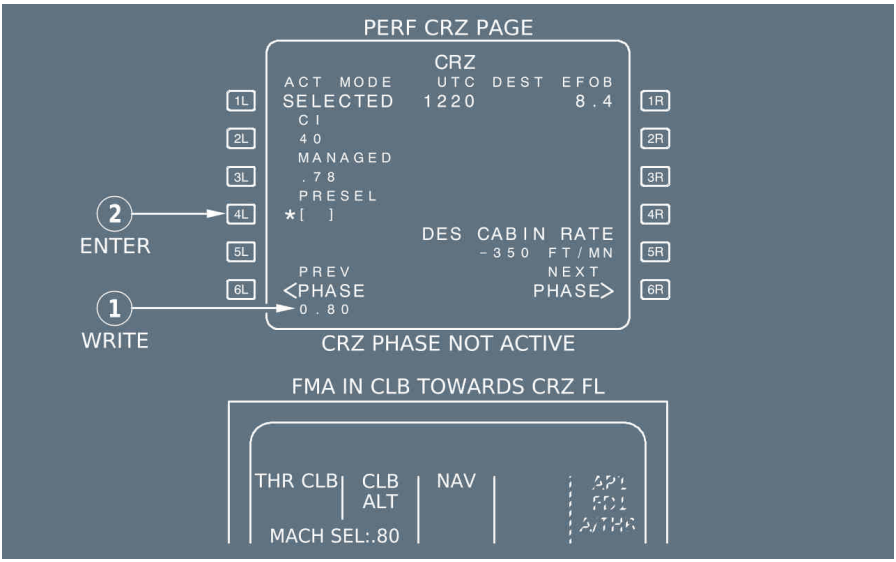
PRESS the PERF key on the MCDU.
PRESS the “NEXT PHASE” [6R] key on the MCDU, until the CRZ page is accessed.
WRITE a cruise Mach (or speed) in the scratchpad and ENTER it in [4L].
To revert to managed speed, PRESS [3L].

When the cruise phase is active, you cannot preselect a cruise Mach or speed.

Ident.: PRO-NOR-SRP-01-10-B-00003973.0004001 / 09 OCT 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

CRUISE MACH (SPEED) PRESELECTION

The pilot preselects a cruise Mach, when a Mach number other than the ECON cruise Mach number is required.
When the aircraft transitions to the cruise phase, the speed target symbol goes to the preselected value and “SELECTED” becomes the active speed mode (blue target on PFD, target MACH shown in the speed/Mach window of the FCU).



PROCEDURE

PRESS the PERF key on the MCDU.
PRESS the “NEXT PHASE” [6R] key on the MCDU, until the CRZ page is accessed.
WRITE a cruise Mach (or speed) in the scratchpad and ENTER it in [4L].
To revert to managed speed, PRESS [3L].

When the cruise phase is active, you cannot preselect a cruise Mach or speed.

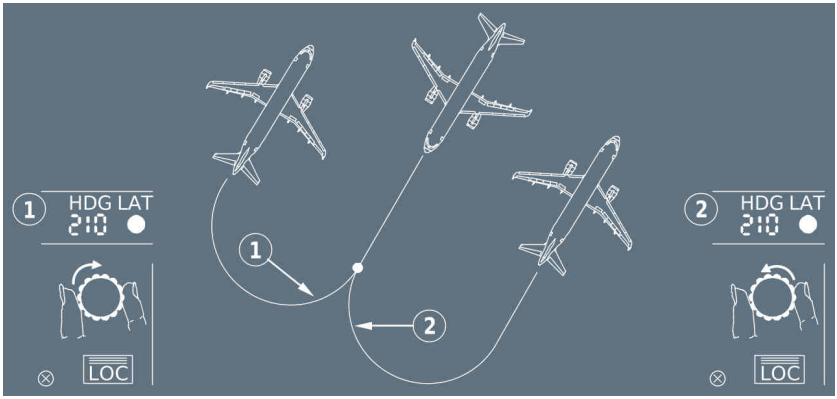
Ident.: PRO-NOR-SRP-01-10-B-00004095.0001001 / 09 OCT 12
Applicable to: ALL

ENTERING A HEADING/TRACK PRESET FUNCTION

Tfhe heading/track preset allows the pilot to preset a takeoff or go-around heading or track before commanding the aircraft to take up that heading or track (manual activation).
The flight crew can enter a heading or a track preset while the aircraft is on the ground and until takeoff.

PROCEDURE

- **Before takeoff:**
  SET the appropriate HDG or TRK in the FCU window.
  This disarms the navigation mode and allows the runway mode to remain engaged after takeoff.
- **After takeoff:**
  PULL HDG/TRK knob.
  The heading or track mode engages on the preset value.



The direction in which the pilot rotates the HDG/TRK selection knob usually determines the direction of the turn. A left rotation (decreasing heading) produces a left turn; a right rotation produces a right turn.

However, when a heading has been preset before takeoff or go-around, the direction of the turn will be such as to cause the shortest turn at the moment of engagement.

CANCELLING THE HEADING/TRACK PRESET FUNCTION

The pilot can cancel the heading preset by pushing the HDG/TRK knob back in again. This engages or arms the NAV mode.

FMGS RE-INITIALIZATION AFTER A CANCELED FLIGHT

Ident.: PRO-NOR-SRP-01-10-00013064.0001001 / 16 NOV 11
Applicable to: ALL

If the flight crew initially prepared a flight with all the data associated with this flight (takeoff speeds, winds, etc.), and if this flight is later canceled and replaced by another flight, the flight crew may use the following procedure to initialize the FMGS again:

PREPARE the new flight data in the secondary flight plan, using SEC INIT A, SEC INIT B, and SEC PERF pages
ACTIVATE the secondary flight plan.

Note: *When the flight crew activates the secondary flight plan, the following data of the primary flight plan is lost if the secondary flight plan does not include any replacement data:*

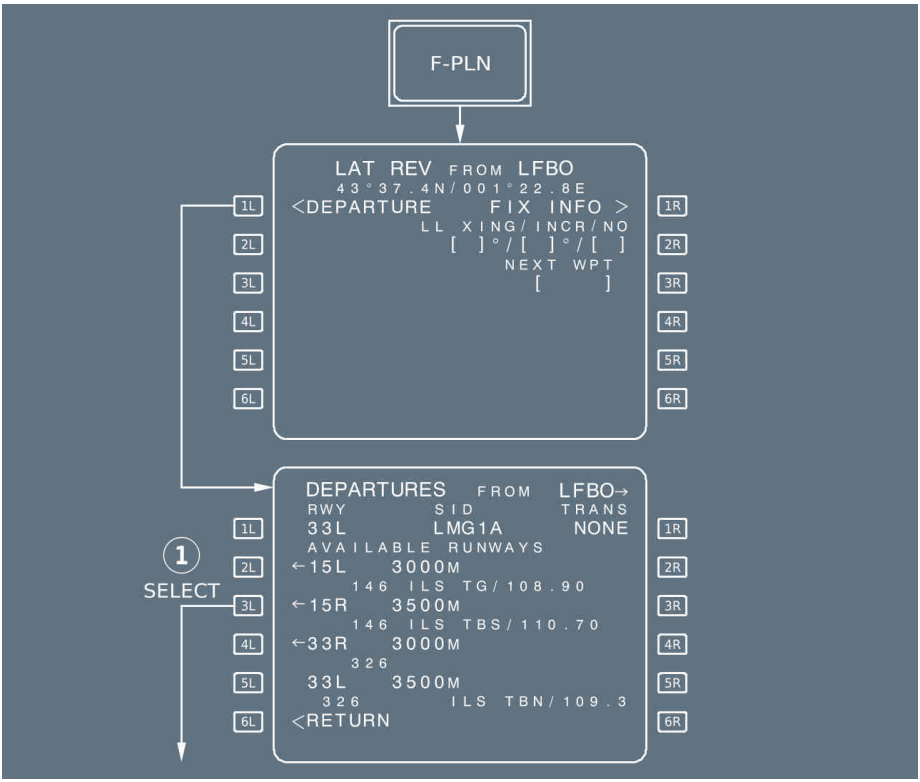
- *Alternate data*
- *Winds and cruise TEMP at waypoints as inserted on CRZ WIND pages*
- *Departure and arrival selection (STAR, APP, RWY) and approach parameters (QNH, TEMP, WIND, TRANS ALT, VAPP, MDA/MDH, DH, LDG CONF)*
- *Altitude, speed, and time constraints*
- *Steps*
- *CMS*
- *Offsets*
- *Flaps/THS*
- *Preselected cruise and descent speeds.*

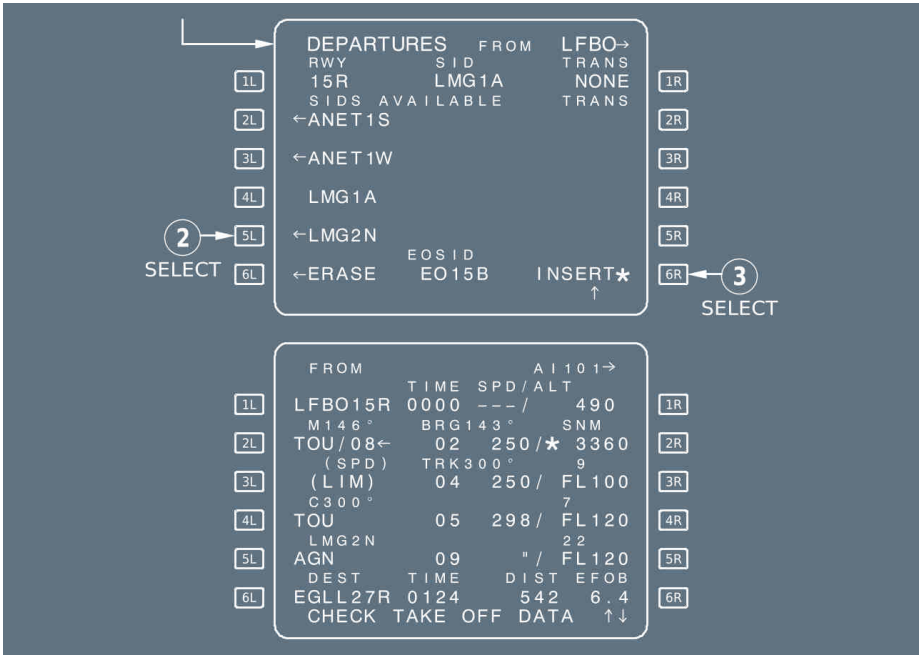
Before Pushback or Start

CHANGE OF RUNWAY

Ident.: PRO-NOR-SRP-01-15-00003975.0003001 / 22 MAY 12

[1] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**





PRESS the F-PLN key on the MCDU.
SELECT the LAT REV at origin.
SELECT the DEPARTURE prompt [1L].
SELECT the new RWY in use.
SELECT the appropriate SID and TRANS.
CHECK the resulting temporary F-PLN and INSERT it.

CHECK TAKE OFF DATA comes up in the scratchpad if the PERF TO page had been filled in.

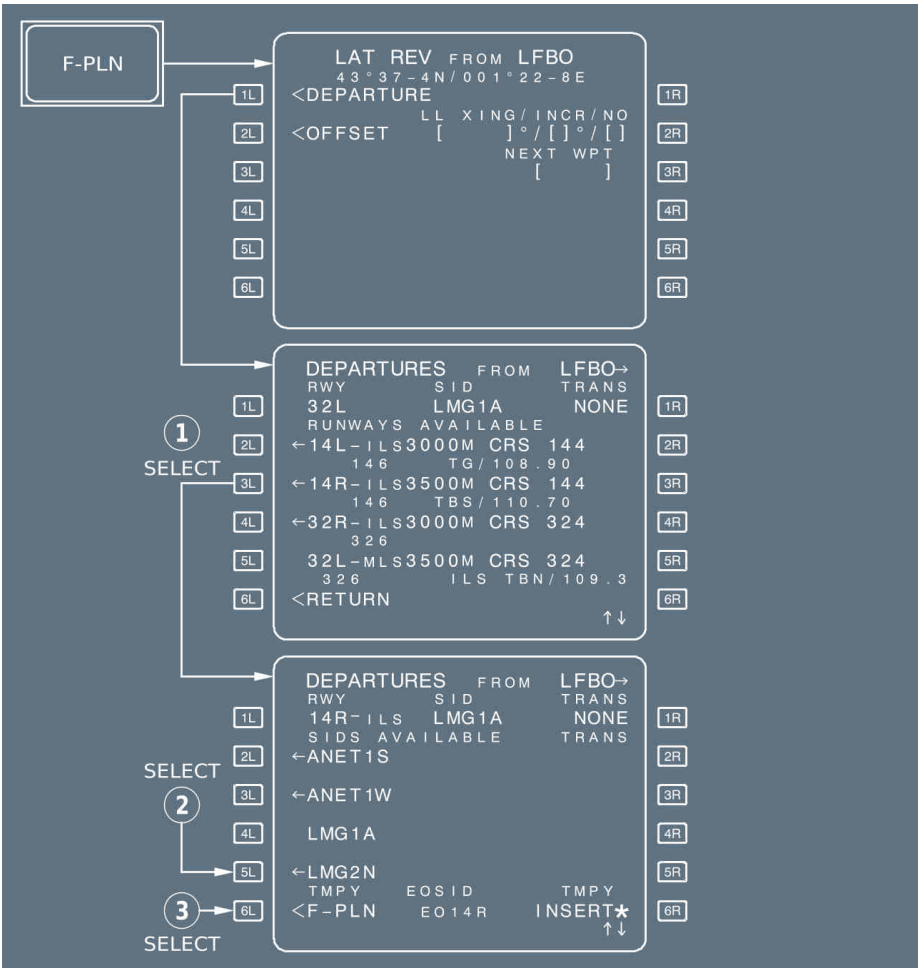
ENTER the new V1, VR, V2, FLEX TEMP or CONF, as appropriate.

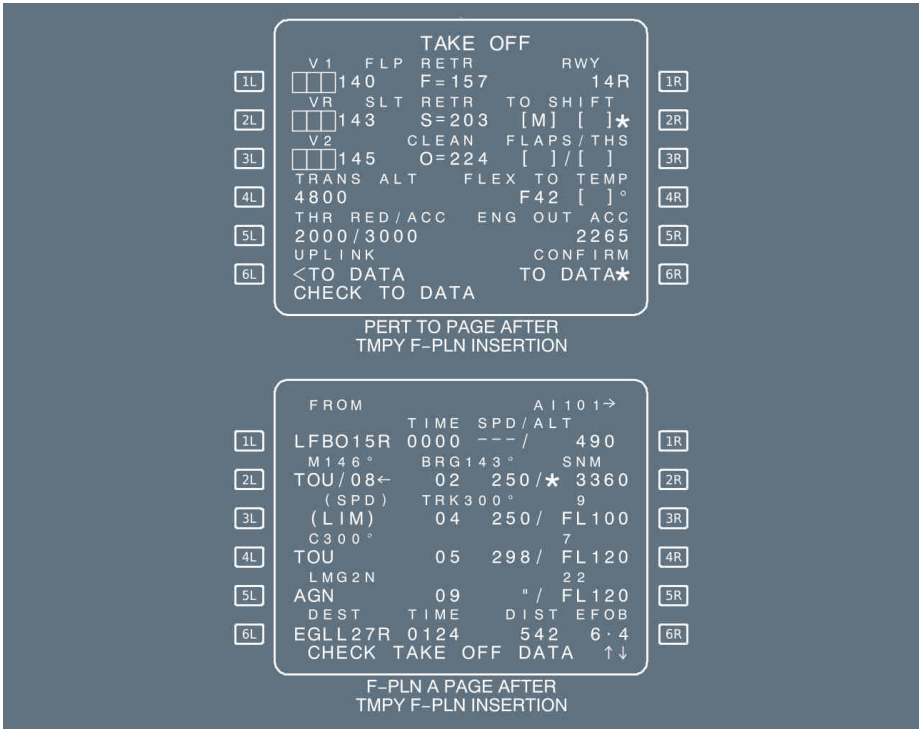
Note: *If the previously selected SID is compatible with the new runway, it automatically appears in the temporary flight plan. Any revision the pilot may have made to the previous SID will not be transferred.*
If the pilot still wants it, he has to reenter it.

CHANGE OF RUNWAY

Ident.: PRO-NOR-SRP-01-15-00003975.0015001 / 28 NOV 17

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336





PRESS the F-PLN key on the MCDU.
SELECT the LAT REV at origin.
SELECT the DEPARTURE prompt [1L].
SELECT the new RWY in use.

The "CHECK TAKE-OFF DATA" message is displayed.

CHECK/SELECT the appropriate SID and TRANS.
CHECK and INSERT the TMPY F-PLN, or continue with next revision.
PRESS the PERF key to access PERF TAKEOFF page.
CHECK the V1, VR, V2 and FLEX values displayed after the amber boxes. If these values are correct, PRESS [6R] to confirm and insert them. Else, ENTER new values.
ENTER the new V1, VR, V2, FLEX TEMP or CONF, as appropriate.

The previously-entered values, adjacent to the boxes, may be re-selected by pressing the CONFIRM TO DATA on [6R].*

Note: In case of a runway change, any previous lateral modification performed on the active DEPARTURE procedure may lead to additional waypoint stacking in the temporary F-PLN. The crew has to check and revise it, as necessary.

TAKEOFF FROM INTERSECTION

Ident.: PRO-NOR-SRP-01-15-00003976.0001001 / 09 DEC 09
Applicable to: ALL

Use RTOW or FCOM to revise takeoff parameters :
PRESS the [PERF] key on MCDU
ENTER the takeoff shift
ENTER the new V1, VR, V2, FLX TEMP, or CONF, as appropriate

Note: The insertion of the shift in takeoff position permits the system to make an accurate revision to its navigation data at takeoff.

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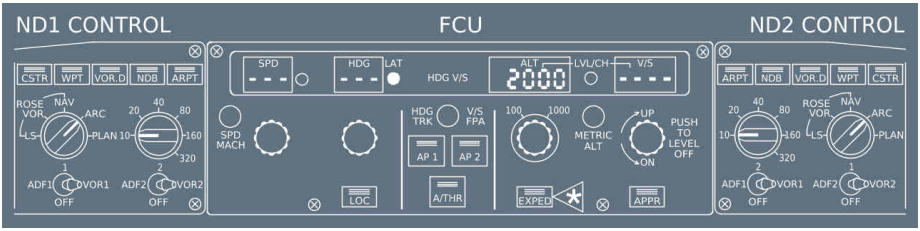
Taxi

FCU SELECTION FOR TAKEOFF

Ident.: PRO-NOR-SRP-01-20-00003978.0004001 / 09 OCT 12
Applicable to: ALL



PROCEDURE

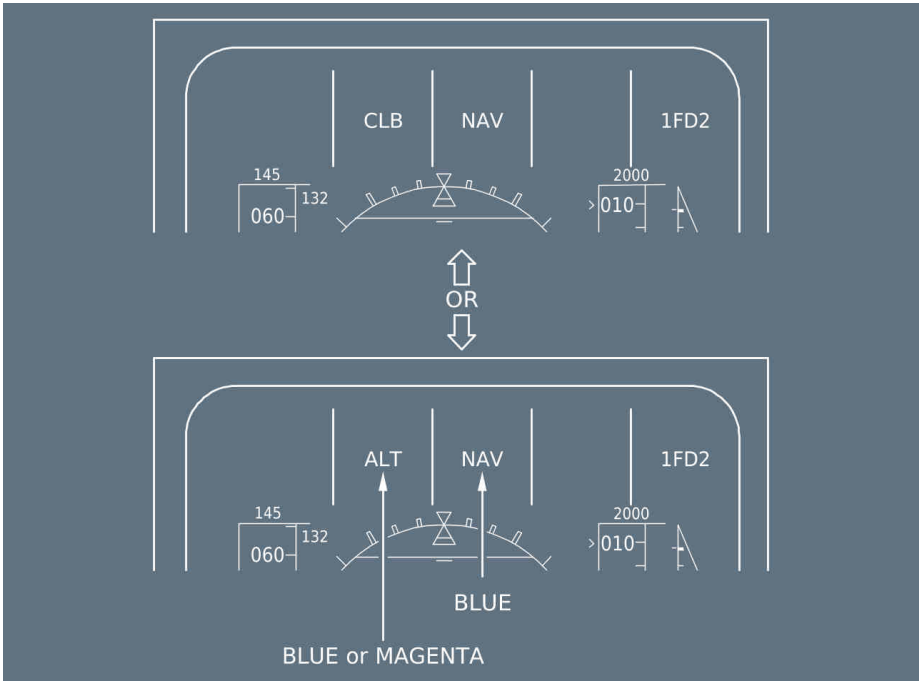
ENSURE that HDG – V/S modes are selected (change over pb).
CONFIRM or SELECT the first cleared altitude
CROSS CHECK on PFD the target altitude
CONFIRM both FDs ON

FMA MODE CHECK

Ident.: PRO-NOR-SRP-01-20-00003979.0002001 / 22 MAY 12

1 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

CHECK that the FMA CLB (or ALT) mode is armed



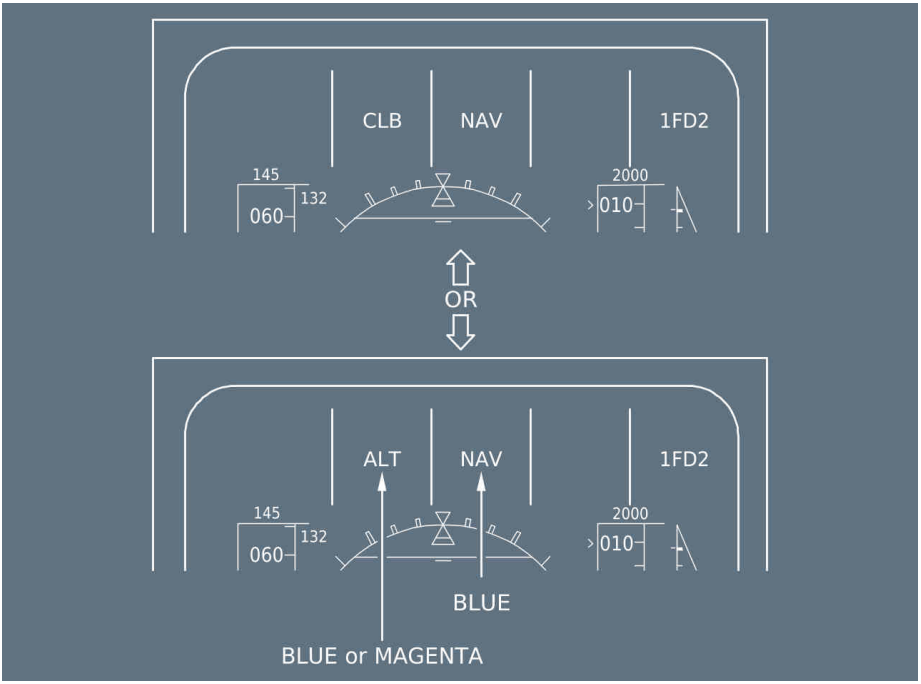
Note: *ALT (in blue or magenta) may be displayed instead of CLB if the FCU altitude or a constraint is set at or below the acceleration altitude.*

If a HDG/TRK was preset, NAV is disarmed.

FMA MODE CHECK

Ident.: PRO-NOR-SRP-01-20-00003979.0003001 / 22 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

CHECK that the FMA CLB (or ALT) mode is armed



Note: *ALT (in blue or magenta) may be displayed instead of CLB if the FCU altitude or a constraint is set at or below the acceleration altitude.*

Note: *If a radar-vector standard instrument departure (SID) has been selected, a F-PLN discontinuity immediately follows the departure runway, and NAV mode is not armed. After takeoff, RWY TRK mode engages until the crew selects a HDG or performs a DIR TO.*

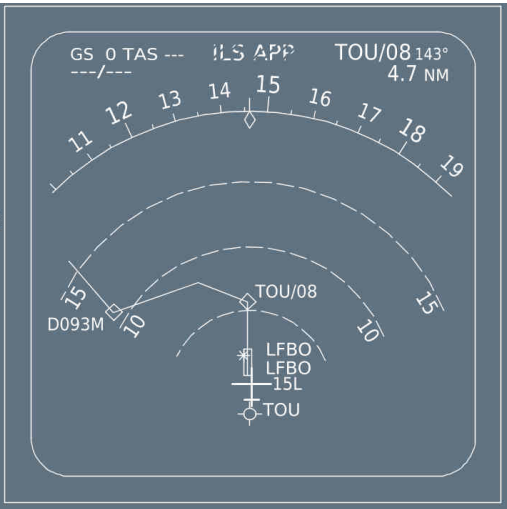
If a HDG/TRK was preset, NAV is disarmed.

SELECTING A NAVIGATION DISPLAY

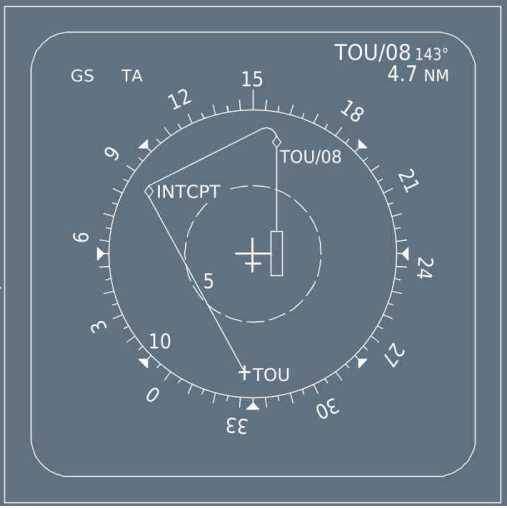
Ident.: PRO-NOR-SRP-01-20-00003980.0001001 / 22 MAY 12
Applicable to: ALL

SET the minimum range to display the first waypoint after departure or as required for weather radar.

ARC mode
FOR DEPARTURE
IN GENERAL
DIRECTION
OF RUNWAY
HEADING

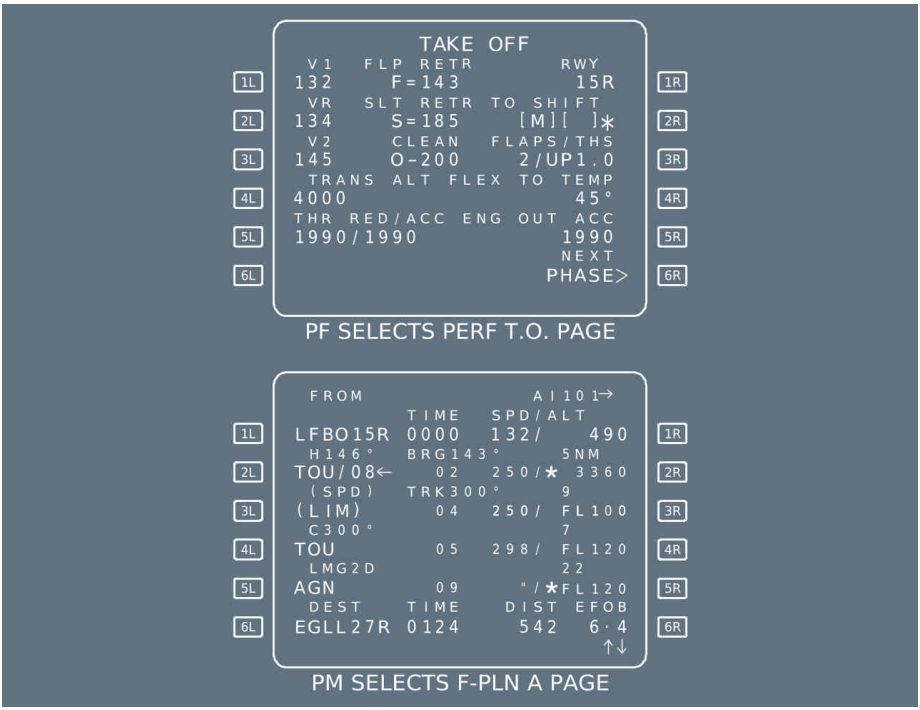


Rose NAV mode
FOR DEPARTURE
IN DIRECTION
OPPOSITE TO
THAT OF RUNWAY
HEADING



SELECTING TAKEOFF DISPLAYS FOR PILOT'S AND COPILOT'S MCDU

Ident.: PRO-NOR-SRP-01-20-00003981.0001001 / 23 DEC 14
Applicable to: ALL



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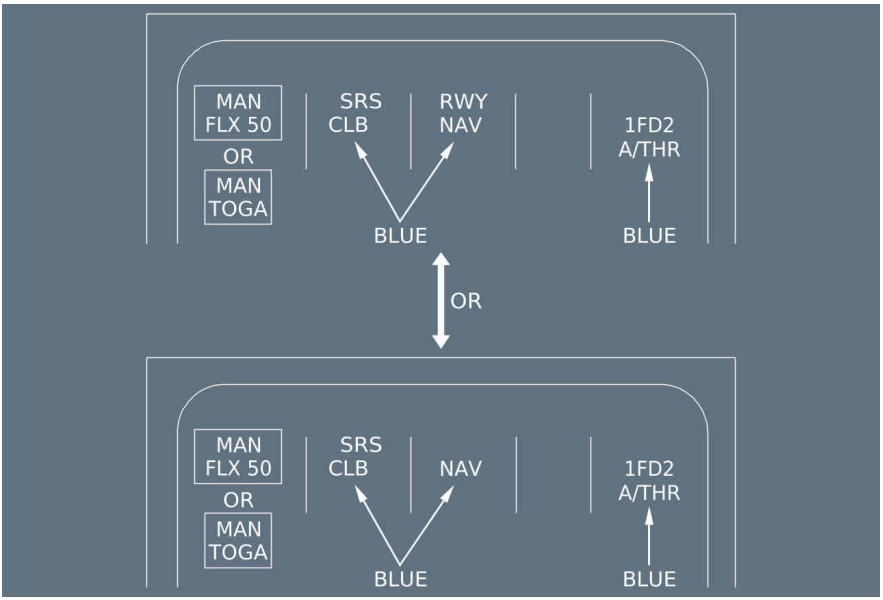
Takeoff

MONITORING THE TAKEOFF

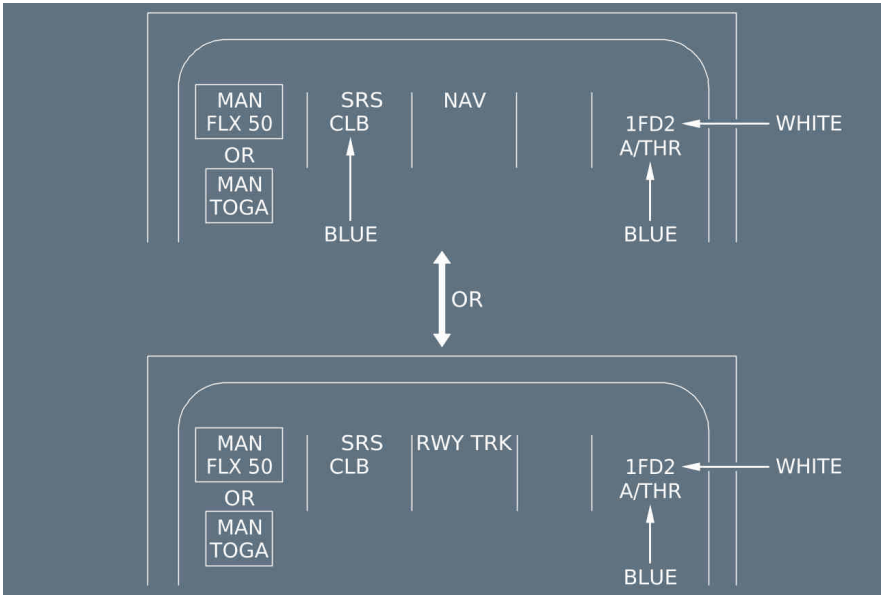
Ident.: PRO-NOR-SRP-01-30-00003983.0007001 / 09 OCT 12
Applicable to: ALL

- **At power set (thrust levers in FLX or TOGA position)**
  CHECK that the navigation is updated to the runway threshold by verifying that the aircraft symbol is centered on the runway threshold of the navigation display.
  CHECK the FMA for appropriate mode selection

  Note: - *RWY mode appears if an ILS is tuned to a station corresponding to the departure runway. Otherwise no lateral mode comes up until the aircraft has lifted off.*

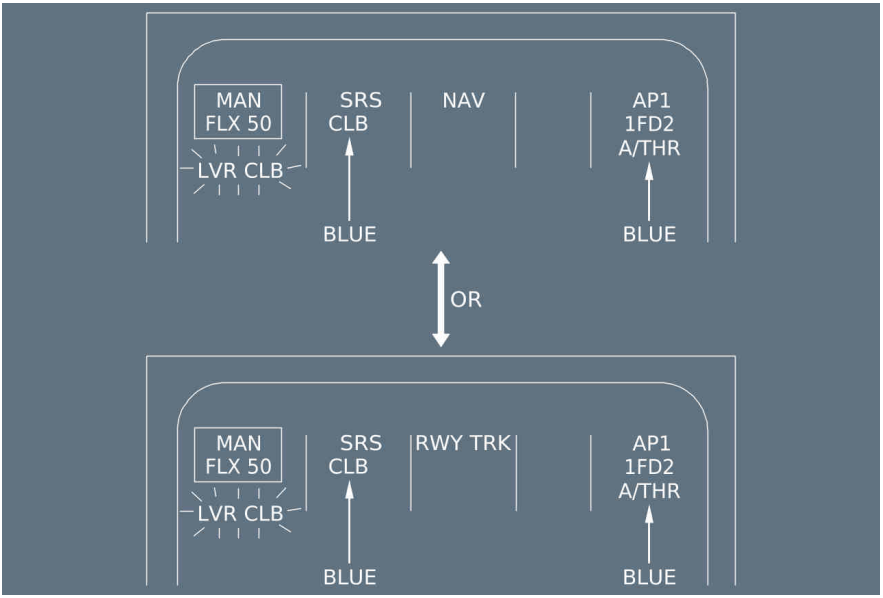


- **At 30 ft**
  - **If NAV is armed,** it engages automatically.
  - **If NAV is not armed,** RWY TRK mode engages and remains displayed until the crew selects another lateral mode.



- **At 100 ft**
  Engage AP1 or AP2.
  The FMGS has an internal delay that prevents the AP from engaging 5 s after liftoff and if the aircraft is below 100 ft.

- **At thrust reduction altitude**
  "LVR CLB" flashes in the first column of the FMA



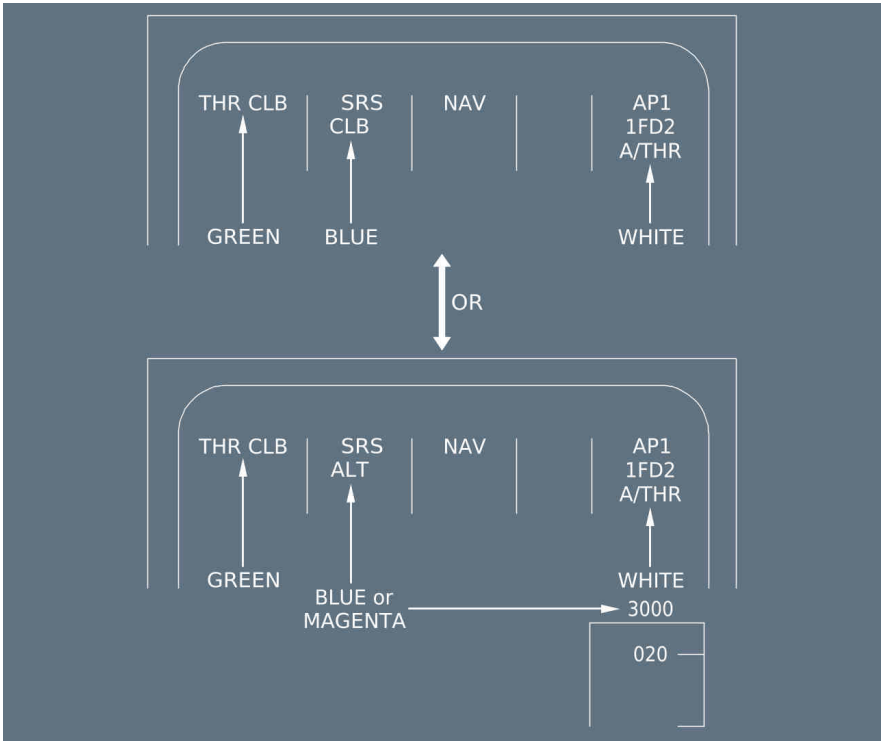
Procedure

SET the thrust levers to the CL detent

A/THR activates automatically

CHECK that A/THR turns to white in the 5th FMA column.

CHECK that THR CLB appears in green in the first column.



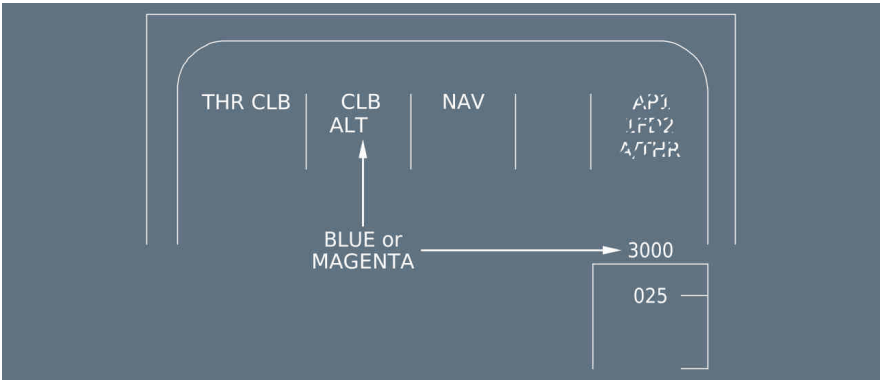
Depending on the next level off altitude, CLB or ALT is armed and displayed in the second column.

ALT is armed:

- *in blue if the next predicted level-off is the FCU-selected altitude (target altitude blue at the top of the ALT scale)*
- *in magenta if the next predicted level-off is an ALT CSTR (target altitude magenta at the top of the ALT scale)*

● **At acceleration altitude**

The vertical phase automatically switches to climb.
CLB mode engages. The target speed jumps to initial climb speed on the PFD.



Procedure

CHECK that "CLB" appears in green in the second FMA column.

- *The speed reference system (SRS) mode remains engaged until CLB phase is engaged, which occurs at ACCEL ALT or at any other vertical mode engagement, whichever comes first.*
- *If during takeoff the FCU altitude is set below the current aircraft altitude, the system ignores the FCU altitude and the aircraft remains in SRS mode until the pilot selects an altitude above the aircraft altitude or engages any other mode.*

PRESELECTING A HDG OR A TRK

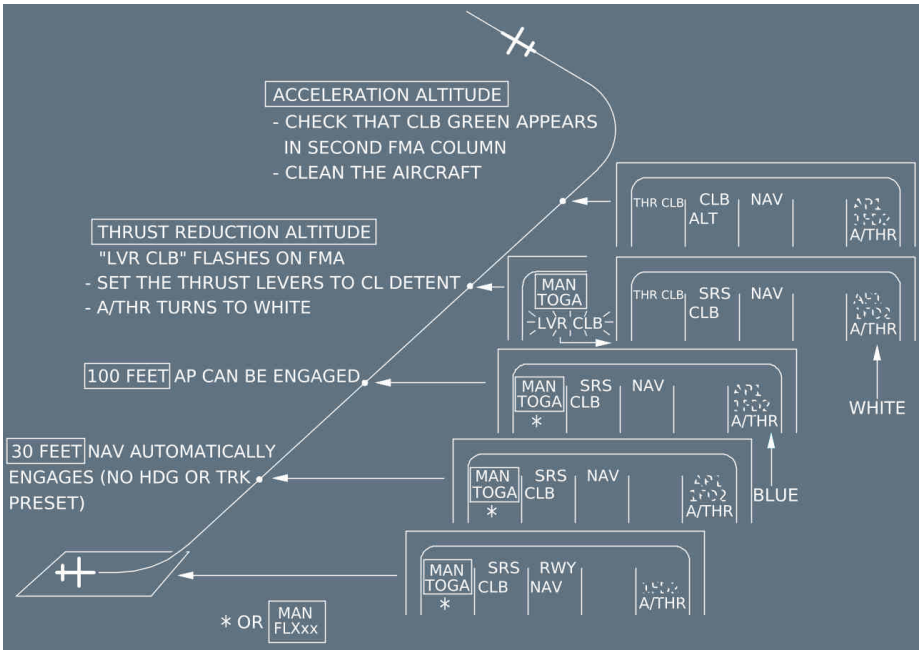
Ident.: PRO-NOR-SRP-01-30-00003984.0001001 / 16 NOV 11
Applicable to: ALL

PROCEDURE

- **If a HDG or a TRK was preselected on the ground :**
  PULL OUT the HDG/TRK selector knob when required
  CHECK that the HDG/TRK mode is active and displayed on the FMA
  When a HDG or TRK is preset, OP CLB mode will engage at the acceleration altitude. (CLB mode is not available in HDG/TRK mode).

NORMAL TAKEOFF PROFILE

Ident.: PRO-NOR-SRP-01-30-00003985.0002001 / 22 MAY 12
Applicable to: ALL



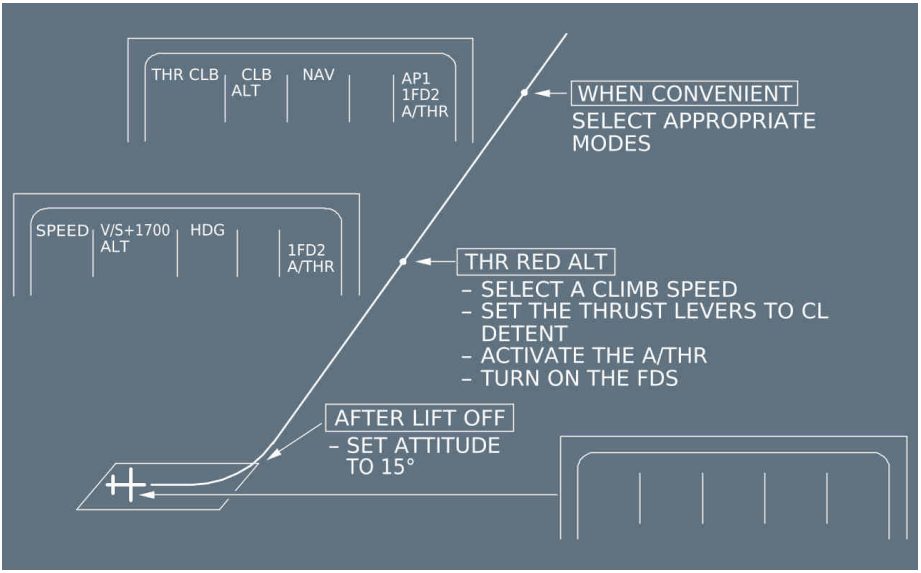
NO FLIGHT DIRECTOR TAKEOFF

Ident.: PRO-NOR-SRP-01-30-00003986.0004001 / 09 OCT 12
Applicable to: ALL

If a takeoff is initiated without FDs, the system responds as follow:

- There are no FD bars.
- There is no A/THR arming.
- There is no guidance available.
- The target speed on the PFD is that selected on the FCU or is defaulted to 100 kt.
- Setting the thrust levers to the CL detent does not activate A/THR.

Note: *Do not engage the autothrust prior to selecting a target speed on the FCU.*



PROCEDURE

Establish initial climb of 15 °

- **When reaching the thrust reduction altitude (THR RED ALT):**
  SELECT a climb speed.
  SET the thrust levers to CL detent.
  ACTIVATE the autothrust.
  TURN ON the FDs (basic modes engage).
  SELECT appropriate mode.
  Failure of both FDs after the start of takeoff:
  - *The FD bars disappear.*
  - *The FCU window displays the target speed, which synchronizes on V2, or the current speed (if it is higher).*
  - *The autothrust remains armed.*
  - *At thrust reduction altitude, LVR CLB flashes. If the pilot set the thrust levers to the CLB detent, the autothrust becomes active in selected SPD mode (no FDs selected).*
    If the current speed is greater than the target speed, the thrust decreases.
  - *At acceleration altitude the target speed does not change, since it is selected.*

TAKEOFF WITH NO V2 ENTRY

Ident.: PRO-NOR-SRP-01-30-00003987.0001001 / 16 NOV 11
Applicable to: ALL

If V2 is not inserted, the speed reference system (SRS) will not engage for takeoff.
5 s after lift off, V/S mode will engage. When V/S engages the current airspeed becomes the FCU target speed.

To regain a normal speed target, the pilot must :

SELECT the appropriate climb speed on the FCU and PULL out the knob.

- **At ACC ALT :**
  PUSH the A/THR pb on the FCU.
  SET the thrust levers to CL detent.
  PUSH in the SPD selector knob to get a managed speed target.

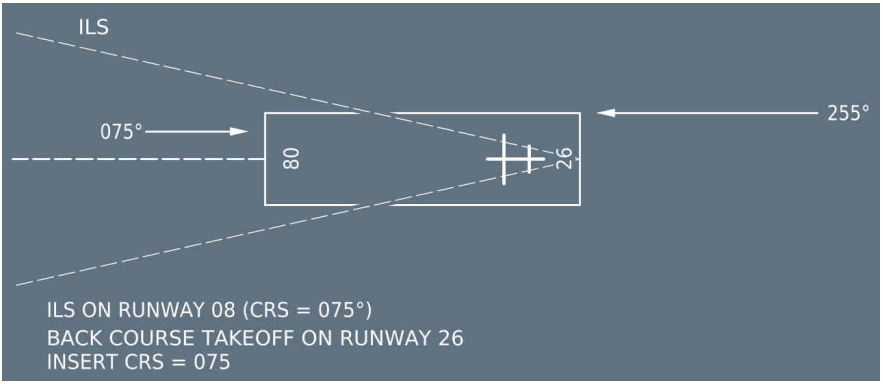
TAKEOFF USING THE LOCALIZER OF THE OPPOSITE RUNWAY

Ident.: PRO-NOR-SRP-01-30-00003988.0003001 / 09 OCT 12
Applicable to: MSN 01767-01920, 02108, 02135, 02139-02195, 02359-02405, 02482, 02609-02626, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-04954

- **If the localizer, of the ILS associated with the opposite runway, must be used for takeoff:**
  SELECT the RAD NAV PAGE.
  ENTER the ILS IDENT.
  If the ILS is in the database, the system tunes the proper frequency.
  Check that the ILS front course is displayed in the CRS field.

  Note: This may trigger the "RWY/ILS MISMATCH" message. Disregard it.

- **If the ILS is not in the database:**
  SET the appropriate frequency, and SET the ILS front course in the CRS field.



DESELECT the LS pb on the FCU.

Since the PFD displays reverse deviation.

SELECT ROSE ILS on one ND.

TAKEOFF USING THE LOCALIZER OF THE OPPOSITE RUNWAY

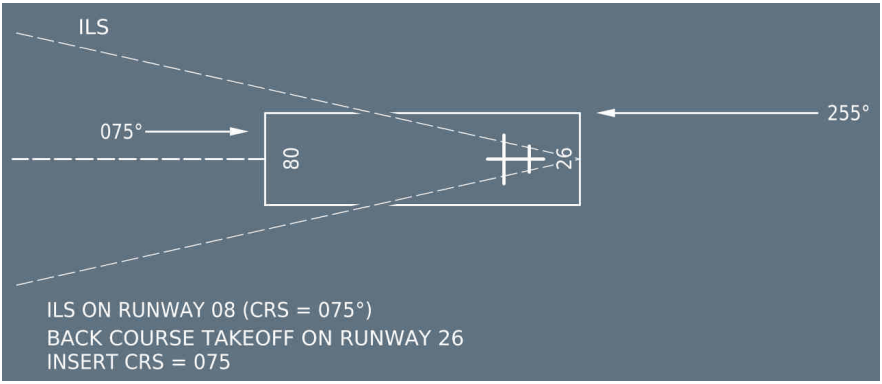
Ident.: PRO-NOR-SRP-01-30-00003988.0005001 / 09 OCT 12

[1] **Applicable to: MSN 01957-02097, 02121, 02138, 02204-02334, 02443-02457, 02584, 02649-03264, 03330, 03750, 04294, 04314, 04393-04438, 04491, 04510, 04532, 04645, 04965-09063**

- **If the localizer, of the ILS associated with the opposite runway, must be used for takeoff:**
  SELECT the RAD NAV PAGE.
  ENTER the ILS IDENT.
  If the ILS is in the database, the system tunes the proper frequency.
  Check that the ILS front course is displayed in the CRS field.

  Note: This may trigger the "RWY/ILS MISMATCH" message. Disregard it.

- **If the ILS is not in the database:**
  SET the appropriate frequency, and SET the ILS front course in the CRS field.



DESELECT the LS pb on the FCU.

Since the PFD displays reverse deviation.

DESELECT the LS pb on ISIS.

Since ISIS displays LOC reverse deviation.

SELECT ROSE-ILS on one ND.

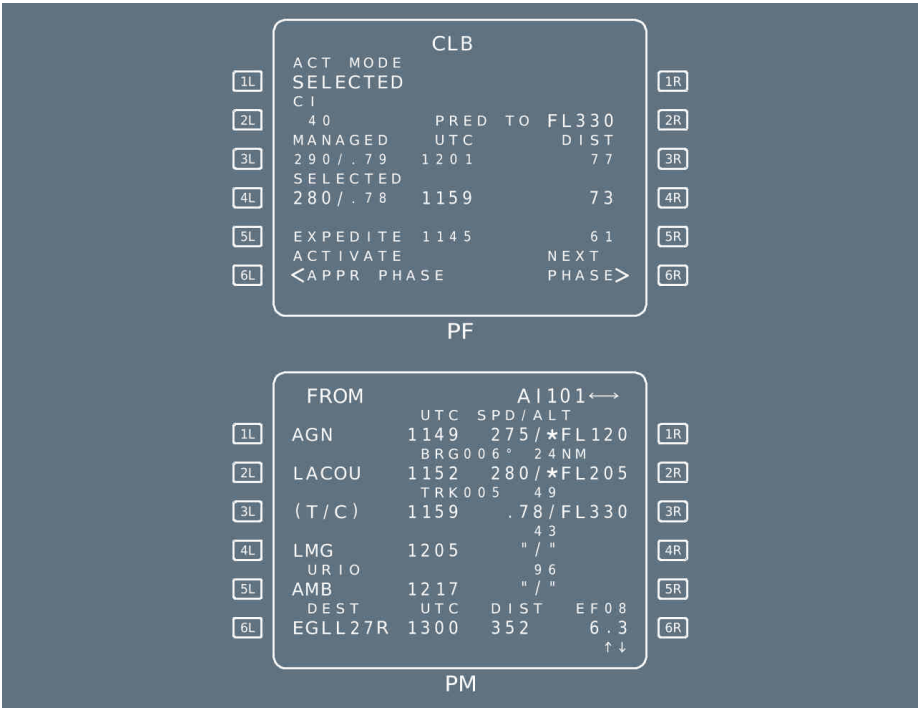
Climb

MONITORING THE CLIMB PHASE

Ident.: PRO-NOR-SRP-01-40-00003989.0031001 / 05 JUN 18

[1] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

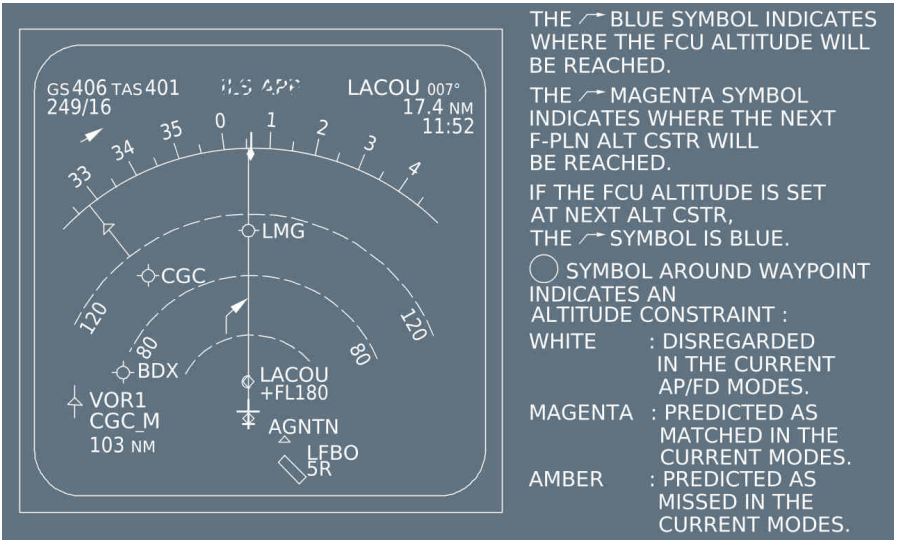
The PF MCDU should display the PERF CLB page allowing him to monitor the climb.
The PM MCDU should display the F-PLN page to allow the pilot to monitor time, speed and altitude predictions. This page also displays matched or missed information for constraints.



CHECK vertical mode CLB if NAV is engaged.
CHECK vertical mode OP CLB if HDG/TRK is engaged.

MONITORING THE ND (ROSE NAV OR ARC)

Displays the lateral and vertical paths, in the current AP/FD active modes.

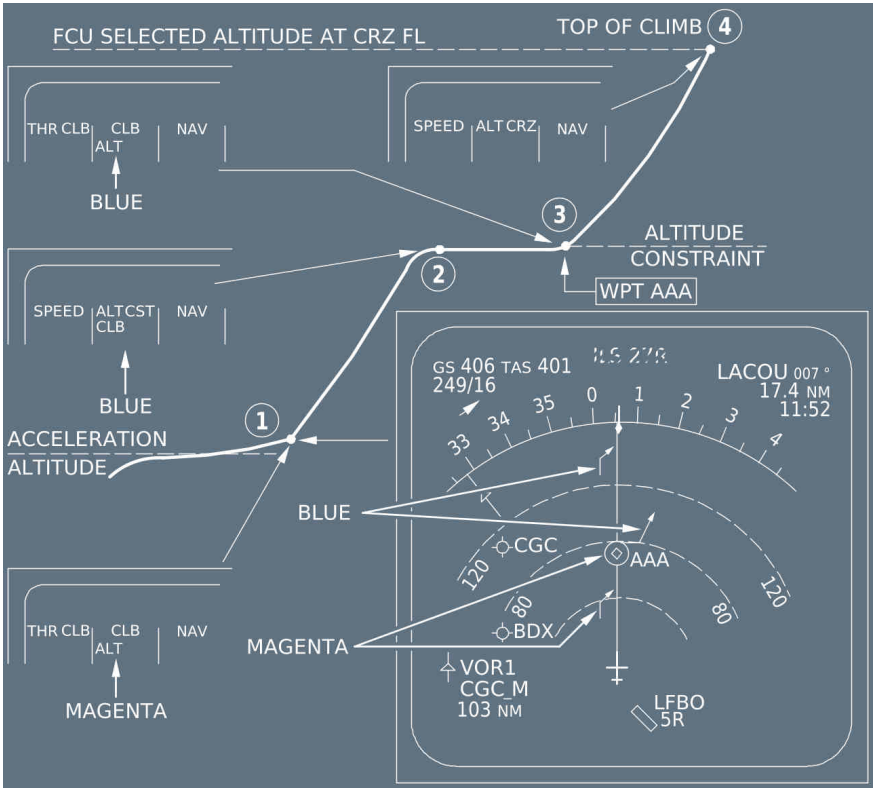


MONITORING THE AP/FD MODES AND FMA

If CLB mode is engaged, the flight mode annunciator (FMA) and the navigation display (ND) show the tactical situation as follows:

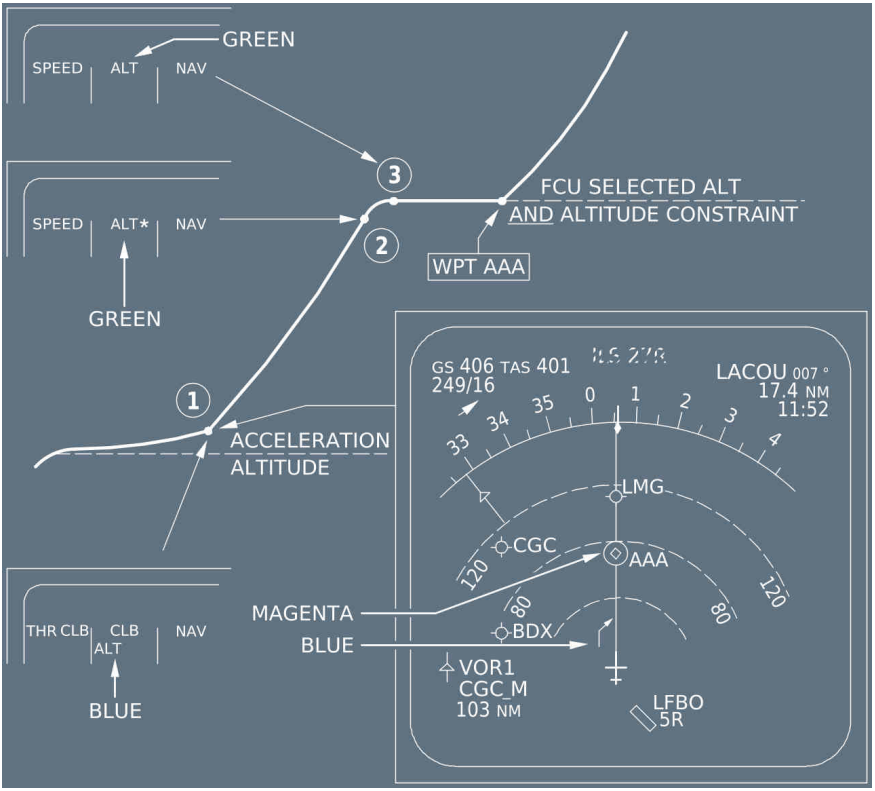
CASE 1

The FCU selected altitude is set above the next altitude constraint



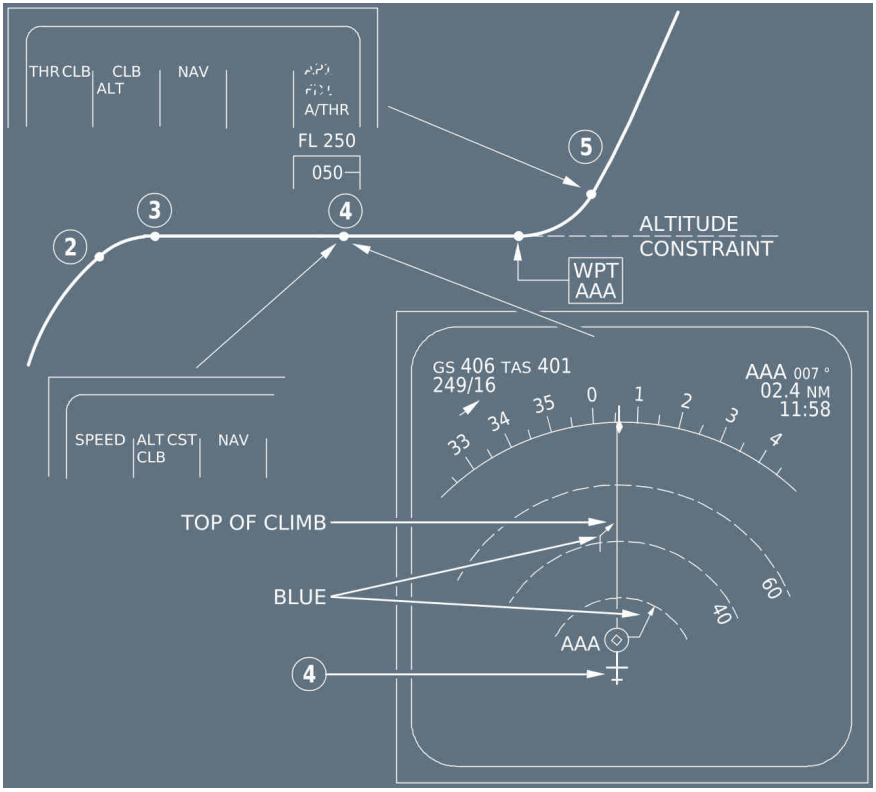
CASE 2

The FCU selected altitude is set at the next altitude constraint
The aircraft will automatically levels off at this altitude.



To resume the climb automatically when the waypoint AAA is reached, apply the following procedure during the level off (Position 4):

SELECT the FCU altitude to the next constraint (if any) or the cruise FL.
PUSH the FCU ALT selector knob to arm CLB mode.



RECOMMENDATION:

To ensure that you will not miss the next constraint, it is recommended to select the FCU altitude to the next constraint as described above.

MONITORING THE CONSTRAINTS

SPEED, ALTITUDE and TIME constraint can be checked using MCDUs. Each constraint is preceded by a star that indicates if the constraint is matched (magenta star) or missed (amber star).

ALTITUDE CONSTRAINT

- **If an altitude constraint is predicted as missed,** use the following procedure:

SET the FCU ALT to the next ALT CSTR
CHECK the position of the level off symbol on the ND (blue arrow) with respect to the waypoint with the constraint.
DECREASE the target speed until the constraint is met.

SPEED CONSTRAINT

CHECK the SPD CSTR predictions on the MCDU.

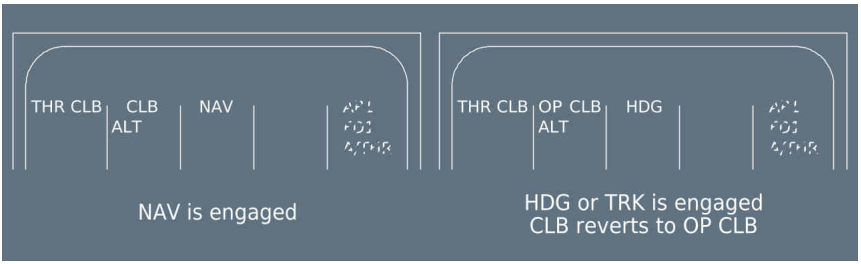
A magenta or amber star (*) indicates that the aircraft will match or miss the constraint.
If the aircraft is to miss the constraint by more than 10 kt, the MCDU scratchpad displays "SPD ERROR AT WPT ---- ".

"CHECK WEIGHT" MESSAGE.

Refer to DSC-22_20-90-20 "CHECK WEIGHT" Message

HDG/TRK MODE ENGAGEMENT

- **If HDG/TRK is engaged,** the guidance does not consider any F-PLN constraint. Therefore if the flight crew disengages NAV, CLB mode reverts to OP CLB.



SPEED SELECTION

- **If a specific speed is required:**
  TURN and PULL the SPD selector knob. (This changes the target speed to blue on the PFD speed scale).
  Predictions on the F-PLN page assume that the speed remains selected until the next SPD LIM or SPD CSTR, or the next phase, whichever comes first.

MONITORING THE CLIMB PHASE

Ident.: PRO-NOR-SRP-01-40-00003989.0025001 / 28 NOV 17
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The PF MCDU should display the PERF CLB page allowing him to monitor the climb.
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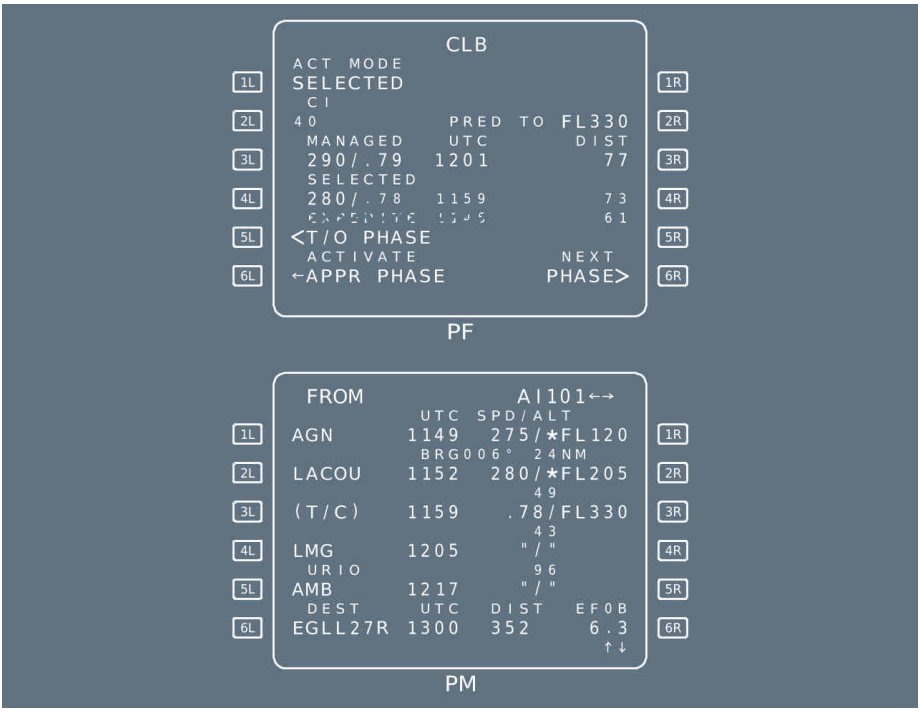
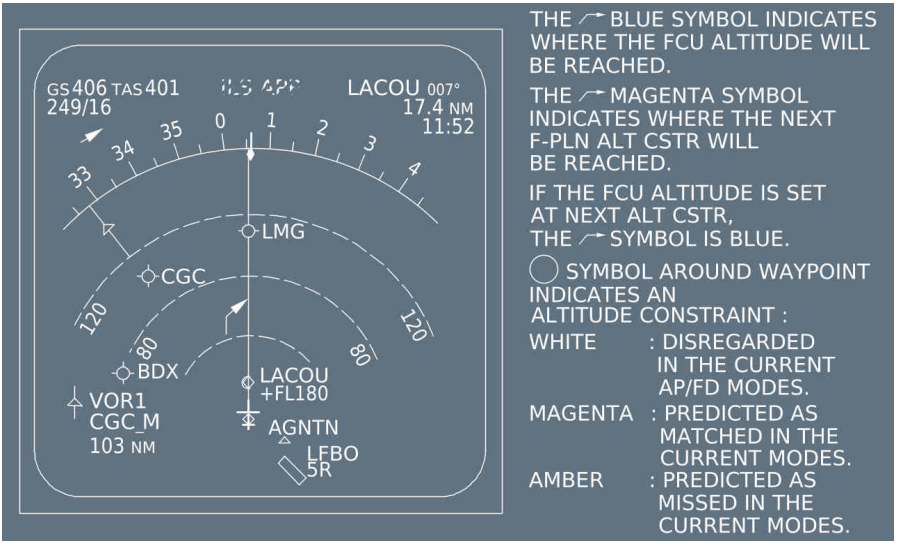


CHECK vertical mode CLB if NAV is engaged.

CHECK vertical mode OP CLB if HDG/TRK is engaged.

MONITORING THE ND (ROSE NAV OR ARC)

Displays the lateral and vertical paths, in the current AP/FD active modes.



MONITORING THE AP/FD MODES AND FMA

If CLB mode is engaged, the flight mode annunciator (FMA) and the navigation display (ND) show the tactical situation as follows:

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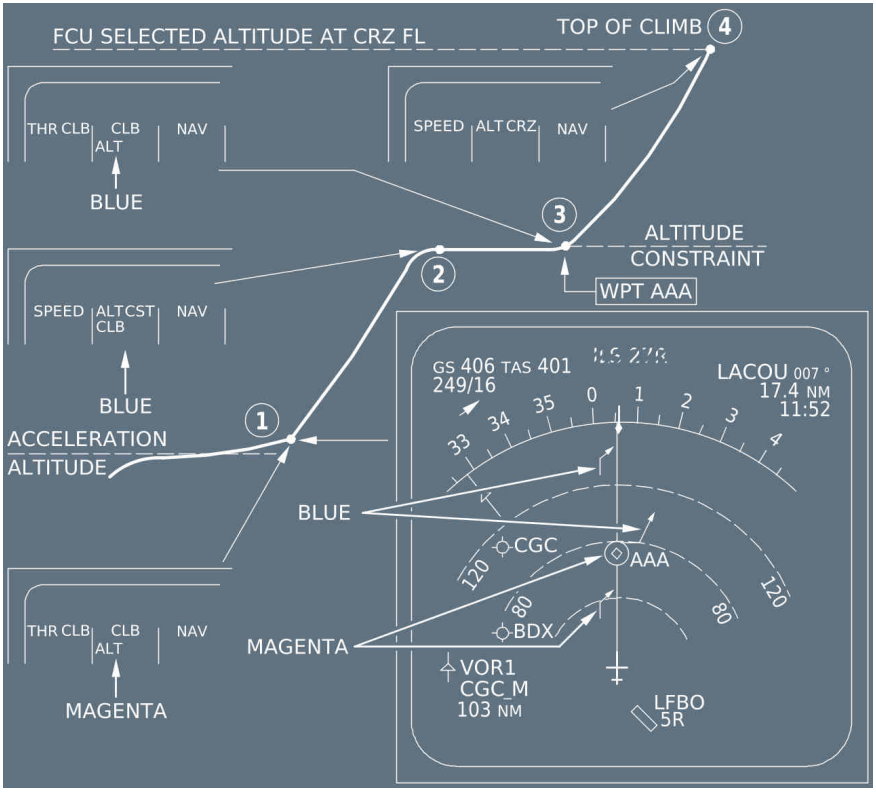
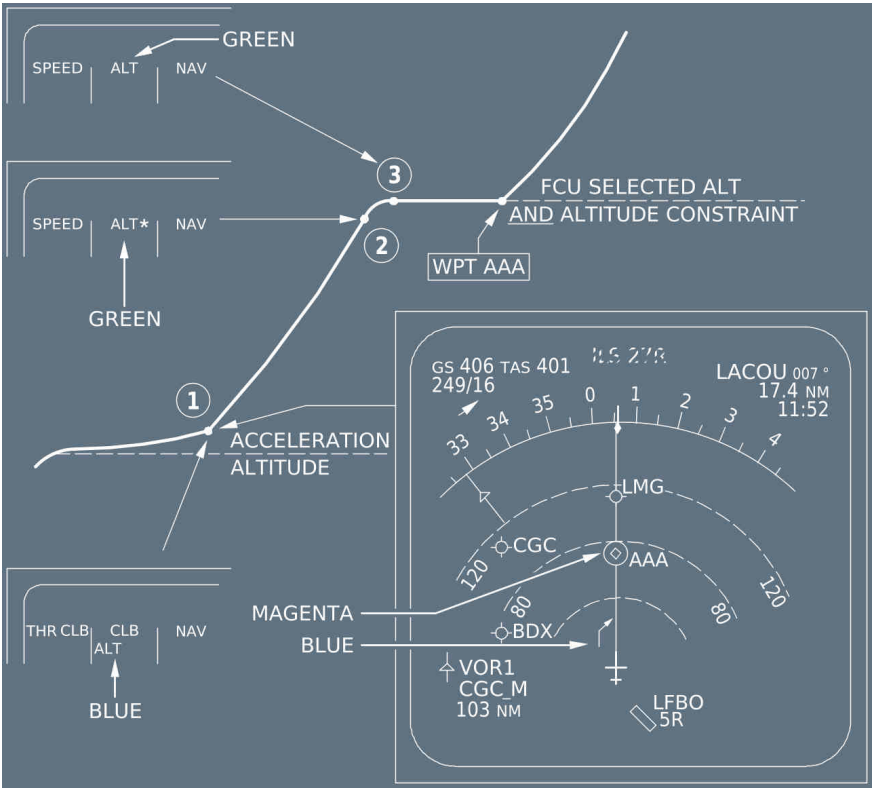


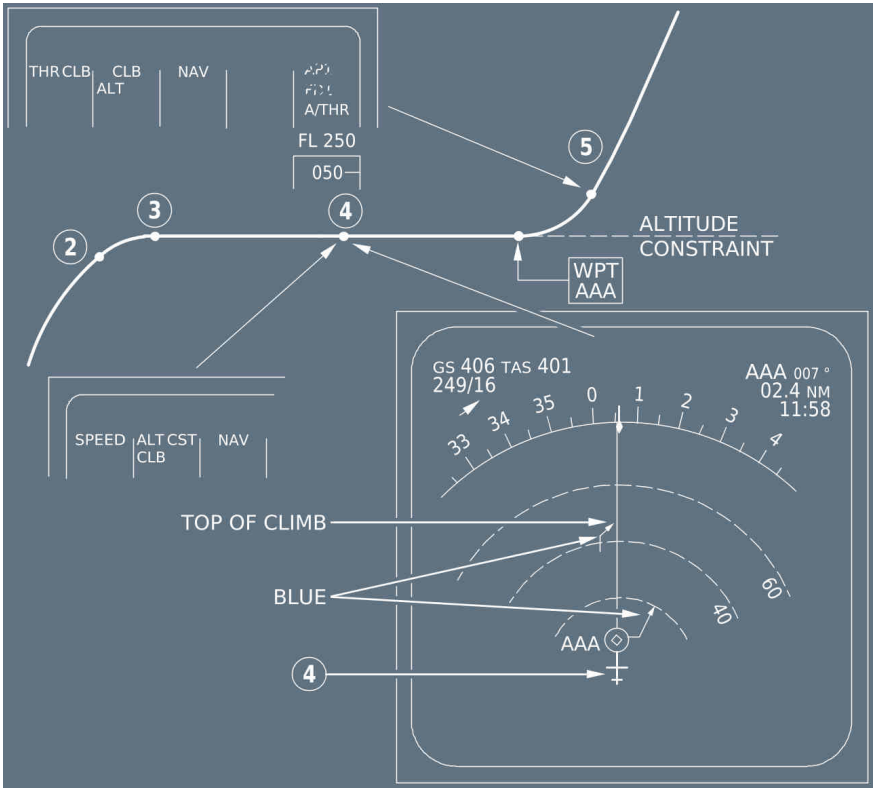
CASE 2

The FCU selected altitude is set at the next altitude constraint
The aircraft will automatically levels off at this altitude.



To resume the climb automatically when the waypoint AAA is reached, apply the following procedure during the level off (Position 4):

SELECT the FCU altitude to the next constraint (if any) or the cruise FL.
PUSH the FCU ALT selector knob to arm CLB mode.



RECOMMENDATION:

To ensure that you will not miss the next constraint, it is recommended to select the FCU altitude to the next constraint as described above.

MONITORING THE CONSTRAINTS

SPEED, ALTITUDE and TIME constraint can be checked using MCDUs. Each constraint is preceded by a star that indicates if the constraint is matched (magenta star) or missed (amber star).

ALTITUDE CONSTRAINT

- **If an altitude constraint is predicted as missed,**
  use the following procedure:

SET the FCU ALT to the next ALT CSTR
CHECK the position of the level off symbol on the ND (blue arrow) with respect to the waypoint with the constraint.
DECREASE the target speed until the constraint is met.

SPEED CONSTRAINT

CHECK the SPD CSTR predictions on the MCDU.

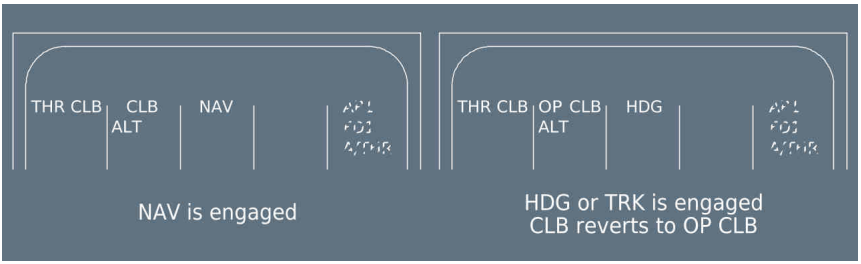
A magenta or amber star (*) indicates that the aircraft will match or miss the constraint.
If the aircraft is to miss the constraint by more than 10 kt, the MCDU scratchpad displays "SPD ERROR AT WPT ---- ".

"CHECK WEIGHT" MESSAGE.

Refer to DSC-22_20-90-20 "CHECK WEIGHT" Message

HDG/TRK MODE ENGAGEMENT

- **If HDG/TRK is engaged,** the guidance does not consider any F-PLN constraint. Therefore if the flight crew disengages NAV, CLB mode reverts to OP CLB.



SPEED SELECTION

- **If a specific speed is required:**
  TURN and PULL the SPD selector knob. (This changes the target speed to blue on the PFD speed scale).
  Predictions on the F-PLN page assume that the speed remains selected until the next SPD LIM or SPD CSTR, or the next phase, whichever comes first.

EXPEDITE CLIMB

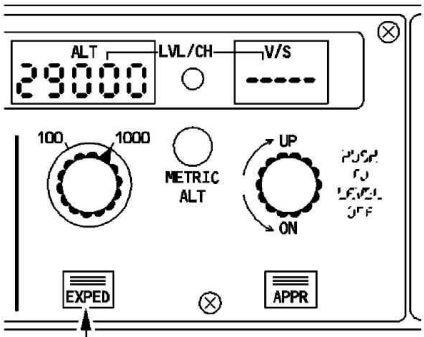
Ident.: PRO-NOR-SRP-01-40-00003990.0002001 / 11 FEB 11

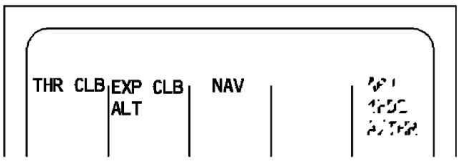
[2] **Applicable to: MSN 01767-02195, 02275-02405, 02457-02649, 02712-02737, 02908-03138, 03308, 03357-09063**

The flight may use the expedite mode temporarily to clear a specified altitude or to match a constraint.

PRESS EXPED pb on the FCU.

The AP acquires and maintains Green Dot speed. There is no benefit to use expedite mode above FL 250. The mach corresponding to green dot is too low to maintain an increased vertical speed.





To revert to normal climb:
PUSH ALT knob CLB mode will engage.

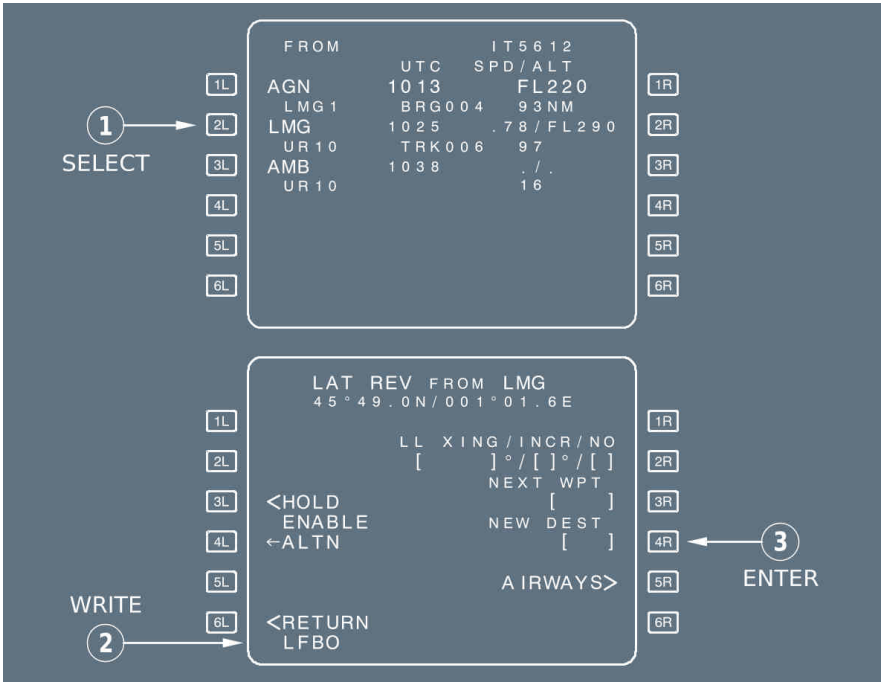
Note: *Pulling ALT knob or V/S knob or SPD/MACH knob also disengages EXPEDITE. PRESSING EXPED pb never disengages the mode.*

IMMEDIATE RETURN TO ORIGIN AIRPORT

Ident.: PRO-NOR-SRP-01-40-00003991.0003001 / 23 JUN 15

3 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

- **If the SEC F-PLN has been prepared for an immediate return to the airport of origin:**
  ACTIVATE the SEC F-PLN.
  PERFORM a DIR TO the appropriate waypoint.
- **If the SEC F-PLN has not been prepared for an immediate return to the airport of origin:**



PERFORM a lateral revision at TO waypoint
ENTER the departure airport ident in the NEW DEST field and INSERT the temporary flight plan.
PERFORM a lateral revision at the new destination
SELECT: APPR – STAR – VIA – TRANS and INSERT

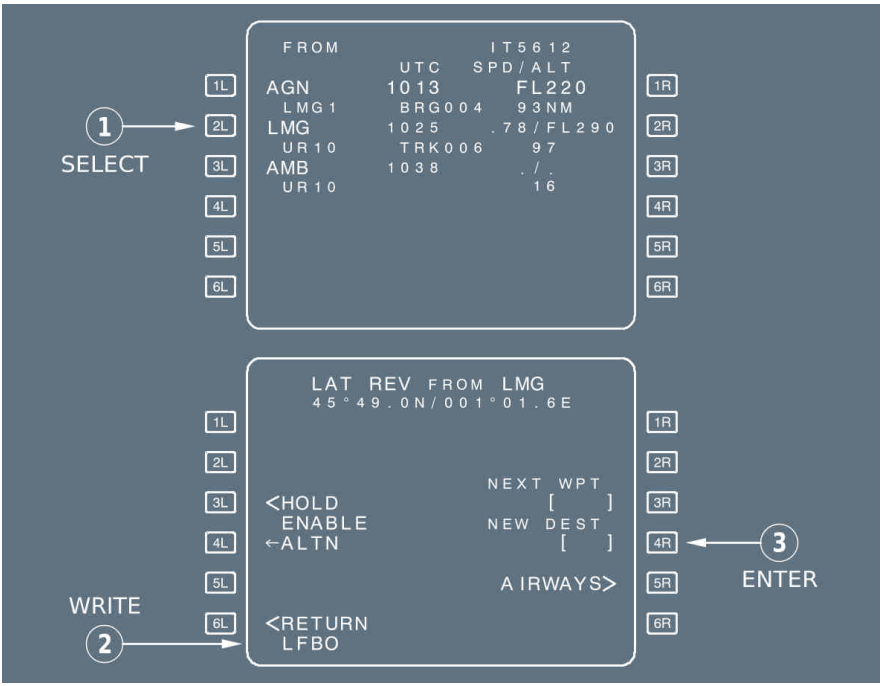
- **When cleared to divert:**
  PERFORM a DIR TO the suitable waypoint.
  ENTER QNH, WIND, MDA/MDH, LDG CONF.
  CHECK RAD NAV page.

IMMEDIATE RETURN TO ORIGIN AIRPORT

Ident.: PRO-NOR-SRP-01-40-00003991.0007001 / 23 JUN 15
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

- **If the SEC F-PLN has been prepared for an immediate return to the airport of origin:**
  REVERT to HDG mode, then ACTIVATE the SEC F-PLN.
  PERFORM a DIR TO the appropriate waypoint.

- **If the SEC F-PLN has not been prepared for an immediate return to the airport of origin:**



PERFORM a lateral revision at TO waypoint
ENTER the departure airport ident in the NEW DEST field.
PERFORM a lateral revision at the new destination

SELECT: APPR – STAR – VIA – TRANS and INSERT
CHECK and INSERT the TMPY F-PLN or continue with next revision.

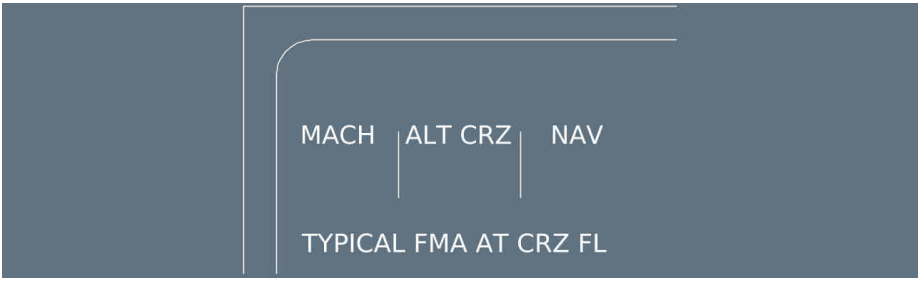
■ **When cleared to divert:**
PERFORM a DIR TO the suitable waypoint.
ENTER QNH, WIND, MDA/MDH, LDG CONF.
CHECK RAD NAV page.

Cruise

REACHING CRUISE FLIGHT LEVEL

Ident.: PRO-NOR-SRP-01-50-00003992.0002001 / 03 NOV 14
Applicable to: ALL

On reaching the cruise flight level, the flight crew should be sure that the FMA displays “ALT CRZ” in its second column, which ensures that the aircraft is at cruise flight level and at Economy Cruise Mach (ECON CRZ MACH).



The FMGS engages the “soft altitude” (SOFT ALT) mode 2 min after the cruise flight level is captured and Mach stabilized. (SOFT ALT) mode allows the aircraft to deviate ± 50 ft from the target altitude to minimize the thrust variation and reduce the fuel consumption.

- **If the FMA does not display ALT CRZ at the assigned flight level,** soft altitude mode will not engage and the predictions will be computed at the preplanned flight level. This will occur when the ATC assigned flight level is lower than the preplanned flight level entered on the PROG page.

- **If the FMA does not display ALT CRZ at the assigned FL (as may occur when the ATC-assigned FL is lower than the preplanned FL selected initially):**
  PRESS the [PROG].
  ENTER the current cruise flight level.

  Note: If the current cruise flight level is above the preplanned FL, selecting the FCU updates it automatically.

“SET SPD AUTO” OR “SET MANAGED SPD” OR “CHECK SPEED MODE”

- **If the climb phase was flown in selected speed and if the cruise phase is planned to be flown in managed speed (ECON MACH/SPEED)** , “SET SPD AUTO” or “SET MANAGED SPEED” or "CHECK SPEED MODE" appears on the PFD and MCDU as a reminder.

PRESS the FCU speed selector knob to activate the managed Mach.

MONITORING THE NAVIGATION ACCURACY

Ident.: PRO-NOR-SRP-01-50-A-00003993.0001001 / 22 MAY 12
Applicable to: ALL

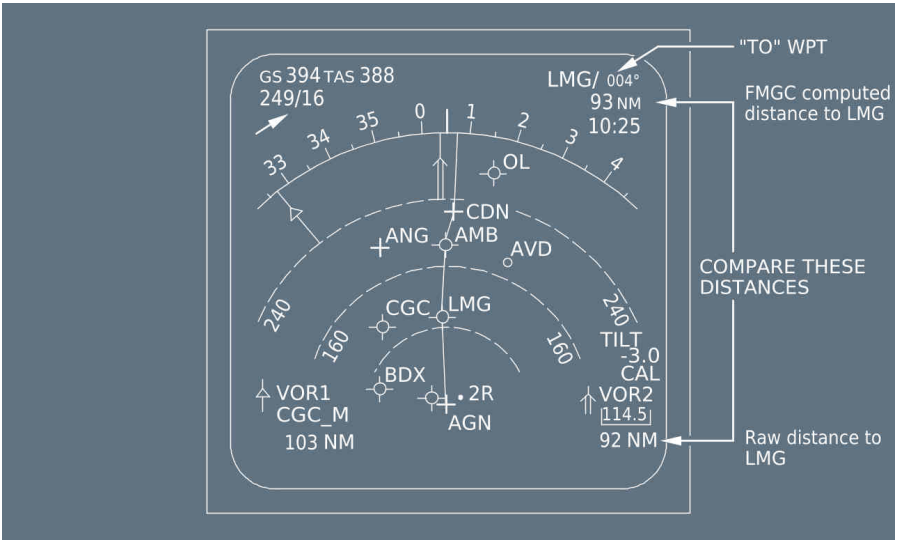
GENERAL

On aircraft equipped with GPS PRIMARY, the navigation accuracy check is not required as long as GPS PRIMARY ◁⋘ is available.
Otherwise, navigation accuracy shall be checked periodically in cruise.

The PROG page displays an estimated accuracy as being high or low (center of sixth line):
- "HIGH" means that the FMGS estimates the FM position accurate enough to meet the EN ROUTE criteria,
- "LOW" means that the pilot must compare raw data from tuned navaids with corresponding data computed by FM and shown on the ND or MCDU PROG page. The appearance of the message "NAV ACCUR DOWNGRAD" on the MCDU calls for a similar crosscheck.

Note: The pilot should make such a comparison periodically, even if the PROG page is displaying "HIGH" and navaids are available: this allows him to quantify the FM position error.

The method for checking the accuracy is explained in the SOP and in Evaluation of position accuracy chapter (*Refer to DSC-22_20-20-20 General*).
A quick check is explained here below when the TO waypoint is a DME type. (VOR/DME or VOR/TAC or DME or TAC)

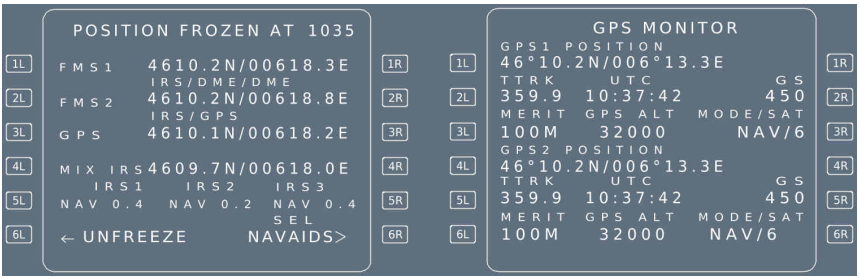


Ident.: PRO-NOR-SRP-01-50-A-00003994.0013001 / 22 NOV 11

[1] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

POSITION DISCREPANCY

- **If there is a discrepancy between the raw data position and the FM position:**
  PRESS the DATA key on the MCDU.
  SELECT the POSITION MONITOR page.
  SELECT “FREEZE”.
  On the other MCDU : Select the GPS MONITOR page.



Ident.: PRO-NOR-SRP-01-50-A-00003994.0014001 / 14 FEB 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

POSITION DISCREPANCY

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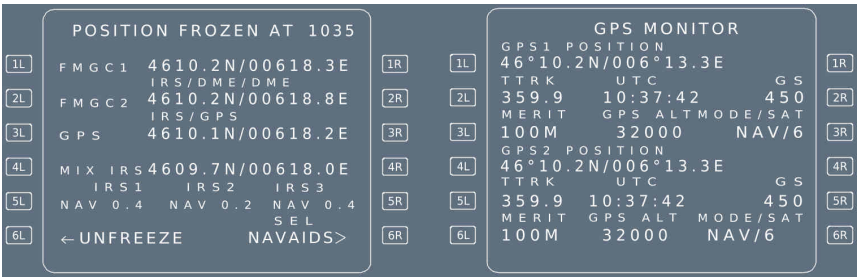


MONITORING THE FUEL PREDICTIONS

Ident.: PRO-NOR-SRP-01-50-00003995.0013001 / 14 FEB 11
Applicable to: ALL

The F-PLN and FUEL PRED pages display fuel and time predictions throughout the flight. These predictions are meaningful if the lateral and vertical flight plan, and the entered winds are kept accurate enough as the flight progresses.

PROCEDURE

In addition to the Fuel Management procedure described in the SOPs (*Refer to PRO-NOR-SOP-15 Cruise - Flight Progress*), periodically apply the following actions:

KEEP ACCURATE FMS PREDICTIONS

Periodically UPDATE the F-PLN elements (F-PLN waypoints, step altitudes, predicted winds).

CHECK the MIN DEST FOB value on the FUEL PRED page

The MIN DEST FOB value is computed by the FMS and by default it is equals to ALTN + FINAL. ALTN, FINAL and MIN DEST FOB can be modified by the flight crew.
At the beginning of the CRZ phase, and/or after any change of destination or alternate airport, check that the MIN DEST FOB value is meaningful. Otherwise, update the MIN DEST FOB value, as appropriate.

CHECK the DEST EFOB value on the F-PLN or FUEL PRED page

MONITOR the EFOB at destination on the F-PLN or FUEL PRED page. If necessary, ADAPT the flight strategy.

"DEST EFOB BELOW MIN" MESSAGE

If the predicted EFOB at destination becomes less than the MIN DEST FOB value displayed on the FUEL PRED page:

- The destination EFOB turns to amber on the F-PLN, FUEL PRED and PERF (CLB, CRZ, DES) pages, and REPORT page.
- The "DEST EFOB BELOW MIN" amber message is displayed on the MCDU scratchpad, after 2 min (if the FMS is in CRZ or DES phase).

Note: *If the flight crew has cleared the "DEST EFOB BELOW MIN" message, and if the predicted EFOB at destination is still less than the MIN DEST FOB value, the "DEST EFOB BELOW MIN" message will appear again at the beginning of the descent phase.*

PROCEDURE

- **If the "DEST EFOB BELOW MIN" message is triggered on the MCDU:**
  CHECK the DEST EFOB value on the F-PLN or FUEL PRED page,
  CHECK the hypothesis used by the FMS to compute the fuel predictions,
  Check that the F-PLN elements (F-PLN waypoints, step altitudes, predicted winds) are up-to-date, to ensure that the FMS predictions are accurate.
  Check that the MIN DEST FOB fuel value is meaningful and corresponds to the planned fuel strategy.
  ADAPT the flight strategy as required.

ENTERING A STEP CLIMB OR A STEP DESCENT

Ident.: PRO-NOR-SRP-01-50-00003996.0002001 / 22 MAY 12

[2] **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

The crew may use the STEP ALTS page to enter up to four geographic step points or one optimal step (computed by the FMGS) at any waypoint of the cruise.

PROCEDURE

PRESS the PERF key.
SELECT "STEP ALTS" prompt.

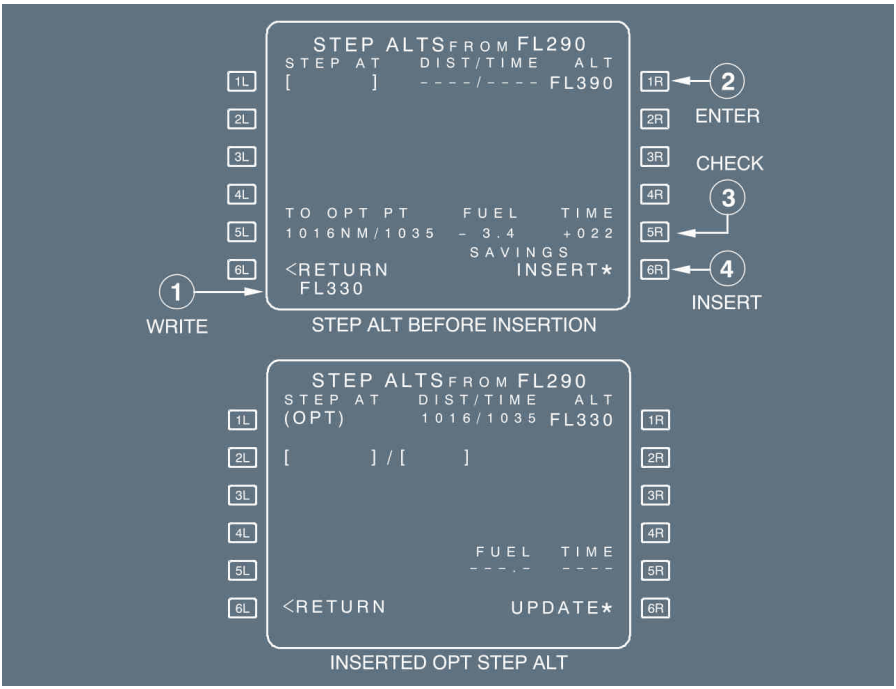
The PERF PAGE displays this prompt in cruise phase. The crew may also call up the STEP ALTS page using a vertical revision at any cruise waypoint.

ENTERING AN OPTIMAL STEP (ONLY STEP CLIMB)

WRITE a step altitude or FL into the scratchpad.
ENTER the step altitude or FL in the [1R] field.
CHECK the FUEL and TIME SAVINGS predictions on the 5L and 5R fields.
PUSH the INSERT prompt [6R] if adequate.

After insertion, the optimum step climb is updated only when the flight crew presses the UPDATE prompt [6R].
The ND shows symbols for the start of climb (S/C) and the top of climb (T/C). The MCDU shows the associated pseudo-waypoints.
It is possible to convert an optimum step to a geographic step by overwriting the [1L] field (see geographic step).

- **When reaching the step climb pseudo-waypoint:**
  REQUEST climb clearance.
  ADJUST the FCU altitude to the STEP ALT, and PUSH.



ENTERING A GEOGRAPHIC STEP

WRITE a step altitude into the scratchpad.

The format is position/altitude (or FL). The position can be a waypoint or waypoint/distance to waypoint. The waypoint/distance is an along track offset waypoint.

ENTER it in [1L] to [4L] field.

The entry of the initial geographic step point requires both a valid waypoint and altitude entries. When a step has been entered, the flight crew may change the position and the altitude independently. The flight crew cannot modify the position and the altitude in a single entry: To modify both, they should modify the position first, and then the altitude.

CHECK the predictions

- **When reaching the step climb or descent pseudo-waypoint (S/C or S/D):**
  REQUEST climb or descent clearance.
  ADJUST the FCU altitude to the STEP ALT, and PUSH.

The DIST/TIME field may display the following messages:

- ABOVE MAX if the step altitude exceeds the MAX ALT.
- IGNORED if the start step point is less than 50 NM from the top of descent.
- STEP NOW when the aircraft is within 20 NM of the step point.
  If the aircraft overflies the step waypoint without commencing a climb or a descent, the system deletes the step from the vertical F-PLN automatically (a “STEP DELETED” message is displayed on the MCDU scratchpad), and recomputes the predictions.
  A step is not deleted if the FCU altitude is moved only partially towards the step altitude.
  The flight phase remains “cruise” whenever a step is initiated.

Note: For an altitude restriction defined at a waypoint less than 50 NM before the top of descent and lower than the CRZ FL, it is recommended to enter an altitude constraint rather than a step.

ENTERING A STEP CLIMB OR A STEP DESCENT

Ident.: PRO-NOR-SRP-01-50-00003996.0012001 / 22 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

The crew may use the STEP ALTS page to enter up to four geographic step points or one optimal step (computed by the FMGS) at any waypoint of the cruise.

PROCEDURE

PRESS the F-PLN key on the MCDU.
SELECT the VERT REV page at any waypoint.
SELECT "STEP ALTS" prompt.

The PERF PAGE displays this prompt in cruise phase. The crew may also call up the STEP ALTS page using a vertical revision at any cruise waypoint.

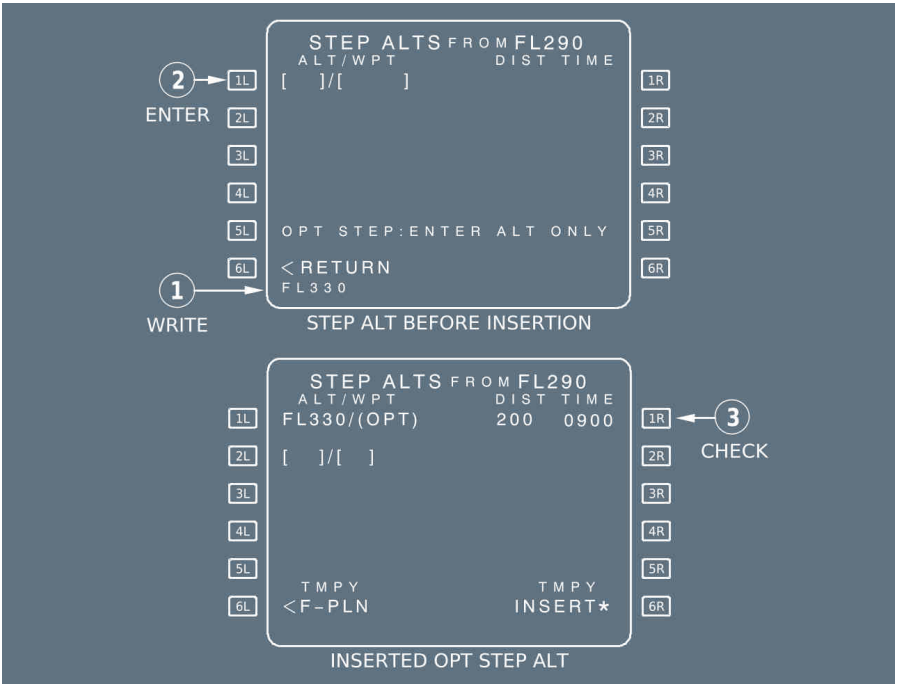
ENTERING AN OPTIMAL STEP (ONLY STEP CLIMB)

WRITE the desired step altitude into the scratchpad.
ENTER it in the [1L] field

The FMGS automatically computes the optimal location of the step and inserts it in the TMPY F-PLN.

CHECK the FUEL and TIME SAVINGS predictions on the [5R].

After insertion, the optimum step location is regularly updated, until the aircraft is within 20 NM of the step point.
The ND shows symbols for the start of climb (S/C) and the top of climb (T/C). The MCDU shows the associated pseudo-waypoints.
It is possible to convert an optimum step to a geographic step by overwriting the [1L] field (see geographic step).



- **When reaching the step climb pseudo-waypoint (S/C):**
  REQUEST climb clearance to ATC.
  ADJUST the FCU altitude to the STEP ALT, and PUSH the FCU knob.

Note: *The step will be deleted from the F-PLN after having sequenced the start of climb for the step.*

ENTERING A GEOGRAPHIC STEP (STEP CLIMB OR STEP DESCENT)

WRITE a step altitude and waypoint into the scratchpad.

The format is:
- *Altitude (or FL)/waypoint (Ex: FL 350/BERAD)*
- *Altitude (or FL)/waypoint/distance (Ex: FL 350/BERAD/-20)*

The waypoint must be in the flight plan.

ENTER it in [1L] to [4L] field.

It is possible to independently modify either the location or the altitude of an existing step altitude. It is not possible to modify with a single entry both the location and the altitude : An entry "waypoint/xxx" will be taken by the system as an along track offset of xxx nautical miles.

CHECK the predictions (distance, time).

- **When reaching the step climb or descent pseudo-waypoint (S/C or S/D):**
  REQUEST climb or descent clearance
  ADJUST the FCU altitude to the STEP ALT, and PUSH the FCU knob.

The DIST/TIME field may display the following messages:

- ABOVE MAX if the step altitude exceeds the MAX ALT.
- IGNORED if the step end point is less than 50 NM from the top of descent or if the step climb is located prior to the top of climb or after the top of descent.
- STEP AHEAD when the aircraft is within 20 NM of the step point.
  If the aircraft overflies the step pseudo-waypoint without commencing a climb or a descent, the system deletes the step from the vertical F-PLN automatically (a "STEP DELETED" message is displayed on the MCDU scratchpad), and recomputes the predictions.
  The step is not deleted if the FCU altitude is moved only partially towards the step altitude.
  The flight phase remains "cruise" whenever a step is initiated.

Note: *For an altitude restriction defined at a waypoint less than 50 NM before the top of descent and lower than the CRZ FL, it is recommended to enter an altitude constraint rather than a step.*

IMMEDIATE CHANGE OF LEVEL IN CRUISE

Ident.: PRO-NOR-SRP-01-50-00003997.0001001 / 14 FEB 11

3 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

When the pilot changes his flight level without inserting a step:

- If the FCU-selected altitude is above the previous CRZ FL, the CRZ FL on the PROG page changes to the new flight level.
- If the FCU-selected altitude is lower than the previous CRZ FL and if the distance to DEST is more than 200 NM, the CRZ FL on the PROG page changes.

  In that case Mach target is managed as follows:
  - At the start of the descent, the Mach target is the managed Mach number at the initial cruise flight level.
  - When the aircraft reaches the new flight level, the Mach target switches either to the Mach number for the lower CRZ FL, or to the speed for the lower CRZ FL if the aircraft reaches the crossover altitude. This logic prevents the aircraft from exceeding VMO during descent.
- If the FCU-selected altitude is lower than the previous CRZ FL and the aircraft is within 200 NM of its destination, the system activates the descent phase.

The pilot may reactivate the cruise phase by entering a new cruise flight level in the PROG page.

IMMEDIATE CHANGE OF LEVEL IN CRUISE

Ident.: PRO-NOR-SRP-01-50-00003997.0002001 / 14 FEB 11

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

When the flight crew changes the flight level through a FCU altitude selection:

- If the FCU-selected altitude is above the previous CRZ FL, the CRZ FL on the PROG page changes to the new flight level.
- If the FCU-selected altitude is lower than the previous CRZ FL and if the distance to DEST is more than 200 NM, the CRZ FL on the PROG page changes.

  In that case Mach target is managed as follows:
  - At the start of the descent, the Mach target is the managed Mach number at the initial cruise flight level.
  - When the aircraft reaches the new flight level, the Mach target switches either to the Mach number for the lower CRZ FL, or to the speed for the lower CRZ FL if the aircraft reaches the crossover altitude. This logic prevents the aircraft from exceeding VMO during descent.
- If the FCU-selected altitude is lower than the previous CRZ FL and the aircraft is within 200 NM of its destination, the system activates the descent phase.

The pilot may reactivate the cruise phase by entering a new cruise flight level in the PROG page.

CAUTION	If the pilot modifies the CRZ FL on the PROG page without setting the FCU altitude, the FMS may target a Speed/Mach above VMO/MMO. Changing the FCU altitude makes the FMS behavior become correct again.

PREPARATION FOR DESCENT AND APPROACH

Ident.: PRO-NOR-SRP-01-50-B-00003998.0001001 / 09 DEC 09
Applicable to: ALL

GENERAL

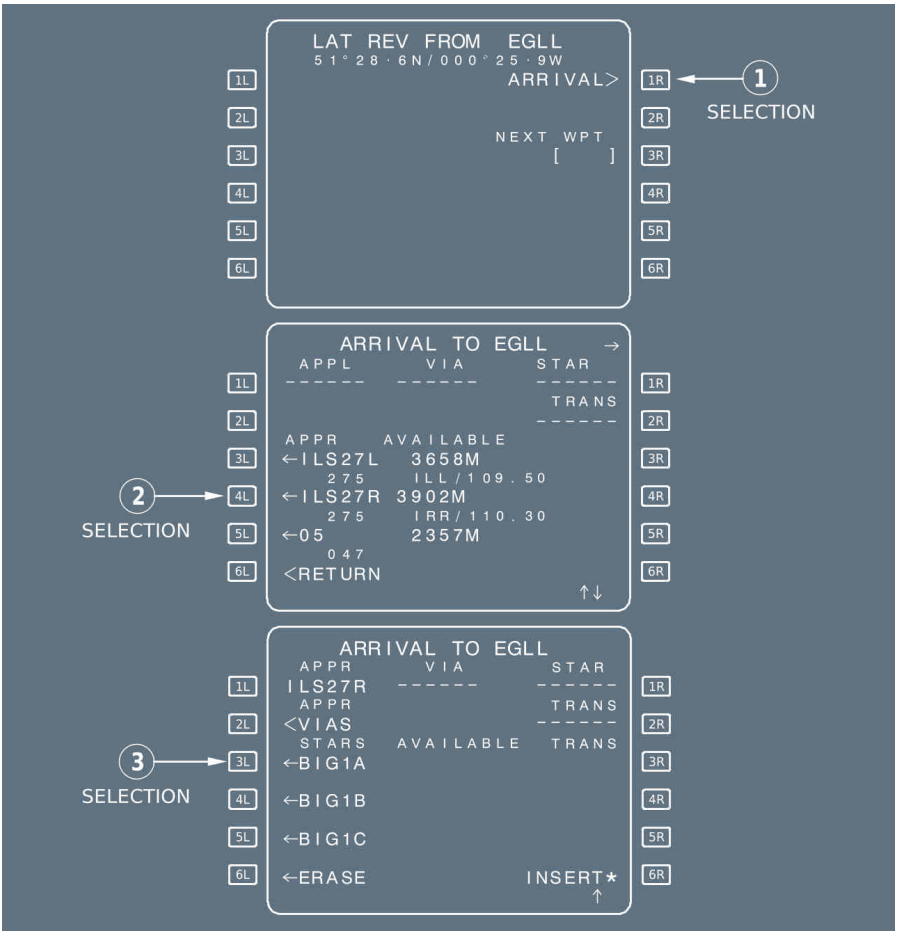
The preparation for descent and approach consists of :
- Entering PERF and WIND data
- Defining the lateral and vertical F-PLN
- Checking the tuning (auto or manual) of the appropriate navaids

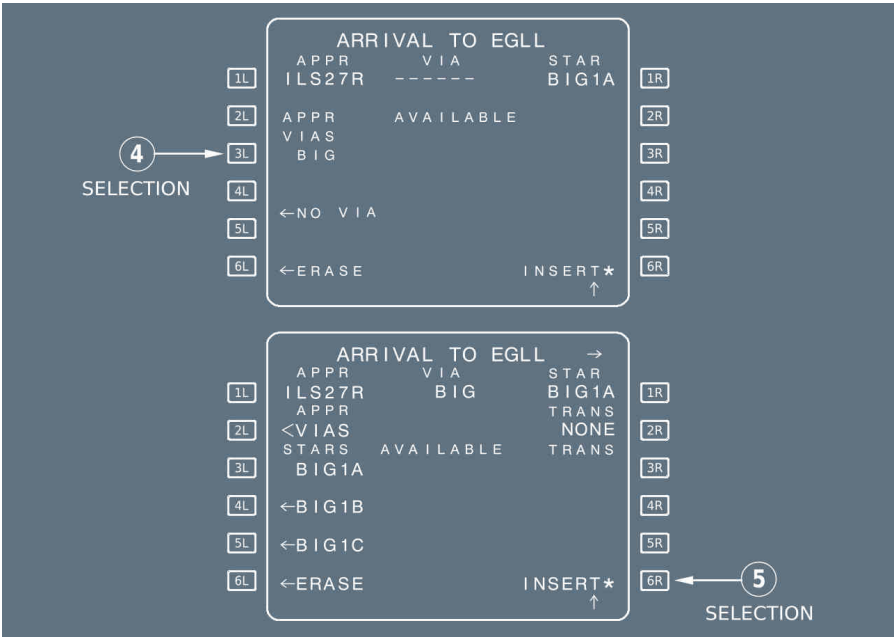
After receiving the arrival information, the flight crew should use the following procedure.

Ident.: PRO-NOR-SRP-01-50-B-00003999.0001001 / 22 MAY 12

4 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

REVISION OF LATERAL F-PLN





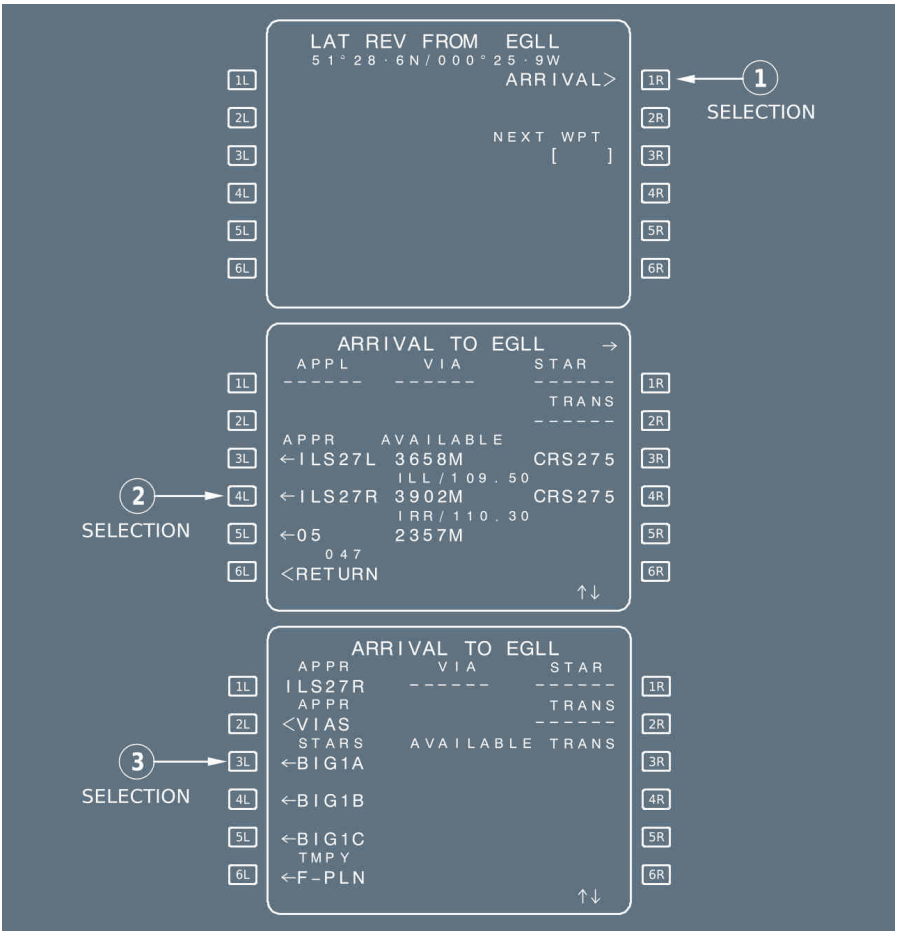
PERFORM a lateral revision at destination
SELECT an ARRIVAL
SELECT an APPROACH, a STAR, a TRANSITION, a VIA.

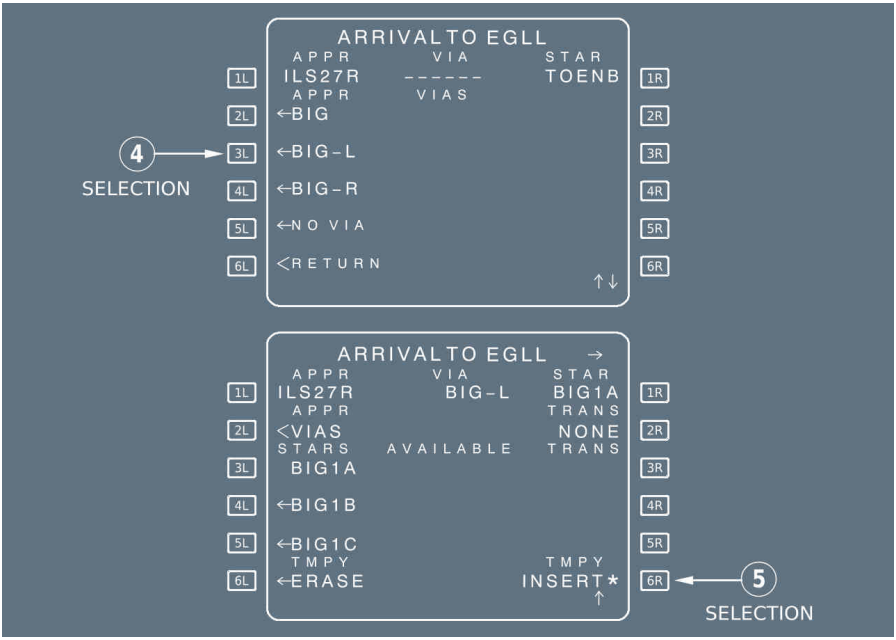
When the pilot selects successive items, the page are automatically sequenced. But pressing "NEXT PAGE" key brings up the APPR and STAR page successively.

CHECK the temporary revision including the missed approach.
INSERT the temporary revision, [6R] key.

Ident.: PRO-NOR-SRP-01-50-B-00003999.0015001 / 22 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

REVISION OF LATERAL F-PLN





PERFORM a lateral revision at destination
SELECT an ARRIVAL prompt.
SELECT an APPROACH.
SELECT A STAR.
If a desired, call up VIA subpage by pressing [2L] prompt on STAR page and SELECT a VIA.

Note: *When the pilot selects successive items, the page are automatically sequenced. But pressing "→" key brings up the APPR and STAR page successively.*

CHECK and INSERT the TMPY F-PLN or continue with next revision.

Ident.: PRO-NOR-SRP-01-50-B-00004000.0001001 / 22 MAY 12

5 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

REVISION OF VERTICAL FLIGHT PLAN

CHECK that the speed and altitude constraints as displayed on the ND. (Use the CSTR pusbutton).

ENTER any additional speed or altitude constraints using the vertical revision page.

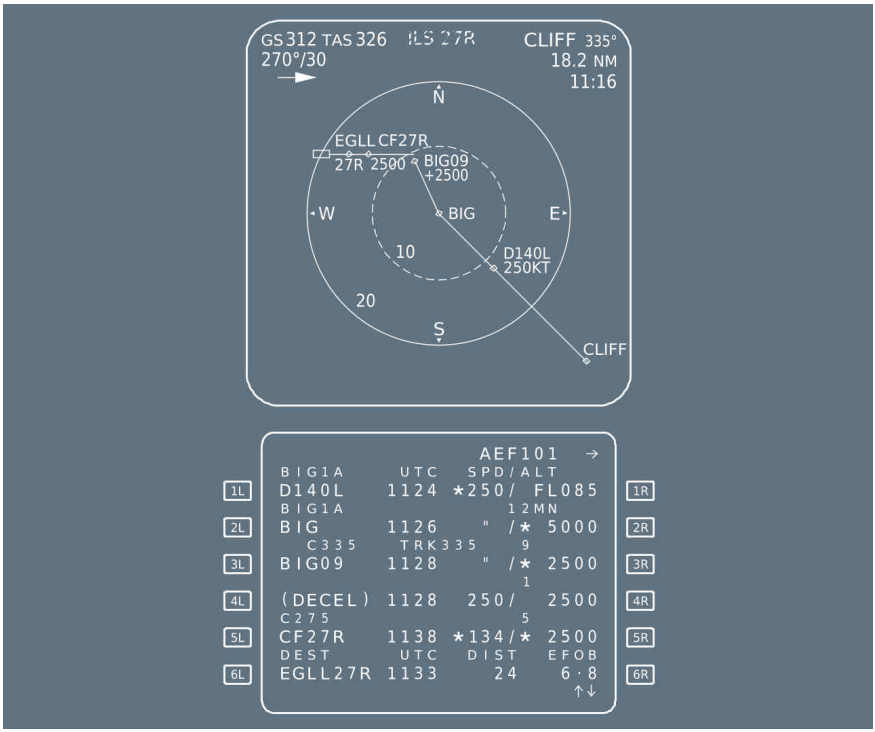
In order not to be too fast when commencing the approach, you may insert a speed constraint at the FAF (Final Approach Fix).

When all computations are completed.

REVIEW the flight plan, using the approach chart.

When the destination runway changes and if the previously selected STAR is compatible with the new runway, the system selects it automatically in the temporary F-PLN. If the flight crew has entered any revision or constraint on this STAR, it will not be transferred.

The pilot must reenter it in order to retain it for this approach.



Ident.: PRO-NOR-SRP-01-50-B-00004000.0003001 / 28 NOV 17
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

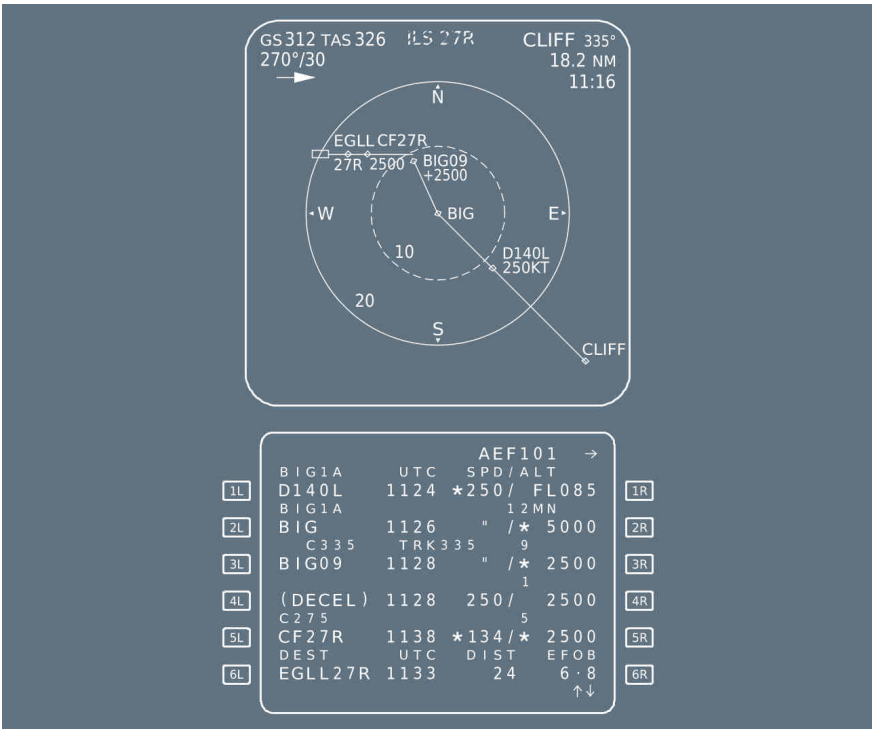
REVISION OF VERTICAL FLIGHT PLAN

CHECK that the speed and altitude constraints as displayed on the ND. (Use the CSTR pushbutton).
ENTER any additional speed or altitude constraints using the vertical revision page.

In order not to be too fast when commencing the approach, you may insert a speed constraint at the FAF (Final Approach Fix).
When all computations are completed.

REVIEW the flight plan, using the approach chart.

Note: *: When the crew changes the approach or the destination runway, and if the previously selected approach procedure is compatible with the new one, the system automatically inserts it in the temporary F-PLN.*



Ident.: PRO-NOR-SRP-01-50-B-00004001.0002001 / 05 JUN 18

6 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

ENTERING THE WINDS FOR DESCENT

Refer to DSC-22_20-30-20-25 Wind - Temperature - QNH - General.

Ident.: PRO-NOR-SRP-01-50-B-00004001.0003001 / 05 JUN 18

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

ENTERING THE WINDS FOR DESCENT

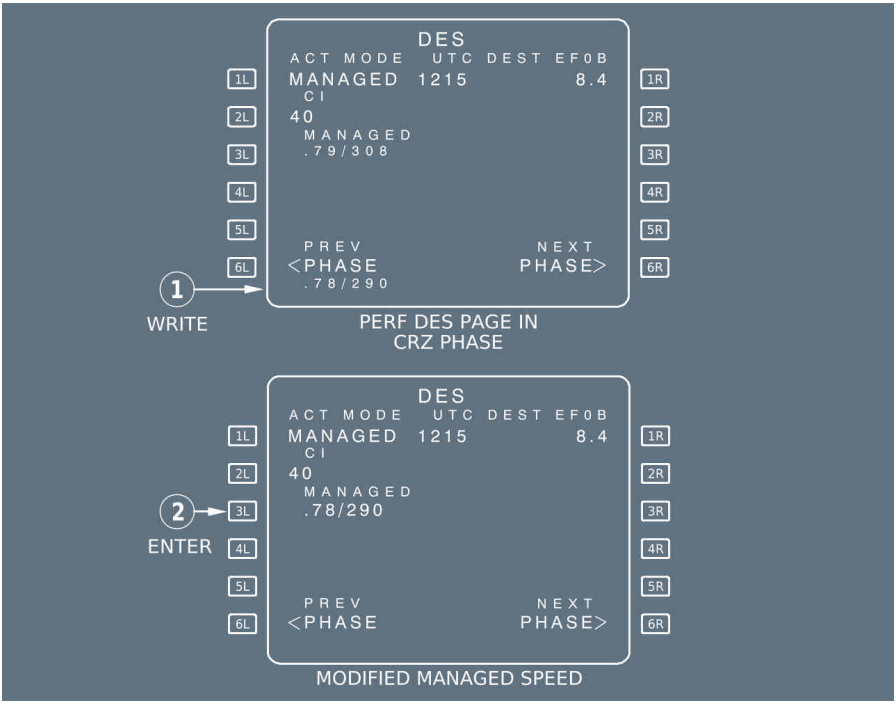
Refer to DSC-22_20-30-20-28 Wind - Temperature - QNH - General.

Ident.: PRO-NOR-SRP-01-50-B-00004002.0002001 / 22 MAY 12

7 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

PRESELECTING A MANAGED SPEED/MACH

As long as the descent phase is not active, the PERF DES page may either be used to select a speed, or a Mach number, or both, to replace the optimum descent speed.
The Flight Guidance Computer then uses the entered speed, instead of the optimum speed for computing the descent profile.
When the system switches to the descent phase, it sets the MANAGED target speed to the entered speed. From there, the speed may only be modified by using the FCU selector knob.
Once in descent phase, the pilot cannot modify the MANAGED speed again.



PROCEDURE

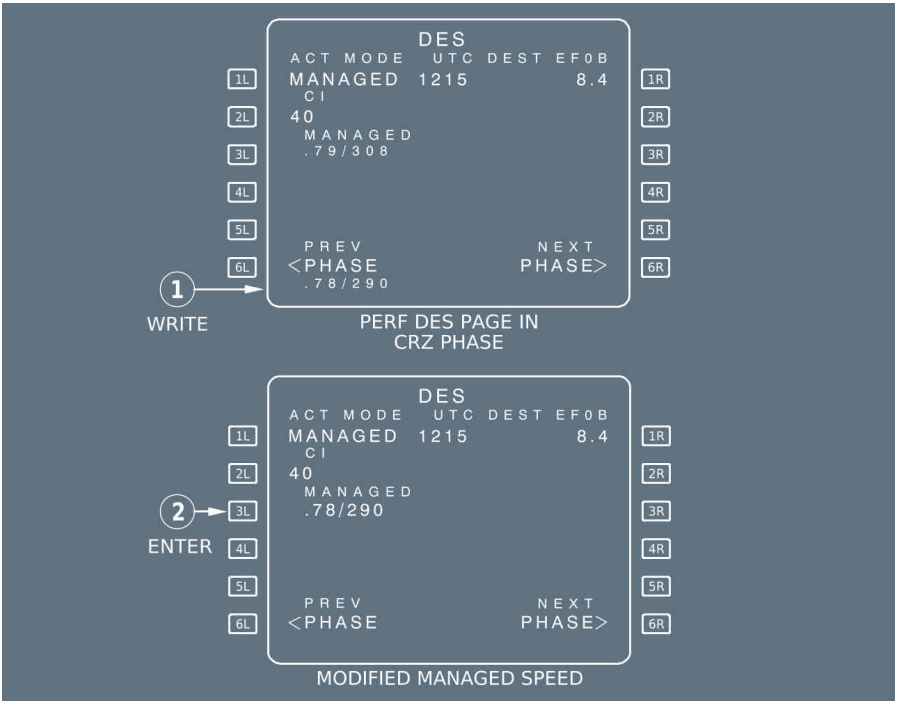
PRESS the PERF on MCDU.
SELECT the “NEXT PHASE” prompt.
WRITE the descent speed into the scratchpad and ENTER it.
The 3L field displays the imposed managed speed value.

Ident.: PRO-NOR-SRP-01-50-B-00004002.0009001 / 22 MAY 12
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

PRESELECTING A MANAGED SPEED/MACH

The PERF DES page may either be used to select a speed, or a Mach number, or both, to replace the optimum descent speed.
The Flight Guidance Computer then uses the entered speed, instead of the optimum speed for computing the descent profile.
When the system switches to the descent phase, it sets the MANAGED target speed to the entered speed. From there, the speed may only be modified by using the FCU selector knob.

Once in descent phase, the pilot cannot modify the MANAGED speed again.



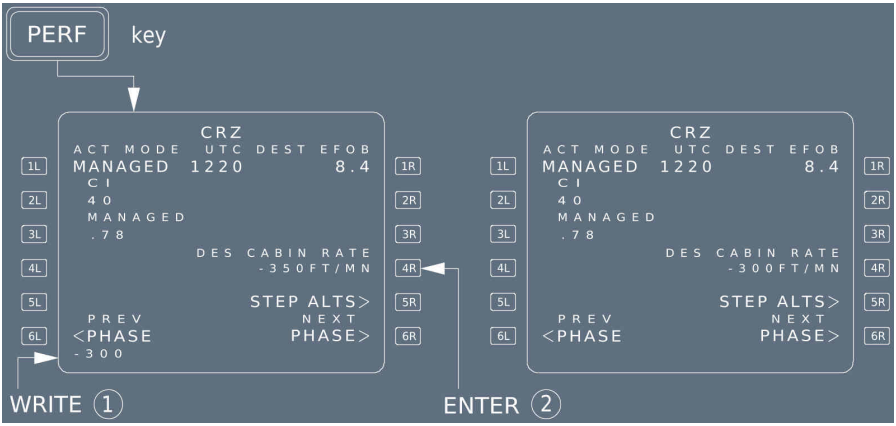
PROCEDURE

PRESS the PERF on MCDU.
SELECT the “NEXT PHASE” prompt.
WRITE the descent speed into the scratchpad and ENTER it.
The 3L field displays the imposed managed speed value.

Ident.: PRO-NOR-SRP-01-50-B-00004003.0003001 / 16 NOV 11

8 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

MODIFICATION OF THE CABIN RATE

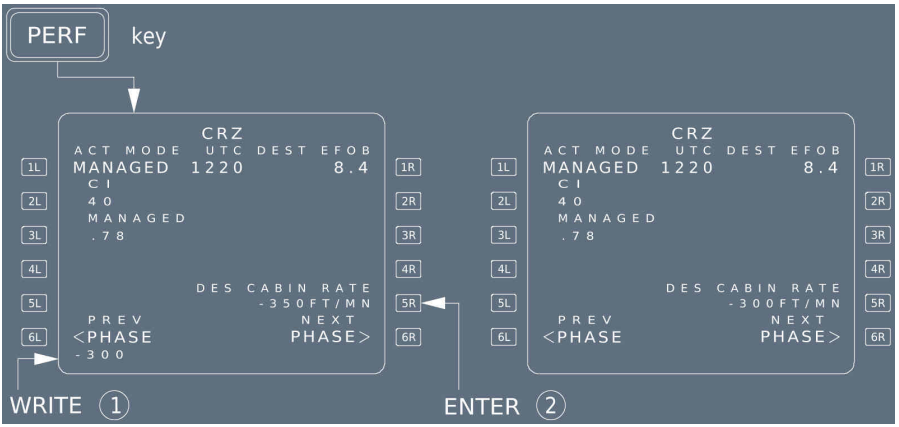


PROCEDURE

PRESS the MCDU's PERF.
WRITE the new cabin rate in the scratchpad.
ENTER it in the [4R] field.

Ident.: PRO-NOR-SRP-01-50-B-00004003.0004001 / 16 NOV 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

MODIFICATION OF THE CABIN RATE



PROCEDURE

PRESS the MCDU's PERF.
WRITE the new cabin rate in the scratchpad.
ENTER it in the [5R] field.

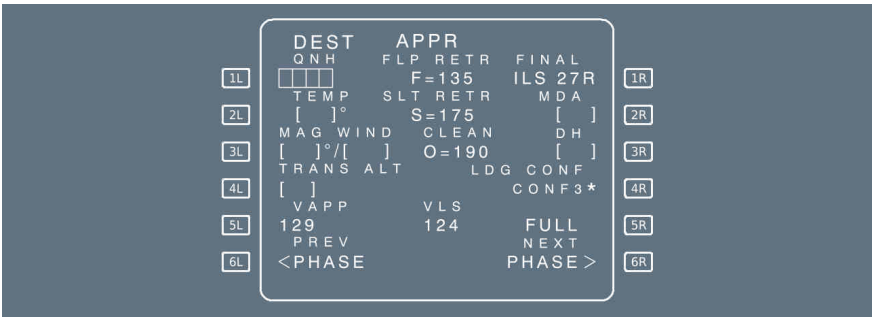
Ident.: PRO-NOR-SRP-01-50-B-00004004.0002001 / 22 MAY 12
Applicable to: MSN 01767-01920, 02108, 02275-02334

ENTERING THE APPROACH DATA

From PERF DES page, SELECT “NEXT PHASE” [6R] key to display the APPR page.
ENTER QNH, TEMP, WIND at destination (magnetic north reference), DH or MDA (MDH depending on the OPC option).

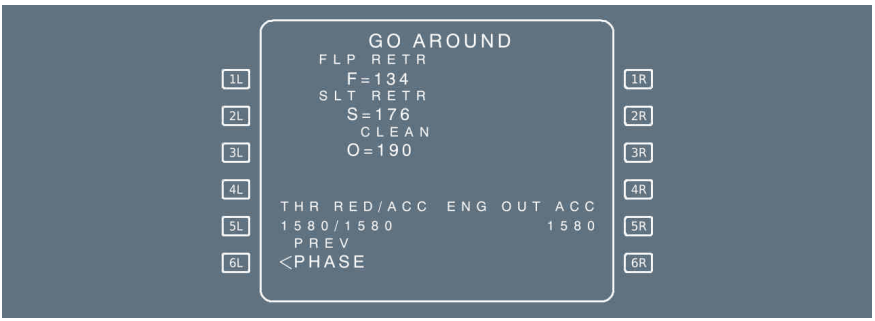
(The PFD displays the MDA/MDH or DH only when the distance to destination is less than 250 NM).

CHECK and, if necessary, MODIFY
- LDG CONF (landing configuration),
- VAPP (the FM-computed value may be modified),
- TRANS ALT (transition altitude).



The scratchpad displays "ENTER DEST DATA" if the approach page is not completed when the aircraft is 180 NM from destination.

SELECT "NEXT PHASE" in order to display the GO AROUND page.
CHECK and, if necessary, MODIFY the THR RED ALT and the ACC ALT.



Ident.: PRO-NOR-SRP-01-50-B-00004004.0003001 / 19 APR 17
Applicable to: MSN 02195-02204, 02359, 02405, 02482

ENTERING THE APPROACH DATA

From PERF DES page, SELECT "NEXT PHASE" [6R] key to display the APPR page.

ENTER QNH, TEMP, WIND at destination (magnetic north reference), DH or MDA (MDH depending on the OPC option).

(The PFD displays the MDA/MDH or DH value, only when the distance to destination is less than 250 NM).

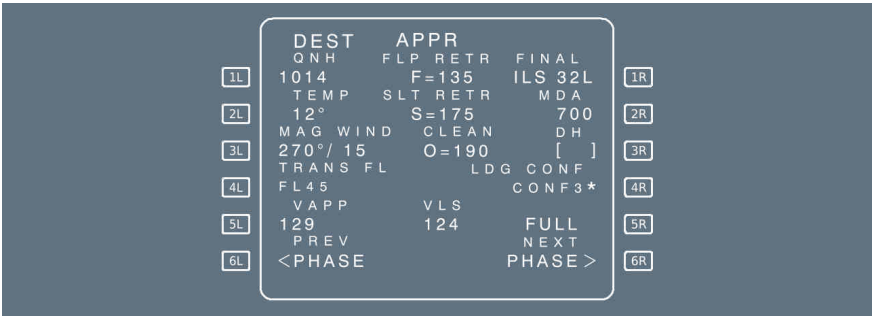
CHECK and, if necessary, MODIFY the LDG CONF (landing configuration)

CHECK, and if necessary MODIFY the VAPP

The FMS-computed value may be modified

CHECK the TRANS FL value

(see note 1 below)



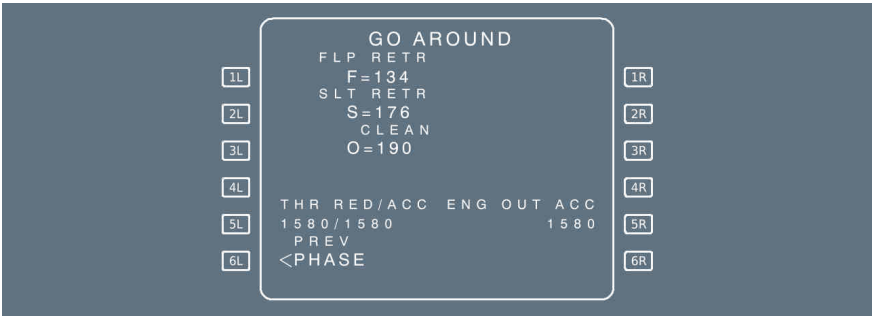
Note: *1. The default TRANS FL value is computed by the FMS based on:*

- *The Transition Altitude of the destination airport (extracted from the NAV Database),*
- *The QNH value entered on PERF APPR page. Due to the internal FMS computation of altitude constraints, it is rounded to the upper multiple of 5.*
  If this computed TRANS FL value differs by more than 500 ft from the Transition Level specified on the approach chart or reported by ATC, the flight crew may modify the TRANS FL value.

2. The scratchpad displays "ENTER DEST DATA" if the PERF APPR page has not been completed when the aircraft is less than 180 NM from destination.

SELECT "NEXT PHASE" in order to display the GO AROUND page.

CHECK and, if necessary, MODIFY the THR RED ALT and the ACC ALT.



Ident.: PRO-NOR-SRP-01-50-B-00004004.0010001 / 22 MAY 12

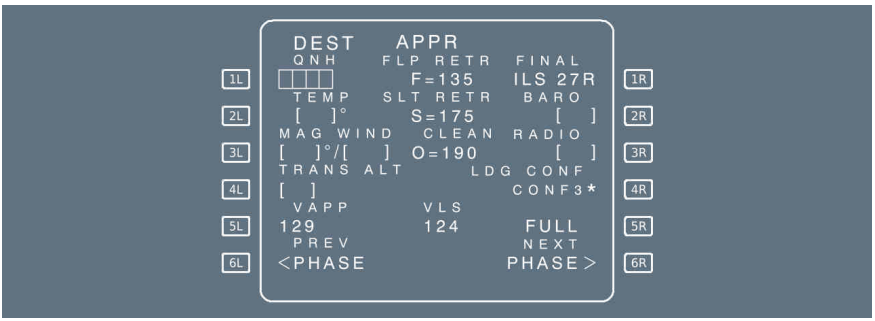
9 **Applicable to: MSN 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

ENTERING THE APPROACH DATA

From PERF DES page, SELECT “NEXT PHASE” [6R] key to display the APPR page.
ENTER QNH, TEMP, WIND at destination (magnetic north reference), minimum in the RADIO or BARO fields.

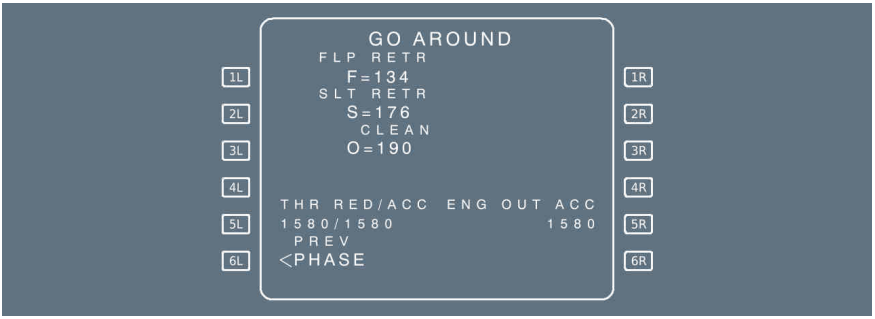
(The PFD displays the entered BARO or RADIO minimum value, only when the distance to destination is less than 250 NM).

CHECK and, if necessary, MODIFY
- LDG CONF (landing configuration),
- VAPP (the FM-computed value may be modified),
- TRANS ALT (transition altitude).



The scratchpad displays “ENTER DEST DATA” if the approach page is not completed when the aircraft is 180 NM from destination.

SELECT "NEXT PHASE" in order to display the GO AROUND page.
CHECK and, if necessary, MODIFY the THR RED ALT and the ACC ALT.



Ident.: PRO-NOR-SRP-01-50-B-00004004.0027001 / 19 APR 17
Applicable to: MSN 01957-02097, 02121-02139, 02443, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

ENTERING THE APPROACH DATA

From PERF DES page, SELECT "NEXT PHASE" [6R] key to display the APPR page.
ENTER QNH, TEMP, WIND at destination (magnetic north reference), minimum in the RADIO or BARO fields.

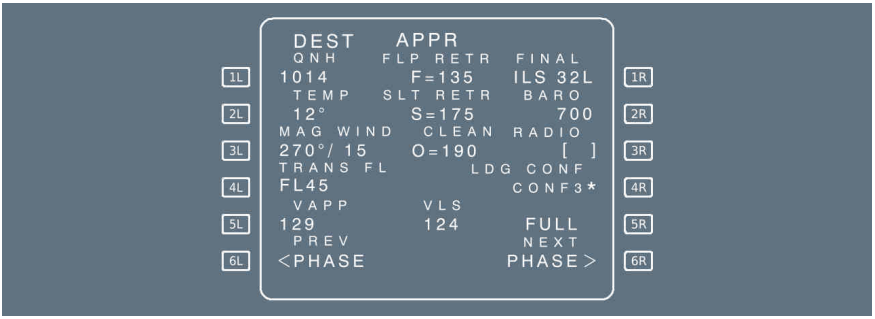
(The PFD displays the entered BARO or RADIO minimum value, only when the distance to destination is less than 250 NM).

CHECK and, if necessary, MODIFY the LDG CONF (landing configuration)
CHECK, and if necessary MODIFY the VAPP

The FMS-computed value may be modified

CHECK the TRANS FL value

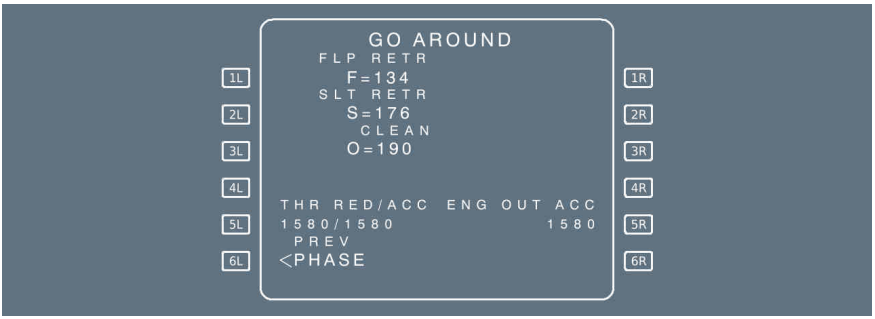
(see note 1 below)



Note: *1. The default TRANS FL value is computed by the FMS based on:*
- *The Transition Altitude of the destination airport (extracted from the NAV Database),*
- *The QNH value entered on PERF APPR page. Due to the internal FMS computation of altitude constraints, it is rounded to the upper multiple of 5.*
  If this computed TRANS FL value differs by more than 500 ft from the Transition Level specified on the approach chart or reported by ATC, the flight crew may modify the TRANS FL value.

2. The scratchpad displays "ENTER DEST DATA" if the PERF APPR page has not been completed when the aircraft is less than 180 NM from destination.

SELECT "NEXT PHASE" in order to display the GO AROUND page.
CHECK and, if necessary, MODIFY the THR RED ALT and the ACC ALT.



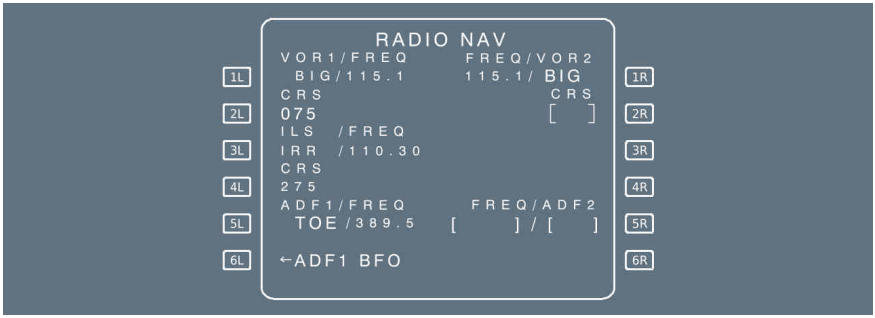
Ident.: PRO-NOR-SRP-01-50-B-00004005.0001001 / 22 MAY 12
Applicable to: ALL

SELECTING THE RADIO NAVAIDS

CHECK or SELECT the NAVAIDS appropriate for the approach.

For an ILS procedure, the ILS will be autotuned.
NDBs must be manually entered.

Note: *When the destination has a VOR/DME, ENTER it manually in the VOR field. ENTER its identifier in the BRG/DIST field of the PROG page. This allows you to perform a permanent NAV accuracy check.*



Ident.: PRO-NOR-SRP-01-50-B-00004006.0003001 / 08 DEC 16
Applicable to: ALL

COST INDEX FOR LONG-RANGE CRUISE

The flight crew can use the table below to find an approximate Cost Index value that is calculated for cruise at long-range cruise speed. This value is valid for CRZ FL = OPT ALT ± 1 000 ft.

AIRCRAFT	ENGINE	CILRC	
		kg/min	100 lb/h
A318/A319/A320/A321	CFM 56-5-A1/A3	45	60
	CFM 56-5-A4/A5	40	55
	CFM 56-5-B1/B2/B3	65	85
	CFM 56-5-B4 (A321)	65	85
	CFM 56-5-B4 (A320)	55	75
	CFM 56-5-B4/P	25	35
	CFM 56-5-B5/B6/B7	25	35
	CFM 56-5-B5/2P CFM 56-5-B6/2P CFM 56-5-B7/2P	30	40
	CFM 56-5-B8/B9	15	20
	CFM LEAP-1A	40	55
	PW6122/PW6124	20	30
	PW1100G-JM	40	55
	V2500-A1	45	60
	V2522-A5/V2524-A5/ V2527M-A5	50	70
	V2530-A5/V2533-A5	50	70
	V2527-A5/V2527E-A5	40	55

Intentionally left blank

Descent

DESCENT INITIATION

Ident.: PRO-NOR-SRP-01-60-00004007.0001001 / 14 FEB 11
Applicable to: ALL

The top of descent, displayed on the F-PLN page (T/D) and on the ND ( ), is a position that the system calculates, assuming that the aircraft will begin its descent in DES mode with managed speed, and that the system will guide the aircraft along the descent profile computed with all the vertical F-PLN data (ALT CSTR, ECON or AUTO MACH/SPD, SPD CSTR, SPD LIMIT) to reach VAPP at 1 000 ft AGL.

Note: *The ND does not display the top of descent when HDG (or TRACK) mode is engaged.*

PROCEDURES

- **When the aircraft reaches the top of descent (F/D) :**
  SELECT the altitude target.
  PUSH the ALT selector knob. DES mode engages.
  CHECK the FMA annunciators.

DESCENT MONITORING

Ident.: PRO-NOR-SRP-01-60-A-00004008.0004001 / 06 JUN 16
Applicable to: MSN 01767-01920, 02108, 02275-02334

DES MODE ENGAGED

When DES mode is engaged, NAV mode is engaged, and the system takes into account all altitude and speed constraints of the F-PLN.
The key parameter for monitoring the descent is the vertical deviation (VDEV) displayed on the PFD and on the PROG page, which indicates whether the aircraft is on, above, or below the descent profile.

PROCEDURE

SET the ATC-cleared altitude on the FCU (considering also what is the safe altitude).

If the lowest safe altitude is higher than the ATC-cleared altitude, check with ATC that this constraint applies.
If it is confirmed, SET the FCU altitude to the safe altitude until it is safe to go to the ATC-cleared altitude.

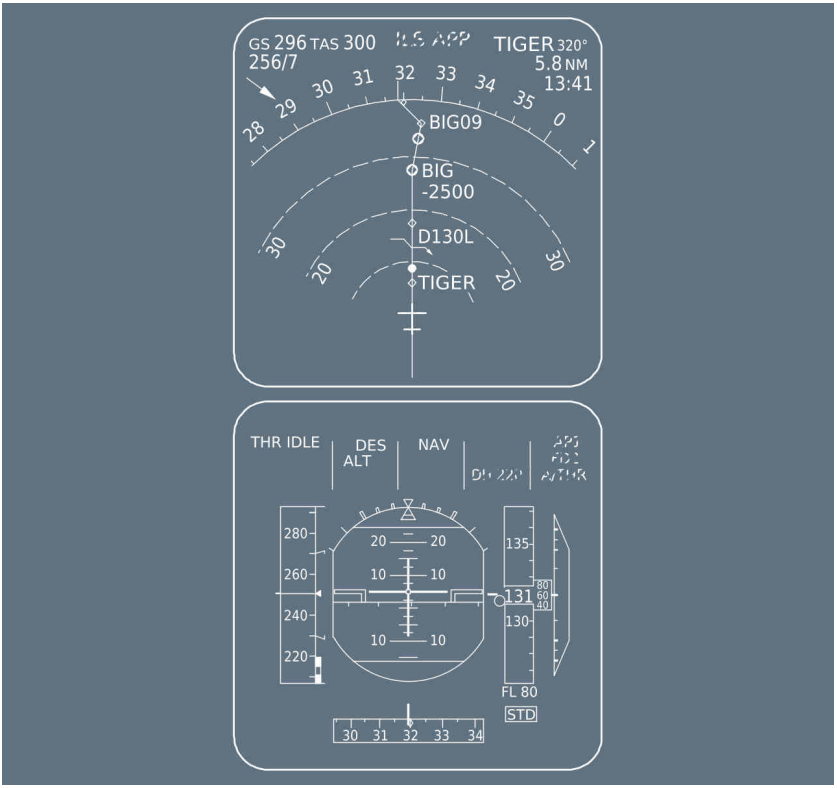
MONITOR the vertical deviation (VDEV) on the PFD and the PROG page.
MONITOR the speed change that occurs, when the aircraft reaches a speed change symbol (magenta ball) under managed speed.

MONITOR the FMA (ALT*, ALT CST*, ALT, ALT CST) when the aircraft reaches level symbols.

- **If the aircraft is on the descent profile:**
  The aircraft is considered to be on the vertical profile, when it is within 50 ft of it. VDEV is close to zero, and the system predicts that it will match constraints until the aircraft levels off at the next FCU altitude.

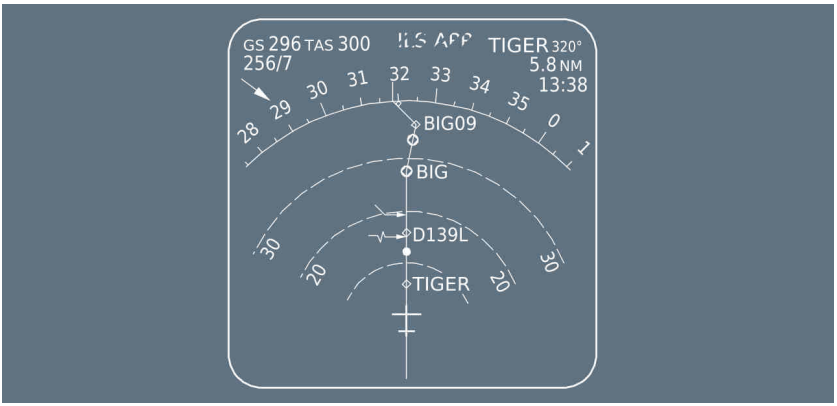
  MONITOR the predicted descent point after the next level-off.

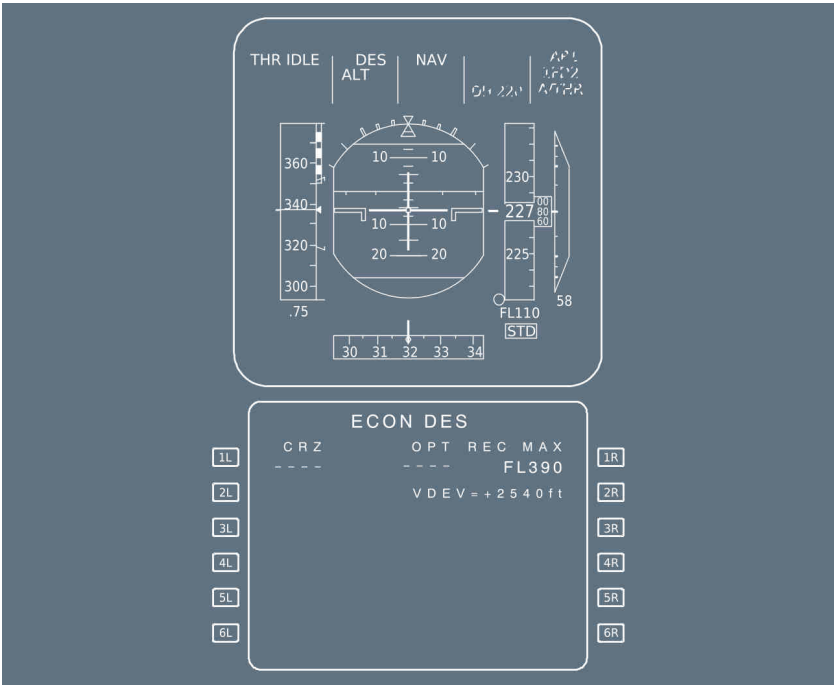
  The A/THR adjusts the thrust for the particular segment. The first FMA column may display "THR IDLE" or "SPEED".



- **If the aircraft is above the descent profile:**
  VDEV is down on the PFD and positive on the PROG page.

The A/THR sets IDLE thrust and the AP increases speed by calling for down elevator. If the aircraft reaches the upper limit of the managed speed range, the aircraft diverges and maintains the upper limit speed.





Procedure

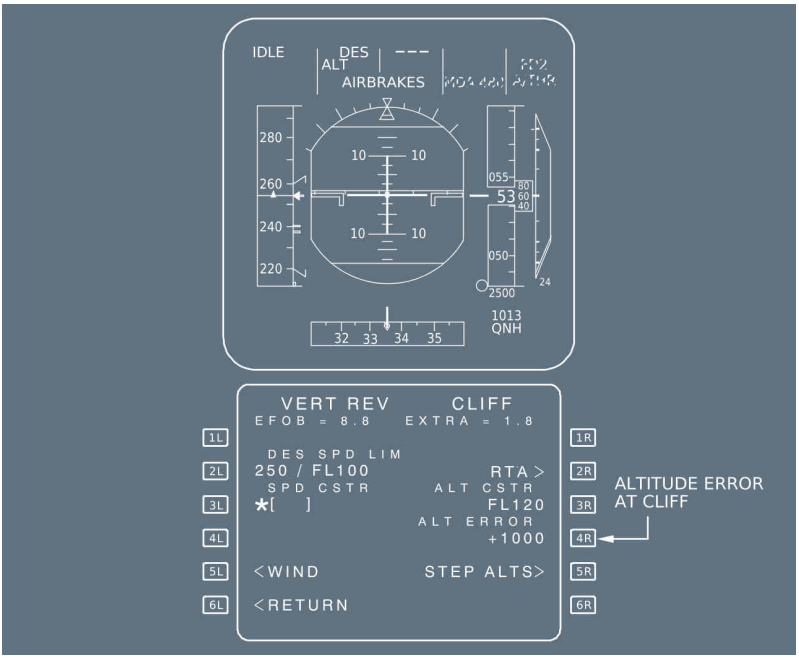
SELECT a descent speed higher than the upper limit when possible.

MONITOR the intercept symbol .

When this symbol reaches the next ALT CSTR waypoint "MORE DRAG" appears on the PFD indicating that speedbrakes must be extended in order to match the next altitude constraint. This is an advisory message.

Note: *With DPO , when above the descent profile, the flight crew may have to extend the speed brakes in order to go back on the descent profile.*

- **If an altitude constraint is predicted to be missed by more than 250 ft,** the vertical revision page shows ALT ERROR at the waypoint.



- **If a speed constraint is predicted to be missed by more than 10 kt:**
  SELECT an appropriate speed.
  RESUME managed speed when the aircraft is back on the descent path.

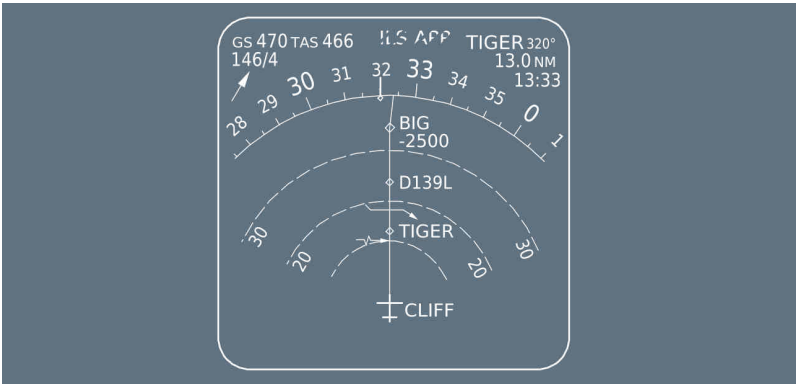
■ **If the aircraft is below the descent profile:**
VDEV is up on the PFD and negative on the PROG page. The system maintains the target speed (managed or selected speed).

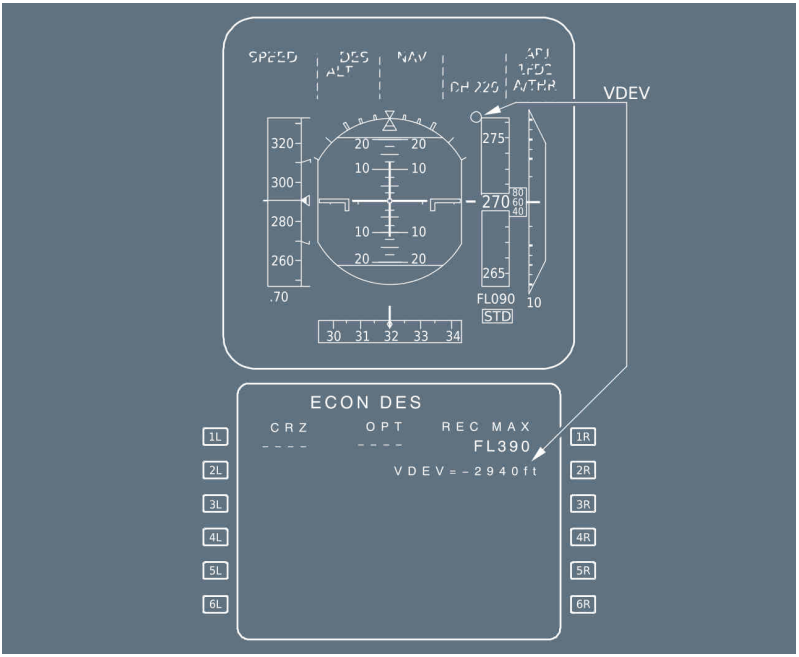
MONITOR the intercept symbol ([~]) on the ND and any leveling off at the next ALT CSTR.

- **If the aircraft is flying at an altitude that is higher than both the descent speed limit altitude and the destination elevation +5 000 ft:**

  The FMGS maintains the V/S at -1 000 ft/min and the target speed, until the aircraft reaches the altitude constraint or intercepts the descent profile.

- **If the aircraft is flying at an altitude that is lower than either the descent speed limit altitude, or the destination elevation +5 000 ft:**
  The FMGS maintains the V/S at -500 ft/min and the target speed, until the aircraft reaches the altitude constraint or intercepts the descent profile.





- **If the rate of descent has to be increased (ATC requirement):**
  SELECT OP DES mode
  Increase the target speed or extend the speedbrakes.

Ident.: PRO-NOR-SRP-01-60-A-00004008.0005001 / 06 JUN 16
Applicable to: MSN 02195-02204, 02359, 02405, 02482

DES MODE ENGAGED

When DES mode is engaged, NAV mode is engaged, and the system takes into account all altitude and speed constraints of the F-PLN.
The key parameter for monitoring the descent is the vertical deviation (VDEV) displayed on the PFD and on the PROG page, which indicates whether the aircraft is on, above, or below the descent profile.

PROCEDURE

SET the ATC-cleared altitude on the FCU (considering also what is the safe altitude).

If the lowest safe altitude is higher than the ATC-cleared altitude, check with ATC that this constraint applies.

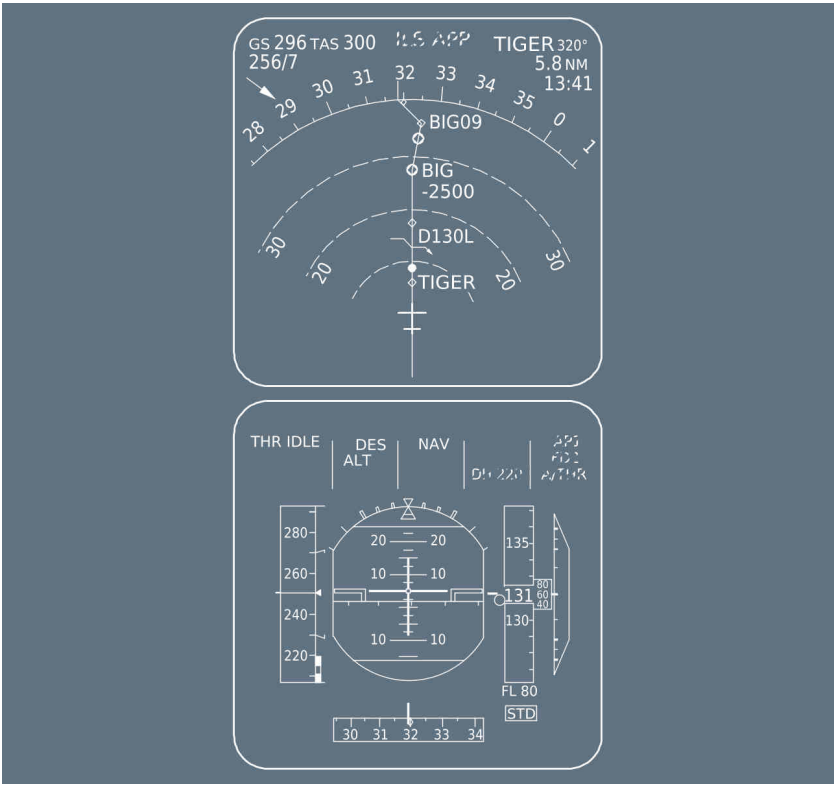
If it is confirmed, SET the FCU altitude to the safe altitude until it is safe to go to the ATC-cleared altitude.

MONITOR vertical deviation (VDEV) on the PFD and the PROG page.
MONITOR the speed change that occurs, when the aircraft reaches a speed change symbol (magenta ball) under managed speed.
MONITOR the FMA (ALT*, ALT CST*, ALT, ALT CST), when the aircraft reaches level symbols.

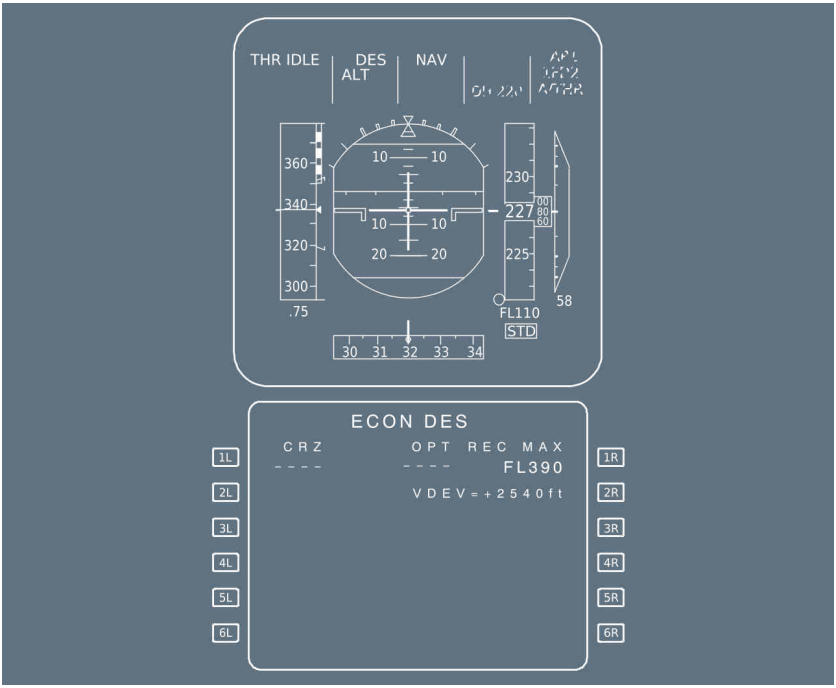
- **If the aircraft is on the descent profile:**
  The aircraft is considered to be on the vertical profile, when it is within 50 ft of it. VDEV is close to zero, and the system predicts that it will match constraints until the aircraft levels off at the next FCU altitude.

  MONITOR the predicted descent point after the next level-off.

  The A/THR adjusts the thrust for the particular segment. The first FMA column may display "THR IDLE" or "SPEED".



■ **If the aircraft is above the descent profile:**
VDEV is down on the PFD and positive on the PROG page.
The A/THR sets IDLE thrust and the AP increases speed by calling for down elevator. If the aircraft reaches the upper limit of the managed speed range, the aircraft diverges and maintains the upper limit speed.



Procedure

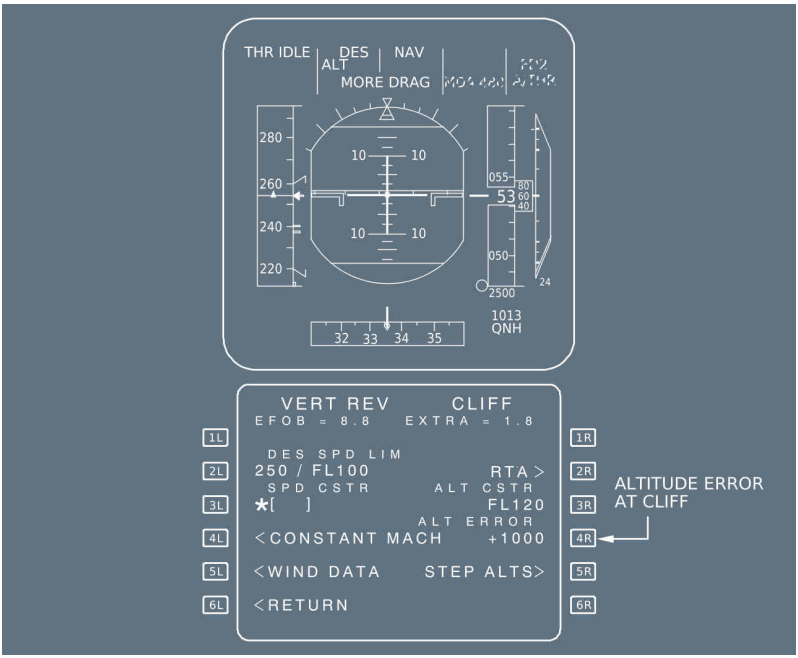
SELECT a descent speed higher than the upper limit when possible.

MONITOR the intercept symbol .

When this symbol reaches the next ALT CSTR waypoint, "MORE DRAG" appears on the PFD, indicating that speedbrakes must be extended in order to match the next altitude constraint. This is an advisory message.

Note: With DPO , when above the descent profile, the flight crew may have to extend the speed brakes in order to go back on the descent profile.

- **If an altitude constraint is predicted to be missed by more than 250 ft,** the vertical revision page shows ALT ERROR at the waypoint.



- **If a speed constraint is predicted to be missed by more than 10 kt:**
  SELECT an appropriate speed.
  RESUME managed speed when the aircraft is back on the descent profile.

■ **If the aircraft is below the descent profile:**
VDEV is up on the PFD and negative on the PROG page. The system maintains the target speed (managed or selected speed).

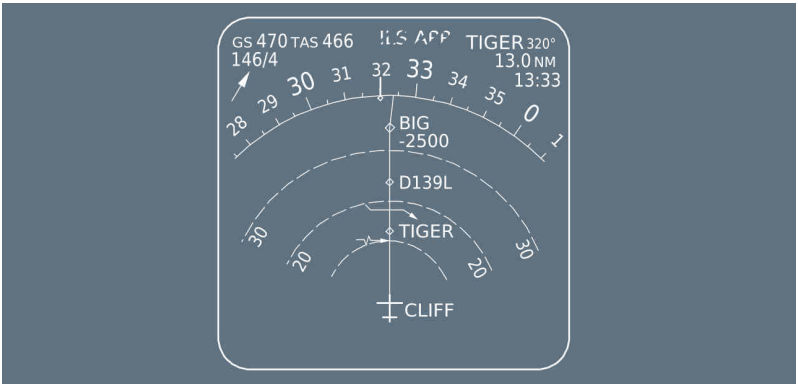
MONITOR the intercept symbol ([]) on the ND and any leveling off at the next ALT CSTR.

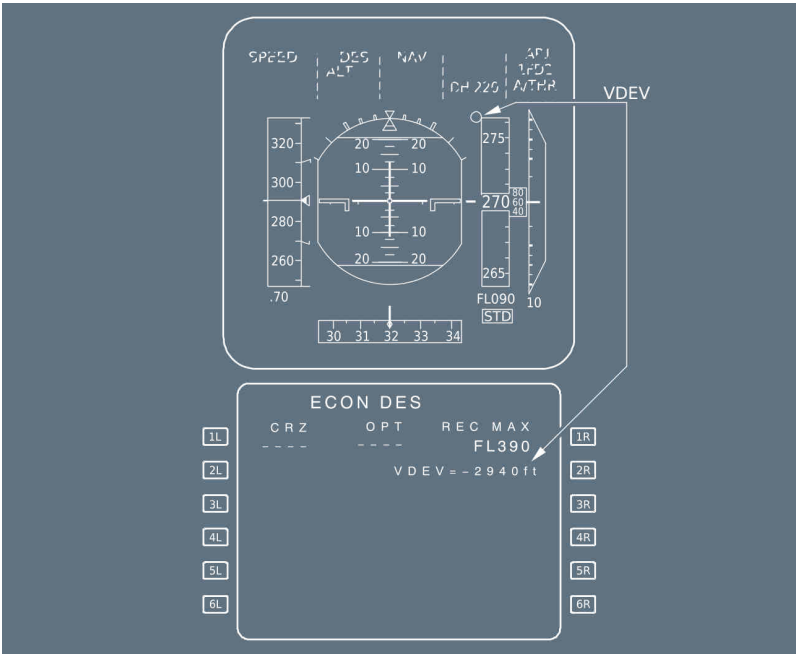
- **If the aircraft is flying at an altitude that is higher than both the descent speed limit altitude and the destination elevation +5 000 ft:**

  The FMGS maintains the V/S at -1 000 ft/min and the target speed, until the aircraft reaches the altitude constraint or intercepts the descent profile.

- **If the aircraft is flying at an altitude that is lower than either the descent speed limit altitude, or the destination elevation +5 000 ft:**

  The FMGS maintains the V/S at -500 ft/min and the target speed, until the aircraft reaches the altitude constraint or intercepts the descent profile.





- **If the rate of descent has to be increased (ATC requirement):**
  SELECT OP DES mode
  Increase the target speed or extend the speedbrakes.

Ident.: PRO-NOR-SRP-01-60-A-00004008.0007001 / 06 JUN 16

1 **Applicable to: MSN 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

DES MODE ENGAGED

When DES mode is engaged, NAV mode is engaged, and the system takes into account all altitude and speed constraints of the F-PLN.
The key parameter for monitoring the descent is the vertical deviation (VDEV) displayed on the PFD and on the PROG page, which indicates whether the aircraft is on, above, or below the descent profile.

PROCEDURE

SET the ATC-cleared altitude on the FCU (considering also what is the safe altitude).
If the lowest safe altitude is higher than the ATC-cleared altitude, check with ATC that this constraint applies.

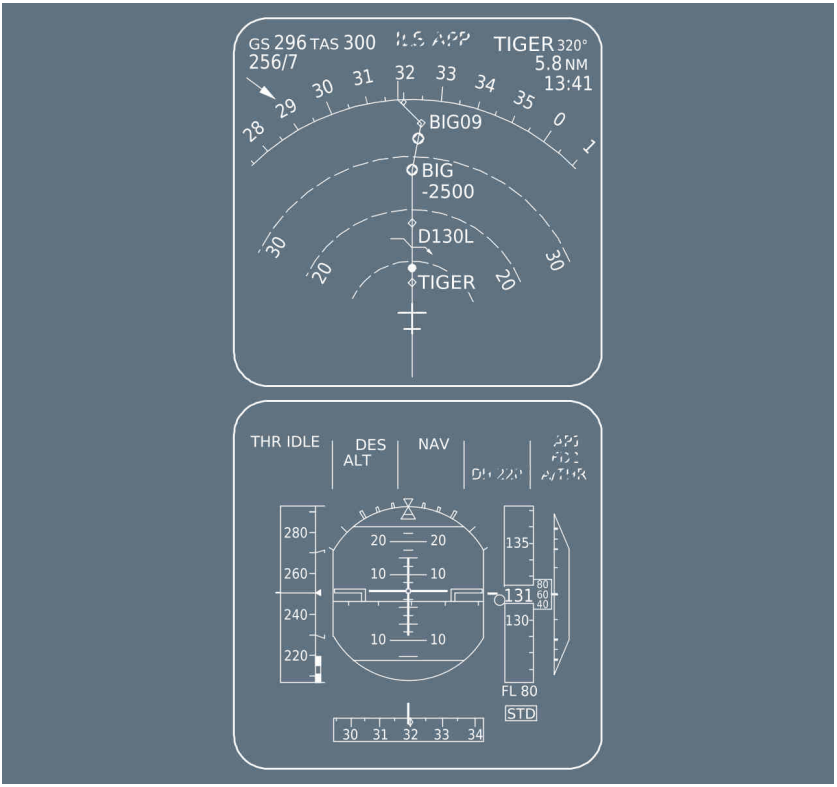
If it is confirmed, SET the FCU altitude to the safe altitude until it is safe to go to the ATC-cleared altitude.

MONITOR vertical deviation (VDEV) on the PFD and the PROG page.
MONITOR the speed change that occurs, when the aircraft reaches a speed change symbol (magenta ball) under managed speed.
MONITOR the FMA (ALT*, ALT CST*, ALT, ALT CST), when the aircraft reaches level symbols.

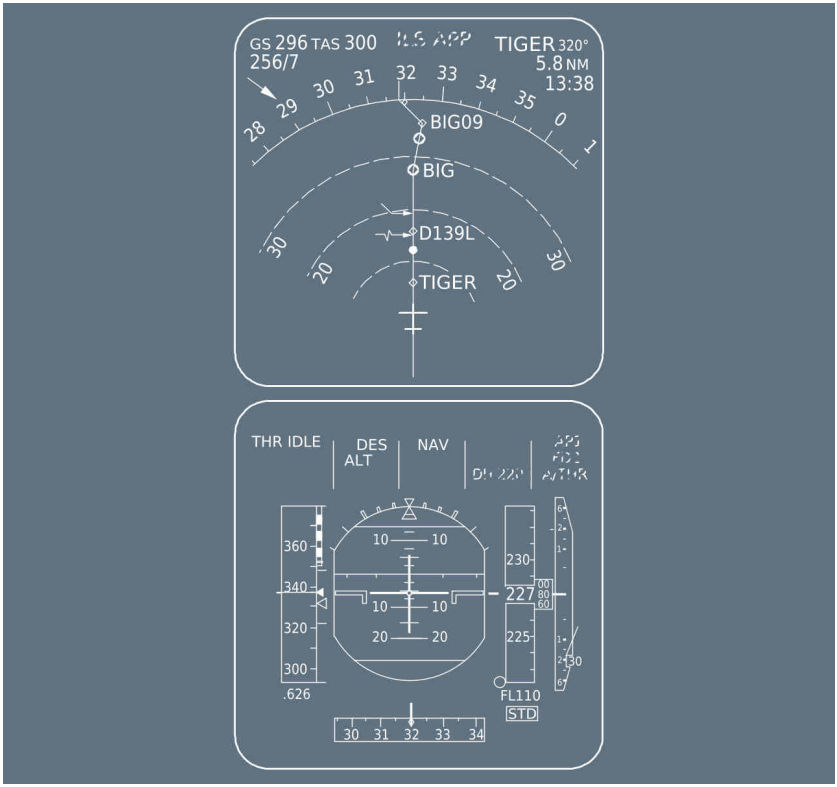
- **If the aircraft is on the descent profile:**
  The aircraft is considered to be on the vertical profile, when it is within 50 ft of it. VDEV is close to zero, and the system predicts that it will match constraints until the aircraft levels off at the next FCU altitude.

  MONITOR the predicted descent point after the next level-off.

  A/THR adjusts thrust for the particular segment. The first FMA column may display "THR IDLE" or "SPEED".



■ **If the aircraft is above the descent profile:**
VDEV is down on the PFD and positive on the PROG page.
A/THR sets IDLE thrust and the AP increases speed by calling for down elevator. If the aircraft reaches the upper limit of the managed speed range, the aircraft diverges and maintains the upper limit speed.



Procedure

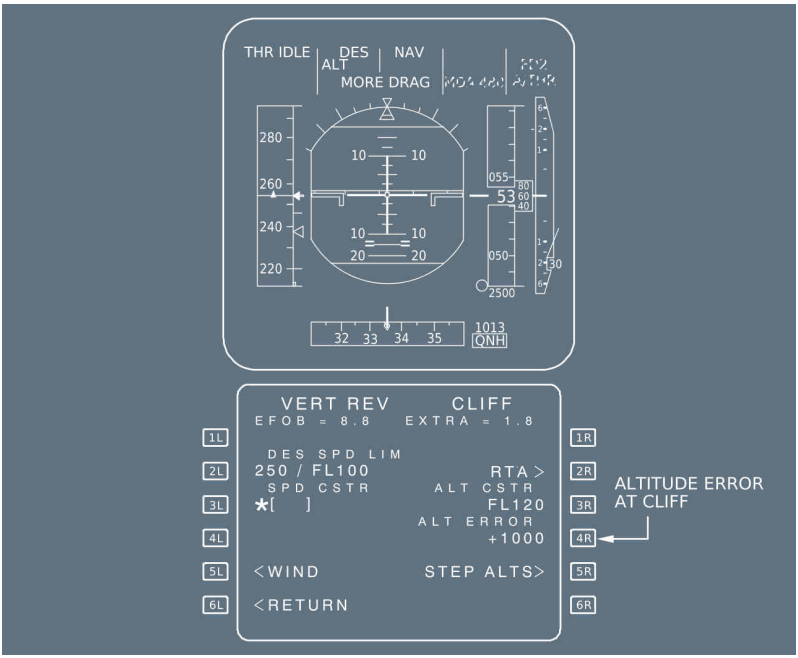
SELECT a descent speed higher than the upper limit when possible.

MONITOR the intercept symbol

When this symbol reaches the next ALT CSTR waypoint, "MORE DRAG" appears on the PFD, indicating that speedbrakes must be extended in order to match the next altitude constraint. This is an advisory message.

Note: With DPO , when above the descent profile, the flight crew may have to extend the speed brakes in order to go back on the descent profile.

- **If an altitude constraint is predicted to be missed by more than 250 ft,** the vertical revision page shows ALT ERROR at the waypoint.



- **If a speed constraint is predicted to be missed by more than 10 kt:**
  SELECT an appropriate speed.
  RESUME managed speed when the aircraft is back on the descent path.

■ **If the aircraft is below the descent profile:**
VDEV is up on the PFD and negative on the PROG page. The system maintains the target speed (managed or selected speed).

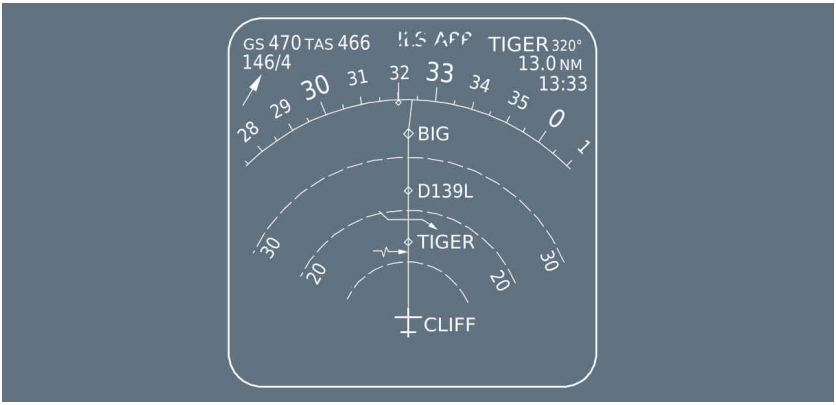
MONITOR the intercept symbol ([]) on the ND and any leveling off at the next ALT CSTR.

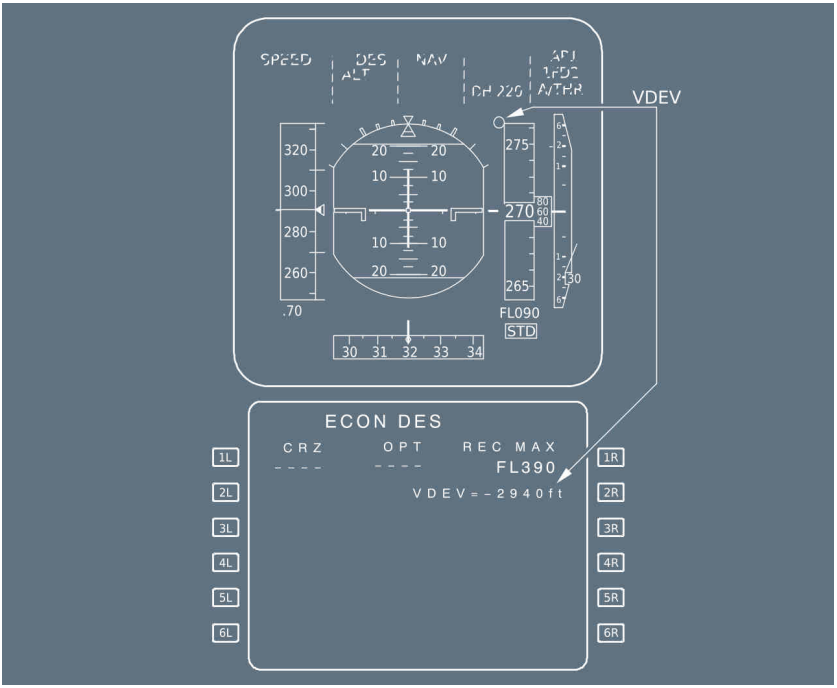
- **If the aircraft is flying at an altitude that is higher than both the descent speed limit altitude and the destination elevation +5 000 ft:**

  The FMGS maintains the V/S at -1 000 ft/min and the target speed, until the aircraft reaches the altitude constraint or intercepts the descent profile.

- **If the aircraft is flying at an altitude that is lower than either the descent speed limit altitude, or the destination elevation +5 000 ft:**

  The FMGS maintains the V/S at -500 ft/min and the target speed, until the aircraft reaches the altitude constraint or intercepts the descent profile.





- **If the rate of descent has to be increased (ATC requirement):**
  SELECT OP DES mode
  Increase the target speed or extend the speedbrakes.

Ident.: PRO-NOR-SRP-01-60-A-00004008.0032001 / 06 JUN 16
Applicable to: MSN 01957-02097, 02121-02139, 02443, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

DES MODE ENGAGED

When DES mode is engaged, NAV mode is engaged, and the system takes into account all altitude and speed constraints of the F-PLN.
The key parameter for monitoring the descent is the vertical deviation (VDEV) displayed on the PFD and on the PROG page, which indicates whether the aircraft is on, above, or below the descent profile.

PROCEDURE

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If the lowest safe altitude is higher than the ATC-cleared altitude, check with ATC that this constraint applies.
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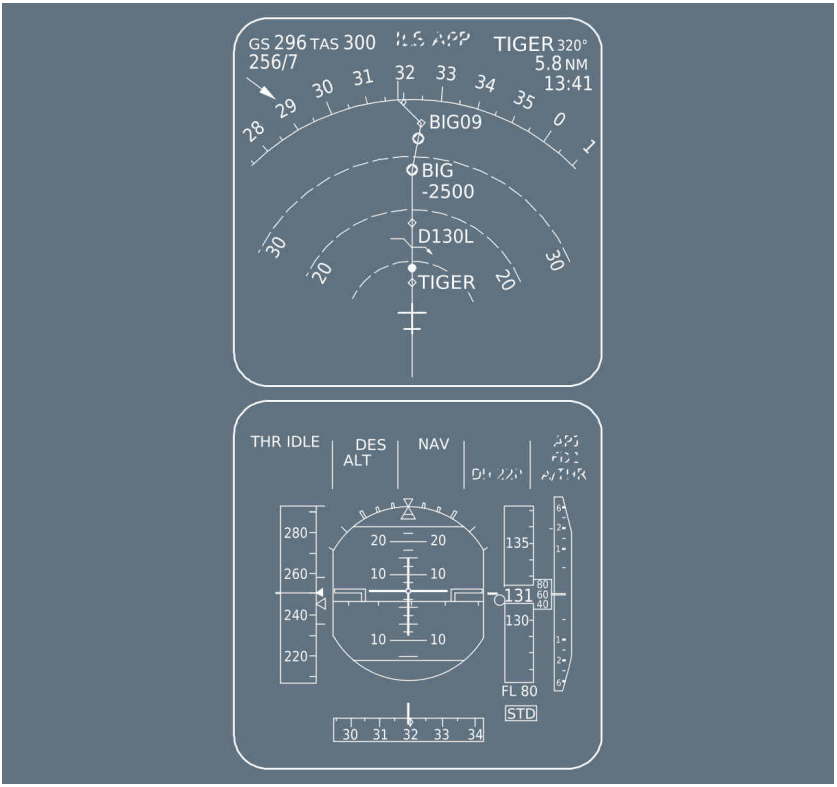
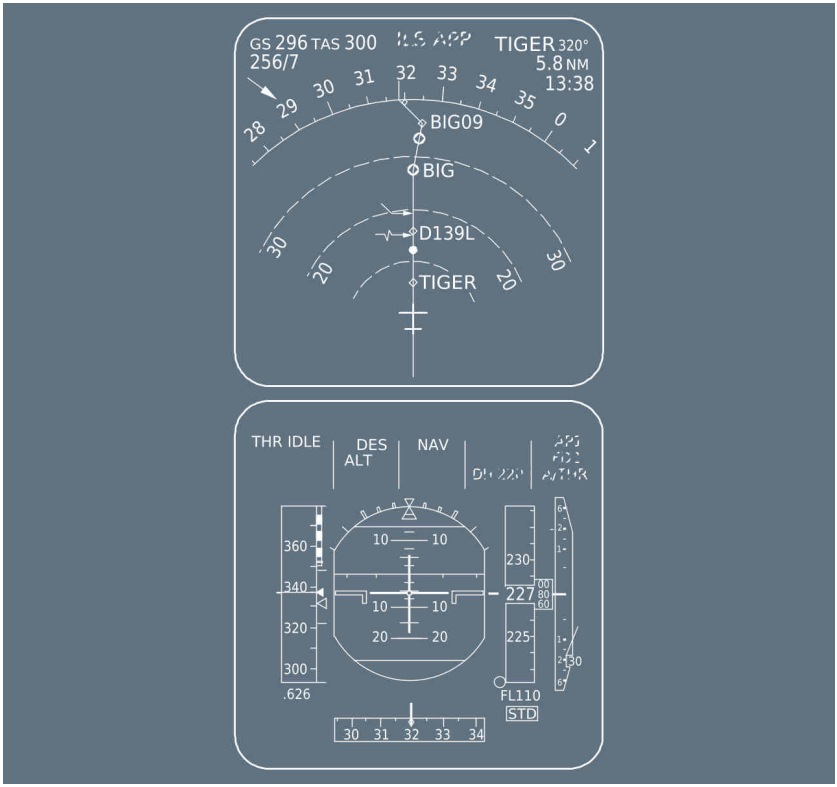
  A/THR adjusts thrust for the particular segment. The first FMA column may display "THR IDLE" or "SPEED".



■ **If the aircraft is above the descent profile:**
VDEV is down on the PFD and positive on the PROG page.
A/THR sets IDLE thrust and the AP increases speed by calling for down elevator. If the aircraft reaches the upper limit of the managed speed range, the aircraft diverges and maintains the upper limit speed.



Procedure

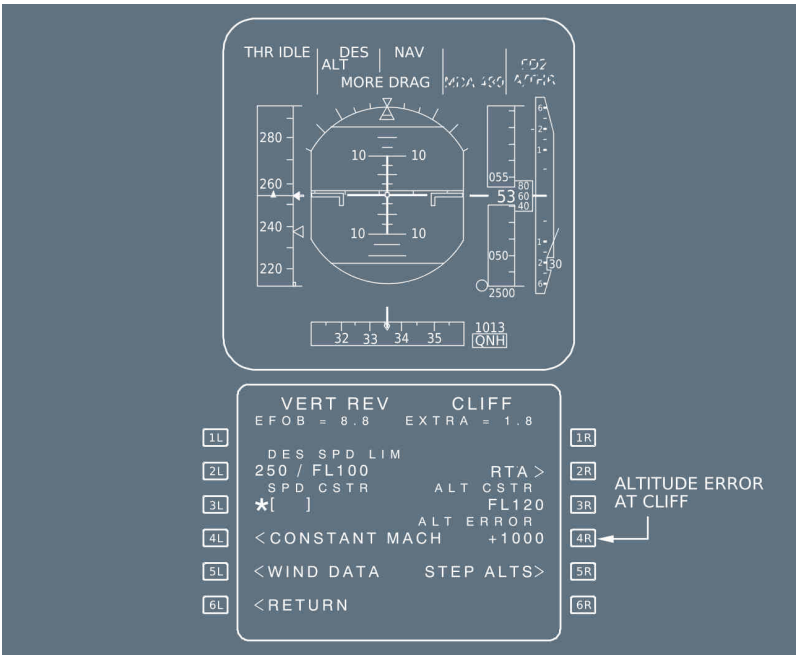
SELECT a descent speed higher than the upper limit when possible.

MONITOR the intercept symbol .

When this symbol reaches the next ALT CSTR waypoint, "MORE DRAG" appears on the PFD, indicating that speedbrakes must be extended in order to match the next altitude constraint. This is an advisory message.

Note: With DPO , when above the descent profile, the flight crew may have to extend the speed brakes in order to go back on the descent profile.

- **If an altitude constraint is predicted to be missed by more than 250 ft** the vertical revision page shows ALT ERROR at the waypoint.



- **If a speed constraint is predicted to be missed by more than 10 kt:**
  SELECT an appropriate speed.
  RESUME managed speed when the aircraft is back on the descent profile.

■ **If the aircraft is below the descent profile**

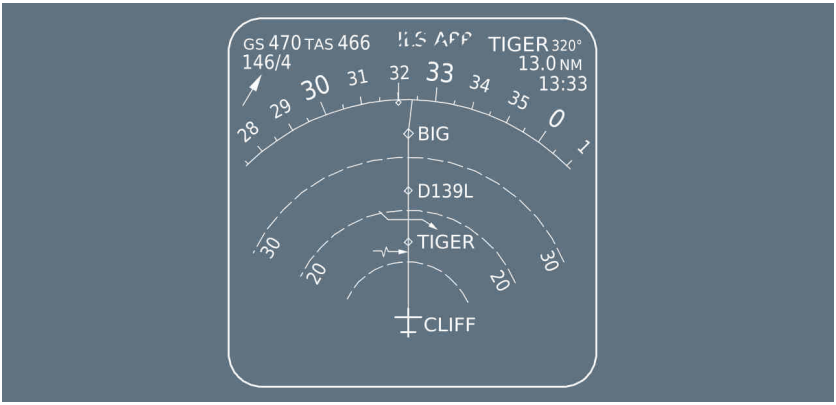
VDEV is up on the PFD and negative on the PROG page. The system maintains the target speed (managed or selected speed).

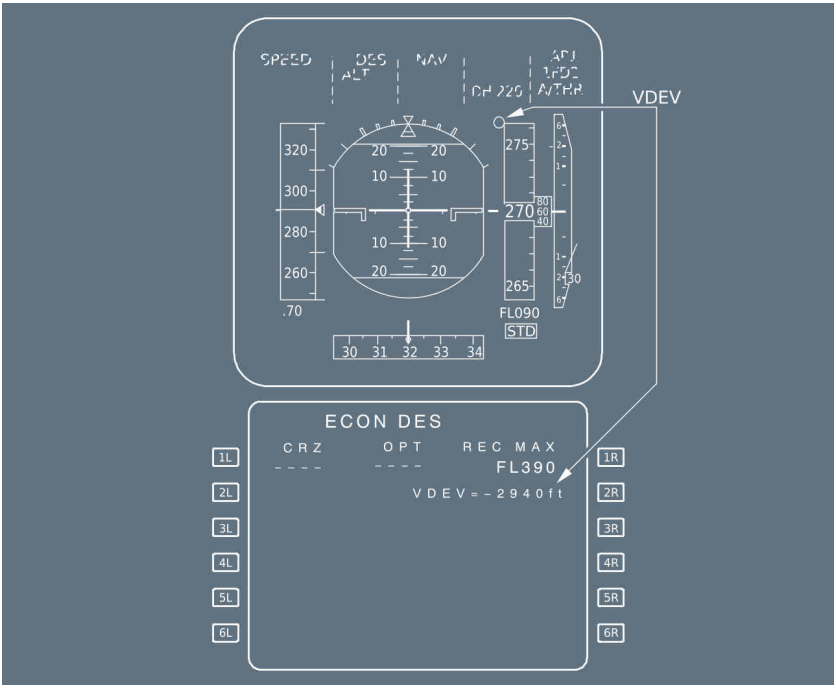
MONITOR the intercept symbol ([]) on the ND and any leveling off at the next ALT CSTR.

- **If the aircraft is flying at an altitude that is higher than both the descent speed limit altitude and the destination elevation +5 000 ft:**

  The FMGS maintains the V/S at -1 000 ft/min and the target speed, until the aircraft reaches the altitude constraint or intercepts the descent profile.

■ **If the aircraft is flying at an altitude that is lower than either the descent speed limit altitude, or the destination elevation +5 000 ft:**
The FMGS maintains the V/S at -500 ft/min and the target speed, until the aircraft intercepts either the altitude constraint or the descent profile.



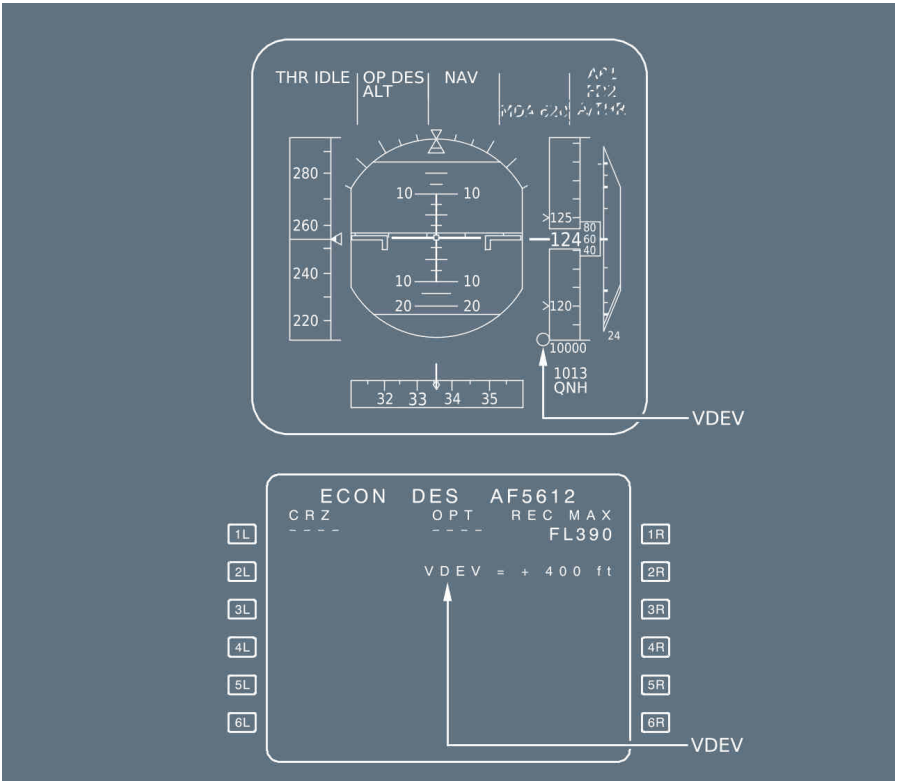


- **If the rate of descent has to be increased (ATC requirement):**
  SELECT OP DES mode
  Increase the target speed or extend the speedbrakes.

Ident.: PRO-NOR-SRP-01-60-A-00004009.0002001 / 22 MAY 12
Applicable to: ALL

OP DES, V/S OR FPA MODE ENGAGED

- In either case, the aircraft is no longer guided on the descent profile and altitude constraints are disregarded. If NAV mode is engaged the ND displays a white circle on waypoint with an altitude constraint. If NAV mode is disengaged, the circle is removed.
- The PFD still shows VDEV for reference purposes.
- The target altitude is always the FCU selected altitude (shown in blue).
  On the ND, level-off symbol is blue (no constraint). If NAV mode is engaged and the speed target managed, speed constraints are considered.



When HDG or TRK mode is engaged, vertical position may also be assessed on the ND using the energy circle. It is displayed as a green arc oriented on the current track and centered on the aircraft current position.

Note: *Altitude and speed predictions displayed on the F-PLN page assume an immediate return to DES mode.*

PROCEDURE

SET the FCU altitude as cleared by ATC, while considering the applicable safe altitude.

If the next safe altitude is higher than the ATC-cleared altitude, check with the ATC to verify that this constraint applies.
If confirmed, set the FCU altitude to the safe altitude, until it is safe to fly at the cleared altitude.

MONITOR the speed target, when the aircraft reaches the speed change symbol.
MONITOR the FMA ALT*, ALT, upon reaching the level symbol.

When in HDG/TRK mode, MONITOR the energy circle ◁✻ on the ND.

The MCDU F-PLN page presents SPD/ALT constraint-matching predictions, which assume that DES mode is immediately re-engaged.

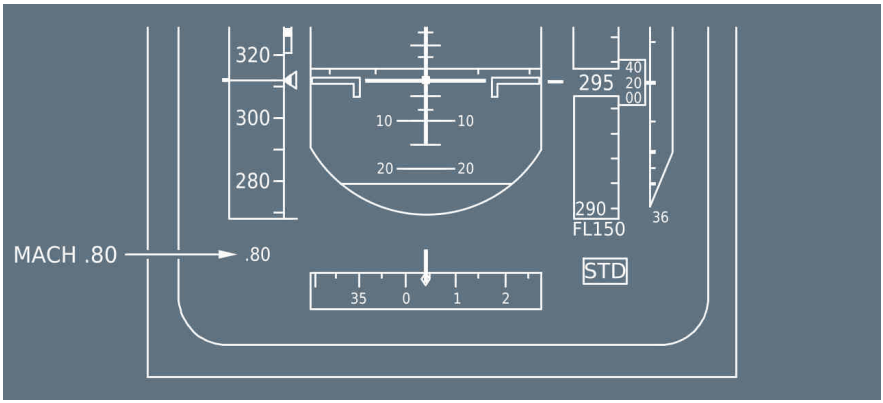
CHECK the predictions before re-engaging DES mode (in order to resume the descent profile).

Note: *VDEV is available on the PFD even in HDG mode; it is a valuable tool for monitoring the descent, as long as crosstrack error (XTK) is less than 5 NM.*
The aircraft automatically decelerates for approach, only if it flies over the DECEL pseudo waypoint with NAV mode engaged (or LOC, LOC).*

EXPEDITE DESCENT (IF INSTALLED)

Ident.: PRO-NOR-SRP-01-60-00004010.0001001 / 22 MAY 12
Applicable to: ALL

- **When ATC requires a rapid descent:**
  DEPRESS THE EXPED pushbutton
  Flight guidance (FG) pitches the aircraft to acquire and maintain 0.80/340. FG orders a pitch rate that produces no more than 0.15 g. The pilot can use this mode to initiate an emergency descent. To resume normal descent, PUSH the ALT selection knob or engage any other vertical mode.



MONITORING THE NAVIGATION IN THE TERMINAL CONTROL AREA

Ident.: PRO-NOR-SRP-01-60-00004012.0002001 / 14 FEB 11
Applicable to: ALL

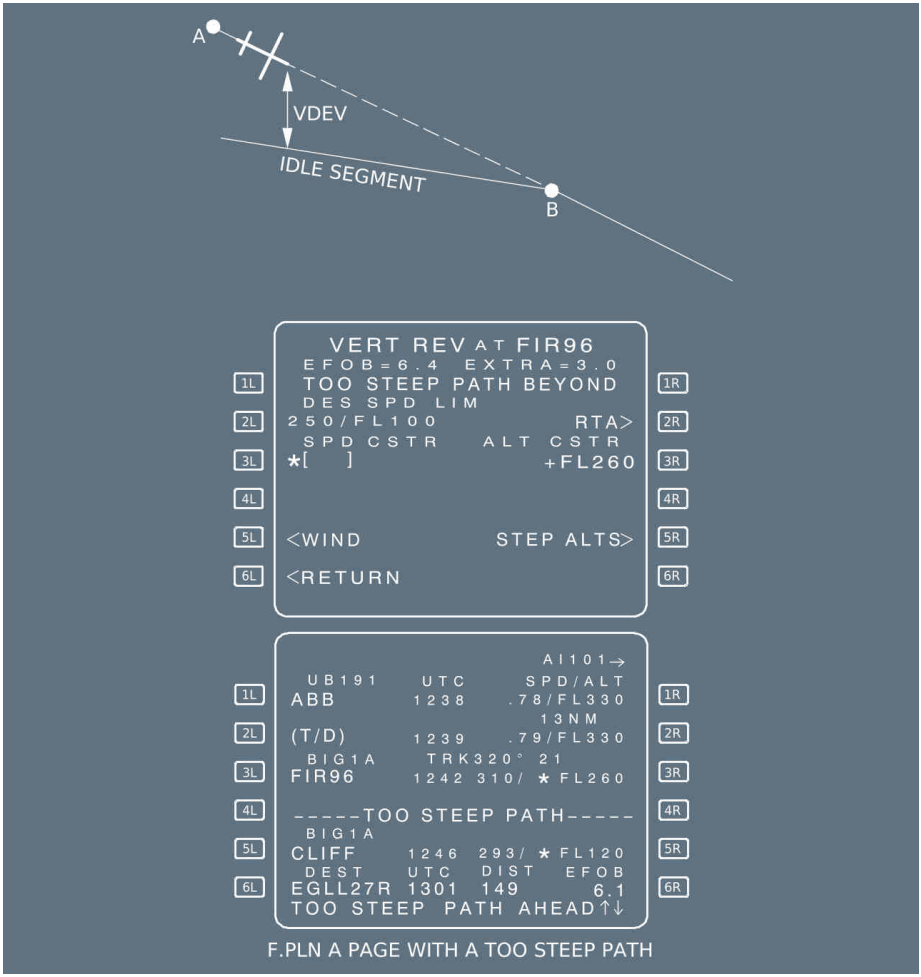
If the MCDU “AREA RNP IS XX.X” message or “PROCEDURE RNP IS XX.X” message is displayed, the pilot will manually-entered RNP value in the REQUIRED field of the PROG page and clear or modify it, if it is not in accordance with the RNP value specified in the area (NAV or approach chart).

TOO STEEP PATH

Ident.: PRO-NOR-SRP-01-60-00004013.0007001 / 22 MAY 12

2 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 05120, 05218, 06720-09063**

“TOO STEEP PATH AHEAD” appears on the MCDU scratchpad, when the system predicts this situation, and TOO STEEP PATH is displayed on the F-PLN page.
When the aircraft is crossing the first waypoint of a TOO STEEP PATH, the system computes a flyable descent profile (with an idle segment). The VDEV makes a jump because it is related to a new profile.



F.PLN A PAGE WITH A TOO STEEP PATH

PROCEDURE

- **When passing the first waypoint of the TOO STEEP PATH:**
  MONITOR VDEV and predictions at the next CSTR waypoint.
  If required, EXTEND the speedbrakes before seeing the “MORE DRAG” message.
  CONSIDER using a holding pattern, if necessary.

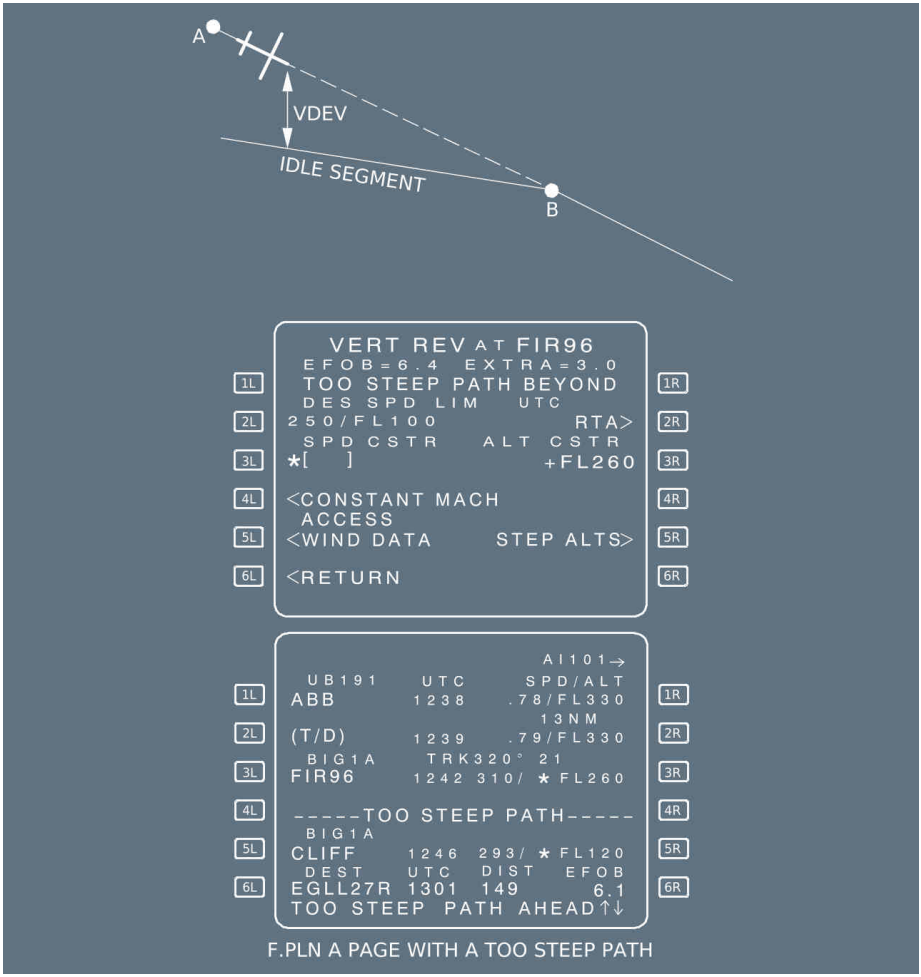
TOO STEEP PATH

Ident.: PRO-NOR-SRP-01-60-00004013.0008001 / 22 MAY 12

Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

"TOO STEEP PATH AHEAD" appears on the MCDU scratchpad, when the system predicts this situation, and TOO STEEP PATH is displayed on the F-PLN page.

When the aircraft is crossing the first waypoint of a TOO STEEP PATH, the system computes a flyable descent profile (with an idle segment). The VDEV makes a jump because it is related to a new profile.



F.PLN A PAGE WITH A TOO STEEP PATH

PROCEDURE

- **When passing the first waypoint of the TOO STEEP PATH:**
  MONITOR VDEV and predictions at the next CSTR waypoint.
  If required, EXTEND the speedbrakes before seeing the “MORE DRAG” message.
  CONSIDER using a holding pattern, if necessary.

HOLDING PATTERN

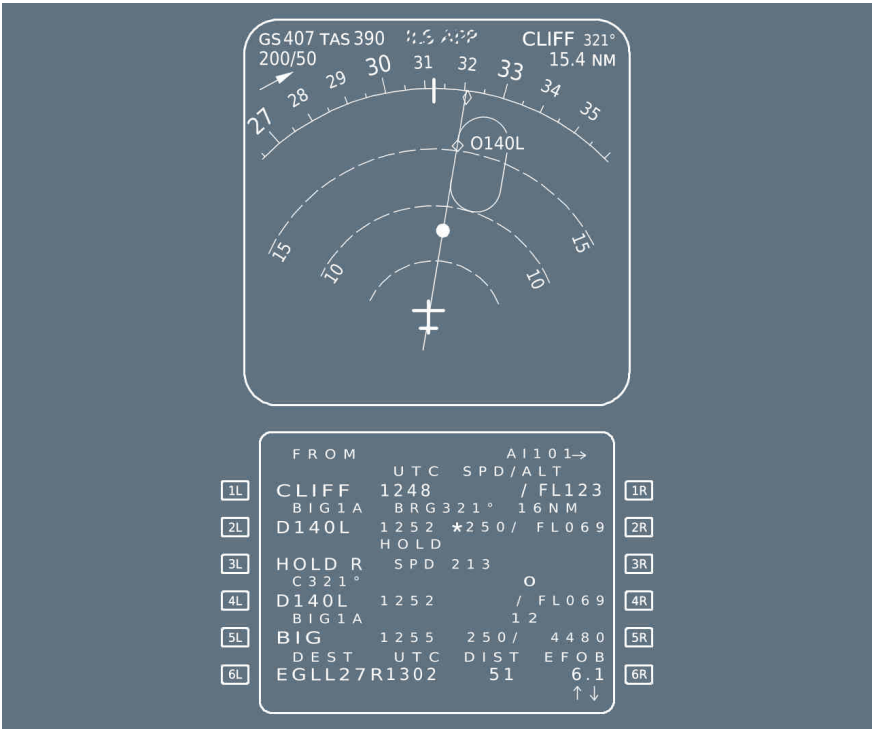
Ident.: PRO-NOR-SRP-01-60-00004014.0001001 / 09 OCT 12
Applicable to: ALL

A hold may be required during the descent, and may be manually inserted.

PROCEDURE

PRESS the F-PLN key.
SELECT the lateral revision page.
SELECT the HOLD prompt.
CHECK the HOLDING data, and MODIFY it if necessary.
CHECK the temporary flight plan and INSERT the holding pattern in it.

Note: *If the holding fix is close to the DECEL pseudo waypoint and the speed is managed, manually activate the approach phase to change the managed target speed to approach speed (VAPP). This will avoid having an increase of speed not appropriate.*



MANUAL TERMINATION

Ident.: PRO-NOR-SRP-01-60-00004016.0001001 / 09 DEC 09
Applicable to: ALL

You should not use DES mode when entering a leg with manual termination. Manual termination, which is defined as a track or a heading with no termination, is always part of a database procedure. The computed descent flight profile may not be adequate when flying this type of leg.

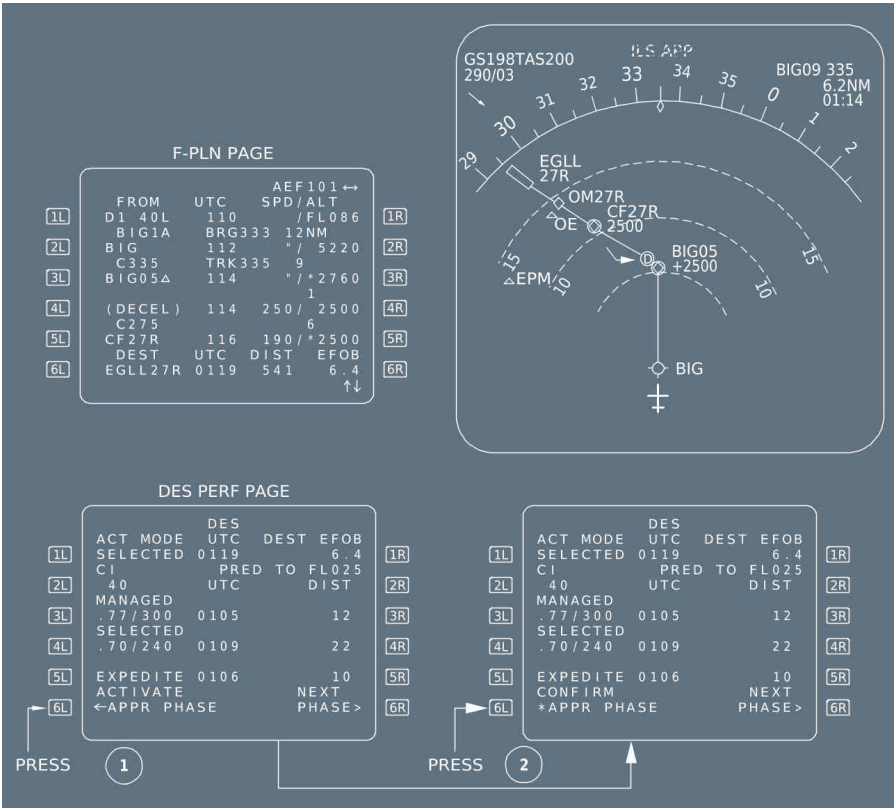
Approach

INITIAL APPROACH

Ident.: PRO-NOR-SRP-01-70-00004017.0002001 / 17 MAR 11
Applicable to: ALL

UPON REACHING THE INITIAL APPROACH AREA

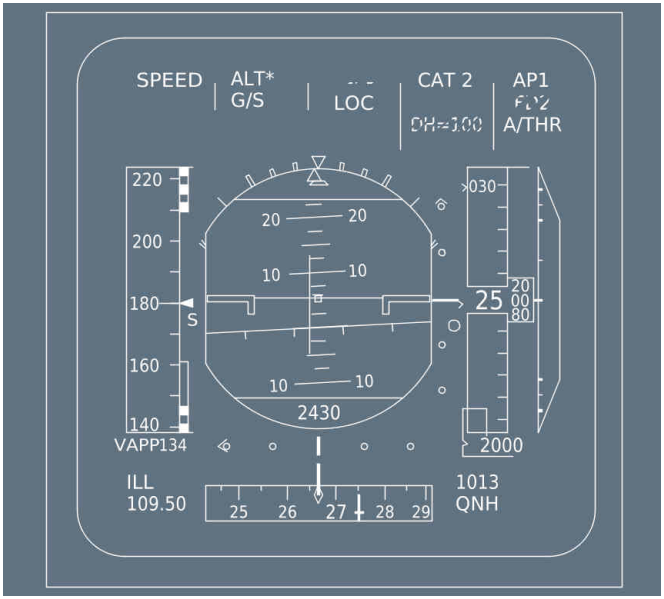
- Approach phase will activate automatically when flying over the DECEL pseudo waypoint with NAV, APPR NAV or LOC* or LOC mode engaged.
- You will activate manually the approach phase on the PERF page if:
  - HDG or TRK mode is engaged, or
  - You are flying a go around, or
  - An early deceleration is required



MANAGED SPEED

CHECK that managed speed is active: MONITOR the target speed.

During the approach, the autothrust limits the speed of the current configuration. (GD, S, F, VAPP).



- **If ATC requires a specific speed:**
  SWITCH to selected speed (turn and pull the speed selector knob on the FCU).
  ADJUST the aircraft configuration accordingly.

- **If ATC orders successive step descents down to the final approach flight path:**
  Use the V/S or FPA mode.
  MONITOR VDEV.

NAV ACCURACY

As required by the SOP.
Without installed GPS and when no DME is available for the accuracy check, use HIGH/LOW on the PROG page.
In this case, consider a “HIGH” to be equivalent to a positive crosscheck.

ATC CLEARANCE

MODIFY the F-PLN, RAD NAV, and PERF APPR data to agree with the latest clearance and landing information.

ILS/MLS/GLS/FLS APPROACH

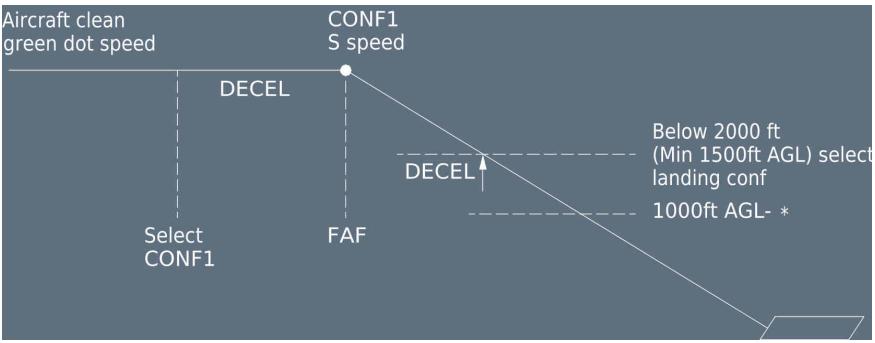
Ident.: PRO-NOR-SRP-01-70-A-00004018.0001001 / 17 MAR 11
Applicable to: ALL

INTERMEDIATE/FINAL APPROACH (ILS APPROACH ENTERED IN THE F-PLN)

The preferred technique for flying an ILS approach is to fly a decelerated approach using the AP/FDs, the LOC and G/S modes, A/THR in the SPEED mode, managed speed target is recommended.

DECELERATED APPROACH

The decelerated approach technique brings the aircraft down to 1 000 ft, at VAPP. In most cases, the interception of the final descent path is achieved with CONF 1 at S speed.



(*) The approach must be stabilized at approach speed (minimum ground speed) in the landing configuration before reaching 1 000 ft AGL.

Ident.: PRO-NOR-SRP-01-70-A-00004019.0008001 / 17 MAR 11
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

APPROACH MODE ACTIVATION (LOC-G/S)

- **When cleared by ATC and when appropriate:**
  DEPRESS the APPR pushbutton to arm the APPR mode for the approach entered in the flight plan.

  Note: If a NON PRECISION approach is selected in the active flight plan and if the flight crew manually tunes an ILS on the RAD NAV page, the MCDU displays "CHECK APPR SELECTION" and the PFD displays "CHECK APP GUIDANCE" or "CHECK APP SEL" (if CPIP3 installed). These messages are a reminder to the flight crew that, although an ILS is tuned on RAD NAV page, the available approach guidance modes are APP NAV-FINAL when the APPR pushbutton is pressed in on the FCU.

The FCU APPR pushbutton arms or engages LOC and G/S modes, if:
- An ILS approach is entered in the flight plan, or
- No approach, or only a runway, is entered in the flight plan, and an ILS is manually-tuned on the RAD NAV page, or
- Both RMPs are set to NAV, and an ILS is selected.

Ident.: PRO-NOR-SRP-01-70-A-00004019.0009001 / 17 MAR 11

1 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

APPROACH MODE ACTIVATION (LOC-G/S)

- **When cleared by ATC and when appropriate:**
  DEPRESS the APPR pushbutton to arm the APPR mode for the approach entered in the flight plan.

  Note: If a NON PRECISION approach is selected in the active flight plan and if the flight crew manually tunes an ILS on the RAD NAV page, the MCDU and the PFD display "CHECK APPR SELECTION". This message is a reminder to the flight crew that, although an ILS is tuned on RAD NAV page, the available approach guidance modes are APP NAV-FINAL when the APPR pushbutton is pressed in on the FCU.

  The FCU APPR pushbutton arms or engages LOC and G/S modes, if:
  - An ILS approach is entered in the flight plan, or
  - No approach, or only a runway, is entered in the flight plan, and an ILS is manually-tuned on the RAD NAV page, or
  - Both RMPs are set to NAV, and an ILS is selected.

Ident.: PRO-NOR-SRP-01-70-A-00004020.0002001 / 17 MAR 11

2 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

AUTOLAND

CHECK that the FMA displays the aircraft capability (CAT 2 or CAT 3) for the intended ILS approach.
MONITOR the radio automatic callout.

- **At 350 ft RA:**
  CHECK that “LAND” is displayed on the FMA.
  CHECK ILS course.
  If LAND is not displayed or if the ILS course is not correct, do not perform an autoland. The flight crew should perform a go-around, if visual references are not sufficient.

- **Between 50 and 40 ft RA:**
  CHECK that “FLARE” is displayed on the FMA.

- **At approximately 30 ft RA:**
  CHECK that "IDLE" is displayed on the FMA, and that autothrust starts to reduce thrust toward IDLE.

- **At 10 ft, "RETARD" callout comes up:**
  MOVE the thrust levers to IDLE.
  Autothrust disconnects.

- **At touchdown:**
  CHECK that "ROLL OUT" appears on the FMA.

  Note: *In the case of tailwind during an automatic rollout, it is recommended to use manual braking without delay or automatic braking for an optimised runway centerline tracking.*

- **At the end of the Rollout:**
  Disconnect the autopilot.

  If the flight crew does not disconnect the AP at the end of the rollout, and uses the nosewheel steering handwheel to taxi the aircraft off the runway, the following will occur:
  - *The AP will try to steer the aircraft back to the runway centerline, if the nosewheel steering handwheel is released and the aircraft heading is less than 20 ° off the runway centerline.*
  - *The AP will automatically disconnect, if the aircraft heading is 20 ° or more off the runway centerline.*

Ident.: PRO-NOR-SRP-01-70-A-00004020.0012001 / 17 MAR 11

3 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

AUTOLAND

CHECK that the FMA displays the aircraft capability (CAT 2 or CAT 3) for the intended ILS approach.
MONITOR the radio automatic callout.

- **At 350 ft RA:**
  CHECK that "LAND" is displayed on the FMA.
  CHECK ILS course.
  If LAND is not displayed or if the ILS course is not correct, do not perform an autoland. The flight crew should perform a go-around, if visual references are not sufficient.

- **Between 50 and 40 ft RA:**
  CHECK that "FLARE" is displayed on the FMA.

- **At approximately 30 ft RA:**
  CHECK that "IDLE" is displayed on the FMA, and that autothrust starts to reduce thrust toward IDLE.

- **At 10 ft, "RETARD" callout comes up:**
  MOVE the thrust levers to IDLE.
  Autothrust disconnects.

- **At touchdown:**
  CHECK that "ROLL OUT" appears on the FMA.

- **At the end of the Rollout:**
  Disconnect the autopilot.

  If the flight crew does not disconnect the AP at the end of the rollout, and uses the nosewheel steering handwheel to taxi the aircraft off the runway, the following will occur:
  - *The AP will try to steer the aircraft back to the runway centerline, if the nosewheel steering handwheel is released and the aircraft heading is less than 20 ° off the runway centerline.*
  - *The AP will automatically disconnect, if the aircraft heading is 20 ° or more off the runway centerline.*

Ident.: PRO-NOR-SRP-01-70-A-00004021.0001001 / 17 MAR 11
Applicable to: ALL

MANUAL LANDING

- **At DH:**
  DISCONNECT the APs. SPEED mode remains engaged.

- **At 20 ft "RETARD" automatic call out comes up:**
  MOVE the thrust levers to IDLE if they are not there already. (The A/THR disconnects).

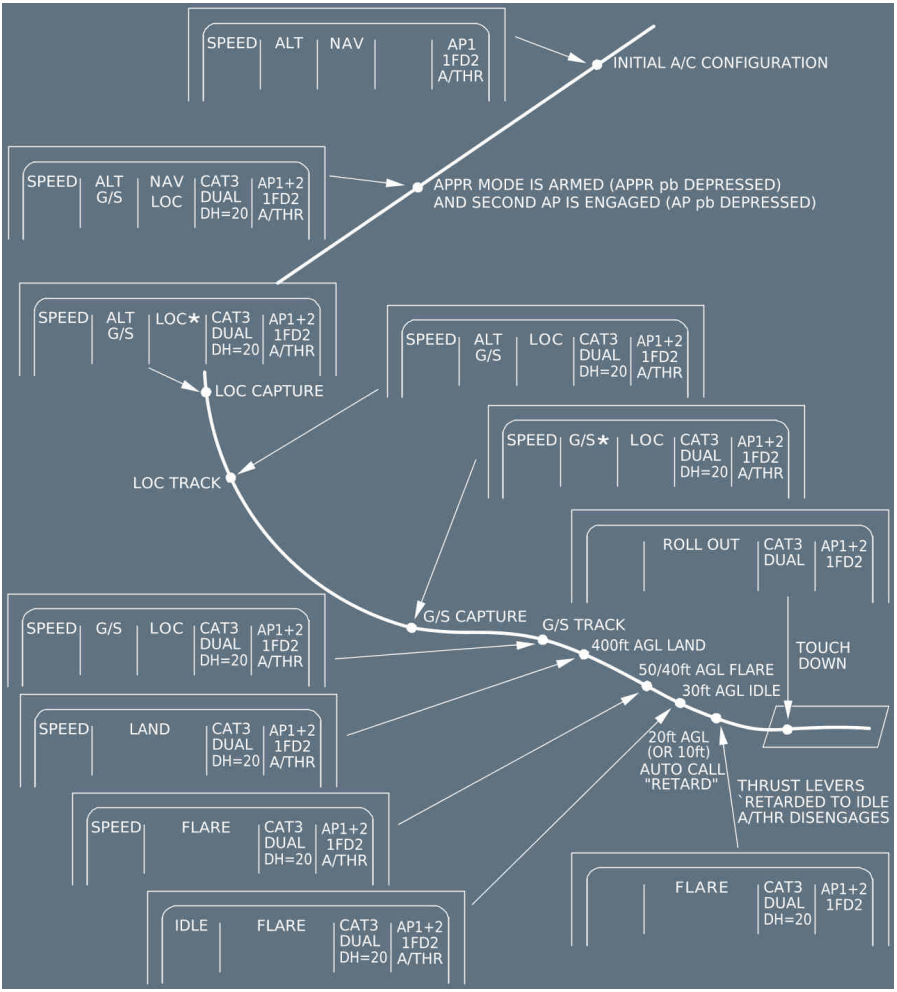
- **At touch down:**

  "ROLL OUT" appears on the FMA and the yaw bar comes up on the PFD.

  Note: *The retard call out is only a reminder when a manual landing is performed.*

Ident.: PRO-NOR-SRP-01-70-A-00004022.0004001 / 22 MAY 12
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

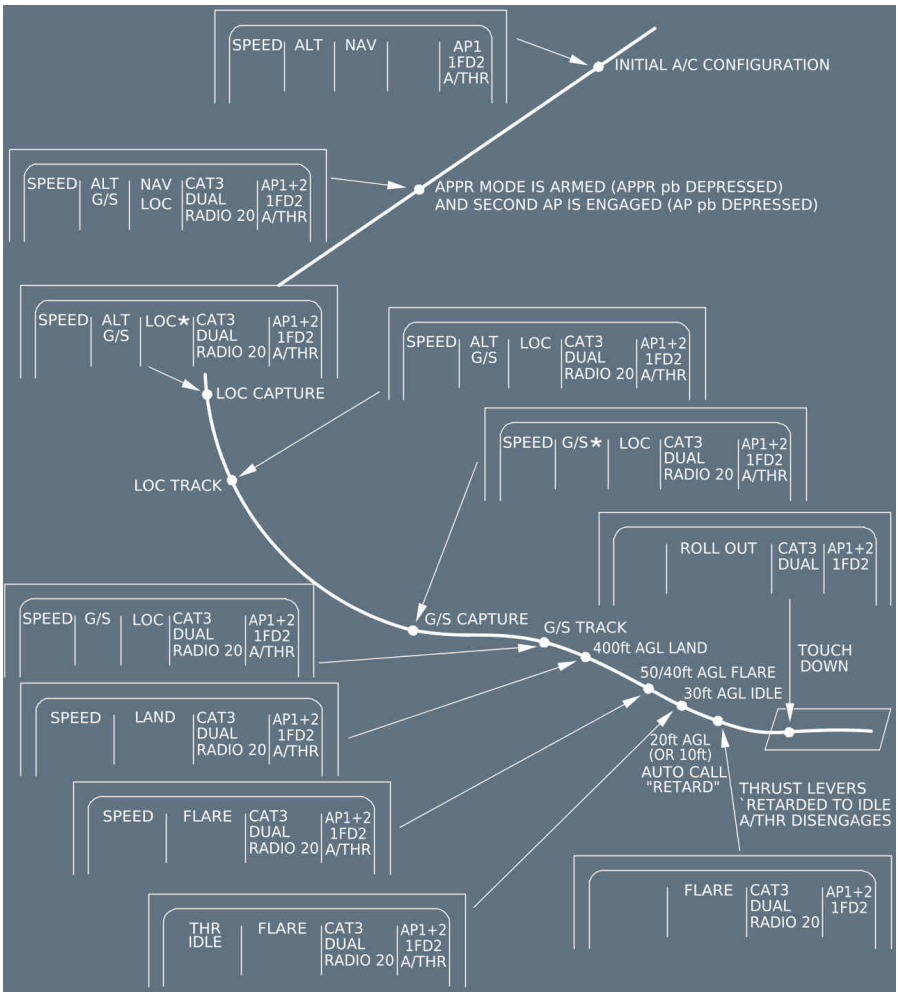
STANDARD ILS AUTOMATIC APPROACH



Ident.: PRO-NOR-SRP-01-70-A-00004022.0011001 / 22 MAY 12

4 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

STANDARD ILS AUTOMATIC APPROACH



Ident.: PRO-NOR-SRP-01-70-A-00004023.0001001 / 26 NOV 13
Applicable to: ALL

EARLY SELECTION OF APPROACH MODE LOC-G/S

Pressing the APPR pushbutton arms LOC and G/S.
When the aircraft is above 5 000 ft AGL, the Radio altimeter signals may not be valid. As long as the Radio altimeter signals are invalid, the FMA displays CAT 1.

- **When the aircraft is cleared for an ILS/MLS ◁ /GLS ◁ approach:**
  PRESS the APPR pb on the FCU.
- **When the aircraft is below 5 000 ft AGL:**
  Check that the FMA displays the correct capability for the intended approach.

Ident.: PRO-NOR-SRP-01-70-A-00004024.0002001 / 29 MAY 13
Applicable to: ALL

GLIDESLOPE INTERCEPTION FROM ABOVE

If the aircraft is above the glideslope, the system will not capture the G/S automatically.
The pilot must bring the aircraft onto the glideslope beam, and select an appropriate V/S to intercept it. *Refer to PRO-NOR-SOP-18-C Approach using LOC G/S Guidance - General*.

Ident.: PRO-NOR-SRP-01-70-A-00004025.0001001 / 17 MAR 11
Applicable to: ALL

DATA LOCK

When the aircraft reaches 700 ft RA with APPR mode (LOC and G/S) armed or engaged, the ILS FREQ and course are frozen in the receiver.
This function (ILS tune inhibit) is available, when at least one AP/FD is engaged. Any attempt to change the ILS frequency or CRS, via the MCDU or RMP, does not affect the receiver.
If the speed is managed, the system does not accept any modifications the pilot may enter on the PERF APPR page (surface wind, selected landing configuration, or VAPP) for speed guidance purposes below this altitude.
When the aircraft reaches 400 ft RA, LAND mode engages. The flight crew can only disengage this mode by engaging the GO AROUND mode.

Ident.: PRO-NOR-SRP-01-70-A-00004026.0001001 / 17 MAR 11
Applicable to: ALL

USE OF RMPS FOR ILS/DME

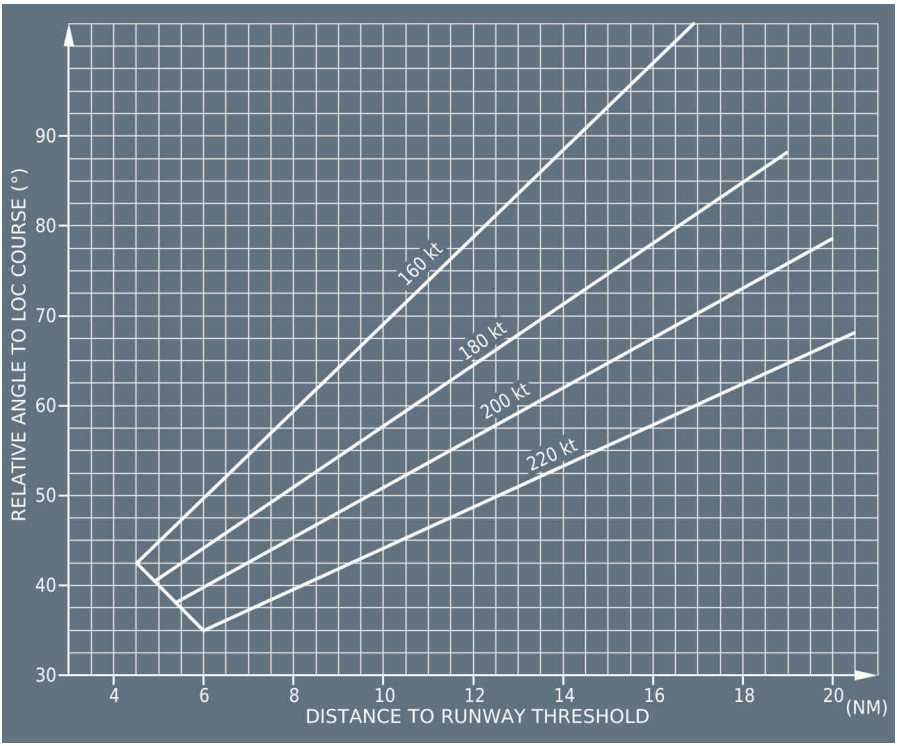
If both FMGCs fail, the flight crew can use the RMPs (Radio Management Panels 1 and 2) for back up tuning. Either RMP controls ILS. Prior to select an ILS frequency on one of the RMPs, the flight crew has to select “NAV” button from RMP 1 and RMP 2.

If the ILS has a DME, the PFD will not display the DME distance. In this situation, the flight crew will fly without DME information. If necessary, increase the Decision height (DH) accordingly.

Ident.: PRO-NOR-SRP-01-70-A-00004027.0001001 / 22 MAY 12
Applicable to: ALL

LOCALIZER (LOC) BEAM CAPTURE

The flight crew must always monitor the capture of a LOC beam. During this evolution, the PFD and ND must indicate that associated deviation indications move toward the centre of the scale. To avoid performing a false capture, the flight crew must be careful not to arm the LOC too early. The following graph shows the angle of interception versus distance to the runway threshold that ensures that the aircraft will not overshoot the axis by more than one and a half dot.



The capture begins when the deviation is two dots or less. It is programmed to line the aircraft up on the beam with a single overshoot, even if the intercept angle is large.

Note: *ICAO requires LOC beam to ensure a normal capture within 10 NM and plus or minus 35 ° from the course centerline. Some ILS systems just meet the requirement and are subject to false capture outside these limits.*

SWITCHING FROM NON ILS TO ILS APPROACH

Ident.: PRO-NOR-SRP-01-70-00004028.0002001 / 17 MAR 11
Applicable to: ALL

If an ILS approach is possible when a non ILS was previously scheduled, use one of the following procedures:

USE OF SECOND FLIGHT PLAN

Use a secondary flight plan to prepare the alternate ILS approach, time permitting.

COPY the ACTIVE flight plan.
REVISE the ARRIVAL: insert the ILS approach and the applicable STAR/VIA.
On the RAD NAV page, TUNE in the ILS manually.
REVISE the PERF APPR page.

CHANGE OF THE CLEARANCE

ATC changes the clearance from the non-ILS to the ILS approach.

- **If a secondary flight plan has been prepared:**
  ACTIVATE the SEC F-PLN and adjust.
  Follow subsequent standard procedures.
- **If a secondary flight plan has not been prepared:**
  REVISE the ARRIVAL on the primary F-PLN, inserting the ILS approach.
  REVISE the PERF APPR page.
  Follow subsequent standard procedures.

CAUTION	If the pilot decides to fly the ILS approach without revising the arrival of the primary flight plan (a non ILS approach is in the F-PLN), LOC and G/S modes will not be available when he presses the APPR pushbutton. Consequently, he should: • Manually TUNE in the ILS on the RAD NAV page: CHECK that the "CHECK APPR SELECTION" message comes up. • Press the ILS pushbutton and select ROSE ILS on the EIS CONTROL panel. • Use HDG, V/S or TRK, FPA modes to fly the ILS.

LANDING CATEGORIES

Ident.: PRO-NOR-SRP-01-70-00004038.0001001 / 16 NOV 11
Applicable to: ALL

Each FMGC computes its own landing category : CAT1, CAT2, CAT3 single, and CAT3 dual and displays the corresponding landing category on the FMAs.
Each category depends upon the availability of aircraft systems and functions.
When the landing capability downgrades, a triple click aural warning is activated.

FAIL-OPERATIONAL AUTOMATIC LANDING SYSTEM

An automatic landing system is fail-operational if, in the event of a failure below alert height, the remaining part of the automatic system allows the aircraft to complete the approach, flare, and landing. A CAT 3 DUAL system is a fail-operational automatic landing system.

Note: In the event of a failure, the automatic landing system operates as a fail-passive system.

FAIL-PASSIVE AUTOMATIC LANDING SYSTEM

An automatic landing system is fail-passive if, in the event of a failure, there is no significant out-of-trim condition or deviation of flight path or attitude, but the landing is not completed automatically. A CAT3 single system is a fail-passive automatic landing system.

Note: With a fail-passive automatic landing system the pilot assumes control of the aircraft after a failure.

Below 100 ft (radio altimeter), the FMGS freezes the landing capability until LAND mode is disengaged or both APs are off.
Therefore a failure occurring below 100 ft does not change the category of the system.

ALERT HEIGHT

The alert height is the height above touch down, above which a CAT3 autoland would be discontinued and a missed approach executed, if a failure occurred in either the airplane systems or the relevant ground equipments.
Below the alert height, if such a failure occurs, the flare, touchdown and roll out may be accomplished using the remaining automatic system.

WARNINGS FOR ILS APPROACH

Ident.: PRO-NOR-SRP-01-70-00004039.0010001 / 17 MAR 17

5 **Applicable to: MSN 01767-04384, 04399-09063**

AUTOLAND WARNING

With “LAND” or “FLARE” green on the FMA and at least one AP engaged, the AUTOLAND red light appears on the glareshield when the aircraft is below 200 ft RA and one of the following events occurs:

- The autopilots are lost, or
- The aircraft gets too far off the beam (LOC or G/S flash on PFD), or
- Loss of LOC signal above 15 ft, or loss of glide signal above 100 ft (transmitter or receivers), or
- The difference between both radio altimeter indications is greater than 15 ft, or
- The FMGS detects a long flare.

WARNING OF EXCESSIVE BEAM DEVIATION

This warning is a flashing of the LOC and G/S scales on the PFD and ND ROSE ILS. It occurs whenever:

- G/S deviation is greater than 1 dot (above 100 ft RA).
- LOC deviation is greater than 1/4 dot (above 15 ft RA).

WARNING ASSOCIATED WITH ILS "LANDING CAPABILITY"

Any downgrading in the aircraft’s capability for automatic approach and landing sounds a triple-click aural warning.

FAILURE OF BOTH LOCALIZER AND GLIDESLOPE RECEIVERS

The PFD and ND (rose ILS mode) display red LOC and G/S flags (if the ILS pushbutton has been pressed green). LOC and G/S scales disappear from the PFD.

If LOC or G/S modes are engaged and at least one AP/FD is engaged

- The AP disengages.
- The FD reverts to its HDG-V/S or TRK-FPA modes.

FAILURE OF LOCALIZER OR GLIDESLOPE TRANSMITTER (WHEN CAPTURED)

- The corresponding index is lost.
- The LOC and G/S scales flash.
- The corresponding FD bar flashes.

The FMA retains the LOC and G/S modes: If the transmitter failure is temporary, the APs are able to regain these modes. If the failure is long-term, or if it occurs when the aircraft is below 200 ft RA, this allows the aircraft to perform a GO AROUND with one or 2 autopilots engaged.

WARNINGS FOR ILS APPROACH

Ident.: PRO-NOR-SRP-01-70-00004039.0002001 / 17 MAR 17
Applicable to: MSN 04393-04397

AUTOLAND WARNING

With “LAND” or “FLARE” green on the FMA and at least one AP engaged, the AUTOLAND red light appears on the glareshield when the aircraft is below 200 ft RA and one of the following events occurs:

- The autopilots are lost, or
- The aircraft gets too far off the beam (LOC or G/S flash on PFD), or
- Loss of LOC signal above 15 ft, or loss of glide signal above 100 ft (transmitter or receivers).
- The difference between both radio altimeter indications is greater than 15 ft.

WARNING OF EXCESSIVE BEAM DEVIATION

This warning is a flashing of the LOC and G/S scales on the PFD and ND ROSE ILS. It occurs whenever:

- G/S deviation is greater than 1 dot (above 100 ft RA).
- LOC deviation is greater than 1/4 dot (above 15 ft RA).

WARNING ASSOCIATED WITH ILS "LANDING CAPABILITY"

Any downgrading in the aircraft’s capability for automatic approach and landing sounds a triple-click aural warning.

FAILURE OF BOTH LOCALIZER AND GLIDESLOPE RECEIVERS

The PFD and ND (rose ILS mode) display red LOC and G/S flags (if the ILS pushbutton has been pressed green). LOC and G/S scales disappear from the PFD.

If LOC or G/S modes are engaged and at least one AP/FD is engaged

- The AP disengages.
- The FD reverts to its HDG-V/S or TRK-FPA modes.

FAILURE OF LOCALIZER OR GLIDESLOPE TRANSMITTER (WHEN CAPTURED)

- The corresponding index is lost.
- The LOC and G/S scales flash.
- The corresponding FD bar flashes.

Above 200 ft RA, if the transmitter failure lasts less than 7 s, the FMA retains the LOC and G/S modes (or the LAND mode) and the APs are able to regain these modes. If the failure lasts longer than 7 s, the AP disengages and the FD reverts to its basic modes. Below 200 ft RA, if

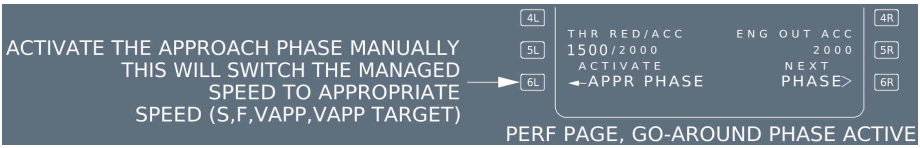
the transmitter failure occurs, the AUTOLAND warning appears, indicating that the crew must perform a GO AROUND (if insufficient visual references) with one or 2 APs engaged.

Go-Around

MONITORING THE GO-AROUND

Ident.: PRO-NOR-SRP-01-80-00004054.0002001 / 09 DEC 09
Applicable to: MSN 04393-04397

Engage the GO-AROUND phase and GO-AROUND modes by setting the thrust levers to the TOGA position, if at least CONF1 is selected.
When the GO-AROUND phase is engaged, the previously-flown approach is automatically strung back into the flight plan at the end of the missed approach procedure.
In the GO-AROUND phase, the system makes no predictions. Consequently, CLB and DES modes are not available, and the flight crew must monitor constraints.
When the aircraft leaves the GO-AROUND phase, all predictions and modes become available again. During a GO-AROUND phase, the managed speed is Green Dot.



HEADING/TRACK PRESET FUNCTION IN GO-AROUND PHASE

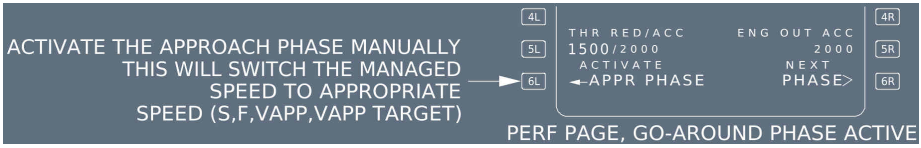
The flight crew can use the heading/track preset, when LOC*, LOC, LAND, FINAL or GA is engaged.

SET the appropriate heading, or track value, in the window of the FCU.
When necessary, PULL the HDG/TRK selection knob to engage the mode on the preset value.

MONITORING THE GO-AROUND

Ident.: PRO-NOR-SRP-01-80-00004054.0005001 / 09 JUL 13
[1] **Applicable to: MSN 01767-04384, 04399-09063**

Engage the GO-AROUND phase and GO-AROUND modes by setting the thrust levers to the TOGA position, if at least CONF1 is selected.
When the GO-AROUND phase is engaged, the previously-flown approach is automatically strung back into the flight plan at the end of the missed approach procedure.
In the GO-AROUND phase, the system makes no predictions. Consequently, CLB and DES modes are not available, and the flight crew must monitor constraints.
When the aircraft leaves the GO-AROUND phase, all predictions and modes become available again. During a GO-AROUND phase, the managed speed is Green Dot.



HEADING/TRACK PRESET FUNCTION IN GO-AROUND PHASE

The flight crew can use the heading/track preset, when LOC*, LOC, LAND or GA is engaged.

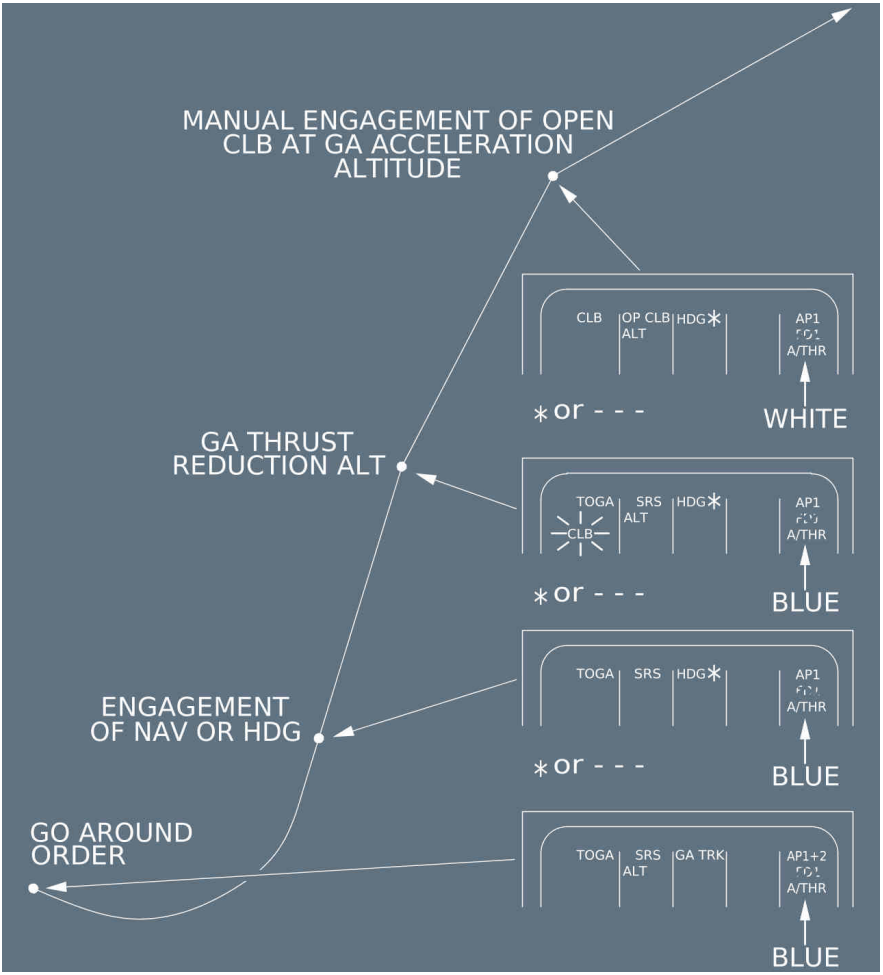
SET the appropriate heading, or track value, in the window of the FCU.
When necessary, PULL the HDG/TRK selection knob to engage the mode on the preset value.

Note: *The heading/track preset is not available in non precision approach in AP/FD FINAL mode.*

GO-AROUND PROFILE

Ident.: PRO-NOR-SRP-01-80-00004055.0006001 / 22 MAY 12
Applicable to: MSN 02204, 02914

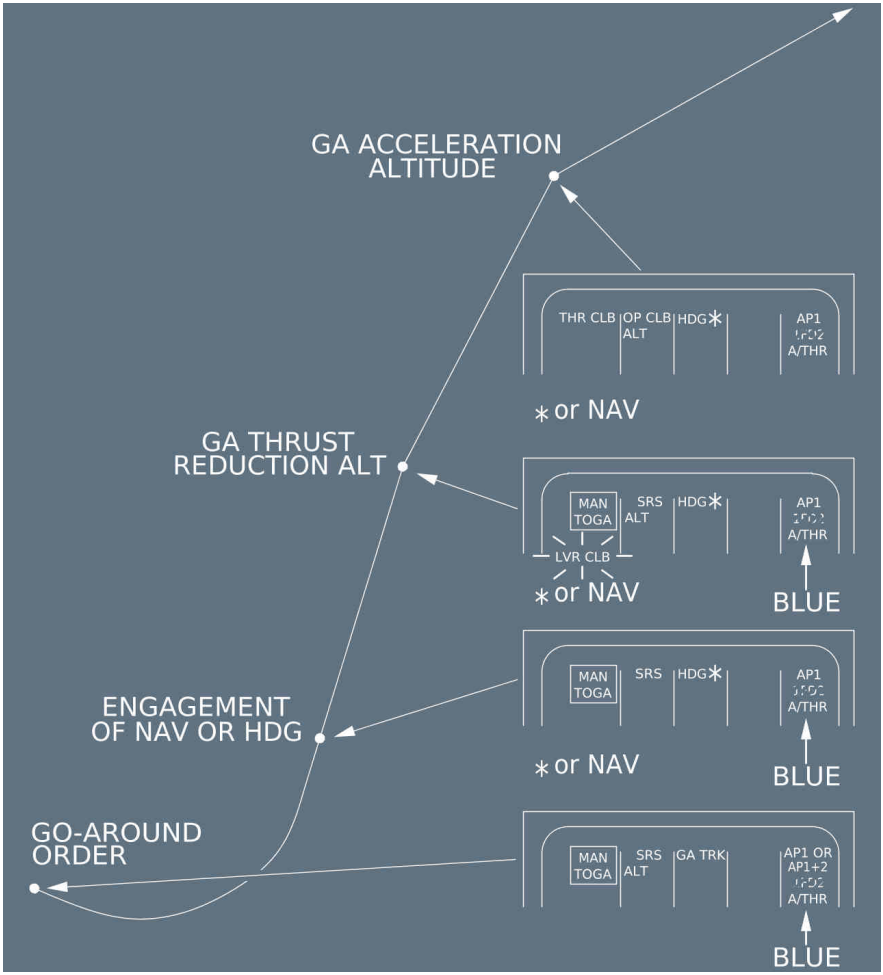
- **WITH FD ON:**
  Apply SOP procedures



GO-AROUND PROFILE

Ident.: PRO-NOR-SRP-01-80-00004055.0014001 / 22 MAY 12
Applicable to: MSN 01920, 02457, 02649, 02712, 03264, 03330

- **WITH FD ON:**
  Apply SOP procedures

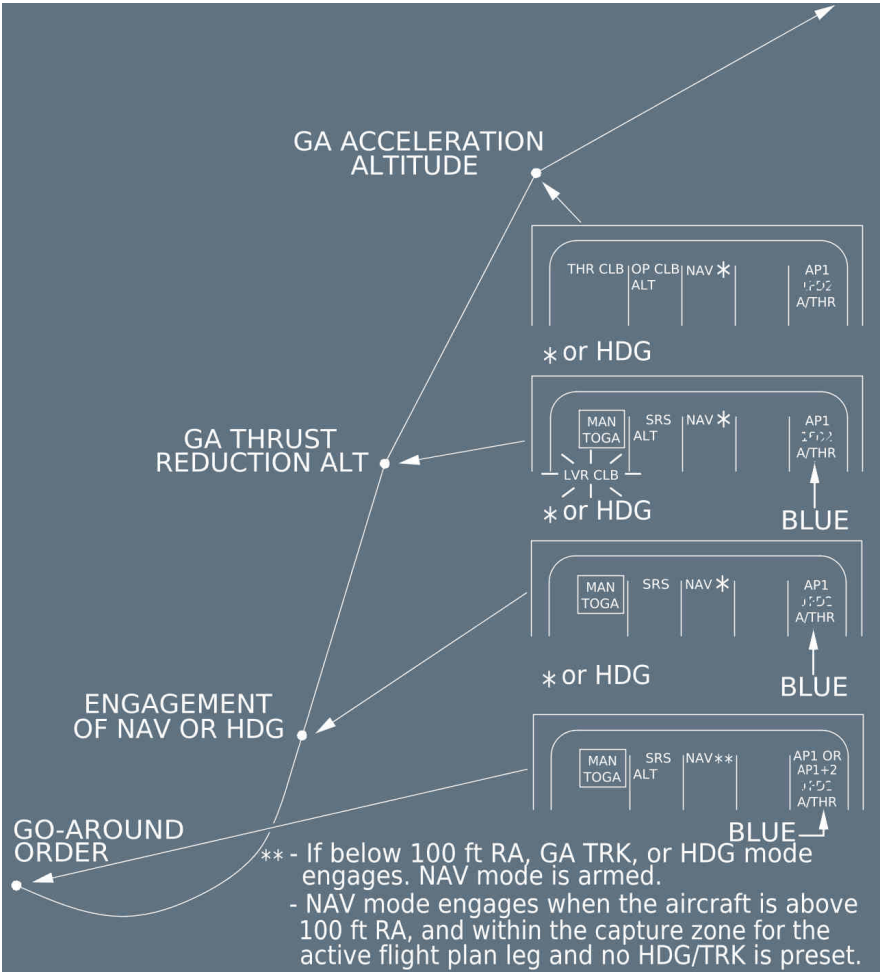


GO-AROUND PROFILE

Ident.: PRO-NOR-SRP-01-80-00004055.0043001 / 22 MAY 12

2 **Applicable to: MSN 01767, 01957-02195, 02275-02443, 02482-02626, 02670, 02737-02908, 03071-03138, 03308, 03357-09063**

- **WITH FD ON:**
  Apply SOP procedures



MISSED APPROACH: TRY AGAIN

Ident.: PRO-NOR-SRP-01-80-00004057.0001001 / 14 FEB 11
Applicable to: MSN 01767-01920, 02108, 02195-02359, 02405, 02482

If the pilot intends to fly another approach to the destination:

- The flight plan has all the necessary data for the missed approach
- Green Dot is the target speed.

- **When cleared by the ATC to follow the missed approach procedure:**
  ENGAGE NAV mode, or
  TURN and PULL the HDG selector knob to set a heading
  HDG, or TRK, or NAV modes can only be engaged above 100 ft.

- **When entering the initial approach area:**
  Activate the approach phase on the MCDU's PERF GO AROUND page
  - **If the APPR phase is not activated:**
    - Managed approach speed will not be available
    - The system will not furnish predictions
    - MDA/MDH/DH displays will not appear on the PFD.

MISSED APPROACH: TRY AGAIN

Ident.: PRO-NOR-SRP-01-80-00004057.0008001 / 14 FEB 11

3 **Applicable to: MSN 01957-02097, 02121-02139, 02388, 02443-02457, 02584-09063**

If the pilot intends to fly another approach to the destination:
- The flight plan has all the necessary data for the missed approach
- Green Dot is the target speed.

- **When cleared by the ATC to follow the missed approach procedure:**
  ENGAGE NAV mode, or
  TURN and PULL the HDG selector knob to set a heading
  HDG, or TRK, or NAV modes can only be engaged above 100 ft.

- **When entering the initial approach area:**
  Activate the approach phase on the MCDU's PERF GO AROUND page
  - **If the APPR phase is not activated:**
    - Managed approach speed will not be available
    - The system will not furnish predictions
    - BARO/RADIO minima displays will not appear on the PFD.

MISSED APPROACH: DIVERT

Ident.: PRO-NOR-SRP-01-80-00004058.0001001 / 14 FEB 11

4 **Applicable to: MSN 01767-01920, 02108, 02275-02334, 02388, 02457, 02584-02670, 02737-02804, 03750, 04491, 04532, 04645, 04965-09063**

- **If the crew decides to divert to the alternate:**
  ENABLE ALTN, preferably at the TO waypoint.

- **When cleared to a waypoint:**
  PERFORM a DIRECT TO.

  The system automatically reverts to CLB phase, and modifies the target speed from Green Dot to initial speed.

  The system automatically sets the CRZ FL to the defaulted alternate CRZ FL (FL 220 or 310), and retains the previous cost index.

  The pilot may adjust these as necessary.

  Note: *Diversion may also be initiated by entering a NEW DEST in the LAT REV page at the TO waypoint, or by using the secondary F-PLN, if prepared.* *Refer to DSC-22_20-60-30 General.*

MISSED APPROACH: DIVERT

Ident.: PRO-NOR-SRP-01-80-00004058.0004001 / 14 FEB 11
Applicable to: MSN 01957-02097, 02121-02204, 02359, 02405-02443, 02482, 02712, 02908-03618, 03782-04488, 04506-04518, 04535-04637, 04752-04954

- **If the crew decides to divert to the alternate:**
  ENABLE ALTN, preferably at the TO waypoint.

- **When cleared to a waypoint:**
  PERFORM a DIRECT TO.

  The system automatically reverts to CLB phase, and modifies the target speed from Green Dot to initial speed.

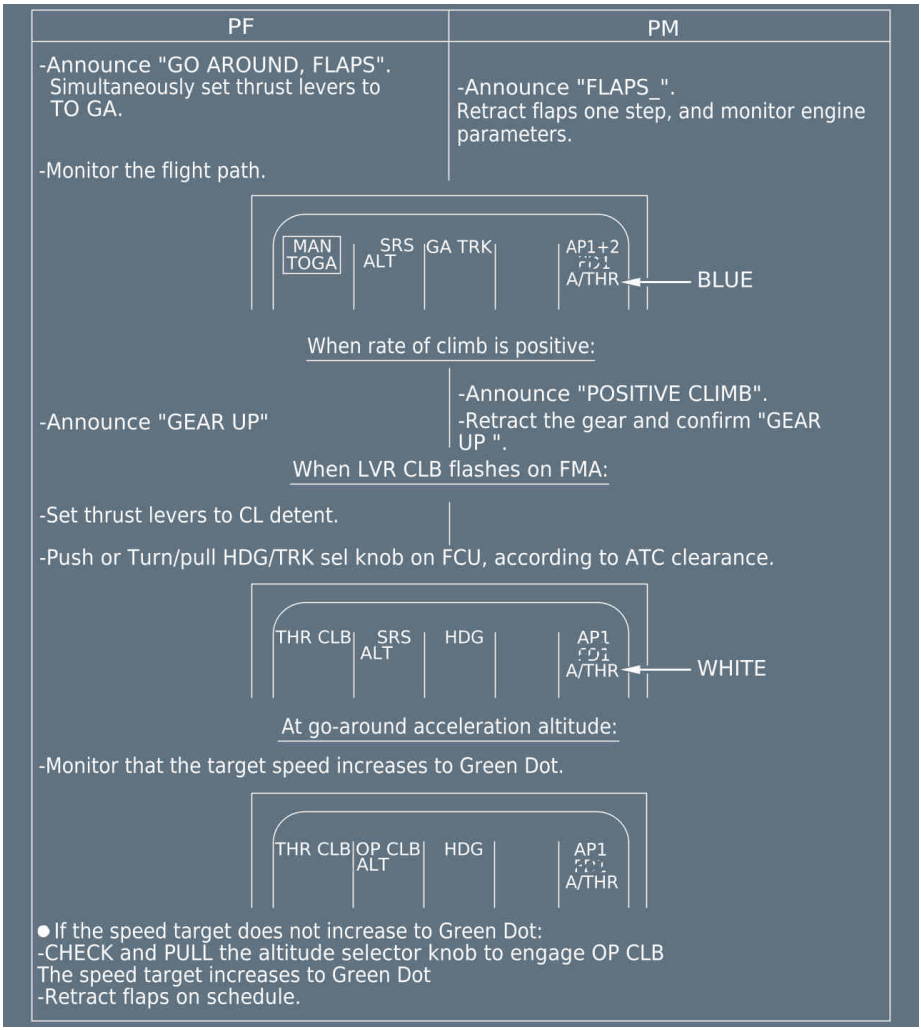
  The system automatically sets the CRZ FL to the defaulted alternate CRZ FL (FL 220 or 310), The Cost Index is set to 0.0 and the message USING COST INDEX 0 is triggered.

  The pilot may adjust these as necessary.

  Note: *Diversion may also be initiated by entering a NEW DEST in the LAT REV page at the TO waypoint, or by using the secondary F-PLN, if prepared.* *Refer to DSC-22_20-60-30 General.*

TASK SHARING DURING A GO-AROUND

Ident.: PRO-NOR-SRP-01-80-00004059.0002001 / 20 JUL 15
Applicable to: ALL



PROCEDURES

SPECIAL OPERATIONS

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Localization Title	Toc Index	ID	Reason
PRO-SPO-20 General	A	1	Effectivity update: The information now also applies to MSN 09063.
PRO-SPO-20 General	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-SPO-20 Fuel Transfer	B	3	Effectivity update: The information now also applies to MSN 09063.
PRO-SPO-20 Flight Planning and Execution - EMER Descent in Case of Rapid Depressurization	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-SPO-20 Systems	E	5	Effectivity update: The information no longer applies to MSN 05449.
PRO-SPO-20 Systems	E	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-SPO-20 Performance Data	F	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-SPO-20 Performance Data	F	8	Effectivity update: The information now also applies to MSN 09063.
PRO-SPO-20 Flight Planning from Brake Release to Landing	G	9	Effectivity update: The information now also applies to MSN 09063.
PRO-SPO-20 Flight Planning from Brake Release to Landing	G	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-SPO-20 Flight Planning from Brake Release to Landing	G	11	Effectivity update: The information no longer applies to MSN 05449.
PRO-SPO-20 Ground Distance/Air Distance Conversion	H	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PRO-SPO-20 Ground Distance/Air Distance Conversion	H	13	Effectivity update: The information now also applies to MSN 09063.
PRO-SPO-40-50 Abnormal and Emergency Procedures	C	1	Effectivity update: The information no longer applies to MSN 05449.
PRO-SPO-40-50 Abnormal and Emergency Procedures	C	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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Localization Title	Toc Index	ID	Reason
PRO-SPO-40-60 General	A	1	Effectivity update: The information no longer applies to MSN 05449.
PRO-SPO-40-60 General	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-SPO-40-60 Maximum Diversion Distance	B	3	Effectivity update: The information now also applies to MSN 09063.
PRO-SPO-40-60 Maximum Diversion Distance	B	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-SPO-40-60 Maximum Diversion Distance	B	5	Effectivity update: The information no longer applies to MSN 05449.
PRO-SPO-40-60 ETOPS Fuel Requirement from Critical Point to Landing - All Engines - Cruise at LRC	C	6	Effectivity update: The information now also applies to MSN 09063.
PRO-SPO-40-60 ETOPS Fuel Requirement from Critical Point to Landing - All Engines - Cruise at LRC	C	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-SPO-40-60 ETOPS Fuel Requirement from Critical Point to Landing - All Engines - Cruise at LRC	C	8	Effectivity update: The information no longer applies to MSN 05449.
PRO-SPO-40-60 ETOPS Fuel Requirement from Critical Point to Landing - One Engine Out - Cruise at 350kt	D	9	Effectivity update: The information now also applies to MSN 09063.
PRO-SPO-40-60 ETOPS Fuel Requirement from Critical Point to Landing - One Engine Out - Cruise at 350kt	D	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-SPO-40-60 ETOPS Fuel Requirement from Critical Point to Landing - One Engine Out - Cruise at 350kt	D	11	Effectivity update: The information no longer applies to MSN 05449.
PRO-SPO-40-60 ETOPS Fuel Requirement from Critical Point to Landing - One Engine Out - Cruise at 320kt	E	12	Effectivity update: The information now also applies to MSN 09063.
PRO-SPO-40-60	E	13	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.

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Localization Title	Toc Index	ID	Reason
ETOPS Fuel Requirement from Critical Point to Landing - One Engine Out - Cruise at 320kt			
PRO-SPO-40-60 ETOPS Fuel Requirement from Critical Point to Landing - One Engine Out - Cruise at 320kt	E	14	Effectivity update: The information no longer applies to MSN 05449.
PRO-SPO-43 FADEC Intermix Operations	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PRO-SPO-60 General	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-SPO-60 Limitations	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PRO-SPO-60 Procedures	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PRO-SPO-60 Procedures	C	4	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
PRO-SPO-60 Performance	D	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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GENERAL

Ident.: PRO-SPO-20-00001883.0002001 / 04 SEP 18

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Flight without cabin pressurization can result of:
- Dispatch under MEL
- Departure following a structural damage
- Depressurization in flight

The flight crew must decide the flight level and the airspeed depending on:
- The cause of the depressurization
- The distance to fly
- The topographic conditions
- The meteorological conditions, and
- The passengers on board the aircraft.

Revenue flight is permitted without cabin pressurization, provided that the oxygen requirements below are achieved.
After a MEL dispatch with both PACKs inoperative, the flight without cabin pressurization is permitted provided the flight is performed without passengers and with the ACTs empty.

GENERAL

Ident.: PRO-SPO-20-00001883.0001001 / 12 NOV 15

2 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Flight without cabin pressurization can result of:
- Dispatch under MEL
- Departure following a structural damage
- Depressurization in flight

The flight crew must decide the flight level and the airspeed depending on:
- The cause of the depressurization
- The distance to fly
- The topographic conditions
- The meteorological conditions, and
- The passengers on board the aircraft.

Revenue flight is permitted without cabin pressurization, provided that the oxygen requirements below are achieved.
After a MEL dispatch with both PACKs inoperative, the flight without cabin pressurization is permitted provided the flight is performed without passengers.

FUEL TRANSFER

Ident.: PRO-SPO-20-00006150.0002001 / 04 SEP 18

3 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Dispatch for a flight without pressurization is not allowed with fuel in any ACTs.
In case of Pressurization failure in flight, automatic fuel transfer from the ACT(s) to the center tank will not occur. The “ACT XFR FAULT” ECAM caution will be triggered to indicate that the automatic transfer is failed. The flight crew must follow the ECAM caution to perform a manual fuel transfer.

OXYGEN REQUIREMENTS

Ident.: PRO-SPO-20-00001884.0001001 / 21 MAR 17

Applicable to: ALL

CREW MEMBERS

See FAR 121.329 or AIR-OPS CAT.IDE.A.235

PASSENGERS

For flight at cabin pressure altitudes above 10 000 ft, up to and including 14 000 ft, there must be enough oxygen to supply 10 % of the passengers for the flight at those altitudes that lasts more than 30 min.
For flight at cabin pressure altitudes above 14 000 ft, up to and including 15 000 ft, there must be enough oxygen for 30 % of the passengers.
For flight at cabin pressure altitudes above 15 000 ft, there must be enough oxygen for all passengers.

FLIGHT PLANNING AND EXECUTION

Ident.: PRO-SPO-20-A-00001981.0001001 / 21 MAR 17

Applicable to: ALL

ALTITUDE

Flight route planning should consider the above-stated restriction in cabin altitude. If cabin altitude exceeds 9 550 ± 350 ft, the EXCESS CAB ALT warning on the ECAM will be activated. When above 14 000 ft, the passenger oxygen masks will drop automatically. Therefore, the recommended maximum altitude for prolonged flight is FL 100. The minimum altitude should be selected by respecting :

- The Minimum Safe Altitude (MSA),
- Turbulence, which is uncomfortable for passengers and,
- Low Outside Air Temperature (OAT), which can be uncomfortable for passengers when the cabin is ventilated by ram air only.

Ident.: PRO-SPO-20-A-00001983.0001001 / 21 MAR 17
Applicable to: ALL

AIRSPEED

If decompression is due to structural damage, consider airspeed reduction. Use slats and flaps, as necessary, to establish low speed conditions. In addition, turbulent conditions are uncomfortable for passengers, and gust response should be minimized by reducing airspeed.

Ident.: PRO-SPO-20-A-00001984.0001001 / 21 MAR 17
Applicable to: ALL

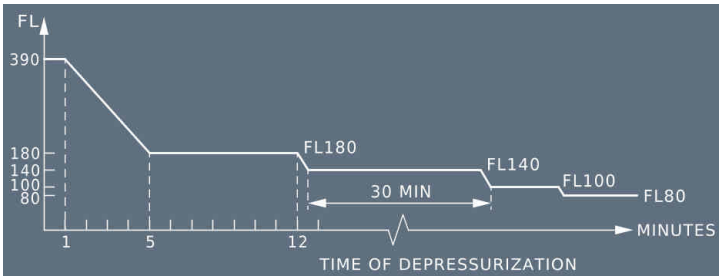
CLIMB AND DESCENT RATE

Takeoff must be performed normally, and the rate of climb must be limited to about 500 ft/min, to ease the pressure change felt by passengers and crew.
Likewise, the rate of descent must be limited to about 1 000 ft/min, except for the final approach which must be performed normally. Notify the ATC of any performance deficiency by a remark in the flight plan.

Ident.: PRO-SPO-20-A-00001985.0001001 / 21 MAR 17
4 **Applicable to: MSN 01767-04312, 04328-04384, 04433, 04481-09063**

EMER DESCENT IN CASE OF RAPID DEPRESSURIZATION

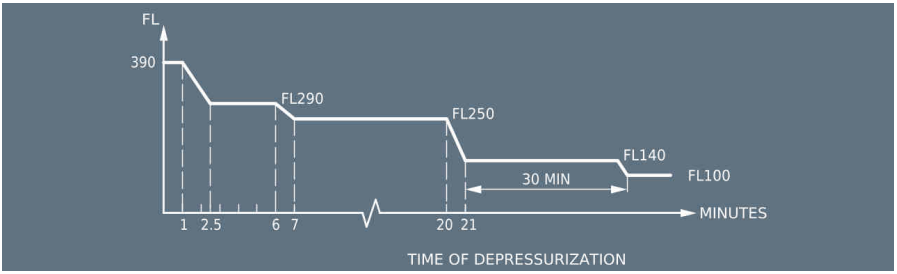
In the event of depressurization, oxygen is supplied to passengers through an individual mask. The capacity of the units is such that the aircraft must descend and remain below the following profile.



Ident.: PRO-SPO-20-A-00001985.0004001 / 21 MAR 17
Applicable to: MSN 04314, 04393-04399, 04438

EMER DESCENT IN CASE OF RAPID DEPRESSURIZATION

In the event of depressurization, oxygen is supplied to passengers through an individual mask. The capacity of the units is such that the aircraft must descend and remain below the following profile.



SYSTEMS

Ident.: PRO-SPO-20-00001990.0005001 / 04 DEC 18
Applicable to: MSN 01957-02097, 02121, 02138, 02457

FAILURE OCCURRING IN FLIGHT

Apply the abnormal and emergency procedures required by ECAM.

FAILURE PRESENT AT DISPATCH

- **If flight with both packs inoperative**

  In this case, the flight must be performed with no passengers

  PACK 1 and 2.....OFF
  RAM AIR.....ON

  Note: *If the "AVIONICS SMOKE" procedure has to be applied, the following flight time limitations have to be considered to protect the avionic equipment :*
  At ISA +40 : 0.5 h
  At ISA +30 : 1.5 h
  At ISA +20 : 4 h
  At ISA +10 and below : No limitation.

  MAX FL.....100 or MSA

- **If both CAB PRESS systems are inoperative, or if there is structural damage :**
  PACK 1 and 2.....ON
  MODE SEL.....MAN
  V/S CTL.....AS RQRD
  Use V/S CTL pb to set the outflow valve opening to 50 %.
  OUTFLOW VALVE HALF OPEN.....CHECK
  The outflow valve opening is limited to 50 %, to prevent the cabin air suction effect.

MAX FL.....100 or MSA

Between FL 80 and FL 150, oxygen must be provided for 2 % of the passengers. This is provided by the portable oxygen system. When it is no longer available, descend to FL 80. For performance at FL 80/250 kt : Use data for FL 100/LRC (Refer to PER-CRZ-CRT-30 LONG RANGE CRUISE - ISA) and increase fuel consumption by 6 %.

TAKEOFF

Limit the aircraft's rate of climb to about 500 ft/min.

CLIMB

Note: The EXCESS CAB ALT warning may occur.
Use the ECAM CLR pb to clear the warning.

DESCENT

- **At top of descent, if engine anti-ice (side with ENG BLEED pb-sw OFF) is available:**
  ANTI ICE ENG (side with ENG BLEED pb-sw OFF) pb-sw.....ON

Limit the aircraft's rate of descent to about 1 000 ft/min. Perform the final approach normally.

SYSTEMS

Ident.: PRO-SPO-20-00001990.0003001 / 04 DEC 18

5 **Applicable to: MSN 04491, 04532-04535, 04603, 04645, 04757, 04813, 05027, 05076, 05090, 05259, 05411, 05683, 05807, 06036-06289**

FAILURE OCCURRING IN FLIGHT

Apply the abnormal and emergency procedures required by ECAM.

FAILURE PRESENT AT DISPATCH

- **If flight with both packs inoperative:**

  In that case, the flight must be performed with no passengers.

  PACK 1 and 2.....OFF
  RAM AIR.....ON

  Note: If the "AVIONICS SMOKE" procedure has to be applied, the following flight time limitations have to be considered to protect the avionic equipment :
  At ISA +40 : 0.5 h
  At ISA +30 : 1.5 h
  At ISA +20 : 4 h
  At ISA +10 and below : No limitation.

  MAX FL.....100 or MSA

- **If both CAB PRESS systems are inoperative, or if there is structural damage:**

TEST OF THE MANUAL OPERATION OF THE OUTFLOW VALVE ON GROUND:

PACK 1 pb-sw and PACK 2 pb-sw..... OFF
OUTFLOW VALVE FULLY OPEN.....CHECK

Check that the outflow valve is fully open on the CAB PRESS SD page

RPCU CB (X23 ON 122VU)..... PULL
MODE SEL pb.....MAN
MAN V/S CTL..... DN

Check that the outflow valve is fully closed on the CAB PRESS SD page

MAN V/S CTL.....UP

Check that the outflow valve is fully open on the CAB PRESS SD page

MODE SEL pb.....AUTO
RPCU CB (X23 ON 122VU)..... PUSH
PACK 1 pb-sw and PACK 2 pb-sw..... ON
MAX FL.....100 or MSA

Between FL 80 and FL 150, oxygen must be provided for 2 % of the passengers. This is provided by the portable oxygen system. When it is no longer available, descend to FL 80. For performance at FL 80/250 kt : Use data for FL 100/LRC (Refer to PER-CRZ-CRT-30 LONG RANGE CRUISE - ISA) and increase fuel consumption by 6 %.

TAKEOFF

Limit the aircraft's rate of climb to about 500 ft/min.

- **If both CAB PRESS systems are inoperative, or if there is structural damage:**
  - **WHEN IN CLEAN CONFIGURATION:**

MODE SEL pb..... MAN
V/S CTL sw.....AS RQRD

Use V/S CTL pb to set the outflow valve opening to 50 %.

OUTFLOW VALVE HALF OPEN..... CHECK

The outflow valve opening is limited to 50 %, to prevent the cabin air suction effect.

CLIMB

Note: The EXCESS CAB ALT warning may occur.
Use the ECAM CLR pb to clear the warning.

DESCENT

- **At top of descent, if engine anti-ice (side with ENG BLEED pb-sw OFF) is available:**

ANTI ICE ENG (side with ENG BLEED pb-sw OFF) pb-sw.....ON

Limit the aircraft's rate of descent to about 1 000 ft/min. Perform the final approach normally.

SYSTEMS

Ident.: PRO-SPO-20-00001990.0001001 / 23 JUN 15
Applicable to: MSN 01767-01920, 02108, 02135, 02139-02443, 02482

FAILURE OCCURRING IN FLIGHT

Apply the abnormal and emergency procedures required by ECAM.

FAILURE PRESENT AT DISPATCH

- **If flight with both packs inoperative**

  In this case, the flight must be performed with no passengers

  PACK 1 and 2.....OFF
  RAM AIR.....ON

  Note: *If the "AVIONICS SMOKE" procedure has to be applied, the following flight time limitations have to be considered to protect the avionic equipment :*
  At ISA +40 : 0.5 h
  At ISA +30 : 1.5 h
  At ISA +20 : 4 h
  At ISA +10 and below : No limitation.

  MAX FL.....100 or MSA

- **If both CAB PRESS systems are inoperative, or if there is structural damage :**
  PACK 1 and 2.....ON
  MODE SEL.....MAN
  V/S CTL.....AS RQRD
  Use V/S CTL pb to set the outflow valve opening to 50 %.
  OUTFLOW VALVE HALF OPEN.....CHECK
  The outflow valve opening is limited to 50 %, to prevent the cabin air suction effect.
  MAX FL.....100 or MSA
  Between FL 80 and FL 150, oxygen must be provided for 2 % of the passengers. This is provided by the portable oxygen system. When it is no longer available, descend to FL 80. For performance at FL 80/250 kt : Use data for FL 100/LRC (Refer to PER-CRZ-CRT-30 LONG RANGE CRUISE - ISA) and increase fuel consumption by 6 %.

TAKEOFF

Limit the aircraft's rate of climb to about 500 ft/min.

CLIMB

Note: The EXCESS CAB ALT warning may occur.
Use the ECAM CLR pb to clear the warning.

DESCENT

Limit the aircraft's rate of descent to about 1 000 ft/min. Perform the final approach normally.

SYSTEMS

Ident.: PRO-SPO-20-00001990.0002001 / 23 JUN 15

6 **Applicable to: MSN 02584-04488, 04506-04518, 04552, 04609-04637, 04752, 04762, 04818-04965, 05036, 05080, 05092-05231, 05262-05365, 05437-05676, 05712-05744, 05829-06010, 06336-09063**

FAILURE OCCURRING IN FLIGHT

Apply the abnormal and emergency procedures required by ECAM.

FAILURE PRESENT AT DISPATCH

- **If flight with both packs inoperative:**

In that case, the flight must be performed with no passengers.

PACK 1 and 2.....OFF
RAM AIR.....ON

Note: If the "AVIONICS SMOKE" procedure has to be applied, the following flight time limitations have to be considered to protect the avionic equipment :
At ISA +40 : 0.5 h
At ISA +30 : 1.5 h
At ISA +20 : 4 h
At ISA +10 and below : No limitation.

MAX FL.....100 or MSA

- **If both CAB PRESS systems are inoperative, or if there is structural damage:**

TEST OF THE MANUAL OPERATION OF THE OUTFLOW VALVE ON GROUND:

PACK 1 pb-sw and PACK 2 pb-sw.....OFF
OUTFLOW VALVE FULLY OPEN.....CHECK
Check that the outflow valve is fully open on the CAB PRESS SD page
RPCU CB (X23 ON 122VU).....PULL
MODE SEL pb.....MAN
MAN V/S CTL.....DN
Check that the outflow valve is fully closed on the CAB PRESS SD page

MAN V/S CTL.....UP

Check that the outflow valve is fully open on the CAB PRESS SD page

MODE SEL pb.....AUTO
RPCU CB (X23 ON 122VU)..... PUSH
PACK 1 pb-sw and PACK 2 pb-sw.....ON
MAX FL.....100 or MSA

Between FL 80 and FL 150, oxygen must be provided for 2 % of the passengers. This is provided by the portable oxygen system. When it is no longer available, descend to FL 80. For performance at FL 80/250 kt : Use data for FL 100/LRC (Refer to PER-CRZ-CRT-30 LONG RANGE CRUISE - ISA) and increase fuel consumption by 6 %.

TAKEOFF

Limit the aircraft's rate of climb to about 500 ft/min.

- **If both CAB PRESS systems are inoperative, or if there is structural damage:**
  - **WHEN IN CLEAN CONFIGURATION:**

    MODE SEL pb.....MAN
    V/S CTL sw.....AS RQRD

    Use V/S CTL pb to set the outflow valve opening to 50 %.

    OUTFLOW VALVE HALF OPEN.....CHECK

    The outflow valve opening is limited to 50 %, to prevent the cabin air suction effect.

CLIMB

Note: The EXCESS CAB ALT warning may occur.
Use the ECAM CLR pb to clear the warning.

DESCENT

Limit the aircraft's rate of descent to about 1 000 ft/min. Perform the final approach normally.

PERFORMANCE DATA

Ident.: PRO-SPO-20-00001991.0001001 / 10 JAN 11

7 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The following table enables the fuel consumption and the time needed from takeoff to landing to be determined in case of flight without cabin pressurization.

The table is established for :
- Takeoff
- Climb from 1 500 ft at 250 kt
- Long range cruise speed at FL 100

- Descent to 1 500 ft at 250 kt
- Approach and landing : IMC procedure 120 kg or 260 lb (6 min)
- ISA temperature
- CG = 25 %
- Normal air conditioning
- Anti ice OFF

The table (*Refer to PRO-SPO-20 Ground Distance/Air Distance Conversion*) gives the conversion from ground distance to air distance

Note: For each degree Celcius above ISA temperature apply a correction of 0.01 (kg/°C/NM) or 0.022 (lb/°C/NM).

PERFORMANCE DATA

Ident.: PRO-SPO-20-00001991.0002001 / 10 JAN 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The following table enables the fuel consumption and the time needed from takeoff to landing to be determined in case of flight without cabin pressurization.

The table is established for :
- Takeoff
- Climb from 1 500 ft at 250 kt
- Long range cruise speed at FL 100
- Descent to 1 500 ft at 250 kt
- Approach and landing : IMC procedure 120 kg or 260 lb (6 min)
- ISA temperature
- CG = 25 %
- Normal air conditioning
- Anti ice OFF

The table (*Refer to PRO-SPO-20 Ground Distance/Air Distance Conversion*) gives the conversion from ground distance to air distance
Following tables have been calculated using databases for CFM 56–5–B /P. If the engines fitted on the aircraft are not /P, the fuel consumption has to be increased by 3 %.

Note: For each degree Celcius above ISA temperature apply a correction of 0.01 (kg/°C/NM) or 0.022 (lb/°C/NM).

PERFORMANCE DATA

Ident.: PRO-SPO-20-00001991.0003001 / 21 MAR 17

[8] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The following table enables the fuel consumption and the time needed from takeoff to landing to be determined in case of flight without cabin pressurization.

The table is established for :

- Takeoff
- Climb from 1 500 ft at 250 kt
- Long range cruise speed at FL 100
- Descent to 1 500 ft at 250 kt
- Approach and landing : IMC procedure 140 kg or 310 lb (6 min)
- ISA temperature
- CG = 25 %
- Normal air conditioning
- Anti ice OFF

The table (*Refer to PRO-SPO-20 Ground Distance/Air Distance Conversion*) gives the conversion from ground distance to air distance

Note: For each degree Celcius above ISA temperature apply a correction of 0.01 (kg/°C/NM) or 0.022 (lb/°C/NM).

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING

Ident.: PRO-SPO-20-00001992.0245001 / 20 DEC 16

9 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT - CRUISE : LONG RANGE AT FL100 - DESCENT : 250KT
IMC PROCEDURE : 140 KG (6 MIN)

NORMAL AIR CONDITIONING ANTI ICE OFF			ISA CG=25.0%		**FUEL CONSUMED (KG) TIME (H.MIN)**		
AIR DIST. (NM)	INITIAL WEIGHT (1000KG)						
	65	**70**	**75**	**80**	**85**	**90**	**95**
220	1729 0.51	1761 0.50	1798 0.50	1842 0.50	1893 0.49	1954 0.49	2023 0.48
240	1863 0.55	1899 0.54	1939 0.54	1987 0.53	2043 0.53	2109 0.52	2183 0.52
260	1997 0.58	2036 0.58	2081 0.57	2132 0.57	2193 0.57	2264 0.56	2343 0.55
280	2131 1.02	2173 1.02	2222 1.01	2278 1.01	2342 1.00	2419 1.00	2503 0.59
300	2264 1.06	2311 1.05	2363 1.05	2422 1.05	2492 1.04	2573 1.03	2663 1.02
320	2398 1.09	2448 1.09	2503 1.09	2567 1.08	2641 1.08	2727 1.07	2823 1.06
340	2532 1.13	2585 1.13	2644 1.12	2712 1.12	2790 1.11	2881 1.11	2982 1.10
360	2665 1.17	2722 1.16	2785 1.16	2857 1.16	2939 1.15	3035 1.14	3141 1.13
380	2798 1.21	2859 1.20	2925 1.20	3001 1.19	3088 1.19	3189 1.18	3300 1.17
400	2931 1.24	2995 1.24	3066 1.23	3145 1.23	3237 1.22	3342 1.21	3459 1.20
420	3065 1.28	3132 1.28	3206 1.27	3290 1.27	3385 1.26	3496 1.25	3617 1.24
440	3198 1.32	3269 1.31	3346 1.31	3434 1.30	3534 1.30	3649 1.29	3776 1.27
460	3330 1.36	3405 1.35	3486 1.34	3578 1.34	3682 1.33	3802 1.32	3934 1.31

CORRECTIONS	**AC OFF**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 5 %	+ 1.1 %	+ 5.3 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT - CRUISE : LONG RANGE AT FL100 - DESCENT : 250KT
IMC PROCEDURE : 140 KG (6 MIN)

NORMAL AIR CONDITIONING ANTI ICE OFF			ISA CG=25.0%		**FUEL CONSUMED (KG) TIME (H.MIN)**		
AIR DIST. (NM)	INITIAL WEIGHT (1000KG)						
	65	**70**	**75**	**80**	**85**	**90**	**95**
480	3463 1.39	3541 1.39	3626 1.38	3721 1.38	3830 1.37	3955 1.36	4092 1.34
500	3596 1.43	3678 1.42	3766 1.42	3865 1.41	3978 1.41	4108 1.40	4250 1.38
520	3729 1.47	3814 1.46	3906 1.46	4009 1.45	4126 1.44	4260 1.43	4408 1.42
540	3861 1.51	3950 1.50	4045 1.49	4152 1.49	4274 1.48	4413 1.47	4565 1.45
560	3994 1.54	4086 1.54	4185 1.53	4296 1.52	4422 1.52	4565 1.50	4723 1.49
580	4126 1.58	4222 1.57	4324 1.57	4439 1.56	4569 1.55	4717 1.54	4880 1.52
600	4258 2.02	4358 2.01	4464 2.00	4582 2.00	4716 1.59	4869 1.58	5037 1.56
620	4390 2.05	4493 2.05	4603 2.04	4725 2.04	4864 2.03	5021 2.01	5194 1.59
640	4522 2.09	4629 2.08	4742 2.08	4868 2.07	5011 2.06	5173 2.05	5351 2.03
660	4655 2.13	4764 2.12	4881 2.12	5010 2.11	5158 2.10	5324 2.09	5507 2.07
680	4786 2.17	4900 2.16	5020 2.15	5153 2.15	5305 2.14	5476 2.12	5663 2.10
700	4918 2.20	5035 2.20	5159 2.19	5296 2.18	5451 2.17	5627 2.16	5820 2.14

CORRECTIONS	**AC OFF**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 5 %	+ 1.1 %	+ 5.3 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING

Ident.: PRO-SPO-20-00001992.0239001 / 16 NOV 15

10 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT - CRUISE : LONG RANGE AT FL100 - DESCENT : 250KT
IMC PROCEDURE : 120 KG (6 MIN)

NORMAL AIR CONDITIONING ANTI ICE OFF			ISA CG=25.0%		**FUEL CONSUMED (KG) TIME (H.MIN)**		
AIR DIST. (NM)	INITIAL WEIGHT (1000KG)						
	50	**55**	**60**	**65**	**70**	**75**	**79**
220	1561 0.52	1602 0.52	1635 0.51	1663 0.50	1683 0.48	1700 0.47	1713 0.45
240	1682 0.56	1726 0.55	1763 0.54	1793 0.53	1817 0.52	1838 0.51	1854 0.49
260	1803 1.00	1851 0.59	1890 0.58	1924 0.57	1951 0.56	1976 0.54	1995 0.53
280	1925 1.04	1975 1.03	2018 1.02	2055 1.01	2086 0.59	2113 0.58	2135 0.56
300	2046 1.07	2099 1.06	2145 1.06	2185 1.05	2219 1.03	2251 1.02	2276 1.00
320	2167 1.11	2223 1.10	2272 1.09	2316 1.08	2353 1.07	2388 1.05	2417 1.04
340	2288 1.15	2347 1.14	2399 1.13	2446 1.12	2487 1.11	2526 1.09	2557 1.07
360	2408 1.19	2471 1.18	2526 1.17	2577 1.16	2621 1.14	2663 1.13	2697 1.11
380	2529 1.22	2595 1.21	2653 1.21	2707 1.19	2754 1.18	2800 1.16	2838 1.15
400	2650 1.26	2718 1.25	2780 1.24	2837 1.23	2888 1.22	2937 1.20	2978 1.18
420	2771 1.30	2842 1.29	2907 1.28	2967 1.27	3021 1.25	3074 1.24	3118 1.22
440	2891 1.34	2966 1.33	3033 1.32	3097 1.31	3154 1.29	3211 1.27	3258 1.26
460	3012 1.37	3089 1.36	3160 1.35	3227 1.34	3288 1.33	3348 1.31	3397 1.30

CORRECTIONS	**AC OFF**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 5 %	+ 1 %	+ 5.5 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT - CRUISE : LONG RANGE AT FL100 - DESCENT : 250KT
IMC PROCEDURE : 120 KG (6 MIN)

NORMAL AIR CONDITIONING ANTI ICE OFF			ISA CG=25.0%		**FUEL CONSUMED (KG) TIME (H.MIN)**		
AIR DIST. (NM)	INITIAL WEIGHT (1000KG)						
	50	**55**	**60**	**65**	**70**	**75**	**79**
480	3132 1.41	3213 1.40	3287 1.39	3357 1.38	3421 1.37	3484 1.35	3537 1.33
500	3253 1.45	3336 1.44	3413 1.43	3486 1.42	3554 1.40	3621 1.39	3676 1.37
520	3373 1.49	3459 1.48	3540 1.47	3616 1.45	3687 1.44	3757 1.42	3816 1.41
540	3493 1.53	3583 1.51	3666 1.50	3746 1.49	3820 1.48	3894 1.46	3955 1.44
560	3613 1.56	3706 1.55	3792 1.54	3875 1.53	3952 1.51	4030 1.50	4094 1.48
580	3733 2.00	3829 1.59	3918 1.58	4004 1.57	4085 1.55	4166 1.53	4233 1.52
600	3853 2.04	3952 2.03	4044 2.02	4134 2.00	4218 1.59	4302 1.57	4372 1.55
620	3973 2.08	4075 2.06	4170 2.05	4263 2.04	4350 2.02	4438 2.01	4511 1.59
640	4093 2.12	4198 2.10	4296 2.09	4392 2.08	4482 2.06	4574 2.04	4650 2.03
660	4213 2.15	4320 2.14	4422 2.13	4521 2.11	4615 2.10	4709 2.08	4789 2.06
680	4332 2.19	4443 2.18	4548 2.16	4650 2.15	4747 2.14	4845 2.12	4927 2.10
700	4452 2.23	4566 2.21	4674 2.20	4779 2.19	4879 2.17	4981 2.16	5066 2.14

CORRECTIONS	**AC OFF**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 5 %	+ 1 %	+ 5.5 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING

Ident.: PRO-SPO-20-00001992.0022001 / 10 JAN 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250 KT - CRUISE : LONG RANGE - DESCENT : 250KT
IMC PROCEDURE : 120 KG (6MIN)

FL 100

NORMAL AIR CONDITIONING ANTI-ICING OFF			ISA CG = 25.0%		FUEL CONSUMED (KG) TIME (H.MIN)		
AIR DIST. (NM)	INITIAL WEIGHT (1000KG)						
	50	55	60	65	70	75	80
220	1895 0.55	1968 0.53	2040 0.52	2110 0.51	2183 0.51	2257 0.50	2336 0.50
240	2039 0.59	2119 0.57	2197 0.55	2271 0.55	2348 0.54	2426 0.54	2509 0.54
260	2183 1.04	2270 1.01	2353 0.59	2432 0.58	2513 0.58	2595 0.57	2682 0.57
280	2326 1.08	2420 1.05	2509 1.03	2593 1.02	2678 1.01	2763 1.01	2854 1.01
300	2470 1.13	2571 1.09	2665 1.07	2753 1.05	2842 1.04	2932 1.04	3026 1.04
320	2613 1.17	2721 1.13	2821 1.10	2914 1.09	3007 1.08	3100 1.07	3199 1.07
340	2756 1.21	2871 1.17	2977 1.14	3074 1.12	3171 1.11	3269 1.11	3371 1.11
360	2899 1.26	3020 1.21	3133 1.18	3234 1.16	3336 1.15	3437 1.14	3543 1.14
380	3042 1.30	3170 1.25	3288 1.21	3394 1.20	3500 1.18	3605 1.18	3715 1.17
400	3185 1.35	3319 1.30	3444 1.25	3554 1.23	3664 1.22	3773 1.21	3886 1.21
420	3327 1.39	3468 1.34	3599 1.29	3713 1.27	3828 1.25	3941 1.24	4058 1.24
440	3469 1.44	3616 1.38	3754 1.33	3873 1.30	3992 1.29	4108 1.28	4229 1.28
460	3611 1.48	3765 1.42	3909 1.36	4032 1.34	4155 1.32	4276 1.31	4400 1.31
480	3753 1.53	3913 1.46	4064 1.40	4192 1.38	4319 1.36	4443 1.35	4572 1.34
500	3895 1.57	4061 1.50	4219 1.44	4351 1.41	4482 1.39	4611 1.38	4743 1.38
520	4036 2.01	4209 1.55	4373 1.48	4510 1.45	4645 1.43	4778 1.41	4913 1.41
540	4177 2.06	4357 1.59	4528 1.52	4668 1.48	4808 1.46	4945 1.45	5084 1.45
560	4318 2.10	4505 2.03	4682 1.55	4827 1.52	4971 1.50	5112 1.48	5255 1.48
580	4459 2.15	4652 2.07	4836 1.59	4986 1.56	5134 1.53	5279 1.52	5425 1.51
600	4600 2.19	4799 2.12	4990 2.03	5144 1.59	5297 1.57	5446 1.55	5595 1.55
620	4741 2.24	4946 2.16	5144 2.07	5302 2.03	5460 2.00	5612 1.58	5766 1.58
640	4881 2.28	5093 2.20	5298 2.11	5460 2.07	5622 2.04	5779 2.02	5936 2.01
660	5021 2.33	5240 2.25	5451 2.14	5618 2.10	5784 2.07	5945 2.05	6106 2.05
680	5161 2.37	5386 2.29	5605 2.18	5776 2.14	5946 2.11	6112 2.09	6275 2.08
700	5301 2.42	5532 2.34	5758 2.22	5934 2.18	6108 2.14	6278 2.12	6445 2.12
AIR CONDITIONING OFF ΔFUEL = – 2.5 %			**ENGINE ANTI ICE ON** ΔFUEL = + 5 %		**TOTAL ANTI ICE ON** ΔFUEL = + 9 %		

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING

Ident.: PRO-SPO-20-00001992.0010001 / 10 JAN 11

11 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250 KT - CRUISE : LONG RANGE - DESCENT : 250KT
IMC PROCEDURE : 120 KG (6MIN)

FL 100

NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 25.0%

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	INITIAL WEIGHT (1000KG)						
	50	**55**	**60**	**65**	**70**	**75**	**80**
220	1883 0.55	1955 0.54	2033 0.53	2119 0.53	2211 0.52	2306 0.50	2392 0.50
240	2025 0.59	2103 0.58	2187 0.57	2279 0.57	2378 0.55	2480 0.54	2571 0.53
260	2166 1.04	2251 1.02	2341 1.01	2440 1.00	2545 0.59	2653 0.57	2750 0.56
280	2307 1.08	2399 1.07	2495 1.05	2600 1.04	2711 1.03	2827 1.01	2928 0.59
300	2448 1.13	2546 1.11	2649 1.09	2760 1.08	2878 1.07	3000 1.04	3106 1.02
320	2589 1.17	2693 1.15	2802 1.13	2919 1.12	3044 1.10	3173 1.07	3284 1.06
340	2729 1.21	2840 1.19	2956 1.17	3079 1.16	3210 1.14	3345 1.11	3462 1.09
360	2870 1.26	2987 1.24	3109 1.21	3238 1.20	3376 1.18	3518 1.14	3640 1.12
380	3010 1.30	3133 1.28	3262 1.26	3397 1.24	3542 1.22	3690 1.18	3818 1.15
400	3150 1.35	3279 1.32	3414 1.30	3556 1.28	3707 1.25	3862 1.21	3995 1.19
420	3290 1.39	3426 1.36	3567 1.34	3714 1.32	3872 1.29	4034 1.25	4173 1.22
440	3429 1.44	3572 1.40	3719 1.38	3872 1.36	4037 1.33	4205 1.28	4350 1.25
460	3569 1.48	3717 1.45	3871 1.42	4031 1.39	4202 1.37	4376 1.32	4527 1.29
480	3708 1.53	3863 1.49	4023 1.46	4188 1.43	4367 1.41	4547 1.35	4704 1.32
500	3847 1.57	4008 1.53	4175 1.50	4346 1.47	4531 1.44	4718 1.39	4880 1.35
520	3986 2.01	4153 1.57	4326 1.54	4503 1.51	4695 1.48	4889 1.42	5057 1.38
540	4125 2.06	4298 2.02	4478 1.58	4661 1.55	4859 1.52	5059 1.46	5233 1.42
560	4264 2.10	4443 2.06	4629 2.02	4818 1.59	5023 1.56	5229 1.49	5410 1.45
580	4402 2.15	4588 2.10	4780 2.06	4974 2.03	5187 1.59	5399 1.53	5586 1.48
600	4541 2.19	4733 2.15	4931 2.10	5131 2.07	5350 2.03	5568 1.57	5762 1.52
620	4679 2.24	4877 2.19	5081 2.14	5288 2.11	5513 2.07	5738 2.00	5938 1.55
640	4817 2.28	5021 2.23	5232 2.19	5444 2.15	5676 2.11	5907 2.04	6113 1.58
660	4955 2.33	5165 2.27	5382 2.23	5600 2.19	5839 2.15	6076 2.07	6289 2.02
680	5092 2.37	5309 2.32	5532 2.27	5756 2.23	6001 2.19	6245 2.11	6464 2.05
700	5230 2.42	5452 2.36	5682 2.31	5912 2.27	6164 2.22	6413 2.15	6639 2.08

AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
ΔFUEL = – 1.5 %	ΔFUEL = + 3 %	ΔFUEL = + 6 %

GROUND DISTANCE/AIR DISTANCE CONVERSION

Ident.: PRO-SPO-20-00001994.0001001 / 10 JAN 11

12 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

GROUND DIST. (NM)	AIR DISTANCE (NM)						
	TAIL WIND		WIND COMPONENTS (KT)				HEAD WIND
	+150	+100	+ 50	0	–50	–100	–150
40	27	30	35	40	48	59	76
60	41	46	52	60	71	88	115
80	54	61	69	80	95	117	153
100	68	76	86	100	119	146	191
120	81	91	104	120	143	176	229
140	95	106	121	140	166	205	267
160	108	121	138	160	190	234	305
180	122	137	155	180	214	264	344
200	135	152	173	200	238	293	382
220	149	167	190	220	261	322	420
240	163	182	207	240	285	352	458
260	176	197	224	260	309	381	496
280	190	213	242	280	333	410	534
300	203	228	259	300	357	439	573
320	217	243	276	320	380	469	611
340	230	258	293	340	404	498	649
360	244	273	311	360	428	527	687
380	257	288	328	380	452	557	725
400	271	304	345	400	475	586	763
420	285	319	362	420	499	615	802
440	298	334	380	440	523	645	840
460	312	349	397	460	547	674	878
480	325	364	414	480	571	703	916
500	339	380	432	500	594	732	954
520	352	395	449	520	618	762	992
540	366	410	466	540	642	791	1031
560	379	425	483	560	666	820	1069
580	393	440	501	580	689	850	1107
600	406	455	518	600	713	879	1145

GROUND DISTANCE/AIR DISTANCE CONVERSION

Ident.: PRO-SPO-20-00001994.0002001 / 21 MAR 17

[13] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

GROUND DIST. (NM)	AIR DISTANCE (NM)						
	TAIL WIND		WIND COMPONENTS (KT)				HEAD WIND
	+150	+100	+ 50	0	–50	–100	–150
40	27	31	35	40	47	58	74
60	41	46	52	60	71	87	112
80	55	61	69	80	95	116	149
100	68	76	87	100	118	145	186
120	82	92	104	120	142	173	223
140	96	107	121	140	166	202	260
160	109	122	139	160	189	231	298
180	123	138	156	180	213	260	335
200	137	153	173	200	236	289	372
220	150	168	191	220	260	318	409
240	164	183	208	240	284	347	446
260	178	199	225	260	307	376	484
280	191	214	243	280	331	405	521
300	205	229	260	300	355	434	558
320	219	245	277	320	378	463	595
340	232	260	295	340	402	492	633
360	246	275	312	360	426	520	670
380	260	290	329	380	449	549	707
400	274	306	347	400	473	578	744
420	287	321	364	420	497	607	781
440	301	336	381	440	520	636	819
460	315	352	399	460	544	665	856
480	328	367	416	480	567	694	893
500	342	382	433	500	591	723	930
520	356	397	451	520	615	752	967
540	369	413	468	540	638	781	1005
560	383	428	485	560	662	810	1042
580	397	443	503	580	686	839	1079
600	410	459	520	600	709	867	1116

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GENERAL

Ident.: PRO-SPO-40-10-00002029.0001001 / 23 JUN 15
Applicable to: ALL

The system design and the reliability of the engine installation of this airplane comply with the criteria for Extended Twin Operations (ETOPS) flights set forth in AMC 20-6 rev. 2 (EASA) or FAR 25.1535 (FAA), when the aircraft is configured, maintained and operated in accordance with the Airbus CMP (Configuration, Maintenance and Procedure) document.

This statement of ability does not constitute an approval to conduct Extended-Range Operations.

The ETOPS EXTENDED OPERATIONS Chapter of the AFM APPENDICES AND SUPPLEMENTS Section refers to the approved Standard for Extended-Range Operations and the applicable limitations, procedures and performance references.

The operator is responsible for showing that he is complying with the regulation of his nation and for obtaining operational approval from his national authorities. The operator may amend this chapter, as needed.

The airplane must be configured in accordance with the Airbus Standard for Extended-Range Operations. However, the authorities may under certain conditions allow the operator to conduct ETOPS flights with limited maximum diversion time (for example, 75 min diversion time in a benign area of operation) without showing full compliance with these standards.

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DEFINITIONS

Ident.: PRO-SPO-40-20-00002031.0001001 / 23 JUN 15
Applicable to: ALL

For the purpose of EU-OPS 1-245 and FAR 121-161, Extended-Range Operations are those intended to be conducted over a route that contains a point beyond 60 min from an adequate airport at the selected one-engine-inoperative speed in still air and ISA (or prevailing delta ISA) conditions.
An adequate airport is an airport which satisfies the aircraft performance requirements applicable at the expected landing weight, and sufficiently equipped to be safely used. In particular, at the anticipated time of use, it should be available and equipped with the necessary services, including ATC, weather information, navaids and emergency services.
An ETOPS (en-route) alternate airport is a confirmed adequate airport which satisfies the dispatch weather minima requirements for ceiling and visibility within the required validity period.

AREA OF OPERATION

Ident.: PRO-SPO-40-20-00002032.0001001 / 21 MAR 17
Applicable to: ALL

The ETOPS area of operations is the airspace within which the distance to an ETOPS adequate airport is less than the ETOPS Max Diversion distance.
The ETOPS maximum diversion distance from an adequate airport must be determined for ISA (or prevailing delta ISA) and no-wind conditions, taking into account aircraft performance with one engine inoperative and the remaining engine operating at MCT.
To determine the ETOPS maximum diversion distance from an adequate airport, the operator must define a One Engine Inoperative diversion speed for performance computation.

The same approved one-engine-inoperative diversion speed (*Refer to PER-OEI-GEN STRATEGY*) must be considered for :
- Establishing the area of operation,
- Calculating the single-engine fuel planning,
- Conducting the diversion in case of engine failure (conditions permitting).

The operator has to define an aircraft weight at diversion that is considered for the ETOPS Maximum Diversion Distance calculation. This aircraft weight can be taken as a representative but conservative value of the aircraft gross weight at the critical point of the route or at the various critical points of all the routes included in a given sector.
The approved one-engine-inoperative descent and cruise speed must be chosen so that the associated net flight path clears the en-route obstacles with the regulatory margin. However, a speed other than the approved one-engine-inoperative speed may be used as the basis for obstacle clearance as long as the fuel required with that speed is covered by the critical fuel scenario.
*Refer to PER-OEI-GEN STRATEGY*for these two one-engine-inoperative speeds.

When the one-engine-inoperative diversion speed is chosen, the maximum distance from a diversion airport, can be directly determined for different maximum diversion times, with the help of the tables provided in this section. The area of possible ETOPS operation can then be drawn on plotting charts.
Another way to determine the maximum distance to a diversion airport is to read the one-engine-inoperative cruise TAS (for the reference gross weight and at the FL for best TAS) in the cruise tables (*Refer to PER-OEI-GEN STRATEGY*) taking into consideration the appropriate speed strategy and the minimum altitude for clearing possible obstacles. The maximum distance the aircraft can travel to a diversion airport is this one-engine-inoperative-TAS multiplied by the maximum allowed diversion time granted to the operator.
Operators whose authorities require that an approved one-engine-inoperative speed be published in the Flight Manual must use this approved speed.

MMEL

Ident.: PRO-SPO-40-30-00002035.0001001 / 03 DEC 13
Applicable to: ALL

The MMEL has been approved taking into consideration the duration of the average ETOPS flight and the maximum diversion time granted to the airframe/engine combination.
The MMEL published by Airbus and approved by the EASA can be used to establish the airline MEL, which must be approved by the operator's national authorities.
This MEL will probably be adapted to the airline network, environment and organization.

Other determining parameters will be :

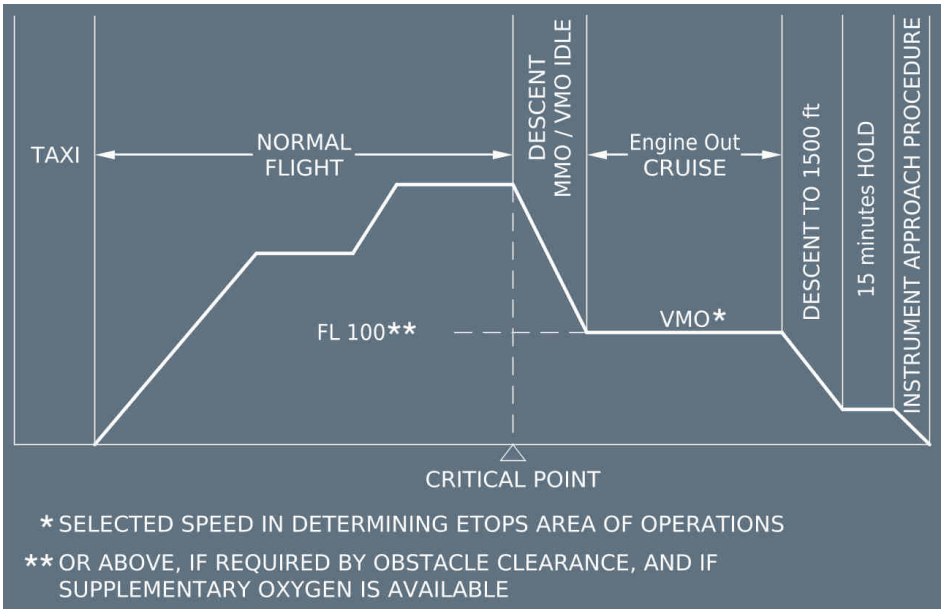
- The maximum and the average diversion times on the route.
- The equipment of the enroute alternates.
- The navigation and communication facilities.
- The average meteorological conditions.

ETOPS FUEL SCENARIOS

Ident.: PRO-SPO-40-30-00012899.0001001 / 23 JUN 15
Applicable to: ALL

According to EASA AMC20-6 rev 2 and FAA121.646 for establishing the ETOPS critical fuel reserves, the operator must consider three diversion scenarios:

- Pressurization Failure + Engine Failure



- Pressurization Failure
  Same Flight Profile as above, but all engines operating and Diversion Cruise Speed* set to LRC.
- Engine Failure
  Same Flight Profile as above, but standard descent speed and Diversion Cruise at the FL** appropriate to gross engine out ceiling at the selected ETOPS diversion speed.
- FAA Fuel Requirements
  For the first two scenarios, involving depressurization, the required block fuel must be calculated in accordance with the operator's ETOPS fuel policy and using the regulatory ETOPS critical fuel reserves *Refer to PRO-SPO-40-30 ETOPS Critical Fuel Reserves*.
  Depending on the approved one-engine-inoperative speed selected for the single-engine diversion strategy, either of these two scenarios may result in the higher fuel requirement.
  The scenario resulting in the higher fuel requirement is called the ETOPS critical fuel scenario, and the associated minimum block fuel requirement is the ETOPS critical fuel plan.
  Note that, it is not necessary to calculate the 3rd scenario (engine failure), as this scenario is never critical, due to the higher diversion flight level.

ETOPS CRITICAL FUEL RESERVES

Ident.: PRO-SPO-40-30-00012901.0001001 / 23 JUN 15
Applicable to: ALL

For the computation of the ETOPS critical fuel reserves and of the complete ETOPS critical fuel planning according to EASA AMC 20-6 rev 2 and FAR 121.646, the diversion fuel must include the following fuel provisions:

- Fuel burn-off from the critical point to the end of descent at the alternate airport
- Fuel for 15 min of holding at 1 500 ft and green dot speed at the alternate
- Fuel for an instrument approach and landing
- Fuel to account for errors in wind forecasting (5 % wind speed factor on actual forecast wind speeds or 5 % fuel if actual forecast wind speeds are not used)
- Fuel to account for aircraft deterioration (use a demonstrated performance factor or 5 %)
- Fuel to account for any Configuration Deviation List (CDL) or MEL item
- Fuel to account for Icing Effects (if forecast) for the critical mission
- Fuel to account for APU use (only for the one-engine-inoperative scenario, if APU is operative)

WIND ERRORS

A 5 % wind speed factor (i.e. an increment to headwind or a decrement to tailwind) on the actual forecast wind should be used to account for potential errors. However if the operator is not using the actual forecast wind based on a wind model acceptable to the certification authorities then 5 % of the fuel for the critical scenario is required as a reserve fuel.

ICING

The most critical scenario must be compensated for the greater of:

A. The effect of airframe icing during 10 % of the time during which icing is forecast, including ice accumulation on unprotected surfaces, and the fuel used by engine and wing anti-ice during this period.

B. Fuel for engine and wing anti-ice for the entire time during which icing is forecast.

Note: *The ETOPS icing fuel reserve is always limited by (B)*

Unless a reliable icing forecast is available, icing may be presumed to occur when the Total Air Temperature (TAT) is less than +10 °C, or if the outside air temperature is between 0 °C and -20 °C with a relative humidity of 55 % or more.

APU

Fuel consumption of 80 kg/h / or 176 lb/h (APU GEN ON, APU BLEED OFF).

In view of our experience, Airbus recommends that the operator includes a contingency fuel provision from departure to the Critical Point (CP), when computing the ETOPS critical fuel planning.

ETOPS FUEL REQUIREMENTS

Ident.: PRO-SPO-40-30-00012902.0001001 / 17 NOV 11
Applicable to: ALL

The operator must compare the entire ETOPS critical fuel planning for the ETOPS critical fuel scenario with the standard fuel planning computed in accordance with the company fuel policy and applicable operational requirements. The higher of the two fuel requirements must be considered as the minimum required block fuel for the flight.

WEATHER MINIMA

Ident.: PRO-SPO-40-30-00002046.0001001 / 23 JUN 15
Applicable to: ALL

Weather forecasts for en-route alternates must meet the operator's applicable weather minimum requirements.
This paragraph provides the applicable minima required by EASA (EU-OPS 1/AMC 20-6 rev. 2) and FAA (AC120-42B).

A. EASA DISPATCH WEATHER MINIMA (EU-OPS 1/AMC 20-6 REV. 2)

An airplane cannot be dispatched unless the meteorological forecasts at ETOPS en-route alternate airports meet the weather minima listed here for a period commencing at the earliest potential time of landing and ending one hour after the latest expected time of landing:

Approach Type	Min ETOPS Ceiling	Min ETOPS Visibility
Precision approach	DH/DA +200 ft	Authorised visibility +800 m
Non-Precision or Circling approach	MDH/MDA +400 ft	Authorised visibility +1 500 m
CAT II/CAT III approach	Specific approval required	Specific approval required

B. FAA DISPATCH WEATHER MINIMA (AC 120-42B)

An airplane cannot be dispatched unless the meteorological forecasts at ETOPS en-route alternate airports meet the weather minima listed here for a period commencing at the earliest potential time of landing and ending at the latest expected time of landing:

Approach Type	Min ETOPS Ceiling	Min ETOPS Visibility
Two or more instrument approaches	Higher of the two (M)DH/DA +200 ft	Higher of the two authorised visibility +800 m
Single Precision approach or Non-Precision approach or Circling approach	(M)DH/DA +400 ft	Authorised visibility +1 600 m
CAT II approach	300 ft	1 200 m or RVR1 200 m
CAT III approach	200 ft	800 m or RVR550 m

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DIVERSION DECISION MAKING

Ident.: PRO-SPO-40-40-00002048.0001001 / 21 MAR 17
Applicable to: ALL

The technical criteria governing a re-routing or diversion decision can be classified into four categories, as follows :

- Loss of MNPS capability, before entering the MNPS area (as applicable).
- Weather minima at diversion airport(s) going below the company/crew en-route minima, before reaching the ETOPS Entry Point, or diversion airport(s) becoming unsuitable for any reason.
- Failure cases requiring a diversion to the nearest airport (cases leading to a LAND ASAP message on the ECAM and/or in the QRH).
- Failure cases resulting in increased fuel consumption, exceeding the available fuel reserves.

Comments and Recommendations

- Electrical generation

  If one IDG fails, a diversion is required in case of :
  - Blue hydraulic circuit low level, low pressure or overheat, or
  - APU no start, or
  - APU or APU generator inoperative, or
  - Second IDG failure.

- Fuel system
  Some failure cases may lead to fuel gravity feeding which implies flight at lower altitude or to some fuel being unusable. The flight crew's evaluation of the actual situation and the fuel remaining may lead to the decision that a diversion is required.
- Hydraulic system :

  If low level, low pressure or overheat on blue hydraulic circuit, a diversion is required in case of :
  - One IDG failure, or
  - APU no start, or
  - APU/APU GEN failure.

- APU :

  If APU/APU GEN fails, a diversion is required in case of :
  - Blue hydraulic circuit low level, low pressure or overheat, or
  - One IDG failure.

DIVERSION PERFORMANCE DATA

Ident.: PRO-SPO-40-40-00002049.0001001 / 21 MAR 17
Applicable to: ALL

Chapter PER-OEI-GEN contains three single engine descent and cruise procedures:
1. The standard strategy,
2. The obstacle strategy,
3. Fixed speed strategies (ETOPS).

For ETOPS operations, any one of the above diversion strategies can be used provided that the selected strategy and speed schedule are used in :
- Establishing the area of operation (maximum diversion distance),
- Calculating the diversion fuel requirements for the single-engine ETOPS fuel scenario,
- Demonstrating the applicable obstacle clearance requirements (net flight path and net ceiling).

During the diversion, the flight crew is expected to use the planned speed schedule.
However, based on the evaluation of the actual situation, the pilot in command has the authority to deviate from this planned one-engine-inoperative speed.

GUIDELINES FOR DIVERSION PROCEDURE

Ident.: PRO-SPO-40-40-00002050.0001001 / 21 MAR 17
Applicable to: ALL

- Complete the related failure procedure,
- Inform ATC,
- Initiate the descent,
- Determine which en route alternate is the most suitable (per company procedure),
- Divert to the chosen en route alternate,
- Comply with the pre-planned diversion strategy and speed schedule, or adjust the speed schedule, as dictated by the evaluation of the actual situation.

Note: *For detailed guidelines and procedures for conducting the diversion (lateral and vertical navigation),* *Refer to DSC-22_20-60-30 - How to Execute a Diversion.*

GENERAL

Ident.: PRO-SPO-40-50-00002051.0001001 / 26 JUN 17
Applicable to: ALL

For ETOPS flights, the flight crew must apply the below procedures, in addition to the SOP (refer to chapter PRO-NOR-SOP) and the ABNORMAL and EMERGENCY procedures (refer to chapter PRO-ABN).

NORMAL PROCEDURES

Applicable to: ALL

Ident.: PRO-SPO-40-50-A-00021794.0002001 / 26 JUN 17

COCKPIT PREPARATION

FUEL

Before each ETOPS flight, the flight crew must check that the fuel crossfeed valve is operating correctly :

FUEL X FEED .....ON

On the ECAM FUEL page, check that the fuel crossfeed valve is open (indication is inline green).

FUEL X FEED..... OFF

Check that the fuel crossfeed valve is closed.

ABNORMAL AND EMERGENCY PROCEDURES

Ident.: PRO-SPO-40-50-00002053.0006001 / 05 JUN 18

1 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

ELECTRICAL EMERGENCY CONFIGURATION

The flight crew must complete the ECAM procedure using the following:

AIR CONDITIONING

As cockpit and cabin temperature control is lost, it is recommended to open the cockpit door.

FUEL

As all fuel pumps are lost, the engines are fed by gravity. *Refer to GRVTY FUEL FEEDING Procedure*.

ENGINE ANTI-ICE

Engine anti-ice valves are permanently open, although the ECAM memo ENG A. ICE is not displayed on the ECAM (except if the ENG A. ICE pb is at ON).

WING ANTI-ICE

If only one ENG BLEED is available, PACK 1 must be switched OFF, to avoid having both packs and wing anti-ice supplied by a single bleed source.

ENGINE

As the engines are in degraded N1 mode, the power setting has to be done using tables given in *Refer to PER-THR-N1 N1 MODE THRUST CONTROL*and following.

BLUE HYDRAULIC CIRCUIT LOW LEVEL OR LOW PRESSURE OR OVERHEAT

Start the APU to ensure availability of the APU generator.

ENGINE OR IDG FAILURE

Start the APU and use the APU electrical channel.

LOSS OF AIR CONDITIONING

In the case of loss of the air conditioning capability (loss of both packs, loss of both bleeds without APU bleed etc.), when at FL 100 with the RAM AIR opened, the CAB FANS must be switched off.

ABNORMAL AND EMERGENCY PROCEDURES

Ident.: PRO-SPO-40-50-00002053.0004001 / 05 JUN 18
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

ELECTRICAL EMERGENCY CONFIGURATION

The flight crew must complete the ECAM procedure using the following:

AIR CONDITIONING

As cockpit and cabin temperature control is lost, it is recommended to open the cockpit door.

FUEL

As all fuel pumps are lost, the engines are fed by gravity. *Refer to GRVTY FUEL FEEDING Procedure*.

ENGINE ANTI-ICE

Engine anti-ice valves are permanently open, although the ECAM memo ENG A. ICE is not displayed on the ECAM (except if the ENG A. ICE pb is at ON).

WING ANTI-ICE

If only one ENG BLEED is available, PACK 1 must be switched OFF, to avoid having both packs and wing anti-ice supplied by a single bleed source.

BLUE HYDRAULIC CIRCUIT LOW LEVEL OR LOW PRESSURE OR OVERHEAT

Start the APU to ensure availability of the APU generator.

ENGINE OR IDG FAILURE

Start the APU and use the APU electrical channel.

LOSS OF AIR CONDITIONING

In the case of loss of the air conditioning capability (loss of both packs, loss of both bleeds without APU bleed etc.), when at FL 100 with the RAM AIR opened, the CAB FANS must be switched off.

ABNORMAL AND EMERGENCY PROCEDURES

Ident.: PRO-SPO-40-50-00002053.0011001 / 21 MAR 17

2 **Applicable to: MSN 06720-09063**

ELECTRICAL EMERGENCY CONFIGURATION

The flight crew must complete the ECAM procedure using the following:

AIR CONDITIONING

As cockpit and cabin temperature control is lost, it is recommended to open the cockpit door.

FUEL

As all fuel pumps are lost, the engines are fed by gravity. *Refer to GRVTY FUEL FEEDING Procedure*.

ENGINE ANTI-ICE

Engine anti-ice valves are permanently open, although the ECAM memo ENG A. ICE is not displayed on the ECAM (except if the ENG A. ICE pb is at ON).

WING ANTI-ICE

If only one ENG BLEED is available, PACK 1 must be switched OFF, to avoid having both packs and wing anti-ice supplied by a single bleed source.

BLUE HYDRAULIC CIRCUIT LOW LEVEL OR LOW PRESSURE OR OVERHEAT

Start the APU to ensure availability of the APU generator.

ENGINE OR IDG FAILURE

Start the APU and use the APU electrical channel.

LOSS OF AIR CONDITIONING

In the case of loss of the air conditioning capability (loss of both packs, loss of both bleeds without APU bleed etc.), when at FL 100 with the RAM AIR opened, the CAB FANS must be switched off.

GENERAL

Ident.: PRO-SPO-40-60-00002054.0002001 / 25 AUG 15

[1] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

In case of electrical emergency configuration, the remaining engine reverts to degraded N1 mode. Consequently the penalties on net ceilings (*Refer to PER-THR-N1 MAXIMUM TAKEOFF N1*) must be taken into account for ETOPS part of the flight.

The two following cases result in a fuel consumption increase:
- RAT extended
- In electrical emergency configuration, the engine anti-ice valves are permanently open.

GENERAL

Ident.: PRO-SPO-40-60-00002054.0001001 / 25 AUG 15

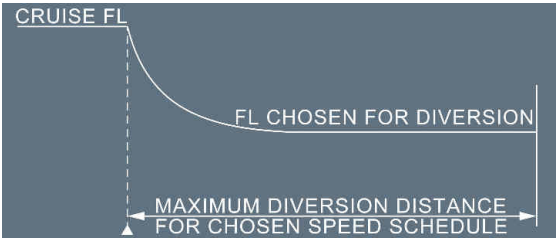
[2] **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

The two following cases result in a fuel consumption increase:
- RAT extended
- In electrical emergency configuration, the engine anti-ice valves are permanently open.

MAXIMUM DIVERSION DISTANCE

Ident.: PRO-SPO-40-60-00002055.0281001 / 21 MAR 17

[3] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



The following computation conditions have been used in accordance with the interpretation of the AIR-OPS CAT.OP.MPA.140 and FAR 121.161:

- ISA conditions
- No wind
- Optimum diversion level after engine failure
- Single engine diversion speed schedule.

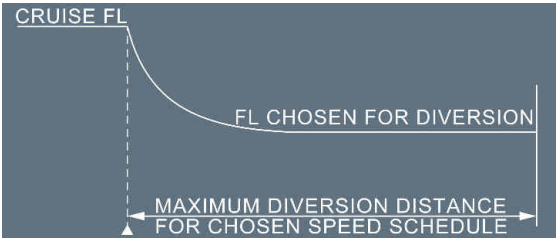
Note: *Obstacles have not to be considered to determine if a route is or is not an ETOPS route.*

MAXIMUM DIVERSION DISTANCE (NM)							
SPEED SCHEDULE	A/C WEIGHT AT CRITICAL POINT (KG)	FL FOR DIVERSION	DIVERSION TIME (MIN)				
			60	90	120	150	180
MCT/VMO	55 000	110	419	622	825	-	-
	60 000	110	418	620	821	1 023	1 226
	65 000	110	417	617	818	1 019	1 220
	70 000	110	416	615	815	1 014	1 214
	75 000	100	415	613	811	1 010	1 209
	80 000	100	414	610	807	1 005	1 202
	85 000	100	412	607	803	999	1 196
	90 000	100	410	604	798	993	1 188
MCT/320 kt	55 000	170	415	618	821	-	-
	60 000	170	413	615	816	1 018	1 221
	65 000	160	412	613	813	1 014	1 214
	70 000	160	410	609	808	1 008	1 208
	75 000	150	409	606	804	1 002	1 199
	80 000	150	406	602	798	995	1 192
	85 000	140	404	598	792	986	1 181
	90 000	130	402	593	785	977	1 169

MAXIMUM DIVERSION DISTANCE

Ident.: PRO-SPO-40-60-00002055.0274001 / 21 MAR 17

[4] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



The following computation conditions have been used in accordance with the interpretation of the AIR-OPS CAT.OP.MPA.140 and FAR 121.161:

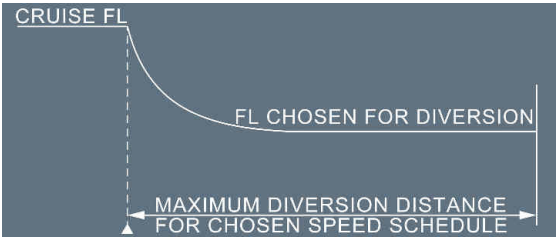
- ISA conditions
- No wind
- Optimum diversion level after engine failure
- Single engine diversion speed schedule.

Note: *Obstacles have not to be considered to determine if a route is or is not an ETOPS route.*

MAXIMUM DIVERSION DISTANCE							
SPEED SCHEDULE	A/C WEIGHT AT CRITICAL POINT (KG)	FL FOR DIVERSION	DIVERSION TIME (MIN)				
			60	90	120	150	180
MCT/VMO	50 000	160	419	623	827	1 031	-
	55 000	160	417	619	822	1 025	1 229
	60 000	150	416	617	818	1 019	1 221
	65 000	150	414	613	813	1 013	1 213
	70 000	140	412	609	806	1 004	1 202
	75 000	140	409	604	799	995	1 191
	80 000	130	406	597	790	982	1 176
MCT/320 kt	50 000	180	418	621	826	1 030	-
	55 000	180	416	618	821	1 024	1 228
	60 000	160	414	614	815	1 016	1 216
	65 000	160	412	611	810	1 010	1 210
	70 000	150	410	607	805	1 002	1 200
	75 000	150	406	601	797	993	1 190
	80 000	150	403	594	787	980	1 175

MAXIMUM DIVERSION DISTANCE

Ident.: PRO-SPO-40-60-00002055.0256001 / 21 MAR 17
Applicable to: MSN 05437-06336



The following computation conditions have been used in accordance with the interpretation of the EU-OPS 1.245 and FAR 121.161:

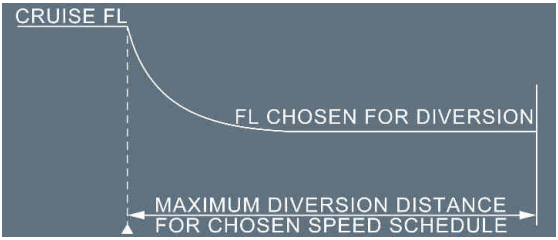
- ISA conditions
- No wind
- Optimum diversion level after engine failure
- Single engine diversion speed schedule.

Note: Obstacles have not to be considered to determine if a route is or is not an ETOPS route.

MAXIMUM DIVERSION DISTANCE							
SPEED SCHEDULE	A/C WEIGHT AT CRITICAL POINT (KG)	FL FOR DIVERSION	DIVERSION TIME (MIN)				
			60	90	120	150	180
MCT/VMO	50 000	220	426	636	846	1 056	1 267
	55 000	200	428	637	846	1 055	1 264
	60 000	200	427	635	843	1 051	1 260
	65 000	190	427	634	841	1 048	1 255
	70 000	180	427	632	838	1 044	1 250
	75 000	160	427	631	835	1 040	1 245
	80 000	130	428	630	832	1 035	1 238
MCT/320 kt	50 000	220	427	637	847	1 057	1 267
	55 000	200	427	635	844	1 053	1 263
	60 000	200	426	633	841	1 050	1 258
	65 000	190	424	631	838	1 045	1 252
	70 000	180	423	628	833	1 039	1 246
	75 000	170	421	624	828	1 031	1 235
	80 000	170	418	619	822	1 024	1 228

MAXIMUM DIVERSION DISTANCE

Ident.: PRO-SPO-40-60-00002055.0035001 / 21 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510



The following computation conditions have been used in accordance with the interpretation of the EU-OPS 1.245 and FAR 121.161:

- ISA conditions
- No wind
- Optimum diversion level after engine failure
- Single engine diversion speed schedule.

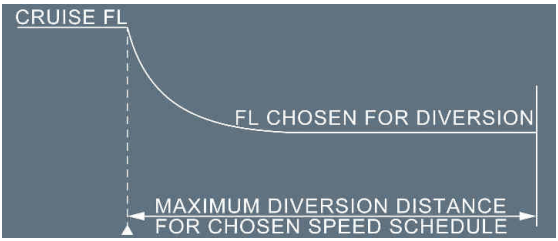
Note: *Obstacles have not to be considered to determine if a route is or is not an ETOPS route.*

MAXIMUM DIVERSION DISTANCE							
SPEED SCHEDULE	A/C WEIGHT AT CRITICAL POINT (KG)	FL FOR DIVERSION	DIVERSION TIME (MIN)				
			60	90	120	150	180
MCT/VMO	50 000	160	414	616	818	-	-
	55 000	160	413	614	815	1 017	1 219
	60 000	160	412	612	812	1 012	1 213
	65 000	160	410	608	807	1 007	1 206
	70 000	160	408	605	802	1 000	1 198
	75 000	160	405	600	795	992	1 188
MCT/320 kt	50 000	160	412	613	814	-	-
	55 000	160	412	613	814	1 015	1 215
	60 000	160	412	612	812	1 012	1 213
	65 000	160	410	608	807	1 007	1 206
	70 000	160	408	605	802	1 000	1 198
	75 000	160	405	600	795	992	1 188

MAXIMUM DIVERSION DISTANCE

Ident.: PRO-SPO-40-60-00002055.0115001 / 21 MAR 17

5 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**



The following computation conditions have been used in accordance with the interpretation of the EU-OPS 1.245 and FAR 121.161:

- ISA conditions
- No wind
- Optimum diversion level after engine failure
- Single engine diversion speed schedule.

Note: *Obstacles have not to be considered to determine if a route is or is not an ETOPS route.*

MAXIMUM DIVERSION DISTANCE							
SPEED SCHEDULE	A/C WEIGHT AT CRITICAL POINT (KG)	FL FOR DIVERSION	DIVERSION TIME (MIN)				
			60	90	120	150	180
MCT/VMO	50 000	210	427	637	847	1 057	1 267
	55 000	200	428	636	845	1 054	1 263
	60 000	200	426	634	841	1 049	1 257
	65 000	180	427	633	840	1 046	1 253
	70 000	170	427	631	836	1 042	1 247
	75 000	150	427	630	833	1 037	1 241
	80 000	130	426	628	830	1 032	1 235
MCT/320 kt	50 000	210	427	637	847	1 057	1 267
	55 000	200	426	635	843	1 053	1 262
	60 000	200	425	632	840	1 048	1 256
	65 000	190	423	629	835	1 042	1 249
	70 000	180	421	626	831	1 036	1 242
	75 000	170	419	622	825	1 029	1 232
	80 000	160	416	617	817	1 018	1 219

ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - ALL ENGINES - CRUISE AT LRC

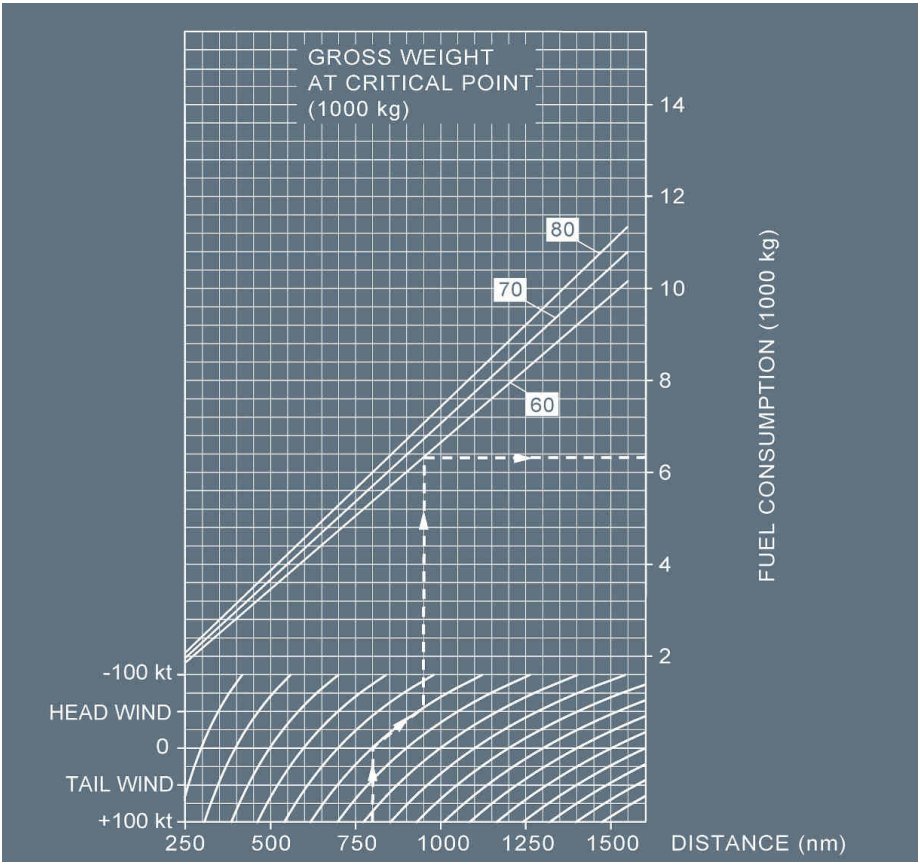
Ident.: PRO-SPO-40-60-00002056.0093001 / 21 MAR 17

6 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Assumptions:

- EMER descent
- Long range cruise at FL 100
- Final descent 250 kt
- Holding 15 min at FL 15
- IFR procedure

Not included: 5 % correction on wind value - Anti icing if icing is forecast - performance factor.



ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - ALL ENGINES - CRUISE AT LRC

Ident.: PRO-SPO-40-60-00002056.0089001 / 21 MAR 17

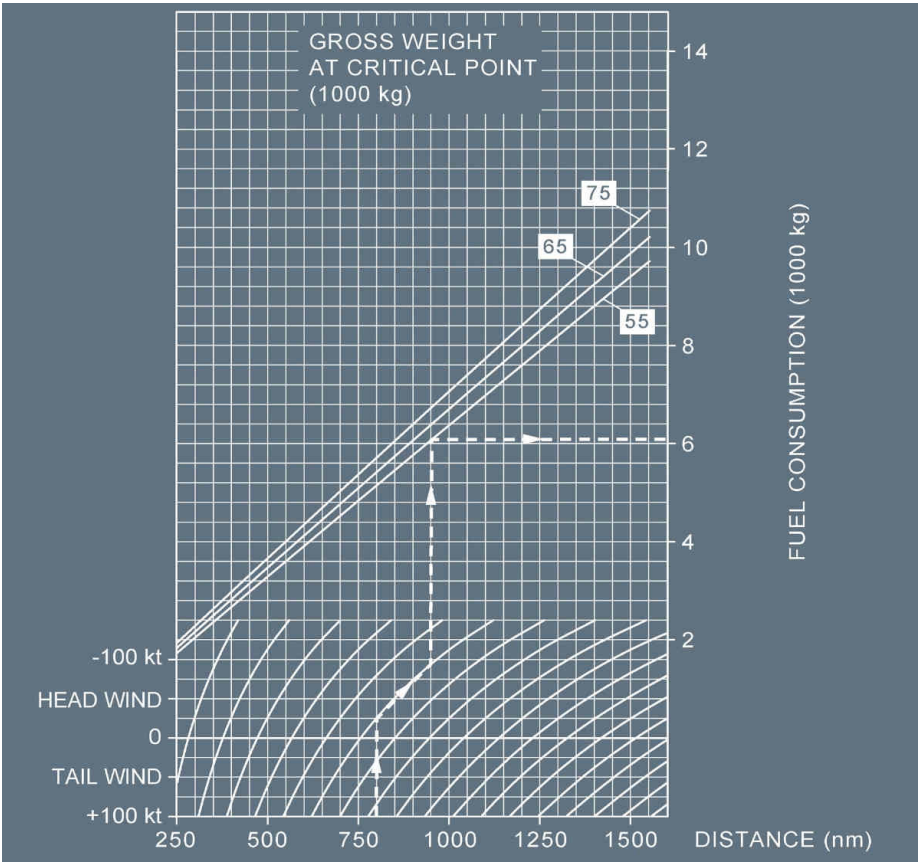
7 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Assumptions:

- EMER descent
- Long range cruise at FL 100
- Final descent 250 kt

- Holding 15 min at FL 15
- IFR procedure

Not included: 5 % correction on wind value - Anti icing if icing is forecast - performance factor.



ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - ALL ENGINES - CRUISE AT LRC

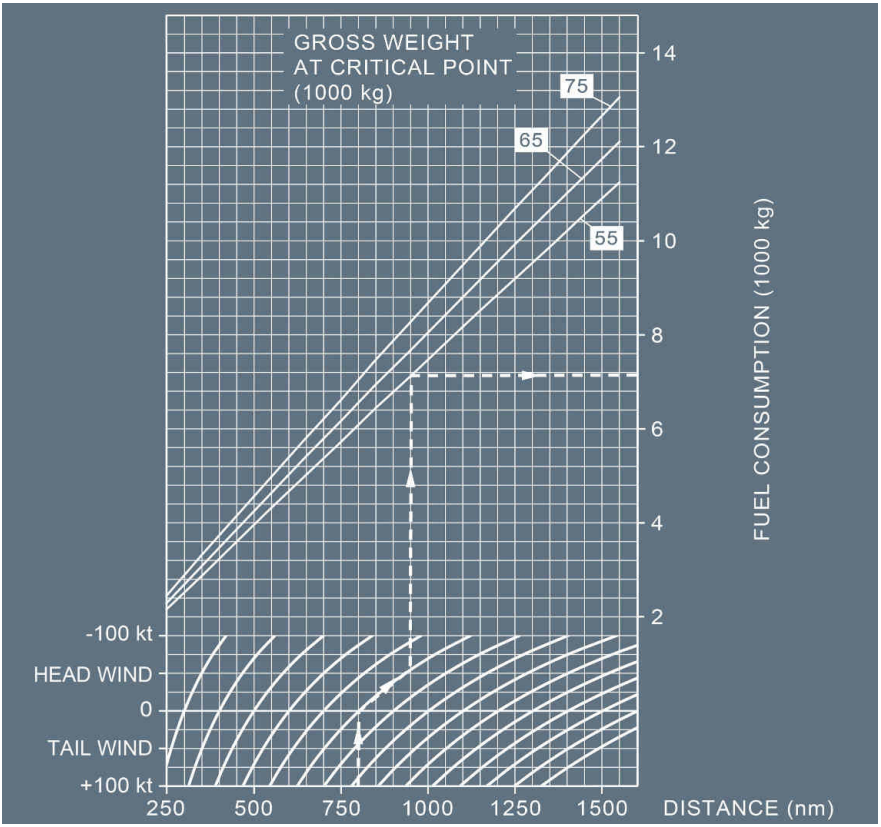
Ident.: PRO-SPO-40-60-00002056.0068001 / 21 MAR 17

Applicable to: MSN 05437-06336

Assumptions:

- EMER descent
- Long range cruise at FL 100
- Final descent 250 kt
- Holding 15 min at FL 15
- IFR procedure

Not included: 5 % correction on wind value - Anti icing if icing is forecast - performance factor.



ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - ALL ENGINES - CRUISE AT LRC

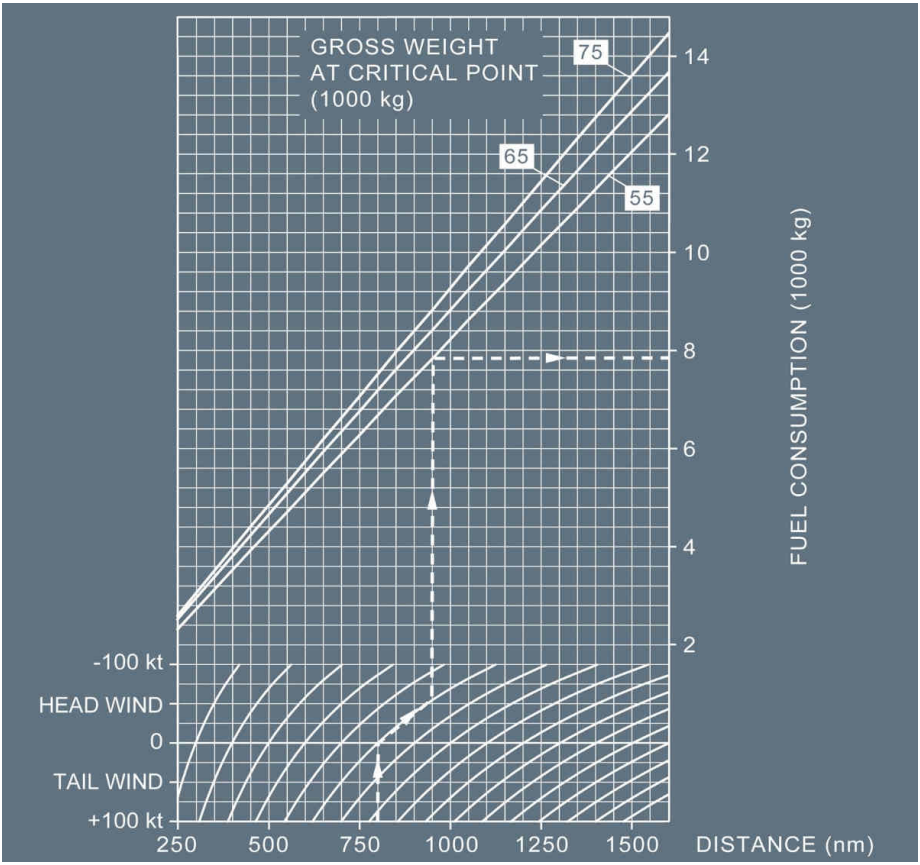
Ident.: PRO-SPO-40-60-00002056.0018001 / 21 MAR 17

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Assumptions:

- EMER descent
- Long range cruise at FL 100
- Final descent 250 kt
- Holding 15 min at FL 15
- IFR procedure

Not included: 5 % correction on wind value - Anti icing if icing is forecast - performance factor.



ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - ALL ENGINES - CRUISE AT LRC

Ident.: PRO-SPO-40-60-00002056.0014001 / 21 MAR 17

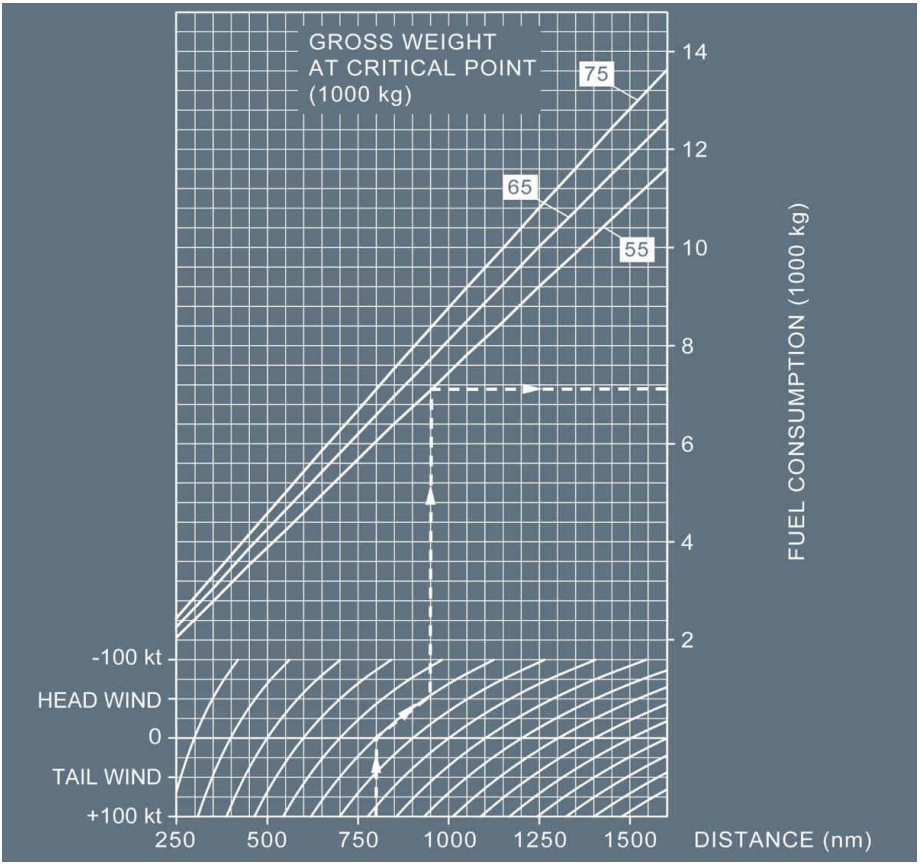
[8] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

Assumptions:

- EMER descent
- Long range cruise at FL 100
- Final descent 250 kt

- Holding 15 min at FL 15
- IFR procedure

Not included: 5 % correction on wind value - Anti icing if icing is forecast - performance factor.



ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - ONE ENGINE OUT - CRUISE AT 350KT

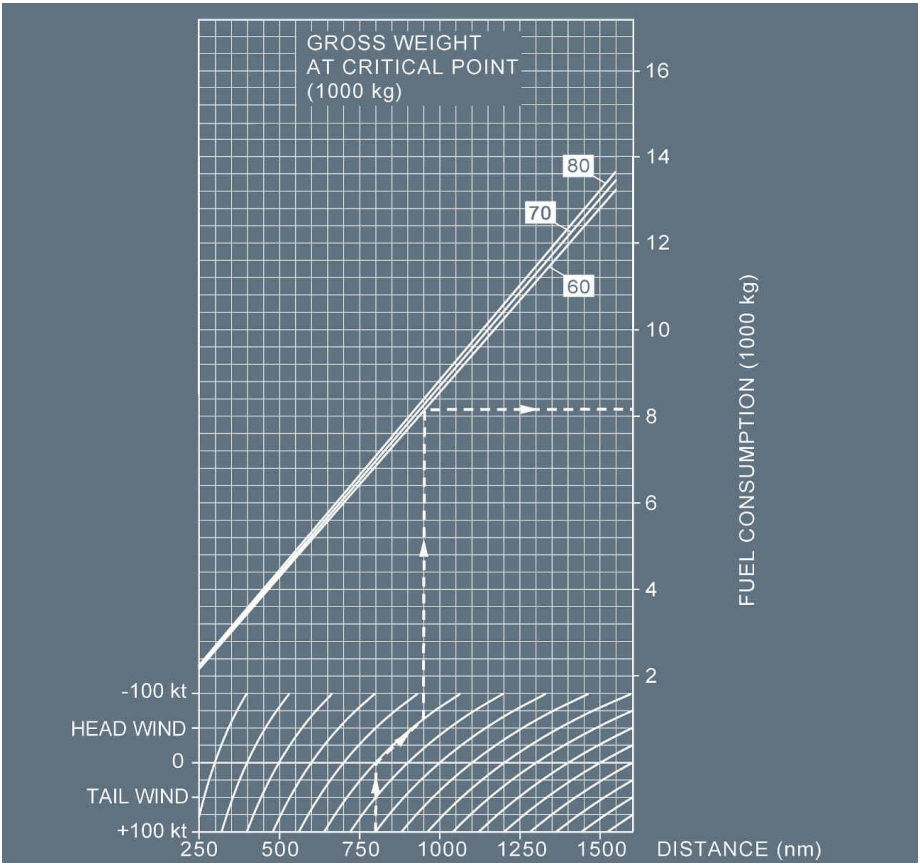
Ident.: PRO-SPO-40-60-00002057.0159001 / 21 MAR 17

9 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Assumptions:

- EMER descent
- Cruise 350 kt at FL 100
- Final descent 250 kt
- Holding 15 min at FL 15
- IFR procedure
- APU fuel burn.

Not included: 5 % correction on wind value - Anti icing if icing is forecast - performance factor.



ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - ONE ENGINE OUT - CRUISE AT 350KT

Ident.: PRO-SPO-40-60-00002057.0155001 / 21 MAR 17

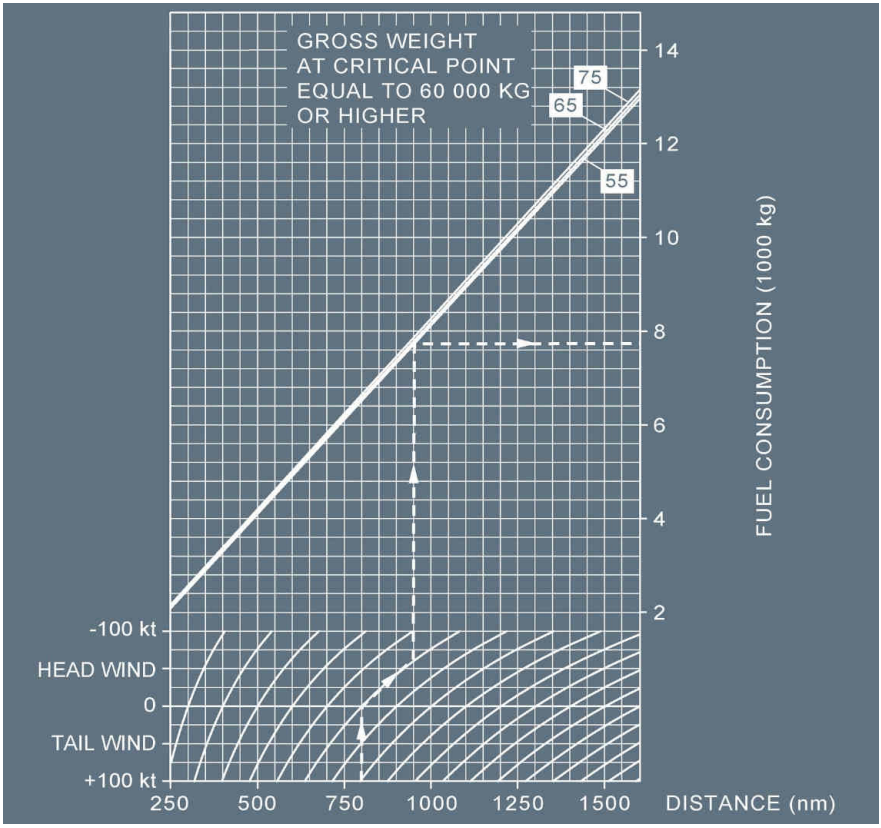
10 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Assumptions:

- EMER descent
- Cruise 350 kt at FL 100
- Final descent 250 kt
- Holding 15 min at FL 15

- IFR procedure
- APU fuel burn.

Not included: 5 % correction on wind value - Anti icing if icing is forecast - performance factor.



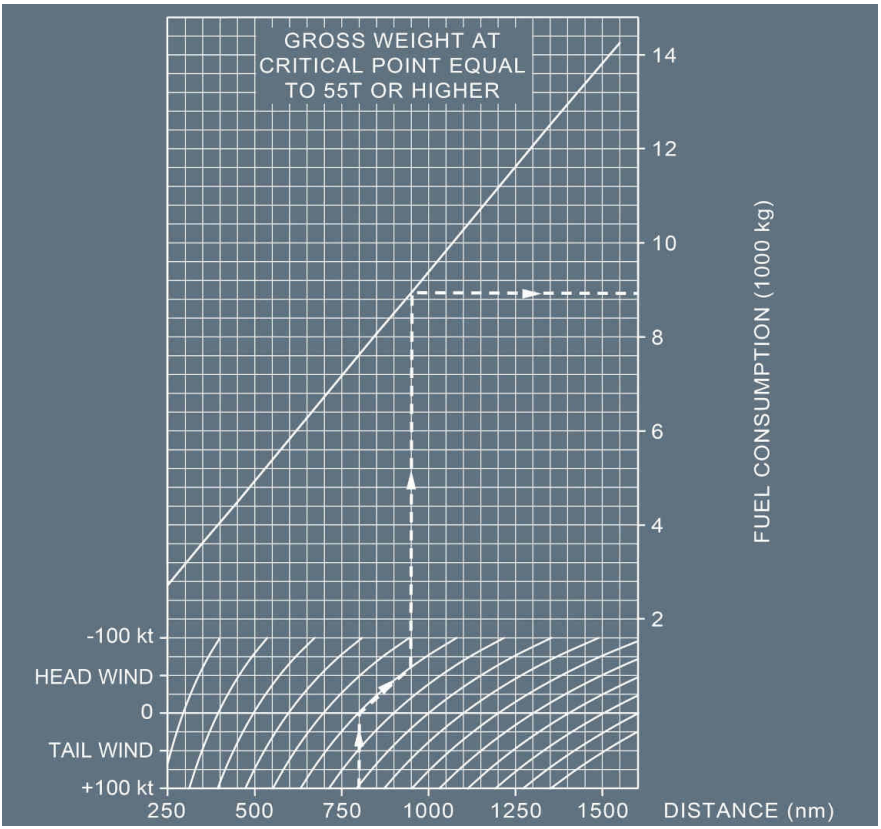
ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - ONE ENGINE OUT - CRUISE AT 350KT

Ident.: PRO-SPO-40-60-00002057.0134001 / 21 MAR 17
Applicable to: MSN 05437-06336

Assumptions:
- EMER descent
- Cruise 350 kt at FL 100

- Final descent 250 kt
- Holding 15 min at FL 15
- IFR procedure
- APU fuel burn.

Not included: 5 % correction on wind value - Anti icing if icing is forecast - performance factor.



ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - ONE ENGINE OUT - CRUISE AT 350KT

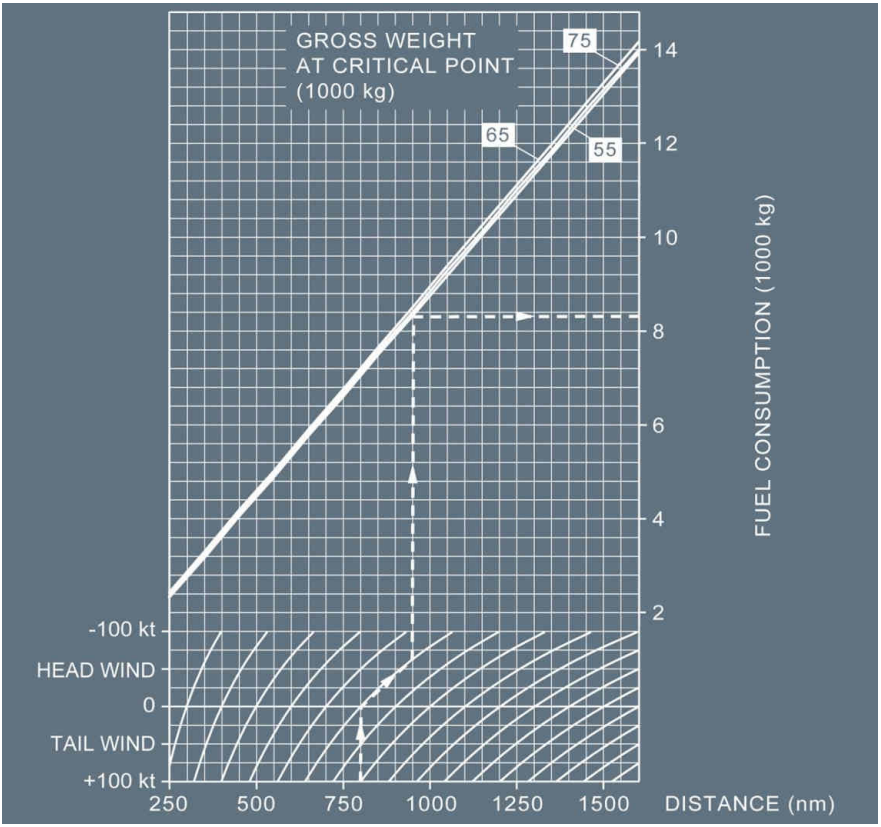
Ident.: PRO-SPO-40-60-00002057.0013001 / 21 MAR 17

11 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

Assumptions:

- EMER descent
- Cruise 350 kt at FL 100
- Final descent 250 kt
- Holding 15 min at FL 15
- IFR procedure
- APU fuel burn.

Not included: 5 % correction on wind value - Anti icing if icing is forecast - performance factor.



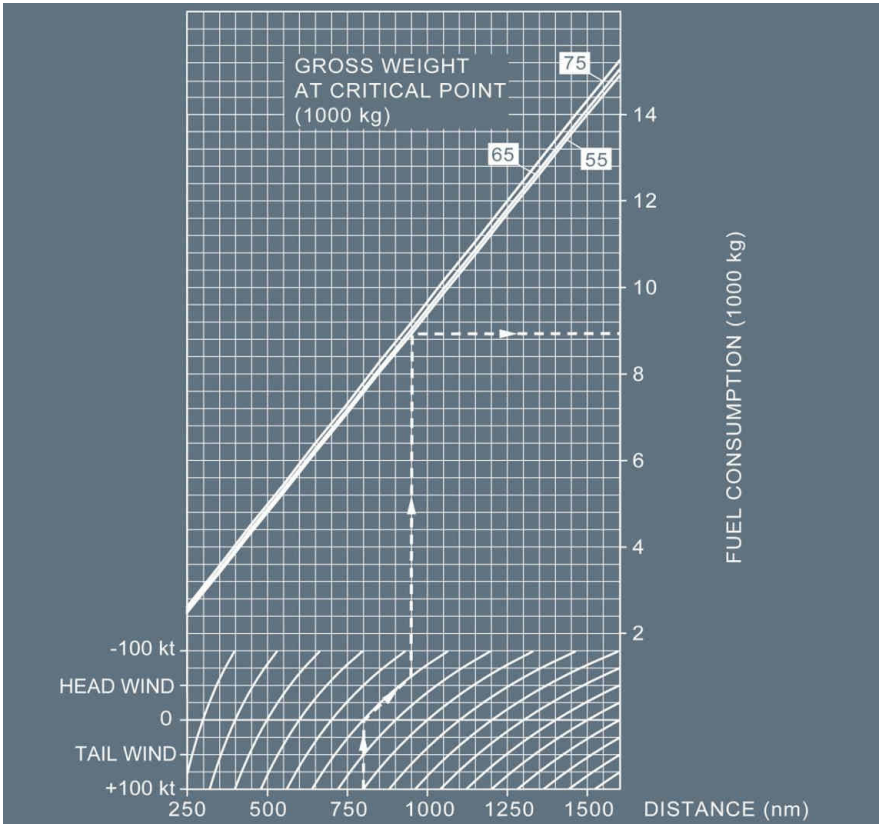
ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - ONE ENGINE OUT - CRUISE AT 350KT

Ident.: PRO-SPO-40-60-00002057.0017001 / 21 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Assumptions:
- EMER descent
- Cruise 350 kt at FL 100
- Final descent 250 kt
- Holding 15 min at FL 15

- IFR procedure
- APU fuel burn.

Not included: 5 % correction on wind value - Anti icing if icing is forecast - performance factor.



ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - ONE ENGINE OUT - CRUISE AT 320KT

Ident.: PRO-SPO-40-60-00002058.0183001 / 21 MAR 17

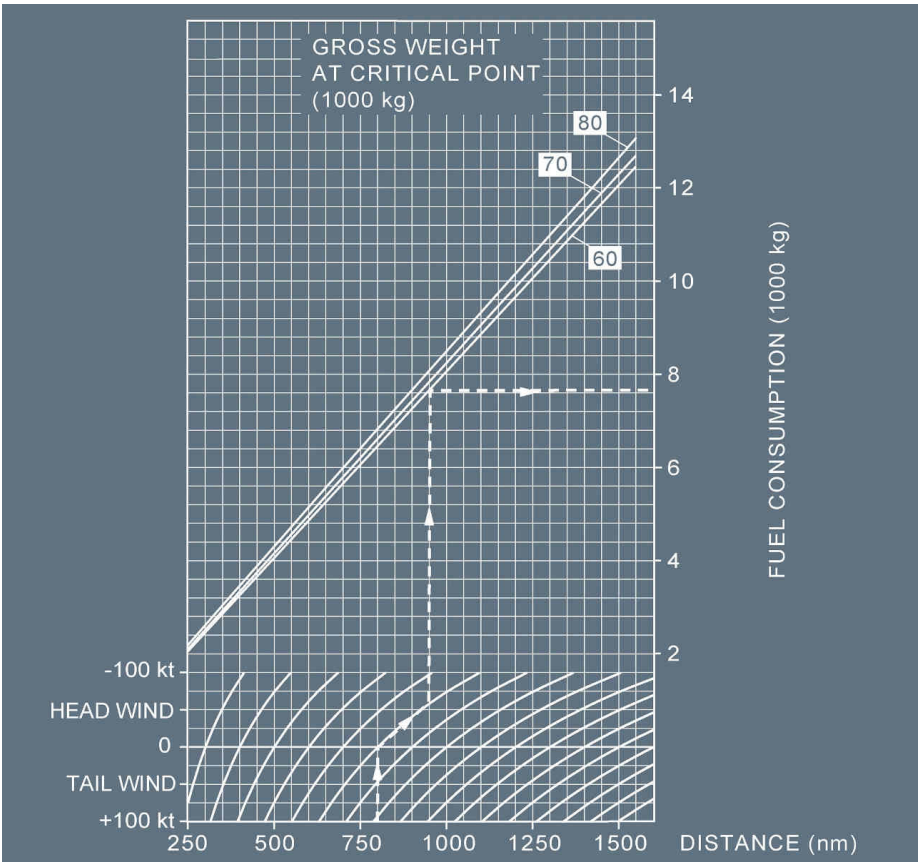
12 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Assumptions:

- EMER descent
- Cruise 320 kt at FL 100

- Final descent 250 kt
- Holding 15 min at FL 15
- IFR procedure
- APU fuel burn.

Not included: 5 % correction on wind value - Anti icing if icing is forecast - performance factor.



ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - ONE ENGINE OUT - CRUISE AT 320KT

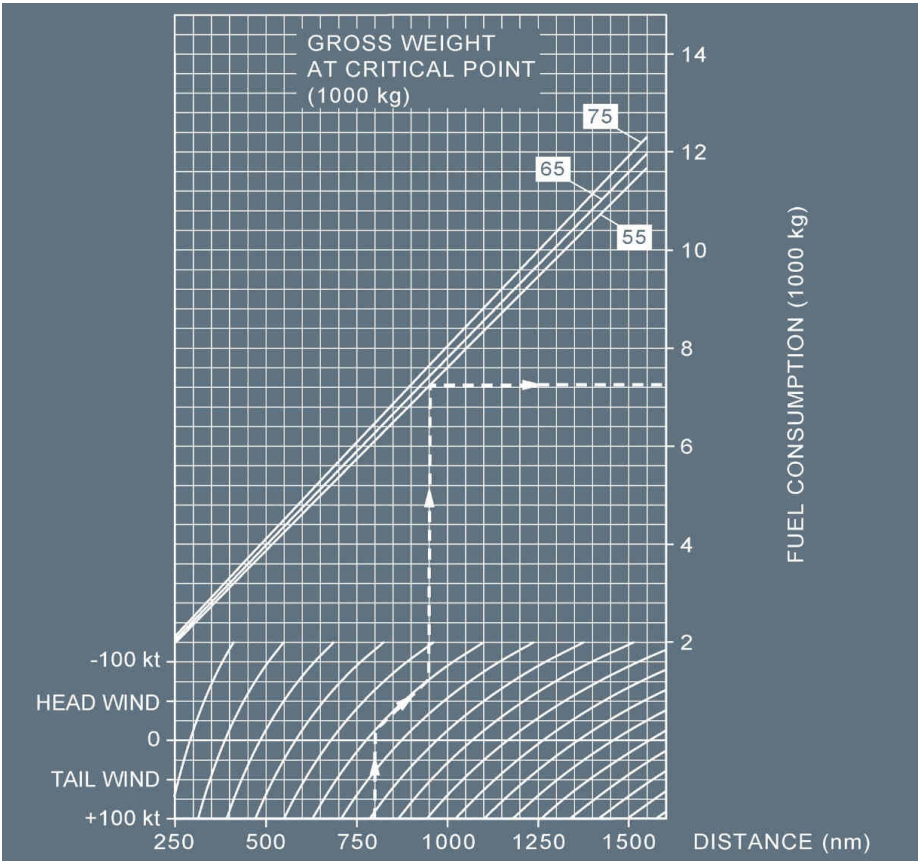
Ident.: PRO-SPO-40-60-00002058.0179001 / 21 MAR 17

13 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Assumptions:

- EMER descent
- Cruise 320 kt at FL 100
- Final descent 250 kt
- Holding 15 min at FL 15
- IFR procedure
- APU fuel burn.

Not included: 5 % correction on wind value - Anti icing if icing is forecast - performance factor.



ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - ONE ENGINE OUT - CRUISE AT 320KT

Ident.: PRO-SPO-40-60-00002058.0158001 / 21 MAR 17

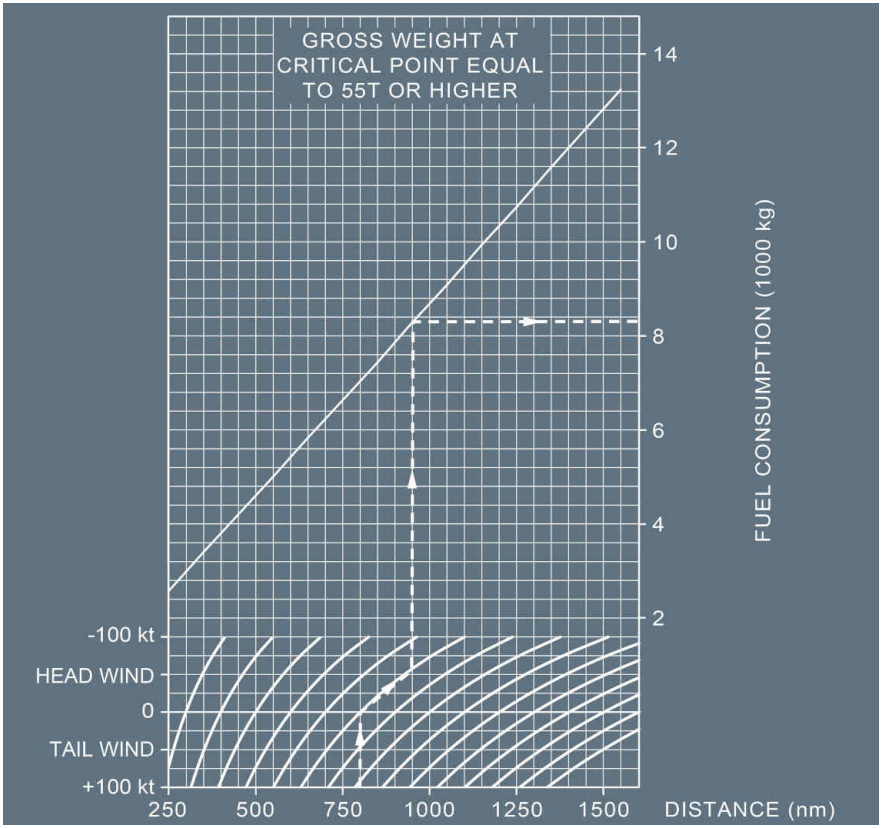
Applicable to: MSN 05437-06336

Assumptions:

- EMER descent
- Cruise 320 kt at FL 100
- Final descent 250 kt
- Holding 15 min at FL 15

- IFR procedure
- APU fuel burn.

Not included: 5 % correction on wind value - Anti icing if icing is forecast - performance factor.



ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - ONE ENGINE OUT - CRUISE AT 320KT

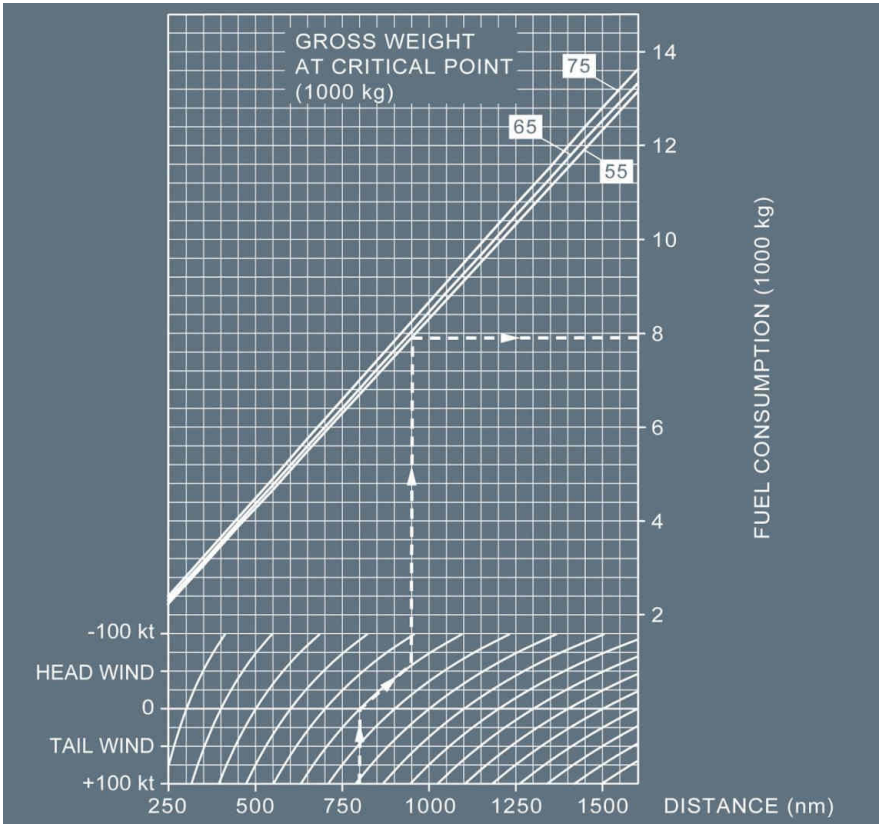
Ident.: PRO-SPO-40-60-00002058.0014001 / 21 MAR 17

14 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

Assumptions:

- EMER descent
- Cruise 320 kt at FL 100
- Final descent 250 kt
- Holding 15 min at FL 15
- IFR procedure
- APU fuel burn.

Not included: 5 % correction on wind value - Anti icing if icing is forecast - performance factor.



ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - ONE ENGINE OUT - CRUISE AT 320KT

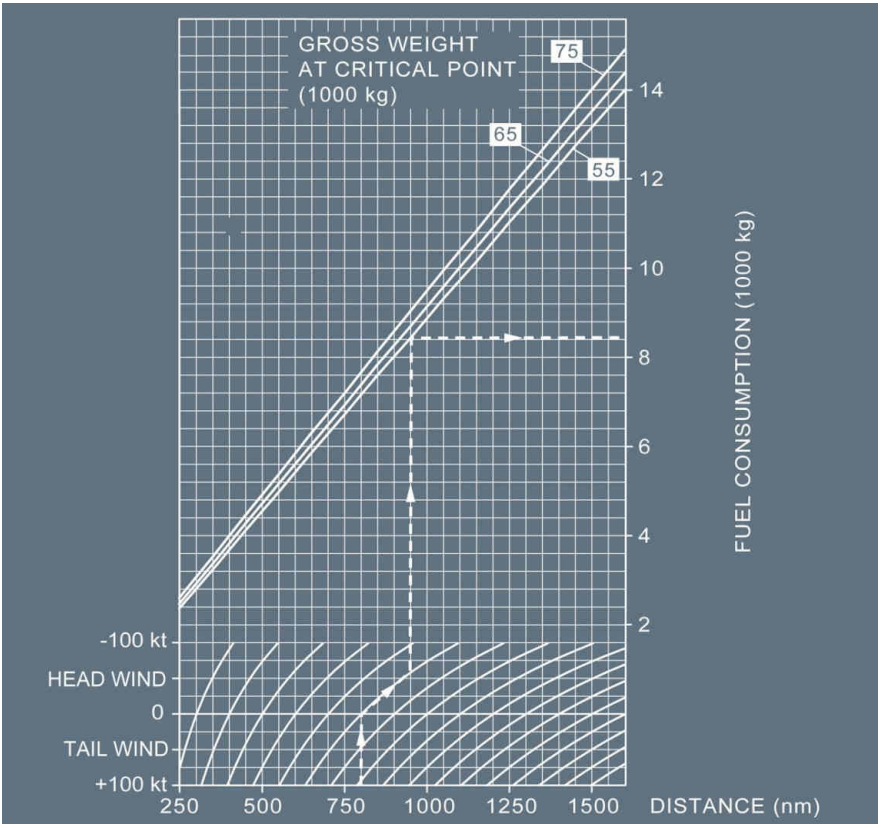
Ident.: PRO-SPO-40-60-00002058.0018001 / 21 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Assumptions:

- EMER descent
- Cruise 320 kt at FL 100
- Final descent 250 kt
- Holding 15 min at FL 15

- IFR procedure
- APU fuel burn.

Not included: 5 % correction on wind value - Anti icing if icing is forecast - performance factor.



ETOPS FUEL REQUIREMENT FROM CRITICAL POINT TO LANDING - EXAMPLE

Ident.: PRO-SPO-40-60-00014769.0001001 / 21 MAR 17
Applicable to: ALL

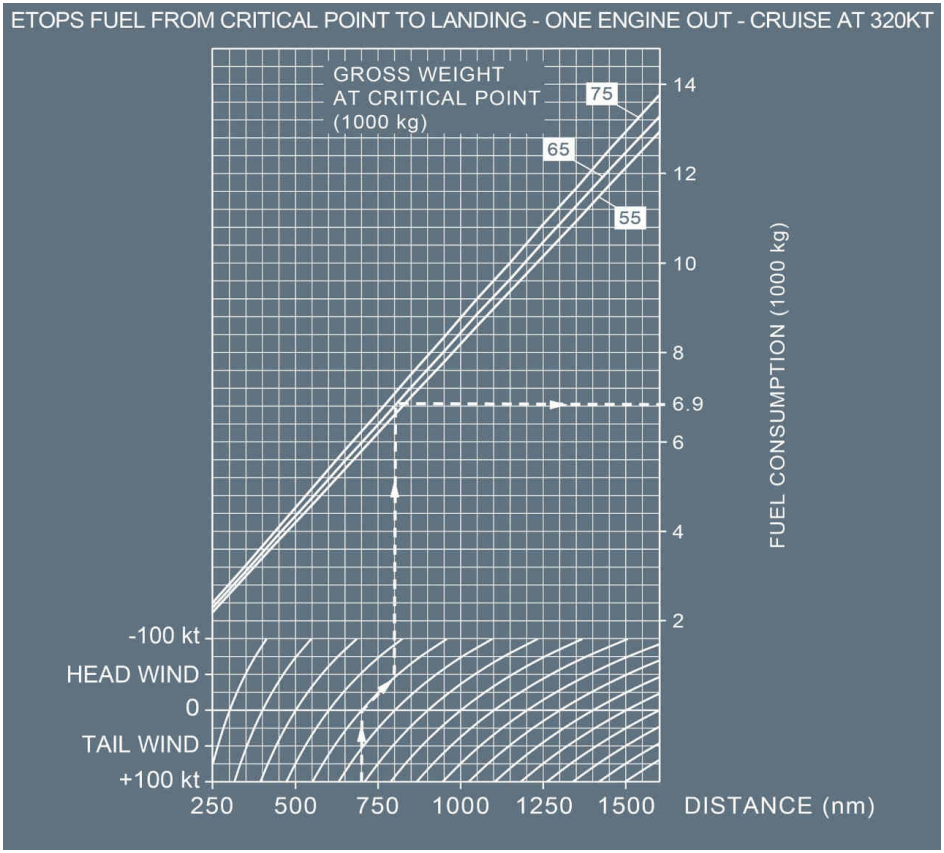
Note: *The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in "kg", the same method can be applied for "lb".*

Assumptions:
- Aircraft weight at critical point: 65 000 kg
- Diversion speed: 320 kt
- Diversion time: 120 min
- Distance from Critical point to diversion airport: 700 NM
- Wind: 50 kt headwind
- Forecasted icing condition on diversion: 40 min
- Aircraft perf factor: 5 %

For the determination of the ETOPS fuel requirement, the greatest fuel quantity of the two following scenarios must be considered (the scenario Engine failure only, without pressurization failure, is never limiting):

1. Pressurization failure - One Engine Inoperative - 320 kt

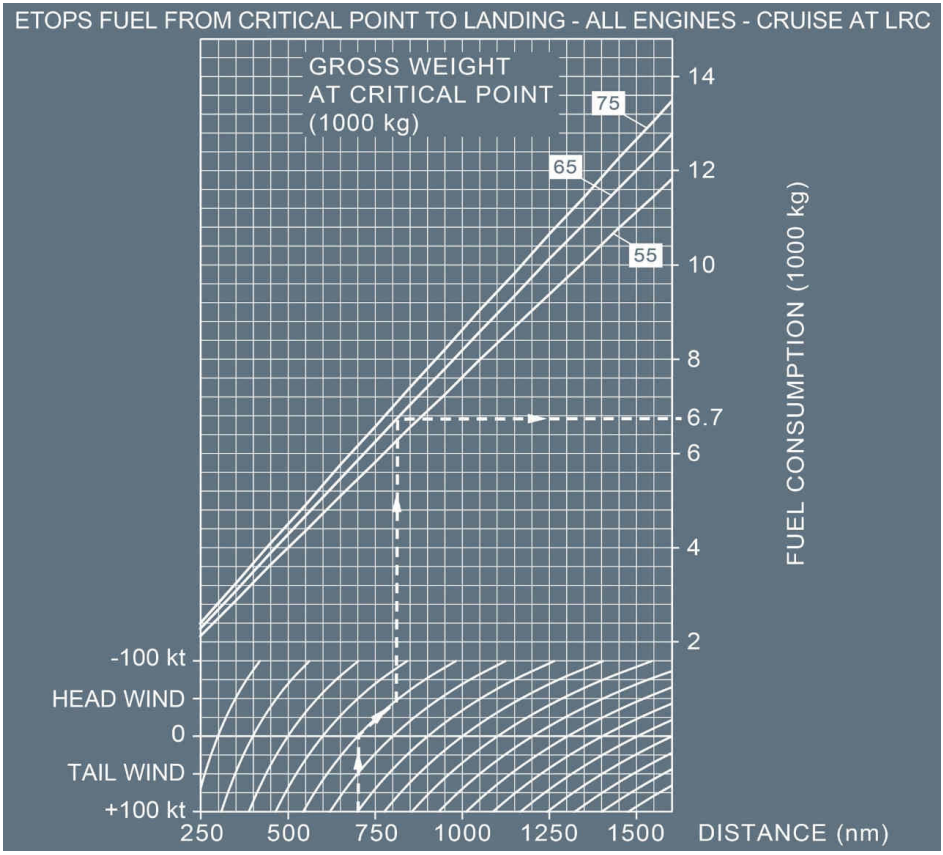
- Determine the corrected wind for diversion taking into account the 5 % wind speed factor: 50 x 1.05 = 52.5 kt
- Enter the ETOPS Fuel from Critical Point to Landing - One Engine Out - Cruise at 320kt graph to determine the corresponding fuel consumption: 6 900 kg



- Determine the final ETOPS fuel requirement, sum of perf factor fuel, icing fuel and fuel determined the step before:
  - Fuel for icing condition (Total anti-ice scenario is limiting): 3.5 % x 40 / 120 = 1.17 %
  - Fuel for perf factor: 5 %
  - Final ETOPS fuel requirement: 6 900 x 1.0117 x 1.05 = 7 330 kg

2. Pressurization failure - All Engines Operative - LRC speed

- Determine the corrected wind for diversion taking into account the 5 % wind speed factor: 50 x 1.05 = 52.5 kt
- Enter the ETOPS Fuel from Critical Point to Landing - All Engines - Cruise at LRC graph to determine the corresponding fuel consumption: 6 700 kg



- Determine the final ETOPS fuel requirement, sum of perf factor fuel, icing fuel and fuel determined the step before:
  - Fuel for icing condition (total anti-ice scenario is limiting): 6 % x 40 / 120 = 2 %
  - Fuel for perf factor: 5 %
  - Final ETOPS fuel requirement: 6 700 x 1.02 x 1.05 = 7 176 kg

The final ETOPS fuel requirement for this diversion is 7 330 kg. The limiting scenario is a pressurization failure and One Engine Out at a diversion speed of 320 kt.

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FADEC INTERMIX OPERATIONS

Ident.: PRO-SPO-43-00022711.0002001 / 05 NOV 18

1 **Applicable to: MSN 06720-09063**

FADEC intermix operations between FADEC FCS4.4 standard and subsequent can present the following cockpit effects during engine operation due to a different oil system management. On FADEC FCS4.4 side:

- Oil temperature higher by approximately 40 °C.
- Oil quantity higher by approximately 5 QT.

These differences do not impact engines normal operations. For oil characteristics limitations, *Refer to LIM-ENG Oil* .

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ENGINE INTERMIX TYPE 1

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Ident.: PRO-SPO-45-A-00002059.0001001 / 30 JUN 14

The following information provides the conditions and procedures necessary in order to temporarily operate an A318/A319/A320/A321 aircraft when a CFM56–5B Single Annular Combustor (SAC) engine is intermixed with a CFM56–5B Double Annular Combustor (DAC) engine.
This engine intermix configuration is indicated in the cockpit with the following placard: “CAUTION: ENGINE INTERMIX TYPE 1” or "CAUTION: ENGINE INTERMIX".

Ident.: PRO-SPO-45-A-00002060.0001001 / 07 DEC 10

ENGINE PARAMETERS

Engine parameters differ significantly, when the engines are at idle:

EGT	:	Up to 250 °C higher on the DAC engine.
FUEL FLOW	:	Up to 25 % higher on the DAC engine.
N1	:	Higher on the DAC engine.
N2	:	Lower on ground on the DAC engine; higher in flight on the DAC engine.

Ident.: PRO-SPO-45-A-00002061.0001001 / 07 DEC 10

CROSSBLEED ENG START

The DAC engine has insufficient acceleration capability to sustain idle speed with a large bleed offtake, when it operates with only 20 injectors. Therefore, it is necessary to preset a 30 % N1 on the supplying engine before launching the start sequence.

Ident.: PRO-SPO-45-A-00004068.0001001 / 07 DEC 10

TAKEOFF PROCEDURE

- The PF must progressively adjust engine thrust in two steps:
  - Step 1 : Idle to 50 % N1.
    Brakes released, when the 50 % N1 is stabilized on both engines.
  - Step 2 : Both engines N1 to takeoff thrust.

  This procedure enables a significantly slower acceleration from ground idle to N1 = 50 % for the double annular combustor.
- Other standard operating procedures apply for takeoff.

Ident.: PRO-SPO-45-A-00002062.0001001 / 07 DEC 10

ENGINE RESPONSE

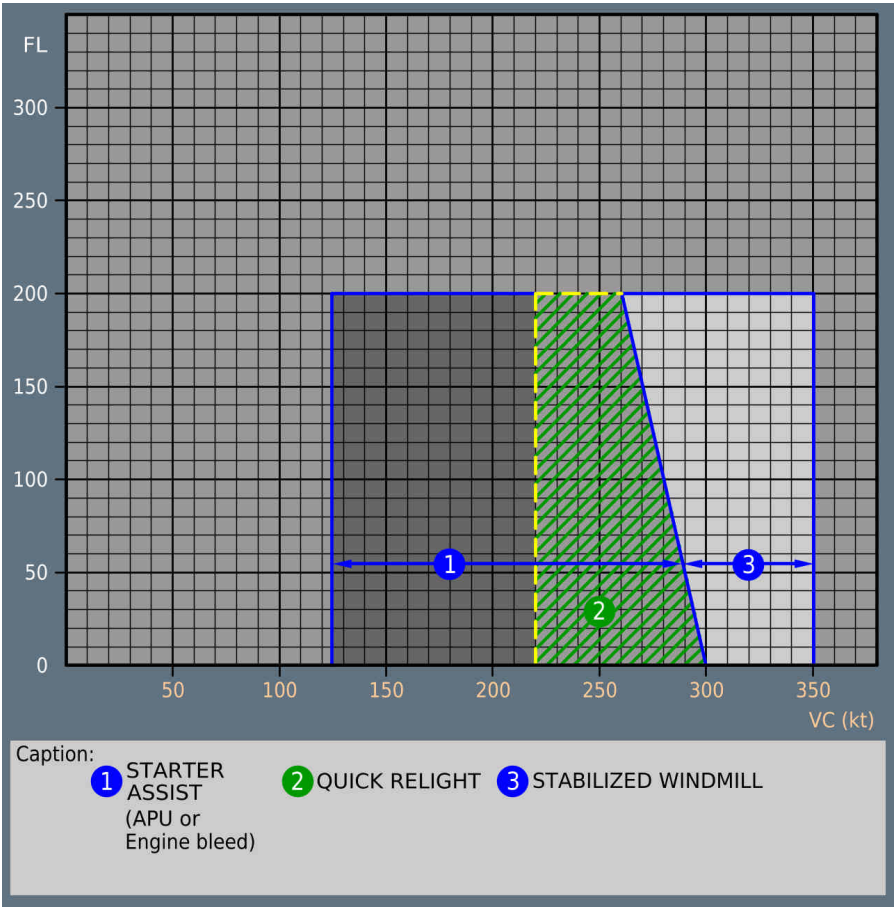
In flight, when the aircraft is in clean configuration, the DAC engine may accelerate from idle more slowly than the SAC engine. This is particularly evident, if the acceleration follows a deceleration.

There is no significant effect on aircraft handling. This difference in engine response disappears when the slats are extended.

Ident.: PRO-SPO-45-A-00004067.0001001 / 09 OCT 12

ENGINE RELIGHT

The DAC engine relight envelope is more restrictive than the SAC engine relight envelope. Therefore, in case of engine intermix, the flight crew must use the DAC engine relight procedure with the corresponding chart (See chart below).



ENGINE INTERMIX TYPE 2

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Ident.: PRO-SPO-45-B-00012731.0007001 / 06 MAR 17

The following information provides the necessary conditions and procedures in order to temporarily operate an A318/A319/A320/A321 with engine intermix configuration between two different SAC engines among CFM56–5Bx classic, the CFM56–5Bx/P, the CFM56-5Bx/3 and the CFM56-5Bx/P "TI HPC kit".
FADEC intermix configuration 5BM software (installed on CFM56-5B classic) with FADEC 5BR software is indicated in the cockpit with the following placard: "CAUTION: ENGINE INTERMIX TYPE 2".

Note: *When FADEC Standard "5BR" or subsequent is installed on both engines, engine thrust behavior is harmonized (transient thrust dissymmetry no longer exist). Therefore, a placard is not necessary and is not displayed.*

Ident.: PRO-SPO-45-B-00012732.0001001 / 07 DEC 10

ENGINE PARAMETERS

In the case of only one operative pack configuration (only one pack OFF):

- N1 : At idle up to 9 % higher on the CFM56-5B/3 TI engine, on ground or in flight in clean configuration.
- N2 : At idle up to 11 % higher on the CFM56-5B/3 TI engine, on ground or in flight in clean configuration.

Ident.: PRO-SPO-45-B-00012733.0001001 / 07 DEC 10

TAKEOFF PROCEDURE

In the case of only one operative pack configuration, due to the difference in N2 at idle between engines, the following takeoff procedure is recommended:

- The PF progressively adjusts engine thrust in two steps:
  - Step 1 : From idle to about 50 % N1 on brakes.
  - Step 2 : From both engines at similar N1 to takeoff thrust after brakes release.
- Other standard operative procedures apply for takeoff.

Ident.: PRO-SPO-45-B-00012734.0007001 / 14 MAY 12

ENGINE RESPONSE

In the case of only one operative pack configuration, due to the difference in N2 at idle between engines, the CFM56–5B/3 TI engine may accelerate from idle to high thrust faster than the CFM56–5B/P SAC engine when the aircraft is on ground or in flight in clean configuration. There is no significant effect on aircraft handling.

The difference in engine response disappears in flight when the slats are extended.

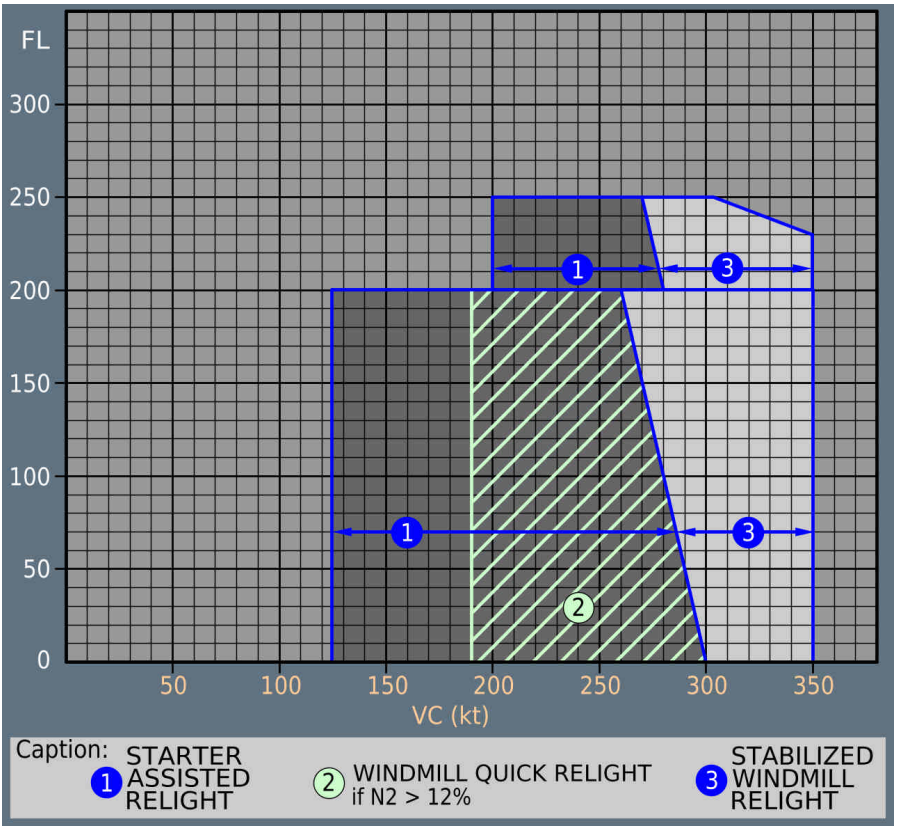
Note: *Depending on the FADEC standard, the flight crew may observe a different deceleration between the two engines (CFM56–5B/P engine is faster to decelerate) when the aircraft is above FL 100 and in unsymmetrical bleed configuration or with the APU BLEED ON.*

Ident.: PRO-SPO-45-B-00016162.0010001 / 02 MAY 17

ENGINE RELIGHT

For SAC-TI engine the maximum altitude for the engine relight envelope is reduced, compared with the SAC engine relight envelope. Therefore, in case of engine intermix, the flight crew must use the SAC-TI engine relight envelope below.

Engine Relight Envelope



GENERAL

Ident.: PRO-SPO-50-00020828.0001001 / 17 MAR 17
Applicable to: ALL

The A318/A319/A320/A321 aircraft systems are designed to comply with the design criteria of the EASA and FAA regulations (documents references provided in the AFM) for the RVSM capability. In addition, operators must obtain an operational approval from their national airworthiness authorities, in order to operate within the RVSM airspace. The EASA and FAA regulations (documents references provided in the AFM) also indicate the requirements for obtaining operational approval.

REQUIRED EQUIPMENTS/FUNCTIONS FOR RVSM

Ident.: PRO-SPO-50-00020955.0002001 / 17 MAR 17
Applicable to: ALL

RVSM regulations require the following equipment/functions in order to be operative:
- 2 ADRs + 2 DMCs
- 1 transponder
- 1 Autopilot function
- 1 FCU channel (for altitude target selection and OP CLB/OP DES mode engagement)
- 2 PFD functions (for altitude indication)
- 1 FWC (for altitude alert function).

RVSM NORMAL PROCEDURE

Ident.: PRO-SPO-50-00020830.0002001 / 17 MAR 17
Applicable to: ALL

For flights in RVSM airspace, the flight crew must apply the standard procedures, in addition to the following RVSM procedures.

FLIGHT PREPARATION

The flight crew must take into account the conditions that may affect operations in RVSM airspace, including:

RVSM APPROVAL.....CHECK

L2 *Verify that the aircraft is approved for RVSM operations.*

L1 WEATHER.....CHECK

L2 *Review the weather forecasted for the flight route. If severe turbulence is expected, this may affect the ability to maintain aircraft altitude.*

L1 REQUIRED EQUIPMENT FOR RVSM.....CHECK

L2 *Check that the required equipment is operative (MEL).*

The flight crew should review the maintenance logs and forms, in order to ensure that the equipment required for RVSM is satisfactory.

L1 ALTITUDES..... CHECK

L2 *Check that the difference between each altitude indication (in the QNH reference) displayed on PFDs and the airport elevation is less than 75 ft.*
Check that the difference between the two primary altitude indications on the PFDs is less than the tolerance specified in SOP. *Refer to PRO-NOR-SOP-06 Glareshield - EFIS Control Panel.*

L1 **IN FLIGHT**

BEFORE ENTERING RVSM AIRSPACE

REQUIRED EQUIPMENT FOR RVSM..... OPERATIVE

L2 *If any of the required equipment fails before the aircraft enters RVSM airspace, the flight crew must request new clearance, to avoid this airspace.*

L1 ALTITUDES..... CHECK

L2 *Check on the PFDs that the difference between altitude indications (in the standard baro setting) is less than the specified tolerance in the table below.*
If only two ADRs are operative, the altimeter indications on PFD and standby altimeter should be recorded. This information may be useful in case of subsequent PFD altitude discrepancy, or loss of both remaining ADRs.

L1

		Comparison of Altitude Indication (ft)		
Flight Level	**Speed or Mach Number**	**Difference between ADR1 and ADR2 (on PFDs)**	**Difference between ADR3 and ADR1/2 (on PFDs)**	**Difference between STBY ALTI and ADRs**
FL 50	250 kt	50 (15 m)	65 (20 m)	130 (40 m)
FL 100	250 kt	55 (17 m)	80 (24 m)	185 (56 m)
FL 200	300 kt	90 (27 m)	135 (41 m)	295 (90 m)
FL 300	M 0.78	130 (40 m)	195 (59 m)	390 (119 m)
FL 390	M 0.78	130 (40 m)	195 (59 m)	445 (136 m)

IN RVSM AIRSPACE

AP..... KEEP ENGAGED

L2 *Ensure that autopilot is engaged for cruise, and for flight level changes.*

L1 AP GUIDANCE..... MONITOR

L2 *During flight level transitions, do not exceed or go below the assigned flight level by more than 150 ft.*

L1 ● **Approximately every hour:**

ALTITUDES.....CHECK

L2 *Check that the difference between the altitude indications on PFDs is less than the specified tolerance. For more information, See table in "Before Entering RVSM airspace".*
Regular check of the flight deck instruments should be sufficient.

L1 **AT THE END OF THE FLIGHT**

ANY MALFUNCTIONS or DEVIATIONS.....REPORT

L2 *Report any malfunction of the systems that enable the aircraft to maintain altitude, including:*
- *Any malfunction or loss of required equipment*
- *Any deviation involving the functions that enable the aircraft to maintain altitude.*

RVSM ABNORMAL AND EMERGENCY PROCEDURE

Ident.: PRO-SPO-50-00020831.0002001 / 17 MAR 17
Applicable to: ALL

ATC.....NOTIFY

When the aircraft is in RVSM airspace, the flight crew must notify the ATC of the following situations, because they may affect the aircraft's ability to maintain the flight level:
- *The failure of both autopilots*
- *The loss of altimeter system redundancy (only one PFD indication remaining)*
- *An excessive discrepancy in altitude indications, and no way to identify the valid indication*
- *The failure of any other equipment, that affects the aircraft's ability to maintain flight level*
- *The encounter of greater than moderate turbulence.*

If the flight crew cannot notify the ATC or obtain the ATC clearance before deviating from the assigned flight level, they should follow the established contingency procedure and obtain the ATC clearance as soon as possible.

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GENERAL

Applicable to: ALL

Ident.: PRO-SPO-51-A-00015857.0001001 / 20 MAR 17

GENERAL

The Performance Based Navigation (PBN) concept implies that the aircraft follows the defined track with a requested navigation performance. The PBN includes RNAV and RNP operations. For RNAV and RNP operations, an operational approval from the airline's national authorities may be required.
The AFM provides regulatory compliances associated with PBN operations.

Ident.: PRO-SPO-51-A-00015859.0001001 / 09 SEP 14

RNAV/RNP CAPABILITY

Before the aircraft enters an RNAV/RNP airspace, RNAV/RNP capability is based on:
- The required RNAV/RNP equipment that is described in each RNAV/RNP section of the FCOM
- Navigation Accuracy HIGH displayed on the MCDU PROG page
- Any specific local requirements published in the Aeronautical Information Publication (AIP).

When the aircraft flies in RNAV/RNP airspace, RNAV/RNP capability is based on:
- Navigation Accuracy HIGH displayed on the MCDU PROG page
- Any specific local requirements published in the Aeronautical Information Publication (AIP).

RNAV 10 / RNP 10

Applicable to: ALL

Ident.: PRO-SPO-51-B-00015854.0001001 / 09 SEP 14

GENERAL

RNAV 10 operations correspond to RNP 10 operations.
In RNAV 10 airspace, the aircraft is expected to fly for a long period of time outside radio navaid coverage.

Ident.: PRO-SPO-51-B-00015855.0001001 / 09 SEP 14

REQUIRED RNAV 10 EQUIPMENT

The minimum navigation equipment required to enter RNAV 10 airspace is:
- Two FMGCs (or one FMGC and one BACK UP NAV ◁)
- Two MCDUs
- Two IRS

- Two NDs (the temporary display of ND information via the PFD/ND switch is permitted on one side)
- One GPS if the flight time outside radio navaid coverage is longer than:
  - 6.2 hr from the time of IRS ground alignment, or
  - 5.7 hr from the time of the last FM position update.

Ident.: PRO-SPO-51-B-00015863.0001001 / 11 APR 17

PROCEDURE

MANAGEMENT OF DEGRADED NAVIGATION

- **If one of the following messages is displayed, the flight crew should resume navigation with the FMGC that provides the correct position:**

  - GPS PRIMARY LOST ◁ on one ND/MCDU
  - NAV ACCUR DOWNGRAD on one ND/MCDU.

- **If the GPS PRIMARY LOST ◁ message is displayed on both NDs/MCDUs, RNAV 10 operations can be continued:**

  - With no time restriction if radio navaids update is available
  - For 5.7 hr from the time of the last position update if radio navaids update is not available. After 5.7 hr, the navigation accuracy must be considered LOW regardless of the navigation accuracy that is displayed on the MCDU PROG page.

- **If one of the following MCDU or ECAM messages is displayed, the flight crew should crosscheck the position data using the POSITION MONITOR page, the IRS 1(2)(3) pages, and the GPS MONITOR page ◁ in order to identify which FMGC position is correct:**

  - FMS1/FMS2 POS DIFF
  - CHECK IRS 1(2)(3)/FM POSITION ◁
  - CHECK A/C POSITION ◁
  - NAV FM/GPS POS DISAGREE ◁

  The flight crew should resume navigation with the FMGC that provides the correct position.

- **If NAV ACCUR DOWNGRAD is displayed on both sides:**

  - As per design FMS REQ ACCUR is set by default; this default value (e.g. 2 NM in cruise, 1 NM in terminal area) is more restrictive than overflown airspace required navigation performance.
  - Any change on FMS REQ ACCUR to be in accordance with airspace requirement is at flight crew's discretion; and should be set back to default value when leaving intended airspace.

If NAV ACCUR DOWNGRAD remains displayed, the flight crew should inform ATC that the RNAV 10 capability is lost.

RNAV 5 / BRNAV

Applicable to: ALL

Ident.: PRO-SPO-51-C-00015851.0001001 / 20 MAR 17

GENERAL

RNAV 5 operations correspond to European BRNAV operations.

Ident.: PRO-SPO-51-C-00015852.0001001 / 06 JUL 17

REQUIRED RNAV 5 EQUIPMENT

The minimum navigation equipment required to enter RNAV 5 airspace is:

- One FMGC
- One MCDU
- One GPS or one DME receiver to update FM position
- Two NDs (the temporary display of ND information via the PFD/ND switch is permitted on one side)
- One IRS.

Ident.: PRO-SPO-51-C-00015864.0001001 / 11 APR 17

PROCEDURE

MANAGEMENT OF DEGRADED NAVIGATION

- **If one of the following messages is displayed, the flight crew should resume navigation with the FMGC that provides the correct position:**

  - GPS PRIMARY LOST ◁✻ on one ND/MCDU
  - NAV ACCUR DOWNGRAD on one ND/MCDU.

- **If one of the following MCDU or ECAM messages is displayed, the flight crew should check the navigation accuracy with navaid raw data via the MCDU PROG page in order to identify which FMGC position is correct:**

  - GPS PRIMARY LOST ◁✻ on both NDs/MCDUs
  - FMS1/FMS2 POS DIFF
  - CHECK IRS 1(2)(3)/FM POSITION ◁✻
  - CHECK A/C POSITION ◁✻
  - NAV FM/GPS POS DISAGREE ◁✻

  The flight crew should resume navigation with the FMGC that provides the correct position.

- **If NAV ACCUR DOWNGRAD is displayed on both sides:**
  - As per design FMS REQ ACCUR is set by default; this default value (e.g. 2 NM in cruise, 1 NM in terminal area) is more restrictive than overflown airspace required navigation performance.
  - Any change on FMS REQ ACCUR to be in accordance with airspace requirement is at flight crew's discretion; and should be set back to default value when leaving intended airspace.

  If NAV ACCUR DOWNGRAD remains displayed, the flight crew should inform ATC that the RNAV 5 capability is lost.

RNAV 1 RNAV 2 / P-RNAV - TERMINAL RNAV

Applicable to: ALL

Ident.: PRO-SPO-51-D-00015848.0001001 / 20 MAR 17

GENERAL

RNAV 1(2) operations correspond to P-RNAV TERMINAL RNAV operations.
The AIP may specify that GPS equipment is required.

Ident.: PRO-SPO-51-D-00015849.0001001 / 06 JUL 17

REQUIRED RNAV 1(2) EQUIPMENT

The minimum navigation equipment required to enter RNAV1/RNAV2 airspace is:
- One FMGC
- One MCDU
- One GPS or one DME receiver to update the FM position
- Two IRS
- One FD in NAV mode
- Two NDs (the temporary display of ND information via the PFD/ND switch is permitted on one side).

Ident.: PRO-SPO-51-D-00015865.0001001 / 20 MAR 17

PROCEDURE

BEFORE ENTERING RNAV 1(2) AIRSPACE

The FMS navigation database provides the terminal procedure (RNAV SID, RNAV STAR, RNAV TRANSITION, etc.) of the flight plan. The flight crew must crosscheck the terminal procedure from the published charts with the FMS navigation database on the F-PLN page (waypoint sequences, tracks, distances, and altitude or speed constraints). The flight crew must

not modify the procedure that is provided by the navigation database, unless required by the ATC (DIR TO, radar vectoring, insertion of waypoints from the navigation database).

MANAGEMENT OF DEGRADED NAVIGATION

- **If one of the following messages is displayed, the flight crew should resume navigation with the FMGC that provides the correct position:**
  - GPS PRIMARY LOST on one ND/MCDU
  - NAV ACCUR DOWNGRAD on one ND/MCDU.
- **If one of the following messages is displayed, the flight crew should check the navigation accuracy with navaid raw data via the MCDU PROG page in order to identify which FMGC position is correct:**
  - GPS PRIMARY LOST on both NDs/MCDUs
  - FMS1/FMS2 POS DIFF
  - CHECK IRS 1(2)(3)/FM POSITION
  - CHECK A/C POSITION
  - NAV FM/GPS POS DISAGREE

  The flight crew should resume navigation with the FMGC that provides the correct position.
- **If NAV ACCUR DOWNGRAD is displayed on both sides:**

  The flight crew should inform the ATC that the RNAV 1(2) capability is lost.

RNP 4

Applicable to: ALL

Ident.: PRO-SPO-51-E-00015845.0001001 / 09 SEP 14

GENERAL

In this airspace, the aircraft is expected to fly for a long period of time outside radio navaid coverage.

Ident.: PRO-SPO-51-E-00015846.0001001 / 09 SEP 14

REQUIRED RNP 4 EQUIPMENT

The minimum navigation equipment required to enter RNP 4 airspace is:
- Two FMGCs (or one FMGC and one BACK UP NAV)
- Two MCDUs
- Two IRS

- One GPS
- Two NDs (the temporary display of ND information via the PFD/ND switch is permitted on one side).

Ident.: PRO-SPO-51-E-00015866.0001001 / 11 APR 17

PROCEDURE

MANAGEMENT OF DEGRADED NAVIGATION

- **If one of the following messages is displayed, the flight crew should resume navigation with the FMGC that provides the correct position:**

  - GPS PRIMARY LOST on one ND/MCDU
  - NAV ACCUR DOWNGRAD on one ND/MCDU.

- **If one of the following MCDU or ECAM messages is displayed, the flight crew should crosscheck the position data using the POSITION MONITOR page, the IRS 1(2)(3) pages, and the GPS MONITOR page in order to identify which FMGC position is correct:**

  - GPS PRIMARY LOST on both NDs/MCDUs
  - FMS1/FMS2 POS DIFF
  - CHECK IRS 1(2)(3)/FM POSITION
  - CHECK A/C POSITION
  - NAV FM/GPS POS DISAGREE

  The flight crew should resume navigation with the FMGC that provides the correct position.

- **If NAV ACCUR DOWNGRAD is displayed on both sides:**

  - As per design FMS REQ ACCUR is set by default; this default value (e.g. 2 NM in cruise, 1 NM in terminal area) is more restrictive than overflown airspace required navigation performance.
  - Any change on FMS REQ ACCUR to be in accordance with airspace requirement is at flight crew's discretion; and should be set back to default value when leaving intended airspace.

  If NAV ACCUR DOWNGRAD remains displayed, the flight crew should inform ATC that the RNAV 4 capability is lost.

RNP 2 IN OCEANIC AND REMOTE CONTINENTAL AREA

Applicable to: ALL

Ident.: PRO-SPO-51-I-00021541.0001001 / 20 MAR 17

GENERAL

In this airspace, the aircraft is expected to fly for a long period of time outside radio navaid coverage.

Ident.: PRO-SPO-51-I-00021542.0001001 / 20 MAR 17

REQUIRED RNP 2 IN OCEANIC AND REMOTE CONTINENTAL AREA EQUIPMENT

The minimum navigation equipment required to enter RNP 2 oceanic and remote continental airspace is:

- Two FMGCs (or one FMGC and one BACK UP NAV ⋖)
- Two MCDUs
- Two IRS
- One GPS
- Two NDs (the temporary display of ND information via the PFD/ND switch is permitted on one side).

Ident.: PRO-SPO-51-I-00021544.0001001 / 20 MAR 17

PROCEDURE

FLIGHT PREPARATION

RAIM/AIME availability should be confirmed for RNP 2 in oceanic and remote continental area operations.

Refer to PRO-NOR-SOP-02 GPS PRIMARY Availability (If Installed)

MANAGEMENT OF DEGRADED NAVIGATION

- **If one of the following messages is displayed, the flight crew should resume navigation with the FMGC that provides the correct position:**
  - GPS PRIMARY LOST on one ND/MCDU
  - NAV ACCUR DOWNGRAD on one ND/MCDU.
- **If one of the following MCDU or ECAM messages is displayed, the flight crew should crosscheck the position data using the POSITION MONITOR page, the IRS 1(2)(3) pages, and the GPS MONITOR page in order to identify which FMGC position is correct:**
  - GPS PRIMARY LOST on both NDs/MCDUs
  - FMS1/FMS2 POS DIFF

- CHECK IRS 1(2)(3)/FM POSITION ◁✻
- CHECK A/C POSITION ◁✻
- NAV FM/GPS POS DISAGREE

The flight crew should resume navigation with the FMGC that provides the correct position.

- **If NAV ACCUR DOWNGRAD is displayed on both sides:**

  The flight crew should inform the ATC that the RNP 2 capability is lost.

RNP 2 IN DOMESTIC AREA

Applicable to: ALL

Ident.: PRO-SPO-51-J-00021545.0001001 / 20 MAR 17

REQUIRED RNP 2 IN DOMESTIC AREA EQUIPMENT

The minimum navigation equipment required to enter RNP 2 domestic airspace is:
- One FMGC
- One MCDU
- One GPS
- Two IRS
- Two NDs (the temporary display of ND information via the PFD/ND switch is permitted on one side).

Ident.: PRO-SPO-51-J-00021546.0001001 / 20 MAR 17

PROCEDURE

FLIGHT PREPARATION

RAIM/AIME availability should be confirmed for RNP 2 in domestic area operations.
Refer to PRO-NOR-SOP-02 GPS PRIMARY Availability (If Installed)

MANAGEMENT OF DEGRADED NAVIGATION

- **If one of the following messages is displayed, the flight crew should resume navigation with the FMGC that provides the correct position:**

  - GPS PRIMARY LOST ◁✻ on one ND/MCDU
  - NAV ACCUR DOWNGRAD on one ND/MCDU.

- **If one of the following MCDU or ECAM messages is displayed, the flight crew should check the navigation accuracy with navaid raw data via the MCDU PROG page in order to identify which FMGC position is correct:**

  - GPS PRIMARY LOST ◁✻ on both NDs/MCDUs
  - FMS1/FMS2 POS DIFF

- CHECK IRS 1(2)(3)/FM POSITION
- CHECK A/C POSITION
- NAV FM/GPS POS DISAGREE

The flight crew should resume navigation with the FMGC that provides the correct position.

- **If NAV ACCUR DOWNGRAD is displayed on both sides:**

  The flight crew should inform the ATC that the RNP 2 capability is lost.

RNP 1 / TERMINAL RNP 1- BASIC RNP 1

Applicable to: ALL

Ident.: PRO-SPO-51-F-00015842.0001001 / 20 MAR 17

GENERAL

RNP 1 operations correspond to RNP 1 Terminal operations.

Ident.: PRO-SPO-51-F-00015843.0001001 / 17 MAR 16

REQUIRED RNP 1 EQUIPMENT

The minimum navigation equipment required to enter RNP 1 airspace is:
- One FMGC
- One MCDU
- One GPS
- Two IRS
- One FD in NAV mode
- Two NDs (the temporary display of ND information via the PFD/ND switch is permitted on one side).

Ident.: PRO-SPO-51-F-00015867.0001001 / 20 MAR 17

PROCEDURE

FLIGHT PREPARATION

RAIM/AIME availability should be confirmed for RNP 1 operations.
Refer to PRO-NOR-SOP-02 GPS PRIMARY Availability (If Installed)

BEFORE ENTERING RNP 1 AIRSPACE

The FMS navigation database provides the terminal procedure (RNAV SID, RNAV STAR, RNAV TRANSITION, etc.) of the flight plan. The flight crew must check the terminal procedure from the published charts with the FMS navigation database on the F-PLN page (waypoint sequences, tracks, distances, and altitude or speed constraints). The flight crew must not

modify the procedure that is provided by the navigation database, unless required by the ATC (DIR TO, radar vectoring, insertion of waypoints from the navigation database).

MANAGEMENT OF DEGRADED NAVIGATION

- **If one of the following messages is displayed, the flight crew should resume navigation with the FMGC that provides the correct position:**
  - GPS PRIMARY LOST ◁✻ on one ND/MCDU
  - NAV ACCUR DOWNGRAD on one ND/MCDU.
- **If one of the following MCDU or ECAM messages is displayed, the flight crew should check the navigation accuracy with navaid raw data via the MCDU PROG page in order to identify which FMGC position is correct:**
  - GPS PRIMARY LOST ◁✻ on both NDs/MCDUs
  - FMS1/FMS2 POS DIFF
  - CHECK IRS 1(2)(3)/FM POSITION ◁✻
  - CHECK A/C POSITION ◁✻
  - NAV FM/GPS POS DISAGREE ◁✻

  The flight crew should resume navigation with the FMGC that provides the correct position.
- **If NAV ACCUR DOWNGRAD is displayed on both sides:**

  The flight crew should inform the ATC that the RNP 1 capability is lost.

RNP APCH / RNAV(GNSS)

Applicable to: ALL

Ident.: PRO-SPO-51-G-00015839.0001001 / 20 MAR 17

GENERAL

RNP APCH operations correspond to RNAV(GNSS) or RNAV(GPS) operations.

Ident.: PRO-SPO-51-G-00015840.0001001 / 11 JUL 17

REQUIRED RNP APCH EQUIPMENT

The minimum equipment required to start RNP APCH operations is:
- One FMGC
- One GPS
- Two IRS
- One MCDU
- One FD
- One PFD on the PF side

- Two NDs (the temporary display of ND information via the PFD/ND switch is permitted on PM side)
- Two FCU channels.

Ident.: PRO-SPO-51-G-00015868.0001001 / 05 JUN 18

PROCEDURE

Refer to PRO-NOR-SOP-18-C Approach using FINAL APP Guidance - General
Refer to PRO-NOR-SOP-18-C Approach using FPA Guidance - General

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GENERAL

Ident.: PRO-SPO-60-00002094.0001001 / 03 JAN 11
Applicable to: MSN 02405-02443, 02482, 02649-02670, 02804-02914, 05158

A standard runway is 45 m wide. Operations on runways less than 45 m wide require authorization from the Airworthiness Authorities.

GENERAL

Ident.: PRO-SPO-60-00002094.0002001 / 03 JAN 11
1 **Applicable to: MSN 01767-02388, 02457, 02584-02626, 02712-02737, 03071-05155, 05190-09063**

This chapter gives the limitations, procedures and performance for operations from/to runways with a width below 45 m .
This chapter does not constitute an operational approval to operate on narrow runways.
Such authorization must be obtained by the operator from the appropriate authorities.

LIMITATIONS

Ident.: PRO-SPO-60-00006122.0002001 / 21 MAR 17
2 **Applicable to: MSN 01767-02388, 02457, 02584-02626, 02712-02737, 03071-05155, 05190-09063**

Minimum runway width.....30 m

The dispatch from/to narrow runways is not allowed in case of :
- Nose wheel steering inoperative
- One brake or more inoperative

Autoland is not allowed.

PROCEDURES

Ident.: PRO-SPO-60-00006123.0006001 / 12 SEP 17
3 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Diversion to a 45 m wide runway is recommended in case of :
- Rudder jam
- Rudder pedal jam
- Yaw damper system fault
- Rudder Travel Limit system fault
- All failures leading to the loss of the nose wheel steering (HYD Yellow system loss, double hydraulic failure, double BSCU fault, double LGCIU fault)

Maximum demonstrated crosswind for takeoff and landing:

Dry runway.....38 kt (gust included) for takeoff and landing
Wet runway.....33 kt (gust included) for takeoff and landing

Contaminated runway..... 10 kt (gust included) for takeoff and landing

Note: *These maximum demonstrated crosswind values are based on the assumption that the crew have been trained accordingly.*

Operations on icy runways have not been demonstrated.

PROCEDURES

Ident.: PRO-SPO-60-00006123.0002001 / 21 MAR 17
Applicable to: MSN 01767-02388

Diversion to a 45 m wide runway is recommended in case of :
- Rudder jam
- Rudder pedal jam
- Yaw damper system fault
- Rudder Travel Limit system fault
- All failures leading to the loss of the nose wheel steering (HYD Green system loss, double hydraulic failure, double BSCU fault, double LGCIU fault)

Maximum demonstrated crosswind for takeoff and landing:

Dry runway.....38 kt (gust included) for takeoff and landing
Wet runway.....33 kt (gust included) for takeoff and landing
Contaminated runway..... 10 kt (gust included) for takeoff and landing

Note: *These maximum demonstrated crosswind values are based on the assumption that the crew have been trained accordingly.*

Operations on icy runways have not been demonstrated.

PROCEDURES

Ident.: PRO-SPO-60-00006123.0003001 / 21 MAR 17
4 **Applicable to: MSN 02457, 02584-02626, 02712-02737, 03071-05155, 05190-06336, 08557, 08587, 08655, 08710, 08768, 09063**

Diversion to a 45 m wide runway is recommended in case of :
- Rudder jam
- Rudder pedal jam
- Yaw damper system fault
- Rudder Travel Limit system fault
- All failures leading to the loss of the nose wheel steering (HYD Yellow system loss, double hydraulic failure, double BSCU fault, double LGCIU fault)

Maximum demonstrated crosswind for takeoff and landing:

Dry runway.....38 kt (gust included) for takeoff and landing
Wet runway.....33 kt (gust included) for takeoff and landing

Contaminated runway..... 10 kt (gust included) for takeoff and landing

Note: *These maximum demonstrated crosswind values are based on the assumption that the crew have been trained accordingly.*

Operations on icy runways have not been demonstrated.

PERFORMANCE

Ident.: PRO-SPO-60-00006124.0001001 / 23 JUN 15

[5] **Applicable to: MSN 01767-02388, 02457, 02584-02626, 02712-02737, 03071-05155, 05190-09063**

For runways with a width above or equal to 40 m ., the basic takeoff performance remains unchanged.
For runways with a width below 40 m , the VMCG must be increased by the values indicated in the following table :

Runway Width	30 m	35 m	40 m
∆ VMCG(kt)	+ 2.5	+ 1.5	+ 0

No correction is required, when takeoff performance is determined by using the applicable approved data.
The minimum V1 values, published in the *Refer to PER-TOF-TOD-25-10 SPEEDS LIMITED BY VMCG/VMCA*, must be increased by 3 kt .
When using the takeoff performance for contaminated runways *Refer to PER-TOF-CTA-10 GENERAL*, the resulting V1 must be crosschecked with the corrected minimum V1.
Further decrease the takeoff weight by 3 t per knot increase in V1.

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GENERAL

Ident.: PRO-SPO-63-00018878.0003001 / 05 JUN 18
Applicable to: MSN 02443, 02670, 02908-02914, 04399, 04438

At LEH (VILH) airport, the mean runway slope is 2.9 %.

This chapter gives the limitations, procedures and performance for operations from/to this runway.

Note: *This chapter must be combined with the "High Altitude operations" procedures. Refer to PRO-NOR-SUP-MISC-A Operation at or Above 9 200 ft..*

This chapter does not constitute an operational approval to operate on this runway. Such authorization must be obtained by the operator from the appropriate authorities.

LIMITATIONS

Ident.: PRO-SPO-63-00018879.0003001 / 21 MAR 17
Applicable to: MSN 02443, 02670, 02908-02914, 04399, 04438

At LEH airport, the mean runway slope is 2.9 %.
Takeoff must be performed downhill.
The relative slope between approach slope and runway slope is limited to less than 4.5 °.
Landing must be performed uphill.
Autoland is not allowed.

PROCEDURES

Ident.: PRO-SPO-63-00018880.0003001 / 21 MAR 17
Applicable to: MSN 02443, 02670, 02908-02914, 04399, 04438

Minimum approach speed is VLS +5 kt

Note: *The flare height should be increased for landing at high altitude airports particularly with high approach speeds or for approaches with increased glide slope or to uphill sloping runways*

PERFORMANCE

Ident.: PRO-SPO-63-00018881.0003001 / 21 MAR 17
Applicable to: MSN 02443, 02670, 02908-02914, 04399, 04438

The Performance Engineering Program/AFM_OCTO Flight Manual modules at the approved revision given in AFM (*Refer to AFM/AFM/PERF/OCTO Performance Database*) have to be used for takeoff and landing.
The mean runway slope must be entered for performance determination.
Landing distance determination does not require any speed increment.

Minimum approach climb gradient is 3 %.

Minimum landing climb gradient is 4.1 %.

OVERVIEW

Ident.: PRO-SPO-85-00020844.0001001 / 17 MAR 17
Applicable to: ALL

The Precision Runway Monitor (PRM) system enables simultaneous close parallel ILS approaches. The air traffic controllers use the PRM system to monitor the aircraft position. If necessary, the ATC orders a break out, turn and climb or descent.

To perform PRM operations:
- The air traffic controllers and the flight crew must satisfy specific training requirements
- The ATC and the aircraft equipment must comply with specific requirements.

BREAK OUT TURN AND CLIMB PROCEDURE

Ident.: PRO-SPO-85-00020845.0001001 / 17 MAR 17
Applicable to: ALL

Simultaneously:

AP..... OFF
BREAK OUT LEFT(RIGHT), HDG___, ALT___..... ANNOUNCE
THRUST LEVERS.....TOGA, and back to CL

L2 *The SRS GA and the GA TRK modes engage. The THR CLB mode engages.*
The speed is managed. The speed target is the aircraft speed at SRS GA engagement.
The FMS GO-AROUND phase becomes active. Therefore, the FMS reinserts the approach.

L1 TURN LEFT(RIGHT) AND CLIMB

L2 *As the situation is urgent, the flight crew should temporarily disregard the FD orders.*

Then

L1 HDG___..... TURN AND PULL

L2 *The GA TRK mode disengages, and the HDG mode engages.*

L1 ALT___.....TURN AND PULL

L2 *The SRS GA mode disengages, and the OP CLB mode engages. The speed target becomes the FMS speed target of the CLIMB phase.*

L1 SPEED..... PULL AND ADJUST

L2 *For the initial break out procedure, adjust the speed (e.g. 160 kt), in order to avoid a significant acceleration, and an increase in workload.*

L1 ● **When established on the break out path:**
AP.....ON

L2 *Before engaging the AP, ensure that the FD bar orders correspond to the aircraft current path.*

L1 SPEED.....SELECT AS RQRD
FLAPS.....AS RQRD
GEAR.....AS RQRD
TCAS MODE SEL.....TA/RA AS RQRD

BREAK OUT TURN AND DESCENT PROCEDURE

Ident.: PRO-SPO-85-00020846.0001001 / 17 MAR 17
Applicable to: ALL

Simultaneously:

AP..... OFF
TURN LEFT(RIGHT) AND MAINTAIN RATE OF DESCENT
BREAK OUT LEFT(RIGHT), HDG___, ALT___..... ANNOUNCE

L2 *As the situation is urgent, the flight crew should temporarily disregard the FD orders.*

Then

L1 HDG___..... TURN AND PULL

L2 *The HDG mode engages. The vertical mode reverts to the V/S mode. The vertical speed target is the aircraft vertical speed at V/S engagement.*

L1 ALT___.....TURN AND PULL

L2 *This action defines an altitude target. The OP DES mode and the THR IDLE mode engage. The speed target does not change.*

L1 V/S.....MONITOR

CAUTION	*Depending on the speed target, the vertical speed may become excessive. If the rate of descent exceeds 1 000 ft/min, engage the V/S mode and limit the rate of descent to 1 000 ft/min.*

- **When established on the break out path:**

AP.....ON

L2 *Before engaging the AP, ensure that the FD bar orders correspond to the aircraft current path.*

L1 - **When cleared by ATC:**

ALT___..... TURN

L2 *Select an altitude target for go-around, in accordance with the ATC clearance.*

L1 THRUST LEVERS..... TOGA, and back to CL

L2 *The SRS GA and the GA TRK modes engage. The THR CLB mode engages.*
The speed is managed. The speed target is the aircraft speed at SRS GA engagement.
The FMS GO-AROUND phase becomes active.

L1 HDG___.....PULL

L2 *The GA TRK mode disengages, and the HDG mode engages. The SRS GA mode remains engaged, until ALT* engagement.*

L1 SPEED.....SELECT AS RQRD
FLAPS.....AS RQRD
GEAR.....AS RQRD
TCAS MODE SEL.....TA/RA AS RQRD

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LIMITATIONS

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LIM-INT Introduction

LIM-AG Aircraft General

LIM-AIR Air Bleed/Cond/Press/Vent

LIM-AFS Auto Flight System

LIM-APU Auxiliary Power Unit

LIM-CAB Cabin Systems

LIM-COM Communication

LIM-ENG Engines

LIM-F_CTL Flight Controls

LIM-FUEL Fuel

LIM-ICE_RAIN Ice and Rain Protection

LIM-LG Landing Gear

LIM-NAV Navigation

LIM-OXY Oxygen

LIM-SURV Surveillance

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M (1)	Localization	DU Title	DU identification	DU date
	LIM-AFS-20	**Automatic Landing in Johannesburg**	00013685.0001001	25 APR 13
	Criteria: A320, A321 **Applicable to: ALL** *Impacted DU: NONE*			
	LIM-AFS-20	**Autoland Databases with Honeywell ADIRU**	00016880.0003001	25 NOV 15
	Criteria: P3510, P3790, P4087, P4419, P4425, P6125, P6985, P7397, SA **Applicable to: MSN 02457, 02584, 02670, 02737-02908** *Impacted DU: NONE*			
E	LIM-AFS-20	**Autoland Databases with Honeywell ADIRU**	00016880.0070001	25 NOV 15
	Criteria: 34-1332, 34-1356, P10660, P13235, P3510, P3790, P4087, P4419, P4425, P6125, P6985, P7397, P9333, SA **Applicable to: MSN 01920, 02108, 02443, 02609-02649, 02712, 02914-03138, 03308, 03357-04216, 04312-04399, 04438-04506, 04518-06336** *Impacted DU: NONE*			
	LIM-AFS-20	**Autoland Databases with Northrop Grumman ADIRU**	00016882.0001001	25 NOV 15
	Criteria: 34-1350, P3790, P4425, P9332 **Applicable to: MSN 01767, 01957-02097, 02121-02405, 02482, 03264, 03330, 04294, 04433, 04510** *Impacted DU: NONE*			

(1) Evolution code : N=New, R=Revised, E=Effectivity

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LIMITATIONS

INTRODUCTION

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Introduction.....A

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INTRODUCTION

Ident.: LIM-INT-00019839.0001001 / 04 SEP 17
Applicable to: ALL

This FCOM chapter contains operational limitations, related to the aircraft and associated systems. All references to airspeed, Mach and altitude relate to indicated airspeed, indicated Mach, and pressure altitude, unless otherwise noted.

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LIMITATIONS

AIRCRAFT GENERAL

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LIM-AG-F_CTL Flight Maneuvering Load Acceleration Limits

Flight Maneuvering Load Acceleration Limits ..... A

LIM-AG-OPS Operational Parameters

Environmental Envelope ..... A
Environmental Envelope ..... B
Environmental Envelope C
Airport Operations and Wind Limitations ..... D

LIM-AG-SPD Speeds

Cockpit Window Open Maximum Speed ..... A
Maximum Flaps/Slats Speeds ..... B
Maximum Operating Speed VMO/MMO C
Maximum Speeds with the Landing Gear Extended ..... D
Maximum Tire Speed ..... E
Minimum Control Speeds ..... F
Taxi Speed ..... G
Wipers Maximum Operating Speed ..... H

LIM-AG-WGHT Weights

Weight Limitations ..... A
Center of Gravity Limits with up to 3 ACTs installation ..... B

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Localization Title	Toc Index	ID	Reason
LIM-AG-OPS Environmental Envelope	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
LIM-AG-OPS Environmental Envelope	B	2	Effectivity update: The information now also applies to MSN 09063.
LIM-AG-OPS Environmental Envelope	C	3	Effectivity update: The information no longer applies to MSN 05449.
LIM-AG-OPS Runway Slope	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
LIM-AG-OPS Runway Altitude	D	5	Effectivity update: The information no longer applies to MSN 05449.
LIM-AG-OPS Runway Altitude	D	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-AG-OPS Nominal Runway Width	D	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
LIM-AG-OPS Tailwind Takeoff	D	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
LIM-AG-OPS Tailwind Landing	D	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
LIM-AG-OPS Flaps Full Note	D	10	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
LIM-AG-SPD Maximum Flaps/Slats Speeds	B	1	Effectivity update: The information now also applies to MSN 09063.
LIM-AG-SPD Maximum Flaps/Slats Speeds	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
LIM-AG-SPD Minimum Control Speeds	F	3	Effectivity update: The information now also applies to MSN 09063.
LIM-AG-SPD Minimum Control Speeds	F	4	Effectivity update: The information no longer applies to MSN 05449.
LIM-AG-SPD Minimum Control Speeds	F	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
LIM-AG-SPD Taxi Speed	G	6	Effectivity update: The information no longer applies to MSN 05449.
LIM-AG-WGHT Weight Limitations	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
LIM-AG-WGHT Weight Limitations	A	2	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
LIM-AG-WGHT Weight Limitations	A	3	Effectivity update: The information no longer applies to MSN 05449.
LIM-AG-WGHT Center of Gravity Limits with up to 3 ACTs installation	B	4	Effectivity update: The information now also applies to MSN 09063.

FLIGHT MANEUVERING LOAD ACCELERATION LIMITS

Ident.: LIM-AG-F_CTL-00020793.0001001 / 17 MAR 17
Applicable to: ALL

Clean configuration.....-1 g to +2.5 g
Other configurations..... 0 g to +2 g

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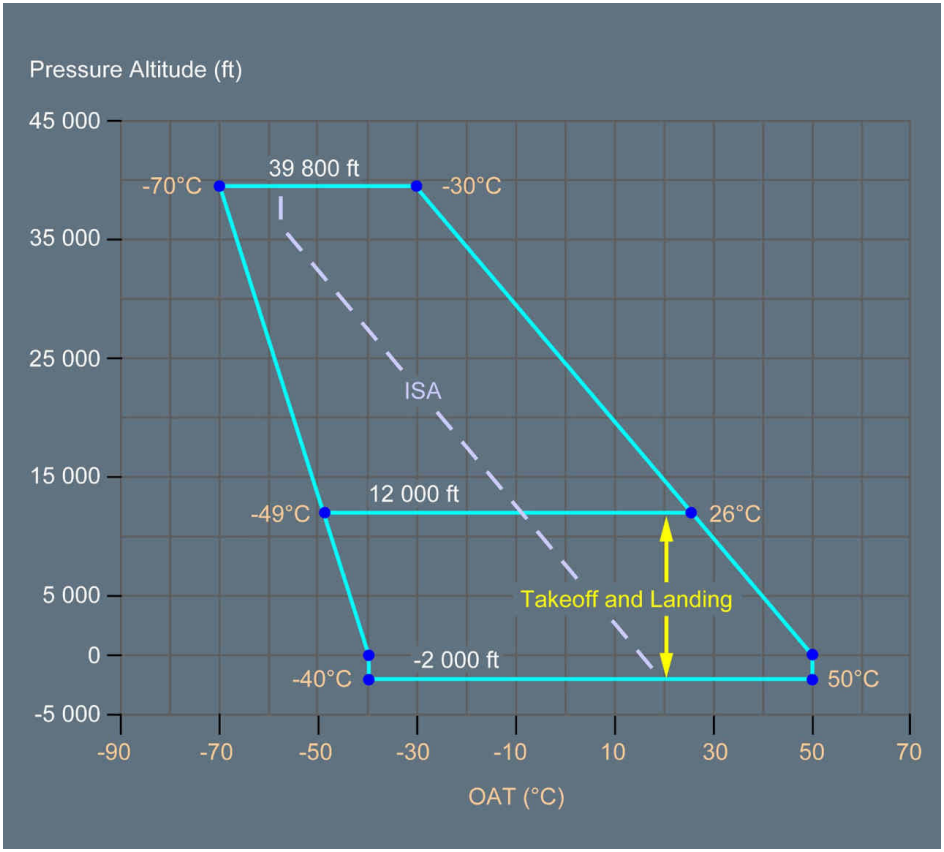
ENVIRONMENTAL ENVELOPE

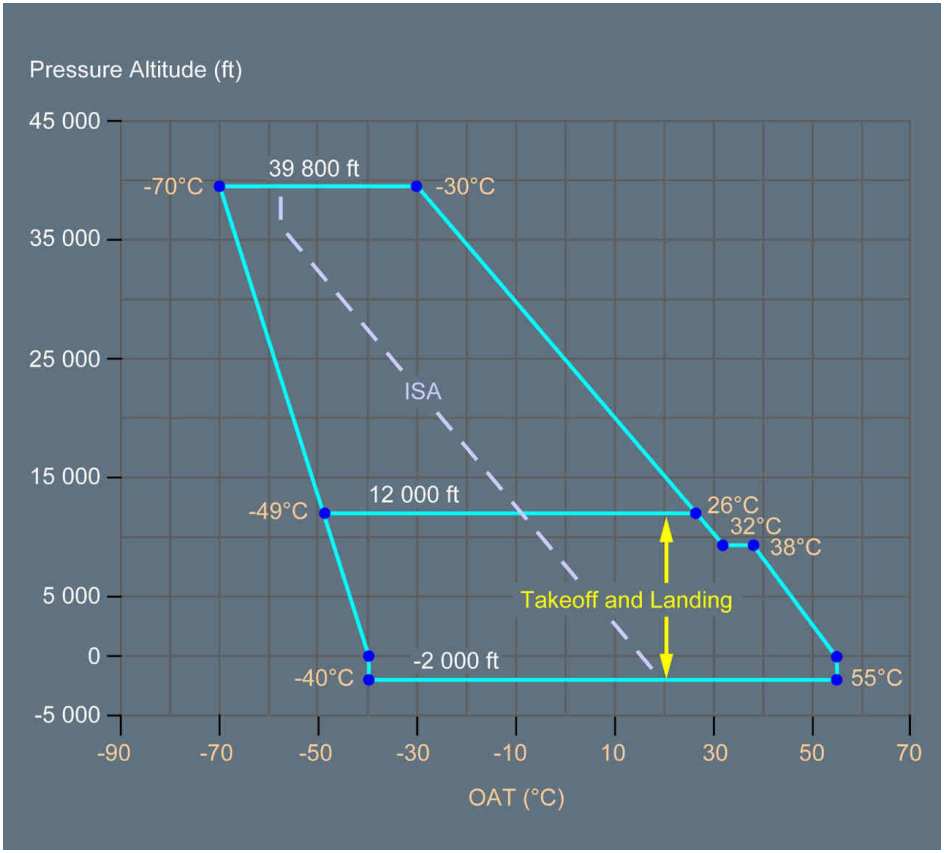
Ident.: LIM-AG-OPS-00021826.0012001 / 19 JUL 17
Applicable to: MSN 06744, 06819



ENVIRONMENTAL ENVELOPE

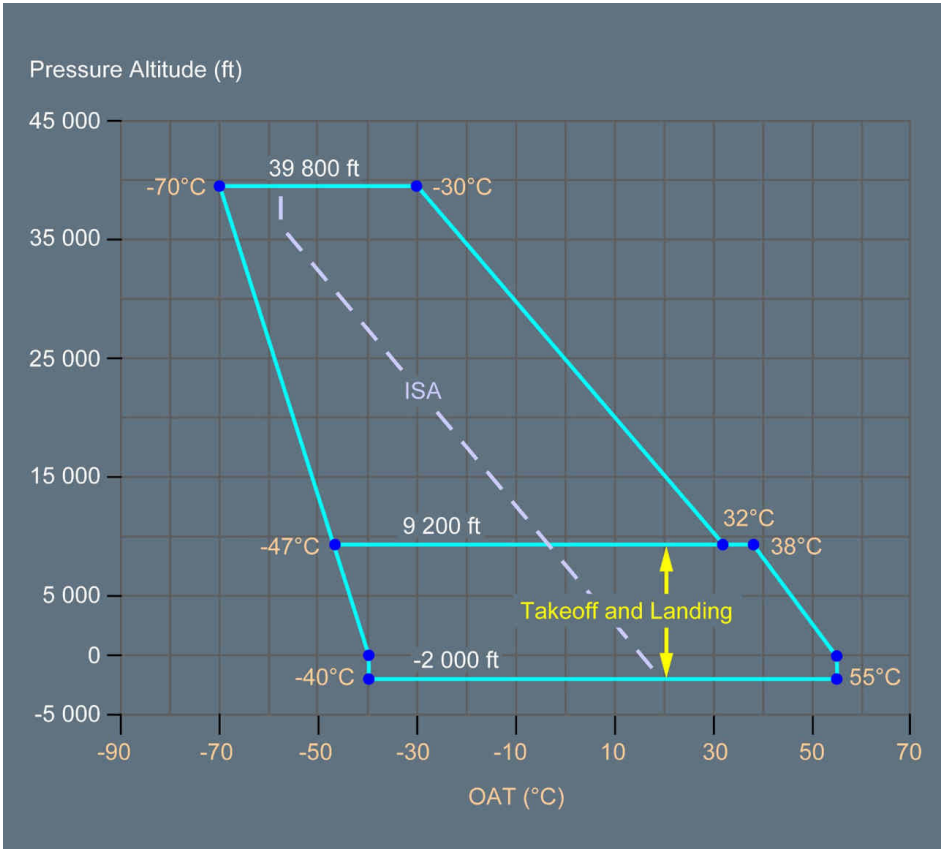
Ident.: LIM-AG-OPS-00021826.0011001 / 19 JUL 17

1 **Applicable to: MSN 06772-06799, 06829, 06904, 06946, 07053-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



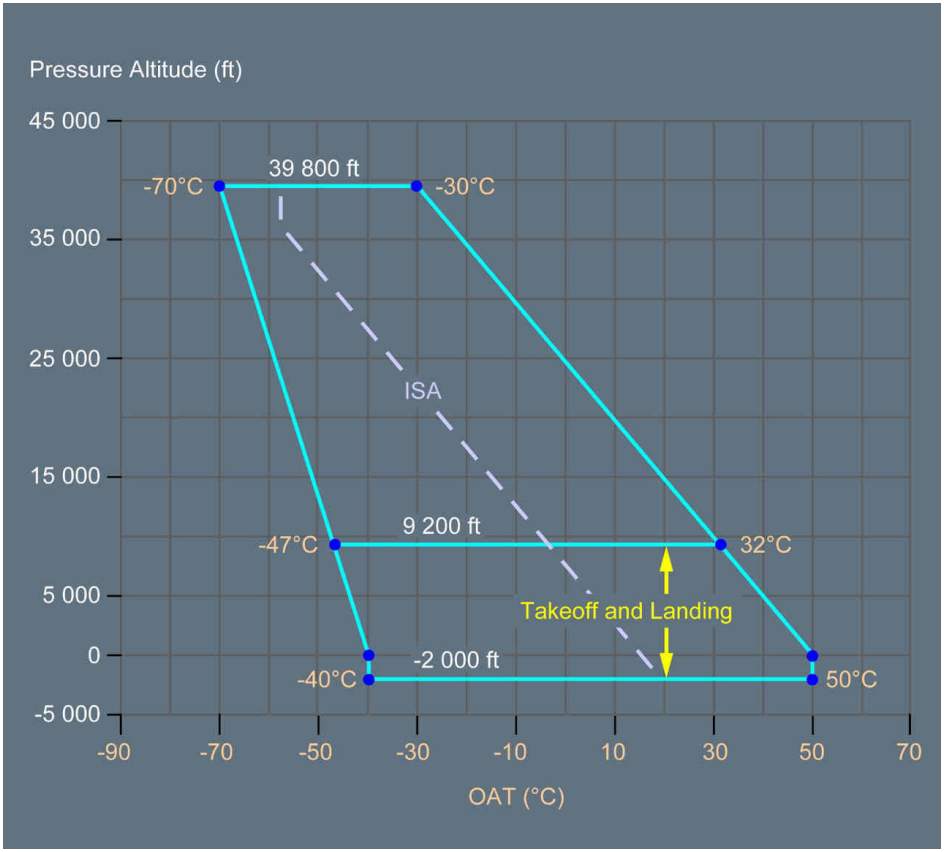
ENVIRONMENTAL ENVELOPE

Ident.: LIM-AG-OPS-00021826.0006001 / 19 JUL 17
Applicable to: MSN 06720, 06849, 06868, 06914, 06952-07033



ENVIRONMENTAL ENVELOPE

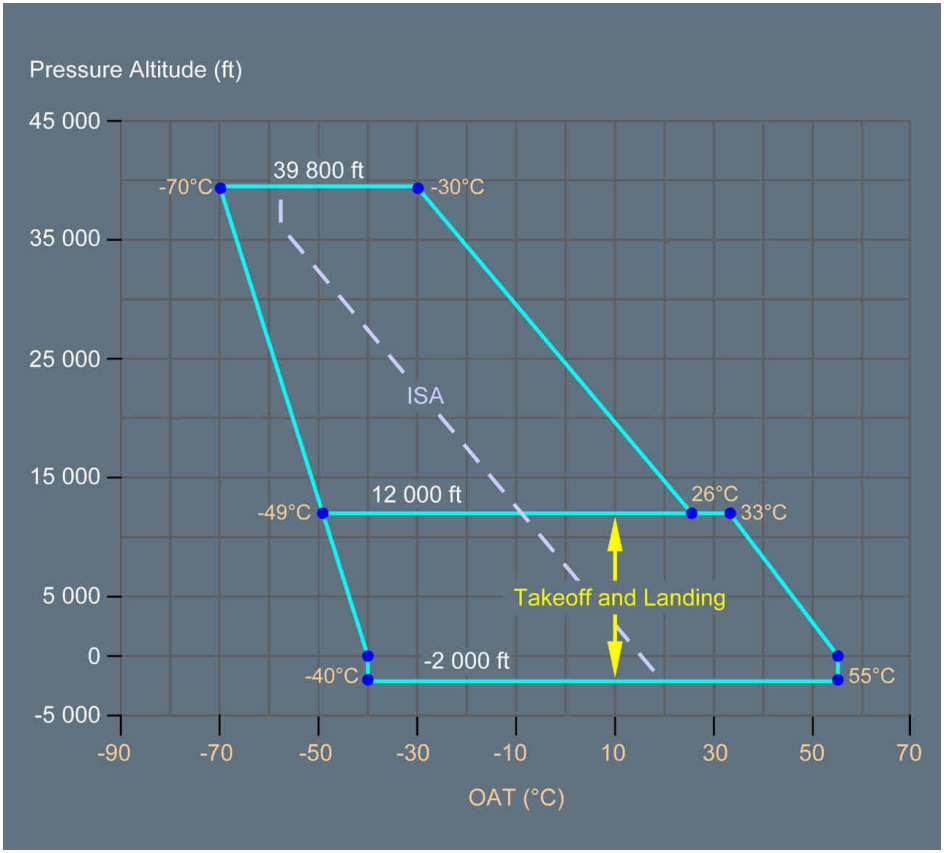
Ident.: LIM-AG-OPS-00021826.0016001 / 19 JUL 17
Applicable to: MSN 06860



ENVIRONMENTAL ENVELOPE

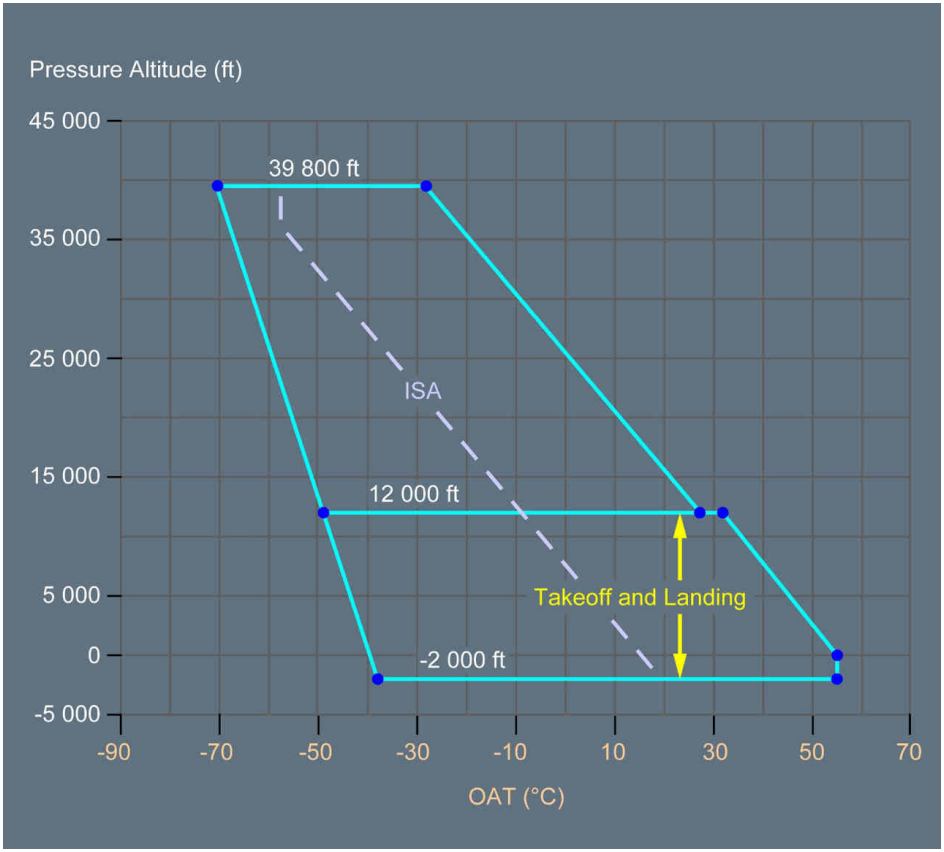
Ident.: LIM-AG-OPS-00021825.0005001 / 13 JUL 18

[2] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



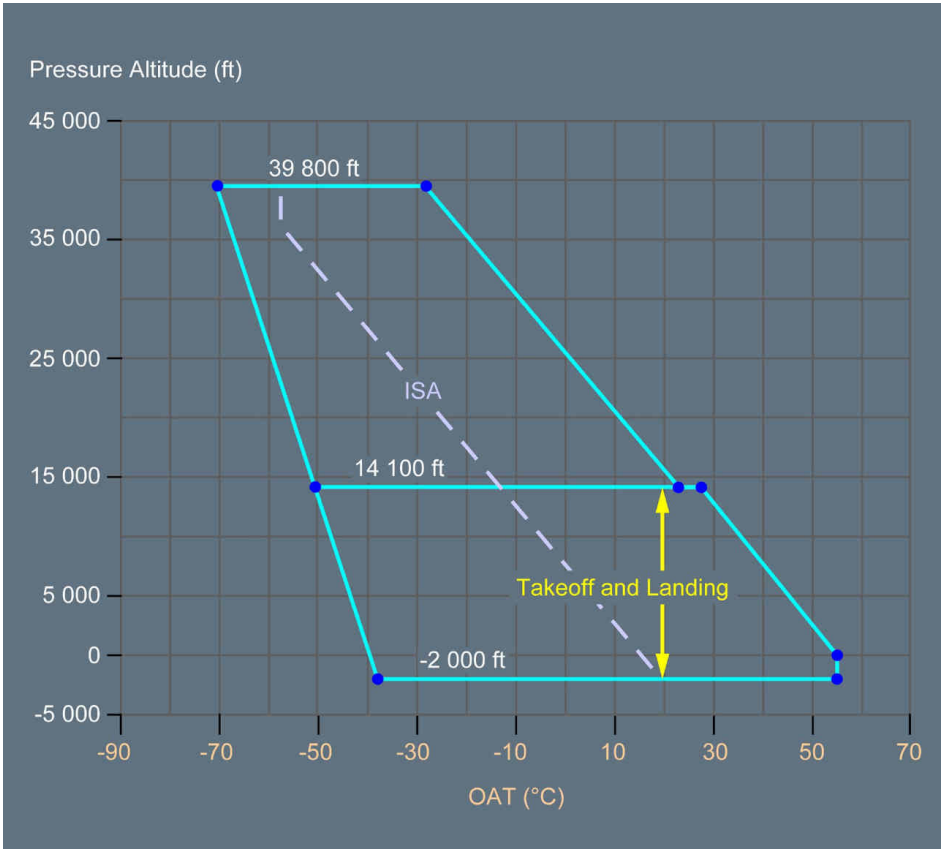
ENVIRONMENTAL ENVELOPE

Ident.: LIM-AG-OPS-00021818.0047001 / 19 JUL 17
Applicable to: MSN 04399, 04438



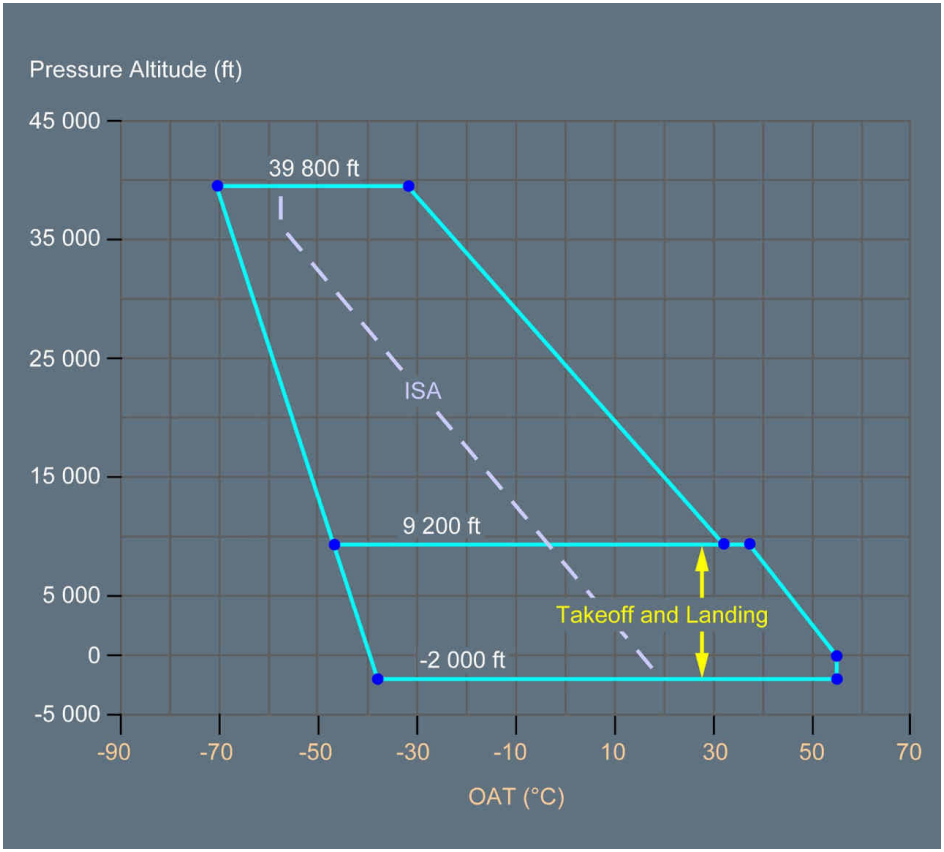
ENVIRONMENTAL ENVELOPE

Ident.: LIM-AG-OPS-00021818.0043001 / 19 JUL 17
Applicable to: MSN 03750



ENVIRONMENTAL ENVELOPE

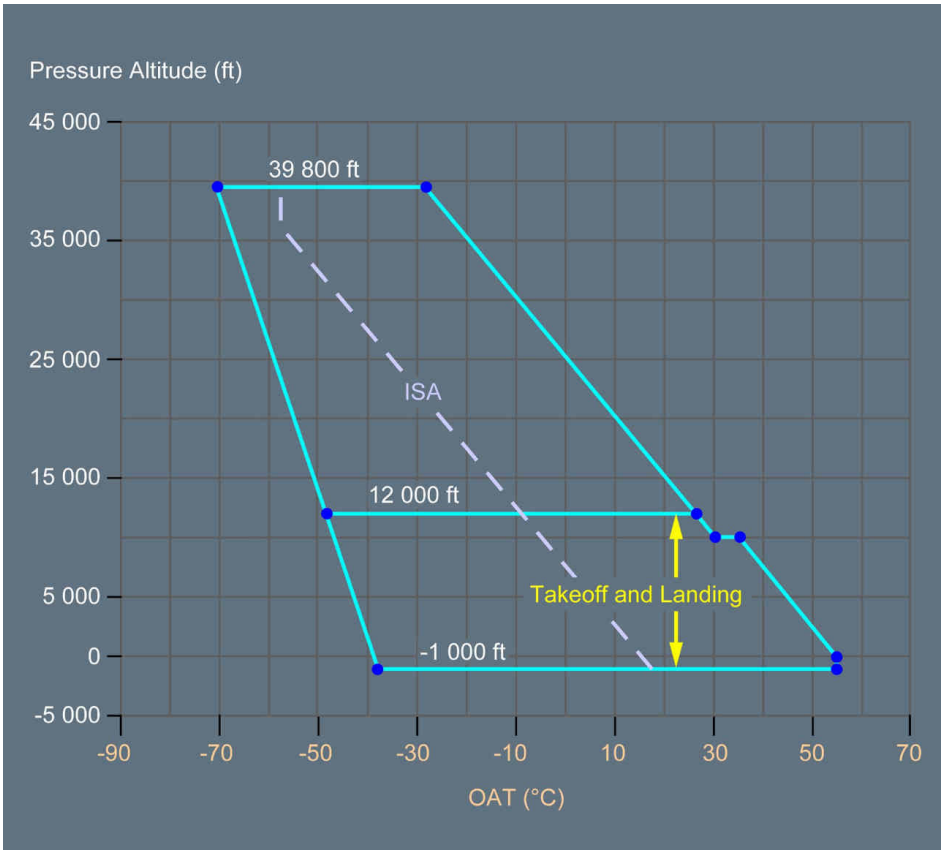
Ident.: LIM-AG-OPS-00021818.0027001 / 27 JUL 17
Applicable to: MSN 01767, 02712, 03138, 04294, 04314, 04393-04397, 04433, 04510



ENVIRONMENTAL ENVELOPE

Ident.: LIM-AG-OPS-00021818.0025001 / 27 JUL 17

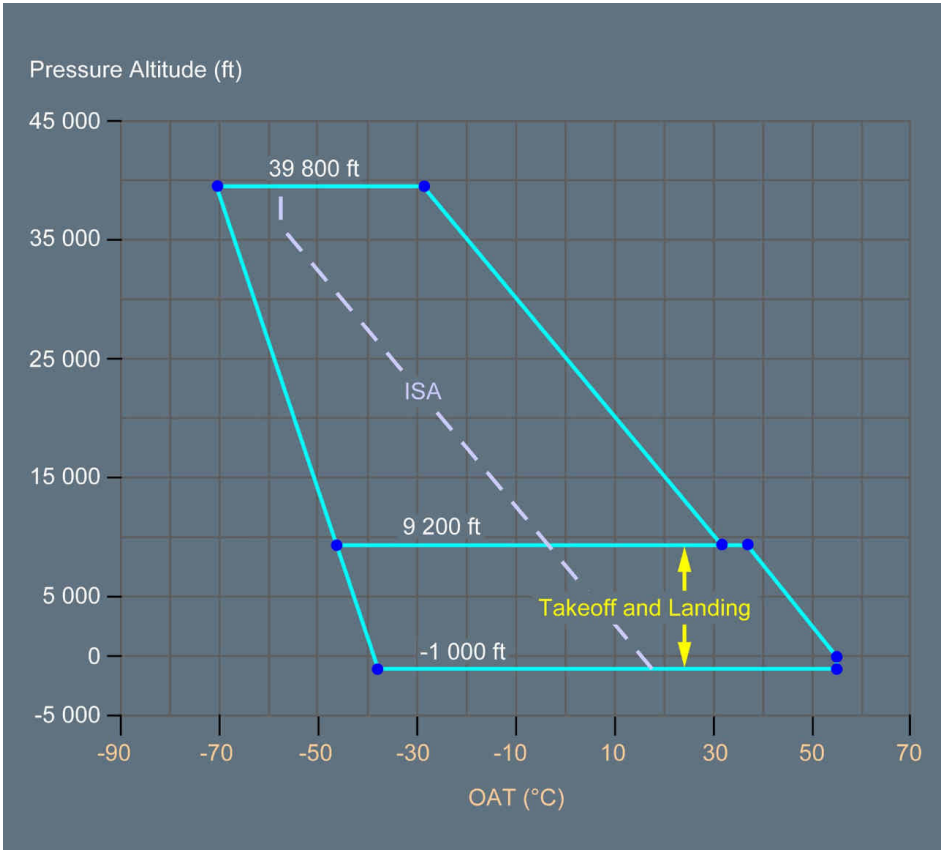
Applicable to: MSN 02443, 02670, 02908-02914, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336



ENVIRONMENTAL ENVELOPE

Ident.: LIM-AG-OPS-00021818.0014001 / 19 JUL 17

[3] **Applicable to: MSN 01920-02405, 02457-02649, 02737-02804, 03071, 03264, 03330, 04491, 04532, 04645, 05120, 05158, 05218**



AIRPORT OPERATIONS AND WIND LIMITATIONS

Ident.: LIM-AG-OPS-ARPT_WIND-00020145.0001001 / 17 MAR 17

[4] **Applicable to: MSN 01767-02405, 02457-02649, 02712-02804, 03071-04397, 04433, 04481-09063**

RUNWAY SLOPE

Runway slope (mean)..... ±2 %

Ident.: LIM-AG-OPS-ARPT_WIND-00020145.0002001 / 17 MAR 17
Applicable to: MSN 02443, 02670, 02908-02914, 04399, 04438

RUNWAY SLOPE

Runway slope (mean)..... ±3 %

Ident.: LIM-AG-OPS-ARPT_WIND-00020135.0009001 / 17 MAR 17
Applicable to: MSN 03750

RUNWAY ALTITUDE

Runway altitude..... 14 100 ft

Ident.: LIM-AG-OPS-ARPT_WIND-00020135.0001001 / 17 MAR 17
5 **Applicable to: MSN 01767-02405, 02457-02649, 02712-02804, 03071-03264, 03330, 04294, 04314, 04393-04397, 04433, 04491, 04510, 04532, 04645, 05120, 05158, 05218, 06720, 06849-06868, 06914, 06952-07033**

RUNWAY ALTITUDE

Runway altitude..... 9 200 ft

Ident.: LIM-AG-OPS-ARPT_WIND-00020135.0007001 / 17 MAR 17
6 **Applicable to: MSN 02443, 02670, 02908-02914, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04399, 04438-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336, 06744-06829, 06904, 06946, 07053-09063**

RUNWAY ALTITUDE

Runway altitude..... 12 000 ft

Ident.: LIM-AG-OPS-ARPT_WIND-00020146.0001001 / 17 MAR 17
Applicable to: MSN 02405-02443, 02482, 02649-02670, 02804-02914, 05158

NOMINAL RUNWAY WIDTH

Nominal runway width..... 45 m

Ident.: LIM-AG-OPS-ARPT_WIND-00020146.0002001 / 17 MAR 17
7 **Applicable to: MSN 01767-02388, 02457, 02584-02626, 02712-02737, 03071-05155, 05190-09063**

NOMINAL RUNWAY WIDTH

Nominal runway width..... 45 m
Minimal runway width..... 30 m

Ident.: LIM-AG-OPS-ARPT_WIND-00020148.0001001 / 17 MAR 17
Applicable to: ALL

WIND FOR TAKEOFF AND LANDING

Maximum demonstrated crosswind (takeoff and landing)..... 38 kt (gust included)

Note: - *The maximum demonstrated crosswind value is not an Airplane Flight Manual (AFM) limitation : It is the maximum crosswind condition experienced during the aircraft certification campaign.*
- *Airbus recommends that operators should not intentionally operate in crosswinds that exceed this value.*

Ident.: LIM-AG-OPS-ARPT_WIND-00020157.0003001 / 17 MAR 17
8 **Applicable to: MSN 01767, 01957-02097, 02121-02195, 02388-02482, 02609-03138, 03308, 03357-05155, 05190-09063**

TAILWIND TAKEOFF

Maximum tailwind for takeoff.....15 kt

Ident.: LIM-AG-OPS-ARPT_WIND-00020157.0001001 / 17 MAR 17
Applicable to: MSN 01920, 02108, 02204-02359, 02584, 03264, 03330, 05158

TAILWIND TAKEOFF

Maximum tailwind for takeoff .....10 kt

Ident.: LIM-AG-OPS-ARPT_WIND-00020159.0001001 / 21 MAR 17
Applicable to: MSN 01920, 02108, 02135, 02139-02359, 02584, 03264, 03330, 05120, 05158

TAILWIND LANDING

Maximum tailwind for landing .....10 kt

Note: *For maximum tailwind for automatic landing and rollout, Refer to LIM-AFS-20 Maximum Wind Conditions for ILS/MLS (If Installed) CAT II or CAT III and for GLS (If Installed) CAT I.*

Ident.: LIM-AG-OPS-ARPT_WIND-00020159.0003001 / 21 MAR 17
9 **Applicable to: MSN 01767, 01957-02097, 02121, 02138, 02388-02482, 02609-03138, 03308, 03357-05094, 05155, 05190-09063**

TAILWIND LANDING

Maximum tailwind for landing .....15 kt

Note: *For maximum tailwind for automatic landing and rollout, Refer to LIM-AFS-20 Maximum Wind Conditions for ILS/MLS (If Installed) CAT II or CAT III and for GLS (If Installed) CAT I.*

Ident.: LIM-AG-OPS-ARPT_WIND-00020168.0002001 / 22 MAR 17
Applicable to: MSN 01767, 02388, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 05437-06336

Note: *For landing with a tailwind greater than 10 kt, use FLAPS FULL only.*

Ident.: LIM-AG-OPS-ARPT_WIND-00020168.0001001 / 22 MAR 17

10 **Applicable to: MSN 01957-02097, 02121, 02138, 02405-02482, 02609-02670, 02737-03071, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05094, 05155, 05190-05411, 06720-09063**

Note: For landing with a tailwind greater than 10 kt, FLAPS FULL is recommended.

Ident.: LIM-AG-OPS-ARPT_WIND-00020166.0001001 / 04 JUL 17
Applicable to: ALL

PASSENGER AND CARGO DOORS OPERATION

The following are the wind limitations for passenger and cargo doors operation:

- The maximum wind for passenger door operation is 65 kt
- The maximum wind for FWD and AFT cargo door operation is 40 kt (or 50 kt, if the aircraft nose is into the wind, or if the FWD and AFT cargo doors are on the leeward side)
- The FWD and AFT cargo doors must be closed before the wind speed exceeds 65 kt.

Ident.: LIM-AG-OPS-ARPT_WIND-00020046.0003001 / 05 JUN 18
Applicable to: ALL

MAXIMUM RECOMMENDED CROSSWIND ON WET AND CONTAMINATED RUNWAYS

Runway Surface Conditions		Maximum Crosswind for Takeoff (Gust included)	Maximum Crosswind for Landing (Gust included)
Runway State or / and Runway Contaminant	**ESF(1) or PIREP(2)**		
Damp **Wet** Up to 3 mm (1/8") of water **Slush** Up to 3 mm (1/8") **Dry snow** Up to 3 mm (1/8") **Wet snow** Up to 3 mm (1/8") **Frost**	**Good**	38 kt	38 kt
Compacted snow OAT at or below -15 °C	**Good to Medium**	29 kt	29 kt
Dry snow More than 3 mm (1/8"), up to 100 mm (4") **Wet snow** More than 3 mm (1/8"), up to 30 mm (6/5") **Compacted snow** OAT above -15 °C **Dry snow over compacted snow** **Wet snow over compacted snow** **Slippery when wet**	**Medium**	25 kt	25 kt

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Runway Surface Conditions		Maximum Crosswind for Takeoff (Gust included)	Maximum Crosswind for Landing (Gust included)
Runway State or / and Runway Contaminant	**ESF(1) or PIREP(2)**		
Water More than 3 mm (1/8"), up to 13 mm (1/2") **Slush** More than 3 mm (1/8"), up to 13 mm (1/2")	**Medium to Poor**	20 kt	20 kt
Ice (cold & dry)	**Poor**	15 kt	15 kt

(1) *ESF: Estimated Surface Friction*

(2) *PIREP: Pilot Report of Braking Action*

Note: The maximum crosswind values given in the above table are recommended values based on computations.

Ident.: LIM-AG-OPS-ARPT_WIND-00014451.0001001 / 22 MAY 12
Applicable to: ALL

TAKEOFF LIMITATIONS ON CONTAMINATED RUNWAYS

Takeoff is not recommended on the following runway conditions:

- Wet ice
- Water on top of Compacted Snow
- Dry Snow or Wet Snow over Ice

COCKPIT WINDOW OPEN MAXIMUM SPEED

Ident.: LIM-AG-SPD-00001904.0001001 / 17 MAR 17
Applicable to: ALL

Maximum speed.....200 kt

MAXIMUM FLAPS/SLATS SPEEDS

Ident.: LIM-AG-SPD-00020087.0013001 / 04 SEP 18
1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Flaps Lever Position	Configuration on Slat/Flap Display	Max Speed	Flight Phase
0		VMO / MMO	CRUISE
1	1	243 kt	HOLDING
	1 + F	225 kt	TAKEOFF
2	2	215 kt	TAKEOFF/APPROACH
3	3	195 kt	TAKEOFF/APPROACH/LANDING
FULL	FULL	186 kt	LANDING

MAXIMUM FLAPS/SLATS SPEEDS

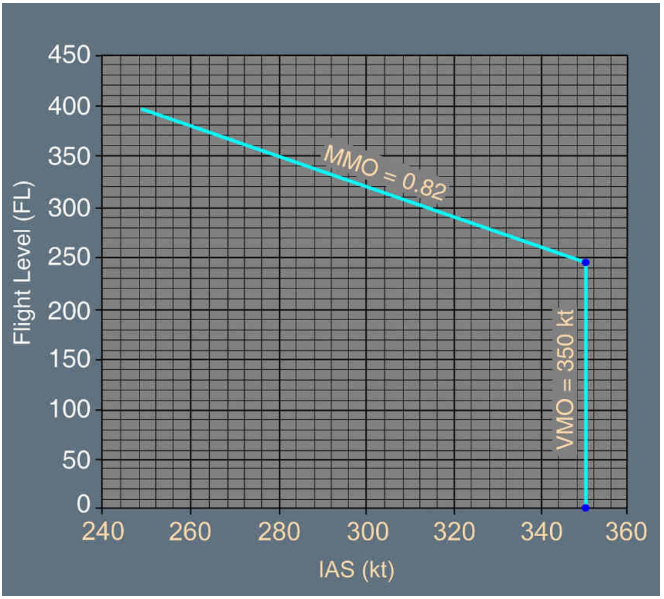
Ident.: LIM-AG-SPD-00020087.0001001 / 17 MAR 17
2 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Flaps Lever Position	Configuration on Slat/Flap Display	Max Speed	Flight Phase
0		VMO/MMO	CRUISE
1	1	230 kt	HOLDING
	1 + F	215 kt	TAKEOFF
2	2	200 kt	TAKEOFF/APPROACH
3	3	185 kt	TAKEOFF/APPROACH/LANDING
FULL	FULL	177 kt	LANDING

MAXIMUM OPERATING SPEED VMO/MMO

Ident.: LIM-AG-SPD-00019991.0002001 / 17 MAR 17
Applicable to: ALL

VMO.....350 kt
MMO.....M 0.82



MAXIMUM SPEEDS WITH THE LANDING GEAR EXTENDED

Ident.: LIM-AG-SPD-00001901.0001001 / 17 MAR 17
Applicable to: ALL

Maximum speed with the landing gear extended (VLE).....280 kt /M 0.67
Maximum speed at which the landing gear may be extended (VLO extension) ..... 250 kt /M 0.60
Maximum speed at which the landing gear may be retracted (VLO retraction) ..... 220 kt /M 0.54

MAXIMUM TIRE SPEED

Ident.: LIM-AG-SPD-00001902.0001001 / 17 MAR 17
Applicable to: ALL

Maximum ground speed..... 195 kt

MINIMUM CONTROL SPEEDS

Ident.: LIM-AG-SPD-00020161.0039001 / 09 JAN 18
3 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

MINIMUM CONTROL SPEED FOR LANDING (VMCL)

VMCL..... 115 kt

MINIMUM CONTROL SPEEDS IN THE AIR (VMCA) AND ON THE GROUND (VMCG)

Altitude (ft)	VMCA (KT IAS)	VMCG (KT IAS)		
		CONF 1 + F	CONF 2	CONF 3
-2 000	111	112	112	113
0	111	112	112	112
2 000	108	110	110	110
4 000	105	107	107	107
6 000	101	103	103	104
8 000	98	100	100	101
9 200	96	99	99	99
10 000	95	98	98	98
12 000	92	96	96	96
14 100	89	93	93	94
15 100	87	91	91	92

MINIMUM CONTROL SPEEDS

Ident.: LIM-AG-SPD-00020161.0015001 / 17 MAR 17

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

MINIMUM CONTROL SPEED FOR LANDING (VMCL)

VMCL..... 113 kt

MINIMUM CONTROL SPEEDS IN THE AIR (VMCA) AND ON THE GROUND (VMCG)

Altitude (ft)	VMCA (kt IAS)	VMCG (kt IAS)		
		CONF 1 + F	CONF 2	CONF 3
-2 000	112	112	110	109
0	110	111	109	109
2 000	108	109	107	107
4 000	108	109	107	107
6 000	107	108	106	105
8 000	104	105	103	103
10 000	100	101	99	99
12 000	97	99	97	96
14 100	94	95	93	93

When the Thrust Bump ◁ is used, consider the following VMCA / VMCG:

Altitude (ft)	VMCA (kt IAS)	VMCG (kt IAS)		
		CONF 1 + F	CONF 2	CONF 3
-2 000	111	112	110	109
0	110	111	109	109
2 000	108	109	107	107
4 000	108	109	107	107
6 000	108	109	107	106

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Altitude (ft)	VMCA (kt IAS)	VMCG (kt IAS)		
		CONF 1 + F	CONF 2	CONF 3
8 000	105	106	104	104
10 000	102	103	101	101
12 000	99	100	98	97
14 100	95	97	95	95

MINIMUM CONTROL SPEEDS

Ident.: LIM-AG-SPD-00020161.0021001 / 17 MAR 17

4 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

MINIMUM CONTROL SPEED FOR LANDING (VMCL)

VMCL..... 109 kt

MINIMUM CONTROL SPEEDS IN THE AIR (VMCA) AND ON THE GROUND (VMCG)

Altitude (ft)	VMCA (kt IAS)	VMCG (kt IAS)		
		CONF 1 + F	CONF 2	CONF 3
-2 000	114	113	111	111
0	112	112	110	109
2 000	111	111	109	108
4 000	108	108	106	106
6 000	105	105	103	103
8 000	103	103	101	101
10 000	100	101	99	98
12 000	97	98	96	95
14 100	94	95	93	93

MINIMUM CONTROL SPEEDS

Ident.: LIM-AG-SPD-00020161.0026001 / 04 SEP 17

5 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

MINIMUM CONTROL SPEED FOR LANDING (VMCL)

VMCL..... 116 kt

MINIMUM CONTROL SPEEDS IN THE AIR (VMCA) AND ON THE GROUND (VMCG)

Altitude (ft)	VMCA (kt IAS)	VMCG (kt IAS)		
		CONF 1 + F	CONF 2	CONF 3
-2 000	114	114	114	114
0	114	113	113	113
2 000	113	111	111	111

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Altitude (ft)	VMCA (kt IAS)	VMCG (kt IAS)		
		CONF 1 + F	CONF 2	CONF 3
4 000	112	110	110	110
6 000	111	108	108	108
8 000	109	104	104	104
10 000	106	99	99	99
12 000	103	95	95	95
14 100	100	89	89	89

TAXI SPEED

Ident.: LIM-AG-SPD-00019838.0001001 / 17 MAR 17

6 **Applicable to: MSN 01767-06336**

- **When the taxi weight is higher than 76 000 kg (167 550 lb):**

CAUTION	Do not exceed a taxi speed of 20 kt during a turn.

WIPERS MAXIMUM OPERATING SPEED

Ident.: LIM-AG-SPD-00001903.0001001 / 17 MAR 17

Applicable to: ALL

Maximum speed.....230 kt

L2 *Note:* *This limitation is applicable when the wipers are sweeping. It is not applicable if the wipers are not sweeping for any reasons.*

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WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00001893.0953001 / 04 JUL 18

[1] **Applicable to: MSN 08218-08345, 08397-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Maximum taxi weight 1.....79 400 kg (175 047 lb)
Maximum takeoff weight 1 (brake release)*.....79 000 kg (174 165 lb)
Maximum taxi weight 2.....74 400 kg (164 023 lb)
Maximum takeoff weight 2 (brake release)*.....74 000 kg (163 142 lb)
Maximum taxi weight 3.....70 400 kg (155 205 lb)
Maximum takeoff weight 3 (brake release)*.....70 000 kg (154 323 lb)
Maximum landing weight.....67 400 kg (148 591 lb)
Maximum zero fuel weight.....64 300 kg (141 757 lb)
Minimum weight.....40 300 kg (88 847 lb)

* Multiple MTOW are certified. A placard fitted on the aircraft must reflect the current MTOW.

In exceptional cases (in flight turn back or diversion), an immediate landing at weight above maximum landing weight is permitted, provided the pilot follows the overweight landing procedure.

WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00001893.0486001 / 18 MAR 11

Applicable to: MSN 03138

Maximum taxi weight.....75 900 kg (167 330 lb)
Maximum takeoff weight (brake release).....75 500 kg (166 448 lb)
Maximum landing weight.....64 500 kg (142 198 lb)
Maximum zero fuel weight.....61 000 kg (134 481 lb)
Minimum weight.....37 230 kg (82 079 lb)

In exceptional cases (in flight turn back or diversion), an immediate landing at weight above maximum landing weight is permitted, provided the pilot follows the overweight landing procedure.

WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00001893.0295001 / 18 MAR 11

Applicable to: MSN 02712

Maximum taxi weight.....77 400 kg (170 637 lb)
Maximum takeoff weight (brake release).....77 000 kg (169 755 lb)
Maximum landing weight.....64 500 kg (142 198 lb)
Maximum zero fuel weight.....61 000 kg (134 481 lb)
Minimum weight.....37 230 kg (82 079 lb)

In exceptional cases (in flight turn back or diversion), an immediate landing at weight above maximum landing weight is permitted, provided the pilot follows the overweight landing procedure.

WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00001893.0268001 / 18 MAR 11
Applicable to: MSN 02138, 03308, 04314, 04393-04397, 04752-04954, 05027-05076, 05090-05092, 05437-05460, 05476-05577, 05712-06336

Maximum taxi weight.....77 400 kg (170 637 lb)
Maximum takeoff weight (brake release).....77 000 kg (169 755 lb)
Maximum landing weight.....66 000 kg (145 505 lb)
Maximum zero fuel weight.....62 500 kg (137 788 lb)
Minimum weight.....37 230 kg (82 079 lb)
In exceptional cases (in flight turn back or diversion), an immediate landing at weight above maximum landing weight is permitted, provided the pilot follows the overweight landing procedure.

WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00001893.0014001 / 16 NOV 11
Applicable to: MSN 02388

Maximum taxi weight.....71 900 kg (158 512 lb)
Maximum takeoff weight (brake release).....71 500 kg (157 630 lb)
Maximum landing weight.....64 500 kg (142 198 lb)
Maximum zero fuel weight.....61 000 kg (134 481 lb)
Minimum weight.....37 230 kg (82 079 lb)
In exceptional cases (in flight turn back or diversion), an immediate landing at weight above maximum landing weight is permitted, provided the pilot follows the overweight landing procedure.

WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00001893.0010001 / 18 MAR 11
Applicable to: MSN 01920-02097, 02121, 02204, 02405-02443, 02482-02670, 02804-02914

Maximum taxi weight.....73 900 kg (162 921 lb)
Maximum takeoff weight (brake release).....73 500 kg (162 039 lb)
Maximum landing weight.....66 000 kg (145 505 lb)
Maximum zero fuel weight.....62 500 kg (137 788 lb)
Minimum weight.....37 230 kg (82 079 lb)
In exceptional cases (in flight turn back or diversion), an immediate landing at weight above maximum landing weight is permitted, provided the pilot follows the overweight landing procedure.

WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00001893.0107001 / 18 MAR 11
Applicable to: MSN 01767, 02108, 02135, 02139-02195, 02275-02359, 02737, 03071, 03264, 03330-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04965, 05080, 05094, 05155, 05190, 05230-05411, 05473, 05641-05683

Maximum taxi weight.....73 900 kg (162 921 lb)
Maximum takeoff weight (brake release).....73 500 kg (162 039 lb)
Maximum landing weight.....64 500 kg (142 198 lb)
Maximum zero fuel weight.....61 000 kg (134 481 lb)
Minimum weight.....37 230 kg (82 079 lb)
In exceptional cases (in flight turn back or diversion), an immediate landing at weight above maximum landing weight is permitted, provided the pilot follows the overweight landing procedure.

WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00001893.0848001 / 20 JUL 15
Applicable to: MSN 06720-08206

Maximum taxi weight.....73 900 kg (162 921 lb)
Maximum takeoff weight (brake release).....73 500 kg (162 039 lb)
Maximum landing weight.....67 400 kg (148 591 lb)
Maximum zero fuel weight.....64 300 kg (141 757 lb)
Minimum weight.....40 300 kg (88 847 lb)
In exceptional cases (in flight turn back or diversion), an immediate landing at weight above maximum landing weight is permitted, provided the pilot follows the overweight landing procedure.

WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00001893.0956001 / 26 JUL 18
Applicable to: MSN 08387

Maximum taxi weight 1.....74 400 kg (164 023 lb)
Maximum takeoff weight 1 (brake release)*.....74 000 kg (163 142 lb)
Maximum taxi weight 2.....70 400 kg (155 205 lb)
Maximum takeoff weight 2 (brake release)*.....70 000 kg (154 323 lb)
Maximum landing weight.....67 400 kg (148 591 lb)
Maximum zero fuel weight.....64 300 kg (141 757 lb)
Minimum weight.....40 300 kg (88 847 lb)
* Dual MTOW is certified. A placard fitted on the aircraft must reflect the current MTOW.
In exceptional cases (in flight turn back or diversion), an immediate landing at weight above maximum landing weight is permitted, provided the pilot follows the overweight landing procedure.

WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00001893.0951001 / 26 FEB 18

[2] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Maximum taxi weight.....97 400 kg (214 730 lb)
Maximum takeoff weight (brake release).....97 000 kg (213 848 lb)
Maximum landing weight.....79 200 kg (174 606 lb)
Maximum zero fuel weight.....75 600 kg (166 669 lb)
Minimum weight.....46 300 kg (102 075 lb)

In exceptional cases (in flight turn back or diversion), an immediate landing at weight above maximum landing weight is permitted, provided the pilot follows the overweight landing procedure.

WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00001893.0730001 / 16 NOV 11

Applicable to: MSN 02457, 05158

Maximum taxi weight 1.....77 400 kg (170 637 lb)
Maximum takeoff weight 1 (brake release)*.....77 000 kg (169 755 lb)
Maximum taxi weight 2.....73 900 kg (162 921 lb)
Maximum takeoff weight 2 (brake release)*.....73 500 kg (162 039 lb)
Maximum landing weight.....66 000 kg (145 505 lb)
Maximum zero fuel weight.....62 500 kg (137 788 lb)
Minimum weight.....37 230 kg (82 079 lb)

* Dual MTOW are certified. A placard fitted on the aircraft must reflect the current MTOW.

In exceptional cases (in flight turn back or diversion), an immediate landing at weight above maximum landing weight is permitted, provided the pilot follows the overweight landing procedure.

WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00001893.0128001 / 16 NOV 11

Applicable to: MSN 04399, 04438

Maximum taxi weight 1.....77 400 kg (170 638 lb)
Maximum takeoff weight 1 (brake release)*.....77 000 kg (169 756 lb)
Maximum taxi weight 2.....73 900 kg (162 922 lb)
Maximum takeoff weight 2 (brake release)*.....73 500 kg (162 040 lb)
Maximum landing weight.....64 500 kg (142 198 lb)
Maximum zero fuel weight.....61 000 kg (134 482 lb)
Minimum weight.....37 230 kg (82 078 lb)

* Dual MTOW is certified. A placard fitted on the aircraft must reflect the current MTOW.

In exceptional cases (in flight turn back or diversion), an immediate landing at weight above maximum landing weight is permitted, provided the pilot follows the overweight landing procedure.

WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00001893.0291001 / 16 NOV 11

Applicable to: MSN 04294, 04433, 04510

Maximum taxi weight 1 ..... 77 400 kg (170 637 lb)
Maximum takeoff weight 1 (brake release)* ..... 77 000 kg (169 755 lb)
Maximum taxi weight 2 ..... 75 900 kg (167 330 lb)
Maximum takeoff weight 2 (brake release)* ..... 75 500 kg (166 448 lb)
Maximum taxi weight 3 ..... 73 900 kg (162 921 lb)
Maximum takeoff weight 3 (brake release)* ..... 73 500 kg (162 039 lb)
Maximum landing weight ..... 64 500 kg (142 198 lb)
Maximum zero fuel weight ..... 61 000 kg (134 481 lb)
Minimum weight ..... 37 230 kg (82 079 lb)

* Multiple MTOW are certified. A placard fitted on the aircraft must reflect the current MTOW.

In exceptional cases (in flight turn back or diversion), an immediate landing at weight above maximum landing weight is permitted, provided the pilot follows the overweight landing procedure.

WEIGHT LIMITATIONS

Ident.: LIM-AG-WGHT-00001893.0266001 / 16 NOV 11

3 **Applicable to: MSN 04491, 04532, 04645, 05120, 05218**

Maximum taxi weight 1 ..... 77 400 kg (170 637 lb)
Maximum takeoff weight 1 (brake release)* ..... 77 000 kg (169 755 lb)
Maximum taxi weight 2 ..... 75 900 kg (167 330 lb)
Maximum takeoff weight 2 (brake release)* ..... 75 500 kg (166 448 lb)
Maximum taxi weight 3 ..... 73 900 kg (162 921 lb)
Maximum takeoff weight 3 (brake release)* ..... 73 500 kg (162 039 lb)
Maximum taxi weight 4 ..... 71 900 kg (158 512 lb)
Maximum takeoff weight 4 (brake release)* ..... 71 500 kg (157 630 lb)
Maximum landing weight ..... 64 500 kg (142 198 lb)
Maximum zero fuel weight ..... 61 000 kg (134 481 lb)
Minimum weight ..... 37 230 kg (82 079 lb)

* Dual MTOW are certified. A placard fitted on the aircraft must reflect the current MTOW.

In exceptional cases (in flight turn back or diversion), an immediate landing at weight above maximum landing weight is permitted, provided the pilot follows the overweight landing procedure.

CENTER OF GRAVITY LIMITS WITH UP TO 3 ACTS INSTALLATION

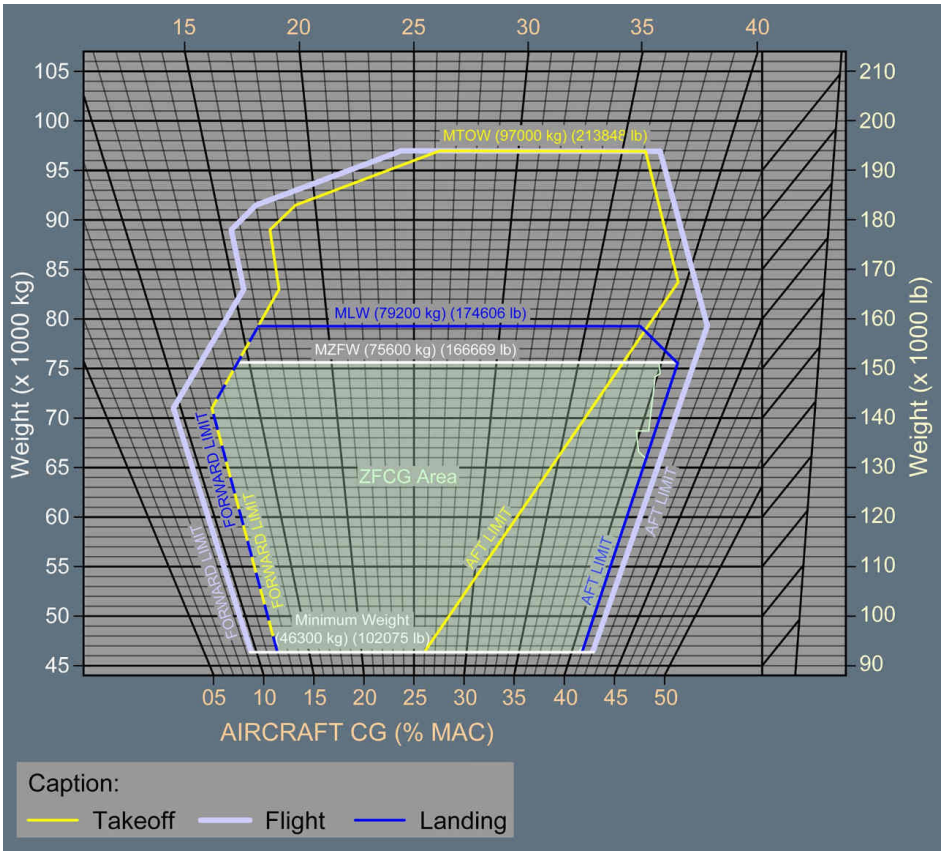
Ident.: LIM-AG-WGHT-00022520.0005001 / 04 SEP 18

4 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The CG envelope provides the CG limits for the highest certified MTOW, MLW and MZFW. The CG limits of the aircraft must be restricted according to the aircraft MTOW, MLW and MZFW given in the Weight Limitations chapter.
The ZFCG at dispatch must be within the ZFCG area.

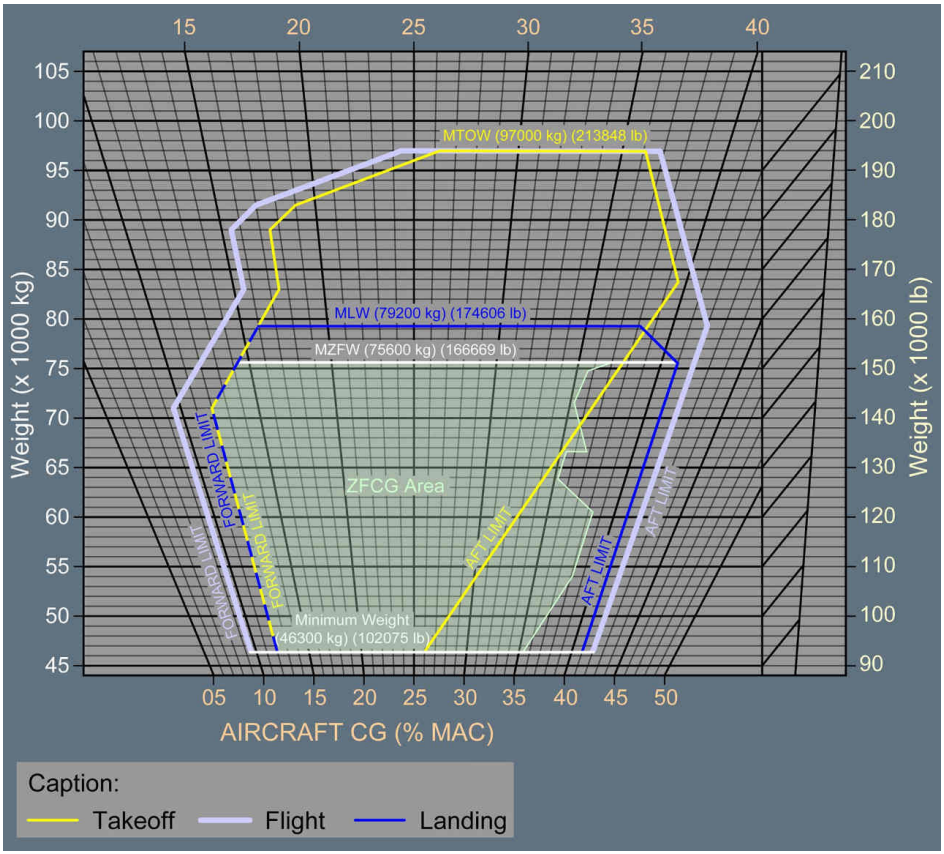
1. The following CG envelope is valid for:
   - Aircraft with only one ACT (AFT1 ACT) installed and refueled.
   - Aircraft with two or three ACTs installed, but only one ACT (AFT1 ACT) refueled.

CG Envelope - One ACT refueled



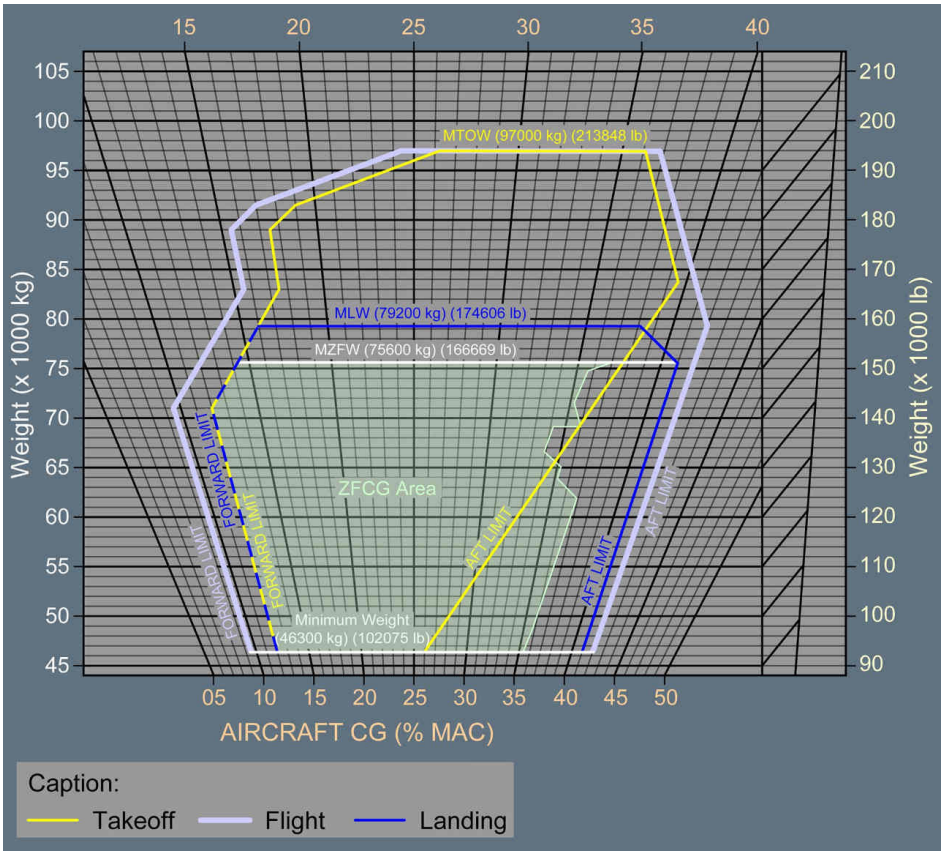
2. The following CG envelope is valid for:
   - Aircraft with only two ACTs (AFT1 ACT and AFT2 ACT) installed and two ACTs refueled.
   - Aircraft with three ACTs installed, but only two ACTs (AFT1 ACT and AFT2 ACT) refueled.

CG Envelope - Two ACTs refueled



3. The following CG envelope is valid for:
   - Aircraft with three ACTs (FWD ACT, AFT1 ACT and AFT2 ACT) installed and three ACTs refueled.

CG Envelope - Three ACTs refueled



- CG limits are given in percentage of the reference chord length aft of the leading edge.
- The reference chord length is 4.193 m (13.76 ft). It is 20.58 m (67.51 ft) aft of the aircraft nose.

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LIMITATIONS

AIR BLEED/COND/PRESS/VENT

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General....A
APU Bleed Use with HP Air Start Unit....B
Avionics Ventilation....C
Cabin Pressure....D
Packs Use with LP Air Conditioning Unit....E

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GENERAL

Ident.: LIM-AIR-00020807.0001001 / 17 MAR 17
Applicable to: ALL

With passengers on board, it is not recommended to exceed 20 min without air conditioning supply. The lack of fresh air supply will significantly reduce the cabin's air quality.

APU BLEED USE WITH HP AIR START UNIT

Ident.: LIM-AIR-00020084.0001001 / 17 MAR 17
Applicable to: ALL

The flight crew must not use bleed air from the APU BLEED and from the HP Air Start Unit at the same time, to prevent any adverse effect on the Bleed Air System.

AVIONICS VENTILATION

Ident.: LIM-AIR-00020086.0001001 / 17 MAR 17
Applicable to: ALL

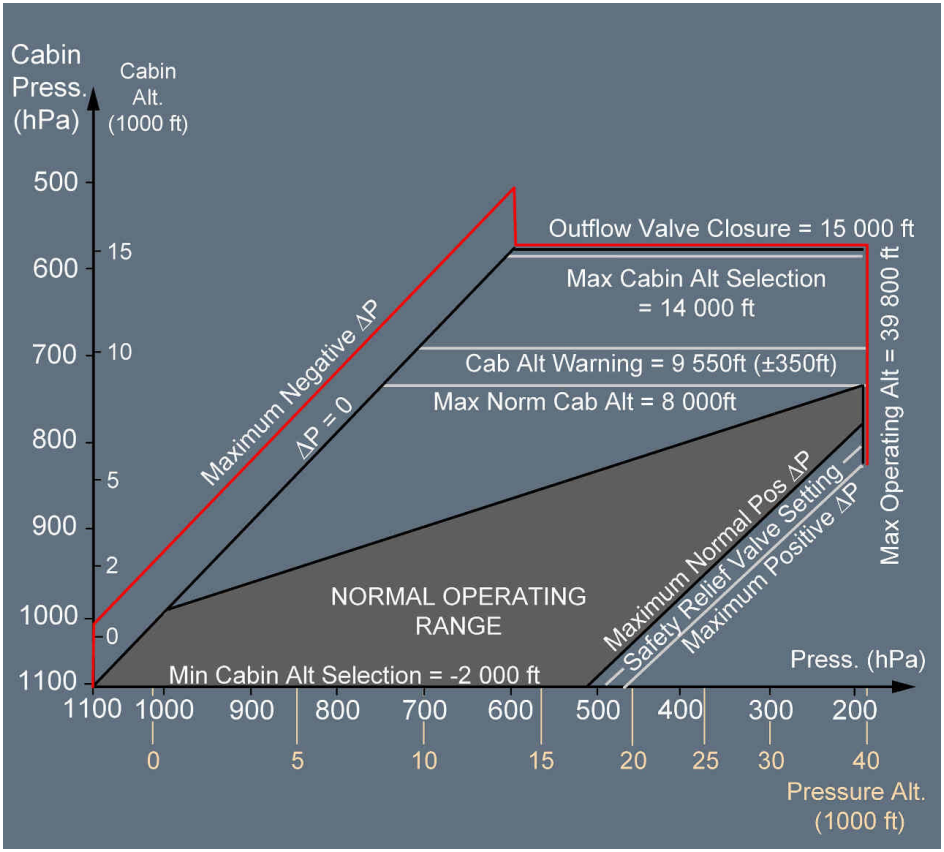
During ground operations and depending on the Outside Air Temperature (OAT), the flight crew must limit the time that the aircraft electric power supply is used, in normal avionics ventilation system configuration, as follows:

OAT ≤ 49 °C	No limitation
49 °C < OAT ≤ 55 °C	2 h
55 °C < OAT ≤ 60 °C	1 h
60 °C < OAT ≤ 64 °C	0.5 h

CABIN PRESSURE

Ident.: LIM-AIR-00020085.0003001 / 17 MAR 17
Applicable to: ALL

Maximum positive differential pressure..... 9.0 PSI
Maximum negative differential pressure.....-1.0 PSI
Safety relief valve setting..... 8.6 PSI



Note: *Maximum differential pressure (Δp) and safety valve setting tolerance = ± 7 hPa (0.1 PSI).*

PACKS USE WITH LP AIR CONDITIONING UNIT

Ident.: LIM-AIR-00020083.0001001 / 17 MAR 17
Applicable to: ALL

The flight crew must not use conditioned air from the packs and from the LP Air Conditioning Unit at the same time, to prevent any adverse effect on the Air Conditioning system.

LIMITATIONS

AUTO FLIGHT SYSTEM

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LIM-AFS-10 General

Autopilot Function....A
Flight Management Function....B
Use of NAV Mode....C
Use of FLS ◁✈ ....D
Non-Precision Approaches with Engine-Out....E
Navigation Database Validation....F

LIM-AFS-20 Automatic Approach, Landing and Rollout

ILS Category II....A
Special Authorization CAT II (SA CAT II)....B
Other than Standard CAT II (OTS CAT II)....C
ILS Category III Fail Passive (Single)....D
ILS Category III Fail Operational (Dual)....E
Engine-Out....F
Maximum Wind Conditions for ILS/MLS ◁✈ CAT II or CAT III and for GLS ◁✈ CAT I....G
Automatic Landing....H
Automatic Landing in Johannesburg....I
Autoland Databases with Honeywell ADIRU....J
Autoland Databases with Northrop Grumman ADIRU....K

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Localization Title	Toc Index	ID	Reason
LIM-AFS-10 Autopilot Function - PAR Approach	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
LIM-AFS-10 Autopilot Function - Other Phases	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
LIM-AFS-10 Autopilot Function - Other Phases	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
LIM-AFS-10 Autopilot Function - PAR Approach	A	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
LIM-AFS-10 Autopilot Function - Other Phases	A	5	Effectivity update: The information now also applies to MSN 09063.
LIM-AFS-20 ILS Category III Fail Operational (Dual)	E	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-AFS-20 ILS Category III Fail Operational (Dual)	E	2	Effectivity update: The information no longer applies to MSN 05449.
LIM-AFS-20 Engine-Out	F	3	Effectivity update: The information no longer applies to MSN 05449.
LIM-AFS-20 Engine-Out	F	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-AFS-20 Maximum Wind Conditions for ILS/MLS ◁ CAT II or CAT III and for GLS ◁ CAT I	G	5	Effectivity update: The information now also applies to MSN 09063.
LIM-AFS-20 Maximum Wind Conditions for ILS/MLS ◁ CAT II or CAT III and for GLS ◁ CAT I	G	6	Effectivity update: The information no longer applies to MSN 05449.
LIM-AFS-20 Maximum Wind Conditions for ILS/MLS ◁ CAT II or CAT III and for GLS ◁ CAT I	G	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
LIM-AFS-20 Automatic Landing - Glide Slope	H	8	Effectivity update: The information no longer applies to MSN 05449.
LIM-AFS-20 Automatic Landing - Pressure Altitude Limit	H	9	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
LIM-AFS-20 Automatic Landing - Runway	H	10	Effectivity update: The information no longer applies to MSN 05449.
LIM-AFS-20 Automatic Landing - Glide Slope	H	11	Effectivity update: The information no longer applies to MSN 05449.
LIM-AFS-20 Automatic Landing - Airport Elevation	H	12	Effectivity update: The information no longer applies to MSN 05449.
LIM-AFS-20 Automatic Landing - Pressure Altitude Limit	H	13	Effectivity update: The information no longer applies to MSN 05449.
LIM-AFS-20 Automatic Landing - Runway	H	14	Effectivity update: The information no longer applies to MSN 05449.
LIM-AFS-20 Automatic Landing - Glide Slope	H	15	Effectivity update: The information no longer applies to MSN 05449.
LIM-AFS-20 Automatic Landing - Airport Elevation	H	16	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
LIM-AFS-20 Automatic Landing - Pressure Altitude Limit	H	17	Effectivity update: The information no longer applies to MSN 05449.
LIM-AFS-20 Automatic Landing - Runway	H	18	Effectivity update: The information no longer applies to MSN 05449.
LIM-AFS-20 Automatic Landing - Glide Slope	H	19	Effectivity update: The information no longer applies to MSN 05449.
LIM-AFS-20 Automatic Landing - Airport Elevation	H	20	Effectivity update: The information no longer applies to MSN 05449.
LIM-AFS-20 Automatic Landing - Pressure Altitude Limit	H	21	Effectivity update: The information no longer applies to MSN 05449.
LIM-AFS-20 Automatic Landing - Runway	H	22	Effectivity update: The information now also applies to MSN 09063.
LIM-AFS-20 Automatic Landing - Glide Slope	H	23	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-AFS-20 Automatic Landing - Airport Elevation	H	24	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
LIM-AFS-20 Automatic Landing - Weight	H	25	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
LIM-AFS-20 Automatic Landing - Pressure Altitude Limit	H	26	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-AFS-20 Automatic Landing - Rollout	H	27	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.

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Localization Title	Toc Index	ID	Reason
LIM-AFS-20 Automatic Landing - Glide Slope	H	28	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-AFS-20 Automatic Landing - Pressure Altitude Limit	H	29	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-AFS-20 Automatic Landing - Runway	H	30	Effectivity update: The information now also applies to MSN 09063.
LIM-AFS-20 Automatic Landing - Glide Slope	H	31	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-AFS-20 Automatic Landing - Airport Elevation	H	32	Effectivity update: The information now also applies to MSN 09063.
LIM-AFS-20 Automatic Landing - Weight	H	33	Effectivity update: The information now also applies to MSN 09063.
LIM-AFS-20 Automatic Landing - Pressure Altitude Limit	H	34	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-AFS-20 Automatic Landing - Runway	H	35	Effectivity update: The information now also applies to MSN 09063.
LIM-AFS-20 Autoland Databases with Honeywell ADIRU	J	36	Effectivity update: The information no longer applies to MSN 05449.

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AUTOPILOT FUNCTION

Applicable to: MSN 01767-02097, 02121, 02138, 02204, 02388, 02443-02457, 02584-02670, 02804-02914, 03308, 03357-04312, 04328-04384, 04399-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: LIM-AFS-10-10-00019567.0001001 / 17 MAR 17

The autopilot can be used with the following minimum values:

Ident.: LIM-AFS-10-10-00019753.0001001 / 23 JUL 18

At takeoff	100 ft AGL and at least 5 s after liftoff

Ident.: LIM-AFS-10-10-00019568.0001001 / 23 JUL 18

In approach with F-G/S mode	200 ft AGL
In approach with FINAL APP, V/S or FPA mode	250 ft AGL

Ident.: LIM-AFS-10-10-00019746.0005001 / 09 JUN 17

In circling approach	500 ft AGL for aircraft category C (600 ft AGL for aircraft category D).

Ident.: LIM-AFS-10-10-00019747.0001001 / 17 MAR 17

ILS/MLS approach when CAT1 is displayed on the FMA	160 ft AGL
GLS approach when AUTOLAND is not displayed on the FMA	160 ft AGL
ILS/MLS approach when CAT2 or CAT3 (single or dual) is displayed on the FMA	0 ft AGL if autoland

Ident.: LIM-AFS-10-10-00019748.0001001 / 17 MAR 17

[1] PAR approach (Precision Approach Radar) *Note:* - *The use of the AP and/or FD is authorized in PAR approach, with HDG V/S or TRK FPA.* - *PAR approaches may be subject to operational approval.*	250 ft AGL

Ident.: LIM-AFS-10-10-00019750.0001001 / 17 MAR 17

After a manual go-around	100 ft AGL

Ident.: LIM-AFS-10-10-00019751.0001001 / 06 JUL 17

[2] In all other phases	500 ft AGL
The AP or FD in OP DES or DES mode can be used in approach. However, its use is only permitted if the FCU selected altitude is set to, or above, the higher of the two: MDA/MDH or 500 ft AGL.	

AUTOPILOT FUNCTION

Applicable to: MSN 02108, 02135, 02139-02195, 02275-02359, 02405, 02482, 02712-02737, 03071-03264, 03330, 04314, 04393-04397

Ident.: LIM-AFS-10-10-00019567.0001001 / 17 MAR 17

The autopilot can be used with the following minimum values:

Ident.: LIM-AFS-10-10-00019753.0001001 / 23 JUL 18

At takeoff	100 ft AGL and at least 5 s after liftoff

Ident.: LIM-AFS-10-10-00019568.0001001 / 23 JUL 18

In approach with F-G/S mode	200 ft AGL
In approach with FINAL APP, V/S or FPA mode	250 ft AGL

Ident.: LIM-AFS-10-10-00019746.0005001 / 09 JUN 17

In circling approach	500 ft AGL for aircraft category C (600 ft AGL for aircraft category D).

Ident.: LIM-AFS-10-10-00019747.0001001 / 17 MAR 17

ILS/MLS approach when CAT1 is displayed on the FMA	160 ft AGL
GLS approach when AUTOLAND is not displayed on the FMA	160 ft AGL
ILS/MLS approach when CAT2 or CAT3 (single or dual) is displayed on the FMA	0 ft AGL if autoland

Ident.: LIM-AFS-10-10-00019750.0001001 / 17 MAR 17

After a manual go-around	100 ft AGL

Ident.: LIM-AFS-10-10-00019751.0001001 / 06 JUL 17

3 In all other phases	500 ft AGL
The AP or FD in OP DES or DES mode can be used in approach. However, its use is only permitted if the FCU selected altitude is set to, or above, the higher of the two: MDA/MDH or 500 ft AGL.	

AUTOPILOT FUNCTION

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: LIM-AFS-10-10-00019567.0001001 / 17 MAR 17

The autopilot can be used with the following minimum values:

Ident.: LIM-AFS-10-10-00019753.0001001 / 23 JUL 18

At takeoff	100 ft AGL and at least 5 s after liftoff

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Ident.: LIM-AFS-10-10-00019568.0001001 / 23 JUL 18

In approach with F-G/S ◁ mode	200 ft AGL
In approach with FINAL APP, V/S or FPA mode	250 ft AGL

Ident.: LIM-AFS-10-10-00019746.0005001 / 09 JUN 17

In circling approach	500 ft AGL for aircraft category C (600 ft AGL for aircraft category D).

Ident.: LIM-AFS-10-10-00019747.0001001 / 17 MAR 17

ILS/MLS ◁ approach when CAT1 is displayed on the FMA	160 ft AGL
GLS ◁ approach when AUTOLAND is not displayed on the FMA	160 ft AGL
ILS/MLS ◁ approach when CAT2 or CAT3 (single or dual) is displayed on the FMA	0 ft AGL if autoland

Ident.: LIM-AFS-10-10-00019748.0001001 / 17 MAR 17

4 PAR approach (Precision Approach Radar) *Note:* - *The use of the AP and/or FD is authorized in PAR approach, with HDG V/S or TRK FPA.* - *PAR approaches may be subject to operational approval.*	250 ft AGL

Ident.: LIM-AFS-10-10-00019750.0001001 / 17 MAR 17

After a manual go-around	100 ft AGL

Ident.: LIM-AFS-10-10-00019751.0004001 / 21 NOV 17

5 In all other phases	900 ft AGL
The AP or FD in OP DES or DES mode can be used in approach. However, its use is only permitted if the FCU selected altitude is set to, or above, the higher of the two: MDA/MDH or 900 ft AGL.	

FLIGHT MANAGEMENT FUNCTION

Applicable to: ALL

Ident.: LIM-AFS-10-20-00020069.0001001 / 27 FEB 18

FMGS lateral and vertical navigation is certified for:
- After takeoff, en route, and terminal area operations
- Navigation within RNAV/RNP airspace
- Instrument approach procedures (except ILS, LOC, LOC B/C, LDA, SDF, GLS ◁, MLS ◁ and FLS ◁ final approaches)
- Missed approach procedures.

The FLS ◁ function is certified for:
- RNAV, RNAV (GNSS), GPS, VOR, VOR/DME, NDB, NDB/DME instrument approach procedures, using FMS navigation for lateral and vertical navigation
- LOC, ILS (GS out), or LOC B/C instrument approaches, using FMS navigation for vertical navigation, associated with LOC or LOC B/C for lateral navigation.

Approval of the FMGS is based on the assumption that the navigation database is validated for intended use.
Obstacle clearance and adherence to airspace constraints remains a flight crew responsibility.
Fuel, time predictions/performance information is provided for advisory purposes only.

Ident.: LIM-AFS-10-20-00020070.0002001 / 17 MAR 17

NAVIGATION PERFORMANCE

The navigation accuracy depends on:
- IRS drift, or
- One of the following:
  - Radio navaid availability, or
  - Elapsed time since last computation of radio navaid position.

RNP accuracy with GPS PRIMARY ◁ is:

	With AP ON (1)	With AP OFF and FD ON (1)	With AP OFF and FD OFF
En route	1 NM	1 NM	1.1 NM
In terminal area	0.5 NM	0.51 NM	0.51 NM
In approach	0.3 NM	0.3 NM	0.3 NM with F-LOC ◁ deviation Not authorized without F-LOC ◁ deviation

(1) - *In NAV (all phases), or*
- *In F-LOC ◁ (approach phase)*

Ident.: LIM-AFS-10-20-00020389.0001001 / 04 MAY 18

DEGRADED SITUATION

If GPS PRIMARY LOST ◁ is displayed on the ND and MCDU, the navigation accuracy remains sufficient for RNP operations provided that, the RNP value is checked or entered on the MCDU and HIGH ACCURACY is displayed.

USE OF NAV MODE

Applicable to: ALL

Ident.: LIM-AFS-10-30-00020334.0001001 / 17 MAR 17

AFTER TAKEOFF

NAV mode may be used after takeoff provided that:
- GPS PRIMARY is available, or
- The flight crew checked the FMGS takeoff updating.

Ident.: LIM-AFS-10-30-00020335.0001001 / 17 MAR 17

IN TERMINAL AREA

NAV mode may be used in terminal area provided that:
- GPS PRIMARY is available, or
- the appropriate RNP is checked or entered on the MCDU, and HIGH accuracy is displayed, or
- FMS navigation is crosschecked with navaid raw data.

Ident.: LIM-AFS-10-30-00020336.0001001 / 17 MAR 17

APPROACH BASED ON RADIO NAVAIDS

A navaids approach may be performed in NAV, APP NAV or FINAL APP, with AP or FD engaged, provided that:
- If GPS PRIMARY is available, the reference navaid may be unserviceable, or the airborne radio equipment may be inoperative, or not installed, provided that an operational approval is obtained
- If GPS PRIMARY is not available, the reference navaid and the corresponding airborne radio equipment must be serviceable, tuned and monitored during the approach.

Note: *FLS is the recommended managed lateral and vertical guidance mode for radio navaids approach.*

Ident.: LIM-AFS-10-30-00020337.0001001 / 17 MAR 17

RNAV APPROACH

An RNAV(RNP) approach may be performed, with GPS PRIMARY not available, only if the radio navaid coverage supports the RNP value and HIGH accuracy is displayed on the MCDU with the specified RNP, and an operational approval is obtained.
An RNAV(GNSS) approach may be performed provided that GPS PRIMARY is available.
Refer to Guidance Modes per Approach Types

Note: *FLS is the recommended managed lateral and vertical guidance mode for RNAV approach.*

USE OF FLS

Ident.: LIM-AFS-10-00020808.0001001 / 17 MAR 17
Applicable to: ALL

APPROACH BASED ON RADIO NAVAIDS

A navaids approach may be flown with the FLS provided that:

- F-APP capability is displayed on FMA
  In this case, the reference navaids may be unserviceable, or the airborne radio equipment may be inoperative, or not installed, provided that an operational approval is obtained.
- F-APP + RAW capability is displayed on FMA.
  In this case, the reference navaids and the corresponding airborne radio equipment must be serviceable, tuned and monitored during the approach.

An ILS (G/S out), LOC, or LOC-B/C approach may be flown with the lateral LOC (LOC-B/C) mode and with the F-G/S mode of FLS function provided that:

- F-APP capability is displayed on FMA
  In this case, the reference navaids may be unserviceable, or the airborne radio equipment may be inoperative, or not installed, provided that an operational approval is obtained.
- F-APP + RAW capability is displayed on FMA.
  In this case, the reference navaids and the corresponding airborne radio equipment must be serviceable, tuned and monitored during the approach.

RNAV(GNSS) APPROACH

An RNAV(GNSS) approach with LNAV minimum may be flown with the FLS provided that the F-APP capability is displayed on FMA.
An RNAV(GNSS)approach with LNAV/VNAV minimum must be flown with the FLS provided that the F-APP capability is displayed on FMA.

NON-PRECISION APPROACHES WITH ENGINE-OUT

Ident.: LIM-AFS-10-00006519.0001001 / 09 FEB 11
Applicable to: MSN 02388, 02443, 02914, 03264-03330

If one engine is inoperative, it is not permitted to use the autopilot to perform NPAs in the following modes: FINAL APP, NAV V/S, NAV/FPA.
Only FD use is permitted.

NAVIGATION DATABASE VALIDATION

Applicable to: ALL

Ident.: LIM-AFS-10-40-00021656.0002001 / 08 AUG 17

RNAV(GNSS) APPROACHES AND APPROACHES BASED ON VOR/NDB

To fly an approach in lateral managed mode or lateral and vertical managed mode, the approach stored in the Navigation database must be either:

- Produced by an approved supplier compliant with ED76/DO200A requirements, or
- Validated and approved by the Operator.

Note: *RNAV(GNSS) approaches lateral trajectories are geometrically based on waypoints coordinates. Thus, validating waypoints coordinate ensure no coding error on the approach and correct lateral trajectory. Observed lateral track degree of difference between MCDU F-PLN page display and charts may come from inconsistency between FMS MagVar and charted MagVar, which has no effect on lateral trajectory.*

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ILS CATEGORY II

Ident.: LIM-AFS-20-00020136.0001001 / 18 SEP 18
Applicable to: ALL

Minimum decision height.....100 ft
At least one autopilot must be engaged in APPR mode, and CAT 2 or CAT 3 SINGLE or CAT 3 DUAL must be displayed on the FMA.
For manual landing, AP should be disconnected no later than 80 ft AGL.

SPECIAL AUTHORIZATION CAT II (SA CAT II)

Ident.: LIM-AFS-20-00020138.0001001 / 18 SEP 18
Applicable to: ALL

Minimum decision height.....100 ft
At least one autopilot must be engaged in APPR mode, and CAT 2 or CAT 3 SINGLE or CAT 3 DUAL must be displayed on the FMA.
With HUD ◁, the flight crew must use the HUD to monitor the approach and perform an automatic landing or a manual landing. If the flight crew performs an automatic approach without automatic landing, the autopilot must be disengaged no later than at 80 ft AGL.
Without HUD, the flight crew must perform an automatic landing.

OTHER THAN STANDARD CAT II (OTS CAT II)

Ident.: LIM-AFS-20-00020139.0001001 / 18 SEP 18
Applicable to: ALL

Minimum decision height.....100 ft
At least one autopilot must be engaged in APPR mode, and CAT 2 or CAT 3 SINGLE or CAT 3 DUAL must be displayed on the FMA.
With HUD ◁, the flight crew must use the HUD to monitor the approach and perform an automatic landing or a manual landing. If the flight crew performs an automatic approach without automatic landing, the autopilot must be disengaged no later than at 80 ft AGL.
Without HUD, the flight crew must perform an automatic landing.

ILS CATEGORY III FAIL PASSIVE (SINGLE)

Ident.: LIM-AFS-20-00020140.0001001 / 18 SEP 18
Applicable to: ALL

Minimum decision height.....50 ft
A/THR must be used in selected or managed speed.
At least one autopilot must be engaged in APPR mode, and CAT 3 SINGLE or CAT 3 DUAL must be displayed on the FMA.

ILS CATEGORY III FAIL OPERATIONAL (DUAL)

Ident.: LIM-AFS-20-00020141.0001001 / 17 MAR 17

1 **Applicable to: MSN 06720-09063**

Alert height.....100 ft AGL
A/THR must be used in selected or managed speed.
Both autopilots must be engaged in APPR mode, and CAT 3 DUAL must be displayed on the FMA.

- **CAT III without DH:**
  Minimum Runway Visual Range.....75 m

ILS CATEGORY III FAIL OPERATIONAL (DUAL)

Ident.: LIM-AFS-20-00020141.0008001 / 18 SEP 18

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Alert height..... 100 ft
A/THR must be used in selected or managed speed.
Both autopilots must be engaged in APPR mode, and CAT 3 DUAL must be displayed on the FMA.

- **CAT III with DH:**
  Minimum Decision Height.....20 ft
- **CAT III without DH:**
  Minimum Runway Visual Range.....75 m

ILS CATEGORY III FAIL OPERATIONAL (DUAL)

Ident.: LIM-AFS-20-00020141.0004001 / 18 SEP 18

2 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

Alert height..... 100 ft
A/THR must be used in selected or managed speed.
Both autopilots must be engaged in APPR mode, and CAT 3 DUAL must be displayed on the FMA.

- **CAT III with DH:**
  Minimum Decision Height.....25 ft
- **CAT III without DH:**
  Minimum Runway Visual Range.....75 m

ILS CATEGORY III FAIL OPERATIONAL (DUAL)

Ident.: LIM-AFS-20-00020141.0002001 / 18 SEP 18

Applicable to: MSN 05437-06336

Alert height..... 100 ft
A/THR must be used in selected or managed speed.

Both autopilots must be engaged in APPR mode, and CAT 3 DUAL must be displayed on the FMA.

- **CAT III with DH:**
  Minimum Decision Height..... 22 ft
- **CAT III without DH:**
  Minimum Runway Visual Range.....75 m

ENGINE-OUT

Ident.: LIM-AFS-20-00020142.0001001 / 17 MAR 17

3 **Applicable to: MSN 01767-06336**

CAT II and CAT III fail passive autoland are only approved in configuration FULL, and if engine-out procedures are completed before reaching 1 000 ft in approach.

ENGINE-OUT

Ident.: LIM-AFS-20-00020142.0003001 / 17 MAR 17

4 **Applicable to: MSN 06720-09063**

CAT II and CAT III fail passive autoland are only approved in configuration 3 and FULL, and if engine-out procedures are completed before reaching 1 000 ft in approach.

MAXIMUM WIND CONDITIONS FOR ILS/MLS ⋖ CAT II OR CAT III AND FOR GLS ⋖ CAT I

Ident.: LIM-AFS-20-00020144.0015001 / 07 SEP 17

5 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Headwind : 15 kt
Tailwind : 10 kt
Crosswind : 10 kt

Note: *Wind limitation is based on the surface wind reported by ATC. If the wind displayed on the ND exceeds the above-noted autoland limitations, but the tower reports surface wind within the limitations, then the autopilot can remain engaged. If the tower reports a surface wind that exceeds the limitations, only CAT I automatic approach without autoland can be performed.*

MAXIMUM WIND CONDITIONS FOR ILS/MLS ⋖ CAT II OR CAT III AND FOR GLS ⋖ CAT I

Ident.: LIM-AFS-20-00020144.0001001 / 17 MAR 17

6 **Applicable to: MSN 01767-05411**

Headwind : 30 kt
Tailwind : 10 kt
Crosswind : 20 kt

Note: Wind limitation is based on the surface wind reported by ATC. If the wind displayed on the ND exceeds the above-noted autoland limitations, but the tower reports a surface wind within the limitations, then the autopilot can remain engaged. If the tower reports a surface wind beyond limitations, only CAT I automatic approach without autoland can be performed.

MAXIMUM WIND CONDITIONS FOR ILS/MLS ⩤ CAT II OR CAT III AND FOR GLS ⩤ CAT I

Ident.: LIM-AFS-20-00020144.0010001 / 17 MAR 17

7 **Applicable to: MSN 06720-06952, 07001-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Headwind : 30 kt

Tailwind : 10 kt

Crosswind : 20 kt (15 kt with One Engine Inoperative (OEI) and with Automatic Rollout)

Note: Wind limitation is based on the surface wind reported by ATC. If the wind displayed on the ND exceeds the above-noted autoland limitations, but the tower reports surface wind within the limitations, then the autopilot can remain engaged. If the tower reports a surface wind that exceeds the limitations, only CAT I automatic approach without autoland can be performed.

MAXIMUM WIND CONDITIONS FOR ILS/MLS ⩤ CAT II OR CAT III AND FOR GLS ⩤ CAT I

Ident.: LIM-AFS-20-00020144.0005001 / 17 MAR 17

Applicable to: MSN 05437-06336

Headwind : 30 kt

Tailwind : 10 kt

Crosswind : 20 kt without Automatic Rollout / 15 kt with Automatic Rollout

Note: Wind limitation is based on the surface wind reported by ATC. If the wind displayed on the ND exceeds the above-noted autoland limitations, but the tower reports a surface wind within the limitations, then the autopilot can remain engaged. If the tower reports a surface wind beyond limitations, only CAT I automatic approach without autoland can be performed.

MAXIMUM WIND CONDITIONS FOR ILS/MLS ⩤ CAT II OR CAT III AND FOR GLS ⩤ CAT I

Ident.: LIM-AFS-20-00020144.0009001 / 17 MAR 17

Applicable to: MSN 06967

Headwind : 20 kt

Tailwind : 5 kt

Crosswind : 15 kt

Note: *Wind limitation is based on the surface wind reported by ATC. If the wind displayed on the ND exceeds the above-noted autoland limitations, but the tower reports a surface wind within the limitations, then the autopilot can remain engaged. If the tower reports a surface wind beyond limitations, only CAT I automatic approach without autoland can be performed.*

AUTOMATIC LANDING

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 04294, 04314, 04393-04438, 04510

Ident.: LIM-AFS-20-10-00020149.0001001 / 17 MAR 17

ILS/MLS ◁ CAT II and CAT III autoland and GLS ◁ CAT I autoland are approved in CONF 3 and CONF FULL.

Ident.: LIM-AFS-20-10-00020150.0001001 / 17 MAR 17

Automatic landing is demonstrated:

- With CAT II and CAT III ILS/MLS ◁ beam and CAT I GLS ◁ beam.

Ident.: LIM-AFS-20-10-00020151.0001001 / 17 MAR 17

8 - With a glide slope angle between -2.5 ° and -3.15 °

Ident.: LIM-AFS-20-10-00020152.0001001 / 17 MAR 17

- With an airport elevation at or below 2 500 ft

Ident.: LIM-AFS-20-10-00020155.0001001 / 17 MAR 17

9 Automatic landing is not allowed below -1 000 ft pressure altitude.

Ident.: LIM-AFS-20-10-00020156.0001001 / 03 OCT 17

10 Automatic rollout performance is approved on dry and wet runways, but performance on snow-covered or icy runways was not demonstrated.

During automatic rollout with one engine inoperative or one thrust reverser inoperative, the flight crew can use the remaining thrust reverser, provided that the wind does not exceed the maximum wind conditions for automatic rollout.

Ident.: LIM-AFS-20-10-00020158.0001001 / 17 MAR 17

Automatic landing system performance is demonstrated with CAT II or CAT III ILS/MLS ◁ airport installation. However, automatic landing in CAT I or better weather conditions is possible on CAT I ground installations or on CAT II/III ground installations when ILS/MLS ◁ sensitive areas are not protected, if the following precautions are taken:

- The airline checked that the ILS/MLS ◁ beam quality, and the effect of the terrain profile before the runway have no adverse effect on AP/FD guidance. Particularly, the effect of terrain profile within 300 m before the runway threshold must be evaluated
- The flight crew is aware that LOC or G/S beam fluctuations, independent of the aircraft system, may occur. The PF is prepared to immediately disconnect the autopilot, and to take the appropriate action, should not satisfactory guidance occur
- At least CAT2 capability is displayed on the FMA and the flight crew uses CAT II/III procedures
- Visual references are obtained at an altitude appropriate for the CAT I approach. If not, a go-around must be performed.

Ident.: LIM-AFS-20-10-00021180.0003001 / 25 JAN 18

- With aircraft weight below the maximum landing weight

AUTOMATIC LANDING

Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411

Ident.: LIM-AFS-20-10-00020149.0001001 / 17 MAR 17

ILS/MLS ◁ CAT II and CAT III autoland and GLS ◁ CAT I autoland are approved in CONF 3 and CONF FULL.

Ident.: LIM-AFS-20-10-00020150.0001001 / 17 MAR 17

Automatic landing is demonstrated:

- With CAT II and CAT III ILS/MLS ◁ beam and CAT I GLS ◁ beam.

Ident.: LIM-AFS-20-10-00020151.0001001 / 17 MAR 17

11 - With a glide slope angle between -2.5 ° and -3.15 °

Ident.: LIM-AFS-20-10-00020152.0007001 / 17 MAR 17

12 - With an airport elevation at or below 6 500 ft

Ident.: LIM-AFS-20-10-00020155.0001001 / 17 MAR 17

13 Automatic landing is not allowed below -1 000 ft pressure altitude.

Ident.: LIM-AFS-20-10-00020156.0001001 / 03 OCT 17

14 Automatic rollout performance is approved on dry and wet runways, but performance on snow-covered or icy runways was not demonstrated.

During automatic rollout with one engine inoperative or one thrust reverser inoperative, the flight crew can use the remaining thrust reverser, provided that the wind does not exceed the maximum wind conditions for automatic rollout.

Ident.: LIM-AFS-20-10-00020158.0001001 / 17 MAR 17

Automatic landing system performance is demonstrated with CAT II or CAT III ILS/MLS ◁ airport installation. However, automatic landing in CAT I or better weather conditions is possible on CAT I ground installations or on CAT II/III ground installations when ILS/MLS ◁ sensitive areas are not protected, if the following precautions are taken:

- The airline checked that the ILS/MLS ◁ beam quality, and the effect of the terrain profile before the runway have no adverse effect on AP/FD guidance. Particularly, the effect of terrain profile within 300 m before the runway threshold must be evaluated
- The flight crew is aware that LOC or G/S beam fluctuations, independent of the aircraft system, may occur. The PF is prepared to immediately disconnect the autopilot, and to take the appropriate action, should not satisfactory guidance occur
- At least CAT2 capability is displayed on the FMA and the flight crew uses CAT II/III procedures
- Visual references are obtained at an altitude appropriate for the CAT I approach. If not, a go-around must be performed.

Ident.: LIM-AFS-20-10-00021180.0003001 / 25 JAN 18

- With aircraft weight below the maximum landing weight

AUTOMATIC LANDING

Applicable to: MSN 03750

Ident.: LIM-AFS-20-10-00020149.0001001 / 17 MAR 17

ILS/MLS ◁ CAT II and CAT III autoland and GLS ◁ CAT I autoland are approved in CONF 3 and CONF FULL.

Ident.: LIM-AFS-20-10-00020150.0001001 / 17 MAR 17

Automatic landing is demonstrated:

- With CAT II and CAT III ILS/MLS ◁ beam and CAT I GLS ◁ beam.

Ident.: LIM-AFS-20-10-00020151.0001001 / 17 MAR 17

15 - With a glide slope angle between -2.5 ° and -3.15 °

Ident.: LIM-AFS-20-10-00020152.0003001 / 17 MAR 17

16 - With an airport elevation at or below 9 200 ft

Ident.: LIM-AFS-20-10-00020155.0001001 / 17 MAR 17

17 Automatic landing is not allowed below -1 000 ft pressure altitude.

Ident.: LIM-AFS-20-10-00020156.0001001 / 03 OCT 17

18 Automatic rollout performance is approved on dry and wet runways, but performance on snow-covered or icy runways was not demonstrated.

During automatic rollout with one engine inoperative or one thrust reverser inoperative, the flight crew can use the remaining thrust reverser, provided that the wind does not exceed the maximum wind conditions for automatic rollout.

Ident.: LIM-AFS-20-10-00020158.0001001 / 17 MAR 17

Automatic landing system performance is demonstrated with CAT II or CAT III ILS/MLS ◁ airport installation. However, automatic landing in CAT I or better weather conditions is possible on CAT I ground installations or on CAT II/III ground installations when ILS/MLS ◁ sensitive areas are not protected, if the following precautions are taken:

- The airline checked that the ILS/MLS ◁ beam quality, and the effect of the terrain profile before the runway have no adverse effect on AP/FD guidance. Particularly, the effect of terrain profile within 300 m before the runway threshold must be evaluated
- The flight crew is aware that LOC or G/S beam fluctuations, independent of the aircraft system, may occur. The PF is prepared to immediately disconnect the autopilot, and to take the appropriate action, should not satisfactory guidance occur
- At least CAT2 capability is displayed on the FMA and the flight crew uses CAT II/III procedures
- Visual references are obtained at an altitude appropriate for the CAT I approach. If not, a go-around must be performed.

Ident.: LIM-AFS-20-10-00021180.0003001 / 25 JAN 18

- With aircraft weight below the maximum landing weight

AUTOMATIC LANDING

Applicable to: MSN 05437-06336

Ident.: LIM-AFS-20-10-00020149.0001001 / 17 MAR 17

ILS/MLS ◁ CAT II and CAT III autoland and GLS ◁ CAT I autoland are approved in CONF 3 and CONF FULL.

Ident.: LIM-AFS-20-10-00020150.0001001 / 17 MAR 17

Automatic landing is demonstrated:

- With CAT II and CAT III ILS/MLS ◁ beam and CAT I GLS ◁ beam.

Ident.: LIM-AFS-20-10-00020151.0001001 / 17 MAR 17

19 - With a glide slope angle between -2.5 ° and -3.15 °

Ident.: LIM-AFS-20-10-00020152.0007001 / 17 MAR 17

20 - With an airport elevation at or below 6 500 ft

Ident.: LIM-AFS-20-10-00020155.0001001 / 17 MAR 17

21 Automatic landing is not allowed below -1 000 ft pressure altitude.

Ident.: LIM-AFS-20-10-00020156.0005001 / 03 OCT 17

22 Automatic rollout performance is approved on dry and wet runways, but performance on snow-covered or icy runways was not demonstrated.

During automatic rollout with one engine inoperative or one thrust reverser inoperative, the flight crew can use the remaining thrust reverser, provided that:

- No more than idle thrust is used
- The wind does not exceed the maximum wind conditions for automatic rollout.

Ident.: LIM-AFS-20-10-00020158.0001001 / 17 MAR 17

Automatic landing system performance is demonstrated with CAT II or CAT III ILS/MLS ◁ airport installation. However, automatic landing in CAT I or better weather conditions is possible on CAT I ground installations or on CAT II/III ground installations when ILS/MLS ◁ sensitive areas are not protected, if the following precautions are taken:

- The airline checked that the ILS/MLS ◁ beam quality, and the effect of the terrain profile before the runway have no adverse effect on AP/FD guidance. Particularly, the effect of terrain profile within 300 m before the runway threshold must be evaluated
- The flight crew is aware that LOC or G/S beam fluctuations, independent of the aircraft system, may occur. The PF is prepared to immediately disconnect the autopilot, and to take the appropriate action, should not satisfactory guidance occur
- At least CAT2 capability is displayed on the FMA and the flight crew uses CAT II/III procedures
- Visual references are obtained at an altitude appropriate for the CAT I approach. If not, a go-around must be performed.

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Ident.: LIM-AFS-20-10-00021180.0003001 / 25 JAN 18

- With aircraft weight below the maximum landing weight

AUTOMATIC LANDING

Applicable to: MSN 06720-06952, 07001-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045

Ident.: LIM-AFS-20-10-00020149.0001001 / 17 MAR 17

ILS/MLS ◁ CAT II and CAT III autoland and GLS ◁ CAT I autoland are approved in CONF 3 and CONF FULL.

Ident.: LIM-AFS-20-10-00020150.0001001 / 17 MAR 17

Automatic landing is demonstrated:

- With CAT II and CAT III ILS/MLS ◁ beam and CAT I GLS ◁ beam.

Ident.: LIM-AFS-20-10-00020151.0004001 / 17 MAR 17

23 - With a glide slope angle between -2.5 ° and -3.25 °

Ident.: LIM-AFS-20-10-00020152.0003001 / 17 MAR 17

24 - With an airport elevation at or below 9 200 ft

Ident.: LIM-AFS-20-10-00020153.0001001 / 17 MAR 17

25 - With aircraft weight at or above 44 000 kg (97 004 lb)

Ident.: LIM-AFS-20-10-00020155.0002001 / 17 MAR 17

26 Automatic landing is not allowed below -2 000 ft pressure altitude.

Ident.: LIM-AFS-20-10-00020156.0008001 / 03 OCT 17

27 Automatic rollout performance is approved on dry and wet runways, but performance on snow-covered or icy runways was not demonstrated.

During automatic rollout with one engine inoperative or one thrust reverser inoperative, the flight crew can use the remaining thrust reverser, provided that:

- No more than idle thrust is used
- Headwind component not above 30 kt
- Tailwind component not above 10 kt
- Crosswind component not above 15 kt.

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Continued from the previous page

Ident.: LIM-AFS-20-10-00020158.0001001 / 17 MAR 17

Automatic landing system performance is demonstrated with CAT II or CAT III ILS/MLS ◁ airport installation. However, automatic landing in CAT I or better weather conditions is possible on CAT I ground installations or on CAT II/III ground installations when ILS/MLS ◁ sensitive areas are not protected, if the following precautions are taken:

- The airline checked that the ILS/MLS ◁ beam quality, and the effect of the terrain profile before the runway have no adverse effect on AP/FD guidance. Particularly, the effect of terrain profile within 300 m before the runway threshold must be evaluated
- The flight crew is aware that LOC or G/S beam fluctuations, independent of the aircraft system, may occur. The PF is prepared to immediately disconnect the autopilot, and to take the appropriate action, should not satisfactory guidance occur
- At least CAT2 capability is displayed on the FMA and the flight crew uses CAT II/III procedures
- Visual references are obtained at an altitude appropriate for the CAT I approach. If not, a go-around must be performed.

Ident.: LIM-AFS-20-10-00021180.0003001 / 25 JAN 18

- With aircraft weight below the maximum landing weight

AUTOMATIC LANDING

Applicable to: MSN 06967

Ident.: LIM-AFS-20-10-00020149.0001001 / 17 MAR 17

ILS/MLS ◁✻ CAT II and CAT III autoland and GLS ◁✻ CAT I autoland are approved in CONF 3 and CONF FULL.

Ident.: LIM-AFS-20-10-00020150.0001001 / 17 MAR 17

Automatic landing is demonstrated:

- With CAT II and CAT III ILS/MLS ◁✻ beam and CAT I GLS ◁✻ beam.

Ident.: LIM-AFS-20-10-00020151.0004001 / 17 MAR 17

28 - With a glide slope angle between -2.5 ° and -3.25 °

Ident.: LIM-AFS-20-10-00020152.0002001 / 17 MAR 17

- With an airport elevation at or below 5 750 ft

Ident.: LIM-AFS-20-10-00020153.0002001 / 17 MAR 17

- With aircraft weight at or above 46 000 kg (101 413 lb)

Ident.: LIM-AFS-20-10-00020155.0002001 / 17 MAR 17

29 Automatic landing is not allowed below -2 000 ft pressure altitude.

Ident.: LIM-AFS-20-10-00020156.0005001 / 03 OCT 17

30 Automatic rollout performance is approved on dry and wet runways, but performance on snow-covered or icy runways was not demonstrated.

During automatic rollout with one engine inoperative or one thrust reverser inoperative, the flight crew can use the remaining thrust reverser, provided that:

- No more than idle thrust is used
- The wind does not exceed the maximum wind conditions for automatic rollout.

Ident.: LIM-AFS-20-10-00020158.0001001 / 17 MAR 17

Automatic landing system performance is demonstrated with CAT II or CAT III ILS/MLS ◁✻ airport installation. However, automatic landing in CAT I or better weather conditions is possible on CAT I ground installations or on CAT II/III ground installations when ILS/MLS ◁✻ sensitive areas are not protected, if the following precautions are taken:

- The airline checked that the ILS/MLS ◁✻ beam quality, and the effect of the terrain profile before the runway have no adverse effect on AP/FD guidance. Particularly, the effect of terrain profile within 300 m before the runway threshold must be evaluated
- The flight crew is aware that LOC or G/S beam fluctuations, independent of the aircraft system, may occur. The PF is prepared to immediately disconnect the autopilot, and to take the appropriate action, should not satisfactory guidance occur
- At least CAT2 capability is displayed on the FMA and the flight crew uses CAT II/III procedures
- Visual references are obtained at an altitude appropriate for the CAT I approach. If not, a go-around must be performed.

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Ident.: LIM-AFS-20-10-00021180.0003001 / 25 JAN 18

- With aircraft weight below the maximum landing weight

AUTOMATIC LANDING

Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063

Ident.: LIM-AFS-20-10-00020149.0001001 / 17 MAR 17

ILS/MLS ◁ CAT II and CAT III autoland and GLS ◁ CAT I autoland are approved in CONF 3 and CONF FULL.

Ident.: LIM-AFS-20-10-00020150.0001001 / 17 MAR 17

Automatic landing is demonstrated:

- With CAT II and CAT III ILS/MLS ◁ beam and CAT I GLS ◁ beam.

Ident.: LIM-AFS-20-10-00020151.0004001 / 17 MAR 17

31 - With a glide slope angle between -2.5 ° and -3.25 °

Ident.: LIM-AFS-20-10-00020152.0011001 / 16 JAN 18

32 - With an airport elevation at or below 9 200 ft

Ident.: LIM-AFS-20-10-00020153.0010001 / 25 JAN 18

33 - With aircraft weight at or above 51 000 kg (112 436 lb)

Ident.: LIM-AFS-20-10-00020155.0002001 / 17 MAR 17

34 Automatic landing is not allowed below -2 000 ft pressure altitude.

Ident.: LIM-AFS-20-10-00020156.0005001 / 03 OCT 17

35 Automatic rollout performance is approved on dry and wet runways, but performance on snow-covered or icy runways was not demonstrated.

During automatic rollout with one engine inoperative or one thrust reverser inoperative, the flight crew can use the remaining thrust reverser, provided that:

- No more than idle thrust is used
- The wind does not exceed the maximum wind conditions for automatic rollout.

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Ident.: LIM-AFS-20-10-00020158.0001001 / 17 MAR 17

Automatic landing system performance is demonstrated with CAT II or CAT III ILS/MLS ◁ airport installation. However, automatic landing in CAT I or better weather conditions is possible on CAT I ground installations or on CAT II/III ground installations when ILS/MLS ◁ sensitive areas are not protected, if the following precautions are taken:

- The airline checked that the ILS/MLS ◁ beam quality, and the effect of the terrain profile before the runway have no adverse effect on AP/FD guidance. Particularly, the effect of terrain profile within 300 m before the runway threshold must be evaluated
- The flight crew is aware that LOC or G/S beam fluctuations, independent of the aircraft system, may occur. The PF is prepared to immediately disconnect the autopilot, and to take the appropriate action, should not satisfactory guidance occur
- At least CAT2 capability is displayed on the FMA and the flight crew uses CAT II/III procedures
- Visual references are obtained at an altitude appropriate for the CAT I approach. If not, a go-around must be performed.

Ident.: LIM-AFS-20-10-00021180.0003001 / 25 JAN 18

- With aircraft weight below the maximum landing weight

AUTOMATIC LANDING IN JOHANNESBURG

Ident.: TDU / LIM-AFS-20-00013685.0001001 / 25 APR 13
Applicable to: ALL
Impacted DU: NONE

Automatic landing is not permitted on Johannesburg 03R/21L runways.

AUTOLAND DATABASES WITH HONEYWELL ADIRU

Ident.: TDU / LIM-AFS-20-00016880.0003001 / 25 NOV 15
Applicable to: MSN 02457, 02584, 02670, 02737-02908
Impacted DU: NONE

The below table provides for each concerned airport, the dates when the following limitations begin:

- AUTOLAND is not allowed
- ROLLOUT is not allowed.

CAT II approaches without AUTOLAND are still allowed.

Airport Code	Airport location	Month/year
FAEL	EAST LONDON BEN SCHOEMAN SOUTH AFR REP	August 2018
PAFA	FAIRBANKS INTL AK USA	January 2015
PANC	ANCHORAGE INTL AK USA	October 2015
BIKF	KEFLAVIK ICELAND	January 2015
EGAA	BELFAST ALDERGROVE UNITED KINGDOM	September 2020

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Airport Code	Airport location	Month/year
EGPF	GLASGOW UNITED KINGDOM	July 2020
EGPH	EDINBURGH UNITED KINGDOM	September 2020
EFRO	ROVANIEMI FINLAND	September 2019
EFOU	OULU FINLAND	August 2020

Note: This limitation is applicable until end of 2020. From 2021, without a revision of this limitation, AUTOLAND and ROLLOUT will not be allowed on any airport.

The above limitations do not apply if three new ADIRU with updated magnetic variation tables are installed and Operators ensure previous standards are not installed.

AUTOLAND DATABASES WITH HONEYWELL ADIRU

Ident.: TDU / LIM-AFS-20-00016880.0070001 / 25 NOV 15

36 **Applicable to: MSN 01920, 02108, 02443, 02609-02649, 02712, 02914-03138, 03308, 03357-04216, 04312-04399, 04438-04506, 04518-06336**

Impacted DU: NONE

The below table provides for each concerned airport, the dates when the following limitations begin:
- AUTOLAND is not allowed
- ROLLOUT is not allowed.

CAT II approaches without AUTOLAND are still allowed.

Airport code	Airport Location	Month/Year
PAFA	FAIRBANKS INTL AK USA	September 2016
PANC	ANCHORAGE INTL AK USA	June 2018

Note: This limitation is applicable until end of 2020. From 2021, without a revision of this limitation, AUTOLAND and ROLLOUT will not be allowed on any airport.

The above limitations do not apply if three new ADIRU with updated magnetic variation tables are installed and Operators ensure previous standards are not installed.

AUTOLAND DATABASES WITH NORTHROP GRUMMAN ADIRU

Ident.: TDU / LIM-AFS-20-00016882.0001001 / 25 NOV 15

Applicable to: MSN 01767, 01957-02097, 02121-02405, 02482, 03264, 03330, 04294, 04433, 04510

Impacted DU: NONE

The below table provides for each concerned airport, the dates when the following limitations begin:
- AUTOLAND is not allowed
- ROLLOUT is not allowed.

CAT II approaches without AUTOLAND are still allowed.

Airport code	Airport Location	Month/Year
PAFA	FAIRBANKS INTL AK USA	January 2018
PANC	ANCHORAGE INTL AK USA	January 2019

Note: *This limitation is applicable until end of 2020. From 2021, without a revision of this limitation, AUTOLAND and ROLLOUT will not be allowed on any airport.*

The above limitations do not apply if three new ADIRU with updated magnetic variation tables are installed and Operators ensure previous standards are not installed.

LIMITATIONS

AUXILIARY POWER UNIT

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General....A
APU Start/Shutdown during Refueling/Defueling....B
Operational Envelope....C

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Localization Title	Toc Index	ID	Reason
LIM-APU EGT	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
LIM-APU EGT	A	2	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
LIM-APU Operational Envelope	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
LIM-APU Operational Envelope	C	4	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
LIM-APU APU Bleed	C	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
LIM-APU APU Bleed	C	6	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.

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GENERAL

Ident.: LIM-APU-10-00020088.0001001 / 17 MAR 17
Applicable to: ALL

APU START

After three consecutive APU start attempts, the flight crew must wait 60 min before a new start attempt.

Ident.: LIM-APU-10-00020089.0001001 / 17 MAR 17
Applicable to: ALL

ROTOR SPEED

Maximum N speed..... 107 %

Ident.: LIM-APU-10-00020090.0003001 / 17 MAR 17
[1] **Applicable to: MSN 01767-01920, 02108, 02204, 02334, 02388, 02443-02457, 02584, 02649-02670, 02737-02914, 03138-03264, 03330, 03750, 04294, 04399-04438, 04510, 05158, 06720-09045**

EGT

Maximum EGT for APU start (below 35 000 ft)..... 1 090 °C
Maximum EGT for APU start (above 35 000 ft).....1 120 °C
Maximum EGT for APU running.....675 °C

Ident.: LIM-APU-10-00020090.0002001 / 17 MAR 17
[2] **Applicable to: MSN 01957-02097, 02121-02195, 02275, 02359, 02405, 02482, 02609-02626, 02712, 03071, 03308, 03357-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-06336, 09063**

EGT

Maximum EGT for APU start (below 25 000 ft)..... 900 °C
Maximum EGT for APU start (above 25 000 ft).....982 °C
Maximum EGT for APU running (with 5 s confirmation for shutdown).....682 °C
Maximum EGT for APU running (for immediate shutdown)..... 700 °C to 742 °C

APU START/SHUTDOWN DURING REFUELING/DEFUELING

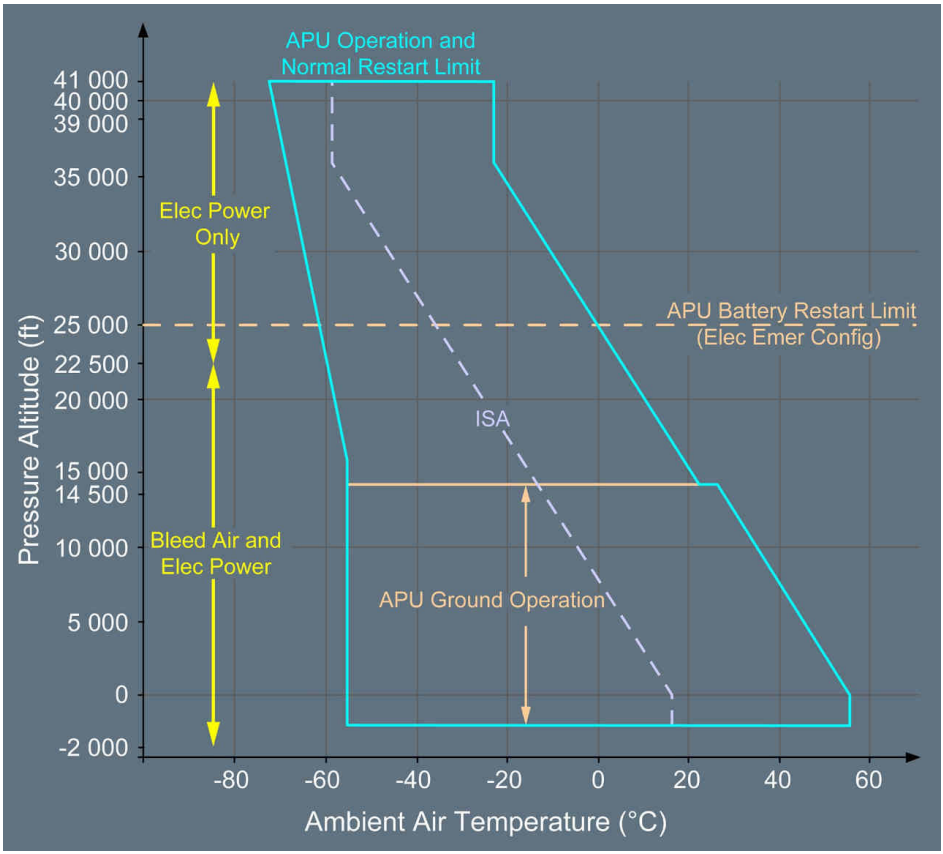
Ident.: LIM-APU-00020091.0001001 / 17 MAR 17
Applicable to: ALL

During refuel/defuel procedures, APU starts or shutdown are permitted with the following restrictions:
- If the APU failed to start or following an automatic APU shutdown, do not start the APU
- If a fuel spill occurs, perform a normal APU shutdown.

OPERATIONAL ENVELOPE

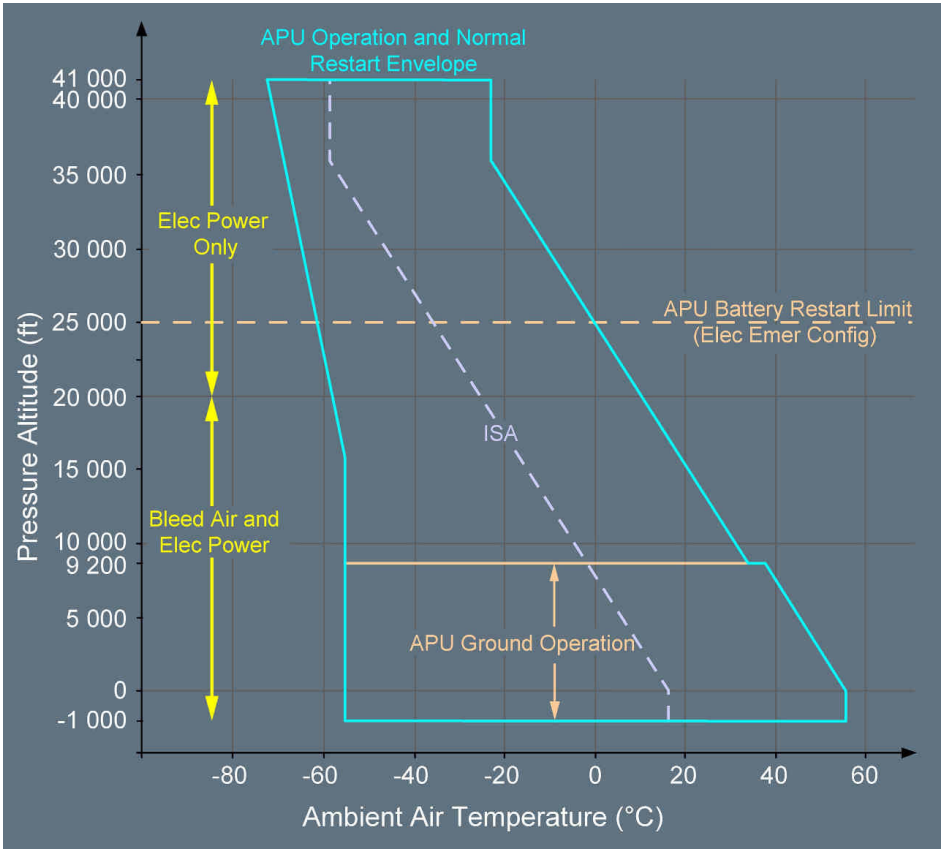
Ident.: LIM-APU-20-00019832.0003001 / 01 JUN 17

3 **Applicable to: MSN 01767-01920, 02108, 02204, 02334-02388, 02443-02457, 02584, 02649-02670, 02737-02908, 03138, 03750, 04294, 04399-04438, 04510, 05158, 06720-09045**



Ident.: LIM-APU-20-00019832.0008001 / 17 MAR 17

4 **Applicable to: MSN 01957-02097, 02121-02195, 02275, 02405, 02482, 02609-02626, 02712, 02914-03071, 03264-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-06336, 09063**



Ident.: LIM-APU-20-00021771.0002001 / 04 JUL 17

5 **Applicable to: MSN 01767-01920, 02108, 02204, 02334-02388, 02443-02457, 02584, 02649-02670, 02737-02908, 03138, 03750, 04294, 04399-04438, 04510, 05158, 06720-09045**

APU BLEED

Max altitude to assist engine start..... 20 000 ft
Max altitude for air conditioning and pressurization (single pack operation)..... 22 500 ft
Max altitude for air conditioning and pressurization (dual pack operation)..... 15 000 ft
Use of APU bleed air for wing anti-ice is not permitted.

Ident.: LIM-APU-20-00021771.0001001 / 04 JUL 17

6 **Applicable to: MSN 01957-02097, 02121-02195, 02275, 02405, 02482, 02609-02626, 02712, 02914-03071, 03264-03618, 03782-04216, 04312-04397, 04481-04506, 04518-05155, 05190-06336, 09063**

APU BLEED

Max altitude to assist engine start..... 20 000 ft
Max altitude for air conditioning and pressurization (single pack operation)..... 20 000 ft
Max altitude for air conditioning and pressurization (dual pack operation)..... 15 000 ft
Use of APU bleed air for wing anti-ice is not permitted.

LIMITATIONS

CABIN SYSTEMS

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Power Supply for Portable Electronic Device (PED)..... A

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POWER SUPPLY FOR PORTABLE ELECTRONIC DEVICE (PED)

Ident.: LIM-CAB-00020226.0001001 / 22 MAR 17
Applicable to: MSN 01957-02097, 02121, 02138, 02649, 03071, 03750, 04314, 04393-04397

The In-Seat Power Supply System (ISPSS) for the Portable Electronic Device (PED) carried by the passengers must be turned off during takeoff and landing.

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LIMITATIONS

COMMUNICATION

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GSM Onboard ..... A

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GSM ONBOARD

Ident.: LIM-COM-00020293.0001001 / 17 MAR 17
Applicable to: ALL

The use of mobile phones is prohibited in the toilets and the cockpit.

It is prohibited to use the GSM Onboard System:
- Below 3 000 m AGL (approximately 10 000 ft)
- In some geographical areas (refer to the “Regional Operation Data for the Onboard Mobile Telephony System” document for the identification of these geographical areas).

Note: *The GSM Onboard System is able to identify the above-mentioned flight conditions. If the system identifies any of these conditions, it automatically turns off.*

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LIMITATIONS

ENGINES

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Thrust Setting/EGT Limits..... A
Shaft Speeds..... B
Oil..... C
Starter..... D
Reverse Thrust..... E
Reduced Thrust Takeoff..... F
Crosswind Operation on Ground..... G
Soft Go-Around..... H

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Localization Title	Toc Index	ID	Reason
LIM-ENG Thrust Setting/EGT Limits	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-ENG Thrust Setting/EGT Limits	A	2	Effectivity update: The information no longer applies to MSN 05449.
LIM-ENG Shaft Speeds	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-ENG Shaft Speeds	B	4	Effectivity update: The information no longer applies to MSN 05449.
LIM-ENG Oil	C	5	Effectivity update: The information no longer applies to MSN 05449.
LIM-ENG Oil	C	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-ENG Starter	D	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-ENG Starter	D	8	Effectivity update: The information no longer applies to MSN 05449.
LIM-ENG Flex Takeoff	F	9	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
LIM-ENG Flex Takeoff	F	10	Effectivity update: The information now also applies to MSN 09063.
LIM-ENG Flex Takeoff	F	11	Effectivity update: The information no longer applies to MSN 05449.
LIM-ENG Crosswind Operation on Ground	G	12	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-ENG Crosswind Operation on Ground	G	13	Effectivity update: The information no longer applies to MSN 05449.
LIM-ENG Soft Go-Around	H	14	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.

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THRUST SETTING/EGT LIMITS

Ident.: LIM-ENG-00019960.0020001 / 18 MAY 18

[1] **Applicable to: MSN 06720-09063**

Operating Conditions		Time Limit	EGT Limit
Takeoff(1) and Go-around	All engines operative	5 min	1 083 °C
	One engine inoperative	10 min	
Maximum Continuous Thrust (MCT)		Not limited	1 043 °C
Starting	On ground		1 083 °C
	In flight		

(1) *Includes TOGA, FLEX, and DERATE thrust modes.*

THRUST SETTING/EGT LIMITS

Ident.: LIM-ENG-00019960.0004001 / 20 MAR 17

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Operating Conditions		Time Limit	EGT Limit
Takeoff(1) and Go-around	All engines operative	5 min	950 °C
	One engine inoperative	10 min	
Maximum Continuous Thrust (MCT)		Not limited	915 °C
Starting	On ground		725 °C
	In flight		

(1) *Includes TOGA, FLEX, and DERATE thrust modes.*

THRUST SETTING/EGT LIMITS

Ident.: LIM-ENG-00019960.0017001 / 20 MAR 17

[2] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

Operating Conditions		Time Limit	EGT Limit
Takeoff(1) and Go-around	All engines operative	5 min	635 °C
	One engine inoperative	10 min	
Maximum Continuous Thrust (MCT)		Not limited	610 °C
Starting	On ground		635 °C
	In flight		

(1) *Includes TOGA, FLEX, and DERATE thrust modes.*

SHAFT SPEEDS

Ident.: LIM-ENG-00020355.0007001 / 20 MAR 17

[3] **Applicable to: MSN 06720-09063**

Maximum N1 in normal operation..... 100 %
Maximum N1 permitted..... 105 %

Note: The N1 limit depends on the ambient conditions and on the configuration of the engine air bleed. These parameters may limit N1 to a value that is less than the above-mentioned N1 value (Refer to PER-THR-MTO MAXIMUM TAKEOFF).

Maximum N2 in normal operation..... 100 %
Maximum N2 permitted..... 105 %

SHAFT SPEEDS

Ident.: LIM-ENG-00020355.0003001 / 20 MAR 17

[4] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

Maximum N1..... 100 %

Note: The N1 limit depends on the ambient conditions and on the configuration of the engine air bleed. These parameters may limit N1 to a value that is less than the above-mentioned N1 value (Refer to PER-THR-MTO MAXIMUM TAKEOFF).

Maximum N2..... 100 %

SHAFT SPEEDS

Ident.: LIM-ENG-00020355.0002001 / 20 MAR 17

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Maximum N1..... 104 %

Note: The N1 limit depends on the ambient conditions and on the configuration of the engine air bleed. These parameters may limit N1 to a value that is less than the above-mentioned N1 value (Refer to PER-THR-MTO MAXIMUM TAKEOFF).

Maximum N2..... 105 %

OIL

Ident.: LIM-ENG-00020354.0001001 / 05 DEC 17

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

OIL TEMPERATURE

Maximum continuous temperature..... 140 °C

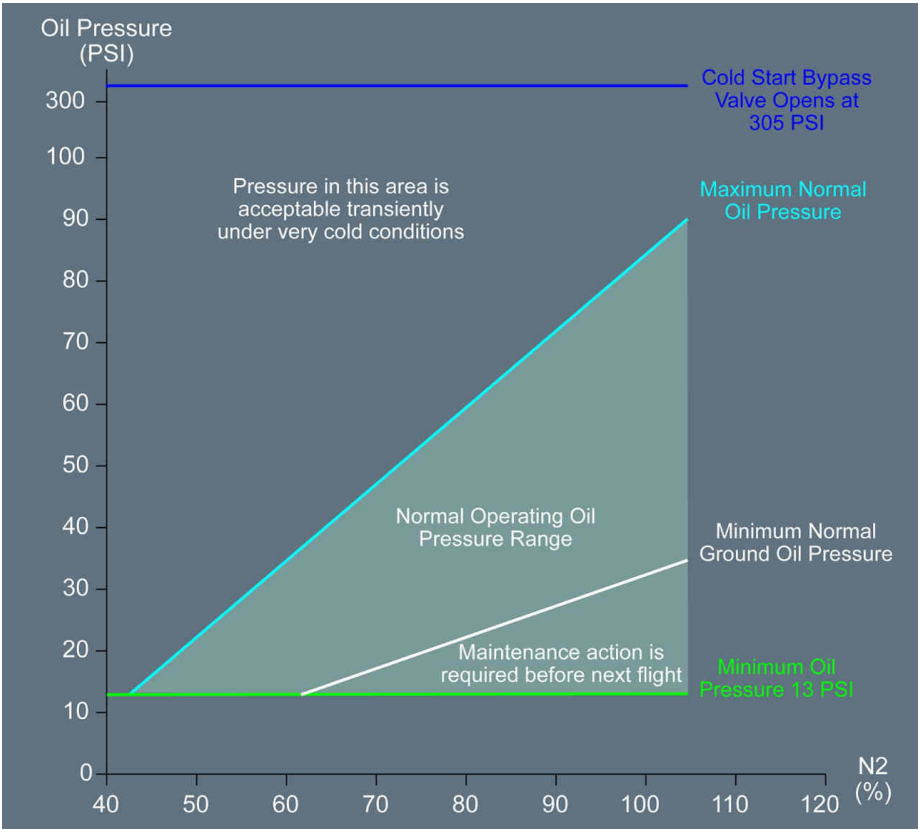
Maximum transient temperature (15 min)..... 155 °C
Minimum starting temperature.....-40 °C
Minimum temperature before takeoff..... -10 °C

OIL QUANTITY

Minimum oil quantity..... *Refer to PRO-NOR-SOP-04 Before Walkaround - ECAM Pages*

OIL PRESSURE

MIN/MAX Oil Pressure (ECAM Indication)



OIL

Ident.: LIM-ENG-00020354.0010001 / 05 DEC 17

5 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

OIL TEMPERATURE

Maximum continuous temperature..... 155 °C
Maximum transient temperature (15 min)..... 165 °C
Minimum starting temperature.....-40 °C
Minimum temperature before IDLE is exceeded.....-10 °C
Minimum temperature before takeoff..... 50 °C

OIL QUANTITY

Minimum oil quantity..... *Refer to PRO-NOR-SOP-04 Before Walkaround - ECAM Pages*

MINIMUM OIL PRESSURE

Minimum oil pressure.....60 PSI

OIL

Ident.: LIM-ENG-00020354.0011001 / 05 DEC 17

6 **Applicable to: MSN 06720-09063**

OIL TEMPERATURE

Maximum temperature.....151 °C
Minimum starting temperature.....-40 °C
Minimum temperature before takeoff..... 52 °C

OIL QUANTITY

Minimum oil quantity..... *Refer to PRO-NOR-SOP-04 Before Walkaround - ECAM Pages*

MINIMUM OIL PRESSURE

Minimum oil pressure.....65 PSI

MAXIMUM OIL PRESSURE

Maximum oil pressure.....270 PSI

STARTER

Ident.: LIM-ENG-00020356.0004001 / 20 MAR 17

7 **Applicable to: MSN 06720-09063**

- A standard automatic start that includes up to three start attempts, is considered one cycle
- For ground starts (automatic or manual), a 35 s pause is required between successive cycles
- A 15 min cooling period is required, subsequent to three failed cycles, or 15 min of continuous or cumulated crank
- The starter must not be run when N2 is above 20 %.

STARTER

Ident.: LIM-ENG-00020356.0002001 / 20 MAR 17

8 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

- A standard automatic start that includes only one start attempt, is considered one cycle
- For ground starts (automatic or manual), a 15 s pause is required between successive cycles
- A 30 min cooling period is required, subsequent to three failed cycles or 5 min of continuous crank
- For manual start, observe a two-minute maximum cycle time
- For crank, observe a 5 min maximum cycle time
- The starter must not be run when N2 is above 10 % on-ground and 18 % in-flight.

STARTER

Ident.: LIM-ENG-00020356.0001001 / 20 MAR 17

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

- A standard automatic start that includes up to three start attempts, is considered one cycle
- For ground starts (automatic or manual), a 20 s pause is required between successive cycles
- A 15 min cooling period is required, subsequent to four failed cycles
- The starter must not be run when N2 is above 20 %.

REVERSE THRUST

Ident.: LIM-ENG-00020357.0001001 / 20 MAR 17

Applicable to: ALL

Selection of the reverse thrust is prohibited in flight.
Backing the aircraft with reverse thrust is not permitted.
Maximum reverse should not be used below 70 kt. Idle reverse is permitted down to aircraft stop.

REDUCED THRUST TAKEOFF

Ident.: LIM-ENG-10-00020358.0046001 / 01 JUN 17

9 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

FLEX TAKEOFF

Takeoff at reduced thrust, so-called as FLEX takeoff, is permitted only if the airplane meets all performance requirements at the takeoff weight, with the operating engines at the thrust available for the flexible temperature (TFLEX).
Takeoff at reduced thrust is permitted with any inoperative item affecting the performance only if the associated performance shortfall has been applied to meet the above requirements.
FLEX takeoff is not permitted on contaminated runways.

TFLEX cannot be:
- Higher than TMAXFLEX, equal to ISA + 50 °C.
- Lower than the flat temperature (TREF).
- Lower than the actual OAT.

Ident.: LIM-ENG-10-00020358.0044001 / 01 JUN 17

10 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

FLEX TAKEOFF

Takeoff at reduced thrust, so-called as FLEX takeoff, is permitted only if the airplane meets all performance requirements at the takeoff weight, with the operating engines at the thrust available for the flexible temperature (TFLEX).
Takeoff at reduced thrust is permitted with any inoperative item affecting the performance only if the associated performance shortfall has been applied to meet the above requirements.
FLEX takeoff is not permitted on contaminated runways.

TFLEX cannot be:
- Higher than TMAXFLEX, equal to ISA + 49 °C.
- Lower than the flat temperature (TREF).
- Lower than the actual OAT.

Ident.: LIM-ENG-10-00020358.0004001 / 20 MAR 17

Applicable to: MSN 02108, 02135, 02139-02359, 02405-02482, 02609-02670, 02737-02914, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

FLEX TAKEOFF

Takeoff at reduced thrust, so-called as FLEX takeoff, is permitted only if the airplane meets all performance requirements at the takeoff weight, with the operating engines at the thrust available for the flexible temperature (TFLEX).
Takeoff at reduced thrust is permitted with any inoperative item affecting the performance only if the associated performance shortfall has been applied to meet the above requirements.

FLEX takeoff is not permitted on contaminated runways.

TFLEX cannot be:
- Higher than TMAXFLEX, equal to ISA + 55 °C.
- Lower than the flat temperature (TREF).
- Lower than the actual OAT.

Ident.: LIM-ENG-10-00020358.0008001 / 01 JUN 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

FLEX TAKEOFF

Takeoff at reduced thrust, so-called as FLEX takeoff, is permitted only if the airplane meets all performance requirements at the takeoff weight, with the operating engines at the thrust available for the flexible temperature (TFLEX).
Takeoff at reduced thrust is permitted with any inoperative item affecting the performance only if the associated performance shortfall has been applied to meet the above requirements.
FLEX takeoff is not permitted on contaminated runways.

TFLEX cannot be:
- Higher than TMAXFLEX, equal to ISA + 53 °C. TMAXFLEX corresponds to a reduction of 25 % from the full rated takeoff thrust.
- Lower than the flat temperature (TREF).
- Lower than the actual OAT.

Ident.: LIM-ENG-10-00020358.0017001 / 01 JUN 17
11 **Applicable to: MSN 01957-02097, 02121, 02138, 03071, 04491, 04532, 04645, 05120, 05218**

FLEX TAKEOFF

Takeoff at reduced thrust, so-called as FLEX takeoff, is permitted only if the airplane meets all performance requirements at the takeoff weight, with the operating engines at the thrust available for the flexible temperature (TFLEX).
Takeoff at reduced thrust is permitted with any inoperative item affecting the performance only if the associated performance shortfall has been applied to meet the above requirements.
FLEX takeoff is not permitted on contaminated runways.

TFLEX cannot be:
- Higher than TMAXFLEX, equal to ISA + 72 °C.
- Lower than the flat temperature (TREF).
- Lower than the actual OAT.

Ident.: LIM-ENG-10-00020359.0001001 / 20 MAR 17
Applicable to: ALL

DERATED TAKEOFF

Selection of TOGA thrust is not permitted when a derated takeoff is performed, except when requested in any abnormal or emergency procedures.
The use of reduced thrust takeoff (FLEX takeoff) is not permitted in association with derated takeoff.
The use of derated takeoff is permitted regardless of the runway condition (dry, wet, or contaminated).

CROSSWIND OPERATION ON GROUND

Ident.: LIM-ENG-00020360.0003001 / 20 MAR 17
12 **Applicable to: MSN 06720-09063**

ENGINE START

The engine is able to start in crosswind up to 35 kt.

CROSSWIND OPERATION ON GROUND

Ident.: LIM-ENG-00020360.0001001 / 20 MAR 17
13 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

This engine is able to start in crosswind up to 35 kt .

SOFT GO-AROUND

Ident.: LIM-ENG-00020363.0002001 / 04 DEC 17
14 **Applicable to: MSN 06720-09063**

The use of GA SOFT mode is prohibited with one engine inoperative.

LIMITATIONS

FLIGHT CONTROLS

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Flight Maneuvering Load Acceleration Limits..... A
Maximum Altitude Flaps/Slats Extended..... B
Maximum Flaps/Slats Speeds..... C
Use of Flight Controls..... D

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FLIGHT MANEUVERING LOAD ACCELERATION LIMITS

Ident.: LIM-F_CTL-00020162.0001001 / 17 MAR 17
Applicable to: ALL

Refer to LIM-AG-F_CTL Flight Maneuvering Load Acceleration Limits.

MAXIMUM ALTITUDE FLAPS/SLATS EXTENDED

Ident.: LIM-F_CTL-00020160.0001001 / 17 MAR 17
Applicable to: ALL

Maximum operating altitude with slats and/or flaps extended.....20 000 ft

MAXIMUM FLAPS/SLATS SPEEDS

Ident.: LIM-F_CTL-00020163.0001001 / 17 MAR 17
Applicable to: ALL

Refer to LIM-AG-SPD Maximum Flaps/Slats Speeds.

USE OF FLIGHT CONTROLS

Ident.: LIM-F_CTL-00020000.0001001 / 17 MAR 17
Applicable to: ALL

CAUTION	Rapid and large alternating control inputs, especially in combination with large changes in pitch, roll or yaw (e.g. large sideslip angles) may result in structural failures at any speed.

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LIMITATIONS

FUEL

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Certified Fuel....A
Fuel Temperature....B
Fuel Temperature Limits when JP4 and JET B Fuels are Used....C
Maximum Allowed Fuel Imbalance....D
Minimum Fuel Quantity for Takeoff....E

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Localization Title	Toc Index	ID	Reason
LIM-FUEL Certified Fuel	A	1	Effectivity update: The information no longer applies to MSN 05449.
LIM-FUEL Certified Fuel	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-FUEL Fuel Temperature	B	3	Effectivity update: The information no longer applies to MSN 05449.
LIM-FUEL Fuel Temperature	B	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-FUEL Fuel Temperature Limits when JP4 and JET B Fuels are Used	C	5	Effectivity update: The information no longer applies to MSN 05449.
LIM-FUEL Maximum Allowed Fuel Imbalance	D	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
LIM-FUEL Maximum Allowed Fuel Imbalance	D	7	Effectivity update: The information now also applies to MSN 09063.

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CERTIFIED FUEL

Ident.: LIM-FUEL-00019707.0001001 / 17 MAR 17

[1] **Applicable to: MSN 01767-06336**

The fuel system is certified with: JET A, JET A1, JET B, JP4, JP5, JP8, N° 3 JET, RT, and TS-1, in accordance with engine manufacturers and fuel specifications.

CERTIFIED FUEL

Ident.: LIM-FUEL-00019707.0002001 / 17 MAR 17

[2] **Applicable to: MSN 06720-09063**

The fuel system is certified with: JET A, JET A1, JP5, JP8, N° 3 JET, RT, and TS-1, in accordance with engine manufacturers and fuel specifications.

FUEL TEMPERATURE

Ident.: LIM-FUEL-00019708.0001001 / 28 NOV 17

[3] **Applicable to: MSN 01767-06336**

	JET A1/JP8/ N°3 JET	JET A	JP5	RT	TS-1	JET B	JP4
MINI	-43 °C	-36 °C (1)	-42 °C	-45 °C	-45 °C	-46 °C	-54 °C
MAXI	54 °C					49 °C	

(1) *For JET A only, if TAT reaches -34 °C, monitor the fuel temperature on the FUEL SD page, to ensure that it remains above -36 °C.*

Note: The various types of fuel can be mixed in all proportions. However, in the case of fuel mixture, the minimum fuel specification values provided in the table above are no longer applicable.

FUEL TEMPERATURE

Ident.: LIM-FUEL-00019708.0002001 / 28 NOV 17

[4] **Applicable to: MSN 06720-09063**

	JET A1/JP8/ N°3 JET	JET A	JP5	RT	TS-1
MINI	-43 °C	-36 °C (1)	-42 °C	-45 °C	-45 °C
MAXI	55 °C				

(1) *For JET A only, if TAT reaches -34 °C, monitor the fuel temperature on the FUEL SD page, to ensure that it remains above -36 °C.*

Note: *The various types of fuel can be mixed in all proportions. However, in the case of fuel mixture, the minimum fuel specification values provided in the table above are no longer applicable.*

FUEL TEMPERATURE LIMITS WHEN JP4 AND JET B FUELS ARE USED

Ident.: LIM-FUEL-00019709.0001001 / 17 MAR 17

5 **Applicable to: MSN 01767-06036**

If the wing fuel temperature exceeds 30 °C at engine start, the altitude must be limited to 35 000 ft until the center tank is empty.
If the wing fuel temperature exceeds 40 °C at engine start, the altitude must be limited to 30 000 ft until the center tank is empty.
If the wing fuel temperature exceeds 49 °C at engine start, the altitude must be limited to 25 000 ft until the center tank is empty.

Reason : At high altitude with high fuel temperature, the pressure supplied by the center tank pumps becomes lower than the pressure supplied by the wing tank pumps.

MAXIMUM ALLOWED FUEL IMBALANCE

Ident.: LIM-FUEL-00020435.0001001 / 17 MAR 17

6 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The following tables indicate the maximum allowed wing imbalance at takeoff, in flight, and at landing.

FUEL IMBALANCE AT TAKEOFF

INNER TANKS (OUTER TANKS BALANCED)

Tank Fuel Quantity (Heavier Tank)	Maximum Asymmetry
Full	500 kg (1 102 lb)
3 000 kg (6 613 lb)	1 050 kg (2 314 lb)
1 450 kg (3 196 lb)	1 450 kg (3 196 lb)

The variation is linear between these values.

OUTER TANKS (INNER TANKS BALANCED)

Maximum Asymmetry	370 kg (815 lb)

FUEL IMBALANCE IN FLIGHT AND AT LANDING

INNER TANKS (OUTER TANKS BALANCED)

Tank Fuel Quantity (Heavier Tank)	Maximum Asymmetry
Full	1 500 kg (3 306 lb)
4 300 kg (9 479 lb)	1 600 kg (3 527 lb)
2 250 kg (4 960 lb)	2 250 kg (4 960 lb)

The variation is linear between these values, and there is no limitation below 2 250 kg (4 960 lb).

OUTER TANKS

Maximum Asymmetry	690 kg (1 521 lb)(1)

(1) *The maximum fuel imbalance in the outer wing fuel tanks (one full/one empty) is allowed provided that:*
- *The fuel quantity of the outer and inner wing fuel tanks of one side is equal to the fuel quantity of the outer and inner wing fuel tanks on the other side, or*
- *On the side of the lighter outer tank, the fuel quantity of the inner tank is more than the fuel quantity of the opposite inner tank. The difference between the fuel quantity in the inner tanks should not be more than 3 000 kg (6 613 lb).*

Note: In exceptional conditions (i.e. fuel system failure), the above-mentioned values for maximum fuel imbalance may be exceeded without significant effect to the aircraft handling qualities. The aircraft remains fully controllable in all flight phases.

MAXIMUM ALLOWED FUEL IMBALANCE

Ident.: LIM-FUEL-00020435.0008001 / 17 MAR 17

7 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The following tables indicate the maximum allowed wing imbalance at takeoff, in flight, and at landing.

FUEL IMBALANCE AT TAKEOFF

Tank Fuel Quantity (Heavier Tank)	Maximum Asymmetry
Full	400 kg (882 lb)
3 000 kg (6 614 lb)	400 kg (882 lb)
700 kg (1 543 lb)	700 kg (1 543 lb)

The variation is linear between these values.

FUEL IMBALANCE IN FLIGHT AND AT LANDING

Tank Fuel Quantity (Heavier Tank)	Maximum Asymmetry
Full	1 320 kg (2 910 lb)
4 000 kg (8 818 lb)	1 450 kg (3 196 lb)
2 350 kg (5 180 lb)	2 350 kg (5 180 lb)

The variation is linear between these values, and there is no limitation below 2 350 kg (5 180 lb).

Note: In exceptional conditions (i.e. fuel system failure), the above-mentioned values for maximum fuel imbalance may be exceeded without significant effect to the aircraft handling qualities. The aircraft remains fully controllable in all flight phases.

MINIMUM FUEL QUANTITY FOR TAKEOFF

Ident.: LIM-FUEL-00019771.0001001 / 17 MAR 17
Applicable to: ALL

Minimum fuel quantity for takeoff.....1 500 kg (3 307 lb)
The ECAM alerts that are related to fuel low level in the wing tanks (FUEL WING TK LO LVL, etc.) must not appear for takeoff.

LIMITATIONS

ICE AND RAIN PROTECTION

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Definition of Icing Conditions....A
Definition of Severe Ice Accretion....B
Definition of Thin Hoarfrost....C
Rain Repellent ◁ ....D
Wipers Maximum Operating Speed....E

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DEFINITION OF ICING CONDITIONS

Ident.: LIM-ICE_RAIN-00020608.0001001 / 05 JUN 18
Applicable to: ALL

- Icing conditions exist when the OAT (on ground or after takeoff) or the TAT (in flight) is at or below 10 °C and visible moisture in any form is present (such as clouds, fog with visibility of 1 sm (1 600 m) or less, rain, snow, sleet or ice crystals).
- Icing conditions also exist when the OAT on the ground and for takeoff is at or below 10 °C and operating on ramps, taxiways or runways where surface snow, standing water or slush may be ingested by the engines, or freeze on engines, nacelles or engine sensor probes.

DEFINITION OF SEVERE ICE ACCRETION

Ident.: LIM-ICE_RAIN-00020609.0001001 / 17 MAR 17
Applicable to: ALL

Ice accretion is considered severe when the ice accumulation on the airframe reaches approximately 5 mm (0.2 in) thick or more.

DEFINITION OF THIN HOARFROST

Ident.: LIM-ICE_RAIN-00020610.0001001 / 17 MAR 17
Applicable to: ALL

Thin hoarfrost is typically a white crystalline deposit which usually develops uniformly on exposed surfaces on cold and cloudless nights.
It is so thin that surface features (lines or markings) can be distinguished beneath it.

RAIN REPELLENT ⋖

Ident.: LIM-ICE_RAIN-00020224.0001001 / 17 MAR 17
Applicable to: ALL

The flight crew should only use the rain repellent in the case of moderate to heavy rain.

WIPERS MAXIMUM OPERATING SPEED

Ident.: LIM-ICE_RAIN-00020225.0001001 / 17 MAR 17
Applicable to: ALL

Refer to LIM-AG-SPD Wipers Maximum Operating Speed.

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LIMITATIONS

LANDING GEAR

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Braking System....A
Brake Temperature....B
Maximum Speeds with the Landing Gear Extended....C
Maximum Tire Speed....D
Nosewheel Steering (NWS)....E
Taxi with Deflated or Damaged Tires....F

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BRAKING SYSTEM

Ident.: LIM-LG-00020233.0001001 / 17 MAR 17
Applicable to: ALL

The braking system is not designed to hold the aircraft in a stationary position when a high thrust level is applied on at least one engine.
During ground procedures that require a thrust increase with braking, the flight crew must ensure that the aircraft remains stationary, and must be ready to immediately retard the thrust levers to IDLE.

BRAKE TEMPERATURE

Ident.: LIM-LG-00020255.0001001 / 17 MAR 17
Applicable to: ALL

Maximum brake temperature for takeoff (brake fans ◁⋘ off).....300 °C

MAXIMUM SPEEDS WITH THE LANDING GEAR EXTENDED

Ident.: LIM-LG-00020237.0001001 / 17 MAR 17
Applicable to: ALL

Refer to LIM-AG-SPD Maximum Speeds with the Landing Gear Extended.

MAXIMUM TIRE SPEED

Ident.: LIM-LG-00020238.0001001 / 17 MAR 17
Applicable to: ALL

Refer to LIM-AG-SPD Maximum Tire Speed.

NOSEWHEEL STEERING (NWS)

Ident.: LIM-LG-00020236.0001001 / 12 SEP 17
Applicable to: ALL

For NWS angle limit, *Refer to DSC-20-30 Taxiing*.
Towbarless operation on the nose landing gear (towing and pushback) is approved when using the accepted towbarless towing vehicles listed in the Airbus WISE ISI 09.11.00001, with the following information:
Maximum NWS angle..... ±85 °

TAXI WITH DEFLATED OR DAMAGED TIRES

Ident.: LIM-LG-00020235.0001001 / 01 JUN 17
Applicable to: ALL

To vacate the runway or taxi at low speed with tire(s) deflated (not damaged), all of the following limitations apply:

- If maximum one tire per gear is deflated (consider three gears)
  Maximum taxi speed during turn..... 7 kt
- If two tires are deflated on the same main gear (maximum one main gear)
  Maximum taxi speed.....3 kt
- For the nosewheel steering (NWS) angle
  Maximum NWS angle..... 30 °

In addition, if tire damage is suspected, the flight crew must ask for an aircraft inspection prior to vacate the runway or taxi. If the ground crew suspects that a tire burst may damage the landing gear, maintenance action is due.
For more information, *Refer to FCTM/PR-AEP-LG Taxi with Deflated or Damaged Tires*.

LIMITATIONS

NAVIGATION

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Inertial Reference System (IRS).....A

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Localization Title	Toc Index	ID	Reason
LIM-NAV Inertial Reference System (IRS)	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.

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INERTIAL REFERENCE SYSTEM (IRS)

Ident.: LIM-NAV-00020081.0001001 / 17 MAR 17

[1] **Applicable to: MSN 01920, 02108, 02443-02457, 02584-03138, 03308, 03357-04216, 04312-04399, 04438-04506, 04518-09063**

IR GROUND ALIGNMENT

Ground alignment of the IRS is possible in latitudes between 73 ° North and 73 ° South.

MAGNETIC (MAG) REFERENCE

■ **If all ADIRUs have the same magnetic variation table:**

In NAV mode, the IR will not provide valid magnetic heading and magnetic track angle:
- North of 73 ° North, and
- South of 60 ° South.

Flying at latitudes beyond these limits is prohibited.

■ **If one ADIRU has a different magnetic variation table:**

In NAV mode, the IR will not provide valid magnetic heading and magnetic track angle:
- North of 60 ° North, between 30 ° West and 160 ° West, and
- North of 73 ° North, and
- South of 55 ° South.

Flying at latitudes beyond these limits is prohibited.

INERTIAL REFERENCE SYSTEM (IRS)

Ident.: LIM-NAV-00020081.0002001 / 17 MAR 17

Applicable to: MSN 01767, 01957-02097, 02121-02405, 02482, 03264, 03330, 04294, 04433, 04510

IR GROUND ALIGNMENT

Ground alignment of the IRS is possible in latitudes between 82 ° North and 82 ° South.

MAGNETIC (MAG) REFERENCE

■ **If all ADIRUs have the same magnetic variation table:**

In NAV mode, the IR will not provide valid magnetic heading and magnetic track angle:
- North of 73 ° North, between 90 ° West and 120 ° West (magnetic polar region), and
- North of 82 ° North, and
- South of 60 ° South.

Flying at latitudes beyond these limits is prohibited.

■ **If one ADIRU has a different magnetic variation table:**

In NAV mode, the IR will not provide valid magnetic heading and magnetic track angle:
- North of 60 ° North, between 30 ° West and 160 ° West, and
- North of 75 ° North, and
- South of 55 ° South.

Flying at latitudes beyond these limits is prohibited.

LIMITATIONS

OXYGEN

Intentionally left blank

Minimum Flight Crew Oxygen Pressure.....A

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Localization Title	Toc Index	ID	Reason
LIM-OXY Minimum Flight Crew Oxygen Pressure	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
LIM-OXY Minimum Flight Crew Oxygen Pressure	A	2	Effectivity update: The information no longer applies to MSN 05449.

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MINIMUM FLIGHT CREW OXYGEN PRESSURE

Ident.: LIM-OXY-00020232.0008001 / 17 MAR 17

[1] **Applicable to: MSN 06720-09063**

REF Temperature (1)		°C	-10	0	10	20	30	40	50
		°F	14	32	50	68	86	104	122
MIN CAPT Indication (PSI) (2)	CAPT		460	480	500	520	540	550	570
	CAPT + 3rd Occ.		650	680	700	730	750	780	800
MIN F/O Indication (PSI) (2)	F/O		460	480	500	520	540	550	570
	F/O + 4th Occ.		650	680	700	730	750	780	800

(1) *REF Temperature :*

- *On ground : REF Temperature = (OAT + Cockpit TEMP) / 2*
- *In flight : REF Temperature = CAB TEMP (°C) - 10 °C, or*
  REF Temperature = CAB TEMP (°F) - 18 °F

(2) *Minimum Bottle Pressure to Cover:*

- *Preflight checks*
- *The use of oxygen, when only one flight crewmember is in the cockpit*
- *Unusable quantity (to ensure regulator operation with minimum pressure)*
- *Normal system leakage*
- *The most demanding case among the following:*
  - *Protection after loss of cabin pressure, with mask regulator on NORMAL (diluted oxygen):*
    - *During emergency descent for all flight crewmembers and observers for 15 min*
    - *During cruise at FL 100 for two flight crewmembers for 105 min.*
  - *Protection against smoke with 100 % oxygen for all flight crewmembers and observers during 15 min at 8 000 ft cabin altitude.*

Note: The above times that are based on the use of a sealed mask may be shorter for bearded crew (in terms of performance, pressure, or duration).

MINIMUM FLIGHT CREW OXYGEN PRESSURE

Ident.: LIM-OXY-00020232.0002001 / 17 MAR 17

Applicable to: MSN 02388, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

REF Temperature (1)		°C	-10	0	10	20	30	40	50
		°F	14	32	50	68	86	104	122
MIN Bottle Pressure (PSI)(2)	2 Crewmembers		656	681	706	731	756	781	806
	2 Crewmembers + 1 OBS		861	893	926	959	992	1 024	1 057
	2 Crewmembers + 2 OBS		1 090	1 132	1 173	1 215	1 256	1 298	1 339

(1) REF Temperature :

- *On ground : REF Temperature = (OAT + Cockpit TEMP) / 2*
- *In flight : REF Temperature = CAB TEMP (°C) - 10 °C, or*
  REF Temperature = CAB TEMP (°F) - 18 °F

(2) Minimum Bottle Pressure to Cover:

- *Preflight checks*
- *The use of oxygen, when only one flight crewmember is in the cockpit*
- *Unusable quantity (to ensure regulator operation with minimum pressure)*
- *Normal system leakage*
- *The most demanding case among the following:*
  - *Protection after loss of cabin pressure, with mask regulator on NORMAL (diluted oxygen):*
    - *During emergency descent for all flight crewmembers and observers for 13 min*
    - *During cruise at FL 100 for two flight crewmembers for 107 min.*
  - *Protection against smoke with 100 % oxygen for all flight crewmembers and observers during 15 min at 8 000 ft cabin altitude.*

Note: The above times that are based on the use of a sealed mask may be shorter for bearded crew (in terms of performance, pressure, or duration).

MINIMUM FLIGHT CREW OXYGEN PRESSURE

Ident.: LIM-OXY-00020232.0003001 / 17 MAR 17

[2] **Applicable to: MSN 01767-02359, 02405-03264, 03330, 03750, 04294, 04433, 04491, 04510, 04532, 04645, 05120, 05218**

REF Temperature (1)		°C	-10	0	10	20	30	40	50
		°F	14	32	50	68	86	104	122
MIN Bottle Pressure (PSI)(2)	2 Crewmembers		468	486	504	522	540	558	576
	2 Crewmembers + 1 OBS		606	629	652	675	698	721	744
	2 Crewmembers + 2 OBS		759	788	817	846	875	904	933

(1) REF Temperature :

- *On ground : REF Temperature = (OAT + Cockpit TEMP) / 2*
- *In flight : REF Temperature = CAB TEMP (°C) - 10 °C, or*
  REF Temperature = CAB TEMP (°F) - 18 °F

(2) Minimum Bottle Pressure to Cover:

- *Preflight checks*
- *The use of oxygen, when only one flight crewmember is in the cockpit*
- *Unusable quantity (to ensure regulator operation with minimum pressure)*
- *Normal system leakage*
- *The most demanding case among the following:*
  - *Protection after loss of cabin pressure, with mask regulator on NORMAL (diluted oxygen):*
    - *During emergency descent for all flight crewmembers and observers for 13 min*
    - *During cruise at FL 100 for two flight crewmembers for 107 min.*
  - *Protection against smoke with 100 % oxygen for all flight crewmembers and observers during 15 min at 8 000 ft cabin altitude.*

Note: The above times that are based on the use of a sealed mask may be shorter for bearded crew (in terms of performance, pressure, or duration).

MINIMUM FLIGHT CREW OXYGEN PRESSURE

Ident.: LIM-OXY-00020232.0004001 / 17 MAR 17
Applicable to: MSN 04399, 04438

REF Temperature (1)		°C	-10	0	10	20	30	40	50
		°F	14	32	50	68	86	104	122
MIN Bottle Pressure (PSI)(2)	2 Crewmembers		716	744	771	798	826	853	880
	2 Crewmembers + 1 OBS		874	907	940	974	1 007	1 040	1 073
	2 Crewmembers + 2 OBS		1 103	1 145	1 187	1 229	1 270	1 312	1 354

(1) REF Temperature :

- *On ground : REF Temperature = (OAT + Cockpit TEMP) / 2*
- *In flight : REF Temperature = CAB TEMP (°C) - 10 °C, or*
  REF Temperature = CAB TEMP (°F) - 18 °F

(2) Minimum Bottle Pressure to Cover:

- *Preflight checks*
- *The use of oxygen, when only one flight crewmember is in the cockpit*
- *Unusable quantity (to ensure regulator operation with minimum pressure)*
- *Normal system leakage*
- *The most demanding case among the following:*
  - *Protection after loss of cabin pressure, with mask regulator on NORMAL (diluted oxygen):*
    - *During emergency descent for all flight crewmembers and observers for 22 min*
    - *During cruise at FL 100 for two flight crewmembers for 98 min.*
  - *Protection against smoke with 100 % oxygen for all flight crewmembers and observers during 15 min at 8 000 ft cabin altitude.*

Note: The above times that are based on the use of a sealed mask may be shorter for bearded crew (in terms of performance, pressure, or duration).

MINIMUM FLIGHT CREW OXYGEN PRESSURE

Ident.: LIM-OXY-00020232.0007001 / 17 MAR 17
Applicable to: MSN 04314, 04393-04397

REF Temperature (1)		°C	-10	0	10	20	30	40	50
		°F	14	32	50	68	86	104	122
MIN Bottle Pressure (PSI)(2)	2 Crewmembers		509	529	548	567	587	606	626
	2 Crewmembers + 1 OBS		615	638	661	685	708	732	755
	2 Crewmembers + 2 OBS		768	798	827	856	885	915	944

(1) REF Temperature :

- *On ground : REF Temperature = (OAT + Cockpit TEMP) / 2*
- *In flight : REF Temperature = CAB TEMP (°C) - 10 °C, or*
  REF Temperature = CAB TEMP (°F) - 18 °F

(2) Minimum Bottle Pressure to Cover:

- *Preflight checks*
- *The use of oxygen, when only one flight crewmember is in the cockpit*
- *Unusable quantity (to ensure regulator operation with minimum pressure)*
- *Normal system leakage*
- *The most demanding case among the following:*
  - *Protection after loss of cabin pressure, with mask regulator on NORMAL (diluted oxygen):*
    - *During emergency descent for all flight crewmembers and observers for 22 min*
    - *During cruise at FL 100 for two flight crewmembers for 98 min.*
  - *Protection against smoke with 100 % oxygen for all flight crewmembers and observers during 15 min at 8 000 ft cabin altitude.*

Note: The above times that are based on the use of a sealed mask may be shorter for bearded crew (in terms of performance, pressure, or duration).

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LIMITATIONS

SURVEILLANCE

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GPWS / Predictive GPWS ..... A

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GPWS / PREDICTIVE GPWS ◁

Ident.: LIM-SURV-00019775.0001001 / 17 AUG 18
Applicable to: ALL

Aircraft navigation must not be based on the use of the terrain display .
The terrain display is intended to serve as a situation awareness tool only, and may not provide the accuracy on which to solely base terrain avoidance maneuvering.

The predictive GPWS ◁ functions should be inhibited (TERR pushbutton to OFF, on the GPWS panel) when the aircraft position is less than 15 NM from the airfield:

- For operations from/to runways not incorporated in the predictive GPWS database.
- For specific approach or departure procedures, which have previously been identified as potentially causing expected or spurious terrain alerts.

Only aircraft with Man-made Obstacle Function ◁ can display obstacles on ND and trigger alerts, based on a dedicated database which includes artificial obstacles worldwide.

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OPERATIONS ENGINEERING BULLETINS

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M(1)	Identification	T(2)	E(3)	Rev. Date	Title
	OEB54 issue 2	R	N	03 SEP 18	Incorrect FAC Weight due to dashed CG on FUEL PRED page
	Criteria: J3283, P8572, P9892 **Applicable to: MSN 05829, 05898**				
	OEB28 issue 2	W	N	27 MAY 13	No Localizer or Glide Slope Capture in Approach
	Criteria: P5168 **Applicable to: MSN 01767**				
	OEB42 issue 2	W	N	23 JUL 13	Incorrect Vertical Profile During Non Precision Approaches
	Criteria: P7373 **Applicable to: MSN 04393-04397**				
	OEB46 issue 1	W	N	05 NOV 13	No Engagement of Guidance Mode
	Criteria: 27-1234, 27-1243 **Applicable to: MSN 04393-04397, 04947**				
	OEB47 issue 1	W	Y	20 DEC 13	HYD ENG PUMP LO PR followed by HYD RSVR OVHT
	Criteria: SA **Applicable to: MSN 01767-01920, 02108, 02204, 02405-02482, 02649, 02908**				

(1) Evolution code : N=New, R=Revised, E=Effectivity
(2) Type of OEB: R=Red, W=White
(3) Affects ECAM: Y=Yes, N=No

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M	Localization	DU Title	DU identification	DU date

No Temporary Documentary Unit

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OPERATIONS
ENGINEERING BULLETINS

GENERAL DESCRIPTION

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General Description..... A

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GENERAL DESCRIPTION

Applicable to: ALL

Ident.: OEB-GEN-A-00014181.0001001 / 23 NOV 11

An Operations Engineering Bulletin (OEB) is issued to rapidly inform operators of any deviations from initial design objectives that have a significant operational impact. An OEB provides the operators with technical information and temporary operational procedures that address these deviations.

Ident.: OEB-GEN-A-00014182.0001001 / 23 NOV 11

TYPE OF OEB

OEBs can either be red or white, depending on their level of priority.

- RED OEBs are issued to indicate that non-compliance with the recommended procedures may have a significant impact on the safe operation of the aircraft.
- WHITE OEBs are issued to indicate that non-compliance with the recommended procedures may have a significant impact on aircraft operation.

Airbus strongly recommends that all Operators rapidly apply the OEB corrective actions as soon as they become available, particularly for red OEBs.

Ident.: OEB-GEN-A-00014183.0001001 / 23 JUN 15

OEB CONTENT AND MANAGEMENT

An OEB:

- Is temporary and usually focuses on one operational subject only,
- Is included in the OEB section of both the FCOM and QRH. The procedural part of each white or red OEB (OEB PROC) is provided in the OEB section of the QRH, so that the flight crew can easily access the procedures,
- Remains applicable until the appropriate corrective actions are completed.

Note: After installation of the OEB corrective modification/Service Bulletins (SB): if an Operator reinstalls any spare equipment for which there was an associated OEB, it is Operator's responsibility to ensure that this OEB be applied again for the applicable aircraft.

OEB IN THE FCOM

The content of each OEB includes:

- The reason for issue,
- Technical explanations of the deviation from the initial design objectives,
- The operational impact if the flight crew does not apply the OEB procedure,

Continued on the following page

GENERAL DESCRIPTION (Cont'd)

- The conditions for applying the OEB procedures :
  - ECAM warning/caution affected by the OEB,
  - Cockpit effects,
  - Flight phases,
  - Specific event.
- The OEB operational procedure(s) to be applied,
- The corrective actions that cancel the OEB (if available),
- The OEB REMINDER codes, (if applicable).

OEB IN THE QRH

Each FCOM OEB has an associated “OEB PROC” in the OEB section of the QRH, that includes:

- The title of the OEB PROC,
- The “ECAM ENTRY" field:
  This section identifies whether or not one of the possible conditions for applying the OEB PROC is an ECAM warning/caution.
  The flight crew must disregard the ECAM procedure and/or STATUS of the ECAM alerts listed in the "ECAM ENTRY" field and must apply the QRH’s OEB procedure instead.
- The OEB operational procedure(s) that the flight crew must apply.

FCOM LIST OF EFFECTIVE OEB

The List of Effective Operations Engineering Bulletins (LEOEB) enables to review all the Operations Engineering Bulletins (OEBs) that are applicable to the fleet. Each time an OEB is issued or revised, the LEOEB is updated.

M (1)	Identification	T (2)	E (3)	REV. Date	Title
	OEB38 issue 1	R	N	18 MAR 11	Erroneous Radio Altimeter Height Indication
	Criteria: SA Applicable to: ALL				

(1) Evolution code: N=New, R=Revised, E=Effectivity
(2) Type of OEB: R=Red, W=White
(3) Affects ECAM: Y=Yes, N=No

The FCOM LEOEB consists of:

Continued on the following page

GENERAL DESCRIPTION (Cont'd)

The "M" field that may provide the following Evolution Code:
- The "N" letter indicates a new OEB, or
- The "R" letter indicates a revised OEB, or
- The "E" letter indicates an aircraft validity change on the OEB.

The "Identification" field which identifies the OEB with its identification number.

Note: *The FCOM OEB and associated QRH OEB PROC have the same OEB number in order to be consistent. However, the issue number of the QRH OEB PROC and the FCOM OEB may be different, because a revision of an FCOM OEB does not necessarily result in a revision of the corresponding QRH OEB PROC, that only provides the procedure part.*

The "T" field indicates the Type of OEB:
- The "W" letter indicates a white OEB, or
- The "R" letter indicates a red OEB.

Note: *OEBs are listed by type of OEB (RED OEBs first, then WHITE OEBs), and in numerical order for each type of OEB. This enables the flight crew to easily review the OEBs before flight.*

The "E" field indicates whether or not the OEB affects ECAM procedure(s). This enables the flight crew to easily review the OEBs before flight particularly for Operators that use the OEB REMINDER function:
- The "Y" letter indicates that the OEB affects only ECAM procedure(s),
- The "N" letter indicates that at least one of the procedures provided in the OEB does not affect ECAM procedure(s).

CAUTION	When Airbus provides the Operator with the LEOEB, the information "AFFECTS ECAM : Y" ("E" field) does not necessarily mean that (for Operators using the OEB REMINDER function) the Operator's maintenance personnel has activated the OEB REMINDER codes for this OEB onboard the aircraft. It is the Operator's responsibility to define a suitable process for providing the flight crew with confirmation that the OEB REMINDER codes are activated for the ECAM alerts affected by OEBs.

The "Rev Date" field indicates the date at which the OEB content was issued/changed
The "Title" field provides the OEB title.

Continued on the following page

GENERAL DESCRIPTION (Cont'd)

QRH LIST OF EFFECTIVE OEB

The List of Effective Operations Engineering Bulletins (LEOEB) enables to review all the Operations Engineering Bulletins (OEBs) that are applicable to the fleet. Each time an OEB is issued or revised, the LEOEB is updated.

Identification	Title
OEB26 Issue 1	**Erroneous Radio Altimeter (RA) Height Indication** ECAM Entry None
OEB33 Issue 1	Pack Flow Monitoring ECAM Entry None
OEB34 Issue 1	NAV ADR 1+2+3 FAULT ECAM Warning Undue Activation ECAM Entry NAV ADR 1+2+3 FAULT
OEB35 Issue 2	**Loss of AP and A/THR Associated with Alternate Law Reversion** ECAM Entry None

The QRH LEOEB consists of:
The "Identification" field which identifies the OEB with its identification and issue number.

Note: The FCOM OEB and associated QRH OEB PROC have the same OEB number in order to be consistent. However, the issue number of the QRH OEB PROC and the FCOM OEB may be different, because a revision of an FCOM OEB does not necessarily result in a revision of the corresponding QRH OEB PROC, that only provides the procedure part.

Red OEB identification number and title are in bold font. White OEB identification number and title are in regular font. This enables the flight crew to easily review the OEBs before flight.

Note: OEBs are listed in numerical order regardless of the type of OEB (red or white).

The "Title" field provides the OEB title and the "ECAM Entry" part of the OEB PROC. This enable the flight crew to easily review the OEBs before flight particularly for Operators that use the OEB REMINDER function.

Continued on the following page

GENERAL DESCRIPTION (Cont'd)

CAUTION	When Airbus provides the Operator with the LEOEB, the information "ECAM Entry " does not necessarily mean that (for Operators using the OEB REMINDER function) the Operator's maintenance personnel has activated the OEB REMINDER codes for this OEB onboard the aircraft. It is the Operator's responsibility to define a suitable process for providing the flight crew with confirmation that the OEB REMINDER codes are activated for the ECAM alerts affected by OEBs.

A vertical bar in the margin of the QRH LEOEB identifies that the OEB is either new, revised or has an aircraft validity change.

Ident.: OEB-GEN-A-00014184.0001001 / 23 NOV 11

REVIEW OF THE OEB

In accordance with the Standard Operating Procedures, and before each flight, the flight crew must review all OEBs that are applicable to their aircraft. If the OEB conditions are applicable, the flight crew must apply the operational procedure(s) that is in the QRH OEB section.

Ident.: OEB-GEN-A-00014185.0001001 / 23 NOV 11

DISTRIBUTION

OEB are distributed to all affected Operators. The Operators shall provide flight crews with the content of the OEB without delay.

Ident.: OEB-GEN-A-00014186.0001001 / 23 JUN 15

OEB REMINDER FUNCTION

The OEB reminder function provides operational help to the flight crew by enabling them to clearly identify on the ECAM all procedures and STATUS messages superseded by an OEB procedure. When a situation causes an ECAM warning/caution to trigger, a message informs the flight crew in real time that there is an OEB for the displayed ECAM warning/caution and/or STATUS, and as a result, that the ECAM procedure and/or STATUS is changed. In this case, a specific ECAM message informs the flight crew to refer to the QRH. For more information *Refer to FCOM DSC-31-OEB Reminder*.

The OEB reminder function may not be activated for some OEBs. For example, when an OEB procedure supersedes an ECAM procedure, under specific conditions only, the OEB reminder function is not activated, in order to let the flight crew assess the need to apply the OEB procedure or the ECAM procedure.

The OEB reminder function does not relieve the flight crew of their responsibility to review the applicable OEBs during the cockpit preparation.

Continued on the following page

GENERAL DESCRIPTION (Cont'd)

OEB REMINDER CODE

The maintenance personnel must enter specific OEB REMINDER code(s) in the FWC OEB database in order to update the ECAM.
These OEB REMINDER codes are provided in the FCOM OEB chapter only, and are sent to the Operator's Flight Operations department along with the associated QRH OEB PROC. This is to ensure that the OEB database is not updated before the OEB procedure is available in the QRH and FCOM onboard documentation.

Good coordination between the Airline's/Operator's Flight Operations department and the Airline's/Operator's Engineering department must be established, in order to:

- Ensure that the QRH OEB section is updated onboard the aircraft before the activation of the OEB REMINDER function for a specific OEB.
- Rapidly send information about the OEB REMINDER codes to the Engineering department for a rapid update of the ECAM.
- Provide the flight crew with confirmation that the OEB REMINDER codes are activated onboard the aircraft for the ECAM alerts affected by OEBs.

CAUTION	As soon as the maintenance personnel has embodied the corrective action that cancels the OEB on a specific aircraft, the Operator must ensure that: 1. Maintenance personnel has deactivated the OEB REMINDER function for the specific OEB, before informing their Flight Operations department of the installation of the OEB correction action. 2. The QRH OEB section onboard the aircraft is updated to remove the specific OEB from the applicable aircraft.

OPERATIONS
ENGINEERING BULLETINS

NO LOCALIZER OR GLIDE SLOPE CAPTURE IN APPROACH

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No Localizer or Glide Slope Capture in Approach.....A
No Localizer or Glide Slope Capture in Approach .....B

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OEB28 Issue 2
Associated with QRH OEB Proc N°: OEB28/2.0
NO LOCALIZER OR GLIDE SLOPE CAPTURE IN APPROACH

Ident.: OEB-28-00013496.0001001 / 27 MAY 13
Applicable to: MSN 01767

Approved by: Head of Airbus Flight Operations & Training Support

- This OEB covers a significant operational issue. Non-compliance with this OEB may have a significant impact on the operations of the aircraft. Airbus recommends that the operators apply this OEB within 30 days from the date of issue of this OEB.
- An extract of this OEB is provided for insertion in the QRH.
- Airbus recommends that all operators rapidly incorporate the corrective Service Bulletins that cancel this OEB when they become available.

Reason for issue:

Issue 02:
This OEB issue 02 removes the electronic link to the FCOM in the frame of the publication of the new FCOM Approach SOPs.
There is no technical change in the procedure.
Issue 01:
This OEB replaces the A320 OEB 184.
Several Operators experienced the following event: LOC* (G/S*) capture mode did not engage when intercepting the localizer (glide slope) during an ILS approach.
This OEB provides an explanation of the above-mentioned event, as well as the operational recommendations that the flight crew should apply, in order to intercept the ILS using LOC and G/S modes.

Applicable to: Aircraft with Rockwell Collins Multi-Mode Receiver (MMR), P/N 822-1152-121 (MOD 26999 or MOD 30631)

Cancelled by: MMR P/N 822-1152-122 (MOD 37356)

Note: The interchangeability code, given in the Illustrated Part Catalog (IPC), indicates the conditions for interchangeability of equipment. After installation of corrective modification(s)/SB(s), if an Operator reinstalls any equipment affected by this OEB, it is the Operator's responsibility to ensure that the recommendations given in this OEB are applied again for the applicable aircraft.

Operations Engineering Bulletins are issued by Airbus, as the need arises, to quickly transmit technical and procedural information. They are distributed to all FCOM holders and to others who need advice of changes to operational information.
The information in the OEB is recommended by Airbus, but may not be approved by Airworthiness Authorities. If the procedures contained in this OEB differ from the procedures in the AFM, the AFM remains the reference.

M	Localization	T	DU Title	DU identification	DU date
	OEB-28		**No Localizer or Glide Slope Capture in Approach**	00013496.0001001	27 MAY 13
	Criteria: P5168 **Applicable to: MSN 01767**				
	OEB-28		**No Localizer or Glide Slope Capture in Approach**	00013497.0001001	27 MAY 13
	Criteria: P5168 **Applicable to: MSN 01767**				

NO LOCALIZER OR GLIDE SLOPE CAPTURE IN APPROACH

Ident.: OEB-28-00013497.0001001 / 27 MAY 13
Applicable to: MSN 01767

EXPLANATION

Investigations have indicated that the LOC* capture mode did not engage due to an automatic, internal reset of one Multi-Mode Receiver (MMR). This automatic reset causes the LOC and/or G/S deviation data computed by this MMR to continuously change from Normal Operation to No Computed Data, approximately every second. This can only be stopped, on ground, if the maintenance crew cuts the MMR power for more than 10 s.

The Master FMGC must receive a valid LOC signal from its onside MMR for a minimum of 3 s to enable LOC* mode engagement. When the MMR associated to the Master FMGC periodically resets, the associated LOC signal is valid for less than one second, which explains why the LOC* mode does not engage.

In such cases, when the AP and/or FD is engaged and the LOC and G/S modes are armed, the aircraft may unexpectedly fly through the ILS beam without capturing it. The ILS identification and deviation symbols displayed on the PFD (and on the ND in ROSE-LS mode) may intermittently disappear. However, when displayed, these ILS deviation symbols are reliable.

The possibility of both MMRs being simultaneously affected is very remote. Therefore, it is highly probable that the second MMR is operative and will continue to provide constant and valid data to the Slave FMGC.

If the flight crew changes the AP in command, the Slave FMGC becomes Master, and will use the associated, valid data from its onside MMR. This will enable the localizer and/or the glide slope capture modes to engage.

Note: 1. *If both APs are engaged, FMGC1 is Master. To change the Master FMGC from FMGC1 to FMGC2, the flight crew must disengage AP1 pb by pressing the AP1 pb on the FCU.*
2. *If the autopilot is disengaged, and both FDs are engaged, FMGC1 is Master by default. It is possible to change the Master FMGC from FMGC1 to FMGC2, by engaging AP2, or disengaging FD1.*

PROCEDURE

In accordance with the FCOM Standard Operating Procedures, the flight crew should closely monitor the localizer and glide slope capture, for every ILS approach.

- **If LOC* mode does not engage when expected, the flight crew should:**
  Perform the ILS interception using the LOC raw data deviations. The FD and AP can be used in selected modes (HDG-V/S modes, or preferably TRK-FPA modes) for this purpose.
  Consider changing the Master FMGC:

Continued on the following page

NO LOCALIZER OR GLIDE SLOPE CAPTURE IN APPROACH (Cont'd)

- **If the AP is engaged:**
  Change the AP in command
  (If AP1+2 are engaged, change to AP2, by pressing the AP1 pb on the FCU to disengage AP1)
- **If the AP is disengaged, and the FDs are engaged:**
  Turn off FD1

Then, attempt to reengage the LOC and G/S modes, by pressing the APPR pb.

LOC* (G/S*) mode should engage as expected, and the ILS can then be flown in LOC and G/S modes. However, the flight crew should disregard the approach capability on the FMA, and perform only a CAT I approach with a manual landing.

Note: *If it is still not possible to intercept the ILS after changing the Master FMGC, the flight crew must perform an ILS approach using raw data. The AP/FD can be used in selected modes (HDG/VS, or preferably TRK/FPA). The flight crew should disarm the APPR (LOC) mode(s) by setting the APPR (LOC) pb to OFF on the FCU, and then perform a CAT I approach with a manual landing.*

CORRECTIVE ACTION

This OEB is cancelled by the installation of the MMR P/N 822-1152-122.

END OF OEB28

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OPERATIONS
ENGINEERING BULLETINS

INCORRECT VERTICAL PROFILE DURING NON PRECISION APPROACHES

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Incorrect Vertical Profile During Non Precision Approaches.....A
Incorrect Vertical Profile During Non Precision Approaches.....B

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OEB42 Issue 2
Associated with QRH OEB Proc N°: OEB42/1.0
INCORRECT VERTICAL PROFILE DURING NON PRECISION APPROACHES

Ident.: OEB-42-00013611.0001001 / 23 JUL 13
Applicable to: MSN 04393-04397

Approved by: Head of Airbus Flight Operations & Training Support

- This OEB covers a significant operational issue. Non-compliance with this OEB may have a significant impact on the operations of the aircraft. Airbus recommends that the operators apply this OEB within 30 days from the date of issue of this OEB.
- An extract of this OEB is provided for insertion in the QRH.
- Airbus recommends that all operators rapidly incorporate the corrective Service Bulletins that cancel this OEB when they become available.

Reason for issue:

Issue 02:
This OEB is reissued in order to provide the cancellation criteria.
Issue 01:
This OEB replaces the A320 OEB 205.
This OEB is issued to provide the operators with the operational recommendations to apply when the flight crew performs a Non Precision Approach (NPA) with two or more Flight Path Angle (FPA) coded in the Navigation DataBase (NDB).

Applicable to:

All A318/A319/A320/A321 aircraft with Thales/GE FMS 2 (Rev 2+ "S4", Release 1A "S5" and "S6")

Cancelled by:

Thales/GE FMS 2 Release 1A (R1A) "S7" standard

Note: The interchangeability code, given in the Illustrated Part Catalog (IPC), indicates the conditions for interchangeability of equipment. After installation of corrective modification(s)/SB(s), if an Operator reinstalls any equipment affected by this OEB, it is the Operator's responsibility to ensure that the recommendations given in this OEB are applied again for the applicable aircraft.

OPERATIONS ENGINEERING BULLETINS
INCORRECT VERTICAL PROFILE DURING NON PRECISION APPROACHES

Operations Engineering Bulletins are issued by Airbus, as the need arises, to quickly transmit technical and procedural information. They are distributed to all FCOM holders and to others who need advice of changes to operational information.
The information in the OEB is recommended by Airbus, but may not be approved by Airworthiness Authorities. If the procedures contained in this OEB differ from the procedures in the AFM, the AFM remains the reference.

M	Localization	T	DU Title	DU identification	DU date
	OEB-42		**Incorrect Vertical Profile During Non Precision Approaches**	00013611.0001001	23 JUL 13
	Criteria: P7373 **Applicable to: MSN 04393-04397**				
	OEB-42		**Incorrect Vertical Profile During Non Precision Approaches**	00013612.0001001	23 JUL 13
	Criteria: P7373 **Applicable to: MSN 04393-04397**				

INCORRECT VERTICAL PROFILE DURING NON PRECISION APPROACHES

Ident.: OEB-42-00013612.0001001 / 23 JUL 13
Applicable to: MSN 04393-04397

EXPLANATION

BACKGROUND

The FMS computes the vertical profile of the final approach backwards from an anchor point that is the Missed Approach Point (MAP), the Runway threshold (RWY) or the Final End Point (FEP). The FMS adapts its vertical profile to take into account for each waypoint, the following Navigation DataBase data:

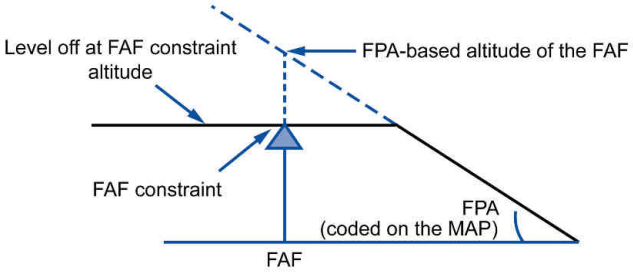
- FPAs
- Altitude constraints.

Note: *The OEB scenario can impact RNP AR procedures. However, the mandatory preliminary validation of such procedures enables operators to detect the misbehaviour in advance. It is then possible for operators to ask for a new coding of the approach.*

Note: *The use of FLS is not affected as the computation of the FLS beam is not impacted.*

DESCRIPTION OF THE MISBEHAVIOUR

When the theoretical altitude of the FAF, based on the FPA coded on the anchor point (called "FPA-based altitude" in this document), is higher than or equal to the FAF altitude constraint, the FMS erroneously disregards the FPA coded on the FAF.



As a result, the vertical profile before the FAF may erroneously consist in:

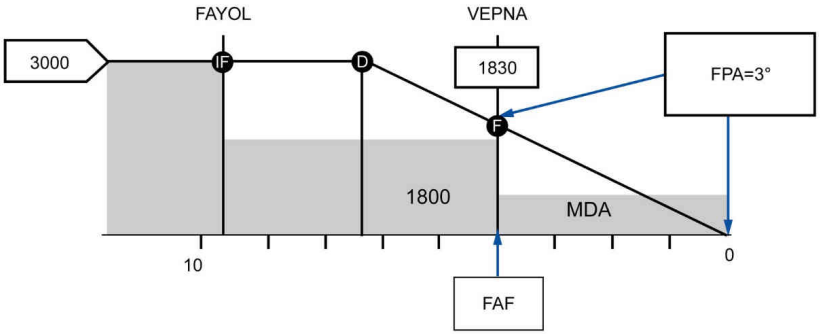
- A descent segment (not respecting the coded FPA), followed by
- A level off at the altitude constraint coded at the FAF.

Continued on the following page

INCORRECT VERTICAL PROFILE DURING NON PRECISION APPROACHES (Cont'd)

Note that this altitude constraint at the FAF should always respect the Minimum Obstacle Clearance (MOC) altitude.
See the below illustration (example):

Approach chart



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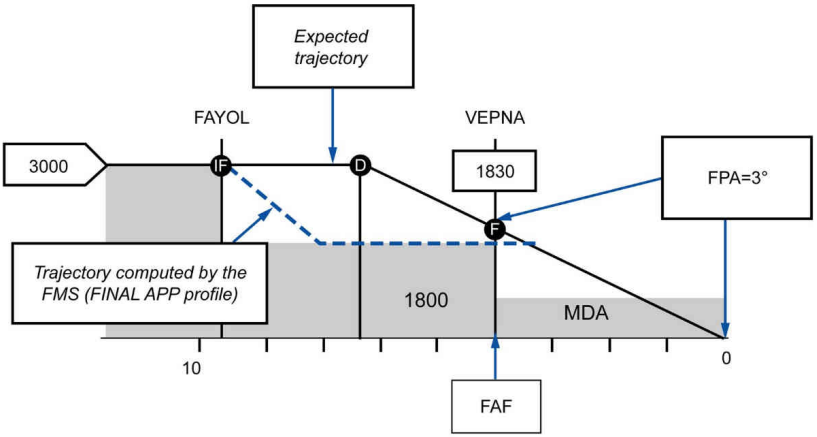
INCORRECT VERTICAL PROFILE DURING NON PRECISION APPROACHES (Cont'd)

Aircraft trajectory



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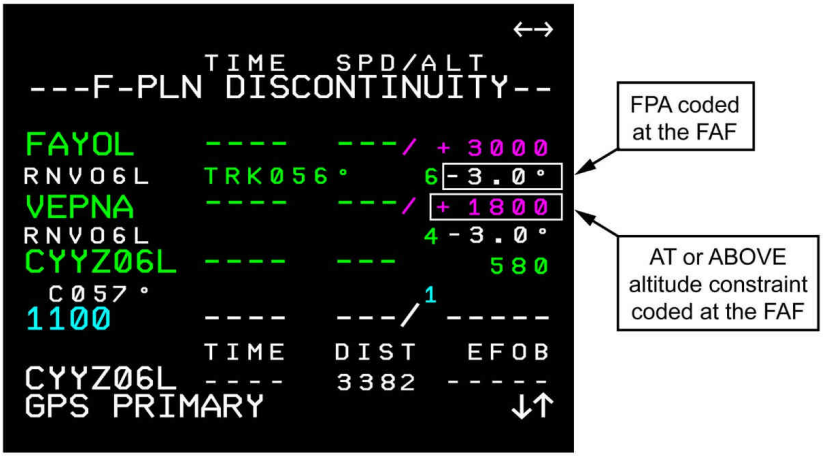
INCORRECT VERTICAL PROFILE DURING NON PRECISION APPROACHES (Cont'd)

MCDU example



LIST OF IMPACTED APPROACHES

The Flight Operations/Engineering department of operators can identify the potentially impacted NPAs with the help of:

- A list established by Airbus, or
- With a Navigation DataBase reading tool.

For this second solution, they have to extract from the Navigation DataBase all NPAs having both:

- AT OR ABOVE altitude constraint coded at the FAF
- A FPA coded on the FAF (i.e. intended for the leg preceding the FAF).

When a list of potentially impacted procedures is established, the operator can also study each procedure to check whether the actual FMS vertical profile is acceptable.
This check can be performed in a simulator or with an aircraft when the weather conditions are VMC (Visual Meteorological Conditions). This check enables to establish a list of impacted NPAs.

Continued on the following page

INCORRECT VERTICAL PROFILE DURING NON PRECISION APPROACHES (Cont'd)

PROCEDURE

The following procedure only applies for flight crew.

■ **If the operator has established a list of impacted NPAs, updated with the current Navigation DataBase cycle:**
When preparing a NPA, the flight crew must check if the procedure is in the list or not:

- **If the procedure is not in the list (i.e. not impacted):**

  There is no restriction on the use of managed lateral and vertical guidance.

- **If the procedure is in the list (i.e. impacted):**
  USE SELECTED vertical guidance (FPA) mode only
  DO NOT USE vertical managed guidance (FINAL APP)
  DISREGARD the VDEV symbol

■ **If the operator has not established a list of impacted NPAs, or if the list is not updated with the current Navigation DataBase cycle:**
The flight crew must check if the procedure contains (refer to the MCDU example):

- Two or more FPA between the descent point and the MAP/RWY/FEP and
- An AT OR ABOVE altitude constraint coded at the FAF

- **If the above coding is not used in the procedure,**

  There is no restriction on the use of managed lateral and vertical guidance.

- **If the above coding is used in the procedure:**
  USE SELECTED vertical guidance (FPA) mode only
  DO NOT USE vertical managed guidance (FINAL APP)
  DISREGARD the VDEV symbol

Note: *1. On an impacted NPA, NAV mode may still be used for lateral guidance.*
2. For an impacted RNAV approach, the flight crew must not use the LNAV/VNAV minimum.

In all cases, the flight crew should check the approach procedure through the MCDU (*Refer to FCOM - Procedure - Normal Procedures - Standard Operating Procedures - Descent Preparation*). If during the approach, the aircraft does not follow the published vertical profile, the flight crew should revert into selected vertical guidance mode.

Continued on the following page

INCORRECT VERTICAL PROFILE DURING NON PRECISION APPROACHES (Cont'd)

CORRECTIVE ACTION

The Thales/GE FMS 2 R1A “S7” standard cancels this OEB (MOD 154301 or, 154302 or, 155031 or, 155032 and Airbus SB 22-1442 or, 22-1444).

END OF OEB42

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OPERATIONS
ENGINEERING BULLETINS

NO ENGAGEMENT OF GUIDANCE MODE

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No Engagement of Guidance Mode.....A
No Engagement of Guidance Mode.....B

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OEB46 Issue 1
Associated with QRH OEB Proc N°: OEB46/1.0
NO ENGAGEMENT OF GUIDANCE MODE

Ident.: OEB-46-00015286.0001001 / 05 NOV 13
Applicable to: MSN 04393-04397, 04947

Approved by: Head of Airbus Flight Operations & Training Support

- This OEB covers a significant operational issue. Non-compliance with this OEB may have a significant impact on the operations of the aircraft. Airbus recommends that the operators apply this OEB within 30 days from the date of issue of this OEB.
- An extract of this OEB is provided for insertion in the QRH.
- Airbus recommends that all operators rapidly incorporate the corrective Service Bulletins that cancel this OEB when they become available.

Reason for issue: The objective of this OEB is to highlight that in the event of an erroneous Radio Altimeter (RA) height indication, guidance modes may not engage as expected.

Applicable to: All A318/A319/A320/A321 aircraft equipped with the ELAC L97 standard (or subsequent ELAC standards).

Cancelled by: FG C14 or FG PC14 or FG I15 or FG PI13 standards.

Note: The interchangeability code, given in the Illustrated Part Catalog (IPC), indicates the conditions for interchangeability of equipment. After installation of corrective modification(s)/SB(s), if an Operator reinstalls any equipment affected by this OEB, it is the Operator's responsibility to ensure that the recommendations given in this OEB are applied again for the applicable aircraft.

Operations Engineering Bulletins are issued by Airbus, as the need arises, to quickly transmit technical and procedural information. They are distributed to all FCOM holders and to others who need advice of changes to operational information.
The information in the OEB is recommended by Airbus, but may not be approved by Airworthiness Authorities. If the procedures contained in this OEB differ from the procedures in the AFM, the AFM remains the reference.

M	Localization	T	DU Title	DU identification	DU date
	OEB-46		**No Engagement of Guidance Mode**	00015286.0001001	05 NOV 13
	Criteria: 27-1234, 27-1243 **Applicable to: MSN 04393-04397, 04947**				
	OEB-46		**No Engagement of Guidance Mode**	00015287.0001001	05 NOV 13
	Criteria: 27-1234, 27-1243 **Applicable to: MSN 04393-04397, 04947**				

NO ENGAGEMENT OF GUIDANCE MODE

Ident.: OEB-46-00015287.0001001 / 05 NOV 13
Applicable to: MSN 04393-04397, 04947

EXPLANATION

If a RA transmits an erroneous height indication, this may have any of the following effects on the auto flight system depending on the flight phase. However, these effects may not necessarily occur in every case of an erroneous RA height indication.

Auto Flight System mode changes (indicated on FMA):
- NAV mode engagement is not possible after takeoff,
- In case of go-around and if the RA is still frozen at a very low height indication:
  - SRS and GA TRK modes engage,
  - NAV, HDG or TRK lateral modes cannot be selected,
  - LVR CLB will not be displayed on the FMA at THR RED ALT,
  - ALT* and ALT will not engage at FCU altitude.

  Disconnecting AP and resetting both FDs enable to recover basic mode (HDG and V/S).

PROCEDURE

■ **During go-around**

● **If SRS and GA TRK modes remain engaged and other guidance modes cannot be selected or engaged as expected:**

Note: - *At the thrust reduction altitude, LVR CLB will not be displayed on the FMA,*
- *ALT* and ALT will not engage at the FCU altitude.*

Disconnect APs.
Set both FDs to OFF then ON. FDs revert to basic modes (HDG - V/S).
Re-engage guidance modes as appropriate.

■ **For the approach that follows the go-around:**
Do not arm the G/S mode.

Flight crews must report, in the technical logbook, any of the above-listed consequences of erroneous RA height.

CORRECTIVE ACTION

FG C14 or FG PC14 or FG I15 or FG PI13.

END OF OEB46

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OPERATIONS
ENGINEERING BULLETINS

HYD ENG PUMP LO PR FOLLOWED BY HYD RSVR OVHT

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HYD ENG PUMP LO PR followed by HYD RSVR OVHT ..... A
HYD ENG PUMP LO PR followed by HYD RSVR OVHT ..... B

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OEB47 Issue 1
Associated with QRH OEB Proc N°: OEB47/2.0
HYD ENG PUMP LO PR FOLLOWED BY HYD RSVR OVHT

Ident.: OEB-47-00015327.0001001 / 20 DEC 13
Applicable to: MSN 01767-01920, 02108, 02204, 02405-02482, 02649, 02908

Approved by: Head of Airbus Flight Operations & Training Support

- This OEB covers a significant operational issue. Non-compliance with this OEB may have a significant impact on the operations of the aircraft. Airbus recommends that the operators apply this OEB within 30 days from the date of issue of this OEB.
- An extract of this OEB is provided for insertion in the QRH.
- Airbus recommends that all operators rapidly incorporate the corrective Service Bulletins that cancel this OEB when they become available.

Reason for issue:

This OEB is issued to provide operational recommendations in the case of a :
- HYD G ENG 1 PUMP LO PR ECAM caution followed by a HYD Y RSVR OVHT ECAM caution
- HYD Y ENG 2 PUMP LO PR ECAM caution followed by a HYD G RSVR OVHT ECAM caution

Applicable to: All A318/A319/A320/A321 Aircraft.

Cancelled by: Power Transfer Unit (PTU) inhibition logic (MOD 35938 or MOD153173)

Note: The interchangeability code, given in the Illustrated Part Catalog (IPC), indicates the conditions for interchangeability of equipment. After installation of corrective modification(s)/SB(s), if an Operator reinstalls any equipment affected by this OEB, it is the Operator's responsibility to ensure that the recommendations given in this OEB are applied again for the applicable aircraft.

Operations Engineering Bulletins are issued by Airbus, as the need arises, to quickly transmit technical and procedural information. They are distributed to all FCOM holders and to others who need advice of changes to operational information.
The information in the OEB is recommended by Airbus, but may not be approved by Airworthiness Authorities. If the procedures contained in this OEB differ from the procedures in the AFM, the AFM remains the reference.

M	Localization	T	DU Title	DU identification	DU date
	OEB-47		**HYD ENG PUMP LO PR followed by HYD RSVR OVHT**	00015327.0001001	20 DEC 13
	Criteria: SA **Applicable to: MSN 01767-01920, 02108, 02204, 02405-02482, 02649, 02908**				
	OEB-47		**HYD ENG PUMP LO PR followed by HYD RSVR OVHT**	00015328.0001001	20 DEC 13
	Criteria: SA **Applicable to: MSN 01767-01920, 02108, 02204, 02405-02482, 02649, 02908**				

HYD ENG PUMP LO PR FOLLOWED BY HYD RSVR OVHT

Ident.: OEB-47-00015328.0001001 / 20 DEC 13
Applicable to: MSN 01767-01920, 02108, 02204, 02405-02482, 02649, 02908

REASON FOR ISSUE

A fluid leakage from the green (yellow) hydraulic system causes a decrease in hydraulic pressure. When the difference in pressure between the green and yellow systems reaches 500 PSI, the PTU is automatically activated to transfer hydraulic power between the two systems. However, due to the fluid leakage, the PTU cannot pressurize the green (yellow) system and starts to run at high speed, heating up the hydraulic fluid in the yellow (green) hydraulic system. This results in an overheat of the yellow (green) hydraulic reservoir and the associated ECAM caution triggers. When the flight crew applies the successive ECAM procedures, both yellow and green hydraulic systems are lost and the Flight Warning Computer (FWC) triggers the HYD G+Y SYS LO PRECAM warning.
The purpose of this OEB is to inform operators about the operational effect of such a failure, and to provide an operational procedure to prevent a dual hydraulic system loss in the described conditions.

EXPLANATION

The main cause of these dual hydraulic loss events is a fluid leakage from the green hydraulic system during landing gear retraction. The decrease in pressure due to this leakage triggers the HYD G ENG 1 PUMP LO PRECAM caution and automatically activates the PTU . However, because of the leakage, the PTU operates at high speed due to its inability to pressurize the green hydraulic system. This causes the yellow hydraulic reservoir to overheat, and the FWC to trigger the HYD Y RSVR OVHTECAM caution.
The ECAM HYD G ENG 1 PUMP LO PR and HYD Y RSVR OVHT procedures specify to set their respective pumps to off. When the flight crew applies these procedures, this results in a loss of the yellow and green hydraulic systems and a HYD G+Y SYS LO PRECAM warning.
During the initial climb, the HYD G RSVR LO LVLECAM caution is inhibited. Therefore the action requested by this procedure to turn off the PTU may appear when the overheat is already present.
A similar scenario may occur, in the case of a slow fluid leakage from the green (yellow) hydraulic system.
In all cases, the HYD Y(G) RSVR OVHTECAM caution is triggered between 2 to 10 min after the triggering of the HYD G(Y) ENG 1(2) PUMP LO PRECAM caution.

Continued on the following page

HYD ENG PUMP LO PR FOLLOWED BY HYD RSVR OVHT (Cont'd)

PROCEDURE

- **If a HYD G ENG 1 PUMP LO PR ECAM caution is followed by a HYD Y RSVR OVHT ECAM caution, disregard the HYD Y RSVR OVHT ECAM procedure, and apply the following procedure to stop the overheat situation:**

HYD Y RSVR OVHT

PTU..... OFF
YELLOW ENG 2 PUMP..... KEEP ON

- **If a HYD Y ENG 2 PUMP LO PR ECAM caution is followed by a HYD G RSVR OVHT ECAM caution, disregard the HYD G RSVR OVHT ECAM procedure, and apply the following procedure to stop the overheat situation:**

HYD G RSVR OVHT

PTU..... OFF
GREEN ENG 1 PUMP..... KEEP ON

CORRECTIVE ACTION

Installation of the automatic PTU inhibition logic as per MOD 35938 (SB A320–29–1126, or SB A320–29–1145), or MOD 153173 (SB A320–29–1156) cancels this OEB. The PTU inhibition logic detects a low pressure situation for more than 6 s of the green or yellow hydraulic system and, consequently, automatically turns off the PTU. This prevents PTU high speed situation and subsequent hydraulic system overheat.

END OF OEB47

OPERATIONS
ENGINEERING BULLETINS

INCORRECT FAC WEIGHT DUE TO DASHED CG ON FUEL PRED PAGE

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Incorrect FAC Weight due to dashed CG on FUEL PRED page.....A
[redacted] Incorrect FAC Weight due to dashed CG on FUEL PRED page [redacted].....B

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OEB54 Issue 2
Associated with QRH OEB Proc N°: OEB54/1.0
INCORRECT FAC WEIGHT DUE TO DASHED CG ON FUEL PRED PAGE

Ident.: OEB-54-00021290.0001001 / 03 SEP 18
Applicable to: MSN 05829, 05898

Approved by: Head of Airbus Flight Operations & Training Support

- This OEB covers a significant operational issue. Non-compliance with this OEB may have a significant impact on the safe operations of the aircraft. The operators shall distribute its content to all flight crews without delay.
- An extract of this OEB is provided for insertion in the QRH.
- Airbus recommends that all operators rapidly incorporate the corrective Service Bulletins that cancel this OEB when they become available.

Reason for issue:

Issue 02:
This OEB is revised in order to update the "Cancelled by" section.
Issue 01:
This OEB is issued to provide a procedure in case both FMS display dashed CG on the FUEL PRED page.

Applicable to:

This OEB is applicable to following aircraft fitted with Thales FMS and FAC standard previous to CAA06:
- A318
- A319/A320/A321ceo fitted with sharklets
- A320neo family
- A319/A320/A321ceo with SB 22-1229 that activates the characteristic speeds computation based on FMS data.

Cancelled by:

This OEB is cancelled by either of the following:

- FAC standard CAA06 (MOD 161931, MP P15872, SB 22-1593 or 22-1594), or
- FAC standard B0625 (MOD 163264, MP P20731, SB 22-1644), or
- Thales FMS2 Release 1A "S7B" standard (MOD 159501 / MP P20078 / SB 22-1590 or MOD 159502 / MP P20079 / SB 22-1591 or MOD 160655 / MP P20384 or MOD 160658 / MP P20386).

Note: The interchangeability code, given in the Illustrated Part Catalog (IPC), indicates the conditions for interchangeability of equipment. After installation of corrective modification(s)/SB(s), if an Operator reinstalls any equipment affected by this OEB, it is the Operator's responsibility to ensure that the recommendations given in this OEB are applied again for the applicable aircraft.

Operations Engineering Bulletins are issued by Airbus, as the need arises, to quickly transmit technical and procedural information. They are distributed to all FCOM holders and to others who need advice of changes to operational information.
The information in the OEB is recommended by Airbus, but may not be approved by Airworthiness Authorities. If the procedures contained in this OEB differ from the procedures in the AFM, the AFM remains the reference.

RED OEB – RED OEB – RED OEB – RED OEB – RED OEB – RED OEB

M	Localization	T	DU Title	DU identification	DU date
	OEB-54		**Incorrect FAC Weight due to dashed CG on FUEL PRED page**	00021290.0001001	03 SEP 18
	Criteria: J3283, P8572, P9892 **Applicable to: MSN 05829, 05898**				
	OEB-54		**Incorrect FAC Weight due to dashed CG on FUEL PRED page**	00021524.0001001	03 SEP 18
	Criteria: J3283, P8572, P9892 **Applicable to: MSN 05829, 05898**				

INCORRECT FAC WEIGHT DUE TO DASHED CG ON FUEL PRED PAGE

Ident.: OEB-54-00021524.0001001 / 03 SEP 18
Applicable to: MSN 05829, 05898

EXPLANATION

The FMS aircraft weight (GW) and CG enable the FAC to compute and display the characteristic speeds (VLS/S/F/GD) on both PFDs.
If the FMS sends an invalid CG to the FAC, the FAC considers both GW and CG as invalid. In this case, the FAC GW that is used to compute the characteristic speeds is initialized with the latest stored valid FMS GW updated with a fuel consumption model. The resulting FAC GW may not reflect the current aircraft weight at takeoff. As a consequence, the characteristic speeds that are displayed on the PFD may be erroneous.

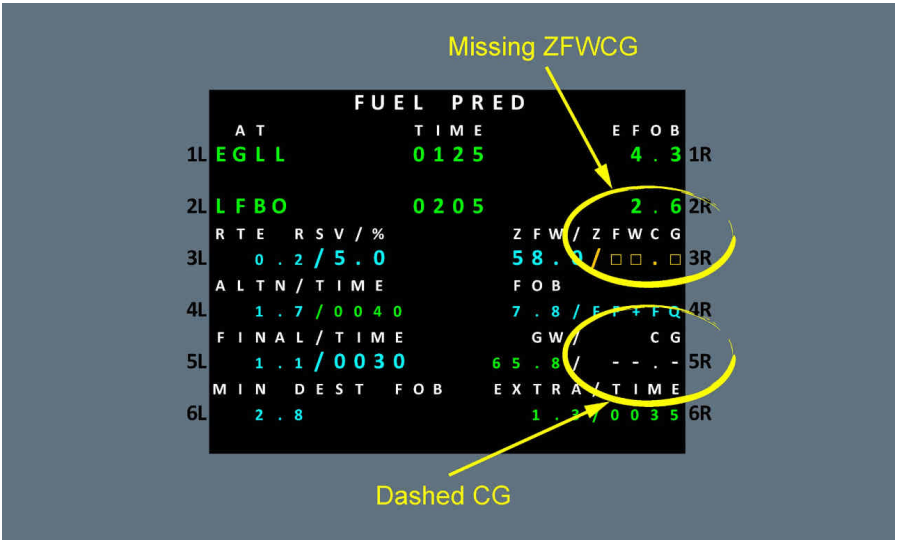
An FMS CG invalidity at engine start may result from either of the following:

- A system malfunction,
- An erroneous insertion of the block fuel or taxi fuel on FMS,
- No insertion of the ZFWCG on FMS.

If the FMS CG is invalid, the CG field is dashed on the FUEL PRED page. This OEBenables the flight crew to detect and correct the FMS CG invalidity by checking, after engine start, the CG field on the FUEL PRED page.

Continued on the following page

INCORRECT FAC WEIGHT DUE TO DASHED CG ON FUEL PRED PAGE (Cont'd)



PROCEDURE

This procedure must be performed on ground only.
The GW CG value must be displayed at least on one FMS to resume normal operations.

AFTER ENGINE START (AT LEAST ONE ENGINE)

CG on FUEL PRED page (FMS1 or 2)..... CHECK

Check that FMS1 or 2 FUEL PRED page displays a GW CG value.

- **If GW CG dashed:**
  ZFWCG value..... ENTER/RE-ENTER
  CG on FUEL PRED page (after 5 s)..... CHECK
  - **If GW CG field remains dashed on both FMS:**
    MAINTENANCE ACTION IS DUE

END OF OEB54

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PERFORMANCE

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PER-LOD Loading

PER-OPD Operating Data

PER-THR Thrust Ratings

PER-TOF Takeoff

PER-FPL Flight Planning

PER-CLB Climb

PER-CRZ Cruise

PER-HLD Holding

PER-DES Descent

PER-GOA Go Around

PER-LDG Landing

PER-OEI One Engine Inoperative

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M	Localization	DU Title	DU identification	DU date

No Temporary Documentary Unit

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PERFORMANCE

LOADING

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PER-LOD-GEN GENERAL

DEFINITIONS....A

PER-LOD-CGO CARGO LOADING

GENERAL....A

PER-LOD-FUL FUEL

USE OF MANUAL MAGNETIC INDICATORS (MMI)....A

PER-LOD-WBA WEIGHT AND BALANCE

PER-LOD-WBA-LTS LOAD AND TRIM SHEET

GENERAL....A
DATA....B
DESCRIPTION....C
LOAD AND TRIM SHEET....D

PER-LOD-WBA-FIT FUEL INDEX TABLES

PER-LOD-WBA-FIT-10 FUEL INDEX TABLE

GENERAL....A
FUEL INDEX TABLE FOR INNER TANK....B
FUEL INDEX TABLE FOR OUTER TANK....C
FUEL INDEX TABLE FOR CENTER TANK....D
FUEL INDEX TABLE FOR WING TANK....E
FUEL INDEX TABLE FOR ACT "AFT1"....F
FUEL INDEX TABLE FOR ACT "AFT2"....G
FUEL INDEX TABLE FOR ACT "FWD"....H

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Localization Title	Toc Index	ID	Reason
PER-LOD-CGO GENERAL	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-LOD-CGO GENERAL	A	2	Effectivity update: The information now also applies to MSN 09063.
PER-LOD-FUL USE OF MANUAL MAGNETIC INDICATORS (MMI) - GENERAL	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-LOD-FUL USE OF MANUAL MAGNETIC INDICATORS (MMI) - GENERAL	A	2	Effectivity update: The information now also applies to MSN 09063.
PER-LOD-FUL USE OF MANUAL MAGNETIC INDICATORS (MMI) - TO DETERMINE FUEL QUANTITY IN THE OUTER TANK	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-LOD-FUL USE OF MANUAL MAGNETIC INDICATORS (MMI) - TO DETERMINE FUEL QUANTITY IN THE WING TANK	A	4	Effectivity update: The information now also applies to MSN 09063.
PER-LOD-FUL USE OF MANUAL MAGNETIC INDICATORS (MMI) - TO DETERMINE FUEL QUANTITY IN THE INNER TANK	A	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-LOD-FUL USE OF MANUAL MAGNETIC INDICATORS (MMI) - WING TANKS (LITERS)	A	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-LOD-FUL USE OF MANUAL MAGNETIC INDICATORS (MMI) - WING TANKS (LITERS)	A	7	Effectivity update: The information now also applies to MSN 09063.
PER-LOD-WBA-LTS DATA	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-LOD-WBA-LTS DATA	B	2	Effectivity update: The information now also applies to MSN 09063.
PER-LOD-WBA-LTS DESCRIPTION	C	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PER-LOD-WBA-LTS DESCRIPTION	C	4	Effectivity update: The information now also applies to MSN 09063.
PER-LOD-WBA-LTS LOAD AND TRIM SHEET	D	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-LOD-WBA-LTS LOAD AND TRIM SHEET	D	6	Effectivity update: The information now also applies to MSN 09063.
PER-LOD-WBA-FIT-10 GENERAL	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-LOD-WBA-FIT-10 GENERAL	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-LOD-WBA-FIT-10 FUEL INDEX TABLE FOR INNER TANK	B	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-LOD-WBA-FIT-10 FUEL INDEX TABLE FOR OUTER TANK	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-LOD-WBA-FIT-10 FUEL INDEX TABLE FOR CENTER TANK	D	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-LOD-WBA-FIT-10 FUEL INDEX TABLE FOR CENTER TANK	D	6	Effectivity update: The information now also applies to MSN 09063.
PER-LOD-WBA-FIT-10 FUEL INDEX TABLE FOR WING TANK	E	7	Effectivity update: The information now also applies to MSN 09063.
PER-LOD-WBA-FIT-10 FUEL INDEX TABLE FOR ACT "AFT1"	F	8	Effectivity update: The information now also applies to MSN 09063.
PER-LOD-WBA-FIT-10 FUEL INDEX TABLE FOR ACT "AFT2"	G	9	Effectivity update: The information now also applies to MSN 09063.
PER-LOD-WBA-FIT-10 FUEL INDEX TABLE FOR ACT "FWD"	H	10	Effectivity update: The information now also applies to MSN 09063.

DEFINITIONS

Ident.: PER-LOD-GEN-00001661.0001001 / 09 DEC 09
Applicable to: ALL

MANUFACTURER'S EMPTY WEIGHT (MEW)

The weight of the structure, power plant, furnishings, systems and other items of equipment that are considered as integral part of the aircraft. It is essentially a "dry" weight, including only those fluids contained in closed systems (e.g. hydraulic fluid).

OPERATIONAL EMPTY WEIGHT (OEW)

The manufacturer's weight empty plus the operator's items i.e. the flight and cabin crew and their baggage, unusable fuel, engine oil, emergency equipment, toilet chemicals and fluids, galley structure, catering equipment, seats, documents etc.

DRY OPERATING WEIGHT (DOW)

The total weight of an aircraft ready for a specific type of operation excluding all usable fuel and traffic load.
Operational Empty Weight plus items specific to the type of flight i.e. catering, newspapers, pantry equipment etc.

TAKEOFF FUEL

The weight of the fuel onboard at takeoff.

OPERATING WEIGHT

The weight obtained by addition of the operational empty weight and the takeoff fuel.

TOTAL TRAFFIC LOAD

The weight of the payload including cargo loads, passengers and passengers bags.

ZERO FUEL WEIGHT (ZFW)

The weight obtained by addition of the total traffic load and the dry operating weight.

TAKEOFF WEIGHT (TOW)

The weight at takeoff. It is equal to the addition of the zero fuel weight and takeoff fuel.

TRIP FUEL

The weight of the fuel necessary to cover the normal leg without reserves.

LANDING WEIGHT

The weight at landing. It is equal to takeoff weight minus trip fuel.

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GENERAL

Ident.: PER-LOD-CGO-00001662.0002001 / 09 DEC 09

1 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The aircraft has two lower deck cargo compartments :
- Forward cargo compartment, compartment 1.
- Aft cargo compartment, subdivided into compartments 3, 4 and 5.

The main access doors to forward and aft compartments are hydraulically operated.
A bulk cargo door ◁ gives additional access to the aft cargo compartment. It is manually operated.

GENERAL

Ident.: PER-LOD-CGO-00001662.0005001 / 09 DEC 09

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The aircraft has two lower deck cargo compartments :
- Forward cargo compartment, compartment 1 and 2.
- Aft cargo compartment, subdivided into compartments 3, 4 and 5.

The main access doors to forward and aft compartments are hydraulically operated.
A bulk cargo door ◁ gives additional access to the aft cargo compartment. It is manually operated.

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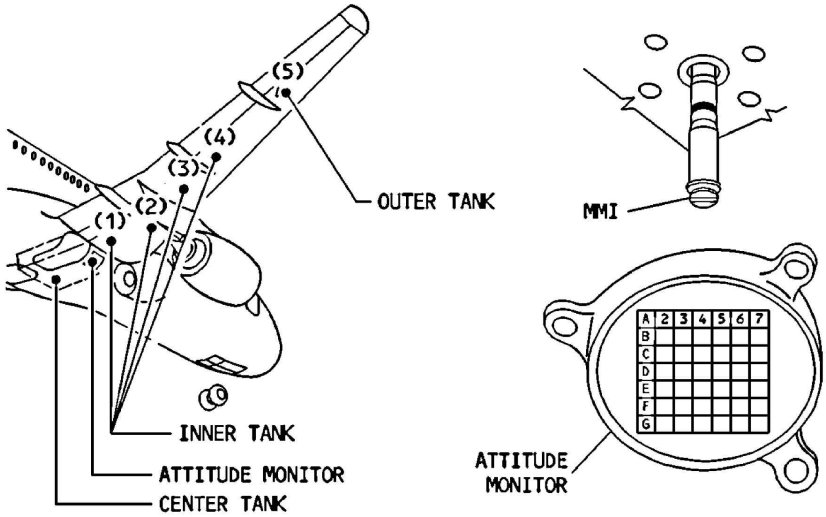
USE OF MANUAL MAGNETIC INDICATORS (MMI)

Ident.: PER-LOD-FUL-C-00001679.0002001 / 09 DEC 09
Applicable to: MSN 01767, 02359, 02405, 02482

GENERAL

Indicators are disposed as follows :

- five in each wing tank, four in inner tank and one in outer tank
- one in the center tank



A/C ATTITUDE.....NOTE

Note the grid square letter and grid square number shown by the bubble on the attitude monitor.

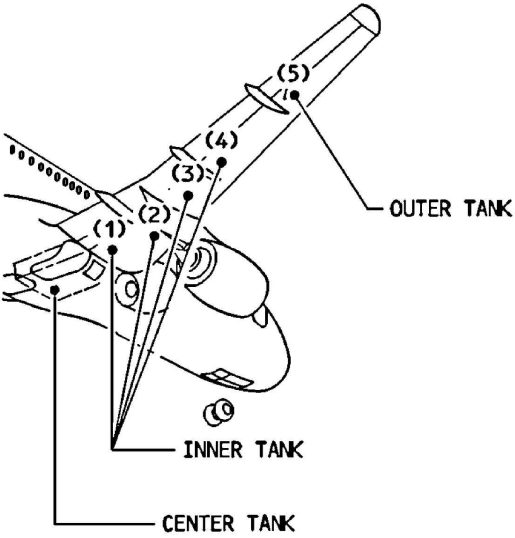
ACCESS PLATFORM.....IN POSITION

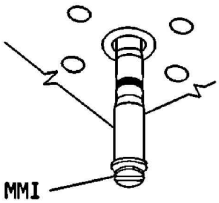
Ident.: PER-LOD-FUL-C-00001679.0005001 / 23 JUN 15
Applicable to: MSN 01920-02334, 02388, 02443-02457, 02584-03782

GENERAL

Indicators are disposed as follows:

- five in each wing tank, four in inner tank and one in outer tank
- one in the center tank





TO DETERMINE AIRCRAFT ATTITUDE

Set ADIRS 1, 2, 3 to the NAV position.
On the LH or RH MCDU, press MCDU MENU pushbutton.
Select CFDSline key (LSK 4L).
Select SYSTEM REPORT/TEST line key (LSK 5L).
Select the line key adjacent to the FUEL indication.
On the MCDU control panel, push the NEXT PAGE key to display the FUEL Main Menu second page.
Select the line key adjacent to the INPUT PARAMETERS VALUES indication.
Use the Table given on the next page to determine the equivalent number and letter from PITCH and ROLL data.
Select RETURN line key (LSK 6L) until CFDS main menu appears.
Press MCDU MENU pushbutton.

PITCH	REF	ROLL	REF
Minus 1.5	1	**Minus 1.5**	A
Minus 1.0	2	**Minus 1.0**	B
Minus 0.5	3	**Minus 0.5**	C
0.0	4	**0.0**	D
Plus 0.5	5	**Plus 0.5**	E

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PITCH	REF	ROLL	REF
Plus 1.0	6	**Plus 1.0**	F
Plus 1.5	7	**Plus 1.5**	G

Note: *1. This procedure can only be used if:*

- *The PITCH and ROLL data is taken from the ADIRS (identified by an "A" after the PITCH and ROLL title).*
- *The PITCH data displayed for the LEFT, CTR, and RIGHT is no more or less than 0.1 of each other.*
- *The ROLL data displayed for the LEFT, CTR, and RIGHT is no more or less than 0.1 of each other.*

2. The FQIS input parameters are not automatically updated. Use the NEXT PAGE control on the MCDU to cycle the pages to update the screen.

ACCESS PLATFORM.....IN POSITION

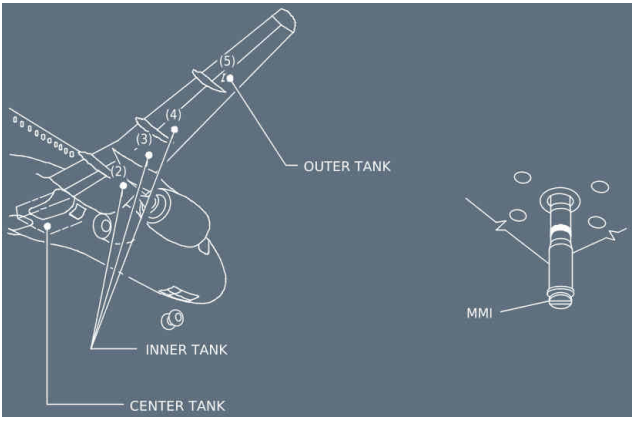
Ident.: PER-LOD-FUL-C-00001679.0007001 / 23 JUN 15

1 **Applicable to: MSN 03863-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

GENERAL

Indicators are installed as follows:

- Four in each wing tank: Three in the inner tank and one in the outer tank
- One in the center tank



TO DETERMINE AIRCRAFT ATTITUDE

Set ADIRS 1, 2, 3 to the NAV position.
On the LH or RH MCDU, press MCDU MENU pushbutton.
Select CFDS line key (LSK 4L).
Select SYSTEM REPORT/TEST line key (LSK 5L).
Select the line key adjacent to the FUEL indication.
On the MCDU control panel, push the NEXT PAGE key to display the FUEL Main Menu second page.
Select the line key adjacent to the INPUT PARAMETERS VALUES indication.
Use the Table given on the next page to determine the equivalent number and letter from PITCH and ROLL data.
Select RETURN line key (LSK 6L) until CFDS main menu appears.
Press MCDU MENU pushbutton.

PITCH	REF	ROLL	REF
Minus 1.5	1	**Minus 1.5**	A
Minus 1.0	2	**Minus 1.0**	B
Minus 0.5	3	**Minus 0.5**	C
0.0	4	**0.0**	D
Plus 0.5	5	**Plus 0.5**	E
Plus 1.0	6	**Plus 1.0**	F
Plus 1.5	7	**Plus 1.5**	G

Note: *1. This procedure can only be used if:*

- *The PITCH and ROLL data is taken from the ADIRS (identified by an "A" after the PITCH and ROLL title).*
- *The PITCH data displayed for the LEFT, CTR, and RIGHT is no more or less than 0.1 of each other.*
- *The ROLL data displayed for the LEFT, CTR, and RIGHT is no more or less than 0.1 of each other.*

2. The FQIS input parameters are not automatically updated. Use the NEXT PAGE control on the MCDU to cycle the pages to update the screen.

ACCESS PLATFORM.....IN POSITION

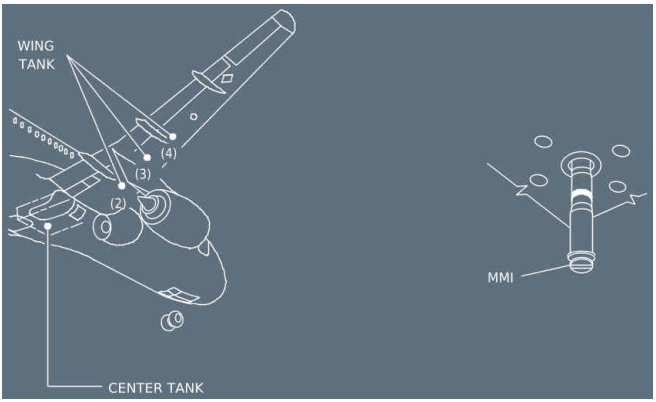
Ident.: PER-LOD-FUL-C-00001679.0008001 / 23 JUN 15

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

GENERAL

Indicators are installed as follows:

- Three in each wing tank
- One in the center tank



TO DETERMINE AIRCRAFT ATTITUDE

Set ADIRS 1, 2, 3 to the NAV position.
On the LH or RH MCDU, press MCDU MENU pushbutton.
Select CFDSline key (LSK 4L).
Select SYSTEM REPORT/TEST line key (LSK 5L).
Select the line key adjacent to the FUEL indication.
On the MCDU control panel, push the NEXT PAGE key to display the FUEL Main Menu second page.
Select the line key adjacent to the INPUT PARAMETERS VALUES indication.
Use the Table given on the next page to determine the equivalent number and letter from PITCH and ROLL data.
Select RETURN line key (LSK 6L) until CFDS main menu appears.
Press MCDU MENU pushbutton.

PITCH	REF	ROLL	REF
Minus 1.5	1	**Minus 1.5**	A
Minus 1.0	2	**Minus 1.0**	B
Minus 0.5	3	**Minus 0.5**	C

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PITCH	REF	ROLL	REF
0.0	4	**0.0**	D
Plus 0.5	5	**Plus 0.5**	E
Plus 1.0	6	**Plus 1.0**	F
Plus 1.5	7	**Plus 1.5**	G

Note: *1. This procedure can only be used if:*

- *The PITCH and ROLL data is taken from the ADIRS (identified by an "A" after the PITCH and ROLL title).*
- *The PITCH data displayed for the LEFT, CTR, and RIGHT is no more or less than 0.1 of each other.*
- *The ROLL data displayed for the LEFT, CTR, and RIGHT is no more or less than 0.1 of each other.*

2. The FQIS input parameters are not automatically updated. Use the NEXT PAGE control on the MCDU to cycle the pages to update the screen.

ACCESS PLATFORM.....IN POSITION

Ident.: PER-LOD-FUL-C-00001692.0001001 / 13 JAN 14

3 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

TO DETERMINE FUEL QUANTITY IN THE OUTER TANK

MMI number 5.....UNLOCK and WITHDRAW

The crewmember must withdraw the MMI slowly until he feels the magnetic attraction between the rod and float magnets.
Do not use force when withdrawing the MMI as this will disengage the float magnet from the rod magnet and bring the rod down onto the mechanical stop.

ROD GRADUATION (which aligns with bottom wing surface).....READ
MMI.....IN PLACE and LOCKED

Use the table for the applicable aircraft wing side, aircraft attitude (grid square letter and number), and the MMI stick number 5, to find the volume of fuel in the outer tank (See below).
Multiply the result by the specific gravity to find the fuel weight.

Note: *The manual magnetic indication accuracy is around 5 %.*

Ident.: PER-LOD-FUL-C-00009657.0005001 / 24 NOV 14

4 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

TO DETERMINE FUEL QUANTITY IN THE WING TANK

MMI (from number 4 to number 2)..... UNLOCK and WITHDRAW

The crewmember must slowly withdraw the MMI, until magnetic attraction is felt between the rod and float magnets.

Do not use force when withdrawing the MMI, as this will disengage the float magnet from the rod magnet, and bring the rod down on to the mechanical stop.

ROD GRADUATION (which aligns with bottom wing surface)..... READ

MMIs shall be withdrawn from number 4 to number 2 until one MMI measures fuel.

MMI..... IN PLACE and LOCKED

Enter the table for the applicable aircraft wing side, aircraft attitude (grid square letter and number), and the applicable MMI stick number, to find the volume of fuel in the wing tank (See below).

Multiply the result by the specific gravity to find the fuel weight.

Note: The manual magnetic indication accuracy is around 5 %.

Ident.: PER-LOD-FUL-C-00001680.0001001 / 13 JAN 14

Applicable to: MSN 01767-03782

TO DETERMINE FUEL QUANTITY IN THE INNER TANK

MMI (from number 4 to number 1)..... UNLOCK and WITHDRAW

The crewmember must withdraw the MMI slowly until he feels the magnetic attraction between the rod and float magnets.

Do not use force when withdrawing the MMI as this will disengage the float magnet from the rod magnet and bring the rod down onto the mechanical stop.

ROD GRADUATION (which aligns with bottom wing surface)..... READ

MMI..... IN PLACE and LOCKED

MMIs shall be withdrawn from number 4 to number 1 until one MMI measures fuel.

Use the table for the applicable aircraft wing side, aircraft attitude (grid square letter and number), and the applicable MMI stick number to find the volume of fuel in the inner tank (Refer to FCOM - PER.LOD.FUL FUEL. C.USE OF MANUAL MAGNETIC INDICATORS (MMI) - WING TANKS).

Multiply the result by the specific gravity to find the fuel weight.

Note: The manual magnetic indication accuracy is around 5 %.

Ident.: PER-LOD-FUL-C-00001680.0003001 / 24 NOV 14

5 **Applicable to: MSN 03863-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

TO DETERMINE FUEL QUANTITY IN THE INNER TANK

MMI (from number 4 to number 2).....UNLOCK and WITHDRAW

The crewmember must withdraw the MMI slowly until he feels the magnetic attraction between the rod and float magnets.

Do not use force when withdrawing the MMI as this will disengage the float magnet from the rod magnet and bring the rod down onto the mechanical stop.

ROD GRADUATION (which aligns with bottom wing surface).....READ

MMI..... IN PLACE and LOCKED

MMIs shall be withdrawn from number 4 to number 2 until one MMI measures fuel.

Use the table for the applicable aircraft wing side, aircraft attitude (grid square letter and number), and the applicable MMI stick number to find the volume of fuel in the inner tank (Refer to FCOM - PER.LOD.FUL FUEL. C.USE OF MANUAL MAGNETIC INDICATORS (MMI) - WING TANKS).
Multiply the result by the specific gravity to find the fuel weight.

Note: The manual magnetic indication accuracy is around 5 %.

Ident.: PER-LOD-FUL-C-00009658.0001001 / 13 JAN 14

Applicable to: ALL

TO DETERMINE FUEL QUANTITY IN THE CENTER TANK

CENTER TANK MMI.....UNLOCK and WITHDRAW

The crewmember must withdraw the MMI slowly until he feels the magnetic attraction between the rod and float magnets.

Do not use force when withdrawing the MMI as this will disengage the float magnet from the rod magnet and bring the rod down onto the mechanical stop.

ROD GRADUATION (which aligns with bottom wing surface).....READ

MMI..... IN PLACE and LOCKED

Use the table for the center tank, and for the applicable aircraft attitude (grid square letter and number) to find the volume of fuel in the center tank (See below).
Multiply the result by the specific gravity to find the fuel weight.

Note: The manual magnetic indication accuracy is around 5 %.

Ident.: PER-LOD-FUL-C-00001681.0001001 / 17 MAR 11
Applicable to: MSN 01767-03782

WING TANKS (LITERS)

MMI N°	MMI READING	LITERS ATTITUDE MONITOR READING A* LEFT WING 1	2	3	4	G 5	RIGHT WING 6	7	MMI READING	LITERS ATTITUDE MONITOR READING A RIGHT WING 1	2	3	4	G 5	LEFT WING 6	7**
1	2	50	50	50	50	50	50	50	2	50	50	50	50	50	50	50
	4	100	100	100	100	100	100	100	4	50	50	50	50	50	50	50
	6	100	100	100	100	100	100	100	6	100	100	100	100	100	100	100
	8	150	150	150	150	150	150	150	8	150	150	150	150	150	150	150
	10	200	200	200	200	200	200	200	10	200	200	200	200	200	200	150
	12	250	250	250	250	250	250	250	12	250	250	250	250	250	250	200
	14	300	300	300	300	300	300	300	14	300	300	300	300	300	300	250
	16	350	350	350	350	350	350	350	16	350	350	350	350	350	350	300
	18	450	450	450	450	450	400	400	18	400	400	400	400	400	400	350
	20	500	500	500	500	500	500	500	20	450	450	450	450	450	450	400
	22	550	550	550	550	550	550	550	22	500	500	500	500	500	500	450
	24	650	650	650	650	650	650	600	24	550	550	550	550	550	550	550
	26	750	750	750	750	750	700	700	26	650	650	650	650	650	650	600
	28	800	800	800	800	800	800	800	28	700	700	700	700	700	700	700
	30	900	900	900	900	900	900	900	30	800	800	800	800	800	800	750
	32	1050	1050	1050	1050	1050	1000	1000	32	900	900	900	900	850	850	850
	34	1150	1150	1150	1150	1150	1150	1100	34	950	950	950	950	950	950	950
	36	1250	1250	1250	1250	1250	1250	1250	36	1050	1050	1050	1050	1050	1050	1050
	38	1350	1350	1350	1350	1350	1350	1350	38	1150	1150	1150	1150	1150	1150	1150
	40	1500	1500	1500	1500	1500	1500	1500	40	1250	1250	1250	1250	1250	1250	1250
	42	1600	1600	1600	1600	1600	1600	1600	42	1350	1350	1350	1350	1350	1350	1350
	44	1750	1750	1750	1750	1750	1750	1750	44	1450	1450	1450	1450	1450	1450	1450
	46	1900	1900	1900	1900	1900	1900	1900	46	1550	1550	1550	1550	1550	1550	1550
	48	2000	2000	2000	2000	2000	2000	2050	48	1700	1700	1700	1700	1700	1700	1700
	50	2200	2200	2200	2200	2200	2200	2200	50	1800	1800	1800	1800	1800	1800	1800
	52	2350	2350	2350	2350	2350	2350	2400	52	1950	1950	1950	1950	1950	1950	1950
	54	2500	2500	2500	2500	2500	2550	2550	54	2000	2000	2050	2050	2050	2050	2050
	56	2650	2650	2700	2700	2700	2650	2700	56	2200	2200	2200	2200	2200	2200	2200
	58	2800	2800	2800	2800	2850	2850	2850	58	2300	2300	2300	2300	2300	2350	2350
	60	2950	2950	2950	3000	3000	3050	3050	60	2450	2500	2500	2500	2500	2500	2500
	62	3100	3100	3150	3150	3150	3200	3250	62	2600	2600	2650	2650	2650	2650	2650
	63	3150	3150	3200	3200	3250	3300	3350	63	2650	2650	2700	2700	2700	2700	2700
	MAX	3450	3450	3450	3500	3500	3600	3600	MAX	2950	2950	2950	2950	2950	3000	3000

* GRID SQUARE LETTER

** GRID SQUARE NUMBER

MMI N°	MMI READING	LITERS ATTITUDE READING A	LEFT WING 1	2	3	G 4	5	RIGHT WING 6	7	MMI READING	LITERS ATTITUDE READING A	RIGHT WING 1	2	3	G 4	5	LEFT WING 6	7
2	2	2300	2250	2200	2200	2200	2200	2200		2	2850	2850	2850	2850	2850	2850	2800	
	4	2500	2450	2400	2400	2350	2350	2350		4	3050	3050	3050	3050	3050	3000	3000	
	6	2650	2600	2600	2600	2550	2500	2500		6	3200	3200	3200	3200	3200	3200	3150	
	8	2750	2750	2750	2700	2700	2650	2650		8	3300	3300	3300	3300	3300	3300	3250	
	10	2900	2900	2900	2900	2850	2850	2850		10	3500	3500	3500	3500	3450	3450	3400	
	12	3100	3100	3100	3100	3100	3050	3000		12	3650	3650	3600	3600	3600	3600	3600	
	14	3250	3250	3250	3250	3250	3250	3200		14	3800	3800	3750	3750	3750	3750	3750	
	16	3450	3450	3450	3450	3450	3400	3400		16	3950	3900	3900	3900	3900	3900	3900	
	18	3700	3650	3650	3650	3650	3600	3600		18	4050	4050	4050	4050	4050	4050	4050	
	20	3900	3900	3900	3900	3850	3850	3850		20	4200	4200	4200	4200	4200	4200	4200	
	22	4100	4100	4050	4050	4050	4050	4050		22	4250	4250	4250	4300	4300	4300	4300	
	24	4300	4300	4300	4300	4300	4300	4300		24	4400	4400	4400	4400	4450	4450	4450	
	26	4500	4500	4500	4500	4500	4500	4550		26	4500	4500	4550	4550	4550	4600	4600	
	28	4700	4700	4750	4750	4750	4750	4750		28	4600	4650	4650	4700	4700	4750	4800	
	30	4950	4950	4950	4950	5000	5000	5000		30	4750	4750	4800	4800	4850	4850	4900	
	32	5100	5100	5150	5150	5150	5200	5200		32	4850	4850	4900	4900	4950	5000	5000	
	MAX									MAX								
3																		
	2	4400	4350	4300	4250	4200	4150	4050		2	5050	5050	5100	5100	5100	5100	5100	
	4	4700	4700	4650	4600	4500	4400	4300		4	5150	5150	5200	5200	5200	5200	5200	
	6	4950	4950	4900	4850	4800	4700	4550		6	5250	5250	5300	5300	5300	5300	5300	
	8	5150	5100	5100	5050	5000	4950	4800		8	5350	5350	5400	5400	5400	5400	5400	
	10	5250	5250	5250	5250	5200	5150	5050		10	5450	5450	5500	5500	5500	5500	5500	
	12	5400	5400	5400	5400	5350	5300	5250		12	5500	5500	5550	5600	5600	5600	5650	
	14	5600	5600	5550	5550	5500	5500	5450		14	5600	5650	5650	5700	5700	5700	5750	
	16	5750	5750	5700	5700	5700	5650	5600		16	5650	5700	5700	5750	5750	5800	5800	
	18	5900	5900	5850	5850	5850	5850	5800		18	5800	5800	5850	5850	5900	5900	5950	
	20	6000	6000	6000	6000	6000	6000	6000		20	5900	5900	5950	5950	6000	6000	6050	
4																		
	2	5700	5600	5550	5500	5450	5400	5300		2	6000	6050	6100	6100	6100	6100	6100	
	4	5850	5750	5700	5650	5600	5550	5500		4	6100	6100	6150	6150	6150	6200	6200	
	6	6000	5900	5850	5800	5750	5700	5650		6	6200	6200	6200	6250	6250	6250	6300	
	8	6150	6100	6050	6000	5950	5900	5850		8	6250	6300	6300	6350	6350	6350	6400	
	10	6300	6300	6250	6200	6150	6150	6100		10	6350	6400	6400	6400	6450	6450	6450	
	12	6450	6400	6400	6400	6350	6300	6250		12	6450	6450	6450	6500	6500	6550	6550	
	14	6550	6500	6500	6500	6500	6450	6450		14	6500	6550	6550	6550	6600	6600	6650	
	16	6600	6600	6600	6600	6600	6600	6550		16	6600	6600	6600	6650	6650	6700	6750	
	18	6650	6650	6650	6650	6650	6650	6650		18	6650	6700	6700	6750	6750	6750	6800	
	MAX									MAX								
5																		
	2	650	600	550	550	550	500	500		2	700	700	700	700	700	700	700	
	4	700	650	650	600	600	550	550		4	750	750	750	750	750	750	750	
	6	750	700	700	650	650	650	600		6	800	800	800	800	750	750	750	
	8	750	750	750	750	700	700	700		8	800	800	800	800	800	800	800	
	10	800	800	800	750	750	750	750		10	850	850	850	850	850	850	850	
	12	800	800	800	800	800	800	800		12	850	850	850	850	850	850	850	
	14	850	850	850	850	850	850	850		14	850	850	850	850	850	850	850	
	MAX	850	850	850	850	850	850	850		MAX	850	850	850	850	850	850	850	

MMI N°	MMI READING	LITERS ATTITUDE MONITOR READING B* LEFT WING 1	2	3	4	F 5	RIGHT WING 6	7	MMI READING	LITERS ATTITUDE MONITOR READING B RIGHT WING 1	2	3	4	F 5	LEFT WING 6	7**
1	2	50	50	50	50	50	50	50	2	50	50	50	50	50	50	50
	4	50	50	50	50	50	50	50	4	50	50	50	50	50	50	50
	6	100	100	100	100	100	100	100	6	100	100	100	100	100	100	100
	8	150	150	150	150	150	150	150	8	150	150	150	150	150	150	150
	10	200	200	200	200	200	200	200	10	200	200	200	200	200	200	150
	12	250	250	250	250	250	250	250	12	250	250	250	250	250	250	200
	14	300	300	300	300	300	300	300	14	300	300	300	300	300	300	250
	16	350	350	350	350	360	350	350	16	350	350	350	350	350	350	300
	18	400	400	400	400	400	400	400	18	400	400	400	400	400	400	350
	20	450	450	450	450	450	450	450	20	450	450	450	450	450	450	450
	22	550	550	550	550	550	550	550	22	500	500	500	500	500	500	500
	24	600	600	600	600	600	600	600	24	550	550	550	550	550	550	550
	26	700	700	700	700	700	700	700	26	650	650	650	650	650	650	650
	28	800	800	800	800	800	800	800	28	700	700	700	700	700	700	700
	30	900	900	900	900	900	900	850	30	800	800	800	800	800	800	800
	32	1000	1000	1000	1000	1000	1000	950	32	900	900	900	900	900	900	850
	34	1100	1100	1100	1100	1100	1100	1100	34	1000	1000	1000	1000	950	950	950
	36	1200	1200	1200	1200	1200	1200	1200	36	1100	1100	1100	1100	1050	1050	1050
	38	1300	1300	1300	1300	1300	1300	1300	38	1200	1200	1200	1200	1200	1150	1150
	40	1450	1450	1450	1450	1450	1450	1450	40	1300	1300	1300	1300	1300	1300	1300
	42	1550	1550	1550	1550	1550	1550	1550	42	1400	1400	1400	1400	1400	1400	1400
	44	1700	1700	1700	1700	1700	1700	1700	44	1500	1500	1500	1500	1500	1500	1500
	46	1800	1800	1800	1800	1800	1800	1800	46	1600	1600	1600	1600	1600	1600	1600
	48	1950	1950	1950	1950	1950	1950	1950	48	1700	1700	1700	1700	1700	1700	1700
	50	2100	2100	2100	2100	2100	2100	2100	50	1850	1850	1850	1850	1850	1850	1850
	52	2250	2250	2250	2250	2250	2250	2250	52	1950	1950	1950	1950	1950	1950	1950
	54	2400	2400	2400	2400	2400	2400	2450	54	2100	2100	2100	2100	2100	2100	2100
	56	2550	2550	2600	2600	2600	2600	2600	56	2250	2250	2250	2250	2250	2250	2250
	58	2750	2750	2750	2750	2750	2750	2750	58	2400	2400	2400	2400	2400	2400	2400
	60	2850	2850	2850	2850	2900	2900	2950	60	2550	2550	2550	2550	2550	2550	2550
	62	3000	3000	3000	3050	3050	3050	3100	62	2700	2700	2700	2700	2700	2700	2700
	63	3050	3050	3050	3100	3150	3150	3200	63	2750	2750	2750	2750	2750	2750	2750
	MAX	3350	3350	3350	3350	3400	3450	3500	MAX	3000	3000	3000	3000	3000	3000	3000

* GRID SQUARE LETTER

** GRID SQUARE NUMBER

MMI N°	MMI READING	LITERS ATTITUDE MONITOR READING B LEFT WING 1	2	3	4	F 5	RIGHT WING 6	7	MMI READING	LITERS ATTITUDE MONITOR READING B RIGHT WING 1	2	3	4	F 5	LEFT WING 6	7
2	2	2350	2350	2300	2300	2250	2200	2200	2	2800	2750	2750	2750	2700	2700	2650
	4	2550	2500	2500	2450	2450	2400	2400	4	2950	2950	2900	2900	2900	2900	2850
	6	2750	2700	2700	2650	2650	2600	2600	6	3100	3100	3100	3100	3100	3050	3050
	8	2850	2850	2800	2800	2800	2750	2750	8	3200	3200	3200	3200	3200	3200	3150
	10	3000	3000	3000	3000	3000	2950	2900	10	3400	3400	3350	3350	3350	3350	3300
	12	3150	3150	3200	3150	3150	3150	3100	12	3550	3550	3550	3550	3500	3500	3450
	14	3350	3350	3350	3350	3350	3300	3300	14	3750	3700	3700	3700	3650	3650	3650
	16	3550	3550	3550	3550	3500	3500	3450	16	3900	3850	3850	3850	3850	3800	3800
	18	3750	3750	3750	3750	3700	3700	3650	18	4050	4000	4000	4000	4000	4000	3950
	20	4000	3950	3950	3950	3950	3900	3900	20	4200	4150	4150	4150	4150	4150	4150
	22	4150	4100	4100	4100	4100	4100	4100	22	4250	4250	4250	4250	4250	4250	4250
	24	4300	4300	4300	4300	4300	4300	4300	24	4400	4400	4400	4400	4400	4400	4400
	26	4500	4500	4500	4500	4500	4500	4500	26	4500	4500	4500	4550	4550	4550	4550
	28	4700	4700	4700	4700	4700	4750	4750	28	4650	4650	4650	4650	4700	4700	4750
	30	4850	4900	4900	4900	4950	4950	4950	30	4750	4750	4800	4800	4850	4850	4900
	32	5050	5100	5100	5100	5100	5150	5150	32	4850	4900	4900	4950	4950	5000	5050
	MAX								MAX							
3	2	4550	4500	4500	4450	4400	4350	4300	2	5000	5000	5000	5000	5000	5000	4950
	4	4800	4800	4800	4750	4650	4600	4500	4	5100	5100	5100	5100	5100	5100	5100
	6	5050	5000	5000	5000	4900	4850	4750	6	5200	5200	5200	5250	5200	5200	5200
	8	5150	5150	5150	5150	5100	5000	5000	8	5300	5300	5350	5350	5350	5350	5350
	10	5300	5300	5300	5300	5250	5200	5150	10	5400	5400	5450	5450	5450	5450	5450
	12	5450	5450	5450	5450	5400	5400	5350	12	5500	5500	5550	5550	5550	5550	5550
	14	5600	5600	5600	5550	5550	5550	5500	14	5600	5600	5650	5650	5650	5650	5700
	16	5700	5700	5700	5700	5700	5700	5700	16	5700	5700	5700	5750	5750	5750	5800
	18	5850	5850	5850	5850	5850	5850	5850	18	5800	5800	5800	5850	5850	5850	5900
	20	6000	6000	6050	6050	6050	6000	6000	20	5900	5900	5950	5950	6000	6000	6000
	MAX								MAX							
4	2								2	5950	5950	6100	6000	6050	6050	6050
	4	5850	5750	5700	5650	5600	5600	5600	4	6050	6050	6100	6100	6100	6100	6150
	6	6000	6000	5950	5900	5850	5800	5800	6	6150	6150	6200	6200	6200	6200	6200
	8	6150	6150	6100	6100	6050	6000	6000	8	6250	6250	6250	6300	6300	6300	6300
	10	6300	6300	6250	6250	6250	6200	6150	10	6350	6350	6350	6400	6400	6400	6400
	12	6400	6400	6400	6400	6350	6350	6300	12	6400	6450	6450	6450	6500	6500	6500
	14	6500	6500	6500	6500	6500	6450	6450	14	6500	6500	6550	6550	6600	6600	6600
	16	6600	6600	6600	6600	6550	6550	6550	16	6600	6600	6600	6650	6650	6700	6700
	18	6760	6770	6770	6770	6770	6770	6760	18	6750	6770	6800	6830	6850	6870	6880
	MAX								MAX							
5	2	650	650	600	600	600	550	550	2	750	700	700	700	700	700	700
	4	750	700	700	650	650	600	600	4	750	750	750	750	750	750	750
	6	750	750	750	700	700	650	650	6	800	800	800	800	750	750	750
	8	800	800	750	750	750	750	700	8	800	800	800	800	800	800	800
	10	800	800	800	800	800	750	750	10	850	850	850	850	800	800	800
	12	850	850	800	800	800	800	800	12	850	850	850	850	850	850	850
	14	850	850	850	850	850	850	850	14	850	850	850	850	850	850	850
	MAX	850	850	850	850	850	850	850	MAX	850	850	850	850	850	850	850

MMI N°	MMI READING	LITERS ATTITUDE MONITOR READING C*	LEFT WING			E	RIGHT WING	
		1	2	3	4	5	6	7
1	2	50	50	50	50	50	50	50
	4	50	50	50	50	50	50	50
	6	100	100	100	100	100	100	100
	8	150	150	150	150	150	150	150
	10	200	200	200	200	200	200	200
	12	250	250	250	250	250	250	250
	14	300	300	300	300	300	300	300
	16	350	350	350	350	350	350	350
	18	400	400	400	400	400	400	400
	20	450	450	450	450	450	450	450
	22	550	550	550	550	500	500	500
	24	600	600	600	600	600	600	600
	26	700	700	700	700	650	650	650
	28	750	750	750	750	750	750	750
	30	850	850	850	850	850	850	850
	32	950	950	950	950	950	950	950
	34	1050	1050	1050	1050	1050	1050	1050
	36	1200	1150	1150	1150	1150	1150	1150
	38	1300	1300	1300	1250	1250	1250	1250
	40	1400	1400	1400	1400	1400	1400	1400
	42	1500	1500	1500	1500	1500	1500	1500
	44	1600	1600	1600	1600	1600	1600	1600
	46	1750	1750	1750	1750	1750	1750	1750
	48	1850	1850	1850	1850	1900	1900	1900
	50	2000	2000	2000	2000	2000	2000	2050
	52	2150	2150	2150	2150	2150	2150	2200
	54	2300	2300	2300	2300	2300	2300	2350
	56	2450	2500	2500	2500	2500	2500	2500
	58	2600	2650	2650	2650	2650	2650	2700
	60	2800	2800	2800	2800	2850	2850	2850
	62	2900	2950	2950	2950	2950	2950	3000
	63	2950	3000	3000	3000	3050	3050	3100
	MAX	3250	3250	3300	3350	3350	3350	3400

MMI READING	LITERS ATTITUDE MONITOR READING C	RIGHT WING			E	LEFT WING	
	1	2	3	4	5	6	7**
2	50	50	50	50	50	50	50
4	50	50	50	50	50	50	50
6	100	100	100	100	100	100	100
8	150	150	150	150	150	150	150
10	200	200	200	200	200	200	150
12	250	250	250	250	250	250	200
14	300	300	300	300	300	300	250
16	350	350	350	350	350	350	350
18	400	400	400	400	400	400	400
20	450	450	450	450	450	450	450
22	500	500	500	500	500	500	500
24	600	600	600	600	600	550	550
26	650	650	650	650	650	650	650
28	750	750	750	750	750	700	700
30	800	800	800	800	800	800	800
32	900	900	900	900	900	900	900
34	1000	1000	1000	1000	1000	1000	1000
36	1100	1100	1100	1100	1100	1100	1100
38	1200	1200	1200	1200	1200	1200	1200
40	1300	1300	1300	1300	1300	1300	1300
42	1400	1400	1400	1400	1400	1400	1400
44	1550	1550	1500	1500	1500	1500	1500
46	1650	1650	1650	1650	1650	1650	1650
48	1800	1750	1750	1750	1750	1750	1800
50	1900	1900	1900	1900	1900	1900	1900
52	2000	2000	2000	2000	2000	2000	2050
54	2150	2150	2150	2150	2150	2150	2200
56	2300	2300	2300	2300	2300	2300	2350
58	2450	2450	2450	2450	2450	2500	2500
60	2600	2600	2600	2600	2600	2650	2650
62	2750	2750	2750	2750	2800	2800	2800
63	2800	2800	2800	2800	2850	2850	2850
MAX	3100	3100	3100	3100	3100	3100	3100

* GRID SQUARE LETTER

** GRID SQUARE NUMBER

MMI N°	MMI READING	LITERS ATTITUDE READING C	LEFT WING 1	2	3	4	E 5	RIGHT WING 6	7	MMI READING	LITERS ATTITUDE MONITOR READING C	RIGHT WING 1	2	3	4	E 5	LEFT WING 6	7
2	2	2450	2400	2400	2400	2350	2350	2350		2	2700	2650	2650	2600	2600	2550	2550	
	4	2650	2600	2600	2600	2550	2550	2500		4	2850	2800	2800	2800	2800	2750	2750	
	6	2800	2800	2800	2800	2750	2750	2700		6	3000	3000	3000	3000	3000	2950	2900	
	8	2900	2900	2900	2900	2900	2850	2850		8	3100	3100	3100	3100	3100	3100	3050	
	10	3100	3100	3100	3100	3100	3050	3000		10	3300	3300	3300	3250	3250	3250	3200	
	12	3250	3250	3250	3250	3250	3250	3200		12	3450	3450	3450	3450	3450	3400	3350	
	14	3450	3450	3450	3450	3400	3400	3350		14	3650	3650	3600	3600	3600	3550	3550	
	16	3650	3650	3650	3600	3600	3550	3550		16	3800	3800	3800	3750	3750	3750	3700	
	18	3850	3850	3800	3800	3800	3750	3750		18	4000	3950	3950	3950	3900	3900	3900	
	20	4050	4050	4000	4000	4000	3950	3950		20	4150	4100	4100	4100	4100	4100	4100	
	22	4200	4200	4150	4150	4150	4100	4100		22	4250	4250	4200	4200	4200	4200	4200	
	24	4350	4350	4300	4300	4300	4300	4300		24	4350	4350	4350	4350	4350	4350	4350	
	26	4500	4500	4500	4500	4500	4500	4500		26	4500	4500	4500	4500	4500	4500	4550	
	28	4650	4650	4650	4700	4700	4700	4700		28	4650	4650	4650	4650	4700	4700	4700	
	30	4850	4850	4850	4850	4900	4900	4900		30	4750	4800	4800	4800	4850	4850	4850	
	32	5000	5000	5000	5050	5050	5050	5100		32	4900	4900	4950	4950	5000	5000	5050	
	MAX									MAX								
3	2	4650	4650	4650	4600	4600	4500	4500		2	4900	4900	4900	4900	4900	4850	4800	
	4	4900	4900	4900	4900	4800	4750	4650		4	5050	5100	5100	5100	5100	5050	5000	
	6	5100	5100	5100	5050	5050	5000	4900		6	5150	5200	5200	5200	5200	5150	5150	
	8	5200	5200	5200	5200	5200	5150	5100		8	5250	5300	5300	5300	5300	5300	5300	
	10	5300	5350	5350	5350	5300	5300	5250		10	5350	5400	5400	5400	5400	5400	5400	
	12	5450	5450	5450	5450	5450	5450	5400		12	5500	5500	5500	5500	5550	5550	5550	
	14	5600	5600	5600	5600	5600	5600	5550		14	5600	5600	5600	5650	5650	5650	5650	
	16	5700	5700	5700	5700	5700	5700	5700		16	5700	5700	5750	5750	5750	5750	5800	
	18	5800	5850	5850	5850	5850	5850	5850		18	5800	5800	5850	5850	5900	5900	5900	
	20	5950	5950	6000	6000	6000	6000	6000		20	5900	5950	5950	6000	6000	6000	6000	
4	2	5800	5750	5750	5700	5700	5700	5700		2	5900	5900	5900	5900	5950	5950	5950	
	4	5950	5900	5900	5850	5850	5800	5800		4	6000	6000	6000	6050	6050	6050	6050	
	6	6050	6050	6000	6000	6000	5950	5950		6	6100	6100	6150	6150	6150	6150	6150	
	8	6200	6150	6150	6150	6150	6100	6100		8	6200	6250	6250	6250	6250	6250	6250	
	10	6300	6300	6300	6300	6300	6250	6250		10	6300	6350	6350	6350	6350	6350	6350	
	12	6400	6400	6400	6400	6400	6400	6400		12	6400	6400	6450	6450	6450	6450	6450	
	14	6500	6500	6500	6500	6500	6500	6500		14	6500	6500	6500	6550	6550	6550	6550	
	16	6600	6600	6600	6600	6600	6600	6600		16	6550	6600	6600	6600	6600	6600	6600	
	18	6730	6740	6750	6750	6760	6760	6770		18	6750	6750	6770	6790	6800	6810	6820	
	MAX									MAX								
5	2	700	700	650	650	600	600	600		2	750	700	700	700	700	650	650	
	4	750	750	700	700	650	650	650		4	750	750	750	750	700	700	700	
	6	750	750	750	750	700	700	700		6	800	800	750	750	750	750	750	
	8	800	800	800	750	750	750	750		8	800	800	800	800	800	800	800	
	10	800	800	800	800	800	800	800		10	850	850	850	800	800	800	800	
	12	850	850	850	800	800	800	800		12	850	850	850	850	850	850	850	
	14	850	850	850	850	850	850	850		14	900	900	850	850	850	850	850	

MMI N°	MMI READING	LITERS ATTITUDE MONITOR READING D* BOTH WINGS 1	2	3	4	5	6	7	MMI READING	LITERS ATTITUDE MONITOR READING D BOTH WINGS 1	2	3	4	5	6	7**	MMI N°
1	2	50	50	50	50	50	50	50	18	3950	3900	3900	3850	3850	3850	3800	2
	4	100	100	100	100	100	100	100	20	4100	4100	4050	4050	4050	4000	4000	
	6	100	100	100	100	100	100	100	22	4200	4200	4150	4150	4150	4150	4150	
	8	150	150	150	150	150	150	150	24	4350	4350	4350	4300	4300	4300	4300	
	10	200	200	200	200	200	200	200	26	4500	4500	4500	4500	4500	4500	4500	
	12	250	250	250	250	250	250	250	28	4650	4650	4650	4650	4650	4700	4700	
	14	300	300	300	300	300	300	300	30	4800	4800	4800	4850	4850	4850	4900	
	16	350	350	350	350	360	350	350	32	4950	4950	5000	5000	5000	5050	5100	
	18	400	400	400	400	400	400	400	MAX								
	20	450	450	450	450	450	450	450									3
	22	500	500	500	500	500	500	500	2	4800	4800	4800	4800	4750	4750	4600	
	24	600	600	600	600	600	600	600	4	5000	5000	5000	5000	4950	4900	4850	
	26	650	650	650	650	650	650	650	6	5100	5150	5150	5100	5100	5100	5050	
	28	750	750	750	750	750	750	750	8	5250	5250	5250	5250	5250	5200	5200	
	30	850	850	850	850	850	850	850	10	5350	5350	5350	5400	5400	5350	5350	
	32	950	950	950	950	950	950	950	12	5450	5500	5500	5500	5500	5500	5500	
	34	1050	1050	1050	1050	1050	1000	1000	14	5600	5600	5600	5600	5600	5600	5600	
	36	1150	1150	1150	1150	1150	1100	1100	16	5700	5700	5700	5750	5750	5750	5750	
	38	1250	1250	1250	1250	1250	1250	1250	18	5800	5800	5850	5850	5850	5900	5900	
	40	1350	1350	1350	1350	1350	1350	1350	20	5900	5900	5950	5950	5950	6000	6000	
	42	1450	1450	1450	1450	1450	1450	1450	MAX								
	44	1550	1550	1550	1550	1550	1550	1550									4
	46	1700	1700	1700	1700	1700	1700	1700	2	5900	5850	5800	5800	5800	5800	5800	
	48	1800	1800	1800	1800	1800	1800	1800	4	6000	5950	5950	5950	5950	5950	5950	
	50	1950	1950	1950	1950	1950	1950	1950	6	6100	6100	6050	6050	6050	6050	6050	
	52	2100	2100	2100	2100	2100	2100	2100	8	6200	6200	6200	6200	6200	6200	6200	
	54	2250	2250	2250	2250	2250	2250	2250	10	6300	6300	6300	6300	6300	6300	6300	
	56	2400	2400	2400	2400	2400	2400	2400	12	6400	6400	6400	6400	6400	6400	6400	
	58	2550	2550	2550	2550	2550	2600	2600	14	6500	6500	6500	6500	6500	6500	6500	
	60	2700	2700	2700	2700	2700	2750	2750	16	6600	6600	6600	6600	6600	6600	6600	
	62	2850	2850	2850	2850	2850	2900	2900	18	6750	6750	6770	6800	6800	6810	6820	
	63	2900	2900	2900	2900	2900	2950	2950	MAX								
	MAX	3050	3050	3100	3100	3100	3150	3150									
2																	5
	2	2550	2550	2500	2500	2450	2450	2450	2	700	700	700	650	650	650	600	
	4	2750	2700	2700	2700	2650	2650	2600	4	750	750	750	700	700	700	650	
	6	2900	2900	2850	2850	2850	2800	2800	6	800	800	750	750	750	750	700	
	8	3000	3000	2950	2950	2950	2950	2900	8	800	800	800	800	800	750	750	
	10	3200	3150	3150	3150	3150	3100	3050	10	850	800	800	800	800	800	800	
	12	3350	3350	3350	3350	3300	3300	3250	12	850	850	850	850	850	850	850	
	14	3550	3550	3550	3500	3500	3450	3450	14	850	850	850	850	850	850	850	
	16	3750	3750	3700	3700	3650	3650	3600	MAX	850	850	850	850	850	850	850	

* GRID SQUARE LETTER

** GRID SQUARE NUMBER

Ident.: PER-LOD-FUL-C-00001681.0004001 / 17 MAR 11

6 **Applicable to: MSN 03863-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

WING TANKS (LITERS)

MMI N°	READING MMI	LITERS ATTITUDE READING A*	LEFT WING 1	2	3	G 4	5	RIGHT WING 6	7	READING MMI	LITERS ATTITUDE READING A	RIGHT WING 1	2	3	G 4	5	LEFT WING 6	7**
2	2	2300	2250	2200	2200	2200	2200	2200	2	2850	2850	2850	2850	2850	2850	2800
	4	2500	2450	2400	2400	2350	2350	2350	4	3050	3050	3050	3050	3050	3000	3000
	6	2650	2600	2600	2600	2550	2500	2500	6	3200	3200	3200	3200	3200	3200	3150
	8	2750	2750	2750	2700	2700	2650	2650	8	3300	3300	3300	3300	3300	3300	3250
	10	2900	2900	2900	2900	2850	2850	2850	10	3500	3500	3500	3500	3450	3450	3400
	12	3100	3100	3100	3100	3100	3050	3000	12	3650	3650	3600	3600	3600	3600	3600
	14	3250	3250	3250	3250	3250	3250	3200	14	3800	3800	3750	3750	3750	3750	3750
	16	3450	3450	3450	3450	3450	3400	3400	16	3950	3900	3900	3900	3900	3900	3900
	18	3700	3650	3650	3650	3650	3600	3600	18	4050	4050	4050	4050	4050	4050	4050
	20	3900	3900	3900	3900	3850	3850	3850	20	4200	4200	4200	4200	4200	4200	4200
	22	4100	4100	4050	4050	4050	4050	4050	22	4250	4250	4250	4300	4300	4300	4300
	24	4300	4300	4300	4300	4300	4300	4300	24	4400	4400	4400	4400	4450	4450	4450
	26	4500	4500	4500	4500	4500	4500	4550	26	4500	4500	4550	4550	4550	4600	4600
	28	4700	4700	4750	4750	4750	4750	4750	28	4600	4650	4650	4700	4700	4750	4800
	30	4950	4950	4950	4950	5000	5000	5000	30	4750	4750	4800	4800	4850	4850	4900
	32	5100	5100	5150	5150	5150	5200	5200	32	4850	4850	4900	4900	4950	5000	5000
	MAX								MAX							
3	2	4400	4350	4300	4250	4200	4150	4050	2	5050	5050	5100	5100	5100	5100	5100
	4	4700	4700	4650	4600	4500	4400	4300	4	5150	5150	5200	5200	5200	5200	5200
	6	4950	4950	4900	4850	4800	4700	4550	6	5250	5250	5300	5300	5300	5300	5300
	8	5150	5100	5100	5050	5000	4950	4800	8	5350	5350	5400	5400	5400	5400	5400
	10	5250	5250	5250	5250	5200	5150	5050	10	5450	5450	5500	5500	5500	5500	5500
	12	5400	5400	5400	5400	5350	5300	5250	12	5500	5500	5550	5600	5600	5600	5650
	14	5600	5600	5550	5550	5500	5500	5450	14	5600	5650	5650	5700	5700	5700	5750
	16	5750	5750	5700	5700	5700	5650	5600	16	5650	5700	5700	5750	5750	5800	5800
	18	5900	5900	5850	5850	5850	5850	5800	18	5800	5800	5850	5850	5900	5900	5950
	20	6000	6000	6000	6000	6000	6000	6000	20	5900	5900	5950	5950	6000	6000	6050

* GRID SQUARE LETTER

** GRID SQUARE NUMBER

MMI N°	MMI READING	LITERS ATTITUDE READING A LEFT WING 1	2	3	4	G 5	RIGHT WING 6	7
4	2	5700	5600	5550	5500	5450	5400	5300
	4	5850	5750	5700	5650	5600	5550	5500
	6	6000	5900	5850	5800	5750	5700	5650
	8	6150	6100	6050	6000	5950	5900	5850
	10	6300	6300	6250	6200	6150	6150	6100
	12	6450	6400	6400	6400	6350	6300	6250
	14	6550	6500	6500	6500	6500	6450	6450
	16	6600	6600	6600	6600	6600	6600	6550
	18	6650	6650	6650	6650	6650	6650	6650
	MAX							
5	2	650	600	550	550	550	500	500
	4	700	650	650	600	600	550	550
	6	750	700	700	650	650	650	600
	8	750	750	750	750	700	700	700
	10	800	800	800	750	750	750	750
	12	800	800	800	800	800	800	800
	14	850	850	850	850	850	850	850
	MAX	850	850	850	850	850	850	850

MMI READING	LITERS ATTITUDE READING A RIGHT WING 1	2	3	4	G 5	LEFT WING 6	7
2	6000	6050	6100	6100	6100	6100	6100
4	6100	6100	6150	6150	6150	6200	6200
6	6200	6200	6200	6250	6250	6250	6300
8	6250	6300	6300	6350	6350	6350	6400
10	6350	6400	6400	6400	6450	6450	6450
12	6450	6450	6450	6500	6500	6550	6550
14	6500	6550	6550	6550	6600	6600	6650
16	6600	6600	6600	6650	6650	6700	6750
18	6650	6700	6700	6750	6750	6750	6800
MAX							
2	700	700	700	700	700	700	700
4	750	750	750	750	750	750	750
6	800	800	800	800	750	750	750
8	800	800	800	800	800	800	800
10	850	850	850	850	850	850	850
12	850	850	850	850	850	850	850
14	850	850	850	850	850	850	850
MAX	850	850	850	850	850	850	850

MMI N°	MMI READING	LITERS ATTITUDE READING B* LEFT WING 1	2	3	4	F 5	RIGHT WING 6	7
2	2	2350	2350	2300	2300	2250	2200	2200
	4	2550	2500	2500	2450	2450	2400	2400
	6	2750	2700	2700	2650	2650	2600	2600
	8	2850	2850	2800	2800	2800	2750	2750
	10	3000	3000	3000	3000	3000	2950	2900
	12	3150	3150	3200	3150	3150	3150	3100
	14	3350	3350	3350	3350	3350	3300	3300
	16	3550	3550	3550	3550	3500	3500	3450
	18	3750	3750	3750	3750	3700	3700	3650
	20	4000	3950	3950	3950	3950	3900	3900
	22	4150	4100	4100	4100	4100	4100	4100
	24	4300	4300	4300	4300	4300	4300	4300
	26	4500	4500	4500	4500	4500	4500	4500
	28	4700	4700	4700	4700	4700	4750	4750
	30	4850	4900	4900	4900	4950	4950	4950
	32	5050	5100	5100	5100	5100	5150	5150
	MAX							
3	2	4550	4500	4500	4450	4400	4350	4300
	4	4800	4800	4800	4750	4650	4600	4500
	6	5050	5000	5000	5000	4900	4850	4750
	8	5150	5150	5150	5150	5100	5000	5000
	10	5300	5300	5300	5300	5250	5200	5150
	12	5450	5450	5450	5450	5400	5400	5350
	14	5600	5600	5600	5550	5550	5550	5500
	16	5700	5700	5700	5700	5700	5700	5700
	18	5850	5850	5850	5850	5850	5850	5850
	20	6000	6000	6050	6050	6050	6000	6000
	MAX							

MMI READING	LITERS ATTITUDE READING B RIGHT WING 1	2	3	4	F 5	LEFT WING 6	7**
2	2800	2750	2750	2750	2700	2700	2650
4	2950	2950	2900	2900	2900	2900	2850
6	3100	3100	3100	3100	3100	3050	3050
8	3200	3200	3200	3200	3200	3200	3150
10	3400	3400	3350	3350	3350	3350	3300
12	3550	3550	3550	3550	3500	3500	3450
14	3750	3700	3700	3700	3650	3650	3650
16	3900	3850	3850	3850	3850	3800	3800
18	4050	4000	4000	4000	4000	4000	3950
20	4200	4150	4150	4150	4150	4150	4150
22	4250	4250	4250	4250	4250	4250	4250
24	4400	4400	4400	4400	4400	4400	4400
26	4500	4500	4500	4550	4550	4550	4550
28	4650	4650	4650	4650	4700	4700	4750
30	4750	4750	4800	4800	4850	4850	4900
32	4850	4900	4900	4950	4950	5000	5050
MAX							
2	5000	5000	5000	5000	5000	5000	4950
4	5100	5100	5100	5100	5100	5100	5100
6	5200	5200	5200	5250	5200	5200	5200
8	5300	5300	5350	5350	5350	5350	5350
10	5400	5400	5450	5450	5450	5450	5450
12	5500	5500	5550	5550	5550	5550	5550
14	5600	5600	5650	5650	5650	5650	5700
16	5700	5700	5700	5750	5750	5750	5800
18	5800	5800	5800	5850	5850	5850	5900
20	5900	5900	5950	5950	6000	6000	6000
MAX							

* GRID SQUARE LETTER

** GRID SQUARE NUMBER

MMIN°	MMI READING	LITERS ATTITUDE READING B LEFT WING 1	2	3	4	F RIGHT WING 5	6	7
4	2							
	4	5850	5750	5700	5650	5600	5600	5600
	6	6000	6000	5950	5900	5850	5800	5800
	8	6150	6150	6100	6100	6050	6000	6000
	10	6300	6300	6250	6250	6250	6200	6150
	12	6400	6400	6400	6400	6350	6350	6300
	14	6500	6500	6500	6500	6500	6450	6450
	16	6600	6600	6600	6600	6550	6550	6550
	18	6760	6770	6770	6770	6770	6770	6760
	MAX							
5								
	2	650	650	600	600	600	550	550
	4	750	700	700	650	650	600	600
	6	750	750	750	700	700	650	650
	8	800	800	750	750	750	750	700
	10	800	800	800	800	800	750	750
	12	850	850	800	800	800	800	800
	14	850	850	850	850	850	850	850
	MAX	850	850	850	850	850	850	850

MMIN°	MMI READING	LITERS ATTITUDE READING B RIGHT WING 1	2	3	4	F LEFT WING 5	6	7
	2	5950	5950	6100	6000	6050	6050	6050
	4	6050	6050	6100	6100	6100	6100	6150
	6	6150	6150	6200	6200	6200	6200	6200
	8	6250	6250	6250	6300	6300	6300	6300
	10	6350	6350	6350	6400	6400	6400	6400
	12	6400	6450	6450	6450	6500	6500	6500
	14	6500	6500	6550	6550	6600	6600	6600
	16	6600	6600	6600	6650	6650	6700	6700
	18	6750	6770	6800	6830	6850	6870	6880
	MAX							
	2	750	700	700	700	700	700	700
	4	750	750	750	750	750	750	750
	6	800	800	800	800	750	750	750
	8	800	800	800	800	800	800	800
	10	850	850	850	850	800	800	800
	12	850	850	850	850	850	850	850
	14	850	850	850	850	850	850	850
	MAX	850	850	850	850	850	850	850

MMIN°	MMI READING	LITERS ATTITUDE READING C* LEFT WING 1	2	3	4	E RIGHT WING 5	6	7
2	2	2450	2400	2400	2400	2350	2350	2350
	4	2650	2600	2600	2600	2550	2550	2500
	6	2800	2800	2800	2800	2750	2750	2700
	8	2900	2900	2900	2900	2900	2850	2850
	10	3100	3100	3100	3100	3100	3050	3000
	12	3250	3250	3250	3250	3250	3250	3200
	14	3450	3450	3450	3450	3400	3400	3350
	16	3650	3650	3650	3600	3600	3550	3550
	18	3850	3850	3800	3800	3800	3750	3750
	20	4050	4050	4000	4000	4000	3950	3950
	22	4200	4200	4150	4150	4150	4100	4100
	24	4350	4350	4300	4300	4300	4300	4300
	26	4500	4500	4500	4500	4500	4500	4500
	28	4650	4650	4650	4700	4700	4700	4700
	30	4850	4850	4850	4850	4900	4900	4900
	32	5000	5000	5000	5050	5050	5050	5100
	MAX							
3								
	2	4650	4650	4650	4600	4600	4500	4500
	4	4900	4900	4900	4900	4800	4750	4650
	6	5100	5100	5100	5050	5050	5000	4900
	8	5200	5200	5200	5200	5200	5150	5100
	10	5300	5350	5350	5350	5300	5300	5250
	12	5450	5450	5450	5450	5450	5450	5400
	14	5600	5600	5600	5600	5600	5600	5550
	16	5700	5700	5700	5700	5700	5700	5700
	18	5800	5850	5850	5850	5850	5850	5850
	20	5950	5950	6000	6000	6000	6000	6000

MMIN°	MMI READING	LITERS ATTITUDE READING C RIGHT WING 1	2	3	4	E LEFT WING 5	6	7**
	2	2700	2650	2650	2600	2600	2550	2550
	4	2850	2800	2800	2800	2800	2750	2750
	6	3000	3000	3000	3000	3000	2950	2900
	8	3100	3100	3100	3100	3100	3100	3050
	10	3300	3300	3300	3250	3250	3250	3200
	12	3450	3450	3450	3450	3450	3400	3350
	14	3650	3650	3600	3600	3600	3550	3550
	16	3800	3800	3800	3750	3750	3750	3700
	18	4000	3950	3950	3950	3900	3900	3900
	20	4150	4100	4100	4100	4100	4100	4100
	22	4250	4250	4200	4200	4200	4200	4200
	24	4350	4350	4350	4350	4350	4350	4350
	26	4500	4500	4500	4500	4500	4500	4550
	28	4650	4650	4650	4650	4700	4700	4700
	30	4750	4800	4800	4800	4850	4850	4850
	32	4900	4900	4950	4950	5000	5000	5050
	MAX							
	2	4900	4900	4900	4900	4900	4850	4800
	4	5050	5100	5100	5100	5100	5050	5000
	6	5150	5200	5200	5200	5200	5150	5150
	8	5250	5300	5300	5300	5300	5300	5300
	10	5350	5400	5400	5400	5400	5400	5400
	12	5500	5500	5500	5500	5550	5550	5550
	14	5600	5600	5600	5650	5650	5650	5650
	16	5700	5700	5750	5750	5750	5750	5800
	18	5800	5800	5850	5850	5900	5900	5900
	20	5900	5950	5950	6000	6000	6000	6000

* GRID SQUARE LETTER

** GRID SQUARE NUMBER

MMI N°	MMI READING	LITERS ATTITUDE READING C LEFT WING 1	2	3	4	E RIGHT WING 5	6	7
4	2	5800	5750	5750	5700	5700	5700	5700
	4	5950	5900	5900	5850	5850	5800	5800
	6	6050	6050	6000	6000	6000	5950	5950
	8	6200	6150	6150	6150	6150	6100	6100
	10	6300	6300	6300	6300	6300	6250	6250
	12	6400	6400	6400	6400	6400	6400	6400
	14	6500	6500	6500	6500	6500	6500	6500
	16	6600	6600	6600	6600	6600	6600	6600
	18	6730	6740	6750	6750	6760	6760	6770
	MAX							
5	2	700	700	650	650	600	600	600
	4	750	750	700	700	650	650	650
	6	750	750	750	750	700	700	700
	8	800	800	800	750	750	750	750
	10	800	800	800	800	800	800	800
	12	850	850	850	800	800	800	800
	14	850	850	850	850	850	850	850

MMI READING	LITERS ATTITUDE READING C RIGHT WING 1	2	3	4	E LEFT WING 5	6	7
2	5900	5900	5900	5900	5950	5950	5950
4	6000	6000	6000	6050	6050	6050	6050
6	6100	6100	6150	6150	6150	6150	6150
8	6200	6250	6250	6250	6250	6250	6250
10	6300	6350	6350	6350	6350	6350	6350
12	6400	6400	6450	6450	6450	6450	6450
14	6500	6500	6500	6550	6550	6550	6550
16	6550	6600	6600	6600	6600	6600	6600
18	6750	6750	6770	6790	6800	6810	6820
MAX							
2	750	700	700	700	700	650	650
4	750	750	750	750	700	700	700
6	800	800	750	750	750	750	750
8	800	800	800	800	800	800	800
10	850	850	850	800	800	800	800
12	850	850	850	850	850	850	850
14	900	900	850	850	850	850	850

MMI N°	MMI READING	LITERS ATTITUDE READING D* BOTH WINGS 1	2	3	4	5	6	7
2	2	2550	2550	2500	2500	2450	2450	2450
	4	2750	2700	2700	2700	2650	2650	2600
	6	2900	2900	2850	2850	2850	2800	2800
	8	3000	3000	2950	2950	2950	2950	2900
	10	3200	3150	3150	3150	3150	3100	3050
	12	3350	3350	3350	3350	3300	3300	3250
	14	3550	3550	3550	3500	3500	3450	3450
	16	3750	3750	3700	3700	3650	3650	3600
	18	3950	3900	3900	3850	3850	3850	3800
	20	4100	4100	4050	4050	4050	4000	4000
	22	4200	4200	4150	4150	4150	4150	4150
	24	4350	4350	4350	4300	4300	4300	4300
	26	4500	4500	4500	4500	4500	4500	4500
	28	4650	4650	4650	4650	4650	4700	4700
	30	4800	4800	4800	4850	4850	4850	4900
	32	4950	4950	5000	5000	5000	5050	5100
	MAX							
3	2	4800	4800	4800	4800	4750	4750	4600
	4	5000	5000	5000	5000	4950	4900	4850
	6	5100	5150	5150	5100	5100	5100	5050
	8	5250	5250	5250	5250	5250	5200	5200
	10	5350	5350	5350	5400	5400	5350	5350
	12	5450	5500	5500	5500	5500	5500	5500
	14	5600	5600	5600	5600	5600	5600	5600
	16	5700	5700	5700	5750	5750	5750	5750
	18	5800	5800	5850	5850	5850	5900	5900
	20	5900	5900	5950	5950	5950	6000	6000
	MAX							

MMI READING	LITERS ATTITUDE READING D BOTH WINGS 1	2	3	4	5	6	7**	MMI N°
2	5900	5850	5800	5800	5800	5800	5800	4
4	6000	5950	5950	5950	5950	5950	5950	
6	6100	6100	6050	6050	6050	6050	6050	
8	6200	6200	6200	6200	6200	6200	6200	
10	6300	6300	6300	6300	6300	6300	6300	
12	6400	6400	6400	6400	6400	6400	6400	
14	6500	6500	6500	6500	6500	6500	6500	
16	6600	6600	6600	6600	6600	6600	6600	
18	6750	6750	6770	6800	6800	6810	6820	
MAX								
2	700	700	700	650	650	650	600	5
4	750	750	750	700	700	700	650	
6	800	800	750	750	750	750	700	
8	800	800	800	800	800	750	750	
10	850	800	800	800	800	800	800	
12	850	850	850	850	850	850	850	
14	850	850	850	850	850	850	850	
MAX	850	850	850	850	850	850	850	

* GRID SQUARE LETTER

** GRID SQUARE NUMBER

Ident.: PER-LOD-FUL-C-00001681.0005001 / 17 MAR 11

7 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

WING TANKS (LITERS)

MMIN°	MMI READING	LITERS ATTITUDE READING A LEFT WING 1	2	3	4	G 5	RIGHT WING 6	7	MMI READING	LITERS ATTITUDE READING A RIGHT WING 1	2	3	4	G 5	LEFT WING 6	7
2	0	2150	2100	2100	2050	2050	2050	2000	0	2800	2750	2750	2750	2700	2700	2650
	2	2300	2250	2250	2250	2200	2200	2150	2	2950	2900	2900	2850	2850	2850	2800
	4	2450	2450	2400	2400	2350	2350	2350	4	3100	3050	3050	3050	3000	3000	2950
	6	2600	2600	2550	2550	2550	2500	2500	6	3250	3200	3200	3200	3150	3150	3150
	8	2800	2750	2750	2750	2700	2700	2700	8	3400	3400	3350	3350	3300	3300	3300
	10	2950	2950	2900	2900	2900	2900	2850	10	3550	3550	3500	3500	3500	3450	3450
	12	3150	3100	3100	3100	3100	3050	3050	12	3700	3700	3700	3650	3650	3650	3600
	14	3300	3300	3300	3300	3300	3250	3250	14	3850	3850	3850	3850	3800	3800	3800
	16	3500	3500	3500	3500	3500	3500	3500	16	4000	4000	4000	4000	4000	3950	3950
	18	3700	3700	3700	3700	3700	3700	3700	18	4150	4150	4150	4150	4150	4150	4100
	20	3900	3900	3900	3900	3900	3900	3900	20	4300	4300	4300	4300	4300	4300	4300
	22	4150	4150	4150	4150	4150	4150	4150	22	4400	4450	4450	4450	4450	4450	4450
	24	4350	4350	4350	4350	4350	4400	4400	24	4550	4550	4550	4550	4600	4600	4600
	26	4550	4550	4550	4600	4600	4600	4650	26	4650	4650	4700	4700	4700	4750	4750
	28	4750	4800	4800	4800	4850	4850	4900	28	4750	4800	4800	4800	4850	4850	4850
	30	4950	5000	5000	5050	5100	5100	5150	30	4850	4900	4900	4950	4950	5000	5000
	32	5150	5200	5250	5250	5300	5350	5400	32	4950	5000	5000	5050	5050	5100	5150
	34	5350	5400	5450	5500	5550	5600	5650	34	5050	5100	5150	5150	5200	5200	5250
3	0	4300	4200	4150	4100	4000	3950	3850	0	5050	5050	5050	5050	5000	5000	5000
	2	4500	4450	4350	4300	4250	4150	4100	2	5150	5150	5150	5150	5150	5100	5100
	4	4700	4650	4600	4550	4450	4400	4350	4	5250	5250	5250	5250	5250	5250	5250
	6	4900	4850	4800	4750	4700	4650	4600	6	5350	5350	5350	5350	5350	5350	5350
	8	5100	5050	5050	5000	4950	4900	4850	8	5450	5450	5450	5450	5450	5450	5450
	10	5300	5250	5250	5200	5150	5150	5100	10	5550	5550	5550	5550	5550	5550	5550
	12	5450	5450	5450	5400	5400	5350	5350	12	5650	5650	5650	5650	5650	5650	5650
	14	5650	5650	5650	5650	5600	5600	5600	14	5700	5750	5750	5750	5750	5750	5800
	16	5800	5800	5800	5850	5850	5850	5800	16	5800	5800	5850	5850	5850	5850	5900
	18	5950	5950	6000	6000	6000	6050	6050	18	5900	5900	5900	5950	5950	5950	6000
	20	6100	6100	6150	6150	6200	6250	6250	20	6000	6000	6000	6050	6050	6050	6100
	22	6200	6250	6300	6350	6400	6400	6450	22	6050	6100	6100	6150	6150	6150	6200
4	0	5650	5600	5550	5450	5400	5300	5200	0	6100	6100	6100	6050	6050	6050	6050
	2	5800	5750	5700	5650	5600	5550	5450	2	6150	6150	6150	6150	6150	6150	6150
	4	5950	5950	5900	5850	5800	5750	5700	4	6250	6250	6250	6250	6250	6250	6250
	6	6100	6100	6050	6050	6000	5950	5900	6	6350	6350	6350	6350	6350	6350	6350
	8	6250	6200	6200	6200	6200	6150	6150	8	6400	6400	6450	6450	6450	6450	6450
	10	6350	6350	6350	6350	6350	6350	6350	10	6500	6500	6500	6500	6550	6550	6550
	12	6500	6500	6500	6550	6550	6550	6550	12	6550	6600	6600	6600	6600	6600	6650
	14	6600	6650	6650	6650	6700	6700	6750	14	6650	6650	6650	6700	6700	6700	6750
	16	6750	6750	6800	6800	6850	6850	6900	16	6700	6750	6750	6750	6800	6800	6800
	18	6850	6900	6950	6950	7000	7050	7050	18	6800	6800	6850	6850	6850	6900	6900
	20	7000	7000	7050	7100	7150	7150	7200	20	6850	6900	6900	6900	6950	6950	7000

MMI N°	MMI READING	LITERS ATTITUDE READING B LEFT WING 1	2	3	4	F 5	RIGHT WING 6	7	MMI READING	LITERS ATTITUDE READING B RIGHT WING 1	2	3	4	F 5	LEFT WING 6	7
2	0	2250	2200	2200	2200	2150	2150	2100	0	2700	2650	2650	2600	2600	2550	2550
	2	2400	2400	2350	2350	2300	2300	2300	2	2850	2800	2800	2750	2750	2700	2700
	4	2550	2550	2500	2500	2450	2450	2450	4	3000	2950	2950	2900	2900	2900	2850
	6	2700	2700	2700	2650	2650	2600	2600	6	3150	3100	3100	3100	3050	3050	3000
	8	2900	2850	2850	2850	2800	2800	2800	8	3300	3300	3250	3250	3200	3200	3200
	10	3050	3050	3000	3000	3000	3000	2950	10	3450	3450	3450	3400	3400	3350	3350
	12	3250	3200	3200	3200	3200	3150	3150	12	3650	3600	3600	3600	3550	3550	3550
	14	3400	3400	3400	3400	3350	3350	3350	14	3800	3800	3750	3750	3750	3700	3700
	16	3600	3600	3600	3550	3550	3550	3550	16	3950	3950	3950	3900	3900	3900	3900
	18	3800	3800	3800	3750	3750	3750	3750	18	4100	4100	4100	4100	4100	4050	4050
	20	4000	4000	4000	4000	4000	3950	4000	20	4250	4250	4250	4250	4250	4250	4250
	22	4200	4200	4200	4200	4200	4200	4200	22	4400	4400	4400	4400	4400	4400	4400
	24	4400	4400	4400	4400	4400	4400	4400	24	4550	4550	4550	4550	4550	4550	4550
	26	4600	4600	4600	4600	4600	4650	4650	26	4650	4650	4700	4700	4700	4750	4750
	28	4800	4800	4800	4850	4850	4850	4900	28	4800	4800	4800	4850	4850	4850	4900
	30	4950	5000	5000	5050	5050	5100	5100	30	4900	4900	4950	4950	5000	5000	5050
	32	5150	5150	5200	5250	5250	5300	5350	32	5000	5000	5050	5100	5100	5150	5150
	34	5300	5300	5350	5400	5450	5500	5550	34	5100	5150	5150	5200	5200	5250	5300
3	0	4550	4450	4400	4350	4250	4200	4150	0	5000	5000	5000	4950	4950	4950	4900
	2	4750	4700	4600	4550	4500	4400	4350	2	5100	5100	5100	5100	5050	5050	5050
	4	4900	4900	4800	4750	4700	4650	4600	4	5200	5200	5200	5200	5200	5200	5150
	6	5100	5050	5000	4950	4900	4850	4800	6	5300	5300	5300	5300	5300	5300	5300
	8	5250	5200	5200	5200	5150	5100	5050	8	5400	5400	5400	5400	5400	5400	5400
	10	5400	5400	5350	5350	5350	5300	5250	10	5500	5500	5500	5550	5550	5550	5550
	12	5500	5550	5550	5550	5550	5500	5500	12	5600	5600	5650	5650	5650	5650	5650
	14	5650	5650	5700	5700	5700	5700	5700	14	5700	5700	5750	5750	5750	5750	5800
	16	5800	5800	5850	5850	5850	5900	5900	16	5800	5800	5850	5850	5850	5900	5900
	18	5900	5950	5950	6000	6000	6050	6100	18	5900	5900	5950	5950	5950	6000	6000
	20	6050	6100	6100	6150	6150	6200	6250	20	6000	6000	6050	6050	6050	6100	6100
	22	6200	6200	6250	6300	6300	6350	6400	22	6100	6100	6100	6150	6150	6200	6200
4	0	5750	5750	5750	5700	5650	5600	5500	0	6050	6050	6050	6050	6000	6000	6000
	2	5900	5900	5850	5850	5850	5800	5750	2	6150	6150	6150	6100	6100	6100	6100
	4	6050	6000	6000	6000	6000	5950	5900	4	6200	6200	6200	6200	6200	6200	6200
	6	6150	6150	6150	6150	6150	6150	6100	6	6300	6300	6300	6300	6300	6300	6300
	8	6300	6300	6300	6300	6300	6300	6300	8	6400	6400	6400	6400	6400	6400	6450
	10	6400	6400	6400	6400	6450	6450	6450	10	6500	6500	6500	6500	6500	6500	6550
	12	6500	6550	6550	6550	6550	6600	6600	12	6550	6600	6600	6600	6600	6600	6650
	14	6650	6650	6650	6700	6700	6700	6750	14	6650	6650	6650	6700	6700	6700	6750
	16	6750	6750	6800	6800	6850	6850	6900	16	6750	6750	6750	6750	6800	6800	6800
	18	6850	6900	6900	6950	6950	7000	7050	18	6800	6800	6850	6850	6850	6900	6900
	20	6950	7000	7000	7050	7100	7100	7150	20	6900	6900	6900	6950	6950	7000	7000

MMIN°	MMI READING	LITERS ATTITUDE READING C LEFT WING 1	2	3	4	E 5	RIGHT WING 6	7	MMI READING	LITERS ATTITUDE READING C RIGHT WING 1	2	3	4	E 5	LEFT WING 6	7
2	0	2350	2350	2300	2300	2250	2250	2250	0	2550	2550	2550	2500	2500	2450	2450
	2	2500	2500	2450	2450	2400	2400	2400	2	2700	2700	2700	2650	2650	2600	2600
	4	2650	2650	2600	2600	2600	2550	2550	4	2900	2850	2850	2800	2800	2750	2750
	6	2800	2800	2800	2750	2750	2750	2700	6	3050	3000	3000	2950	2950	2950	2900
	8	3000	2950	2950	2950	2900	2900	2900	8	3200	3200	3150	3150	3100	3100	3100
	10	3150	3150	3100	3100	3100	3100	3050	10	3350	3350	3350	3300	3300	3300	3250
	12	3350	3300	3300	3300	3250	3250	3250	12	3550	3500	3500	3500	3450	3450	3450
	14	3500	3500	3500	3450	3450	3450	3450	14	3700	3700	3650	3650	3650	3650	3600
	16	3700	3700	3650	3650	3650	3650	3650	16	3900	3850	3850	3850	3800	3800	3800
	18	3900	3900	3850	3850	3850	3850	3850	18	4050	4050	4000	4000	4000	4000	4000
	20	4100	4050	4050	4050	4050	4050	4050	20	4200	4200	4200	4200	4200	4150	4150
	22	4250	4250	4250	4250	4250	4250	4250	22	4350	4350	4350	4350	4350	4350	4350
	24	4450	4450	4450	4450	4450	4450	4450	24	4500	4500	4550	4550	4550	4550	4550
	26	4650	4650	4650	4650	4650	4650	4650	26	4650	4650	4700	4700	4700	4700	4700
	28	4800	4800	4850	4850	4850	4850	4900	28	4800	4800	4800	4850	4850	4850	4900
	30	4950	5000	5000	5000	5050	5050	5100	30	4900	4950	4950	5000	5000	5050	5050
	32	5100	5150	5150	5200	5250	5250	5300	32	5050	5050	5100	5100	5150	5150	5200
	34	5250	5250	5300	5350	5400	5450	5500	34	5150	5150	5200	5250	5300	5300	5350
3	0	4700	4650	4600	4550	4500	4400	4350	0	4900	4900	4900	4850	4800	4800	4750
	2	4850	4800	4750	4750	4650	4600	4550	2	5050	5050	5000	5000	4950	4950	4900
	4	5000	5000	4950	4900	4850	4800	4750	4	5150	5150	5150	5150	5100	5100	5050
	6	5150	5150	5100	5100	5050	5000	4950	6	5250	5250	5250	5250	5250	5250	5200
	8	5300	5300	5250	5250	5250	5200	5150	8	5400	5400	5400	5400	5400	5400	5350
	10	5400	5400	5400	5400	5400	5400	5350	10	5500	5500	5500	5500	5500	5500	5500
	12	5550	5550	5550	5550	5550	5550	5550	12	5600	5600	5600	5600	5650	5650	5650
	14	5650	5700	5700	5700	5700	5750	5750	14	5700	5700	5700	5750	5750	5750	5750
	16	5800	5800	5850	5850	5850	5900	5900	16	5800	5800	5850	5850	5850	5900	5900
	18	5900	5950	5950	6000	6000	6050	6050	18	5900	5900	5950	5950	6000	6000	6000
	20	6050	6050	6100	6100	6150	6150	6200	20	6000	6000	6050	6050	6100	6100	6150
	22	6150	6200	6200	6250	6250	6300	6350	22	6100	6100	6150	6150	6200	6250	6250
4	0	5850	5850	5800	5800	5750	5750	5700	0	6000	6000	5950	5950	5950	5950	5900
	2	5950	5950	5950	5950	5900	5900	5850	2	6100	6100	6100	6050	6050	6050	6050
	4	6100	6100	6050	6050	6050	6050	6000	4	6200	6200	6200	6200	6150	6150	6150
	6	6200	6200	6200	6200	6200	6200	6200	6	6300	6300	6300	6300	6300	6300	6300
	8	6300	6300	6300	6300	6300	6300	6300	8	6350	6400	6400	6400	6400	6400	6400
	10	6400	6450	6450	6450	6450	6450	6450	10	6450	6450	6500	6500	6500	6500	6500
	12	6550	6550	6550	6550	6600	6600	6600	12	6550	6550	6600	6600	6600	6600	6600
	14	6650	6650	6650	6700	6700	6700	6750	14	6650	6650	6650	6700	6700	6700	6750
	16	6750	6750	6800	6800	6800	6850	6850	16	6750	6750	6750	6800	6800	6800	6850
	18	6850	6850	6900	6900	6950	6950	7000	18	6800	6850	6850	6850	6900	6900	6950
	20	6950	6950	7000	7000	7050	7100	7100	20	6900	6900	6950	6950	7000	7000	7050

MMI N°	MMI READING	LITERS ATTITUDE READING D BOTH WINGS 1	2	3	4	5	6	7	MMI READING	LITERS ATTITUDE READING D BOTH WINGS 1	2	3	4	5	6	7	MMI N°
2	0	2450	2450	2400	2400	2350	2350	2350	0	4850	4800	4800	4750	4700	4650	4550	3
	2	2600	2600	2550	2550	2550	2500	2500	2	4950	4950	4950	4900	4850	4800	4750	
	4	2750	2750	2750	2700	2700	2650	2650	4	5100	5100	5100	5050	5050	5000	4950	
	6	2950	2900	2900	2850	2850	2850	2800	6	5200	5200	5200	5200	5200	5150	5150	
	8	3100	3050	3050	3050	3000	3000	3000	8	5350	5350	5350	5350	5350	5350	5300	
	10	3250	3250	3200	3200	3200	3200	3150	10	5450	5450	5450	5450	5450	5450	5450	
	12	3450	3400	3400	3400	3350	3350	3350	12	5600	5600	5600	5600	5600	5600	5600	
	14	3600	3600	3600	3550	3550	3550	3550	14	5700	5700	5700	5700	5750	5750	5750	
	16	3800	3800	3750	3750	3750	3750	3700	16	5800	5800	5850	5850	5850	5900	5900	
	18	3950	3950	3950	3950	3950	3900	3900	18	5900	5950	5950	5950	6000	6000	6050	
	20	4150	4150	4150	4150	4100	4100	4100	20	6000	6050	6050	6100	6100	6150	6150	
	22	4350	4350	4300	4300	4300	4300	4300	22	6100	6150	6150	6200	6250	6250	6300	
	24	4500	4500	4500	4500	4500	4500	4500									
	26	4650	4650	4650	4700	4700	4700	4700	0	5950	5900	5900	5900	5900	5850	5850	4
	28	4800	4800	4850	4850	4850	4850	4900	2	6050	6050	6000	6000	6000	6000	6000	
	30	4950	4950	5000	5000	5050	5050	5050	4	6150	6150	6150	6150	6150	6100	6100	
	32	5050	5100	5100	5150	5200	5200	5250	6	6250	6250	6250	6250	6250	6250	6250	
	34	5200	5200	5250	5300	5350	5350	5400	8	6350	6350	6350	6350	6350	6350	6350	
									10	6450	6450	6450	6450	6500	6500	6500	
									12	6550	6550	6550	6600	6600	6600	6600	
									14	6650	6650	6650	6700	6700	6700	6750	
									16	6750	6750	6750	6800	6800	6850	6850	
									18	6850	6850	6850	6900	6900	6950	6950	
									20	6900	6950	6950	7000	7000	7050	7050	

Ident.: PER-LOD-FUL-C-00001682.0001001 / 16 NOV 11
Applicable to: ALL

CENTER TANK (LITERS)

MMI READING	LITERS ATTITUDE MONITOR READING LINES A AND G*						
	1	2	3	4	5	6	7
2	300	300	350	350	350	350	350
4	400	450	450	500	500	500	500
6	600	600	650	650	650	650	650
8	750	750	750	750	750	750	750
10	900	850	850	850	850	850	900
12	1050	1000	1000	1000	1000	1000	1050
14	1250	1250	1200	1200	1200	1200	1200
16	1450	1450	1400	1400	1400	1400	1400
18	1650	1650	1600	1600	1600	1600	1600
20	1900	1850	1850	1850	1850	1800	1800
22	2100	2050	2050	2050	2050	2000	2000
24	2300	2250	2250	2250	2200	2200	2150
26	2450	2450	2450	2450	2450	2400	2350
28	2700	2650	2650	2650	2600	2550	2550
30	2900	2850	2850	2850	2800	2800	2750
32	3050	3050	3050	3050	3000	3000	2950
34	3250	3250	3250	3250	3200	3200	3150
36	3500	3500	3450	3450	3450	3400	3400
38	3700	3700	3700	3700	3650	3650	3600
40	3900	3900	3900	3900	3900	3850	3800
42	4100	4100	4100	4100	4100	4050	4050
44	4350	4350	4350	4300	4300	4250	4250
46	4550	4550	4550	4550	4500	4500	4450
48	4750	4750	4750	4700	4700	4650	4650
50	4950	4950	4950	4950	4900	4900	4850
52	5150	5150	5150	5150	5100	5100	5050
54	5400	5400	5400	5400	5350	5300	5250
56	5600	5600	5600	5600	5550	5500	5450
58	5800	5800	5800	5750	5750	5700	5650
60	6000	6000	6000	5950	5950	5900	5900
62	6200	6200	6200	6150	6150	6100	6100
64	6400	6400	6400	6400	6350	6300	6300
66	6600	6600	6600	6600	6550	6550	6500
68	6800	6800	6750	6750	6750	6700	6700
70	7000	6950	6950	6950	6900	6900	6900
72	7200	7200	7150	7150	7100	7100	7050
74	7400	7400	7350	7350	7300	7300	7300
76	7600	7600	7600	7550	7550	7500	7500
78	7850	7800	7800	7800	7750	7700	7700
MAX	7950	7900	7900	7900	7850	7800	7800

MMI READING	LITERS ATTITUDE MONITOR READING LINES B AND F						
	1	2	3	4	5	6	7**
2	300	300	300	300	300	300	350
4	400	450	450	450	500	500	500
6	600	600	650	650	650	650	600
8	750	750	750	750	750	750	750
10	900	850	850	850	850	850	900
12	1050	1000	1000	1000	1000	1000	1050
14	1250	1200	1200	1200	1200	1200	1200
16	1450	1450	1450	1450	1400	1400	1400
18	1700	1700	1650	1650	1600	1600	1600
20	1900	1900	1900	1850	1850	1850	1800
22	2100	2100	2100	2050	2050	2000	2000
24	2300	2300	2250	2250	2200	2200	2150
26	2500	2500	2450	2450	2400	2350	2350
28	2700	2700	2650	2650	2600	2550	2500
30	2900	2900	2900	2850	2800	2800	2750
32	3100	3100	3100	3050	3050	3000	2950
34	3300	3300	3300	3250	3250	3200	3150
36	3500	3500	3500	3450	3450	3400	3400
38	3700	3700	3700	3700	3650	3650	3600
40	3950	3950	3950	3900	3900	3850	3800
42	4150	4150	4150	4100	4100	4050	4000
44	4350	4350	4350	4300	4300	4250	4200
46	4550	4550	4550	4550	4500	4500	4450
48	4750	4750	4750	4750	4700	4700	4650
50	4950	4950	4950	4950	4900	4900	4850
52	5150	5150	5150	5150	5150	5100	5050
54	5400	5400	5400	5400	5350	5300	5250
56	5600	5600	5600	5600	5550	5500	5450
58	5800	5800	5800	5800	5750	5750	5700
60	6000	6000	6000	6000	5950	5950	5900
62	6200	6200	6200	6200	6150	6150	6100
64	6400	6400	6400	6400	6350	6350	6300
66	6600	6600	6600	6600	6550	6550	6500
68	6800	6800	6800	6800	6750	6750	6700
70	7000	7000	7000	6950	6950	6950	6900
72	7200	7200	7150	7150	7150	7100	7100
74	7400	7400	7350	7350	7350	7300	7300
76	7600	7600	7600	7550	7550	7500	7500
78	7800	7800	7800	7750	7750	7700	7700
MAX	7900	7900	7850	7850	7850	7800	7800

MMI READING	LITERS ATTITUDE MONITOR READING LINES C AND E						
	1	2	3	4	5	6	7
2	250	300	300	300	300	300	300
4	400	450	450	500	500	500	450
6	600	600	650	650	650	600	600
8	750	750	750	750	750	750	750
10	850	850	850	850	850	850	850
12	1050	1000	1000	1000	1000	1000	1000
14	1250	1200	1200	1200	1200	1200	1200
16	1450	1450	1450	1400	1400	1400	1400
18	1650	1650	1650	1650	1600	1600	1600
20	1900	1900	1900	1900	1900	1850	1800
22	2100	2100	2100	2100	2050	2050	2000
24	2300	2300	2250	2250	2250	2200	2200
26	2500	2500	2450	2450	2400	2400	2350
28	2700	2650	2650	2650	2600	2600	2550
30	2900	2900	2850	2850	2800	2800	2750
32	3100	3100	3100	3100	3050	3050	3000
34	3300	3300	3300	3250	3250	3200	3200
36	3500	3500	3500	3500	3450	3450	3400
38	3700	3700	3700	3700	3700	3650	3600
40	3950	3950	3950	3950	3900	3900	3850
42	4150	4150	4150	4150	4100	4100	4050
44	4350	4350	4350	4350	4300	4300	4250
46	4550	4550	4550	4550	4500	4500	4450
48	4750	4750	4750	4750	4750	4700	4650
50	4950	4950	4950	4950	4900	4900	4850
52	5150	5150	5150	5150	5100	5100	5050
54	5400	5400	5400	5400	5350	5300	5250
56	5600	5600	5600	5600	5550	5500	5450
58	5800	5800	5800	5800	5750	5700	5650
60	6000	6000	6000	6000	5950	5950	5900
62	6200	6200	6200	6200	6150	6100	6100
64	6400	6400	6400	6400	6350	6300	6300
66	6600	6600	6600	6600	6550	6550	6500
68	6800	6800	6800	6750	6750	6700	6700
70	7000	7000	7000	6950	6950	6900	6900
72	7200	7200	7150	7150	7150	7150	7100
74	7400	7400	7400	7350	7350	7300	7300
76	7600	7600	7600	7550	7550	7500	7500
78	7800	7800	7800	7750	7750	7700	7700
MAX	7900	7900	7850	7850	7850	7800	7800

MMI READING	LITERS ATTITUDE MONITOR READING LINES D						
	1	2	3	4	5	6	7
2	300	300	300	300	300	300	300
4	450	450	500	500	500	500	500
6	600	600	650	650	650	650	600
8	750	750	750	750	750	750	750
10	900	900	900	900	900	900	900
12	1050	1000	1000	1000	1000	1000	1050
14	1250	1250	1200	1200	1200	1200	1200
16	1500	1450	1450	1450	1400	1400	1400
18	1700	1700	1700	1650	1650	1650	1600
20	1900	1900	1900	1900	1900	1850	1850
22	2100	2100	2100	2100	2050	2050	2000
24	2300	2300	2300	2250	2250	2200	2200
26	2500	2500	2450	2450	2400	2400	2350
28	2700	2700	2700	2650	2600	2600	2550
30	2900	2900	2900	2900	2850	2800	2750
32	3100	3100	3100	3100	3050	3050	3000
34	3300	3300	3300	3300	3250	3250	3200
36	3500	3500	3500	3500	3450	3450	3400
38	3700	3750	3750	3700	3700	3650	3650
40	3950	3950	3950	3950	3900	3900	3850
42	4150	4150	4150	4150	4100	4100	4050
44	4350	4350	4350	4350	4300	4300	4250
46	4550	4550	4550	4550	4500	4500	4450
48	4750	4750	4750	4750	4700	4700	4650
50	4950	4950	4950	4950	4900	4900	4850
52	5200	5200	5200	5150	5100	5100	5050
54	5400	5400	5400	5400	5350	5300	5250
56	5600	5600	5600	5600	5550	5500	5450
58	5800	5800	5800	5800	5750	5700	5650
60	6000	6000	6000	6000	5950	5950	5900
62	6200	6200	6200	6200	6150	6150	6100
64	6400	6400	6400	6400	6350	6350	6300
66	6600	6600	6600	6600	6550	6550	6500
68	6800	6800	6800	6800	6750	6750	6700
70	7000	7000	7000	7000	6950	6950	6900
72	7200	7200	7200	7150	7150	7150	7100
74	7400	7400	7400	7350	7350	7350	7300
76	7600	7600	7600	7550	7550	7550	7500
78	7800	7800	7800	7750	7750	7700	7700
MAX	7900	7900	7900	7900	7850	7850	7800

* GRID SQUARE LETTER

** GRID SQUARE NUMBER

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GENERAL

Ident.: PER-LOD-WBA-LTS-00001685.0001001 / 09 DEC 09
Applicable to: ALL

This chart allows the determination of Aircraft CG location (MAC) function of dry operating weight, pantry adjustment, cargo loads, passengers and fuel on board.
The operational limits shown on the load and trim sheet are more restrictive than the certified limits because error margins have been taken into account.

The load and trim sheet needs to be updated when :
- a modification which changes the aircraft certified limits is included or
- a modification (cabin layout, cargo arrangement ...) which influences the operational limits is made.

It is the airline responsibility to define a load and trim sheet and to keep it up to date. *Refer to PER-LOD-WBA-LTS DESCRIPTION* is a description of the Load and Trim Sheet utilization (*Refer to PER-LOD-WBA-LTS LOAD AND TRIM SHEET*), for a typical passenger arrangement.
Refer to customized load and trim sheet for preparing a revenue flight.

DATA

Ident.: PER-LOD-WBA-LTS-00001686.0002001 / 23 JUN 15
1 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Dry Operating Weight = 42 500 kg and CG = 27 % (H-arm = 18.93 m)
Deviation or adjustment = +100 kg in zone F
Cargo = 5 500 kg with the following distribution:
cargo 1 = 2 000 kg; cargo 3 = 1 500 kg; cargo 4 = 1 500 kg; cargo 5 = 500 kg
Passengers = 145 PAX with the following distribution:
cabin OA = 50; cabin OB = 55; cabin OC = 40
Ramp Fuel = 13 200 kg; Taxi Fuel = 200 kg; Fuel Density = 0.785 kg/l

DATA

Ident.: PER-LOD-WBA-LTS-00001686.0004001 / 23 JUN 15

[2] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Dry Operating Weight = 48 000 kg and CG = 22 % (H-arm = 23 m)
Deviation or adjustment = +100 kg in zone F
Cargo = 6 500 kg with the following distribution:
cargo 1 = 1 000 kg; cargo 2 = 0 kg; cargo 3 = 3 000 kg; cargo 4 = 2 000 kg; cargo 5 = 500 kg
Passengers = 180 PAX with the following distribution:
cabin OA = 50; cabin OB = 70; cabin OC = 60
Ramp Fuel = 14 200 kg
Taxi Fuel = 200 kg
Fuel Density = 0.785 kg/l

DESCRIPTION

Ident.: PER-LOD-WBA-LTS-00001687.0002001 / 12 FEB 11

[3] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

a. Enter Master data in (1).
b. Compute Dry Operating Weight Index using the formula indicated in (2) and report in (3).
c. Dry Operating Index = 53.4.
d. Enter weight deviation or adjustment in (4) and read corresponding index variation in (5): +1.43.
e. Calculate corrected index and report in (6): 54.83.
f. Enter master data in table (7) and determine Zero Fuel Weight: 60 280 kg and Takeoff Weight: 73 280 kg.
g. Enter cargo weight and passenger number per compartment in (8).
h. Enter index scale (9) with corrected index and proceed through cargo and passenger scales (10).
i. From the final point draw a vertical line which intersects (12) the zero fuel weight horizontal line (11).
j. Check if the intersection point is within the Zero Fuel Weight operational limits, if not rearrange cargo loading.
k. Read in table (13) the fuel index correction corresponding to Ramp Fuel Weight (13 200 kg) and Fuel Density (0.785 kg/l).
   This example will be continued assuming the FUEL INDEX = –2 was found. Carry in fuel scale (14).
l. From this point draw a vertical line which intersects (16) the takeoff weight horizontal line (15).
m. Check if the intersection point is within the Takeoff Weight operational limits.
n. Read zero fuel weight and CG position: 32.7 % and fill in table (17).
o. Read takeoff CG position: 30.5 % and fill in table (18).

CAUTION	If there is no customized trim sheet for your airline in this section, do not use the information enclosed herein for day to day operation as margins and load CG vary with cabin and cargo layout.

Note: *When referring to CG lower than 27 %, an operational margin is taken into account. It is the reason why performance at forward CG (lower than 25 %) must be used for operational CG lower than 27 %.*

DESCRIPTION

Ident.: PER-LOD-WBA-LTS-00001687.0004001 / 12 FEB 11

4 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

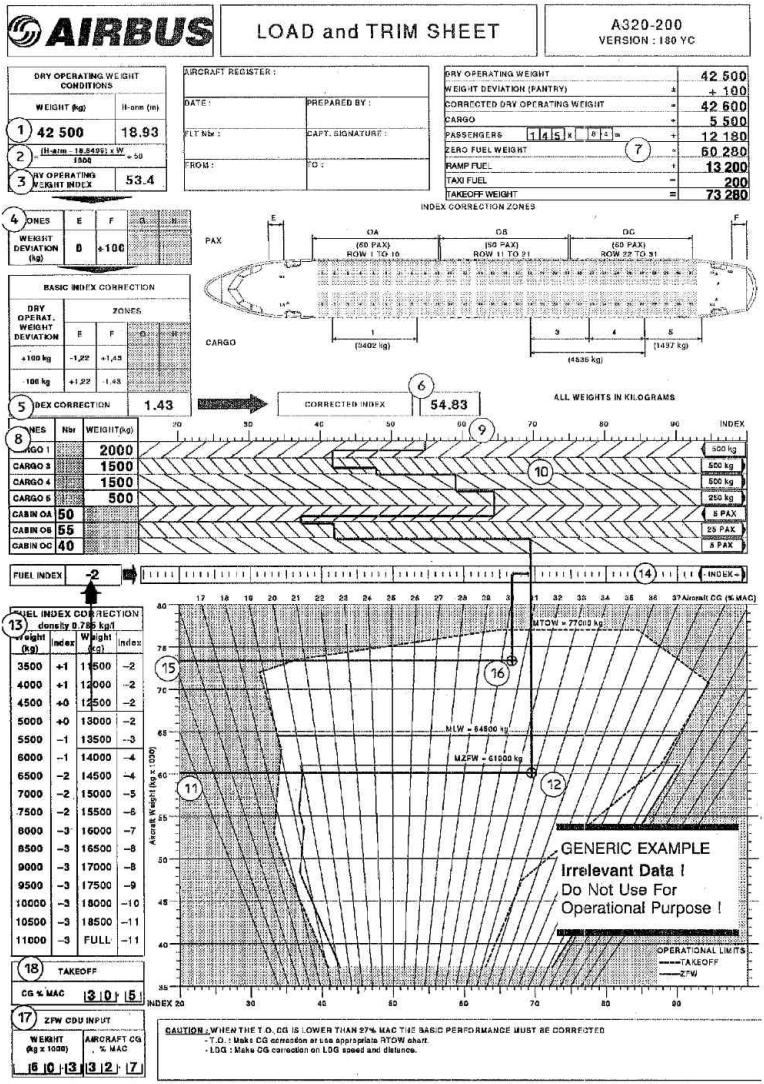
a. Enter Master data in (1).
b. Compute Dry Operating Weight Index using the formula indicated in (2) and report in (3).
c. Dry Operating Index = 43.96.
d. Enter weight deviation or adjustment in (4) and read corresponding index variation in (5): +1.70.
e. Calculate corrected index and report in (6): 45.66.
f. Enter master data in table (7) and determine Zero Fuel Weight: 69 720 kg and Takeoff Weight: 83 720 kg.
g. Enter cargo weight and passenger number per compartment in (8).
h. Enter index scale (9) with corrected index and proceed through cargo and passenger scales (10).
i. From the final point draw a vertical line which intersects (12) the zero fuel weight horizontal line (11).
j. Check if the intersection point is within the Zero Fuel Weight operational limits, if not rearrange cargo loading.
k. Read in table (13) the fuel index correction corresponding to Ramp Fuel Weight (14 200 kg) and Fuel Density (0.785 kg/l).
   This example will be continued assuming the FUEL INDEX = –5 was found.
   Carry in fuel scale (14).
l. From this point draw a vertical line which intersects (16) the takeoff weight horizontal line (15).
m. Check if the intersection point is within the Takeoff Weight operational limits.
n. Read zero fuel weight and CG position: 31.6 % and fill in table (17).
o. Read takeoff CG position: 29 % and fill in table (18).

CAUTION	If there is no customized trim sheet for your airline in this section, do not use the information enclosed herein for day to day operation as margins and load CG vary with cabin and cargo layout.

LOAD AND TRIM SHEET

Ident.: PER-LOD-WBA-LTS-00001688.0002001 / 23 FEB 11

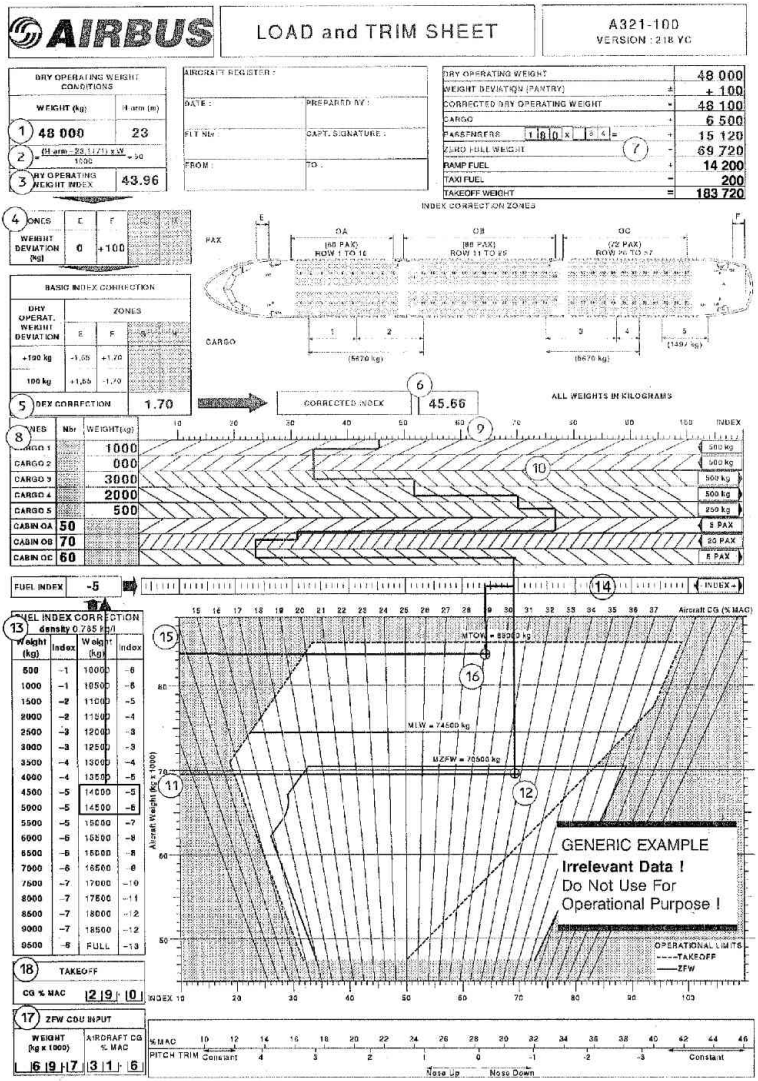
5 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



LOAD AND TRIM SHEET

Ident.: PER-LOD-WBA-LTS-00001688.0004001 / 23 FEB 11

6 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



FUEL INDEX TABLE

GENERAL

Ident.: PER-LOD-WBA-FIT-10-00012775.0018001 / 16 OCT 18

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The standard tools such as the load and trim sheet used to compute the CG assume the fuel distribution is normal as per the automatic fueling system features.
If for any reason, (e.g. dispatch through MMEL with one item inoperative) after refueling the actual fuel distribution deviates from the normal fuel distribution in the tanks, the actual and the trim sheet CG will show a discrepancy. The following tables allow to determine the fuel index taking into account the actual fuel quantity in each tank. To determine the actual takeoff CG enter the tables with the actual fuel quantities in each tank, read the fuel index for each tank and use their sum to enter the trim sheet. Check that the actual CG is inside the operational limits. If the CG is outside the limits transfer fuel to achieve a distribution in accordance with the chart or rearrange the load.

Note: *These tables are valid only when used with the following formula for the index:*
I = W x (H-arm – 23.117)/1 000 + K or I = [(CG – 25) x W x 0.000042] + K
(Weight in kg, H-arm in m)

DATA : Fuel in left wing fuel tank = 5 000 kg
Fuel in right wing fuel tank = FULL
Fuel in center tank = FULL
Fuel in AFT 1 = 2 000 kg
Fuel in AFT 2 = 0 kg
Fuel in FWD = 0 kg

		Weight	Index	
Wing tank	**Left**	5 000	-	3
	Right	6 000	-	1
Center tank		6 350	-	10
AFT 1		2 000	+	9
AFT 2		0		0
FWD		0		0
TOTAL		19 350	-	5

Enter the trim sheet with a fuel index of -5.

GENERAL

Ident.: PER-LOD-WBA-FIT-10-00012775.0002001 / 21 MAR 17

[2] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The fuel index table has been established assuming a fuel distribution in accordance with refuel distribution given in section *Refer to DSC-28-10-70 Refueling - Defueling* of this volume.
If after refueling the actual distribution deviates from the chart values, the actual and the trim sheet CG will show a discrepancy. The following tables allow to determine the fuel index taking into account the actual fuel quantity in each tank. To determine the actual takeoff CG enter the tables with the actual fuel quantities in each tank, read the fuel index for each tank and use their sum to enter the trim sheet. Check that the actual CG is inside the operational limits. If the CG is outside the limits transfer fuel to achieve a distribution in accordance with the chart or rearrange the load.

Note: *These tables are valid only when used with the following formula for the index:*
I = W x (H-arm – 18.85)/1 000 + K or I = [(CG – 25) x W x 0.000042] + K
(Weight in kg, H-arm in m)

DATA : Fuel in left inner fuel tank = 4 500 kg
Fuel in right inner fuel tank = 4 500 kg
Fuel in left outer fuel tank = 200 kg
Fuel in right outer fuel tank = FULL
Fuel in center tank = 0 kg

		Weight	Index	
Inner tank	**Left**	4 500	-	3
	Right	4 500	-	3
Outer tank	**Left**	200		0
	Right	691	+	2
Center tank		0		0
TOTAL		9 891	-	4

Enter the trim sheet with a fuel index of –4

FUEL INDEX TABLE FOR INNER TANK

Ident.: PER-LOD-WBA-FIT-10-00012776.0001001 / 25 JUL 12

[3] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Note: These tables are valid only when used with the following formulae for the index: I=W×(H-arm−18.85)/1 000+K or I=[(CG−25)×W×0.000042]+K (Weight in kg, H-arm in m)

Weight	Index
500	-1
1 000	-1
1 500	-2
2 000	-2
2 500	-2
3 000	-3
3 500	-3
4 000	-3
4 500	-3
5 000	-3
FULL	-2

FUEL INDEX TABLE FOR OUTER TANK

Ident.: PER-LOD-WBA-FIT-10-00012777.0001001 / 25 JUL 12

[4] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Note: These tables are valid only when used with the following formulae for the index: I=W×(H-arm−18.85)/1 000+K or I=[(CG−25)×W×0.000042]+K (Weight in kg, H-arm in m)

Weight	Index
250	1
500	1
FULL	2

FUEL INDEX TABLE FOR CENTER TANK

Ident.: PER-LOD-WBA-FIT-10-00012778.0001001 / 25 JUL 12

5 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Note: These tables are valid only when used with the following formulae for the index: I=W×(H-arm–18.85)/1 000+K or I=[(CG–25)×W×0.000042]+K (Weight in kg, H-arm in m)

Weight	Index
500	-1
1 000	-1
1 500	-2
2 000	-3
2 500	-3
3 000	-4
3 500	-5
4 000	-6
4 500	-7
5 000	-7
5 500	-8
6 000	-9
FULL	-10

FUEL INDEX TABLE FOR CENTER TANK

Ident.: PER-LOD-WBA-FIT-10-00012778.0003001 / 25 JUL 12

6 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Note: These tables are valid only when used with the following formulae for the index: I=W×(H-arm–23.117)/1 000+K or I=[(CG–25)×W×0.000042]+K (Weight in kg, H-arm in m)

Weight	Index
500	-1
1 000	-1
1 500	-2
2 000	-3
2 500	-4
3 000	-4
3 500	-5
4 000	-6
4 500	-7
5 000	-7
5 500	-8
6 000	-9
FULL	-10

FUEL INDEX TABLE FOR WING TANK

Ident.: PER-LOD-WBA-FIT-10-00012779.0001001 / 25 JUL 12

[7] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Note: These tables are valid only when used with the following formulae for the index: I=W×(H-arm–23.117)/1 000+K or I=[(CG–25)×W×0.000042]+K (Weight in kg, H-arm in m)

Weight	Index
500	-1
1 000	-1
1 500	-2
2 000	-2
2 500	-2
3 000	-3
3 500	-3
4 000	-3
4 500	-3
5 000	-3
5 500	-2
6 000	-2
FULL	-1

FUEL INDEX TABLE FOR ACT "AFT1"

Ident.: PER-LOD-WBA-FIT-10-00022616.0001001 / 16 OCT 18

[8] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Note: These tables are valid only when used with the following formulae for the index:
I = W x (H-arm – 23.117)/1 000 + K or I = [(CG – 25) x W x 0.000042] + K
(Weight in kg, H-arm in m)

Weight	Index
0	0
157	1
314	1
471	2
628	3
785	3
942	4
1 099	5
1 256	5
1 413	6
1 570	7
1 727	7
1 884	8
2 041	9
2 198	10
2 355	10
2 450	11
FULL	11

FUEL INDEX TABLE FOR ACT "AFT2"

Ident.: PER-LOD-WBA-FIT-10-00022617.0001001 / 16 OCT 18

[9] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Note: These tables are valid only when used with the following formulae for the index:
I = W x (H-arm – 23.117)/1 000 + K or I = [(CG – 25) x W x 0.000042] + K
(Weight in kg, H-arm in m)

Weight	Index
0	0
157	1
314	2
471	3
628	4
785	5
942	6
1 099	6
1 256	7
1 413	8
1 570	9
1 727	10
1 884	11
2 041	12
2 198	13
2 355	14
2 450	14
FULL	15

FUEL INDEX TABLE FOR ACT "FWD"

Ident.: PER-LOD-WBA-FIT-10-00022618.0001001 / 16 OCT 18

10 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Note: These tables are valid only when used with the following formulae for the index:
I = W x (H-arm – 23.117)/1 000 + K or I = [(CG – 25) x W x 0.000042] + K
(Weight in kg, H-arm in m)

Weight	Index
0	0
157	-1
314	-2
471	-3
628	-4
785	-5
942	-6
1 099	-7
1 256	-8
1 413	-9
1 570	-10
1 727	-11
1 884	-12
2 041	-13
2 198	-14
2 355	-15
2 450	-16
FULL	-17

PERFORMANCE

OPERATING DATA

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PER-OPD-GEN GENERAL

CONVERSIONS - IAS . MACH - TAS . MACH - SAT . TAT....A
INTERNATIONAL STANDARD ATMOSPHERE (ISA)....B
CONVERSIONS - QNH - QFE - PRESSURE ALTITUDE....C
CONVERSIONS QFE HPA - IN. HG - FT....D
WIND COMPONENTS (FOR TAKEOFF AND LANDING)....E
ALTITUDE TEMPERATURE CORRECTION....F

PER-OPD-CON GROUND DISTANCE/AIR DISTANCE CONVERSION

PER-OPD-CON-AEO ALL ENGINES OPERATIVE

GENERAL....A
M.78....B
LONG RANGE SPEED UP TO FL270....C
LONG RANGE SPEED ABOVE FL270....D

PER-OPD-CON-OEI ONE ENGINE INOPERATIVE

GENERAL....A
LONG RANGE SPEED....B
FIXED SPEEDS....C

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Localization Title	Toc Index	ID	Reason
PER-OPD-CON-AEO LONG RANGE SPEED UP TO FL270	C	1	Effectivity update: The information now also applies to MSN 09063.
PER-OPD-CON-AEO LONG RANGE SPEED UP TO FL270	C	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-OPD-CON-AEO LONG RANGE SPEED ABOVE FL270	D	3	Effectivity update: The information now also applies to MSN 09063.
PER-OPD-CON-AEO LONG RANGE SPEED ABOVE FL270	D	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-OPD-CON-OEI LONG RANGE SPEED	B	1	Effectivity update: The information now also applies to MSN 09063.
PER-OPD-CON-OEI LONG RANGE SPEED	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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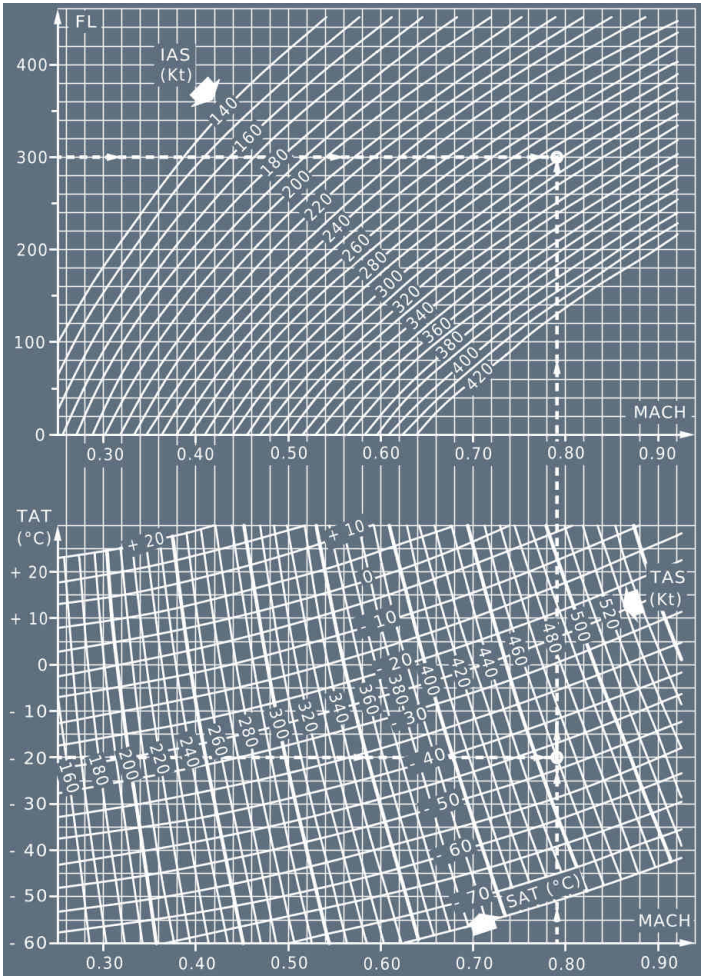
CONVERSIONS - IAS . MACH - TAS . MACH - SAT . TAT

Ident.: PER-OPD-GEN-00001962.0001001 / 23 FEB 11
Applicable to: ALL



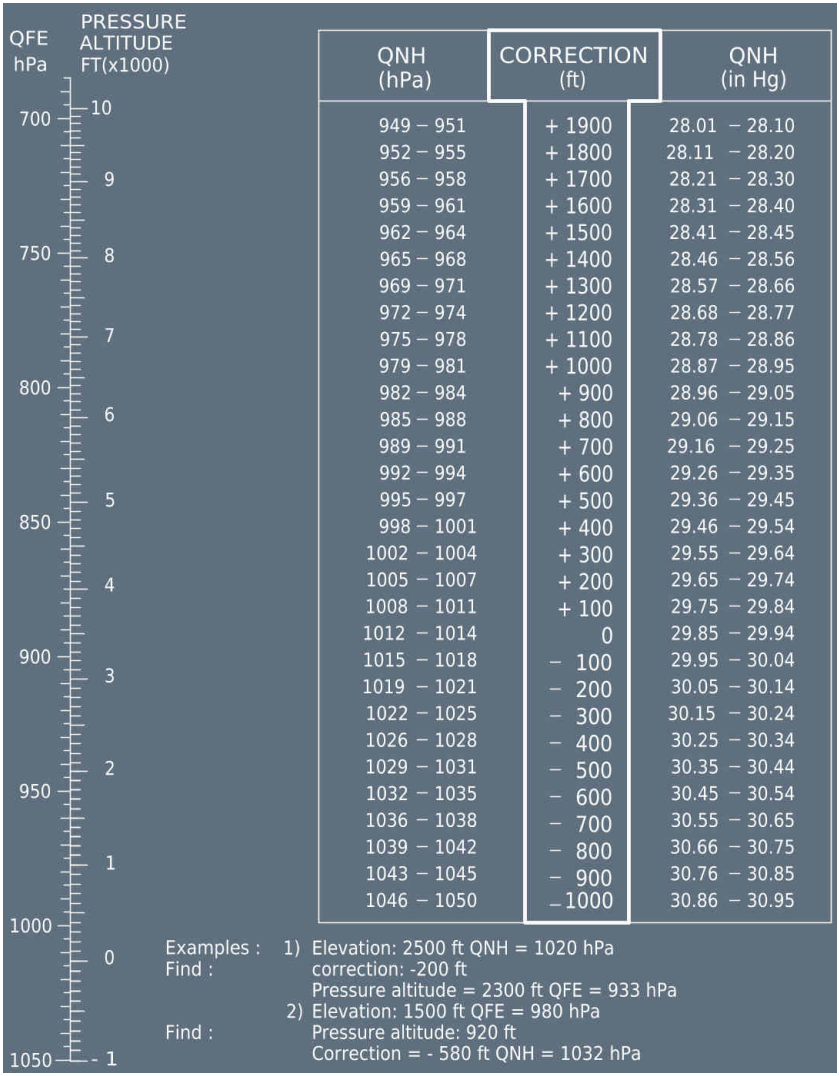
INTERNATIONAL STANDARD ATMOSPHERE (ISA)

Ident.: PER-OPD-GEN-00001963.0001001 / 09 DEC 09
Applicable to: ALL

ALTITUDE (Feet)	TEMP. (°C)	PRESSURE			PRESSURE RATIO $\delta = P / Po$	DENSITY $\sigma = \rho / \rho o$	SPEED OF SOUND (a) (kt)	ALTITUDE (meters)
		hPa	P.S.I.	in. Hg.				
40,000	– 56.5	188	2.72	5.54	0.1851	0.2462	573	12.192
39,000	– 56.5	197	2.85	5.81	0.1942	0.2583	573	11.887
38,000	– 56.5	206	2.99	6.10	0.2038	0.2710	573	11.582
37,000	– 56.5	217	3.14	6.40	0.2138	0.2844	573	11.278
36,000	– 56.3	227	3.30	6.71	0.2243	0.2981	573	10.973
35,000	– 54.3	238	3.46	7.04	0.2353	0.3099	576	10.668
34,000	– 52.4	250	3.63	7.38	0.2467	0.3220	579	10.363
33,000	– 50.4	262	3.80	7.74	0.2586	0.3345	581	10.058
32,000	– 48.4	274	3.98	8.11	0.2709	0.3473	584	9.754
31,000	– 46.4	287	4.17	8.49	0.2837	0.3605	586	9.449
30,000	– 44.4	301	4.36	8.89	0.2970	0.3741	589	9.144
29,000	– 42.5	315	4.57	9.30	0.3107	0.3881	591	8.839
28,000	– 40.5	329	4.78	9.73	0.3250	0.4025	594	8.534
27,000	– 38.5	344	4.99	10.17	0.3398	0.4173	597	8.230
26,000	– 36.5	360	5.22	10.63	0.3552	0.4325	599	7.925
25,000	– 34.5	376	5.45	11.10	0.3711	0.4481	602	7.620
24,000	– 32.5	393	5.70	11.60	0.3876	0.4642	604	7.315
23,000	– 30.6	410	5.95	12.11	0.4046	0.4806	607	7.010
22,000	– 28.6	428	6.21	12.64	0.4223	0.4976	609	6.706
21,000	– 26.6	446	6.47	13.18	0.4406	0.5150	611	6.401
20,000	– 24.6	466	6.75	13.75	0.4595	0.5328	614	6.096
19,000	– 22.6	485	7.04	14.34	0.4791	0.5511	616	5.791
18,000	– 20.7	506	7.34	14.94	0.4994	0.5699	619	5.486
17,000	– 18.7	527	7.65	15.57	0.5203	0.5892	621	5.182
16,000	– 16.7	549	7.97	16.22	0.5420	0.6090	624	4.877
15,000	– 14.7	572	8.29	16.89	0.5643	0.6292	626	4.572
14,000	– 12.7	595	8.63	17.58	0.5875	0.6500	628	4.267
13,000	– 10.8	619	8.99	18.29	0.6113	0.6713	631	3.962
12,000	– 8.8	644	9.35	19.03	0.6360	0.6932	633	3.658
11,000	– 6.8	670	9.72	19.79	0.6614	0.7156	636	3.353
10,000	– 4.8	697	10.10	20.58	0.6877	0.7385	638	3.048
9,000	– 2.8	724	10.51	21.39	0.7148	0.7620	640	2.743
8,000	– 0.8	753	10.92	22.22	0.7428	0.7860	643	2.438
7,000	+ 1.1	782	11.34	23.09	0.7716	0.8106	645	2.134
6,000	+ 3.1	812	11.78	23.98	0.8014	0.8359	647	1.829
5,000	+ 5.1	843	12.23	24.90	0.8320	0.8617	650	1.524
4,000	+ 7.1	875	12.69	25.84	0.8637	0.8881	652	1.219
3,000	+ 9.1	908	13.17	26.82	0.8962	0.9151	654	914
2,000	+ 11.0	942	13.67	27.82	0.9298	0.9428	656	610
1,000	+ 13.0	977	14.17	28.86	0.9644	0.9711	659	305
0	+ 15.0	1013	14.70	29.92	1.0000	1.0000	661	0
– 1.000	+ 17.0	1050	15.23	31.02	1.0366	1.0295	664	– 305

CONVERSIONS - QNH - QFE - PRESSURE ALTITUDE

Ident.: PER-OPD-GEN-00001964.0001001 / 09 DEC 09
Applicable to: ALL



QNH (hPa)	CORRECTION (ft)	QNH (in Hg)
949 – 951	+ 1900	28.01 – 28.10
952 – 955	+ 1800	28.11 – 28.20
956 – 958	+ 1700	28.21 – 28.30
959 – 961	+ 1600	28.31 – 28.40
962 – 964	+ 1500	28.41 – 28.45
965 – 968	+ 1400	28.46 – 28.56
969 – 971	+ 1300	28.57 – 28.66
972 – 974	+ 1200	28.68 – 28.77
975 – 978	+ 1100	28.78 – 28.86
979 – 981	+ 1000	28.87 – 28.95
982 – 984	+ 900	28.96 – 29.05
985 – 988	+ 800	29.06 – 29.15
989 – 991	+ 700	29.16 – 29.25
992 – 994	+ 600	29.26 – 29.35
995 – 997	+ 500	29.36 – 29.45
998 – 1001	+ 400	29.46 – 29.54
1002 – 1004	+ 300	29.55 – 29.64
1005 – 1007	+ 200	29.65 – 29.74
1008 – 1011	+ 100	29.75 – 29.84
1012 – 1014	0	29.85 – 29.94
1015 – 1018	– 100	29.95 – 30.04
1019 – 1021	– 200	30.05 – 30.14
1022 – 1025	– 300	30.15 – 30.24
1026 – 1028	– 400	30.25 – 30.34
1029 – 1031	– 500	30.35 – 30.44
1032 – 1035	– 600	30.45 – 30.54
1036 – 1038	– 700	30.55 – 30.65
1039 – 1042	– 800	30.66 – 30.75
1043 – 1045	– 900	30.76 – 30.85
1046 – 1050	–1000	30.86 – 30.95

Examples : 1) Elevation: 2500 ft QNH = 1020 hPa
Find : correction: -200 ft
Pressure altitude = 2300 ft QFE = 933 hPa
2) Elevation: 1500 ft QFE = 980 hPa
Find : Pressure altitude: 920 ft
Correction = - 580 ft QNH = 1032 hPa

CONVERSIONS QFE HPA - IN. HG - FT

Ident.: PER-OPD-GEN-00001965.0001001 / 08 FEB 11

Applicable to: ALL

QFE hPa	in. Hg	PRESS. ALT. ft	QFE hPa	in. Hg	PRESS. ALT. ft	QFE hPa	in. Hg	PRESS. ALT. ft
1050	31.01	– 989	960	28.35	1486	870	25.69	4157
1048	30.95	– 936	958	28.29	1543	868	25.63	4219
1046	30.89	– 883	956	28.23	1601	866	25.57	4281
1044	30.83	– 830	954	28.17	1658	864	25.51	4343
1042	30.77	– 776	952	28.11	1715	862	25.45	4405
1040	30.71	– 723	950	28.05	1773	860	25.40	4468
1038	30.65	– 669	948	27.99	1831	858	25.34	4531
1036	30.59	– 615	946	27.94	1889	856	25.28	4593
1034	30.53	– 562	944	27.88	1947	854	25.22	4656
1032	30.47	– 508	942	27.82	2005	852	25.16	4718
1030	30.42	– 454	940	27.76	2062	850	25.10	4781
1028	30.36	– 400	938	27.70	2120	848	25.04	4844
1026	30.30	– 346	936	27.64	2178	846	24.98	4907
1024	30.24	– 292	934	27.58	2236	844	24.92	4970
1022	30.18	– 238	932	27.52	2294	842	24.86	5033
1020	30.12	– 184	930	27.46	2353	840	24.81	5097
1018	30.06	– 129	928	27.40	2412	838	24.75	5161
1016	30.00	– 74	926	27.34	2471	836	24.69	5225
1014	29.94	– 20	924	27.29	2530	834	24.63	5289
1012	29.88	34	922	27.23	2589	832	24.57	5353
1010	29.83	89	920	27.17	2647	830	24.51	5417
1008	29.77	144	918	27.11	2707	828	24.45	5481
1006	29.71	199	916	27.05	2767	826	24.39	5545
1004	29.65	254	914	26.99	2826	824	24.33	5610
1002	29.59	309	912	26.93	2885	822	24.27	5675
1000	29.53	364	910	26.87	2944	820	24.21	5740
998	29.47	419	908	26.81	3004	818	24.16	5805
996	29.41	475	906	26.75	3064	816	24.10	5870
994	29.35	530	904	26.70	3124	814	24.04	5935
992	29.29	586	902	26.64	3183	812	23.98	6000
990	29.23	641	900	26.58	3243	810	23.92	6065
988	29.18	697	898	26.52	3303	808	23.86	6131
986	29.12	753	896	26.46	3363	806	23.80	6197
984	29.06	809	894	26.40	3424	804	23.74	6263
982	29.00	865	892	26.34	3484	802	23.68	6329
980	28.94	921	890	26.28	3545	800	23.62	6394
978	28.88	977	888	26.22	3606	798	23.56	6461
976	28.82	1033	886	26.16	3667	796	23.51	6528
974	28.76	1089	884	26.10	3728	794	23.45	6595
972	28.70	1145	882	26.05	3789	792	23.39	6661
970	28.64	1202	880	25.99	3850	790	23.33	6727
968	28.59	1259	878	25.93	3911	788	23.27	6794
966	28.53	1316	876	25.87	3973	786	23.21	6861
964	28.47	1373	874	25.81	4034	784	23.15	6928
962	28.41	1430	872	25.75	4096	782	23.09	6995

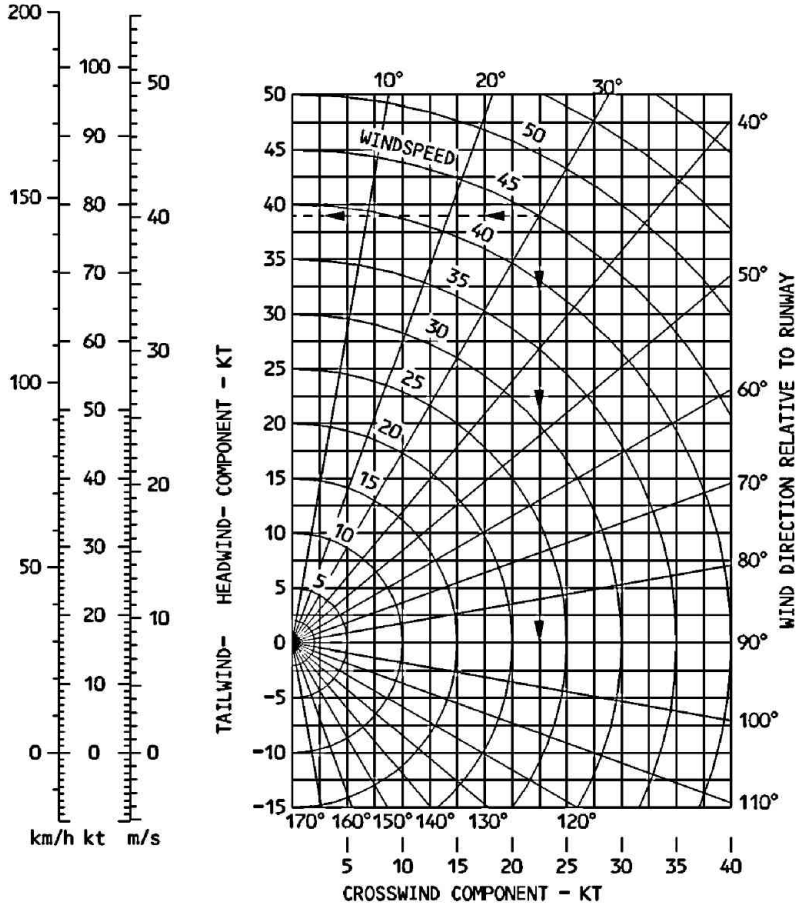
WIND COMPONENTS (FOR TAKEOFF AND LANDING)

Ident.: PER-OPD-GEN-00001966.0001001 / 08 FEB 11

Applicable to: ALL

MULTIPLY	BY	TO GET
kt	1.852	km/h
kt	0.5144	m/s
m/s	3.6	km/h
m/s	1.9438	kt
km/h	0.5396	kt
km/h	0.2778	m/s

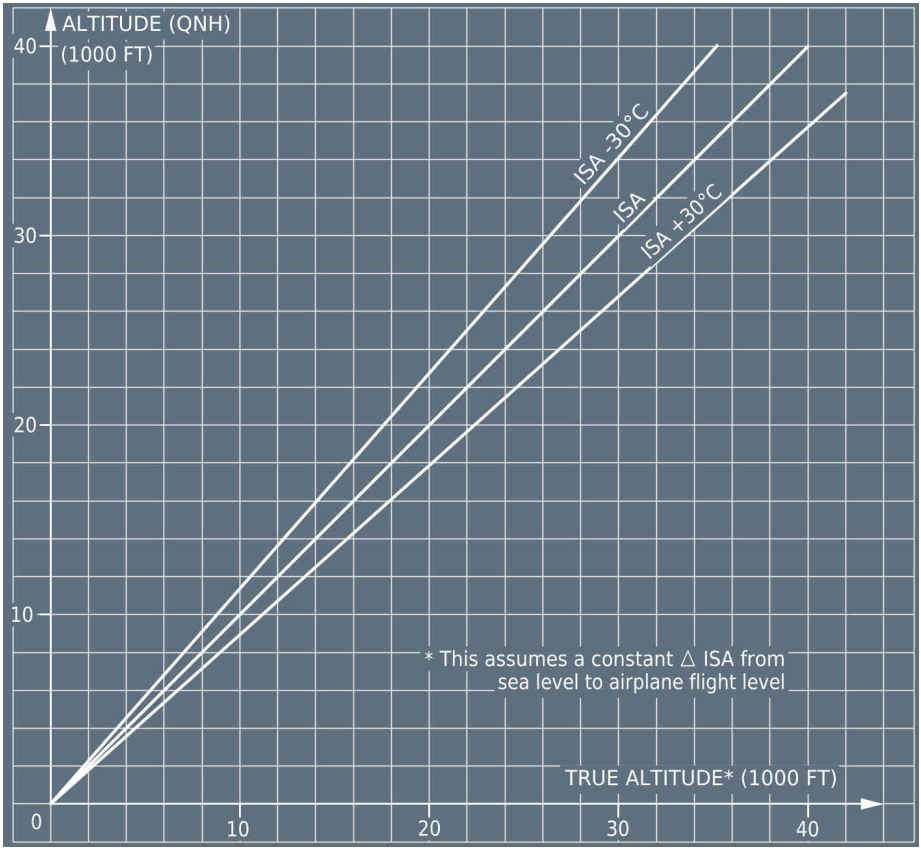
GIVEN	FIND
WIND DIRECTION RELATIVE TO RUNWAY HEADING=30 DEG WIND SPEED=45 KT	CROSS WIND COMPONENT=22.5 KT HEAD WIND COMPONENT=39.0 KT



ALTITUDE TEMPERATURE CORRECTION

Ident.: PER-OPD-GEN-00001967.0001001 / 12 FEB 11
Applicable to: ALL

FOR HIGH ALTITUDE USE



FOR LOW ALTITUDE USE

Values to be added by the pilot to minimum promulgated heights/altitude (ft)

Airport Temperature °C	Height above the elevation of the altimeter setting source (feet)								
	200	300	400	500	1 000	2 000	3 000	4 000	5 000
0	20	20	30	30	60	120	170	230	280

Continued on the following page

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Airport Temperature °C	Height above the elevation of the altimeter setting source (feet)								
	200	**300**	**400**	**500**	**1 000**	**2 000**	**3 000**	**4 000**	**5 000**
-10	20	30	40	50	100	200	290	390	490
-20	30	50	60	70	140	280	420	570	710
-30	40	60	80	100	190	380	570	760	950
-40	50	80	100	120	240	480	720	970	1 210
-50	60	90	120	150	300	590	890	1 190	1 500

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GENERAL

Ident.: PER-OPD-CON-AEO-00001657.0001001 / 23 FEB 11
Applicable to: ALL

The ground distance/air distance conversion tables show the air distance for a given ground distance due to the influence of the wind.

The Tables are given for :
- M .78
- Long range speed.

M.78

Ident.: PER-OPD-CON-AEO-00001658.0001001 / 28 JAN 11
Applicable to: ALL

GROUND DIST. (NM)	AIR DISTANCE (NM)						
	TAIL WIND		WIND COMPONENTS (KT)				HEAD WIND
	+ 150	+ 100	+ 50	0	– 50	– 100	– 150
10	7	8	9	10	11	13	15
20	15	16	18	20	23	26	30
30	22	25	27	30	34	39	45
40	30	33	36	40	45	51	60
50	37	41	45	50	56	64	75
100	75	82	90	100	113	129	150
200	150	164	180	200	225	257	300
300	225	245	270	300	338	386	450
400	300	327	360	400	450	514	600
500	375	409	450	500	563	643	750
1000	750	818	900	1000	1125	1286	1501
1500	1125	1227	1350	1500	1688	1929	2251
2000	1500	1636	1800	2000	2248	2572	3001
2500	1875	2045	2250	2500	2813	3215	3752
3000	2250	2454	2700	3000	3375	3858	4502
3500	2624	2863	3150	3500	3938	4501	5252
4000	2999	3272	3600	4000	4500	5144	6003
4500	3374	3681	4050	4500	5063	5787	6753
5000	3749	4090	4500	5000	5626	6430	7503

FLIP23 A320211 M565A1PIP 3410 03301.000011 0250300 .7800 .00000 0 0300350 0 0 77 64 43 61 18590 FCOM-N0-03-50-002-001

LONG RANGE SPEED UP TO FL270

Ident.: PER-OPD-CON-AEO-00001659.0015001 / 25 JAN 17

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

GROUND DIST. (NM)	AIR DISTANCE (NM)						
	TAIL WIND			WIND COMPONENTS (KT)			HEAD WIND
	+150	+100	+50	0	-50	-100	-150
10	7	8	9	10	11	13	15
20	15	16	18	20	23	26	30
30	22	24	27	30	34	39	45
40	30	33	36	40	45	52	61
50	37	41	45	50	56	65	76
100	75	82	90	100	113	129	151
200	149	163	180	200	225	258	303
300	224	245	270	300	338	388	454
400	299	326	359	400	451	517	605
500	373	408	449	500	564	646	757
1000	747	816	898	1000	1127	1292	1513
1500	1120	1223	1348	1500	1691	1938	2270
2000	1493	1631	1797	2000	2255	2585	3027
2500	1867	2039	2246	2500	2819	3231	3784
3000	2240	2447	2695	3000	3382	3877	4540
3500	2613	2854	3144	3500	3946	4523	5297
4000	2987	3262	3594	4000	4510	5169	6054
4500	3360	3670	4043	4500	5074	5815	6810
5000	3733	4078	4492	5000	5637	6461	7567

LONG RANGE SPEED UP TO FL270

Ident.: PER-OPD-CON-AEO-00001659.0001001 / 28 FEB 11

[2] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

GROUND DIST. (NM)	AIR DISTANCE (NM)						
	TAIL WIND		WIND COMPONENTS (KT)				HEAD WIND
	+150	+100	+ 50	0	–50	–100	–150
10	7	8	9	10	12	14	17
20	14	16	18	20	23	27	33
30	21	24	26	30	35	41	50
40	29	32	35	40	46	55	67
50	36	39	44	50	58	68	83
100	71	79	88	100	115	136	167
200	143	158	176	200	231	273	333
300	214	237	265	300	346	409	500
400	286	316	353	400	462	545	667
500	357	395	441	500	577	682	833
1000	714	789	882	1000	1154	1364	1667
1500	1071	1184	1324	1500	1731	2046	2500
2000	1429	1579	1765	2000	2308	2727	3334
2500	1786	1974	2206	2500	2885	3409	4167
3000	2143	2368	2647	3000	3462	4091	5000
3500	2500	2763	3088	3500	4039	4773	5834
4000	2857	3158	3529	4000	4615	5455	6667
4500	3214	3553	3971	4500	5192	6137	7500
5000	3571	3947	4412	5000	5769	6818	8334

LONG RANGE SPEED ABOVE FL270

Ident.: PER-OPD-CON-AEO-00001660.0012001 / 25 JAN 17

[3] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

GROUND DIST.	AIR DISTANCE (NM)						
	TAIL WIND			WIND COMPONENTS (KT)			HEAD WIND
(NM)	+150	+100	+50	0	-50	-100	-150
10	7	8	9	10	11	13	15
20	15	16	18	20	23	26	30
30	22	24	27	30	34	39	46
40	30	33	36	40	45	52	61
50	37	41	45	50	56	65	76
100	75	81	90	100	113	129	152
200	149	163	180	200	226	259	304
300	224	244	269	300	338	388	455
400	298	326	359	400	451	518	607
500	373	407	449	500	564	647	759
1000	746	815	898	1000	1128	1294	1518
1500	1118	1222	1347	1500	1692	1942	2277
2000	1491	1629	1796	2000	2257	2589	3036
2500	1864	2037	2245	2500	2821	3236	3795
3000	2237	2444	2694	3000	3385	3883	4554
3500	2610	2851	3143	3500	3949	4530	5313
4000	2982	3259	3592	4000	4513	5178	6071
4500	3355	3666	4040	4500	5077	5825	6830
5000	3728	4073	4489	5000	5642	6472	7589

LONG RANGE SPEED ABOVE FL270

Ident.: PER-OPD-CON-AEO-00001660.0001001 / 09 DEC 09

[4] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

GROUND DIST. (NM)	AIR DISTANCE (NM)						
	TAIL WIND		WIND COMPONENTS (KT)				HEAD WIND
	+ 150	+ 100	+ 50	0	– 50	– 100	– 150
10	8	8	9	10	11	13	15
20	15	16	18	20	22	26	30
30	23	25	27	30	34	38	45
40	30	33	36	40	45	51	60
50	38	41	45	50	56	64	75
100	75	82	90	100	112	128	149
200	150	164	180	200	225	256	299
300	226	246	270	300	337	385	448
400	301	328	360	400	449	513	597
500	376	410	450	500	562	641	746
1000	752	820	901	1000	1124	1282	1493
1500	1128	1230	1351	1500	1685	1923	2239
2000	1504	1639	1802	2000	2247	2564	2985
2500	1880	2049	2252	2500	2809	3205	3731
3000	2256	2459	2703	3000	3371	3846	4478
3500	2632	2869	3153	3500	3933	4487	5224
4000	3008	3279	3604	4000	4494	5128	5970
4500	3383	3689	4054	4500	5056	5769	6716
5000	3759	4098	4505	5000	5618	6410	7463

FLIP23 A320211 M565A1PIP 3410 03301.000011 0250300 .7801 .00000 0 0300350 0 0 77 64 43 61 18590 FCOM-N0–03–50–004–001

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GENERAL

Ident.: PER-OPD-CON-OEI-00004074.0001001 / 09 DEC 09
Applicable to: ALL

The ground distance/air distance conversion tables are used to calculate the air distance for a given ground distance due to the influence of the wind.

Tables are given for :
- LONG RANGE SPEED
- FIXED SPEEDS

LONG RANGE SPEED

Ident.: PER-OPD-CON-OEI-00001960.0013001 / 25 JAN 17

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

GROUND DIST. (NM)	AIR DISTANCE (NM)						
	TAIL WIND			WIND COMPONENTS (KT)			HEAD WIND
	+150	+100	+50	0	-50	-100	-150
10	7	8	9	10	11	13	15
20	15	16	18	20	23	26	31
30	22	24	27	30	34	39	46
40	30	32	36	40	45	52	62
50	37	40	45	50	57	65	77
60	44	49	54	60	68	78	93
70	52	57	63	70	79	92	108
80	59	65	72	80	91	105	124
90	67	73	81	90	102	118	139
100	74	81	89	100	113	131	155
200	148	162	179	200	227	262	309
300	222	243	268	300	340	392	464
400	296	324	358	400	453	523	618
500	369	405	447	500	567	654	773
600	443	486	537	600	680	785	928
700	517	567	626	700	793	916	1082
800	591	648	716	800	907	1046	1237
900	665	728	805	900	1020	1177	1392
1000	739	809	895	1000	1133	1308	1546
1100	813	890	984	1100	1247	1439	1701
1200	887	971	1074	1200	1360	1570	1855
1300	961	1052	1163	1300	1474	1700	2010
1400	1035	1133	1253	1400	1587	1831	2165
1500	1108	1214	1342	1500	1700	1962	2319
1600	1182	1295	1431	1600	1814	2093	2474
1700	1256	1376	1521	1700	1927	2224	2629
1800	1330	1457	1610	1800	2040	2355	2783
1900	1404	1538	1700	1900	2154	2485	2938
2000	1478	1619	1789	2000	2267	2616	3092

LONG RANGE SPEED

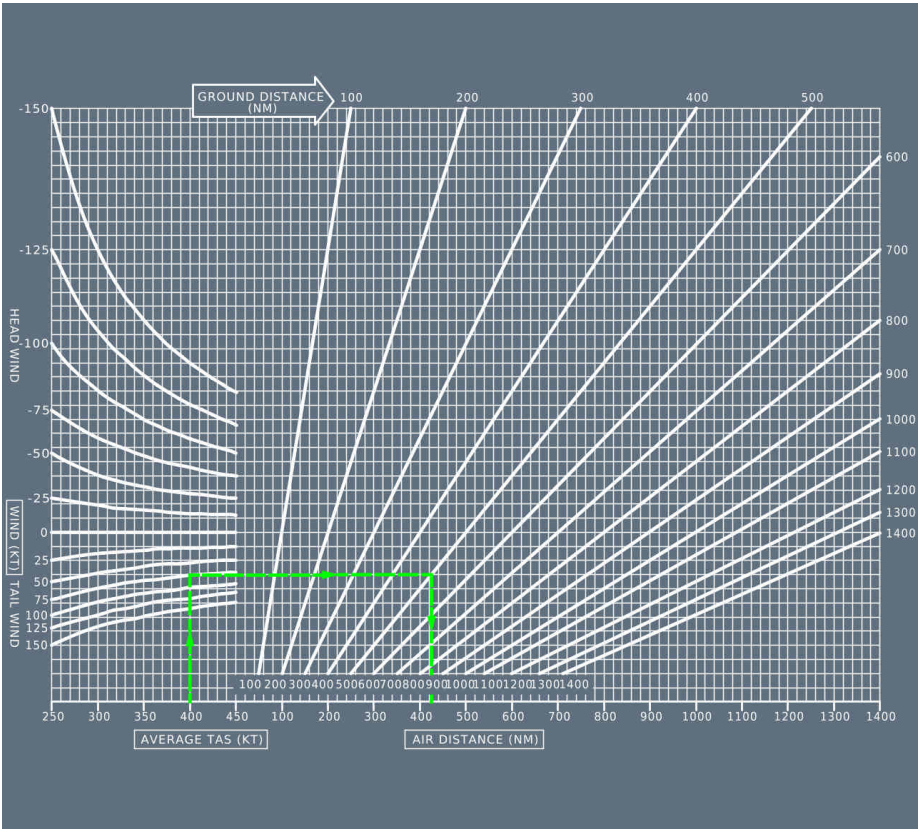
Ident.: PER-OPD-CON-OEI-00001960.0001001 / 09 DEC 09

[2] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

GROUND DIST. (NM)	AIR DISTANCE (NM)						
	TAIL WIND		WIND COMPONENTS (KT)				HEAD WIND
	+150	+100	+ 50	0	–50	–100	–150
10	7	8	9	10	11	13	15
20	15	16	18	20	23	26	31
30	22	24	27	30	34	39	46
40	30	32	36	40	45	52	61
50	37	41	45	50	57	65	77
60	44	49	54	60	68	78	92
70	52	57	63	70	79	91	108
80	59	65	72	80	91	104	123
90	67	73	81	90	102	117	138
100	74	81	90	100	113	130	154
200	148	162	179	200	226	261	307
300	222	243	269	300	340	391	461
400	296	324	358	400	453	521	615
500	371	406	448	500	566	652	768
600	445	487	537	600	679	782	922
700	519	568	627	700	792	913	1076
800	593	649	717	800	905	1043	1230
900	667	730	806	900	1019	1173	1383
1000	741	811	896	1000	1132	1304	1537
1100	815	892	985	1100	1245	1434	1691
1200	889	973	1075	1200	1358	1564	1844
1300	963	1054	1164	1300	1471	1695	1998
1400	1038	1136	1254	1400	1585	1825	2152
1500	1112	1217	1344	1500	1698	1955	2305
1600	1186	1298	1433	1600	1811	2086	2459
1700	1260	1379	1523	1700	1924	2216	2613
1800	1334	1460	1612	1800	2037	2346	2766
1900	1408	1541	1702	1900	2150	2477	2920
2000	1482	1622	1791	2000	2264	2607	3074

FIXED SPEEDS

Ident.: PER-OPD-CON-OEI-00001961.0001001 / 09 DEC 09
Applicable to: ALL



PERFORMANCE

THRUST RATINGS

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PER-THR-GEN GENERAL
GENERAL ..... A

PER-THR-MTO MAXIMUM TAKEOFF
DEFINITION ..... A
MAXIMUM TAKEOFF ..... B

PER-THR-MGA MAXIMUM GO AROUND
DEFINITION ..... A
MAXIMUM GO AROUND ..... B

PER-THR-FLX FLEXIBLE TAKEOFF
DEFINITION ..... A
FLEXIBLE TAKEOFF ..... B

PER-THR-MCT MAXIMUM CONTINUOUS
DEFINITION ..... A
MAXIMUM CONTINUOUS ..... B

PER-THR-MCL MAXIMUM CLIMB
DEFINITION ..... A
MAXIMUM CLIMB ..... B

PER-THR-MCR MAXIMUM CRUISE
DEFINITION ..... A
MAXIMUM CRUISE ..... B

PER-THR-N1 N1 MODE THRUST CONTROL
N1 MODE THRUST CONTROL ..... A
MAXIMUM TAKEOFF N1 ..... B
MAXIMUM GO AROUND N1 C
MAXIMUM CONTINUOUS N1 ..... D
MAXIMUM CLIMB N1 ..... E
MAXIMUM CRUISE N1 ..... F

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Localization Title	Toc Index	ID	Reason
PER-THR-MTO MAXIMUM TAKEOFF	B	1	Effectivity update: The information now also applies to MSN 09063.
PER-THR-MTO MAXIMUM TAKEOFF	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-THR-MTO MAXIMUM TAKEOFF	B	3	Effectivity update: The information no longer applies to MSN 05449.
PER-THR-MGA MAXIMUM GO AROUND	B	1	Effectivity update: The information now also applies to MSN 09063.
PER-THR-MGA MAXIMUM GO AROUND	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-THR-MGA MAXIMUM GO AROUND	B	3	Effectivity update: The information no longer applies to MSN 05449.
PER-THR-FLX DEFINITION	A	1	Effectivity update: The information no longer applies to MSN 05449.
PER-THR-FLX DEFINITION	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PER-THR-FLX FLEXIBLE TAKEOFF	B	3	Effectivity update: The information now also applies to MSN 09063.
PER-THR-FLX FLEXIBLE TAKEOFF	B	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-THR-MCT MAXIMUM CONTINUOUS	B	1	Effectivity update: The information now also applies to MSN 09063.
PER-THR-MCT MAXIMUM CONTINUOUS	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-THR-MCT MAXIMUM CONTINUOUS	B	3	Effectivity update: The information no longer applies to MSN 05449.
PER-THR-MCL MAXIMUM CLIMB	B	1	Effectivity update: The information now also applies to MSN 09063.
PER-THR-MCL MAXIMUM CLIMB	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-THR-MCL MAXIMUM CLIMB	B	3	Effectivity update: The information no longer applies to MSN 05449.
PER-THR-MCR DEFINITION	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-THR-MCR DEFINITION	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-THR-MCR DEFINITION	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-THR-MCR MAXIMUM CRUISE	B	4	Effectivity update: The information now also applies to MSN 09063.

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Localization Title	Toc Index	ID	Reason
PER-THR-MCR MAXIMUM CRUISE	B	5	Effectivity update: The information now also applies to MSN 08961, 09031.
PER-THR-MCR MAXIMUM CRUISE	B	6	Effectivity update: The information no longer applies to MSN 05449.
PER-THR-N1 N1 MODE THRUST CONTROL	A	1	Effectivity update: The information no longer applies to MSN 05449.
PER-THR-N1 MAXIMUM TAKEOFF N1	B	2	Effectivity update: The information no longer applies to MSN 05449.
PER-THR-N1 MAXIMUM GO AROUND N1	C	3	Effectivity update: The information no longer applies to MSN 05449.
PER-THR-N1 MAXIMUM CONTINUOUS N1	D	4	Effectivity update: The information no longer applies to MSN 05449.
PER-THR-N1 MAXIMUM CLIMB N1	E	5	Effectivity update: The information no longer applies to MSN 05449.
PER-THR-N1 MAXIMUM CRUISE N1	F	6	Effectivity update: The information no longer applies to MSN 05449.

GENERAL

Ident.: PER-THR-GEN-00004079.0001001 / 28 FEB 11
Applicable to: ALL

The thrust rating charts have been established for:

- Maximum takeoff
- Maximum go around
- Flexible takeoff
- Maximum continuous
- Maximum climb
- Maximum cruise

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DEFINITION

Ident.: PER-THR-MTO-00001968.0001001 / 01 MAR 11
Applicable to: ALL

It is the maximum thrust certified for takeoff and is normally limited to five minutes.
This time is extended to ten minutes for engine out contingency, as authorized by the approved AFM.

MAXIMUM TAKEOFF

Ident.: PER-THR-MTO-00001969.0033001 / 20 DEC 16

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

PW1133G-JM - TAKEOFF N1 (%)

NO AIR BLEED — MACH=0.000

OAT	PRESSURE ALTITUDE (FT)									
(C)	-2000	-1000	0	1000	2000	3000	4000	5000	6000	7000
-55.0	74.9	76.1	77.3	77.9	78.4	79.0	79.4	79.9	80.5	81.0
-50.0	75.8	77.0	78.2	78.8	79.3	79.8	80.3	80.8	81.4	81.9
-40.0	77.4	78.7	79.9	80.5	81.0	81.6	82.1	82.6	83.1	83.7
-30.0	79.0	80.3	81.6	82.2	82.7	83.3	83.8	84.3	84.8	85.4
-20.0	80.6	81.9	83.2	83.8	84.4	84.9	85.5	86.0	86.5	87.1
-10.0	82.2	83.5	84.8	85.4	86.0	86.6	87.1	87.7	88.2	88.8
-5.0	83.0	84.3	85.6	86.2	86.8	87.4	87.9	88.5	89.0	89.6
0.0	83.8	85.1	86.4	87.0	87.6	88.2	88.8	89.3	89.9	90.5
2.0	84.1	85.4	86.7	87.4	88.0	88.6	89.1	89.7	90.2	90.8
5.0	84.5	85.9	87.2	87.8	88.5	89.0	89.6	90.2	90.7	91.3
8.0	85.0	86.4	87.7	88.3	89.0	89.5	90.1	90.7	91.2	91.9
10.0	85.3	86.7	88.0	88.7	89.3	89.9	90.4	91.0	91.6	92.2
12.0	85.6	87.0	88.3	89.0	89.6	90.2	90.8	91.3	91.9	92.5
14.0	86.0	87.3	88.7	89.3	89.9	90.5	91.1	91.7	92.3	92.9
16.0	86.3	87.6	89.0	89.6	90.3	90.9	91.4	92.0	92.6	93.2
18.0	86.6	88.0	89.3	90.0	90.6	91.2	91.7	92.3	92.9	*93.2*
20.0	86.9	88.3	89.6	90.3	90.9	91.5	92.1	92.7	*92.9*	*92.9*
22.0	87.2	88.6	90.0	90.6	91.2	91.8	92.4	*92.6*	*92.7*	*92.7*
24.0	87.5	88.9	90.3	90.9	91.6	92.2	*92.3*	*92.4*	*92.4*	*92.4*
26.0	87.9	89.2	90.6	91.3	91.9	*92.1*	*92.1*	*92.2*	*92.2*	*92.2*
28.0	88.2	89.5	90.9	91.6	*91.8*	*91.8*	*91.8*	*91.8*	*91.9*	*91.9*
30.0	88.5	89.9	91.2	*91.4*	*91.4*	*91.5*	*91.5*	*91.5*	*91.6*	*91.6*
32.0	88.8	*90.2*	*91.1*	*91.1*	*91.1*	*91.2*	*91.2*	*91.2*	*91.2*	*91.3*
34.0	*89.1*	*90.1*	*90.8*	*90.8*	*90.8*	*90.9*	*90.9*	*90.9*	*90.9*	*91.0*
36.0	*89.0*	*89.8*	*90.5*	*90.5*	*90.5*	*90.5*	*90.6*	*90.6*	*90.6*	*90.7*
38.0	*88.7*	*89.5*	*90.2*	*90.2*	*90.2*	*90.2*	*90.3*	*90.3*	*90.3*	*90.4*

OAT < CORNER POINT — *OAT >= CORNER POINT*

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING ON : (NORM)	-1.2	-1.5
NACELLE ANTI-ICE ON	0	-0.3
NACELLE AND WING ANTI-ICE ON	0	-1.4

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PW1133G-JM - TAKEOFF N1 (%)

NO AIR BLEED — MACH=0.000

OAT (C)	PRESSURE ALTITUDE (FT)									
	-2000	-1000	0	1000	2000	3000	4000	5000	6000	7000
40.0	*88.4*	*89.1*	*89.8*	*89.9*	*89.9*	*89.9*	*90.0*	*90.0*	*90.0*	*90.1*
42.0	*88.1*	*88.8*	*89.5*	*89.5*	*89.6*	*89.6*	*89.7*	*89.7*	*89.7*	
48.0	*87.0*	*87.7*	*88.5*	*88.6*	*88.6*	*88.7*				
50.0	*86.7*	*87.4*	*88.1*	*88.2*	*88.3*					
52.0	*86.4*	*87.1*	*87.8*	*87.9*						
54.0	*86.1*	*86.8*	*87.6*							
55.0	*85.9*	*86.7*	*87.4*							

OAT < CORNER POINT — *OAT >= CORNER POINT*

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING ON : (NORM)	-1.2	-1.5
NACELLE ANTI-ICE ON	0	-0.3
NACELLE AND WING ANTI-ICE ON	0	-1.4

PW1133G-JM - TAKEOFF N1 (%)

NO AIR BLEED — MACH=0.000

OAT (C)	PRESSURE ALTITUDE (FT)										
	6000	7000	8000	9000	10000	11000	12000	13000	14000	15000	16000
-55.0	80.5	81.0	81.5	82.1	82.6	83.6	84.5	85.4	85.9	86.2	86.2
-50.0	81.4	81.9	82.4	83.0	83.5	84.5	85.5	86.4	86.9	87.1	87.2
-40.0	83.1	83.7	84.2	84.8	85.3	86.3	87.3	88.2	88.8	89.1	89.1
-30.0	84.8	85.4	86.0	86.5	87.1	88.1	89.1	90.1	90.7	90.8	90.5
-20.0	86.5	87.1	87.7	88.2	88.8	89.9	91.0	91.9	92.4	92.1	91.8
-10.0	88.2	88.8	89.4	90.0	90.6	91.7	92.8	93.5	93.5	93.5	93.6
-5.0	89.0	89.6	90.2	90.8	91.4	92.5	93.6	94.1	94.2	94.4	*94.5*
0.0	89.9	90.5	91.1	91.7	92.3	93.4	94.3	*94.8*	*94.7*	*94.5*	*94.4*
2.0	90.2	90.8	91.5	92.1	92.7	93.7	94.6	*94.7*	*94.6*	*94.4*	*94.3*
5.0	90.7	91.3	92.0	92.6	93.2	94.1	*94.7*	*94.4*	*94.4*	*94.2*	*94.1*
8.0	91.2	91.9	92.5	93.1	93.7	*94.4*	*94.3*	*94.2*	*94.2*	*93.9*	*93.9*
10.0	91.6	92.2	92.8	93.4	94.0	*94.1*	*94.0*	*94.0*	*94.0*	*93.7*	*93.7*

OAT < CORNER POINT — *OAT >= CORNER POINT*

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING ON : (NORM)	-1.4	-1.6
NACELLE ANTI-ICE ON	0	-0.3
NACELLE AND WING ANTI-ICE ON	-0.1	-1.4

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PW1133G-JM - TAKEOFF N1 (%)

NO AIR BLEED — MACH=0.000

OAT (C)	PRESSURE ALTITUDE (FT)										
	6000	7000	8000	9000	10000	11000	12000	13000	14000	15000	16000
12.0	91.9	92.5	93.2	93.8	*94.0*	*93.9*	*93.7*	*93.8*	*93.8*	*93.5*	*93.5*
14.0	92.3	92.9	93.5	*93.7*	*93.7*	*93.6*	*93.5*	*93.5*	*93.6*	*93.3*	*93.3*
16.0	92.6	93.2	*93.5*	*93.5*	*93.5*	*93.4*	*93.3*	*93.4*	*93.4*	*93.1*	*93.2*
18.0	92.9	*93.2*	*93.2*	*93.2*	*93.2*	*93.2*	*93.1*	*93.2*	*93.2*	*92.9*	*93.0*
20.0	*92.9*	*92.9*	*93.0*	*93.0*	*93.0*	*93.0*	*93.0*	*93.0*	*93.0*	*92.7*	*92.9*
22.0	*92.7*	*92.7*	*92.7*	*92.7*	*92.8*	*92.8*	*92.8*	*92.8*	*92.8*	*92.5*	*92.7*
24.0	*92.4*	*92.4*	*92.5*	*92.5*	*92.6*	*92.5*	*92.6*	*92.6*	*92.6*	*92.2*	
26.0	*92.2*	*92.2*	*92.2*	*92.2*	*92.3*	*92.3*	*92.3*	*92.3*	*92.4*		
28.0	*91.9*	*91.9*	*91.9*	*92.0*	*92.0*	*92.0*	*92.1*	*92.1*			
30.0	*91.6*	*91.6*	*91.6*	*91.7*	*91.7*	*91.8*	*91.8*				
32.0	*91.2*	*91.3*	*91.4*	*91.4*	*91.4*	*91.5*					
34.0	*90.9*	*91.0*	*91.1*	*91.1*	*91.2*						
36.0	*90.6*	*90.7*	*90.8*	*90.8*							
38.0	*90.3*	*90.4*	*90.5*								
40.0	*90.0*	*90.1*									
42.0	*89.7*										
48.0											
50.0											
52.0											
54.0											
55.0											

OAT < CORNER POINT — *OAT >= CORNER POINT*

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING ON : (NORM)	-1.4	-1.6
NACELLE ANTI-ICE ON	0	-0.3
NACELLE AND WING ANTI-ICE ON	-0.1	-1.4

MAXIMUM TAKEOFF

Ident.: PER-THR-MTO-00001969.0030001 / 06 JAN 16

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

PW1127G-JM - TAKEOFF N1 (%)

NO AIR BLEED — MACH=0.000

OAT (C)	PRESSURE ALTITUDE (FT)									
	-2000	-1000	0	1000	2000	3000	4000	5000	6000	7000
-55.0	68.9	70.0	71.1	72.1	73.1	74.1	75.2	76.2	77.3	78.3
-50.0	69.7	70.8	71.9	72.9	73.9	74.9	76.0	77.1	78.1	79.2
-40.0	71.2	72.3	73.4	74.5	75.5	76.5	77.7	78.8	79.8	80.9
-30.0	72.7	73.8	75.0	76.0	77.1	78.1	79.3	80.4	81.5	82.6
-20.0	74.2	75.3	76.5	77.6	78.6	79.7	80.9	82.0	83.1	84.2
-10.0	75.6	76.8	78.0	79.1	80.2	81.3	82.5	83.6	84.7	85.9
-5.0	76.4	77.5	78.7	79.8	80.9	82.0	83.2	84.4	85.5	86.7
0.0	77.1	78.3	79.5	80.6	81.7	82.8	84.0	85.2	86.4	87.5
2.0	77.4	78.6	79.8	80.9	82.0	83.1	84.3	85.6	86.7	87.9
5.0	77.8	79.0	80.2	81.3	82.5	83.6	84.8	86.1	87.2	88.3
8.0	78.2	79.4	80.7	81.8	82.9	84.1	85.3	86.5	87.7	88.8
10.0	78.5	79.7	81.0	82.1	83.2	84.4	85.6	86.9	88.0	89.2
12.0	78.8	80.0	81.3	82.4	83.5	84.7	85.9	87.2	88.3	89.5
14.0	79.1	80.3	81.6	82.7	83.8	85.0	86.3	87.5	88.6	89.8
16.0	79.4	80.6	81.9	83.0	84.1	85.3	86.6	87.8	89.0	90.2
18.0	79.7	80.9	82.2	83.3	84.5	85.6	86.9	88.1	89.3	90.5
20.0	80.0	81.2	82.5	83.6	84.8	85.9	87.2	88.5	89.6	90.8
22.0	80.3	81.5	82.8	83.9	85.1	86.3	87.5	88.8	89.9	*90.8*
24.0	80.6	81.8	83.1	84.2	85.4	86.6	87.8	89.1	90.3	*90.5*
26.0	80.9	82.1	83.4	84.5	85.7	86.9	88.1	89.4	*90.6*	*90.2*
28.0	81.1	82.4	83.7	84.8	86.0	87.2	88.4	89.7	*90.3*	*89.8*
30.0	81.4	82.7	83.9	85.1	86.3	87.5	88.8	90.0	*90.0*	*89.5*
32.0	81.7	83.0	84.2	85.4	86.6	87.8	89.1	*90.1*	*89.6*	*89.1*
34.0	82.0	83.3	84.5	85.7	86.9	88.1	89.4	*89.8*	*89.3*	*88.8*
36.0	82.3	83.6	84.8	86.0	87.2	88.4	*89.4*	*89.4*	*88.9*	*88.4*

OAT < CORNER POINT | *OAT >= CORNER POINT*

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING ON : (NORM)	-1.2	-1.4
NACELLE ANTI-ICE ON	0	-0.3
NACELLE AND WING ANTI-ICE ON	0	-1.3

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PW1127G-JM - TAKEOFF N1 (%)

NO AIR BLEED — MACH=0.000

OAT (C)	PRESSURE ALTITUDE (FT)									
	-2000	-1000	0	1000	2000	3000	4000	5000	6000	7000
38.0	82.6	83.8	85.1	86.3	87.5	88.7	*89.1*	*89.1*	*88.6*	*88.1*
40.0	82.9	84.1	85.4	86.6	87.8	*88.8*	*88.8*	*88.8*	*88.3*	*87.7*
42.0	83.1	84.4	85.7	86.9	88.1	*88.4*	*88.5*	*88.5*	*87.9*	
48.0	84.0	85.3	*86.5*	*87.0*	*87.5*	*87.4*				
50.0	84.3	*85.5*	*86.2*	*86.7*	*87.2*					
52.0	*84.5*	*85.2*	*86.0*	*86.4*						
54.0	*84.2*	*84.9*	*85.7*							
55.0	*84.0*	*84.8*	*85.6*							

OAT < CORNER POINT — *OAT >= CORNER POINT*

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING ON : (NORM)	-1.2	-1.4
NACELLE ANTI-ICE ON	0	-0.3
NACELLE AND WING ANTI-ICE ON	0	-1.3

PW1127G-JM - TAKEOFF N1 (%)

NO AIR BLEED — MACH=0.000

OAT (C)										
	7000	8000	9000	10000	11000	12000	13000	14000	15000	16000
-55.0	78.3	79.3	79.7	80.2	81.3	82.3	82.9	83.5	84.1	84.8
-50.0	79.2	80.1	80.6	81.1	82.2	83.2	83.8	84.4	85.1	85.8
-40.0	80.9	81.9	82.4	82.9	84.0	85.0	85.6	86.3	87.0	87.7
-30.0	82.6	83.6	84.1	84.6	85.7	86.8	87.4	88.1	88.7	89.2
-20.0	84.2	85.3	85.8	86.3	87.5	88.6	89.2	89.8	90.2	90.6
-10.0	85.9	86.9	87.5	88.0	89.2	90.3	90.9	91.3	91.8	92.4
-5.0	86.7	87.8	88.3	88.9	90.1	91.2	91.7	92.1	92.7	93.3
0.0	87.5	88.6	89.2	89.7	90.9	92.0	92.4	93.0	93.5	*93.9*
2.0	87.9	89.0	89.5	90.1	91.2	92.3	92.8	93.3	*93.6*	*93.8*
5.0	88.3	89.5	90.0	90.6	91.7	92.8	*93.2*	*93.2*	*93.3*	*93.6*

OAT < CORNER POINT — *OAT >= CORNER POINT*

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING ON : (NORM)	-1.2	-1.5
NACELLE ANTI-ICE ON	0	-0.3
NACELLE AND WING ANTI-ICE ON	0	-1.3

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PW1127G-JM - TAKEOFF N1 (%)

NO AIR BLEED | MACH=0.000

OAT (C)	7000	8000	9000	10000	11000	12000	13000	14000	15000	16000
8.0	88.8	90.0	90.5	91.1	92.2	*92.9*	*92.9*	*92.9*	*92.9*	*93.3*
10.0	89.2	90.3	90.9	91.4	92.5	*92.7*	*92.7*	*92.7*	*92.7*	*93.1*
12.0	89.5	90.6	91.2	91.8	*92.5*	*92.5*	*92.5*	*92.5*	*92.5*	*92.9*
14.0	89.8	90.9	91.5	92.1	*92.3*	*92.3*	*92.3*	*92.3*	*92.3*	*92.8*
16.0	90.2	91.3	91.9	*92.1*	*92.1*	*92.1*	*92.1*	*92.1*	*92.1*	*92.6*
18.0	90.5	91.6	*91.8*	*91.9*	*91.8*	*91.8*	*91.8*	*91.9*	*91.9*	*92.4*
20.0	90.8	*91.6*	*91.6*	*91.6*	*91.6*	*91.6*	*91.6*	*91.6*	*91.6*	*92.2*
22.0	*90.8*	*91.2*	*91.3*	*91.3*	*91.3*	*91.3*	*91.3*	*91.3*	*91.3*	*92.0*
24.0	*90.5*	*90.9*	*91.0*	*91.0*	*91.0*	*91.0*	*91.0*	*91.0*	*91.0*	
26.0	*90.2*	*90.6*	*90.6*	*90.7*	*90.7*	*90.7*	*90.7*	*90.7*		
28.0	*89.8*	*90.3*	*90.3*	*90.4*	*90.4*	*90.4*	*90.4*			
30.0	*89.5*	*89.9*	*90.0*	*90.1*	*90.1*	*90.1*				
32.0	*89.1*	*89.6*	*89.7*	*89.8*	*89.8*					
34.0	*88.8*	*89.3*	*89.4*	*89.5*						
36.0	*88.4*	*89.0*	*89.1*							
38.0	*88.1*	*88.7*								
40.0	*87.7*									
42.0										
44.0										
46.0										
48.0										
50.0										
52.0										
54.0										
55.0										

OAT < CORNER POINT | *OAT >= CORNER POINT*

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING ON : (NORM)	-1.2	-1.5
NACELLE ANTI-ICE ON	0	-0.3
NACELLE AND WING ANTI-ICE ON	0	-1.3

MAXIMUM TAKEOFF

Ident.: PER-THR-MTO-00001969.0017001 / 28 JAN 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CFM56-5B4	N1 CORRECTIONS FOR AIR BLEED	OAT < CORNER POINT	OAT ≥ CORNER POINT
TAKE OFF			
N1	AIR CONDITIONING ON	–.7	–.7
NO AIR BLEED	ENGINE ANTI ICE ON	0.0	–1.6
MACH=.000	ENGINE ANTI ICE AND WING ANTI ICE ON	0.0	–2.4

OAT	PRESSURE ALTITUDE (FT)												
(°C)	–2000.	–1000.	0.	1000.	2000.	3000.	4000.	5000.	6000.	7000.	8000.	9000.	9200.
–54.0	76.2	77.2	78.2	79.2	80.3	82.3	84.0	85.8	86.7	87.6	88.2	88.0	88.0
–50.0	76.9	77.9	78.9	79.9	81.0	83.0	84.7	86.5	87.5	88.3	88.9	88.8	88.7
–46.0	77.5	78.6	79.6	80.6	81.7	83.7	85.4	87.3	88.2	89.0	89.7	89.5	89.5
–42.0	78.2	79.2	80.2	81.3	82.4	84.4	86.1	88.0	88.9	89.8	90.4	90.2	90.2
–38.0	78.8	79.9	80.9	82.0	83.0	85.1	86.8	88.7	89.6	90.5	91.1	90.9	90.9
–34.0	79.5	80.5	81.5	82.6	83.7	85.7	87.5	89.4	90.3	91.2	91.8	91.6	91.6
–30.0	80.1	81.2	82.2	83.3	84.3	86.4	88.2	90.1	91.0	91.9	92.5	92.3	92.3
–26.0	80.7	81.8	82.8	83.9	85.0	87.1	88.8	90.7	91.7	92.5	93.2	93.0	93.0
–22.0	81.4	82.4	83.5	84.6	85.6	87.7	89.5	91.4	92.4	93.2	93.9	93.7	93.7
–18.0	82.0	83.1	84.1	85.2	86.3	88.4	90.2	92.1	93.1	93.9	94.6	94.4	94.4
–14.0	82.6	83.7	84.8	85.9	87.0	89.1	90.9	92.8	93.8	94.6	95.3	95.1	95.1
–10.0	83.2	84.3	85.4	86.5	87.6	89.7	91.5	93.4	94.4	95.3	95.9	95.7	95.7
–6.0	83.8	84.9	86.0	87.1	88.2	90.3	92.2	94.1	95.1	95.9	96.6	96.4	96.4
–2.0	84.4	85.5	86.6	87.7	88.8	90.9	92.8	94.7	95.7	96.6	97.3	97.1	97.0
2.0	85.0	86.1	87.2	88.3	89.4	91.6	93.4	95.4	96.4	97.2	97.9	97.7	97.7
6.0	85.6	86.7	87.8	88.9	90.0	92.2	94.1	96.0	97.0	97.9	98.6	98.4	98.3
10.0	86.2	87.3	88.4	89.5	90.7	92.8	94.7	96.7	97.7	98.5	99.2	99.0	99.0
14.0	86.8	87.9	89.0	90.2	91.3	93.5	95.3	97.3	98.3	99.2	99.9	99.7	99.6
18.0	87.4	88.5	89.6	90.8	91.9	94.1	95.9	97.9	98.9	99.8	*100.1*	*99.1*	*98.8*
22.0	88.0	89.1	90.2	91.3	92.5	94.7	96.6	98.6	*99.3*	*99.4*	*99.1*	*97.9*	*97.7*
26.0	88.5	89.7	90.7	91.9	93.1	95.3	97.2	*98.3*	*98.5*	*98.5*	*98.0*	*96.8*	*96.6*
30.0	89.1	90.2	91.3	92.5	93.6	95.9	*97.4*	*97.6*	*97.7*	*97.6*	*97.3*	*96.5*	*96.4*
34.0	89.7	90.8	91.9	93.1	94.2	96.5	*96.8*	*97.0*	*97.1*	*97.1*	*97.0*	*96.2*	*96.1*
38.0	90.2	91.4	92.5	93.7	94.8	*96.1*	*96.3*	*96.4*	*96.6*	*96.7*	*96.6*		
42.0	90.8	91.9	93.1	94.2	*94.9*	*95.6*	*95.7*	*95.8*	*96.0*				
46.0	91.4	*92.5*	*93.2*	*93.9*	*94.5*								
50.0	*91.5*	*92.2*	*92.9*	*93.6*	*94.1*								
54.0	*91.2*	*92.0*	*92.7*										

OAT < CORNER POINT
OAT ≥ CORNER POINT

CFM56-5B4 TAKE OFF N1 NO AIR BLEED MACH=.000	N1 CORRECTIONS FOR AIR BLEED	OAT < CORNER POINT	OAT > CORNER POINT
	AIR CONDITIONING ON	–.7	–.7
	ENGINE ANTI-ICE ON	0.0	–1.6
	ENGINE ANTI-ICE AND WING ANTI-ICE ON	0.0	–2.4

OAT (C)	PRESSURE ALTITUDE (FT)									
	7000.	8000.	9000.	9200.	10000.	11000.	12000.	13000.	14000.	14500.
–54.0	87.6	88.2	88.0	88.0	87.8	88.2	88.4	88.6	88.6	88.5
–50.0	88.3	88.9	88.8	88.7	88.6	88.9	89.2	89.3	89.3	89.3
–46.0	89.0	89.7	89.5	89.5	89.3	89.7	89.9	90.1	90.1	90.0
–42.0	89.8	90.4	90.2	90.2	90.0	90.4	90.7	90.8	90.8	90.8
–38.0	90.5	91.1	90.9	90.9	90.7	91.1	91.4	91.5	91.5	91.5
–34.0	91.2	91.8	91.6	91.6	91.4	91.8	92.1	92.2	92.2	92.2
–30.0	91.9	92.5	92.3	92.3	92.1	92.5	92.8	92.9	92.9	92.9
–26.0	92.5	93.2	93.0	93.0	92.8	93.2	93.5	93.6	93.6	93.6
–22.0	93.2	93.9	93.7	93.7	93.5	93.9	94.1	94.3	94.3	94.3
–18.0	93.9	94.6	94.4	94.4	94.2	94.6	94.8	95.0	95.0	95.0
–14.0	94.6	95.3	95.1	95.1	94.9	95.3	95.5	95.7	95.7	95.7
–10.0	95.3	95.9	95.7	95.7	95.6	95.9	96.2	96.3	96.3	96.3
–6.0	95.9	96.6	96.4	96.4	96.2	96.6	96.9	97.0	97.0	97.0
–2.0	96.6	97.3	97.1	97.0	96.9	97.3	97.5	97.6	97.7	97.6
2.0	97.2	97.9	97.7	97.7	97.5	97.9	98.2	98.3	98.3	98.3
6.0	97.9	98.6	98.4	98.3	98.2	98.6	98.8	99.0	99.0	98.9
10.0	98.5	99.2	99.0	99.0	98.8	99.2	99.5	99.6	*99.2*	*98.8*
14.0	99.2	99.9	99.7	99.6	*99.1*	*99.0*	*98.6*	*98.0*	*97.1*	*96.6*
18.0	99.8	*100.1*	*99.1*	*98.8*	*97.9*	*97.6*	*97.0*	*96.1*	*95.7*	*95.6*
22.0	*99.4*	*99.1*	*97.9*	*97.7*	*96.7*	*96.2*	*95.9*	*95.7*	*95.4*	*95.2*
26.0	*98.5*	*98.0*	*96.8*	*96.6*	*96.0*	*95.9*	*95.6*	*95.3*	*95.0*	*94.8*
30.0	*97.6*	*97.3*	*96.5*	*96.4*	*95.8*	*95.7*	*95.4*			
34.0	*97.1*	*97.0*	*96.2*	*96.1*	*95.6*					
38.0	*96.7*	*96.6*								
42.0										
46.0										
50.0										
54.0										

OAT < CORNER POINT
OAT > CORNER POINT

MAXIMUM TAKEOFF

Ident.: PER-THR-MTO-00001969.0008001 / 28 JAN 11

3 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

V2527–A5	TAKEOFF EPR				NO AIR BLEED					MACH=.000	
CORRECTIONS FOR AIR BLEED											
AIR CONDITIONING ON					SUBTRACT .010 FROM EPR						
ENGINE ANTI ICE ON					READ AT ACTUAL OAT + 5(°C)						
ENGINE ANTI ICE AND WING ANTI ICE ON					READ AT ACTUAL OAT + 5(°C) AND SUBTRACT .007 FROM EPR						
OAT	PRESSURE ALTITUDE (FT)										
(°C)	–1000.	0.	1000.	2000.	3000.	4000.	5000.	6000.	7000.	8000.	8500.
–60.0	1.378	1.397	1.413	1.430	1.455	1.479	1.504	1.514	1.524	1.534	1.537
–40.0	1.378	1.397	1.413	1.430	1.455	1.479	1.504	1.514	1.524	1.534	1.537
–20.0	1.378	1.397	1.413	1.430	1.455	1.479	1.504	1.514	1.524	1.534	1.537
0.0	1.378	1.397	1.413	1.430	1.455	1.479	1.504	1.514	1.524	1.534	1.537
10.0	1.378	1.397	1.413	1.430	1.455	1.479	1.504	1.514	1.524	1.534	1.537
20.0	1.378	1.397	1.413	1.430	1.455	1.479	1.504	1.514	1.524	1.534	1.537
22.0	1.378	1.397	1.413	1.430	1.455	1.479	1.504	1.514	1.524	1.534	1.537
24.0	1.378	1.397	1.413	1.430	1.455	1.479	1.504	1.514	1.524	1.534	1.533
26.0	1.378	1.397	1.413	1.430	1.455	1.479	1.504	1.514	1.524	1.525	1.523
28.0	1.378	1.397	1.413	1.430	1.455	1.479	1.504	1.514	1.515	1.513	1.512
30.0	1.378	1.397	1.413	1.430	1.455	1.479	1.504	1.505	1.504	1.503	1.501
32.0	1.378	1.397	1.413	1.430	1.455	1.479	1.495	1.494	1.493	1.492	1.491
34.0	1.378	1.397	1.413	1.430	1.455	1.476	1.485	1.484	1.483	1.482	1.480
36.0	1.378	1.397	1.413	1.430	1.455	1.466	1.474	1.474	1.473	1.471	1.469
38.0	1.378	1.397	1.413	1.430	1.448	1.456	1.464	1.464	1.462	1.460	1.459
40.0	1.378	1.397	1.413	1.429	1.438	1.446	1.454	1.453	1.451	*1.450*	*1.448*
42.0	1.378	1.397	1.413	1.419	1.428	1.436	1.444	1.442	*1.441*	*1.440*	*1.438*
44.0	1.378	1.397	1.409	1.409	1.418	1.426	1.433	*1.432*	*1.431*	*1.429*	*1.428*
46.0	1.378	1.397	1.400	1.399	1.408	1.415	*1.423*	*1.422*	*1.421*	*1.419*	*1.418*
48.0	1.378	1.390	1.391	1.390	1.398	*1.405*	*1.413*	*1.412*	*1.411*	*1.409*	*1.408*
50.0	1.378	1.383	1.381	1.380	*1.388*	*1.396*	*1.403*	*1.402*	*1.401*	*1.399*	*1.398*
52.0	1.374	1.373	1.372	*1.371*	*1.379*	*1.386*	*1.393*	*1.392*	*1.391*	*1.389*	*1.388*
54.0	1.364	1.364	*1.363*	*1.362*	*1.369*	*1.377*	*1.383*	*1.382*	*1.381*	*1.379*	
56.0	1.355	*1.355*	*1.354*	*1.352*	*1.360*	*1.367*	*1.374*	*1.372*	*1.371*		
58.0	*1.346*	*1.346*	*1.345*	*1.343*	*1.351*	*1.358*	*1.364*	*1.363*			
60.0	*1.337*	*1.337*	*1.336*	*1.334*	*1.341*	*1.348*	*1.354*				
62.0	*1.329*	*1.329*	*1.327*	*1.325*	*1.332*	*1.339*					
64.0	*1.320*	*1.320*	*1.318*	*1.316*	*1.323*						
66.0	*1.312*	*1.311*	*1.310*	*1.307*							
68.0	*1.303*	*1.303*	*1.301*								
70.0	*1.295*	*1.294*									
72.0											
74.0											
76.0											
78.0	*DATA GIVEN ABOVE ISA + 40 ARE TO BE USED FOR FLEX TAKEOFF ONLY*										

V2527-A5	TAKEOFF EPR				NO AIR BLEED						MACH=.000
CORRECTIONS FOR AIR BLEED											
AIR CONDITIONING ON					SUBTRACT .015 FROM EPR						
ENGINE ANTI-ICE ON					READ AT ACTUAL OAT +5(°C)						
ENGINE ANTI-ICE AND WING ANTI-ICE ON					READ AT ACTUAL OAT +5(°C) AND SUBTRACT .010 FROM EPR						
OAT (°C)	PRESSURE ALTITUDE (FT)										
	5000.	6000.	7000.	8000.	9000.	10000.	11000.	12000.	13000.	14000.	14500.
–60.0	1.504	1.514	1.524	1.534	1.540	1.545	1.551	1.556	1.562	1.567	1.570
–40.0	1.504	1.514	1.524	1.534	1.540	1.545	1.551	1.556	1.562	1.567	1.570
–20.0	1.504	1.514	1.524	1.534	1.540	1.545	1.551	1.556	1.562	1.567	1.570
0.0	1.504	1.514	1.524	1.534	1.540	1.545	1.551	1.556	1.562	1.567	1.570
5.0	1.504	1.514	1.524	1.534	1.540	1.545	1.551	1.556	1.562	1.567	1.570
10.0	1.504	1.514	1.524	1.534	1.540	1.545	1.551	1.556	1.562	1.567	1.570
12.0	1.504	1.514	1.524	1.534	1.540	1.545	1.551	1.556	1.562	1.567	1.569
14.0	1.504	1.514	1.524	1.534	1.540	1.545	1.551	1.556	1.562	1.564	1.565
16.0	1.504	1.514	1.524	1.534	1.540	1.545	1.551	1.556	1.557	1.559	1.561
18.0	1.504	1.514	1.524	1.534	1.540	1.545	1.551	1.551	1.552	1.553	1.551
20.0	1.504	1.514	1.524	1.534	1.540	1.545	1.544	1.544	1.544	1.541	1.539
22.0	1.504	1.514	1.524	1.534	1.540	1.538	1.536	1.536	1.533	*1.530*	*1.528*
24.0	1.504	1.514	1.524	1.534	1.531	1.529	1.528	1.525	*1.522*	*1.518*	*1.516*
26.0	1.504	1.514	1.524	1.525	1.521	1.519	1.517	*1.514*	*1.510*	*1.506*	*1.504*
28.0	1.504	1.514	1.515	1.513	1.511	1.508	*1.506*	*1.502*	*1.498*	*1.494*	*1.493*
30.0	1.504	1.505	1.504	1.503	1.500	*1.498*	*1.494*	*1.491*	*1.487*	*1.484*	*1.582*
32.0	1.495	1.494	1.493	1.492	*1.490*	*1.487*	*1.483*	*1.479*	*1.476*	*1.473*	*1.471*
34.0	1.485	1.484	1.483	*1.482*	*1.479*	*1.475*	*1.472*	*1.469*	*1.466*	*1.463*	*1.461*
36.0	1.474	1.474	*1.473*	*1.471*	*1.468*	*1.465*	*1.462*	*1.459*	*1.455*	*1.452*	*1.450*
38.0	1.464	*1.464*	*1.462*	*1.460*	*1.457*	*1.454*	*1.451*	*1.448*	*1.445*	*1.441*	*1.440*
40.0	*1.454*	*1.453*	*1.451*	*1.450*	*1.447*	*1.444*	*1.441*	*1.438*	*1.434*	*1.431*	*1.429*
42.0	*1.444*	*1.442*	*1.441*	*1.440*	*1.437*	*1.434*	*1.431*	*1.427*	*1.424*	*1.420*	
44.0	*1.433*	*1.432*	*1.431*	*1.429*	*1.427*	*1.424*	*1.420*	*1.417*	*1.413*		
46.0	*1.423*	*1.422*	*1.421*	*1.419*	*1.416*	*1.413*	*1.410*	*1.406*			
48.0	*1.413*	*1.412*	*1.411*	*1.409*	*1.406*	*1.403*	*1.400*				
50.0	*1.403*	*1.402*	*1.401*	*1.399*	*1.396*	*1.393*					
52.0	*1.393*	*1.392*	1.391	1.389	1.386						
54.0	*1.383*	*1.382*	*1.381*	*1.379*							
56.0	*1.374*	*1.372*	*1.371*								
58.0	*1.364*	*1.363*	*DATA GIVEN ABOVE ISA+40 ARE TO BE USED FOR FLEX TAKEOFF ONLY*								

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DEFINITION

Ident.: PER-THR-MGA-00001971.0001001 / 23 FEB 11
Applicable to: ALL

It is the maximum permissible thrust during go-around.

MAXIMUM GO AROUND

Ident.: PER-THR-MGA-00001972.0035001 / 20 DEC 16

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

PW1133G-JM - GO AROUND N1 (%)

AIR CONDITIONING ON — MACH=0.225

TAT (C)	PRESSURE ALTITUDE (FT)									
	-2000	-1000	0	1000	2000	3000	4000	5000	6000	7000
-55.0	76.4	77.5	78.6	79.1	79.6	80.1	80.5	80.8	80.3	80.5
-50.0	77.3	78.4	79.4	80.0	80.5	81.0	81.4	81.7	81.2	81.4
-40.0	78.9	80.1	81.2	81.7	82.2	82.8	83.2	83.5	82.9	83.2
-30.0	80.6	81.7	82.8	83.4	84.0	84.5	84.9	85.2	84.6	84.9
-20.0	82.2	83.3	84.5	85.1	85.6	86.2	86.6	86.9	86.3	86.6
-10.0	83.7	84.9	86.1	86.7	87.3	87.8	88.3	88.6	88.0	88.3
-5.0	84.5	85.7	86.9	87.5	88.1	88.6	89.1	89.4	88.8	89.1
0.0	85.3	86.5	87.7	88.4	88.9	89.5	89.9	90.3	89.7	90.0
2.0	85.6	86.9	88.1	88.7	89.3	89.8	90.3	90.6	90.0	90.3
5.0	86.1	87.3	88.6	89.2	89.7	90.3	90.8	91.1	90.5	90.8
8.0	86.6	87.8	89.0	89.7	90.2	90.8	91.3	91.6	91.0	91.3
10.0	86.9	88.1	89.4	90.0	90.6	91.1	91.6	91.9	91.3	91.6
12.0	87.2	88.5	89.7	90.3	90.9	91.5	91.9	92.3	91.6	92.0
14.0	87.5	88.8	90.0	90.7	91.2	91.8	92.3	92.6	92.0	92.3
16.0	87.9	89.1	90.4	91.0	91.6	92.1	92.6	92.9	92.3	92.6
18.0	88.2	89.4	90.7	91.3	91.9	92.4	92.9	93.2	92.6	92.9
20.0	88.5	89.8	91.0	91.6	92.2	92.8	93.2	93.6	93.0	*93.1*
22.0	88.8	90.1	91.3	92.0	92.5	93.1	93.6	93.9	*93.1*	*93.2*
24.0	89.1	90.4	91.7	92.3	92.9	93.4	93.9	*94.0*	*93.2*	*93.2*
26.0	89.4	90.7	92.0	92.6	93.2	93.7	*93.9*	*93.8*	*93.2*	*93.2*
28.0	89.8	91.0	92.3	92.9	93.5	*93.8*	*93.7*	*93.7*	*93.2*	*93.2*
30.0	90.1	91.4	92.6	93.2	*93.5*	*93.5*	*93.5*	*93.5*	*93.2*	*93.1*
32.0	90.4	91.7	92.9	*93.2*	*93.3*	*93.3*	*93.2*	*93.2*	*93.1*	*92.9*
34.0	90.7	92.0	*92.9*	*93.0*	*93.0*	*93.0*	*93.0*	*93.0*	*92.7*	*92.7*
36.0	91.0	*92.0*	*92.7*	*92.7*	*92.7*	*92.7*	*92.7*	*92.7*	*92.4*	*92.3*
38.0	*91.0*	*91.7*	*92.4*	*92.4*	*92.4*	*92.4*	*92.4*	*92.4*	*92.1*	*92.0*

OAT < CORNER POINT — *OAT >= CORNER POINT*

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING OFF	0.8	1.3
NACELLE ANTI-ICE ON	0.3	-0.3
NACELLE AND WING ANTI-ICE ON	0.3	-1.3

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PW1133G-JM - GO AROUND N1 (%)										
AIR CONDITIONING ON									MACH=0.225	
TAT	PRESSURE ALTITUDE (FT)									
(C)	**-2000**	**-1000**	**0**	**1000**	**2000**	**3000**	**4000**	**5000**	**6000**	**7000**
40.0	*90.8*	*91.5*	*92.1*	*92.1*	*92.1*	*92.1*	*92.1*	*92.2*	*91.7*	*91.7*
42.0	*90.5*	*91.2*	*91.8*	*91.8*	*91.8*	*91.8*	*91.9*	*91.9*	*91.4*	*91.4*
48.0	*89.8*	*90.4*	*91.0*	*90.8*	*91.1*	*90.9*	*90.6*	*90.9*		
50.0	*89.5*	*90.1*	*90.4*	*90.4*	*90.5*	*90.0*	*90.0*			
52.0	*89.3*	*89.5*	*89.8*	*89.6*	*89.3*	*89.0*				
54.0	*88.7*	*88.9*	*89.0*	*88.5*	*88.1*					
56.0	*88.0*	*88.1*	*87.8*	*87.3*						
58.0	*87.3*	*87.1*	*86.6*							
60.0	*86.4*	*86.1*								

OAT < CORNER POINT	*OAT >= CORNER POINT*	
N1 CORRECTIONS FOR AIR BLEED (%)	**OAT < CORNER POINT**	**OAT >= CORNER POINT**
AIR CONDITIONING OFF	0.8	1.3
NACELLE ANTI-ICE ON	0.3	-0.3
NACELLE AND WING ANTI-ICE ON	0.3	-1.3

PW1133G-JM - GO AROUND N1 (%)											
AIR CONDITIONING ON										MACH=0.225	
TAT	PRESSURE ALTITUDE (FT)										
(C)	**6000**	**7000**	**8000**	**9000**	**10000**	**11000**	**12000**	**13000**	**14000**	**15000**	**16000**
-55.0	80.3	80.5	80.8	81.0	81.3	81.7	82.1	82.5	82.6	82.8	82.7
-50.0	81.2	81.4	81.7	81.9	82.2	82.6	83.0	83.4	83.6	83.7	83.6
-40.0	82.9	83.2	83.4	83.7	83.9	84.4	84.8	85.2	85.4	85.5	85.5
-30.0	84.6	84.9	85.2	85.4	85.7	86.1	86.5	87.0	87.1	87.3	87.2
-20.0	86.3	86.6	86.9	87.1	87.4	87.8	88.3	88.7	88.9	89.0	88.7
-10.0	88.0	88.3	88.5	88.8	89.1	89.6	90.0	90.5	90.5	90.4	90.3
-5.0	88.8	89.1	89.4	89.7	89.9	90.4	90.9	91.3	91.2	91.2	91.1
0.0	89.7	90.0	90.2	90.5	90.8	91.3	91.7	92.0	91.9	*91.9*	*91.7*
2.0	90.0	90.3	90.6	90.9	91.1	91.6	92.0	92.3	*92.2*	*92.0*	*91.8*
5.0	90.5	90.8	91.1	91.4	91.6	92.1	92.5	*92.5*	*92.3*	*92.2*	*92.0*

OAT < CORNER POINT	*OAT >= CORNER POINT*	
N1 CORRECTIONS FOR AIR BLEED (%)	**OAT < CORNER POINT**	**OAT >= CORNER POINT**
AIR CONDITIONING OFF	1.0	1.3
NACELLE ANTI-ICE ON	0.2	-0.3
NACELLE AND WING ANTI-ICE ON	-0.1	-1.2

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Continued from the previous page

PW1133G-JM - GO AROUND N1 (%)

AIR CONDITIONING ON — MACH=0.225

TAT (C)	PRESSURE ALTITUDE (FT)										
	6000	7000	8000	9000	10000	11000	12000	13000	14000	15000	16000
8.0	91.0	91.3	91.6	91.9	92.1	92.6	*92.8*	*92.7*	*92.6*	*92.4*	*92.3*
10.0	91.3	91.6	91.9	92.2	92.5	*92.9*	*92.9*	*92.8*	*92.7*	*92.5*	*92.4*
12.0	91.6	92.0	92.2	92.5	92.8	*93.0*	*93.0*	*92.9*	*92.8*	*92.6*	*92.5*
14.0	92.0	92.3	92.6	92.9	*93.0*	*93.0*	*93.1*	*93.0*	*92.9*	*92.7*	*92.6*
16.0	92.3	92.6	92.9	*93.0*	*93.0*	*93.1*	*93.2*	*93.2*	*93.0*	*92.7*	*92.8*
18.0	92.6	92.9	*93.1*	*93.1*	*93.1*	*93.2*	*93.3*	*93.3*	*93.2*	*92.8*	*92.5*
20.0	93.0	*93.1*	*93.1*	*93.1*	*93.1*	*93.3*	*93.4*	*93.4*	*93.3*	*92.6*	*92.3*
22.0	*93.1*	*93.2*	*93.1*	*93.1*	*93.1*	*93.3*	*93.6*	*93.5*	*93.0*	*92.3*	*92.0*
24.0	*93.2*	*93.2*	*93.1*	*93.1*	*93.2*	*93.4*	*93.7*	*93.3*	*92.8*	*92.0*	*91.6*
26.0	*93.2*	*93.2*	*93.1*	*93.1*	*93.2*	*93.5*	*93.5*	*93.0*	*92.4*	*91.6*	*91.3*
28.0	*93.2*	*93.2*	*93.0*	*93.0*	*93.2*	*93.2*	*93.2*	*92.6*	*92.0*	*91.1*	
30.0	*93.2*	*93.1*	*92.7*	*92.8*	*93.0*	*92.9*	*92.9*	*92.2*	*91.6*		
32.0	*93.1*	*92.9*	*92.4*	*92.6*	*92.7*	*92.6*	*92.5*	*91.8*			
34.0	*92.7*	*92.7*	*92.2*	*92.3*	*92.3*	*92.2*	*92.1*				
36.0	*92.4*	*92.3*	*92.0*	*92.1*	*92.0*	*91.9*					
38.0	*92.1*	*92.0*	*91.8*	*91.8*	*91.7*						
40.0	*91.7*	*91.7*	*91.5*	*91.5*							
42.0	*91.4*	*91.4*	*91.3*								
48.0											
50.0											
52.0											
54.0											
56.0											
58.0											
60.0											

OAT < CORNER POINT — *OAT >= CORNER POINT*

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING OFF	1.0	1.3
NACELLE ANTI-ICE ON	0.2	-0.3
NACELLE AND WING ANTI-ICE ON	-0.1	-1.2

MAXIMUM GO AROUND

Ident.: PER-THR-MGA-00001972.0033001 / 06 JAN 16

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

PW1127G-JM - GO AROUND N1 (%)

AIR CONDITIONING ON — MACH=0.225

TAT (C)	PRESSURE ALTITUDE (FT)									
	-2000	-1000	0	1000	2000	3000	4000	5000	6000	7000
-55.0	71.1	72.1	73.0	74.0	74.8	75.8	76.8	77.8	78.9	79.9
-50.0	71.9	72.9	73.9	74.8	75.7	76.7	77.6	78.7	79.8	80.8
-40.0	73.5	74.5	75.5	76.4	77.3	78.3	79.3	80.4	81.5	82.5
-30.0	75.0	76.0	77.0	78.0	78.9	79.9	80.9	82.1	83.2	84.3
-20.0	76.5	77.5	78.6	79.6	80.5	81.5	82.6	83.7	84.9	85.9
-10.0	78.0	79.0	80.1	81.1	82.1	83.1	84.2	85.3	86.5	87.6
-5.0	78.7	79.8	80.9	81.9	82.9	83.9	85.0	86.1	87.3	88.4
0.0	79.4	80.5	81.6	82.7	83.6	84.7	85.8	86.9	88.1	89.3
2.0	79.7	80.8	81.9	83.0	83.9	85.0	86.1	87.3	88.5	89.6
5.0	80.2	81.3	82.4	83.4	84.4	85.5	86.5	87.7	89.0	90.1
8.0	80.6	81.7	82.8	83.9	84.9	86.0	87.0	88.2	89.4	90.6
10.0	80.9	82.0	83.2	84.2	85.2	86.3	87.4	88.5	89.8	90.9
12.0	81.2	82.3	83.5	84.5	85.5	86.6	87.7	88.9	90.1	91.3
14.0	81.5	82.6	83.8	84.8	85.8	86.9	88.0	89.2	90.4	91.6
16.0	81.8	83.0	84.1	85.2	86.1	87.2	88.3	89.5	90.8	91.9
18.0	82.1	83.3	84.4	85.5	86.4	87.5	88.6	89.8	91.1	92.2
20.0	82.4	83.6	84.7	85.8	86.7	87.8	88.9	90.1	91.4	92.6
22.0	82.7	83.9	85.0	86.1	87.1	88.1	89.2	90.5	91.7	92.9
24.0	83.0	84.2	85.3	86.4	87.4	88.4	89.6	90.8	92.0	*92.9*
26.0	83.3	84.5	85.6	86.7	87.7	88.8	89.9	91.1	92.4	*92.7*
28.0	83.6	84.8	85.9	87.0	88.0	89.1	90.2	91.4	*92.7*	*92.6*
30.0	83.9	85.1	86.2	87.3	88.3	89.4	90.5	91.7	*92.5*	*92.5*
32.0	84.2	85.4	86.5	87.6	88.6	89.7	90.8	92.0	*92.3*	*92.4*
34.0	84.5	85.6	86.8	87.9	88.9	90.0	91.1	*92.2*	*92.1*	*92.2*
36.0	84.8	85.9	87.1	88.2	89.2	90.3	91.4	*91.9*	*91.9*	*91.9*

OAT < CORNER POINT — *OAT >= CORNER POINT*

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING OFF	+1.1	+1.2
NACELLE ANTI-ICE ON	+0.3	-0.3
NACELLE AND WING ANTI-ICE ON	+0.3	-1.2

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PW1127G-JM - GO AROUND N1 (%)

AIR CONDITIONING ON — MACH=0.225

TAT (C)	PRESSURE ALTITUDE (FT)									
	-2000	**-1000**	**0**	**1000**	**2000**	**3000**	**4000**	**5000**	**6000**	**7000**
38.0	85.1	86.2	87.4	88.5	89.5	90.6	*91.7*	*91.6*	*91.6*	*91.5*
40.0	85.3	86.5	87.7	88.8	89.8	90.9	*91.4*	*91.4*	*91.3*	*91.2*
42.0	85.6	86.8	88.0	89.1	90.1	*91.1*	*91.1*	*91.1*	*91.0*	*90.8*
44.0	85.9	87.1	88.3	89.4	90.4	*90.8*	*90.8*	*90.9*	*90.8*	*90.5*
46.0	86.2	87.4	88.6	89.7	*90.7*	*90.5*	*90.5*	*90.6*	*90.5*	
48.0	86.5	87.7	88.9	*90.0*	*90.3*	*90.1*	*90.0*	*90.4*		
50.0	86.8	88.0	*89.2*	*89.6*	*89.8*	*89.4*	*89.5*			
52.0	87.1	*88.3*	*88.8*	*89.0*	*88.9*	*88.7*				
54.0	*87.4*	*87.9*	*88.2*	*88.1*	*88.0*					
56.0	*87.1*	*87.3*	*87.4*	*87.2*						
58.0	*86.5*	*86.5*	*86.6*							
60.0	*85.7*	*85.7*								

OAT < CORNER POINT	*OAT >= CORNER POINT*	
N1 CORRECTIONS FOR AIR BLEED (%)	**OAT < CORNER POINT**	**OAT >= CORNER POINT**
AIR CONDITIONING OFF	+1.1	+1.2
NACELLE ANTI-ICE ON	+0.3	-0.3
NACELLE AND WING ANTI-ICE ON	+0.3	-1.2

PW1127G-JM - GO AROUND N1 (%)

AIR CONDITIONING ON — MACH=0.225

TAT (C)										
	7000	**8000**	**9000**	**10000**	**11000**	**12000**	**13000**	**14000**	**15000**	**16000**
-55.0	79.9	80.2	80.5	80.8	81.5	82.1	82.4	82.7	82.9	83.1
-50.0	80.8	81.1	81.4	81.7	82.4	83.0	83.3	83.6	83.8	84.0
-40.0	82.5	82.8	83.2	83.5	84.2	84.8	85.1	85.4	85.7	85.9
-30.0	84.3	84.5	84.9	85.2	85.9	86.5	86.9	87.2	87.4	87.6
-20.0	85.9	86.2	86.6	86.9	87.6	88.3	88.6	88.9	89.1	89.1
-10.0	87.6	87.9	88.3	88.6	89.3	90.0	90.4	90.5	90.6	90.7

OAT < CORNER POINT	*OAT >= CORNER POINT*	
N1 CORRECTIONS FOR AIR BLEED (%)	**OAT < CORNER POINT**	**OAT >= CORNER POINT**
AIR CONDITIONING OFF	+0.9	+1.1
NACELLE ANTI-ICE ON	+0.3	-0.2
NACELLE AND WING ANTI-ICE ON	+0.3	-1.0

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PW1127G-JM - GO AROUND N1 (%)

AIR CONDITIONING ON — MACH=0.225

TAT (C)	7000	8000	9000	10000	11000	12000	13000	14000	15000	16000
-5.0	88.4	88.7	89.1	89.5	90.2	90.9	91.2	91.3	91.4	91.6
0.0	89.3	89.6	90.0	90.3	91.0	91.7	92.0	92.0	92.2	92.4
2.0	89.6	89.9	90.3	90.6	91.4	92.0	92.3	92.3	92.5	*92.6*
5.0	90.1	90.4	90.8	91.1	91.9	92.5	92.7	*92.8*	*92.7*	*92.7*
8.0	90.6	90.9	91.3	91.6	92.4	93.0	*93.0*	*92.9*	*92.8*	*92.8*
10.0	90.9	91.2	91.6	92.0	92.7	*93.1*	*93.0*	*92.9*	*92.9*	*92.9*
12.0	91.3	91.6	92.0	92.3	93.0	*93.1*	*93.0*	*93.0*	*93.0*	*93.0*
14.0	91.6	91.9	92.3	92.6	*93.1*	*93.1*	*93.1*	*93.1*	*93.1*	*93.1*
16.0	91.9	92.2	92.6	*93.0*	*93.0*	*93.1*	*93.2*	*93.2*	*93.2*	*93.2*
18.0	92.2	92.5	*92.9*	*93.0*	*93.1*	*93.2*	*93.3*	*93.3*	*93.2*	*93.1*
20.0	92.6	*92.9*	*92.9*	*93.0*	*93.2*	*93.3*	*93.4*	*93.4*	*93.1*	*92.9*
22.0	92.9	*92.8*	*92.9*	*93.1*	*93.2*	*93.3*	*93.4*	*93.3*	*92.9*	*92.8*
24.0	*92.9*	*92.8*	*92.9*	*93.2*	*93.3*	*93.4*	*93.3*	*93.1*	*92.6*	*92.6*
26.0	*92.7*	*92.8*	*93.0*	*93.3*	*93.4*	*93.2*	*93.0*	*92.8*	*92.4*	*92.4*
28.0	*92.6*	*92.7*	*93.0*	*93.3*	*93.2*	*93.0*	*92.8*	*92.5*	*92.1*	
30.0	*92.5*	*92.7*	*93.0*	*93.1*	*92.9*	*92.7*	*92.5*	*92.2*		
32.0	*92.4*	*92.7*	*92.7*	*92.8*	*92.6*	*92.4*	*92.1*			
34.0	*92.2*	*92.3*	*92.4*	*92.6*	*92.3*	*92.1*				
36.0	*91.9*	*92.0*	*92.1*	*92.2*	*92.0*					
38.0	*91.5*	*91.6*	*91.8*	*91.9*						
40.0	*91.2*	*91.3*	*91.4*							
42.0	*90.8*	*91.0*								
44.0	*90.5*									
46.0										
48.0										
50.0										
52.0										

OAT < CORNER POINT — *OAT >= CORNER POINT*

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING OFF	+0.9	+1.1
NACELLE ANTI-ICE ON	+0.3	-0.2
NACELLE AND WING ANTI-ICE ON	+0.3	-1.0

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PW1127G-JM - GO AROUND N1 (%)										
AIR CONDITIONING ON									MACH=0.225	
TAT (C)	**7000**	**8000**	**9000**	**10000**	**11000**	**12000**	**13000**	**14000**	**15000**	**16000**
54.0 56.0										
58.0 60.0										

OAT < CORNER POINT	*OAT >= CORNER POINT*	
N1 CORRECTIONS FOR AIR BLEED (%)	**OAT < CORNER POINT**	**OAT >= CORNER POINT**
AIR CONDITIONING OFF	+0.9	+1.1
NACELLE ANTI-ICE ON	+0.3	-0.2
NACELLE AND WING ANTI-ICE ON	+0.3	-1.0

MAXIMUM GO AROUND

Ident.: PER-THR-MGA-00001972.0024001 / 28 JAN 11

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CFM56-5B4 GO AROUND N1 AIR CONDITIONING ON MACH=.225	N1 CORRECTIONS FOR AIR BLEED	OAT < CORNER POINT	OAT ≥ CORNER POINT
	AIR CONDITIONING OFF	0.7	0.7
	ENGINE ANTI ICE ON	0.0	–1.6
	ENGINE ANTI ICE AND WING ANTI ICE ON	0.0	–2.4

TAT (°C)	PRESSURE ALTITUDE (FT)									
	–2000.	–1000.	0.	1000.	2000.	3000.	4000.	5000.	6000.	7000.
–54.0	77.7	78.7	79.6	80.2	80.9	82.1	83.4	84.8	86.2	86.8
–50.0	78.4	79.4	80.3	80.9	81.6	82.8	84.2	85.5	86.9	87.6
–46.0	79.1	80.1	81.0	81.6	82.3	83.5	84.9	86.2	87.6	88.3
–42.0	79.8	80.7	81.7	82.3	83.0	84.2	85.6	87.0	88.4	89.0
–38.0	80.4	81.4	82.3	83.0	83.6	84.9	86.3	87.6	89.1	89.7
–34.0	81.1	82.0	83.0	83.6	84.3	85.5	86.9	88.3	89.7	90.4
–30.0	81.7	82.7	83.6	84.3	85.0	86.2	87.6	89.0	90.4	91.1
–26.0	82.4	83.3	84.3	85.0	85.6	86.9	88.3	89.7	91.1	91.8
–22.0	83.0	84.0	84.9	85.6	86.3	87.5	89.0	90.4	91.8	92.5
–18.0	83.7	84.6	85.6	86.3	86.9	88.2	89.6	91.1	92.5	93.2
–14.0	84.3	85.3	86.2	86.9	87.6	88.9	90.3	91.7	93.2	93.9
–10.0	84.9	85.9	86.8	87.5	88.2	89.5	90.9	92.4	93.8	94.5
–6.0	85.5	86.5	87.5	88.2	88.8	90.1	91.6	93.0	94.5	95.2
–2.0	86.1	87.1	88.1	88.8	89.5	90.8	92.2	93.7	95.1	95.8
2.0	86.7	87.7	88.7	89.4	90.1	91.4	92.9	94.3	95.8	96.5
6.0	87.3	88.3	89.3	90.0	90.7	92.0	93.5	94.9	96.4	97.1
10.0	87.9	88.9	89.9	90.6	91.3	92.6	94.1	95.6	97.1	97.8
14.0	88.5	89.6	90.5	91.3	91.9	93.3	94.8	96.2	97.7	98.4
18.0	89.1	90.1	91.1	91.8	92.5	93.9	95.4	96.8	98.3	99.0
22.0	89.7	90.7	91.7	92.4	93.1	94.5	96.0	97.4	*99.0*	*99.6*
26.0	90.3	91.3	92.3	93.0	93.7	95.1	96.6	*98.1*	*99.0*	*99.0*
30.0	90.8	91.9	92.9	93.6	94.3	95.7	97.2	97.7	98.5	98.4
34.0	91.4	92.5	93.5	94.2	94.9	96.3	*97.2*	*97.4*	*97.9*	*97.7*
38.0	92.0	93.0	94.0	94.8	95.5	*96.7*	*96.9*	*96.9*	*97.2*	*97.0*
42.0	92.6	93.6	94.6	95.4	*96.1*	*96.3*	*96.2*	*96.0*	*96.3*	*96.2*
46.0	93.1	*94.2*	*95.2*	*95.7*	*95.7*	*95.5*	*95.3*	*95.2*	*95.4*	
50.0	*93.7*	*94.5*	*94.8*	*94.8*	*94.8*	*94.6*	*94.4*			
54.0	*93.3*	*93.6*	*93.9*	*94.0*	*93.9*					
58.0	*92.4*	*92.8*	*93.1*							
62.0	*91.6*									

OAT < CORNER POINT

OAT ≥ CORNER POINT

CFM56-5B4 GO AROUND N1 AIR CONDITIONING ON MACH=.225	N1 CORRECTIONS FOR AIR BLEED	OAT < CORNER POINT	OAT > CORNER POINT
	AIR CONDITIONING OFF	0.7	0.7
	ENGINE ANTI-ICE ON	0.0	–1.6
	ENGINE ANTI-ICE AND WING ANTI-ICE ON	0.0	–2.4

TAT (C)	PRESSURE ALTITUDE (FT)									
	7000.	8000.	9000.	9200.	10000.	11000.	12000.	13000.	14000.	14500.
–54.0	86.8	87.3	87.0	87.0	86.7	87.0	87.3	87.4	87.4	87.4
–50.0	87.6	88.1	87.8	87.7	87.5	87.8	88.0	88.1	88.2	88.2
–46.0	88.3	88.8	88.5	88.4	88.2	88.5	88.8	88.9	88.9	88.9
–42.0	89.0	89.6	89.2	89.2	88.9	89.3	89.5	89.6	89.7	89.6
–38.0	89.7	90.2	89.9	89.9	89.6	89.9	90.2	90.3	90.3	90.3
–34.0	90.4	90.9	90.6	90.6	90.3	90.6	90.9	91.0	91.0	91.0
–30.0	91.1	91.6	91.3	91.2	91.0	91.3	91.6	91.7	91.7	91.7
–26.0	91.8	92.3	92.0	91.9	91.7	92.0	92.3	92.4	92.4	92.4
–22.0	92.5	93.0	92.7	92.6	92.4	92.7	93.0	93.1	93.1	93.1
–18.0	93.2	93.7	93.4	93.3	93.1	93.4	93.6	93.8	93.8	93.8
–14.0	93.9	94.4	94.1	94.0	93.8	94.1	94.3	94.5	94.5	94.5
–10.0	94.5	95.1	94.7	94.7	94.4	94.7	95.0	95.1	95.2	95.1
–6.0	95.2	95.7	95.4	95.3	95.1	95.4	95.6	95.8	95.8	95.8
–2.0	95.8	96.4	96.0	96.0	95.7	96.0	96.3	96.4	96.5	96.4
2.0	96.5	97.0	96.7	96.6	96.4	96.7	96.9	97.1	97.1	97.1
6.0	97.1	97.7	97.3	97.3	97.0	97.3	97.6	97.7	97.8	97.7
10.0	97.8	98.3	98.0	97.9	97.7	98.0	98.2	98.4	*98.4*	*98.4*
14.0	98.4	99.0	98.6	98.6	*98.3*	*98.6*	*98.9*	*98.6*	*98.0*	*97.7*
18.0	99.0	*99.6*	*99.3*	*99.1*	*98.2*	*98.1*	*97.7*	*97.2*	*96.4*	*95.9*
22.0	*99.6*	*99.5*	*98.5*	*98.2*	*97.4*	*97.0*	*96.5*	*95.9*	*95.6*	*95.4*
26.0	*99.0*	*98.7*	*97.6*	*97.4*	*96.5*	*96.1*	*95.8*	*95.5*	*95.1*	*94.9*
30.0	*98.4*	*97.9*	*96.9*	*96.7*	*95.9*	*95.7*	*95.4*	*95.0*	*94.6*	
34.0	*97.7*	*97.3*	*96.3*	*96.2*	*95.5*	*95.3*	*95.0*			
38.0	*97.0*	*96.6*	*95.8*	*95.6*	*95.1*					
42.0	*96.2*	*95.9*								
46.0										
50.0										
54.0										

OAT < CORNER POINT
OAT > CORNER POINT

MAXIMUM GO AROUND

Ident.: PER-THR-MGA-00001972.0005001 / 28 JAN 11

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

V2527-A5	GO-AROUND EPR					AIR COND ON				MACH=.225
CORRECTIONS FOR AIR BLEED										
AIR CONDITIONING OFF						ADD .010 TO EPR				
ENGINE ANTI ICE ON						READ AT TAT +5.(°C)				
ENGINE ANTI ICE AND WING ANTI ICE ON						READ AT TAT +5.(°C) AND SUBTRACT .007 FROM EPR				
TAT (°C)	PRESSURE ALTITUDE (FT)									
	–1000.	0.	1000.	2000.	3000.	4000.	5000.	6000.	7000.	8000.	8500.
–60.0	1.391	1.411	1.428	1.446	1.457	1.466	1.475	1.485	1.496	1.507	1.509
–40.0	1.391	1.411	1.428	1.446	1.457	1.466	1.475	1.485	1.496	1.507	1.509
–20.0	1.391	1.411	1.428	1.446	1.457	1.466	1.475	1.485	1.496	1.507	1.509
0.0	1.391	1.411	1.428	1.446	1.457	1.466	1.475	1.485	1.496	1.507	1.509
10.0	1.391	1.411	1.428	1.446	1.457	1.466	1.475	1.485	1.496	1.507	1.509
20.0	1.391	1.411	1.428	1.446	1.457	1.466	1.475	1.485	1.496	1.507	1.509
22.0	1.391	1.411	1.428	1.446	1.457	1.466	1.475	1.485	1.496	1.507	1.509
24.0	1.391	1.411	1.428	1.446	1.457	1.466	1.475	1.485	1.496	1.507	1.509
26.0	1.391	1.411	1.428	1.446	1.457	1.466	1.475	1.485	1.496	1.507	1.509
28.0	1.391	1.411	1.428	1.446	1.457	1.466	1.475	1.485	1.496	1.502	1.500
30.0	1.391	1.411	1.428	1.446	1.457	1.466	1.475	1.485	1.492	1.492	1.491
32.0	1.391	1.411	1.428	1.446	1.457	1.466	1.475	1.482	1.482	1.482	1.480
34.0	1.391	1.411	1.428	1.446	1.457	1.466	1.471	1.472	1.472	1.471	1.470
36.0	1.391	1.411	1.428	1.446	1.457	1.466	1.462	1.463	1.462	1.460	1.459
38.0	1.391	1.411	1.428	1.446	1.457	1.458	1.453	1.452	1.451	1.450	1.448
40.0	1.391	1.411	1.428	1.446	1.455	1.449	1.443	1.442	1.440	1.439	1.438
42.0	1.391	1.411	1.428	1.446	1.444	1.438	1.433	1.431	1.430	1.429	
44.0	1.391	1.411	1.428	1.439	1.433	1.427	1.422	1.421	1.420		
46.0	1.391	1.411	1.428	1.428	1.422	1.416	1.411	1.410			
48.0	1.391	1.411	1.417	1.416	1.411	1.406	1.401				
50.0	1.391	1.407	1.406	1.405	1.400	1.395					
52.0	1.391	1.396	1.396	1.395	1.390						
54.0	1.388	1.386	1.386	1.385							
56.0	1.377	1.377	1.376								
58.0	1.368	1.367									
60.0	1.359										

V2527-A5	GO-AROUND EPR	AIR COND ON	MACH=.225
CORRECTIONS FOR AIR BLEED			
AIR CONDITIONING OFF		ADD .015 TO EPR	
ENGINE ANTI ICE ON		READ AT TAT +5.(°C)	
ENGINE ANTI ICE AND WING ANTI ICE ON		READ AT TAT +5.(°C) AND SUBSTRACT .010 FROM EPR	

TAT (°C)	PRESSURE ALTITUDE (FT)										
	5000.	6000.	7000.	8000.	9000.	10000.	11000.	12000.	13000.	14000.	14500.
–60.0	1.475	1.485	1.496	1.507	1.512	1.518	1.523	1.529	1.534	1.539	1.542
–40.0	1.475	1.485	1.496	1.507	1.512	1.518	1.523	1.529	1.534	1.539	1.542
–20.0	1.475	1.485	1.496	1.507	1.512	1.518	1.523	1.529	1.534	1.539	1.542
0.0	1.475	1.485	1.496	1.507	1.512	1.518	1.523	1.529	1.534	1.539	1.542
5.0	1.475	1.485	1.496	1.507	1.512	1.518	1.523	1.529	1.534	1.539	1.542
10.0	1.475	1.485	1.496	1.507	1.512	1.518	1.523	1.529	1.534	1.539	1.542
12.0	1.475	1.485	1.496	1.507	1.512	1.518	1.523	1.529	1.534	1.539	1.542
14.0	1.475	1.485	1.496	1.507	1.512	1.518	1.523	1.529	1.534	1.539	1.542
16.0	1.475	1.485	1.496	1.507	1.512	1.518	1.523	1.529	1.534	1.537	1.538
18.0	1.475	1.485	1.496	1.507	1.512	1.518	1.523	1.529	1.532	1.533	1.534
20.0	1.475	1.485	1.496	1.507	1.512	1.518	1.523	1.526	1.526	1.529	1.528
22.0	1.475	1.485	1.496	1.507	1.512	1.518	1.520	1.520	1.521	1.518	1.516
24.0	1.475	1.485	1.496	1.507	1.512	1.515	1.513	1.513	1.510	1.506	1.504
26.0	1.475	1.485	1.496	1.507	1.509	1.506	1.506	1.502	1.499	1.494	1.492
28.0	1.475	1.485	1.496	1.502	1.499	1.498	1.495	1.491	1.487	1.483	1.480
30.0	1.475	1.485	1.492	1.492	1.490	1.487	1.484	1.480	1.476	1.471	
32.0	1.475	1.482	1.482	1.482	1.479	1.476	1.473	1.469	1.464		
34.0	1.471	1.472	1.472	1.471	1.468	1.465	1.462	1.458			
36.0	1.462	1.463	1.462	1.460	1.457	1.455	1.451				
38.0	1.453	1.452	1.451	1.450	1.447	1.444					
40.0	1.443	1.442	1.440	1.439	1.437						
42.0	1.433	1.431	1.430	1.429							
44.0	1.422	1.421	1.420								
46.0	1.411	1.410									
48.0	1.401										

DEFINITION

Ident.: PER-THR-FLX-00001973.0002001 / 23 FEB 11

1 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

It is a reduced takeoff thrust as compared to the maximum permissible. The related EPR is calculated as a function of the flexible temperature entered in the FMGS MCDU. The flexible temperature is a function of the aircraft weight and environmental conditions.
It guarantees that the regular performance requirements are met.

DEFINITION

Ident.: PER-THR-FLX-00001973.0001001 / 23 FEB 11

2 **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

It is a reduced takeoff thrust as compared to the maximum permissible. The related N1 is calculated as a function of the flexible temperature entered in the FMGS MCDU. The flexible temperature is a function of the aircraft weight and environmental conditions.
It guarantees that the regular performance requirements are met.

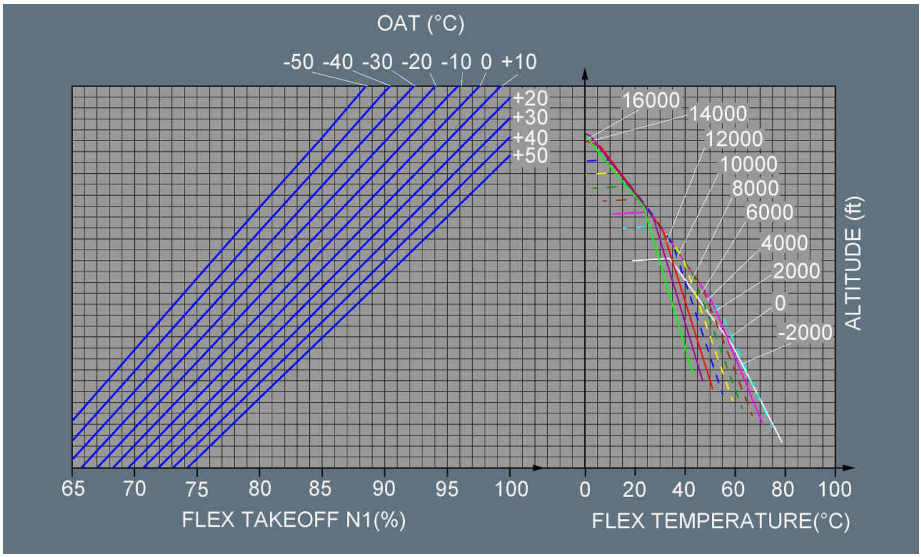
FLEXIBLE TAKEOFF

Ident.: PER-THR-FLX-00001974.0039001 / 20 DEC 16

[3] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

PW1133G-JM PW1133GA-JM	N1 CORRECTIONS FOR AIR BLEED (%)	
FLEX TAKEOFF N1 NO AIR BLEED MACH .000	AIR CONDITIONING ON	- 1.5
	ENG ANTI-ICE ON	- 0.3
	ENG AND WING ANTI-ICE ON	-1.4

PW1133G-JM / PW1133GA-JM REDUCED TAKEOFF THRUST

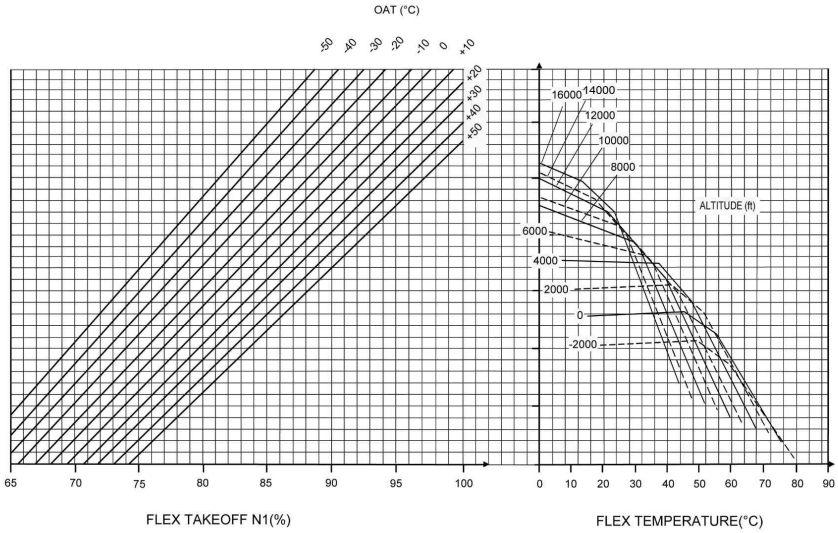


FLEXIBLE TAKEOFF

Ident.: PER-THR-FLX-00001974.0037001 / 06 JAN 16

4 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

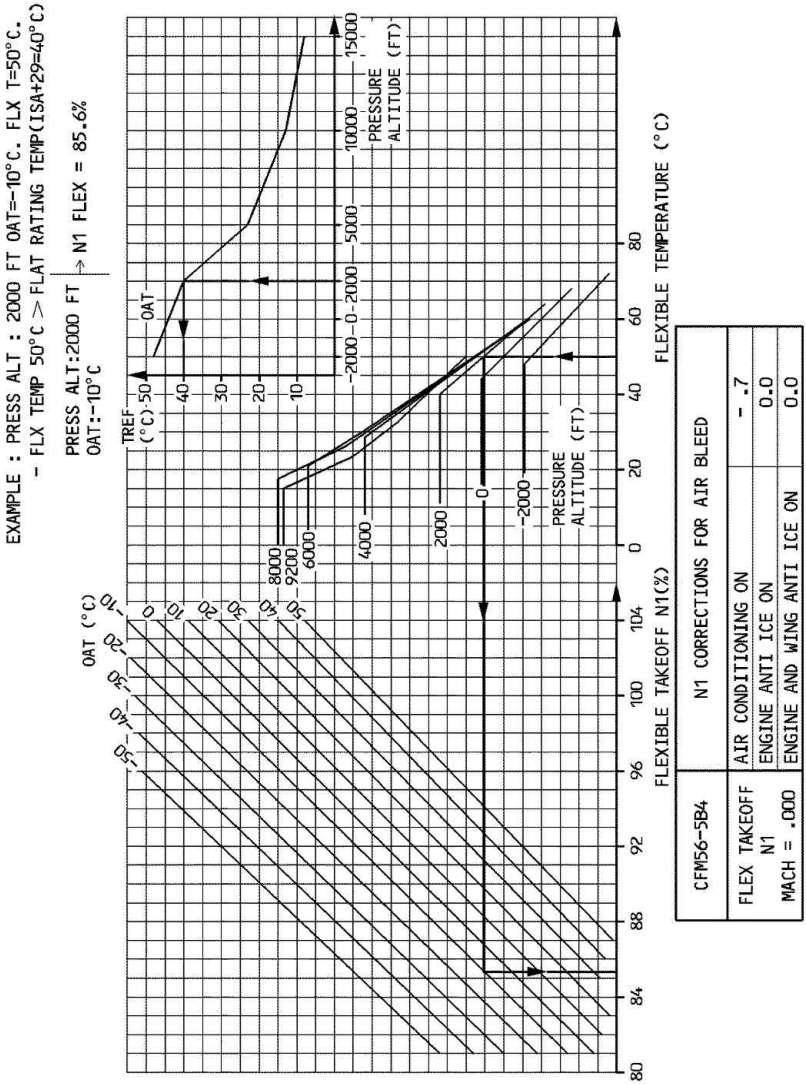
PW1127G-JM PW1127GA-JM	N1 CORRECTIONS FOR AIR BLEED (%)	
FLEX TAKEOFF N1 NO AIR BLEED MACH .000	AIR CONDITIONING ON	- 1.4
	ENG ANTI-ICE ON	- 0.3
	ENG AND WING ANTI-ICE ON	-1.3



FLEXIBLE TAKEOFF

Ident.: PER-THR-FLX-00001974.0008001 / 23 FEB 11

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510



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DEFINITION

Ident.: PER-THR-MCT-00001975.0001001 / 28 FEB 11
Applicable to: ALL

It is the maximum thrust certified for continuous use. This rating should be used, at the pilot's discretion, only when required to ensure safe flight (engine failure).

MAXIMUM CONTINUOUS

Ident.: PER-THR-MCT-00001976.0030001 / 20 DEC 16

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

PW1133G-JM - MAXIMUM CONTINUOUS N1 (%)

AIR CONDITIONING ON — VC= 230KT

TAT (C)	PRESSURE ALTITUDE (FT)												
	-1000	3000	7000	11000	15000	17000	20000	22000	25000	27000	31000	35000	39000
-54.0	76.4	78.0	79.2	81.1	83.4	84.5	86.0	85.4	83.7	84.3	86.3	88.3	87.6
-50.0	77.0	78.7	79.9	81.8	84.1	85.2	86.7	86.1	84.3	85.0	87.1	89.1	88.3
-46.0	77.7	79.4	80.6	82.5	84.9	86.0	87.5	86.8	85.0	85.8	87.9	89.8	89.1
-42.0	78.4	80.1	81.3	83.2	85.6	86.7	88.2	87.3	85.7	86.5	88.6	90.6	89.8
-38.0	79.0	80.8	81.9	83.9	86.3	87.4	88.9	87.8	86.5	87.2	89.4	91.3	90.6
-34.0	79.7	81.4	82.6	84.6	87.0	88.2	89.6	88.3	87.2	87.9	90.1	92.1	91.3
-30.0	80.3	82.1	83.3	85.3	87.7	88.9	90.1	88.9	87.9	88.6	90.8	92.8	92.0
-26.0	81.0	82.7	83.9	86.0	88.4	89.6	90.6	89.5	88.6	89.3	91.5	93.5	92.7
-22.0	81.6	83.4	84.6	86.7	89.1	90.3	91.0	90.2	89.3	90.0	92.2	*93.9*	93.4
-18.0	82.3	84.0	85.3	87.3	89.7	91.0	91.6	90.9	90.0	90.7	92.9	*93.4*	*93.1*
-14.0	82.9	84.7	85.9	88.0	90.4	91.5	92.3	91.6	90.6	91.4	*92.5*	*92.7*	*92.5*
-10.0	83.5	85.3	86.6	88.7	91.1	92.0	93.0	92.3	91.3	*91.6*	*91.9*	*92.1*	*92.0*
-6.0	84.1	86.0	87.2	89.3	91.8	92.5	93.7	93.0	*91.5*	*91.3*	*91.5*	*91.6*	*91.5*
-2.0	84.8	86.6	87.9	90.0	92.4	92.9	94.3	*93.0*	*91.2*	*91.0*	*91.2*	*91.2*	*91.1*
2.0	85.4	87.2	88.5	90.7	93.0	93.5	*94.1*	*92.7*	*90.9*	*90.7*	*90.7*	*90.7*	*90.6*
6.0	86.0	87.9	89.2	91.3	93.5	*93.5*	*93.8*	*92.4*	*90.6*	*90.3*	*90.3*	*90.2*	*90.1*
10.0	86.6	88.5	89.8	92.0	*93.3*	*93.2*	*93.5*	*92.1*	*90.2*	*90.0*	*89.9*	*89.7*	*89.5*
14.0	87.3	89.2	90.5	*92.4*	*92.9*	*93.0*	*93.3*	*91.8*	*89.8*	*89.4*	*89.2*		
18.0	87.9	89.8	91.1	*92.0*	*92.6*	*92.7*	*93.0*	*91.5*	*89.2*	*88.9*			
22.0	88.5	90.4	*91.1*	*91.5*	*92.4*	*92.5*	*92.7*	*91.1*	*88.6*				
26.0	89.2	91.1	*90.6*	*91.1*	*92.1*	*92.2*	*92.4*	*90.6*					
30.0	89.8	*90.8*	*90.2*	*90.6*	*91.7*	*91.8*	*92.0*						
34.0	*90.4*	*90.3*	*89.6*	*90.0*	*91.2*	*91.3*							
38.0	*89.9*	*89.7*	*89.0*	*89.3*									
42.0	*89.4*	*89.2*	*88.2*	*88.8*									
46.0	*88.8*	*88.5*	*87.5*										

OAT < CORNER POINT — *OAT >= CORNER POINT*

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING OFF	1.5	1.6
NACELLE ANTI-ICE ON	0.2	-0.3
NACELLE AND WING ANTI-ICE ON	0.2	-3.0

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PW1133G-JM - MAXIMUM CONTINUOUS N1 (%)													
AIR CONDITIONING ON							VC= 230KT						
TAT	PRESSURE ALTITUDE (FT)												
(C)	**-1000**	**3000**	**7000**	**11000**	**15000**	**17000**	**20000**	**22000**	**25000**	**27000**	**31000**	**35000**	**39000**
50.0	*88.0*	*87.8*	*87.0*										
54.0	*87.3*	*87.1*											
58.0	*86.6*												
62.0	*86.1*												
OAT < CORNER POINT							*OAT >= CORNER POINT*						

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING OFF	1.5	1.6
NACELLE ANTI-ICE ON	0.2	-0.3
NACELLE AND WING ANTI-ICE ON	0.2	-3.0

MAXIMUM CONTINUOUS

Ident.: PER-THR-MCT-00001976.0027001 / 06 JAN 16

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

PW1127G-JM - MAXIMUM CONTINUOUS N1 (%)

AIR CONDITIONING ON — VC= 230KT

TAT (C)	PRESSURE ALTITUDE (FT)												
	-1000	3000	7000	11000	15000	17000	20000	22000	25000	27000	31000	35000	39000
-54.0	70.5	73.4	76.2	79.0	82.1	83.5	85.0	85.6	83.3	82.7	83.5	84.5	84.0
-50.0	71.2	74.1	76.9	79.7	82.8	84.3	85.7	86.3	84.0	83.4	84.3	85.2	84.7
-46.0	71.8	74.7	77.6	80.4	83.5	85.0	86.5	87.0	84.7	84.1	85.0	86.0	85.4
-42.0	72.4	75.4	78.3	81.1	84.2	85.7	87.2	87.5	85.4	84.8	85.7	86.7	86.2
-38.0	73.0	76.0	78.9	81.7	84.9	86.4	87.9	87.9	86.1	85.6	86.5	87.4	86.9
-34.0	73.6	76.6	79.6	82.4	85.6	87.2	88.6	88.5	86.8	86.3	87.2	88.1	87.6
-30.0	74.2	77.3	80.2	83.1	86.3	87.9	89.1	89.1	87.5	87.0	87.9	88.8	88.3
-26.0	74.8	77.9	80.9	83.8	87.0	88.5	89.5	89.7	88.2	87.6	88.6	89.5	88.9
-22.0	75.4	78.5	81.5	84.4	87.7	89.2	89.9	90.4	88.9	88.3	89.3	*89.9*	89.6
-18.0	76.0	79.1	82.1	85.1	88.4	89.9	90.5	91.1	89.6	89.0	90.0	*89.4*	*89.4*
-14.0	76.6	79.7	82.8	85.7	89.0	90.5	91.2	91.8	90.3	89.7	*89.7*	*89.0*	*88.9*
-10.0	77.2	80.3	83.4	86.4	89.7	91.1	91.9	92.5	91.0	*89.9*	*89.3*	*88.5*	*88.4*
-6.0	77.8	80.9	84.0	87.0	90.4	91.6	92.6	93.2	*90.9*	*89.6*	*88.9*	*88.0*	*87.9*
-2.0	78.3	81.5	84.7	87.7	91.0	92.1	93.3	*93.1*	*90.5*	*89.2*	*88.4*	*87.3*	*87.2*
2.0	78.9	82.1	85.3	88.3	91.7	92.6	*93.0*	*92.5*	*90.0*	*88.9*	*87.8*	*86.6*	*86.5*
6.0	79.5	82.8	85.9	89.0	92.2	*92.6*	*92.6*	*92.0*	*89.5*	*88.4*	*87.2*	*85.8*	*85.7*
10.0	80.1	83.4	86.5	89.6	*91.9*	*92.2*	*92.2*	*91.4*	*88.8*	*87.7*	*86.5*	*85.0*	*84.7*
14.0	80.7	84.0	87.2	*90.0*	*91.5*	*91.7*	*91.7*	*90.8*	*88.0*	*87.1*	*85.7*		
18.0	81.3	84.6	87.8	*89.5*	*91.1*	*91.3*	*91.3*	*90.1*	*87.2*	*86.4*			
22.0	81.8	85.2	*87.8*	*88.9*	*90.6*	*90.7*	*90.7*	*89.2*	*86.4*				
26.0	82.4	85.8	*87.2*	*88.4*	*90.0*	*90.0*	*90.0*	*88.3*					
30.0	83.0	*85.3*	*86.5*	*87.7*	*89.4*	*89.3*	*89.3*						
34.0	*83.6*	*84.5*	*85.7*	*87.0*	*88.7*	*88.6*							
38.0	*82.9*	*83.7*	*84.8*	*86.2*									
42.0	*82.1*	*82.9*	*84.0*	*85.4*									

OAT < CORNER POINT — *OAT >= CORNER POINT*

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING OFF	+1.3	+1.4
NACELLE ANTI-ICE ON	+0.2	-0.3
NACELLE AND WING ANTI-ICE ON	+0.2	-2.9

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PW1127G-JM - MAXIMUM CONTINUOUS N1 (%)													
AIR CONDITIONING ON							VC= 230KT						
TAT	PRESSURE ALTITUDE (FT)												
(C)	**-1000**	**3000**	**7000**	**11000**	**15000**	**17000**	**20000**	**22000**	**25000**	**27000**	**31000**	**35000**	**39000**
46.0	*81.4*	*82.2*	*83.3*										
50.0	*80.6*	*81.4*	*82.6*										
54.0	*79.8*	*80.7*											
58.0	*79.2*												
62.0	*78.6*												

OAT < CORNER POINT	*OAT >= CORNER POINT*

N1 CORRECTIONS FOR AIR BLEED (%)	**OAT < CORNER POINT**	**OAT >= CORNER POINT**
AIR CONDITIONING OFF	+1.3	+1.4
NACELLE ANTI-ICE ON	+0.2	-0.3
NACELLE AND WING ANTI-ICE ON	+0.2	-2.9

MAXIMUM CONTINUOUS

Ident.: PER-THR-MCT-00001976.0011001 / 28 JAN 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CFM56-5B4	N1 CORRECTIONS FOR AIR BLEED	OAT < ISA + 10	OAT ≥ ISA + 10
MAXIMUM CONTINUOUS N1			
AIR CONDITIONING ON*	AIR CONDITIONING OFF	0.9	0.9
IAS=230 KT	ENGINE ANTI ICE ON	0.0	–1.4
	ENGINE ANTI ICE AND WING ANTI ICE ON	0.0	–3.2

TAT (°C)	PRESSURE ALTITUDE (FT)										
	–1000.	3000.	7000.	11000.	15000.	19000.	23000.	27000.	31000.	35000.	39000.
–54.0	75.6	77.6	79.2	81.1	85.2	87.3	87.0	83.2	84.3	85.1	84.1
–50.0	76.2	78.3	79.9	81.8	85.9	88.0	87.7	84.0	85.0	85.8	84.9
–46.0	76.9	79.0	80.6	82.6	86.6	88.8	88.5	84.7	85.7	86.6	85.6
–42.0	77.6	79.6	81.2	83.3	87.4	89.5	89.2	85.4	86.4	87.3	86.3
–38.0	78.2	80.3	81.9	83.9	88.0	90.2	89.9	86.1	87.1	88.0	87.0
–34.0	78.8	80.9	82.5	84.6	88.7	90.9	90.6	86.7	87.8	88.6	87.7
–30.0	79.5	81.6	83.2	85.2	89.4	91.6	91.3	87.4	88.5	89.3	88.3
–26.0	80.1	82.2	83.8	85.9	90.1	92.3	92.0	88.1	89.2	90.0	89.0
–22.0	80.7	82.8	84.5	86.6	90.8	93.0	92.7	88.7	89.8	*90.5*	89.7
–18.0	81.4	83.5	85.1	87.2	91.5	93.7	93.4	89.4	90.5	*90.3*	*89.6*
–14.0	82.0	84.1	85.8	87.9	92.1	94.3	94.0	90.1	*90.4*	*90.0*	*89.3*
–10.0	82.6	84.7	86.4	88.5	92.8	95.0	94.7	*90.3*	*90.1*	*89.6*	*89.0*
–6.0	83.2	85.3	87.0	89.1	93.4	95.6	*95.3*	*90.0*	*89.7*	*89.0*	*88.2*
–2.0	83.8	85.9	87.6	89.8	94.1	96.3	*94.6*	*89.7*	*89.0*	*88.4*	*87.5*
2.0	84.4	86.5	88.3	90.4	94.7	*96.3*	*93.9*	*89.0*	*88.4*	*87.7*	*86.9*
6.0	85.0	87.1	88.9	91.0	95.4	*95.6*	*93.3*	*88.4*	*87.8*	*87.0*	*86.3*
10.0	85.5	87.8	89.5	91.6	*94.8*	*94.8*	*92.8*	*87.8*	*87.2*	*86.2*	*85.7*
14.0	86.1	88.4	90.1	*92.0*	*94.0*	*94.2*	*92.4*	*87.1*	*86.5*		
18.0	86.7	88.9	90.7	*91.5*	*93.3*	*93.6*	*91.9*	*86.5*			
22.0	87.3	89.5	*90.7*	*91.0*	*92.8*	*93.1*	*91.3*				
26.0	87.8	90.1	*90.2*	*90.5*	*92.2*	*92.5*					
30.0	88.4	*89.8*	*89.7*	*90.0*	*91.5*	*92.0*					
34.0	*89.0*	*89.3*	*89.5*	*89.4*	*90.9*						
38.0	*88.5*	*88.9*	*89.1*	*88.8*							
42.0	*88.0*	*88.7*	*88.7*	*88.1*							
46.0	*87.4*	*88.3*	*88.2*								
50.0	*86.8*	*87.9*	*87.7*								
54.0	*86.2*	*87.5*									

OAT < ISA + 10
OAT ≥ ISA + 10

* One engine inoperative – 1 pack operative on remaining engine.

MAXIMUM CONTINUOUS

Ident.: PER-THR-MCT-00001976.0018001 / 28 JAN 11

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

V2527/27E	MAXIMUM CONTINUOUS EPR	AIR COND ON*	IAS=230 KT

CORRECTIONS FOR AIR BLEED	
AIR CONDITIONING OFF	.017
ENGINE ANTI-ICE ON	–.017
ENGINE ANTI-ICE AND WING ANTI-ICE ON	–.037

TAT (C)	PRESSURE ALTITUDE (FT)										
	0.	2000.	5000.	8000.	12000.	17000.	20000.	25000.	31000.	35000.	39000.
–50.0	1.285	1.298	1.335	1.442	1.490	1.554	1.588	1.591	1.492	1.505	1.494
–46.0	1.285	1.298	1.335	1.442	1.490	1.554	1.588	1.591	1.492	1.505	1.494
–42.0	1.285	1.298	1.335	1.442	1.490	1.554	1.588	1.591	1.492	1.505	1.494
–38.0	1.285	1.298	1.335	1.442	1.490	1.554	1.588	1.591	1.492	1.505	1.494
–34.0	1.285	1.298	1.335	1.442	1.490	1.554	1.588	1.591	1.492	1.505	1.494
–30.0	1.285	1.298	1.335	1.442	1.490	1.554	1.588	1.591	1.492	1.505	1.494
–26.0	1.285	1.298	1.335	1.442	1.490	1.554	1.588	1.591	1.492	1.505	1.494
–22.0	1.285	1.298	1.335	1.442	1.490	1.554	1.588	1.591	1.492	1.502	1.494
–18.0	1.285	1.298	1.335	1.442	1.490	1.554	1.588	1.591	1.492	1.482	1.477
–14.0	1.285	1.298	1.335	1.442	1.490	1.554	1.588	1.591	1.471	1.462	1.455
–10.0	1.285	1.298	1.335	1.442	1.490	1.554	1.588	1.591	1.448	1.440	1.433
–6.0	1.285	1.298	1.335	1.442	1.490	1.554	1.588	1.575	1.424	1.415	1.408
–2.0	1.285	1.298	1.335	1.442	1.490	1.554	1.588	1.553	1.397	1.393	1.385
2.0	1.285	1.298	1.335	1.442	1.490	1.554	1.569	1.532	1.375	1.370	1.362
6.0	1.285	1.298	1.335	1.442	1.490	1.538	1.548	1.508	1.352	1.348	1.340
10.0	1.285	1.298	1.335	1.442	1.490	1.513	1.526	1.483	1.330	1.325	1.317
14.0	1.285	1.298	1.335	1.442	1.474	1.488	1.503	1.458	1.308		
18.0	1.285	1.298	1.335	1.442	1.449	1.463	1.478	1.432			
22.0	1.285	1.298	1.335	1.418	1.424	1.438	1.453	1.407			
26.0	1.285	1.298	1.327	1.393	1.399	1.413	1.428				
30.0	1.285	1.294	1.316	1.368	1.375	1.388	1.403				
34.0	1.279	1.282	1.305	1.345	1.352	1.362					
38.0	1.265	1.269	1.296	1.325	1.329						
42.0	1.251	1.259	1.285	1.306	1.306						
46.0	1.239	1.249	1.274	1.287							
50.0	1.229	1.239	1.263								
54.0	1.220	1.229	1.252								
58.0	1.211	1.219									
62.0	1.201										
66.0											

(*) One engine inoperative - 1 pack operative on remaining engine.

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DEFINITION

Ident.: PER-THR-MCL-00001977.0001001 / 23 FEB 11
Applicable to: ALL

It is the maximum thrust approved for normal climb.

MAXIMUM CLIMB

Ident.: PER-THR-MCL-00001978.0098001 / 20 DEC 16

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

PW1133G-JM - MAXIMUM CLIMB N1 (%)

AIR CONDITIONING ON — 250/300/0.78

TAT (C)	PRESSURE ALTITUDE (FT)												
	2000	5000	8000	12000	15000	17000	20000	25000	27000	31000	35000	39000	41000
-54.0	74.6	76.1	77.3	78.9	80.5	81.3	82.5	83.4	84.1	85.5	87.4	87.6	87.3
-50.0	75.3	76.8	78.0	79.6	81.2	82.1	83.2	84.1	84.8	86.2	88.2	88.4	88.0
-46.0	76.0	77.4	78.7	80.3	81.9	82.8	83.9	84.9	85.6	87.0	89.0	89.1	88.8
-42.0	76.6	78.1	79.4	81.0	82.6	83.5	84.6	85.6	86.3	87.7	89.8	89.9	89.5
-38.0	77.3	78.8	80.0	81.6	83.3	84.2	85.3	86.4	87.1	88.4	90.5	90.6	90.2
-34.0	77.9	79.4	80.7	82.3	84.0	84.9	86.0	87.1	87.8	89.2	91.2	91.3	91.0
-30.0	78.6	80.1	81.3	83.0	84.7	85.5	86.7	87.8	88.5	89.9	91.9	92.0	91.7
-26.0	79.2	80.7	82.0	83.6	85.4	86.2	87.4	88.4	89.1	90.6	92.7	92.7	92.4
-22.0	79.8	81.3	82.6	84.3	86.0	86.9	88.1	89.1	89.8	91.2	93.4	93.5	93.1
-18.0	80.4	82.0	83.3	84.9	86.7	87.6	88.7	89.7	90.5	91.9	94.1	*93.7*	*93.4*
-14.0	81.1	82.6	83.9	85.6	87.3	88.2	89.4	90.4	91.2	92.7	*93.9*	*93.2*	*92.8*
-10.0	81.7	83.2	84.6	86.2	88.0	88.8	90.1	91.1	91.9	93.4	*93.3*	*92.7*	*92.3*
-6.0	82.3	83.9	85.2	86.9	88.6	89.5	90.7	91.8	92.5	*93.6*	*92.8*	*92.2*	*91.9*
-2.0	82.9	84.5	85.8	87.5	89.3	90.1	91.4	92.4	93.2	*93.1*	*92.4*	*91.8*	*91.5*
2.0	83.5	85.1	86.5	88.1	89.9	90.7	92.0	*92.8*	*92.9*	*92.7*	*92.0*	*91.3*	*91.0*
6.0	84.1	85.7	87.1	88.8	90.6	91.3	92.6	*92.5*	*92.5*	*92.3*	*91.5*	*90.8*	*90.5*
10.0	84.7	86.3	87.7	89.4	91.2	92.0	*92.5*	*92.1*	*92.1*	*91.8*	*91.1*	*90.3*	*89.9*
14.0	85.4	87.0	88.4	90.0	91.8	*91.9*	*92.1*	*91.7*	*91.7*	*91.4*	*90.5*	*89.7*	*89.2*
18.0	86.0	87.6	89.0	90.7	*91.4*	*91.4*	*91.7*	*91.3*	*91.2*	*90.9*			
22.0	86.6	88.2	*89.0*	*90.3*	*90.9*	*91.0*	*91.2*	*90.7*	*90.6*	*90.3*			
26.0	87.2	*88.5*	*88.4*	*89.8*	*90.4*	*90.5*	*90.7*	*90.1*	*90.1*	*89.7*			
30.0	87.8	*88.0*	*87.8*	*89.2*	*89.9*	*90.0*	*90.1*	*89.5*	*89.4*				
34.0	*87.1*	*87.4*	*87.2*	*88.7*	*89.3*	*89.4*	*89.6*	*88.8*					
38.0	*86.3*	*86.6*	*86.4*	*88.0*	*88.7*	*88.8*	*88.9*						
42.0	*85.5*	*85.7*	*85.7*	*87.3*	*88.0*	*88.1*							
46.0	*84.8*	*85.0*	*85.0*	*86.6*	*87.3*								
OAT < CORNER POINT							*OAT >= CORNER POINT*						

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING OFF	1.3	1.5
NACELLE ANTI-ICE ON	0.5	-0.3
NACELLE AND WING ANTI-ICE ON	0.5	-1.2

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PW1133G-JM - MAXIMUM CLIMB N1 (%)													
AIR CONDITIONING ON							250/300/0.78						
TAT	PRESSURE ALTITUDE (FT)												
(C)	**2000**	**5000**	**8000**	**12000**	**15000**	**17000**	**20000**	**25000**	**27000**	**31000**	**35000**	**39000**	**41000**
50.0	*84.1*	*84.4*	*84.4*	*86.0*									
54.0	*83.5*	*83.8*											
58.0	*82.9*												
62.0													
OAT < CORNER POINT							*OAT >= CORNER POINT*						

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING OFF	1.3	1.5
NACELLE ANTI-ICE ON	0.5	-0.3
NACELLE AND WING ANTI-ICE ON	0.5	-1.2

MAXIMUM CLIMB

Ident.: PER-THR-MCL-00001978.0092001 / 15 NOV 16

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

PW1127G-JM - MAXIMUM CLIMB N1 (%)

AIR CONDITIONING ON — 250/300/0.78

TAT (C)	PRESSURE ALTITUDE (FT)												
	2000	5000	8000	12000	15000	17000	20000	25000	27000	31000	35000	39000	41000
-54.0	72.1	73.6	74.9	76.5	78.1	78.9	80.2	81.9	82.2	82.8	83.7	83.9	83.6
-50.0	72.8	74.3	75.5	77.2	78.8	79.6	80.9	82.7	82.9	83.6	84.5	84.7	84.4
-46.0	73.4	74.9	76.2	77.9	79.5	80.3	81.6	83.4	83.7	84.3	85.2	85.4	85.1
-42.0	74.1	75.6	76.9	78.5	80.2	81.0	82.3	84.2	84.4	85.0	86.0	86.1	85.8
-38.0	74.7	76.2	77.5	79.2	80.8	81.7	83.0	84.9	85.0	85.7	86.7	86.8	86.5
-34.0	75.3	76.8	78.1	79.8	81.5	82.4	83.7	85.6	85.7	86.4	87.4	87.5	87.2
-30.0	75.9	77.5	78.8	80.5	82.2	83.0	84.4	86.2	86.4	87.1	88.1	88.2	87.9
-26.0	76.5	78.1	79.4	81.1	82.8	83.7	85.0	86.9	87.1	87.8	88.8	88.9	88.6
-22.0	77.1	78.7	80.0	81.8	83.5	84.4	85.7	87.6	87.8	88.5	89.5	89.6	89.3
-18.0	77.7	79.3	80.7	82.4	84.1	85.0	86.4	88.2	88.5	89.2	90.2	*90.0*	*89.7*
-14.0	78.3	79.9	81.3	83.0	84.8	85.7	87.0	88.9	89.1	89.8	*90.1*	*89.6*	*89.3*
-10.0	78.9	80.5	81.9	83.7	85.4	86.3	87.7	89.6	89.8	90.5	*89.7*	*89.1*	*88.7*
-6.0	79.5	81.2	82.5	84.3	86.0	86.9	88.3	90.2	90.4	*90.7*	*89.2*	*88.5*	*88.2*
-2.0	80.1	81.8	83.1	84.9	86.7	87.6	88.9	90.9	91.1	*90.3*	*88.7*	*88.0*	*87.6*
2.0	80.7	82.4	83.8	85.5	87.3	88.2	89.5	*91.2*	*90.8*	*89.8*	*88.1*	*87.3*	*86.9*
6.0	81.3	83.0	84.4	86.2	87.9	88.8	90.1	*90.8*	*90.4*	*89.3*	*87.4*	*86.5*	*86.1*
10.0	81.9	83.6	85.0	86.8	88.6	89.4	*90.0*	*90.4*	*90.0*	*88.7*	*86.7*	*85.7*	*85.2*
14.0	82.5	84.2	85.6	87.4	89.2	*89.2*	*89.5*	*89.8*	*89.4*	*88.0*	*85.9*	*84.8*	*84.1*
18.0	83.1	84.8	86.2	88.0	*88.7*	*88.7*	*88.9*	*89.2*	*88.7*	*87.3*			
22.0	83.7	85.4	*86.1*	*87.5*	*88.1*	*88.2*	*88.3*	*88.6*	*88.1*	*86.5*			
26.0	84.3	*85.6*	*85.5*	*86.9*	*87.6*	*87.5*	*87.7*	*87.9*	*87.3*	*85.6*			
30.0	84.8	*84.7*	*84.7*	*86.2*	*86.9*	*86.8*	*86.9*	*87.2*	*86.5*				
34.0	*84.1*	*83.9*	*83.9*	*85.5*	*86.1*	*86.0*	*86.1*	*86.4*					
38.0	*83.4*	*83.2*	*83.1*	*84.7*	*85.3*	*85.3*	*85.5*						
42.0	*82.7*	*82.4*	*82.3*	*84.0*	*84.6*	*84.6*							
46.0	*81.9*	*81.7*	*81.6*	*83.4*	*84.0*								
OAT < CORNER POINT							*OAT >= CORNER POINT*						

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING OFF	+1.2	+1.3
NACELLE ANTI-ICE ON	+0.4	-0.3
NACELLE AND WING ANTI-ICE ON	+0.4	-1.0

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PW1127G-JM - MAXIMUM CLIMB N1 (%)													
AIR CONDITIONING ON							250/300/0.78						
TAT	PRESSURE ALTITUDE (FT)												
(C)	**2000**	**5000**	**8000**	**12000**	**15000**	**17000**	**20000**	**25000**	**27000**	**31000**	**35000**	**39000**	**41000**
50.0	*81.1*	*80.9*	*80.9*	*82.7*									
54.0	*80.4*	*80.2*											
58.0	*79.8*												
62.0													
OAT < CORNER POINT							*OAT >= CORNER POINT*						

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING OFF	+1.2	+1.3
NACELLE ANTI-ICE ON	+0.4	-0.3
NACELLE AND WING ANTI-ICE ON	+0.4	-1.0

MAXIMUM CLIMB

Ident.: PER-THR-MCL-00001978.0011001 / 28 JAN 11

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CFM56-5B4	N1 CORRECTIONS FOR AIR BLEED	OAT < ISA + 10	OAT ≥ ISA + 10
MAXIMUM CLIMB N1			
AIR CONDITIONING ON	AIR CONDITIONING OFF	.8	.8
250/300/.78	ENGINE ANTI ICE ON	0.0	–1.3
	ENGINE ANTI ICE AND WING ANTI ICE ON	0.0	–2.4

TAT (°C)	PRESSURE ALTITUDE (FT)										
	–1000.	3000.	7000.	11000.	15000.	19000.	23000.	27000.	31000.	35000.	39000.
–54.0	73.5	75.4	77.0	77.8	78.8	79.8	80.7	81.5	82.5	83.9	83.9
–50.0	74.2	76.1	77.6	78.4	79.5	80.5	81.4	82.2	83.3	84.6	84.6
–46.0	74.8	76.8	78.3	79.1	80.2	81.2	82.1	82.9	84.0	85.3	85.3
–42.0	75.5	77.4	79.0	79.8	80.9	81.9	82.8	83.6	84.7	86.0	86.0
–38.0	76.1	78.1	79.6	80.5	81.5	82.5	83.5	84.3	85.3	86.7	86.7
–34.0	76.7	78.7	80.3	81.1	82.2	83.2	84.1	84.9	86.0	87.4	87.4
–30.0	77.3	79.3	80.9	81.7	82.8	83.8	84.8	85.6	86.7	88.1	88.1
–26.0	77.9	80.0	81.5	82.4	83.5	84.5	85.4	86.2	87.4	88.7	88.7
–22.0	78.6	80.6	82.2	83.0	84.1	85.1	86.1	86.9	88.0	89.4	89.4
–18.0	79.2	81.2	82.8	83.7	84.8	85.8	86.7	87.6	88.7	90.1	*89.9*
–14.0	79.8	81.8	83.5	84.3	85.4	86.4	87.4	88.2	89.4	*90.3*	*89.6*
–10.0	80.4	82.4	84.1	84.9	86.0	87.1	88.0	88.9	90.0	*90.1*	*89.4*
–6.0	81.0	83.0	84.7	85.5	86.6	87.7	88.7	89.5	*90.3*	*90.0*	*88.8*
–2.0	81.5	83.6	85.3	86.1	87.2	88.3	89.3	90.1	*90.1*	*89.5*	*88.0*
2.0	82.1	84.2	85.9	86.7	87.9	88.9	89.9	*90.1*	*90.0*	*88.8*	*87.4*
6.0	82.7	84.8	86.5	87.3	88.5	89.5	*90.0*	*89.9*	*89.6*	*88.2*	*86.8*
10.0	83.3	85.4	87.1	87.9	89.1	*89.8*	*89.8*	*89.7*	*89.0*	*87.5*	*86.2*
14.0	83.9	86.0	87.7	88.6	89.7	*89.6*	*89.7*	*89.2*	*88.4*	*86.8*	*85.6*
18.0	84.4	86.6	88.2	89.1	*89.4*	*89.3*	*89.2*	*88.6*	*87.7*		
22.0	85.0	87.1	*88.7*	*89.2*	*89.0*	*89.0*	*88.6*	*87.9*	*87.0*		
26.0	85.5	87.7	*88.3*	*88.9*	*88.7*	*88.5*	*88.0*	*87.2*	*86.3*		
30.0	86.1	*87.8*	*87.9*	*88.5*	*88.2*	*87.8*	*87.2*	*86.6*			
34.0	86.6	*87.4*	*87.3*	*87.8*	*87.5*	*87.1*	*86.5*				
38.0	*86.4*	*86.9*	*86.6*	*87.1*	*86.8*	*86.4*					
42.0	*85.9*	*86.2*	*85.9*	*86.4*	*86.0*						
46.0	*85.3*	*85.4*	*85.2*	*85.7*	*85.3*						
50.0	*84.5*	*84.7*	*84.4*	*85.0*							
54.0	*83.7*	*84.0*									

OAT < ISA + 10
OAT ≥ ISA + 10

MAXIMUM CLIMB

Ident.: PER-THR-MCL-00001978.0005001 / 28 JAN 11

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

V2527-27E	MAXIMUM CLIMB EPR	AIR COND ON	250/300/.78
CORRECTIONS FOR AIR BLEED			
AIR CONDITIONING OFF			.018
ENGINE ANTI ICE ON			–.018
ENGINE ANTI ICE AND WING ANTI ICE ON			–.030

TAT (°C)	PRESSURE ALTITUDE (FT)										
	0.	2000.	5000.	8000.	12000.	17000.	20000.	25000.	31000.	35000.	39000.
–50.0	1.269	1.289	1.313	1.333	1.326	1.357	1.378	1.395	1.438	1.482	1.491
–46.0	1.269	1.289	1.313	1.333	1.326	1.357	1.378	1.395	1.438	1.482	1.491
–42.0	1.269	1.289	1.313	1.333	1.326	1.357	1.378	1.395	1.438	1.482	1.491
–38.0	1.269	1.289	1.313	1.333	1.326	1.357	1.378	1.395	1.438	1.482	1.491
–34.0	1.269	1.289	1.313	1.333	1.326	1.357	1.378	1.395	1.438	1.482	1.491
–30.0	1.269	1.289	1.313	1.333	1.326	1.357	1.378	1.395	1.438	1.482	1.491
–26.0	1.269	1.289	1.313	1.333	1.326	1.357	1.378	1.395	1.438	1.482	1.491
–22.0	1.269	1.289	1.313	1.333	1.326	1.357	1.378	1.395	1.438	1.482	1.491
–18.0	1.269	1.289	1.313	1.333	1.326	1.357	1.378	1.395	1.438	1.482	1.485
–14.0	1.269	1.289	1.313	1.333	1.326	1.357	1.378	1.395	1.438	1.467	1.462
–10.0	1.269	1.289	1.313	1.333	1.326	1.357	1.378	1.395	1.438	1.443	1.438
–6.0	1.269	1.289	1.313	1.333	1.326	1.357	1.378	1.395	1.428	1.419	1.414
–2.0	1.269	1.289	1.313	1.333	1.326	1.357	1.378	1.395	1.403	1.394	1.389
2.0	1.269	1.289	1.313	1.333	1.326	1.357	1.378	1.389	1.378	1.370	1.366
6.0	1.269	1.289	1.313	1.333	1.326	1.357	1.378	1.365	1.354	1.348	1.344
10.0	1.269	1.289	1.313	1.333	1.326	1.357	1.363	1.341	1.329	1.326	
14.0	1.269	1.289	1.313	1.333	1.326	1.342	1.340	1.317	1.308		
18.0	1.269	1.289	1.313	1.333	1.326	1.320	1.317	1.295	1.287		
22.0	1.269	1.289	1.313	1.323	1.308	1.298	1.296	1.275			
26.0	1.269	1.289	1.308	1.303	1.287	1.277	1.276	1.254			
30.0	1.269	1.289	1.290	1.283	1.267	1.258	1.257				
34.0	1.267	1.272	1.271	1.265	1.248	1.241	1.238				
38.0	1.251	1.255	1.254	1.249	1.231	1.223					
42.0	1.234	1.238	1.238	1.234	1.215						
46.0	1.219	1.223	1.224								
50.0	1.205	1.210	1.210								
54.0	1.192	1.197									
58.0	1.180										
62.0											
66.0											

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DEFINITION

Ident.: PER-THR-MCR-00001979.0011001 / 10 OCT 17

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

It is the maximum thrust approved for normal cruise.
There is no thrust lever position corresponding to this thrust rating.
It is not displayed to the pilot, and the N1 limit which is displayed in cruise is the maximum climb N1.
The FMGS uses the maximum cruise N1 to compute the aircraft maximum speed.

In manual thrust setting, in cruise, the flight crew should limit N1 to the maximum cruise N1 that is equal to:

- The maximum climb N1 that is displayed minus 2.4 % when the aircraft is below 31 000 ft,
- The maximum climb N1 that is displayed minus 2.9 % when the aircraft is at or above 31 000 ft.

DEFINITION

Ident.: PER-THR-MCR-00001979.0010001 / 09 NOV 17

2 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

It is the maximum thrust approved for normal cruise.
There is no thrust lever position corresponding to this thrust rating.
It is not displayed to the pilot, and the N1 limit which is displayed in cruise is the maximum climb N1.
The FMGS uses the maximum cruise N1 to compute the aircraft maximum speed.

In manual thrust setting, in cruise, the flight crew should limit N1 to the maximum cruise N1 that is equal to:

- The maximum climb N1 that is displayed minus 2.1 % when the aircraft is below 31 000 ft,
- The maximum climb N1 that is displayed minus 2.3 % when the aircraft is at or above 31 000 ft.

DEFINITION

Ident.: PER-THR-MCR-00001979.0002001 / 02 FEB 11

3 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

It is the maximum thrust approved for normal cruise.
There is no thrust lever position corresponding to this thrust rating.
It is not displayed to the pilot, and the EPR limit which is displayed in cruise is the maximum climb EPR.
The FMGS uses the maximum cruise EPR to compute the aircraft maximum speed.
In manual thrust setting, in cruise, the pilot should limit EPR to the maximum cruise EPR that is equal to the displayed maximum climb EPR minus 0.07.

DEFINITION

Ident.: PER-THR-MCR-00001979.0004001 / 02 FEB 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

It is the maximum thrust approved for normal cruise.
There is no thrust lever position corresponding to this thrust rating.
It is not displayed to the pilot, and the N1 limit which is displayed in cruise is the maximum climb N1.
The FMGS uses the maximum cruise N1 to compute the aircraft maximum speed.
In manual thrust setting, in cruise, the pilot should limit N1 to the maximum cruise N1 that is equal to the displayed maximum climb N1 minus 1.9 %.

MAXIMUM CRUISE

Ident.: PER-THR-MCR-00001980.0034001 / 20 DEC 16

[4] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

PW1133G-JM - MAXIMUM CRUISE N1 (%)

AIR CONDITIONING ON — 250/300/0.78

TAT (C)	PRESSURE ALTITUDE (FT)												
	2000	5000	8000	12000	15000	17000	20000	25000	27000	31000	35000	39000	41000
-54.0	73.2	74.7	75.9	77.3	78.9	79.7	80.8	81.5	81.9	83.0	84.7	84.9	84.6
-50.0	73.8	75.3	76.5	78.0	79.6	80.4	81.5	82.2	82.7	83.7	85.5	85.6	85.3
-46.0	74.5	76.0	77.2	78.7	80.3	81.1	82.3	83.0	83.4	84.4	86.2	86.4	86.0
-42.0	75.1	76.7	77.9	79.4	80.9	81.7	83.0	83.7	84.1	85.1	87.0	87.1	86.8
-38.0	75.7	77.3	78.5	80.0	81.6	82.4	83.6	84.4	84.8	85.9	87.7	87.8	87.5
-34.0	76.4	77.9	79.2	80.7	82.3	83.1	84.3	85.1	85.5	86.5	88.4	88.5	88.2
-30.0	77.0	78.6	79.8	81.3	82.9	83.8	85.0	85.8	86.2	87.2	89.1	89.2	88.8
-26.0	77.6	79.2	80.5	82.0	83.6	84.4	85.7	86.4	86.8	87.9	89.7	89.9	89.5
-22.0	78.2	79.8	81.1	82.6	84.3	85.1	86.3	87.0	87.5	88.6	90.4	90.5	90.2
-18.0	78.8	80.4	81.7	83.3	84.9	85.7	87.0	87.7	88.2	89.3	91.1	*90.8*	*90.5*
-14.0	79.4	81.1	82.3	83.9	85.5	86.4	87.7	88.4	88.8	90.0	*90.9*	*90.3*	*90.0*
-10.0	80.1	81.7	83.0	84.5	86.2	87.0	88.3	89.0	89.5	90.6	*90.4*	*89.8*	*89.5*
-6.0	80.7	82.3	83.6	85.2	86.8	87.6	89.0	89.7	90.2	*90.8*	*89.9*	*89.4*	*89.0*
-2.0	81.3	82.9	84.2	85.8	87.5	88.2	89.6	90.3	90.8	*90.4*	*89.5*	*88.9*	*88.6*
2.0	81.9	83.5	84.8	86.4	88.1	88.8	90.1	*90.7*	*90.5*	*90.0*	*89.1*	*88.5*	*88.2*
6.0	82.5	84.1	85.5	87.0	88.7	89.5	90.8	*90.4*	*90.1*	*89.6*	*88.7*	*88.0*	*87.7*
10.0	83.1	84.7	86.1	87.7	89.3	90.1	*90.7*	*90.0*	*89.7*	*89.2*	*88.2*	*87.5*	*87.1*
14.0	83.7	85.4	86.7	88.3	90.0	*90.0*	*90.3*	*89.6*	*89.3*	*88.7*	*87.7*	*86.9*	*86.4*
18.0	84.3	86.0	87.3	88.9	*89.5*	*89.5*	*89.9*	*89.2*	*88.8*	*88.2*			
22.0	84.9	86.6	*87.3*	*88.5*	*89.0*	*89.1*	*89.4*	*88.6*	*88.3*	*87.6*			
26.0	85.5	*86.8*	*86.8*	*88.0*	*88.5*	*88.6*	*88.9*	*88.1*	*87.7*	*87.0*			
30.0	86.0	*86.3*	*86.2*	*87.5*	*88.0*	*88.1*	*88.4*	*87.4*	*87.1*				
34.0	*85.4*	*85.7*	*85.5*	*86.9*	*87.5*	*87.6*	*87.8*	*86.8*					
38.0	*84.6*	*84.9*	*84.8*	*86.2*	*86.9*	*86.9*	*87.2*						
42.0	*83.8*	*84.1*	*84.1*	*85.6*	*86.2*	*86.3*							
46.0	*83.1*	*83.4*	*83.4*	*84.9*	*85.5*								
OAT < CORNER POINT							*OAT >= CORNER POINT*						

N1 CORRECTIONS FOR AIR BLEED (%)	OAT < CORNER POINT	OAT >= CORNER POINT
AIR CONDITIONING OFF	1.3	1.5
NACELLE ANTI-ICE ON	0.5	-0.3
NACELLE AND WING ANTI-ICE ON	0.5	-1.2

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PW1133G-JM - MAXIMUM CRUISE N1 (%)													
AIR CONDITIONING ON							250/300/0.78						
TAT	PRESSURE ALTITUDE (FT)												
(C)	**2000**	**5000**	**8000**	**12000**	**15000**	**17000**	**20000**	**25000**	**27000**	**31000**	**35000**	**39000**	**41000**
50.0	*82.4*	*82.8*	*82.8*	*84.3*									
54.0	*81.9*	*82.2*											
58.0	*81.2*												
62.0													

OAT < CORNER POINT	*OAT >= CORNER POINT*	
N1 CORRECTIONS FOR AIR BLEED (%)	**OAT < CORNER POINT**	**OAT >= CORNER POINT**
AIR CONDITIONING OFF	1.3	1.5
NACELLE ANTI-ICE ON	0.5	-0.3
NACELLE AND WING ANTI-ICE ON	0.5	-1.2

MAXIMUM CRUISE

Ident.: PER-THR-MCR-00001980.0029001 / 15 NOV 16

[5] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09031**

PW1127G-JM - MAXIMUM CRUISE N1 (%)

AIR CONDITIONING ON													250/300/0.78
TAT	PRESSURE ALTITUDE (FT)												
(C)	**2000**	**5000**	**8000**	**12000**	**15000**	**17000**	**20000**	**25000**	**27000**	**31000**	**35000**	**39000**	**41000**
-54.0	70.8	72.2	73.4	75.0	76.6	77.4	78.6	80.3	80.5	80.9	81.6	81.8	81.6
-50.0	71.4	72.9	74.1	75.7	77.3	78.1	79.3	81.0	81.3	81.7	82.3	82.5	82.3
-46.0	72.0	73.5	74.7	76.3	77.9	78.7	79.9	81.8	82.0	82.4	83.1	83.2	83.0
-42.0	72.6	74.1	75.4	77.0	78.6	79.4	80.6	82.5	82.7	83.1	83.8	83.9	83.7
-38.0	73.3	74.8	76.0	77.6	79.3	80.1	81.3	83.2	83.3	83.8	84.5	84.6	84.4
-34.0	73.9	75.4	76.6	78.3	79.9	80.7	82.0	83.9	84.0	84.5	85.2	85.3	85.1
-30.0	74.5	76.0	77.3	78.9	80.6	81.4	82.6	84.5	84.7	85.1	85.9	86.0	85.8
-26.0	75.1	76.6	77.9	79.5	81.2	82.0	83.3	85.2	85.4	85.8	86.5	86.7	86.4
-22.0	75.7	77.2	78.5	80.2	81.9	82.7	83.9	85.8	86.0	86.5	87.2	87.3	87.1
-18.0	76.3	77.8	79.1	80.8	82.5	83.3	84.6	86.5	86.7	87.1	87.9	*87.7*	*87.5*
-14.0	76.9	78.4	79.7	81.4	83.1	84.0	85.2	87.1	87.3	87.8	*87.8*	*87.3*	*87.0*
-10.0	77.4	79.0	80.3	82.0	83.7	84.6	85.9	87.8	88.0	88.5	*87.4*	*86.8*	*86.5*
-6.0	78.0	79.6	80.9	82.6	84.4	85.2	86.5	88.4	88.6	*88.6*	*86.9*	*86.3*	*86.0*
-2.0	78.6	80.2	81.5	83.3	85.0	85.8	87.1	89.1	89.3	*88.2*	*86.5*	*85.8*	*85.5*
2.0	79.2	80.8	82.1	83.9	85.6	86.5	87.7	*89.4*	*89.0*	*87.8*	*85.9*	*85.1*	*84.7*
6.0	79.8	81.4	82.8	84.5	86.2	87.1	88.3	*89.0*	*88.6*	*87.3*	*85.2*	*84.3*	*83.9*
10.0	80.3	82.0	83.4	85.1	86.8	87.7	*88.1*	*88.6*	*88.2*	*86.7*	*84.5*	*83.5*	*83.1*
14.0	80.9	82.6	84.0	85.7	87.4	*87.5*	*87.6*	*88.1*	*87.6*	*86.0*	*83.7*	*82.6*	*82.1*
18.0	81.5	83.2	84.6	86.3	*86.9*	*86.9*	*87.1*	*87.4*	*87.0*	*85.3*			
22.0	82.1	83.8	*84.5*	*85.8*	*86.4*	*86.4*	*86.5*	*86.9*	*86.3*	*84.6*			
26.0	82.7	*84.0*	*83.8*	*85.2*	*85.9*	*85.8*	*85.9*	*86.2*	*85.6*	*83.7*			
30.0	83.2	*83.1*	*83.1*	*84.5*	*85.2*	*85.1*	*85.1*	*85.5*	*84.8*				
34.0	*82.5*	*82.3*	*82.3*	*83.8*	*84.4*	*84.3*	*84.4*	*84.7*					
38.0	*81.8*	*81.6*	*81.5*	*83.1*	*83.7*	*83.6*	*83.7*						
42.0	*81.1*	*80.9*	*80.7*	*82.4*	*83.0*	*83.0*							
46.0	*80.4*	*80.1*	*80.0*	*81.7*	*82.4*								
OAT < CORNER POINT							*OAT >= CORNER POINT*						

N1 CORRECTIONS FOR AIR BLEED (%)	**OAT < CORNER POINT**	**OAT >= CORNER POINT**
AIR CONDITIONING OFF	+1.2	+1.3
NACELLE ANTI-ICE ON	+0.4	-0.3
NACELLE AND WING ANTI-ICE ON	+0.4	-1.0

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PW1127G-JM - MAXIMUM CRUISE N1 (%)													
AIR CONDITIONING ON							250/300/0.78						
TAT	PRESSURE ALTITUDE (FT)												
(C)	**2000**	**5000**	**8000**	**12000**	**15000**	**17000**	**20000**	**25000**	**27000**	**31000**	**35000**	**39000**	**41000**
50.0	*79.5*	*79.4*	*79.3*	*81.0*									
54.0	*78.8*	*78.7*											
58.0	*78.3*												
62.0													

OAT < CORNER POINT	*OAT >= CORNER POINT*	
N1 CORRECTIONS FOR AIR BLEED (%)	**OAT < CORNER POINT**	**OAT >= CORNER POINT**
AIR CONDITIONING OFF	+1.2	+1.3
NACELLE ANTI-ICE ON	+0.4	-0.3
NACELLE AND WING ANTI-ICE ON	+0.4	-1.0

MAXIMUM CRUISE

Ident.: PER-THR-MCR-00001980.0005001 / 05 APR 11

6 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

V2527-27E	MAXIMUM CRUISE EPR	AIR COND ON	250/300/.78
CORRECTIONS FOR AIR BLEED			
AIR CONDITIONING OFF			.018
ENGINE ANTI ICE ON			–.018
ENGINE ANTI ICE AND WING ANTI ICE ON			–.030

TAT (°C)	PRESSURE ALTITUDE (FT)										
	0.	2000.	5000.	8000.	12000.	17000.	20000.	25000.	31000.	35000.	39000.
–50.0	1.199	1.219	1.243	1.263	1.256	1.287	1.308	1.325	1.368	1.412	1.421
–46.0	1.199	1.219	1.243	1.263	1.256	1.287	1.308	1.325	1.368	1.412	1.421
–42.0	1.199	1.219	1.243	1.263	1.256	1.287	1.308	1.325	1.368	1.412	1.421
–38.0	1.199	1.219	1.243	1.263	1.256	1.287	1.308	1.325	1.368	1.412	1.421
–34.0	1.199	1.219	1.243	1.263	1.256	1.287	1.308	1.325	1.368	1.412	1.421
–30.0	1.199	1.219	1.243	1.263	1.256	1.287	1.308	1.325	1.368	1.412	1.421
–26.0	1.199	1.219	1.243	1.263	1.256	1.287	1.308	1.325	1.368	1.412	1.421
–22.0	1.199	1.219	1.243	1.263	1.256	1.287	1.308	1.325	1.368	1.412	1.421
–18.0	1.199	1.219	1.243	1.263	1.256	1.287	1.308	1.325	1.368	1.412	1.415
–14.0	1.199	1.219	1.243	1.263	1.256	1.287	1.308	1.325	1.368	1.397	1.392
–10.0	1.199	1.219	1.243	1.263	1.256	1.287	1.308	1.325	1.368	1.373	1.368
–6.0	1.199	1.219	1.243	1.263	1.256	1.287	1.308	1.325	1.358	1.349	1.344
–2.0	1.199	1.219	1.243	1.263	1.256	1.287	1.308	1.325	1.333	1.324	1.319
2.0	1.199	1.219	1.243	1.263	1.256	1.287	1.308	1.319	1.308	1.300	1.296
6.0	1.199	1.219	1.243	1.263	1.256	1.287	1.308	1.295	1.284	1.278	1.274
10.0	1.199	1.219	1.243	1.263	1.256	1.287	1.293	1.271	1.259	1.256	
14.0	1.199	1.219	1.243	1.263	1.256	1.272	1.270	1.247	1.238		
18.0	1.199	1.219	1.243	1.263	1.256	1.250	1.247	1.225	1.217		
22.0	1.199	1.219	1.243	1.253	1.238	1.228	1.226	1.205			
26.0	1.199	1.219	1.238	1.233	1.217	1.207	1.206	1.184			
30.0	1.199	1.219	1.220	1.213	1.197	1.188	1.187				
34.0	1.197	1.202	1.201	1.195	1.178	1.171	1.168				
38.0	1.181	1.185	1.184	1.179	1.161	1.153					
42.0	1.164	1.168	1.168	1.164	1.145						
46.0	1.149	1.153	1.154								
50.0	1.135	1.140	1.140								
54.0	1.122	1.127									
58.0	1.110										
62.0											
66.0											

MAXIMUM CRUISE

Ident.: PER-THR-MCR-00001980.0018001 / 28 FEB 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CFM56-5B4 MAXIMUM CRUISE N1 AIR CONDITIONING ON 250/300/.78	N1 CORRECTIONS FOR AIR BLEED	OAT < ISA+10	OAT ≥ ISA+10
	AIR CONDITIONING OFF	0.8	0.8
	NACELLE ANTI ICE ON	0.0	–1.3
	NACELLE ANTI ICE AND WING ANTI ICE ON	0.0	–2.4

TAT	PRESSURE ALTITUDE (FT)										
(°C)	–1000.	3000.	7000.	11000.	15000.	19000.	23000.	27000.	31000.	35000.	39000.
–54.0	71.6	73.5	75.1	75.9	76.9	77.9	78.8	79.6	80.6	82.0	82.0
–50.0	72.3	74.2	75.7	76.5	77.6	78.6	79.5	80.3	81.4	82.7	82.7
–46.0	72.9	74.9	76.4	77.2	78.3	79.3	80.2	81.0	82.1	83.4	83.4
–42.0	73.6	75.5	77.1	77.9	79.0	80.0	80.9	81.7	82.8	84.1	84.1
–38.0	74.2	76.2	77.7	78.6	79.6	80.6	81.6	82.4	83.4	84.8	84.8
–34.0	74.8	76.8	78.4	79.2	80.3	81.3	82.2	83.0	84.1	85.5	85.5
–30.0	75.4	77.4	79.0	79.8	80.9	81.9	82.9	83.7	84.8	86.2	86.2
–26.0	76.0	78.1	79.6	80.5	81.6	82.6	83.5	84.3	85.5	86.8	86.8
–22.0	76.7	78.7	80.3	81.1	82.2	83.2	84.2	85.0	86.1	87.5	87.5
–18.0	77.3	79.3	80.9	81.8	82.9	83.9	84.8	85.7	86.8	88.2	*88.0*
–14.0	77.9	79.9	81.6	82.4	83.5	84.5	85.5	86.3	87.5	*88.4*	*87.7*
–10.0	78.5	80.5	82.2	83.0	84.1	85.2	86.1	87.0	88.1	*88.2*	*87.5*
–6.0	79.1	81.1	82.8	83.6	84.7	85.8	86.8	87.6	*88.4*	*88.1*	*86.9*
–2.0	79.6	81.7	83.4	84.2	85.3	86.4	87.4	88.2	*88.2*	*87.6*	*86.1*
2.0	80.2	82.3	84.0	84.8	86.0	87.0	88.0	*88.2*	*88.1*	*86.9*	*85.5*
6.0	80.8	82.9	84.6	85.4	86.6	87.6	*88.1*	*88.0*	*87.7*	*86.3*	*84.9*
10.0	81.4	83.5	85.2	86.0	87.2	*87.9*	*87.9*	*87.8*	*87.1*	*85.6*	*84.3*
14.0	82.0	84.1	85.8	86.7	87.8	*87.7*	*87.8*	*87.3*	*86.5*	*84.9*	*83.7*
18.0	82.5	84.7	86.3	87.2	*87.5*	*87.4*	*87.3*	*86.7*	*85.8*		
22.0	83.1	85.2	*86.8*	*87.3*	*87.1*	*87.1*	*86.7*	*86.0*	*85.1*		
26.0	83.6	85.8	*86.4*	*87.0*	*86.8*	*86.6*	*86.1*	*85.3*	*84.4*		
30.0	84.2	*85.9*	*86.0*	*86.6*	*86.3*	*85.9*	*85.3*	*84.7*			
34.0	84.7	*85.5*	*85.4*	*85.9*	*85.6*	*85.2*	*84.6*				
38.0	*84.5*	*85.0*	*84.7*	*85.2*	*84.9*	*84.5*					
42.0	*84.0*	*84.3*	*84.0*	*84.5*	*84.1*						
46.0	*83.4*	*83.5*	*83.3*	*83.8*	*83.4*						
50.0	*82.6*	*82.8*	*82.5*	*83.1*							
54.0	*81.8*	*82.1*									

OAT < ISA + 10
OAT ≥ ISA + 10

N1 MODE THRUST CONTROL

Ident.: PER-THR-N1-00004648.0010001 / 21 MAR 16

[1] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

In case of no EPR available, the thrust control automatically reverts to N1 mode (rated or degraded).
Refer to PRO-ABN-ENG ENG 1(2) EPR MODE FAULT (First Threshold).
If the rated N1 mode is lost on both engines, refer to the power management tables given on the following pages.
The herebelow table gives the N1 to be set in cruise to maintain M 0.78.

	FLIGHT LEVEL					
WEIGHT (1000 KG)	**290**	**310**	**330**	**350**	**370**	**390**
50	75.4	75.5	75.7	76	76.8	78
52	75.7	75.8	76	76.4	77.2	78.6
54	75.9	76.1	76.4	76.8	77.6	79.1
56	76.2	76.4	76.8	77.2	78.1	79.7
58	76.4	76.7	77.1	77.6	78.6	80.4
60	76.7	77.1	77.5	78	79.2	81.2
62	77.1	77.4	77.9	78.5	79.7	81.9
64	77.3	77.7	78.3	79	80.3	
66	77.7	78.1	78.6	79.5	81	
68	78	78.5	79.1	80	81.7	
70	78.3	78.8	79.5	80.5	82.5	
72	78.6	79.2	80	81.1		
74	79	79.5	80.4	81.7		
76	79.3	80	80.9	82.4		N1 (%)

Drift Down ceilings and go around performance are affected as follows:
Drift down ceiling:

Actual Weight (1 000 kg)	**40**	**50**	**60**	**70**
Ceiling Penalty (ft)	4 000	4 700	5 300	6 000

Go around weight:

Normal go around Weight (1 000 kg)	**40**	**45**	**50**	**55**	**60**	**65**	**70**	**75**	**80**	**85**
Weight Penalty (1 000 kg)	5.2	5.9	6.5	7.2	7.8	8.5	9.1	9.8	10.4	11

MAXIMUM TAKEOFF N1

Ident.: PER-THR-N1-00001970.0005001 / 28 JAN 11

[2] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

V2527-A5	TAKEOFF N1				NO AIR BLEED MACH=.000				
CORRECTIONS FOR AIR BLEED									
AIR CONDITIONING ON				SUBTRACT .400 FROM N1					
ENGINE ANTI ICE ON				SUBTRACT 1.3 FROM N1 ABOVE CORNER POINT					
ENGINE ANTI ICE AND WING ANTI ICE ON				SUBTRACT .3 FROM N1 BELOW CORNER POINT AND 1.6 ABOVE CORNER POINT					
OAT (°C)	PRESSURE ALTITUDE (FT)								
	–1000.	0.	1000.	2000.	3000.	4000.	5000.	6000.	7000.
–60.0	74.6	75.4	76.2	76.9	77.5	78.0	78.4	78.9	79.5
–40.0	78.0	78.9	79.6	80.5	81.0	81.5	82.0	82.6	83.1
–20.0	81.3	82.2	83.0	83.8	84.4	85.0	85.5	86.0	86.6
0.0	84.4	85.4	86.2	87.1	87.7	88.3	88.8	89.4	90.0
10.0	86.0	86.9	87.8	88.7	89.3	89.9	90.4	91.0	91.6
20.0	87.5	88.4	89.3	90.2	90.9	91.4	92.0	92.6	93.2
22.0	87.8	88.7	89.6	90.5	91.2	91.8	92.3	92.9	93.5
24.0	88.1	89.0	89.9	90.8	91.5	92.1	92.6	93.2	93.8
26.0	88.3	89.3	90.2	91.1	91.8	92.4	92.9	93.5	94.1
28.0	88.6	89.6	90.5	91.4	92.1	92.7	93.2	93.8	94.5
30.0	88.9	89.9	90.8	91.7	92.4	93.0	93.5	94.1	*94.4*
32.0	89.2	90.2	91.1	92.1	92.7	93.3	93.8	*94.1*	*94.1*
34.0	89.5	90.5	91.4	92.4	93.0	93.6	*93.8*	*93.8*	*93.8*
36.0	89.8	90.8	91.7	92.7	93.3	*93.8*	*93.6*	*93.6*	*93.5*
38.0	90.1	91.1	92.0	93.0	93.6	*93.6*	*93.3*	*93.3*	*93.2*
40.0	90.4	91.4	92.3	93.2	*93.6*	*93.3*	*93.1*	*93.0*	*93.0*
42.0	90.7	91.7	92.6	93.5	*93.3*	*93.1*	*92.8*	*92.8*	
44.0	91.0	92.0	92.9	*93.3*	*93.0*	*92.8*	*92.6*		
46.0	91.3	92.3	*93.0*	*93.0*	*92.8*	*92.6*			
48.0	91.5	92.6	*92.7*	*92.7*	*92.5*				
50.0	91.8	*92.5*	*92.5*	*92.5*					
52.0	92.1	*92.2*	*92.2*						
54.0	*92.0*	*92.0*							
56.0	*91.8*								
58.0									

BELOW CORNER POINT
ABOVE CORNER POINT

V2527-A5	TAKE-OFF N1					NO AIR BLEED		MACH=.000		
CORRECTIONS FOR AIR BLEED										
AIR CONDITIONING ON					SUBTRACT .700 FROM N1					
ENGINE ANTI ICE ON					SUBTRACT 1.7 FROM N1 ABOVE CORNER POINT					
ENGINE ANTI ICE AND WING ANTI ICE ON					SUBTRACT .5 FROM N1 BELOW CORNER POINT AND 2.2 ABOVE CORNER POINT					
OAT (°C)	PRESSURE ALTITUDE (FT)									
	6000.	7000.	8000.	9000.	10000.	11000.	12000.	13000.	14000.	14500.
–60.0	78.9	79.5	80.0	80.3	80.6	80.9	81.2	81.5	81.9	82.0
–40.0	82.6	83.1	83.7	84.0	84.3	84.6	84.9	85.3	85.6	85.8
–20.0	86.0	86.6	87.2	87.5	87.8	88.1	88.5	88.8	89.2	89.4
0.0	89.4	90.0	90.6	90.9	91.2	91.6	91.9	92.3	92.7	92.9
5.0	90.2	90.8	91.4	91.7	92.0	92.4	92.7	93.1	93.5	93.7
10.0	91.0	91.6	92.2	92.5	92.9	93.2	93.6	94.0	94.4	94.6
12.0	91.3	91.9	92.5	92.9	93.2	93.5	93.9	94.3	94.7	94.9
14.0	91.6	92.2	92.8	93.2	93.5	93.9	94.2	94.6	95.0	*95.2*
16.0	91.9	92.6	93.2	93.5	93.9	94.2	94.5	95.0	*95.1*	*95.2*
18.0	92.3	92.9	93.5	93.8	94.2	94.5	94.9	*95.0*	*95.2*	*95.3*
20.0	92.6	93.2	93.8	94.2	94.5	94.8	*94.9*	*95.0*	*95.1*	*95.0*
22.0	92.9	93.5	94.1	94.5	94.8	*94.9*	*94.9*	*95.0*	*94.8*	*94.7*
24.0	93.2	93.8	94.4	94.8	*94.8*	*94.8*	*94.8*	*94.6*	*94.5*	*94.4*
26.0	93.5	94.1	94.8	*94.7*	*94.6*	*94.6*	*94.5*	*94.3*	*94.1*	*94.0*
28.0	94.7	94.5	*94.5*	*94.3*	*94.2*	*94.0*				
30.0	94.1	*94.4*	*94.4*	*94.3*	*94.1*	*94.0*	*93.8*			
32.0	*94.1*	*94.1*	*94.1*	*94.0*	*93.8*	*93.7*				
34.0	*93.8*	*93.8*	*93.8*	*93.7*	*93.5*					
36.0	*93.6*	*93.5*	*93.5*	*93.4*						
38.0	*93.3*	*93.2*	*93.2*							
40.0	*93.0*	*93.0*								
42.0	*92.8*									
44.0						BELOW CORNER POINT				
46.0						*ABOVE CORNER POINT*				
48.0										

MAXIMUM GO AROUND N1

Ident.: PER-THR-N1-00004650.0003001 / 08 FEB 11

3 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

V2527-A5	GO-AROUND N1	AIR COND ON
CORRECTIONS FOR AIR BLEED		
AIR CONDITIONING OFF	ADD .400 TO N1	
NACELLE ANTI ICE ON	SUBTRACT 1.3 FROM N1 ABOVE CORNER POINT	
NACELLE ANTI ICE AND WING ANTI ICE ON	SUBTRACT .3 FROM N1 BELOW CORNER POINT AND 1.6 ABOVE CORNER POINT	

TAT (°C)	PRESSURE ALTITUDE (FT)								
	–1000.	0.	1000.	2000.	3000.	4000.	5000.	6000.	7000.
–60.0	74.3	75.1	75.8	76.6	77.0	77.5	77.9	78.4	78.9
–40.0	77.7	78.5	79.3	80.1	80.6	81.1	81.5	82.0	82.5
–20.0	80.9	81.8	82.6	83.4	84.0	84.5	84.9	85.5	86.0
0.0	84.1	85.0	85.8	86.7	87.2	87.7	88.2	88.8	89.3
10.0	85.6	86.6	87.4	88.3	88.8	89.3	89.8	90.4	91.0
20.0	87.1	88.1	88.9	89.8	90.3	90.9	91.4	92.0	92.5
22.0	87.4	88.4	89.2	90.1	90.7	91.2	91.7	92.3	92.9
24.0	87.7	88.7	89.5	90.4	91.0	91.5	92.0	92.6	93.2
26.0	88.0	89.0	89.8	90.7	91.3	91.8	92.3	92.9	93.5
28.0	88.3	89.3	90.1	91.0	91.6	92.1	92.6	93.2	93.8
30.0	88.6	89.6	90.4	91.3	91.9	92.4	92.9	93.5	*93.7*
32.0	88.9	89.9	90.7	91.6	92.2	92.7	93.2	*93.4*	*93.5*
34.0	89.2	90.1	91.0	91.9	92.5	93.0	*93.2*	*93.2*	*93.2*
36.0	89.4	90.4	91.3	92.2	92.8	*93.3*	*93.0*	*93.0*	*92.9*
38.0	89.7	90.7	91.6	92.5	93.1	*93.0*	*92.8*	*92.7*	*92.6*
40.0	90.0	91.0	91.9	92.8	*93.1*	*92.8*	*92.5*	*92.5*	*92.4*
42.0	90.3	91.3	92.2	93.1	*92.8*	*92.6*	*92.3*	*92.2*	*92.2*
44.0	90.6	91.6	92.5	*92.9*	*92.6*	*92.3*	*92.1*	*92.0*	*91.9*
46.0	90.9	91.9	*92.6*	*92.6*	*92.3*	*92.1*	*91.8*	*91.7*	
48.0	91.2	92.2	*92.3*	*92.3*	*92.0*	*91.8*	*91.5*		
50.0	91.4	*92.1*	*92.1*	*92.0*	*91.8*	*91.5*			
52.0	91.7	*91.8*	*91.8*	*91.8*	*91.5*				
54.0	*91.7*	*91.6*	*91.6*	*91.6*					
56.0	*91.4*	*91.4*	*91.4*						
58.0	*91.2*	*91.2*							

BELOW CORNER POINT
ABOVE CORNER POINT

V2527-A5	GO-AROUND N1				AIR COND ON					
CORRECTIONS FOR AIR BLEED										
AIR CONDITIONING OFF					ADD .700 TO N1					
ENGINE ANTI ICE ON					READ AT TAT +5. (°C)					
ENGINE ANTI ICE AND WING ANTI ICE ON					READ AT TAT +5. (°C) AND SUBTRACT 0.500 FROM N1					
TAT (°C)	**PRESSURE ALTITUDE (FT)**									
	6000.	**7000.**	**8000.**	**9000.**	**10000.**	**11000.**	**12000.**	**13000.**	**14000.**	**14500.**
–60.0	78.4	78.9	79.4	79.7	80.0	80.2	80.4	80.7	80.9	81.1
–40.0	82.0	82.5	83.1	83.3	83.6	83.9	84.1	84.4	84.6	84.8
–20.0	85.5	86.0	86.5	86.8	87.1	87.4	87.7	87.9	88.2	88.3
0.0	88.8	89.3	89.9	90.2	90.5	90.8	91.1	91.3	91.6	91.8
5.0	89.6	90.1	90.7	91.0	91.3	91.6	91.9	92.2	92.5	92.6
10.0	90.4	91.0	91.5	91.8	92.2	92.4	92.7	93.0	93.3	93.4
12.0	90.7	91.3	91.9	92.2	92.5	92.8	93.0	93.3	93.6	93.8
14.0	91.0	91.6	92.2	92.5	92.8	93.1	93.4	93.7	93.9	*94.0*
16.0	91.3	91.9	92.5	92.8	93.1	93.4	93.7	94.0	*94.1*	*94.1*
18.0	91.6	92.2	92.8	93.1	93.4	93.7	94.0	*94.1*	*94.2*	*94.2*
20.0	92.0	92.5	93.1	93.5	93.8	94.1	*94.1*	*94.1*	*94.2*	*94.0*
22.0	92.3	92.9	93.5	93.8	94.1	*94.1*	*94.0*	*94.1*	*93.8*	*93.7*
24.0	92.6	93.2	93.8	94.1	*94.1*	*94.0*	*93.9*	*93.7*	*93.5*	*93.4*
26.0	92.9	93.5	94.1	*94.0*	*93.9*	*93.8*	*93.6*	*93.4*	*93.2*	*93.0*
28.0	93.2	93.8	*94.0*	*93.8*	*93.7*	*93.5*	*93.3*	*93.1*	*92.8*	*92.7*
30.0	93.5	*93.7*	*93.7*	*93.6*	*93.4*	*93.2*	*93.0*	*92.7*	*92.5*	
32.0	*93.4*	*93.5*	*93.4*	*93.3*	*93.1*	*92.9*	*92.6*	*92.4*		
34.0	*93.2*	*93.2*	*93.1*	*92.9*	*92.8*	*92.6*	*92.3*			
36.0	*93.0*	*92.9*	*92.8*	*92.6*	*92.5*	*92.3*				
38.0	*92.7*	*92.6*	*92.5*	*92.4*	*92.3*					
40.0	*92.5*	*92.4*	*92.3*	*92.2*						
42.0	*92.2*	*92.2*	*92.1*							
44.0	*92.0*	*91.9*								
46.0	*91.7*									
48.0										

BELOW CORNER POINT
ABOVE CORNER POINT

Note: *This table is valid for all aircraft speeds.*

MAXIMUM CONTINUOUS N1

Ident.: PER-THR-N1-00004651.0007001 / 09 DEC 09

4 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

V2527/27E	MAXIMUM CONTINUOUS N1				AIR COND ON *					
CORRECTIONS FOR AIR BLEED										
AIR CONDITIONING OFF										.8
NACELLE ANTI-ICE ON										–.8
ENGINE ANTI-ICE AND WING ANTI-ICE ON										–1.7
TAT (C)	PRESSURE ALTITUDE (FT)									
	0.	2000.	5000.	8000.	12000.	17000.	20000.	25000.	31000.	35000.	39000.
–50.0	71.9	72.7	74.7	79.3	81.0	83.7	85.4	86.6	80.1	82.0	82.4
–46.0	72.5	73.4	75.4	80.0	81.7	84.4	86.1	87.4	80.8	82.7	83.1
–42.0	73.1	74.0	76.1	80.7	82.5	85.1	86.9	88.1	81.5	83.4	83.8
–38.0	73.8	74.6	76.7	81.4	83.2	85.9	87.6	88.9	82.2	84.2	84.5
–34.0	74.4	75.3	77.4	82.1	83.9	86.6	88.4	89.7	82.9	84.9	85.3
–30.0	75.0	75.9	78.0	82.7	84.6	87.3	89.1	90.4	83.6	85.6	86.0
–26.0	75.6	76.5	78.7	83.4	85.3	88.0	89.8	91.1	84.3	86.3	86.7
–22.0	76.2	77.1	79.3	84.1	85.9	88.7	90.6	91.9	84.9	87.0	87.4
–18.0	76.8	77.8	79.9	84.8	86.6	89.5	91.3	92.6	85.6	87.7	87.4
–14.0	77.4	78.4	80.6	85.4	87.3	90.2	92.0	93.3	86.3	87.1	86.8
–10.0	78.0	79.0	81.2	86.1	88.0	90.8	92.7	93.7	86.9	86.7	86.5
–6.0	78.6	79.6	81.8	86.7	88.6	91.5	93.4	93.1	86.7	86.3	86.0
–2.0	79.2	80.2	82.4	87.4	89.3	92.2	93.7	92.5	86.3	85.9	85.6
2.0	79.8	80.7	83.0	88.0	90.0	92.7	93.1	92.1	85.8	85.5	85.3
6.0	80.4	81.3	83.6	88.6	90.6	92.1	92.7	91.5	85.4	85.2	85.0
10.0	80.9	81.9	84.2	89.3	91.2	91.5	92.2	90.9	85.0	84.8	84.6
14.0	81.5	82.5	84.8	89.9	90.6	90.9	91.6	90.3	84.7		
18.0	82.1	83.1	85.4	90.2	90.0	90.3	91.0	89.9			
22.0	82.6	83.6	86.0	89.8	89.6	89.9	90.6	89.8			
26.0	83.2	84.2	85.9	89.3	89.2	89.5	90.2				
30.0	83.8	84.3	85.9	88.8	88.8	89.0	90.2				
34.0	83.6	84.1	85.8	88.4	88.3	88.8					
38.0	83.5	83.8	85.9	87.8	87.6						
42.0	82.8	83.5	85.7	87.3	87.3						
46.0	82.2	83.3	85.5	86.6							
50.0	82.0	83.0	85.3								
54.0	81.7	82.6	85.1								
58.0	81.4	82.3									
62.0	81.1										
66.0											

(*) One engine inoperative - 1 pack operative on remaining engine.

Note: This table is valid for all aircraft speeds.

MAXIMUM CLIMB N1

Ident.: PER-THR-N1-00004652.0004001 / 28 JUL 14

5 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

V2527/27E	MAXIMUM CLIMB N1				AIR COND ON						
CORRECTIONS FOR AIR BLEED											
AIR CONDITIONING OFF										.800	
ENGINE ANTI ICE ON										–.800	
ENGINE ANTI ICE AND WING ANTI ICE ON										–1.300	
TAT (°C)	PRESSURE ALTITUDE (FT)										
	0.	2000.	5000.	8000.	12000.	17000.	20000.	25000.	31000.	35000.	39000.
–50.0	71.3	72.1	73.1	74.0	75.1	76.5	77.4	78.3	80.2	82.2	82.7
–46.0	72.0	72.7	73.8	74.7	75.8	77.2	78.1	79.0	80.9	83.0	83.4
–42.0	72.6	73.4	74.4	75.3	76.5	77.9	78.8	79.7	81.7	83.7	84.1
–38.0	73.2	74.0	75.0	76.0	77.1	78.6	79.5	80.4	82.4	84.4	84.9
–34.0	73.8	74.6	75.7	76.6	77.8	79.2	80.1	81.1	83.1	85.1	85.6
–30.0	74.4	75.2	76.3	77.2	78.4	79.9	80.8	81.8	83.8	85.8	86.3
–26.0	75.1	75.9	76.9	77.9	79.1	80.6	81.5	82.4	84.4	86.6	87.0
–22.0	75.7	76.5	77.5	78.5	79.7	81.2	82.1	83.1	85.1	87.3	87.7
–18.0	76.3	77.1	78.2	79.1	80.3	81.8	82.8	83.7	85.8	87.9	87.7
–14.0	76.9	77.7	78.8	79.7	80.9	82.5	83.4	84.4	86.5	87.4	87.1
–10.0	77.4	78.3	79.4	80.4	81.6	83.1	84.1	85.0	87.1	86.9	86.7
–6.0	78.0	78.9	80.0	81.0	82.2	83.7	84.7	85.7	86.9	86.5	86.3
–2.0	78.6	79.5	80.6	81.6	82.8	84.4	85.3	86.3	86.5	86.1	85.9
2.0	79.2	80.0	81.2	82.2	83.4	85.0	86.0	86.1	86.0	85.7	85.5
6.0	79.8	80.6	81.8	82.8	84.0	85.6	86.3	85.7	85.5	85.4	85.2
10.0	80.3	81.2	82.3	83.4	84.6	86.0	86.0	85.2	85.2	85.1	84.9
14.0	80.9	81.8	82.9	83.9	85.2	85.5	85.6	84.8	84.9	84.7	84.7
18.0	81.5	82.3	83.5	84.5	85.4	85.1	85.1	84.4	84.4		
22.0	82.0	82.9	84.1	85.1	85.0	84.7	84.7	83.9	83.9		
26.0	82.6	83.5	84.6	84.9	84.5	84.2	84.3	83.4	83.9		
30.0	83.1	84.0	84.6	84.4	84.0	83.8	83.8	82.9			
34.0	83.7	84.2	84.0	83.8	83.5	83.3	83.4	83.1			
38.0	83.6	83.5	83.4	83.3	83.1	82.9	83.1				
42.0	82.9	82.9	82.9	82.9	82.7	82.7					
46.0	82.3	82.3	82.4	82.5	82.3						
50.0	81.7	81.8	82.0	82.1	82.3						
54.0	81.3	81.5	81.6								
58.0	80.7	80.8									
62.0	80.0										
66.0											

Note: *This table is valid for all aircraft speeds.*

MAXIMUM CRUISE N1

Ident.: PER-THR-N1-00004653.0004001 / 09 DEC 09

6 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

V2527/27E	MAXIMUM CRUISE N1	AIR COND ON
CORRECTIONS FOR AIR BLEED		
AIR CONDITIONING OFF		.800
ENGINE ANTI ICE ON		–.800
ENGINE ANTI ICE AND WING ANTI ICE ON		–1.300

TAT	PRESSURE ALTITUDE (FT)										
(°C)	0.	2000.	5000.	8000.	12000.	17000.	20000.	25000.	31000.	35000.	39000.
–50.0	67.1	68.1	69.4	70.7	72.1	73.7	74.7	75.7	77.4	79.1	79.4
–46.0	67.7	68.7	70.0	71.3	72.7	74.4	75.4	76.4	78.1	79.8	80.1
–42.0	68.3	69.3	70.6	71.9	73.4	75.0	76.1	77.0	78.8	80.5	80.8
–38.0	68.9	69.9	71.3	72.6	74.0	75.7	76.7	77.7	79.5	81.1	81.5
–34.0	69.5	70.4	71.9	73.2	74.6	76.3	77.4	78.4	80.2	81.8	82.2
–30.0	70.1	71.0	72.5	73.8	75.3	77.0	78.0	79.0	80.8	82.5	82.9
–26.0	70.7	71.6	73.1	74.4	75.9	77.6	78.6	79.7	81.5	83.2	83.5
–22.0	71.2	72.2	73.6	75.0	76.5	78.2	79.3	80.3	82.1	83.9	84.2
–18.0	71.8	72.8	74.2	75.6	77.1	78.8	79.9	80.9	82.8	84.5	84.3
–14.0	72.4	73.3	74.8	76.2	77.7	79.5	80.5	81.6	83.4	84.2	84.0
–10.0	72.9	73.9	75.4	76.8	78.3	80.1	81.1	82.2	84.1	83.9	83.7
–6.0	73.5	74.5	75.9	77.3	78.9	80.7	81.8	82.8	83.9	83.5	83.3
–2.0	74.0	75.0	76.5	77.9	79.5	81.3	82.4	83.4	83.5	83.1	82.9
2.0	74.6	75.6	77.1	78.5	80.1	81.9	83.0	83.1	83.1	82.8	82.6
6.0	75.1	76.1	77.6	79.1	80.6	82.5	83.3	82.6	82.5	82.3	82.1
10.0	75.6	76.7	78.2	79.6	81.2	82.8	82.8	82.0	81.9	81.7	81.5
14.0	76.2	77.2	78.7	80.2	81.8	82.2	82.3	81.4	81.4	81.2	81.2
18.0	76.7	77.7	79.3	80.7	81.9	81.6	81.7	80.9	80.9		
22.0	77.2	78.3	79.8	81.3	81.2	80.9	81.1	80.4	80.3		
26.0	77.7	78.8	80.4	80.9	80.6	80.4	80.6	79.9	80.3		
30.0	78.3	79.3	80.2	80.3	80.0	80.0	80.2	79.4			
34.0	78.8	79.4	79.6	79.7	79.4	79.4	79.6	79.6			
38.0	78.5	78.7	78.7	78.8	78.8	78.8	79.3				
42.0	77.5	77.6	77.8	78.1	78.1	78.5					
46.0	76.5	76.7	77.1	77.5	77.5						
50.0	75.5	75.9	76.4	76.8	77.4						
54.0	74.7	75.1	75.6								
58.0	74.0	74.4									
62.0	73.2										
66.0											

Note: This table is valid for all aircraft speeds.

PERFORMANCE

TAKEOFF

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PER-TOF-THR THRUST OPTIONS

PER-TOF-THR-FLX FLEXIBLE TAKEOFF

PER-TOF-THR-FLX-10 DEFINITION OF FLEXIBLE TAKEOFF

DEFINITION OF FLEXIBLE TAKEOFF....A

PER-TOF-THR-FLX-20 USE OF FLEXIBLE TAKEOFF

USE OF FLEXIBLE TAKEOFF....A

PER-TOF-THR-FLX-30 REQUIREMENTS

REQUIREMENTS....A

PER-TOF-THR-FLX-40 RECOMMENDATION

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PER-TOF-TOC TAKEOFF CHARTS

PER-TOF-TOC-05 INTRODUCTION

TAKEOFF CHARTS....A

PER-TOF-TOC-10 GENERAL (TEMPERATURE ENTRY)

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PER-TOF-TOC-12-10 DETERMINATION OF MAXIMUM TAKEOFF WEIGHT AND SPEEDS

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CONSERVATIVE CORRECTIONS FOR QNH AND BLEEDS C
CORRECTIONS FOR WET OR CONTAMINATED RUNWAYS ..... D
CORRECTIONS PRODUCED ON THE RTOW CHART ..... E
COMBINING CORRECTIONS FROM FCOM AND CHART ..... F

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PER-TOF-TOC-14-10 DETERMINATION OF FLEXIBLE TAKEOFF TEMPERATURE AND SPEEDS

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CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS ..... B
CONSERVATIVE CORRECTIONS FOR QNH AND BLEEDS C
CORRECTIONS FOR WET RUNWAY ..... D
CORRECTIONS PRODUCED ON THE RTOW CHART ..... E
COMBINING CORRECTIONS FROM FCOM AND CHART ..... F

PER-TOF-TOC-14-20 FLEXIBLE TAKEOFF NOT POSSIBLE

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PER-TOF-TOC-14-25 FLEXIBLE TAKEOFF POSSIBLE BUT NOT USED

FLEXIBLE TAKEOFF POSSIBLE BUT NOT USED ..... A

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PER-TOF-TOC-16 GENERAL (WEIGHT ENTRY)

PER-TOF-TOC-16-10 TAKEOFF PERFORMANCE

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CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS ..... B
DESCRIPTION OF THE CORRECTIONS ON TAKEOFF CHART C
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PER-TOF-TOC-16-30 ADDITIONAL INFORMATION

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TAKEOFF ON A WET RUNWAY ..... B
RTOW CHARTS - COMPLEMENTARY INFORMATION C
RTOW EXAMPLE ..... D

PER-TOF-TOC-18 MTOW CALCULATION (WEIGHT ENTRY)

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CONSERVATIVE CORRECTIONS FOR QNH AND BLEEDS ..... D
CORRECTIONS FOR WET OR CONTAMINATED RUNWAYS ..... E
CORRECTIONS PRODUCED ON THE RTOW CHART ..... F
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PER-TOF-TOC-18-20 EXTRAPOLATION

EXTRAPOLATION ..... A

PER-TOF-TOC-18-30 MAXIMUM STRUCTURAL TAKEOFF WEIGHT

MAXIMUM STRUCTURAL TAKEOFF WEIGHT ..... A

PER-TOF-TOC-18-40 SUMMARY

SUMMARY ..... A

PER-TOF-TOC-20 FLEXIBLE TAKEOFF (WEIGHT ENTRY)

PER-TOF-TOC-20-10 DETERMINATION OF FLEXIBLE TAKEOFF TEMPERATURE AND SPEEDS

GENERAL ..... A
CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS ..... B
CONSERVATIVE CORRECTIONS FOR QNH AND BLEEDS C
CORRECTIONS FOR WET RUNWAY ..... D
CORRECTIONS PRODUCED ON THE RTOW CHART ..... E
COMBINING CORRECTIONS FROM FCOM AND CHART ..... F

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PER-TOF-TOC-20-20 FLEXIBLE TAKEOFF NOT POSSIBLE
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SUMMARY....A

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EFFECT OF QNH AND BLEEDS (up to 9200 ft)....B
EXAMPLE....C
EFFECT OF QNH AND BLEEDS FOR HIGH ALTITUDE OPERATIONS....D
EFFECT OF QNH AND BLEEDS FOR HIGH ALTITUDE OPERATIONS (above 9200 ft)....E
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PER-TOF-CTA-10 GENERAL
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PER-TOF-CTA-20 DEFINITIONS
DEFINITIONS....A
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TAKEOFF PERFORMANCE....A

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PER-TOF-CTA-40-40 EXAMPLE

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TAKEOFF PERFORMANCE ON WET RUNWAY....B

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Localization Title	Toc Index	ID	Reason
PER-TOF-TOD-25-20 MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)	A	3	A320-271N envelope starts from -2000 ft pressure altitude for takeoff and landing. As a result, the "MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)" table is updated to extend values from -1000 ft to -2000 ft pressure altitude.
			Documentation update: Deletion of information.
PER-TOF-THR-FLX-30 REQUIREMENTS	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-THR-FLX-30 REQUIREMENTS	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-TOF-THR-FLX-30 REQUIREMENTS	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-TOF-TOC-10-20 Corrections due to Different Takeoff Conditions	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-TOF-TOC-10-20 Corrections due to Different Takeoff Conditions	B	2	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-TOC-10-20 MINIMUM SPEEDS	D	3	Effectivity update: The information now also applies to MSN 09063. The information no longer applies to MSN 05449.
PER-TOF-TOC-10-30 DESCRIPTION OF TAKEOFF CHART	C	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PER-TOF-TOC-12-30 EXTRAPOLATION	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-TOC-12-30 EXTRAPOLATION	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-TOF-TOC-14-10 CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-TOF-TOC-14-10 CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS	B	2	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-TOC-16-20 CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS	B	1	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-TOC-16-20	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS			
PER-TOF-TOC-16-30 RTOW CHARTS - COMPLEMENTARY INFORMATION	C	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063. The information no longer applies to MSN 05449.
PER-TOF-TOC-18-20 EXTRAPOLATION	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-TOC-18-20 EXTRAPOLATION	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-TOF-TOC-20-10 CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS	B	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-TOF-TOC-20-10 CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS	B	2	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS (up to 9200 ft)	B	3	Effectivity update: The information no longer applies to MSN 05449.
PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS FOR HIGH ALTITUDE OPERATIONS	D	4	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS FOR HIGH ALTITUDE OPERATIONS	D	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-TOF-TOD-25-10 SPEEDS LIMITED BY VMCG/VMCA	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-TOD-25-10 SPEEDS LIMITED BY VMCG/VMCA	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-TOF-TOD-25-10 SPEEDS LIMITED BY VMC	B	3	Effectivity update: The information no longer applies to MSN 05449.

Continued on the following page

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Localization Title	Toc Index	ID	Reason
PER-TOF-TOD-25-20 MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-TOD-25-20 MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-TOF-TOD-25-20 MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)	A	4	Effectivity update: The information no longer applies to MSN 05449.
PER-TOF-CTA-40-10 TAKEOFF PERFORMANCE	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-CTA-40-10 TAKEOFF PERFORMANCE	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-TOF-CTA-40-20 NO THRUST REVERSERS OPERATIVE (NO CLEARWAY)	B	1	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-CTA-40-20 NO THRUST REVERSERS OPERATIVE (NO CLEARWAY)	B	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-TOF-CTA-40-20 NO THRUST REVERSERS OPERATIVE (NO CLEARWAY)	B	3	Effectivity update: The information no longer applies to MSN 05449.
PER-TOF-CTA-40-20 ALL THRUST REVERSERS OPERATIVE (NO CLEARWAY)	C	4	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-CTA-40-20 ALL THRUST REVERSERS OPERATIVE (NO CLEARWAY)	C	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-TOF-CTA-40-20 ALL THRUST REVERSERS OPERATIVE (NO CLEARWAY)	C	6	Effectivity update: The information no longer applies to MSN 05449.
PER-TOF-CTA-40-20 NO THRUST REVERSERS OPERATIVE (WITH CLEARWAY)	D	7	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-CTA-40-20 NO THRUST REVERSERS OPERATIVE (WITH CLEARWAY)	D	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-TOF-CTA-40-20 NO THRUST REVERSERS OPERATIVE (WITH CLEARWAY)	D	9	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PER-TOF-CTA-40-20 ALL THRUST REVERSERS OPERATIVE (WITH CLEARWAY)	E	10	Effectivity update: The information now also applies to MSN 09063.
PER-TOF-CTA-40-20 ALL THRUST REVERSERS OPERATIVE (WITH CLEARWAY)	E	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-TOF-CTA-40-20 ALL THRUST REVERSERS OPERATIVE (WITH CLEARWAY)	E	12	Effectivity update: The information no longer applies to MSN 05449.

DEFINITION OF FLEXIBLE TAKEOFF

DEFINITION OF FLEXIBLE TAKEOFF

Ident.: PER-TOF-THR-FLX-10-00001718.0001001 / 28 JAN 11
Applicable to: ALL

In many cases the aircraft takes off with a weight lower than the maximum permissible takeoff weight. When this happens, it can meet the required performance (runway, second segment, obstacle,...) with a decreased thrust that is adapted to the weight : this is called FLEXIBLE TAKEOFF and the thrust is called FLEXIBLE TAKEOFF THRUST.
The use of flexible takeoff thrust saves engine life.

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USE OF FLEXIBLE TAKEOFF

USE OF FLEXIBLE TAKEOFF

Ident.: PER-TOF-THR-FLX-20-00001719.0001001 / 09 DEC 09
Applicable to: ALL

The pilot can use flexible takeoff when the actual takeoff weight is lower than the maximum permissible takeoff weight for the actual temperature. The maximum permissible takeoff weight decreases when temperature increases, so it is possible to assume a temperature at which the actual takeoff weight would be the limiting one. This temperature is called FLEXIBLE TEMPERATURE or assumed temperature and is entered in the FADEC via the MCDU PERF TO page in order to get the adapted thrust.

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REQUIREMENTS

REQUIREMENTS

Ident.: PER-TOF-THR-FLX-30-00001792.0047001 / 07 FEB 17

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

- Thrust must not be reduced by more than 25 % of the full rated takeoff thrust.
- The flexible takeoff N1 cannot be lower than the Max climb N1 at the same flight conditions.
  The FADEC takes the above two constraints into account to determine flexible N1.
  The above two constraints also limit the maximum flexible temperature at ISA + 49 (64 °C at sea level).
- The flexible temperature cannot be lower than the flat rating temperature, TREF (ISA +15 at sea level), or the actual temperature (OAT).
- Flexible takeoff is not permitted on contaminated runways.
- The operator should check the maximum thrust (TOGA) at regular intervals in order to detect any engine deterioration, or maintain an adequate engine performance monitoring program to follow up the engine parameters.

REQUIREMENTS

Ident.: PER-TOF-THR-FLX-30-00001792.0046001 / 12 MAY 16

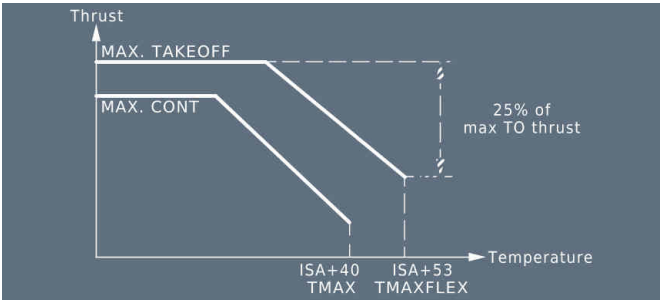
2 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

- Thrust must not be reduced by more than 25 % of the full rated takeoff thrust.
- The flexible takeoff N1 cannot be lower than the Max climb N1 at the same flight conditions.
  The FADEC takes the above two constraints into account to determine flexible N1.
  The above two constraints also limit the maximum flexible temperature at ISA + 50 (65 °C at sea level).
- The flexible temperature cannot be lower than the flat rating temperature, TREF (ISA +32 at sea level), or the actual temperature (OAT).
- Flexible takeoff is not permitted on contaminated runways.
- The operator should check the maximum thrust (TOGA) at regular intervals in order to detect any engine deterioration, or maintain an adequate engine performance monitoring program to follow up the engine parameters.

REQUIREMENTS

Ident.: PER-TOF-THR-FLX-30-00001792.0017001 / 15 MAR 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

- Thrust must not be reduced by more than 25 % of the full rated takeoff thrust.
- The flexible takeoff N1 cannot be lower than the Max climb N1 at the same flight conditions.
  The FADEC takes the above two constraints into account to determine flexible N1.
  The above two constraints also limit the maximum flexible temperature at ISA+ 53 (68 °C at sea level).
- The flexible takeoff thrust cannot be lower than the Max Continuous thrust used for the final takeoff flight path computation (at ISA +40).
- The flexible temperature cannot be lower than the flat rating temperature, TREF (ISA +29 up to 2 000 ft) (See Note), or the actual temperature (OAT).



Note: *TREF being a function of pressure altitude, read it on the takeoff chart.*

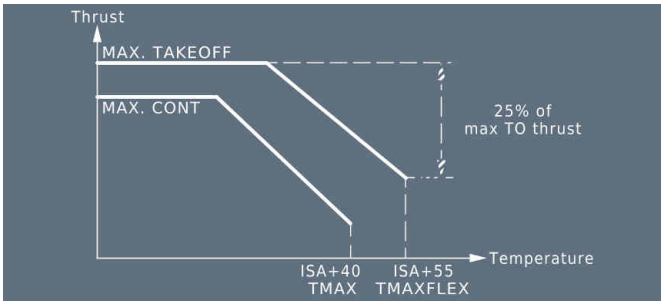
- Flexible takeoff is not permitted on contaminated runways.
- The operator should check the maximum thrust (TOGA) at regular intervals in order to detect any engine deterioration, or maintain an adequate engine performance monitoring program to follow up the engine parameters.

REQUIREMENTS

Ident.: PER-TOF-THR-FLX-30-00001792.0013001 / 04 JUL 17

Applicable to: MSN 02108, 02135, 02139-02359, 02405-02482, 02609-02670, 02737-02914, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-06336

- Thrust must not be reduced by more than 25 % of the full rated takeoff thrust.
- The flexible takeoff EPR cannot be lower than the Max climb EPR at the same flight conditions.
  The FADEC takes the above two constraints into account to determine flexible EPR.
  The above two constraints also limit the maximum flexible temperature at ISA + 55 (70 °C at sea level).
- The flexible takeoff thrust cannot be lower than the Max Continuous thrust used for the final takeoff flight path computation (at ISA +40).
- The flexible temperature cannot be lower than the flat rating temperature, TREF (ISA+31 at sea level or See Note), or the actual temperature (OAT).



Note: TREF being a function of pressure altitude, read it on the takeoff chart.

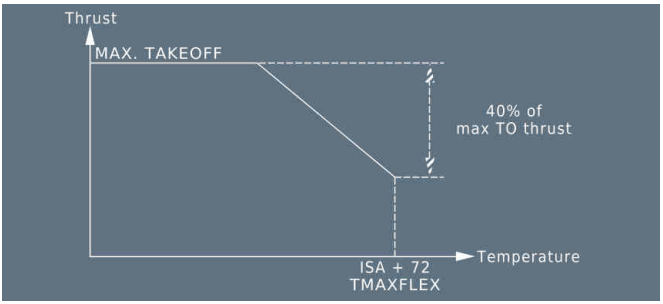
- Flexible takeoff is not permitted on contaminated runways.
- The operator should check the maximum thrust (TOGA) at regular intervals in order to detect any engine deterioration, or maintain an adequate engine performance monitoring program to follow up the engine parameters.

REQUIREMENTS

Ident.: PER-TOF-THR-FLX-30-00001792.0026001 / 04 JUL 17

[3] **Applicable to: MSN 01957-02097, 02121, 02138, 03071, 04491, 04532, 04645, 05120, 05218**

- Thrust must not be reduced by more than 40 % of the full rated takeoff thrust.
- The flexible takeoff EPR cannot be lower than the Max climb EPR at the same flight conditions. The FADEC takes the above two constraints into account to determine flexible EPR. The above two constraints also limit the maximum flexible temperature at ISA + 72 (87 °C at sea level).
- The flexible temperature cannot be lower than the flat rating temperature, TREF (ISA+31 at sea level or See Note), or the actual temperature (OAT).



Note: *TREF being a function of pressure altitude, read it on the takeoff chart.*

- Flexible takeoff is not permitted on contaminated runways.
- The operator should check the maximum thrust (TOGA) at regular intervals in order to detect any engine deterioration, or maintain an adequate engine performance monitoring program to follow up the engine parameters.

RECOMMENDATION

GENERAL

Ident.: PER-TOF-THR-FLX-40-00001720.0002001 / 15 DEC 15
Applicable to: ALL

- In order to extend engine life and save maintenance costs, it is recommended to use flexible thrust reduction.
- However, to improve the takeoff performance, the thrust can be increased by selecting a lower flexible temperature.

Using the same takeoff chart, for a given weight it is possible to :

- Select a temperature lower than the maximum determined one and keep the speeds defined at maximum temperature or,
- Move towards the left side (tailwind) of the takeoff chart while remaining within the same configuration and looking for the same actual takeoff weight at lower temperature.
  This produces a lower flexible temperature and, in general, lower takeoff speeds (V1/VR/V2).

Using one of the two above possibilities, check that the selected temperature is greater than the actual temperature (OAT) and greater than the flat rating temperature (TREF).

TAKEOFF PROCEDURE

Ident.: PER-TOF-THR-FLX-40-00001721.0001001 / 28 JAN 11
Applicable to: ALL

Depending on environmental takeoff conditions, the following procedure is recommended.

CONDITIONS	PROCEDURE	REASON
Dry or wet well paved runway	- Use the flap setting giving the highest flexible temperature. - When flexible temperature difference between two flap settings is low, use the highest flap setting.	Extend engine life and save maintenance costs.
High altitude takeoff	Use CONF2/CONF3	Improve comfort
Badly paved runway or Accelerate stop distance limited runway	Use CONF2/CONF3 or Move towards left side of the takeoff chart	Improve comfort Improve stopping distance
Windshear expected along takeoff path	Use maximum thrust	Maintain acceleration capability
Contaminated runway	Use maximum thrust (flex forbidden)	Improve stopping distance Decrease time on runway. Required by regulations.

TAKEOFF CHARTS

Ident.: PER-TOF-TOC-05-00001704.0001001 / 21 MAR 11
Applicable to: ALL

Takeoff charts are required to provide performance at takeoff. It is possible to present the charts in two different ways, one of which is selected by the airline. The different presentations are :

- temperature entry (temperature provided in the left column)
- weight entry (weight provided in the left column).

Both presentations are described here after. Sections PER-TOF-TOC-10, 12 and 14 are relative to temperature entry while PER-TOF-TOC-16, 18 and 20 are relative to weight entry.

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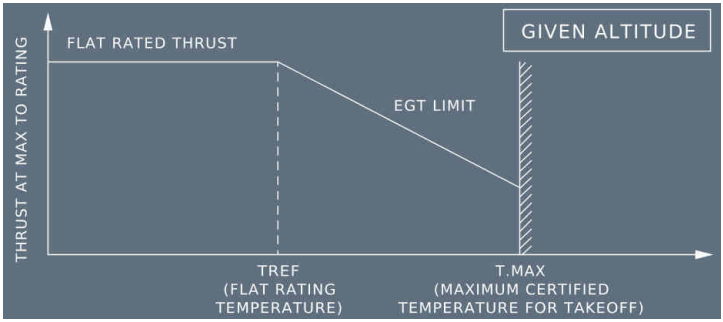
TAKEOFF PERFORMANCE

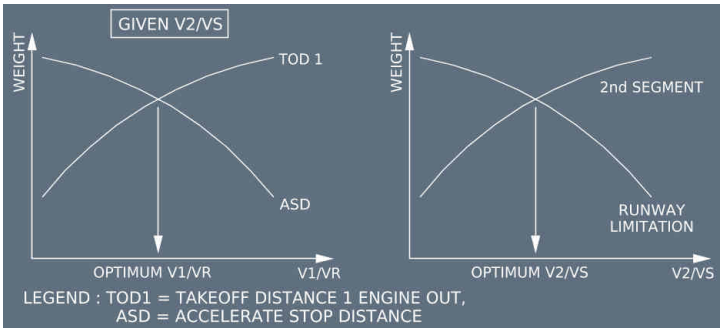
TAKEOFF PERFORMANCE

Ident.: PER-TOF-TOC-10-10-00001705.0001001 / 23 FEB 11
Applicable to: ALL

Takeoff optimization is calculated for a given runway and its obstacles and for given conditions of flap setting, temperature, wind and QNH. The calculation produces a maximum permissible takeoff weight (or a maximum takeoff temperature for an actual weight).
The takeoff thrust produced by the engine varies as follows :



The optimization process calculates the speeds which will produce the maximum takeoff weight. To do so, it takes into account the different takeoff limitations such as TOD, ASD, TOR, second segment..., as shown on the figure charts below.



On a typical runway, the performance of a twin engine aircraft, is generally limited by the one engine out operation at takeoff. The optimum V2/VS and optimum V1/VR are consequently unique.

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TAKEOFF CHART DESCRIPTION

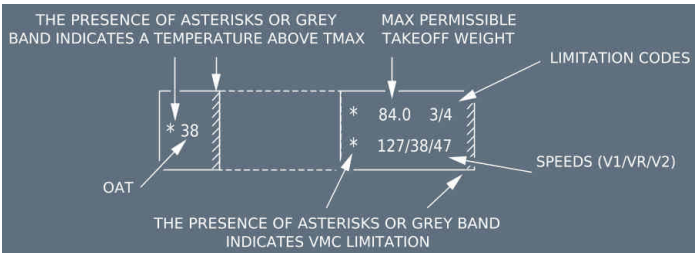
GENERAL

Ident.: PER-TOF-TOC-10-20-00001706.0003001 / 03 MAR 11
Applicable to: ALL

The takeoff chart (RTOW : Regulatory Takeoff Weight) is calculated for a specific aircraft version and for a particular runway specified at the top of the chart. The top of the chart also gives some information about the runway and lists the calculation assumptions.

The chart is given for 2 different configurations and 5 wind values per configuration. This allows the crew to select the configuration that gives either :
- the highest permissible takeoff weight, or, for a given weight,
- the highest flexible temperature.

If different configurations give equivalent performance, the crew should select the configuration associated with the lowest takeoff speeds.
For each temperature value (and for a given configuration and wind), the chart provides the following information :



The available limitation codes are :

- First segment	:	1
- Second segment	:	2
- Runway length	:	3
- Obstacles	:	4
- Tire speed	:	5
- Brake energy	:	6
- Maximum computation weight	:	7
- Final takeoff	:	8
- VMU	:	9

CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS

Ident.: PER-TOF-TOC-10-20-00014608.0001001 / 18 JUL 12

1 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Each takeoff chart is computed for a given set of conditions (air conditioning, QNH, anti ice...) specified at the top of the chart. If the actual takeoff conditions are different, the crew must apply corrections. Two types of correction are available :

- Conservative corrections on *Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS* (to be used when not provided on the chart).
- Corrections (less restrictive) listed on the chart, to be applied as explained below.

Note:
- *If the RTOW chart is based on the CG being at 25 %, the crew can find the takeoff performance at a more forward CG by decreasing the takeoff weight by 1 000 kg (2 200 lb) and increasing V1, VR and V2 by 1 kt.*
- *25 % CG is the basic certified limit, on which all takeoff computations are based. To take into account the operational margins, the above penalties must be applied when operational CG is forward 27 % CG.*

CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS

Ident.: PER-TOF-TOC-10-20-00014608.0002001 / 18 JUL 12

2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

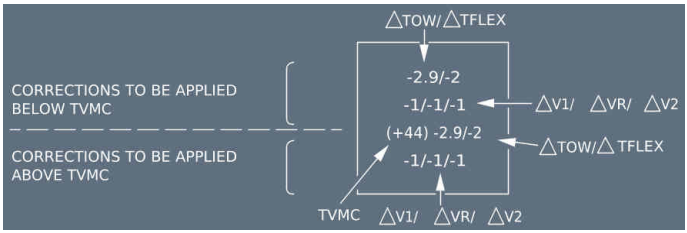
Each takeoff chart is computed for a given set of conditions (air conditioning, QNH, anti ice...) specified at the top of the chart. If the actual takeoff conditions are different, the crew must apply corrections. Two types of correction are available :

- Conservative corrections on *Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS* (to be used when not provided on the chart).
- Corrections (less restrictive) listed on the chart, to be applied as explained below.

DESCRIPTION OF THE CORRECTIONS ON TAKEOFF CHART

Ident.: PER-TOF-TOC-10-20-00005368.0001001 / 08 JUL 15
Applicable to: ALL

The corrections are presented on 4 lines:



TVMC is a temperature value given per column. This is a fictitious value that indicates the temperature above which the speeds are close to a VMCG/VMCA limitation or are VMCG/VMCA limited.

Note: *The lower two lines may be shaded on certain chart formats.*

MINIMUM SPEEDS

Ident.: PER-TOF-TOC-10-20-00005372.0001001 / 08 JUL 15
[3] **Applicable to: MSN 01767-08864, 08901, 09063**

Minimum V1/VR/V2 due to VMCG/VMCA are provided on the bottom right side of the takeoff chart. They are only applicable in case of speed corrections.
These speeds are conservative. They may be slightly higher than V1/VR/V2 displayed on the takeoff chart.

FLEX TEMPERATURE INDICATOR

Ident.: PER-TOF-TOC-10-20-00005373.0001001 / 18 FEB 11
Applicable to: ALL

On the temperature entry chart, the temperature column may display asterisks or have a gray band to indicate temperature values above TMAX and which are flex temperature.

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ADDITIONAL INFORMATION

ONE ENGINE OUT CLIMB PROCEDURE

Ident.: PER-TOF-TOC-10-30-00001708.0001001 / 23 FEB 11
Applicable to: ALL

The performance given in the chart is consistent with the flight path specified for the aircraft with one engine out and takes into account significant obstacles.
When the procedure to be followed is not the standard instrument departure, the chart describes a specific procedure (EOSID).
When the specified procedure requires a turn, except if otherwise stated on the RTOW chart, the turn should be performed with a maximum bank of 15 ° until the aircraft reaches 1 500 ft or until green dot.
The acceleration height (or altitude) ensures that the net flight path clears the highest obstacle by at least 35 ft when accelerating in level flight to green dot speed after an engine failure, in the most adverse conditions.

TAKEOFF ON A WET RUNWAY

Ident.: PER-TOF-TOC-10-30-00001709.0002001 / 23 FEB 11
Applicable to: ALL

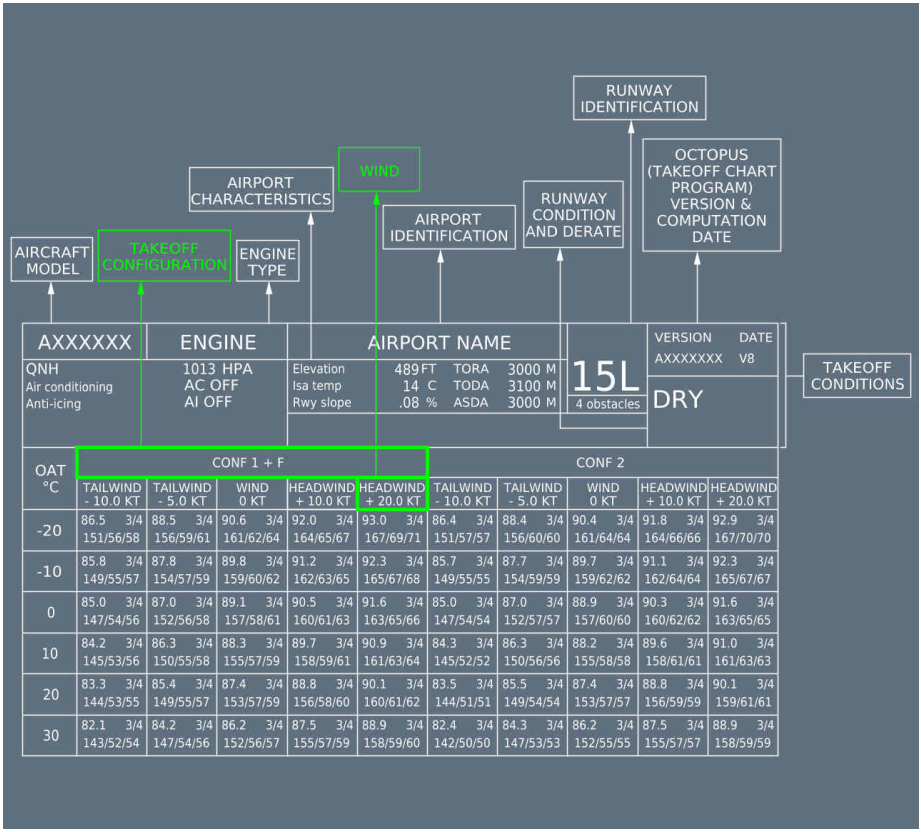
Takeoff charts computed for wet runway with a 15 ft screen height and/or use of reverse thrust may produce, in some conditions, a maximum takeoff weight (or flexible temperature) higher than that obtained for a dry runway. It is thus mandatory to compare both charts (dry and wet) and retain the lower of the two weights (or flexible temperature) and the associated speeds determined for a wet runway.

Note: The crew need not compare the charts if the top of the wet runway chart specifies "DRY CHECK". (The comparison has already been inserted in the WET runway calculation).

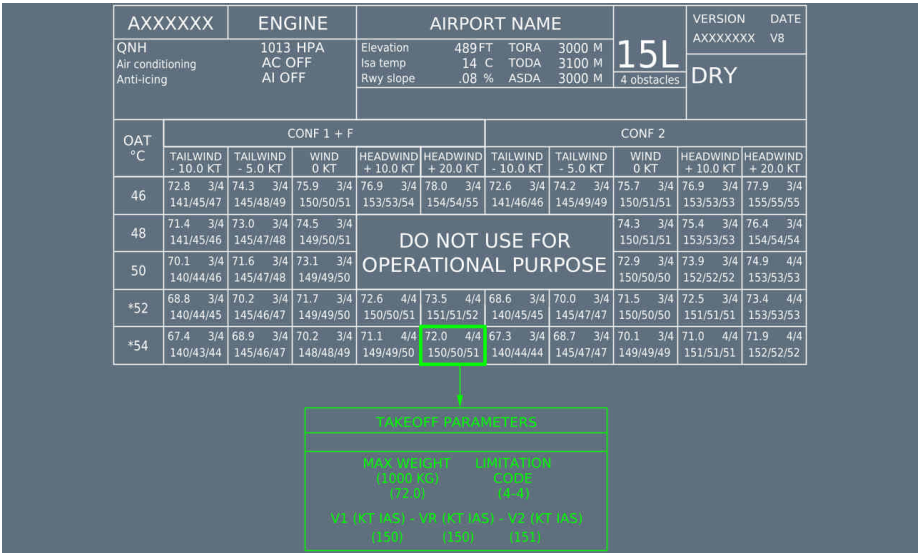
DESCRIPTION OF TAKEOFF CHART

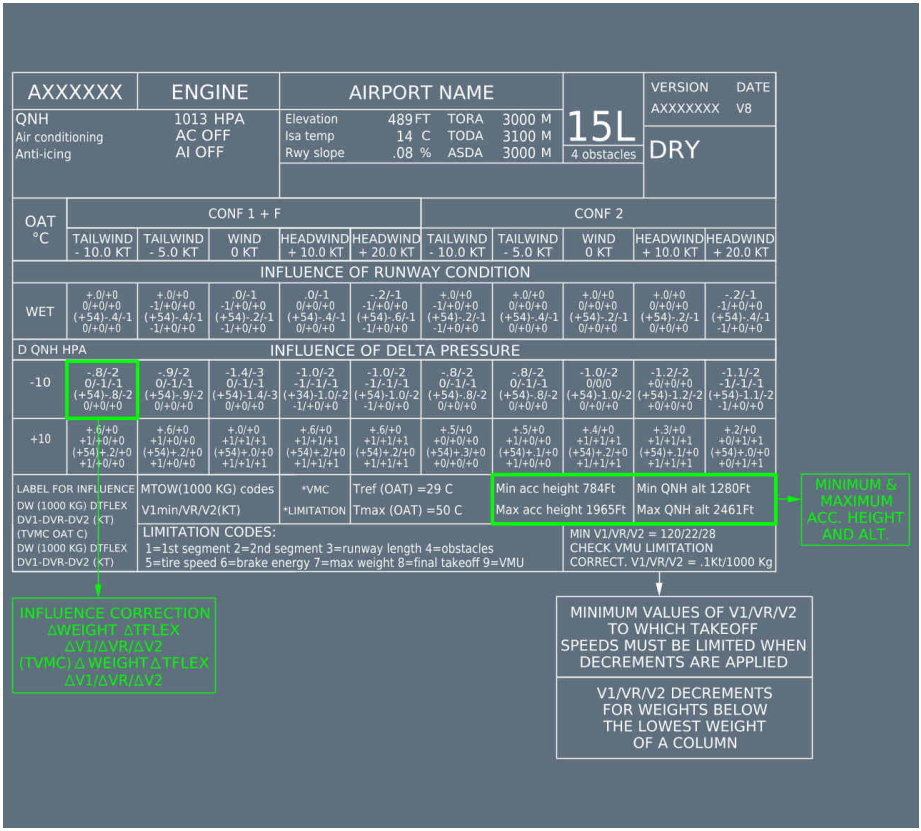
Ident.: PER-TOF-TOC-10-30-00001710.0003001 / 23 FEB 11

1 **Applicable to: MSN 01767-02121, 02138, 02195-02388, 02443-02457, 02584-09063**



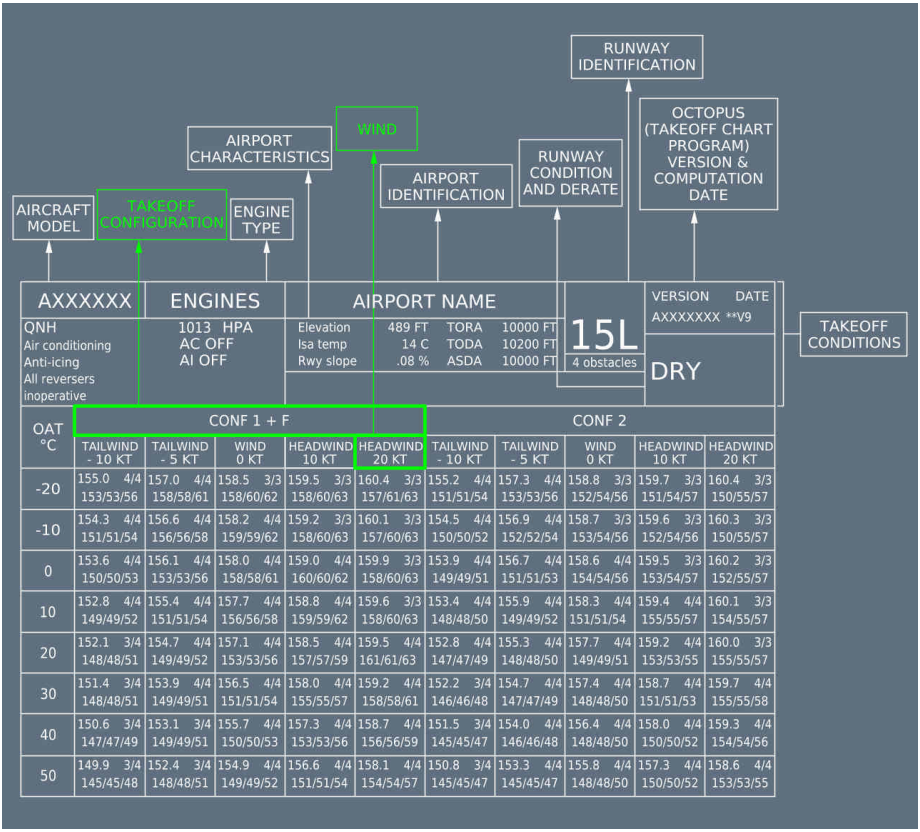
OAT °C	CONF 1 + F					CONF 2				
	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND 0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND 0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
-20	86.5 3/4 151/56/58	88.5 3/4 156/59/61	90.6 3/4 161/62/64	92.0 3/4 164/65/67	93.0 3/4 167/69/71	86.4 3/4 151/57/57	88.4 3/4 156/60/60	90.4 3/4 161/64/64	91.8 3/4 164/66/66	92.9 3/4 167/70/70
-10	85.8 3/4 149/55/57	87.8 3/4 154/57/59	89.8 3/4 159/60/62	91.2 3/4 162/63/65	92.3 3/4 165/67/68	85.7 3/4 149/55/55	87.7 3/4 154/59/59	89.7 3/4 159/62/62	91.1 3/4 162/64/64	92.3 3/4 165/67/67
0	85.0 3/4 147/54/56	87.0 3/4 152/56/58	89.1 3/4 157/58/61	90.5 3/4 160/61/63	91.6 3/4 163/65/66	85.0 3/4 147/54/54	87.0 3/4 152/57/57	88.9 3/4 157/60/60	90.3 3/4 160/62/62	91.6 3/4 163/65/65
10	84.2 3/4 145/53/56	86.3 3/4 150/55/58	88.3 3/4 155/57/59	89.7 3/4 158/59/61	90.9 3/4 161/63/64	84.3 3/4 145/52/52	86.3 3/4 150/56/56	88.2 3/4 155/58/58	89.6 3/4 158/61/61	91.0 3/4 161/63/63
20	83.3 3/4 144/53/55	85.4 3/4 149/55/57	87.4 3/4 153/57/59	88.8 3/4 156/58/60	90.1 3/4 160/61/62	83.5 3/4 144/51/51	85.5 3/4 149/54/54	87.4 3/4 153/57/57	88.8 3/4 156/59/59	90.1 3/4 159/61/61
30	82.1 3/4 143/52/54	84.2 3/4 147/54/56	86.2 3/4 152/56/57	87.5 3/4 155/57/59	88.9 3/4 158/59/60	82.4 3/4 142/50/50	84.3 3/4 147/53/53	86.2 3/4 152/55/55	87.5 3/4 155/57/57	88.9 3/4 158/59/59


AXXXXXX
ENGINE
AIRPORT NAME
15L
4 obstacles
VERSION DATE
AXXXXXXX V8
DRY
QNH 1013 HPA
Air conditioning AC OFF
Anti-icing AI OFF
Elevation 489 FT
Isa temp 14 C
Rwy slope .08 %
TORA 3000 M
TODA 3100 M
ASDA 3000 M
OAT °C
CONF 1 + F
CONF 2
TAILWIND - 10.0 KT
TAILWIND - 5.0 KT
WIND 0 KT
HEADWIND + 10.0 KT
HEADWIND + 20.0 KT
46
48
50
*52
*54
DO NOT USE FOR OPERATIONAL PURPOSE
TAKEOFF PARAMETERS
MAX WEIGHT (1000 KG)
LIMITATION CODE
V1 (KT IAS) - VR (KT IAS) - V2 (KT IAS)


AXXXXXX
ENGINE
AIRPORT NAME
15L
4 obstacles
VERSION DATE
AXXXXXXX V8
DRY
QNH 1013 HPA
Air conditioning AC OFF
Anti-icing AI OFF
Elevation 489 FT
Isa temp 14 C
Rwy slope .08 %
TORA 3000 M
TODA 3100 M
ASDA 3000 M
OAT °C
CONF 1 + F
CONF 2
TAILWIND - 10.0 KT
TAILWIND - 5.0 KT
WIND 0 KT
HEADWIND + 10.0 KT
HEADWIND + 20.0 KT
INFLUENCE OF RUNWAY CONDITION
WET
D QNH HPA
INFLUENCE OF DELTA PRESSURE
-10
+10
LABEL FOR INFLUENCE
DW (1000 KG) DTFLEX
DV1-DVR-DV2 (KT)
(TVMC OAT C)
MTOW(1000 KG) codes
V1min/VR/V2(KT)
*VMC
*LIMITATION
Tref (OAT) =29 C
Tmax (OAT) =50 C
Min acc height 784Ft
Max acc height 1965Ft
Min QNH alt 1280Ft
Max QNH alt 2461Ft
LIMITATION CODES:
1=1st segment 2=2nd segment 3=runway length 4=obstacles
5=tire speed 6=brake energy 7=max weight 8=final takeoff 9=VMU
MIN V1/VR/V2 = 120/22/28
CHECK VMU LIMITATION
CORRECT. V1/VR/V2 = .1Kt/1000 Kg
MINIMUM & MAXIMUM ACC. HEIGHT AND ALT
INFLUENCE CORRECTION
ΔWEIGHT ΔTFLEX
ΔV1/ΔVR/ΔV2
(TVMC) ΔWEIGHT ΔTFLEX
ΔV1/ΔVR/ΔV2
MINIMUM VALUES OF V1/VR/V2 TO WHICH TAKEOFF SPEEDS MUST BE LIMITED WHEN DECREMENTS ARE APPLIED
V1/VR/V2 DECREMENTS FOR WEIGHTS BELOW THE LOWEST WEIGHT OF A COLUMN

DESCRIPTION OF TAKEOFF CHART

Ident.: PER-TOF-TOC-10-30-00001710.0004001 / 18 MAR 11
Applicable to: MSN 02405, 02482



OAT °C	CONF 1 + F TAILWIND - 10 KT	CONF 1 + F TAILWIND - 5 KT	CONF 1 + F WIND 0 KT	CONF 1 + F HEADWIND 10 KT	CONF 1 + F HEADWIND 20 KT	CONF 2 TAILWIND - 10 KT	CONF 2 TAILWIND - 5 KT	CONF 2 WIND 0 KT	CONF 2 HEADWIND 10 KT	CONF 2 HEADWIND 20 KT
-20	155.0 4/4 153/53/56	157.0 4/4 158/58/61	158.5 3/3 158/60/62	159.5 3/3 158/60/63	160.4 3/3 157/61/63	155.2 4/4 151/51/54	157.3 4/4 153/53/56	158.8 3/3 152/54/56	159.7 3/3 151/54/57	160.4 3/3 150/55/57
-10	154.3 4/4 151/51/54	156.6 4/4 156/56/58	158.2 4/4 159/59/62	159.2 3/3 158/60/63	160.1 3/3 157/60/63	154.5 4/4 150/50/52	156.9 4/4 152/52/54	158.7 3/3 153/54/56	159.6 3/3 152/54/56	160.3 3/3 150/55/57
0	153.6 4/4 150/50/53	156.1 4/4 153/53/56	158.0 4/4 158/58/61	159.0 4/4 160/60/62	159.9 3/3 158/60/63	153.9 4/4 149/49/51	156.7 4/4 151/51/53	158.6 4/4 154/54/56	159.5 3/3 153/54/57	160.2 3/3 152/55/57
10	152.8 4/4 149/49/52	155.4 4/4 151/51/54	157.7 4/4 156/56/58	158.8 4/4 159/59/62	159.6 3/3 158/60/63	153.4 4/4 148/48/50	155.9 4/4 149/49/52	158.3 4/4 151/51/54	159.4 4/4 155/55/57	160.1 3/3 154/55/57
20	152.1 3/4 148/48/51	154.7 4/4 149/49/52	157.1 4/4 153/53/56	158.5 4/4 157/57/59	159.5 4/4 161/61/63	152.8 4/4 147/47/49	155.3 4/4 148/48/50	157.7 4/4 149/49/51	159.2 4/4 153/53/55	160.0 3/3 155/55/57
30	151.4 3/4 148/48/51	153.9 4/4 149/49/51	156.5 4/4 151/51/54	158.0 4/4 155/55/57	159.2 4/4 158/58/61	152.2 3/4 146/46/48	154.7 4/4 147/47/49	157.4 4/4 148/48/50	158.7 4/4 151/51/53	159.7 4/4 155/55/58
40	150.6 3/4 147/47/49	153.1 3/4 149/49/51	155.7 4/4 150/50/53	157.3 4/4 153/53/56	158.7 4/4 156/56/59	151.5 3/4 145/45/47	154.0 4/4 146/46/48	156.4 4/4 148/48/50	158.0 4/4 150/50/52	159.3 4/4 154/54/56
50	149.9 3/4 145/45/48	152.4 3/4 148/48/51	154.9 4/4 149/49/52	156.6 4/4 151/51/54	158.1 4/4 154/54/57	150.8 3/4 145/45/47	153.3 4/4 145/45/47	155.8 4/4 148/48/50	157.3 4/4 150/50/52	158.6 4/4 153/53/55

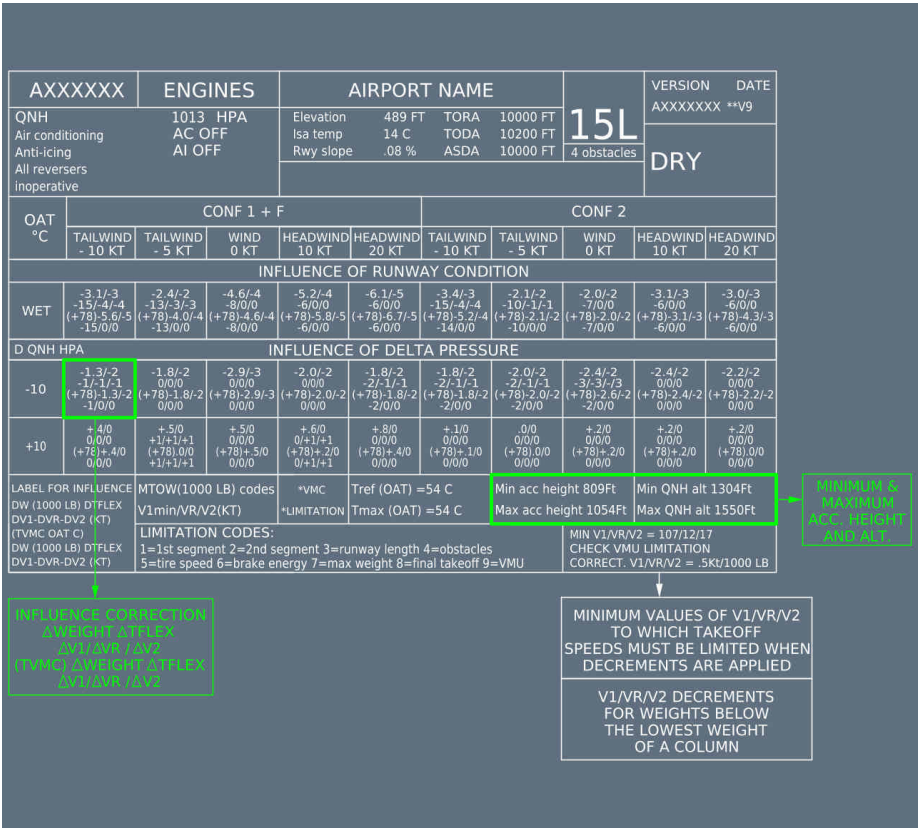
AXXXXXX	ENGINES	AIRPORT NAME					VERSION DATE
QNH	1013 HPA	Elevation	489 FT	TORA	10000 FT	15L	AXXXXXXX **V9
Air conditioning	AC OFF	Isa temp	14 C	TODA	10200 FT	4 obstacles	DRY
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	10000 FT		
All reversers inoperative							

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND - 10 KT	TAILWIND - 5 KT	WIND 0 KT	HEADWIND 10 KT	HEADWIND 20 KT	TAILWIND - 10 KT	TAILWIND - 5 KT	WIND 0 KT	HEADWIND 10 KT	HEADWIND 20 KT
54	149.6 3/4 145/45/47	152.1 3/4 148/48/51	154.6 4/4 149/49/52	156.3 4/4 151/51/53	157.8 4/4 154/54/57	150.5 3/4 144/44/46	153.0 4/4 145/45/47	155.5 4/4 147/47/49	157.1 4/4 149/49/51	158.3 4/4 153/53/55
* 56	147.5 3/4 144/44/47	150.0 3/4 146/46/49	152.4 4/4 147/47/49	154.2 4/4 150/50/52	155.6 4/4 153/53/56	148.4 3/4 143/43/45	150.9 4/4 144/44/45	153.2 4/4 146/46/48	154.8 4/4 148/48/50	156.0 4/4 152/52/54
* 58	145.3 3/4 144/44/46	147.8 4/4 144/44/46	150.1 4/4 146/46/48	151.9 4/4 149/49/52	153.4 4/4 152/52/55	146.2 3/4 142/42/44	148.6 4/4 143/43/45	150.8 4/4 145/45/47	152.4 4/4 147/47/49	153.5 4/4 151/51/53
* 60	143.1 3/4 143/43/46	145.5 4/4 144/44/46	147.7 4/4 145/45/47	149.4 4/4 148/48/51	150.9 4/4 151/51/53	143.8 3/4 141/41/43	146.2 4/4 143/43/44	148.3 4/4 144/44/46	149.9 4/4 145/45/47	150.8 4/4 150/50/52
* 62	140.7 3/4 142/42/45	143.1 4/4 142/42/45	145.2 4/4 144/44/46	146.8 4/4 147/47/49	148.3 4/4 149/49/52	141.5 4/4 140/40/42	143.7 4/4 142/42/44	145.7 4/4 143/43/45	147.3 4/4 144/44/46	148.0 4/4 149/49/50
* 64	138.1 4/4 140/40/42	140.5 4/4 141/41/43	142.7 4/4 143/43/45	144.2 4/4 145/45/48	145.5 4/4 147/47/49	138.8 4/4 139/39/41	141.1 4/4 140/40/42	143.1 4/4 142/42/43	144.6 4/4 143/43/45	145.1 4/4 146/46/48
* 66	135.7 3/4 140/40/42	138.0 4/4 140/40/42	140.0 4/4 142/42/44	141.5 4/4 144/44/46	142.9 4/4 148/48/50	136.2 4/4 138/38/40	138.5 4/4 139/39/41	140.5 4/4 140/40/42	142.0 4/4 142/42/44	142.3 3/3 142/43/45
* 68	133.1 4/4 138/38/41	135.3 4/4 140/40/43	137.4 4/4 141/41/43	138.8 4/4 142/42/44	140.1 4/4 145/45/47	133.7 4/4 137/37/39	135.9 4/4 139/39/40	137.9 4/4 139/39/40	139.1 4/4 140/40/42	139.3 3/3 139/41/42
* 70	130.6 4/4 138/38/40	132.8 4/4 139/39/41	134.6 4/4 140/40/42	136.1 4/4 140/40/42	137.2 3/3 142/42/44	130.9 4/4 137/37/38	133.1 4/4 138/38/39	135.5 4/4 139/39/40	136.1 3/3 137/38/39	136.3 3/3 136/38/40
* 72	127.8 4/4 137/37/39	129.9 4/4 137/37/39	131.8 4/4 139/39/41	DO NOT USE FOR OPERATIONAL PURPOSE				132.3 4/4 137/37/38	133.0 4/4 136/36/37	133.2 3/3 132/36/37
* 74	124.9 4/4 135/35/38	127.0 4/4 136/36/38	128.9 4/4 137/37/39					129.3 4/4 136/36/37	129.8 4/4 134/34/36	130.1 3/3 131/33/34
* 76	122.0 4/4 135/34/37	124.1 4/4 135/35/37	126.0 4/4 135/35/38	127.5 4/4 135/35/38	128.1 3/3 133/34/36	122.4 4/4 133/33/34	124.4 4/4 134/34/35	126.0 4/4 134/34/35	126.6 4/4 133/33/34	127.0 4/4 131/31/32
* 78	119.1 4/4 133/33/35	121.1 4/4 134/34/36	123.1 4/4 134/34/36	124.4 4/4 134/34/36	125.0 4/4 133/33/35	119.5 4/4 132/32/33	121.3 4/4 133/33/34	122.8 4/4 132/32/33	123.3 4/4 131/31/32	123.7 4/4 129/29/31

TAKEOFF PARAMETERS

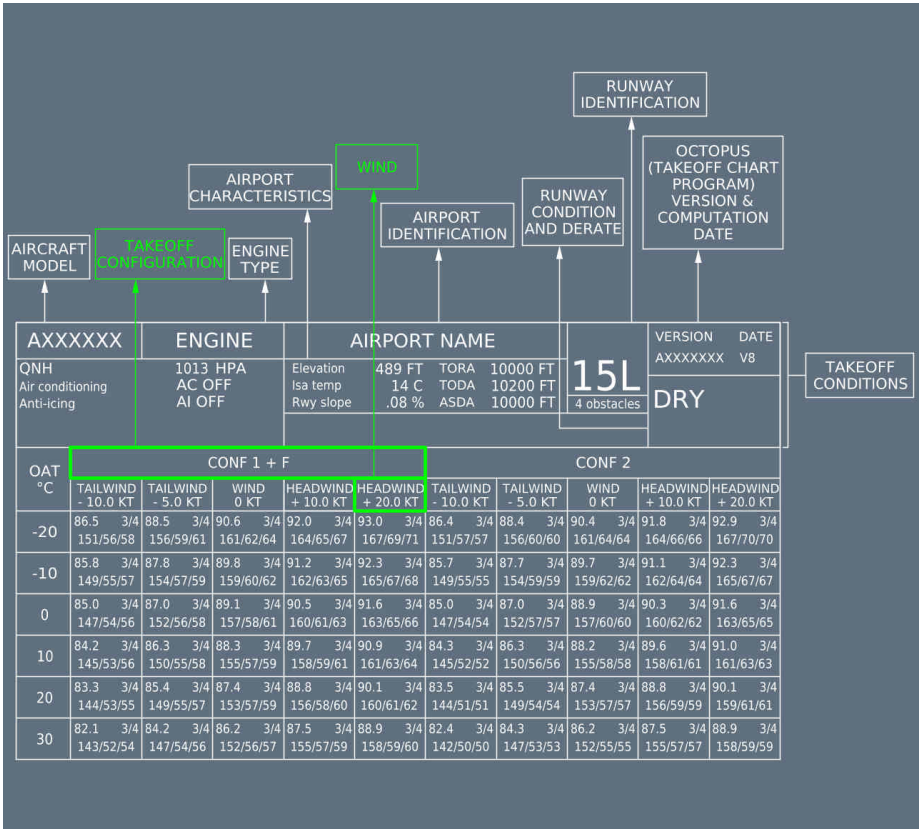
LIMITATION (1000 LB) (125.0)	MAX WEIGHT CODE (4-4)

V1 (KT IAS) - VR (KT IAS) - V2 (KT IAS)
(133) (133) (136)


AXXXXXX
ENGINES
AIRPORT NAME
15L
4 obstacles
VERSION DATE
AXXXXXXX **V9
QNH 1013 HPA
Air conditioning AC OFF
Anti-icing AI OFF
All reversers inoperative
Elevation 489 FT
Isa temp 14 C
Rwy slope .08 %
TORA 10000 FT
TODA 10200 FT
ASDA 10000 FT
DRY
OAT °C
CONF 1 + F
CONF 2
TAILWIND - 10 KT
TAILWIND - 5 KT
WIND 0 KT
HEADWIND 10 KT
HEADWIND 20 KT
INFLUENCE OF RUNWAY CONDITION
WET
-3.1/-3 -15/-4/-4 (+78)-5.6/-5 -15/0/0
-2.4/-2 -13/-3/-3 (+78)-4.0/-4 -13/0/0
-4.6/-4 -8/0/0 (+78)-4.6/-4 -8/0/0
-5.2/-4 -6/0/0 (+78)-5.8/-5 -6/0/0
-6.1/-5 -6/0/0 (+78)-6.7/-5 -6/0/0
-3.4/-3 -15/-4/-4 (+78)-5.2/-4 -14/0/0
-2.1/-2 -10/-1/-1 (+78)-2.1/-2 -10/0/0
-2.0/-2 -7/0/0 (+78)-2.0/-2 -7/0/0
-3.1/-3 -6/0/0 (+78)-3.1/-3 -6/0/0
-3.0/-3 -6/0/0 (+78)-4.3/-3 -6/0/0
D QNH HPA
INFLUENCE OF DELTA PRESSURE
-10
-1.3/-2 -1/-1/-1 (+78)-1.3/-2 -1/0/0
-1.8/-2 0/0/0 (+78)-1.8/-2 0/0/0
-2.9/-3 0/0/0 (+78)-2.9/-3 0/0/0
-2.0/-2 0/0/0 (+78)-2.0/-2 0/0/0
-1.8/-2 -2/-1/-1 (+78)-1.8/-2 -2/0/0
-1.8/-2 -2/-1/-1 (+78)-1.8/-2 -2/0/0
-2.0/-2 -2/-1/-1 (+78)-2.0/-2 -2/0/0
-2.4/-2 -3/-3/-3 (+78)-2.6/-2 -2/0/0
-2.4/-2 0/0/0 (+78)-2.4/-2 0/0/0
-2.2/-2 0/0/0 (+78)-2.2/-2 0/0/0
+10
+4/0 0/0/0 (+78)+.4/0 0/0/0
+.5/0 +1/+1/+1 (+78).0/0 +1/+1/+1
+.5/0 0/0/0 (+78)+.5/0 0/0/0
+.6/0 0/+1/+1 (+78)+.2/0 0/+1/+1
+.8/0 0/0/0 (+78)+.4/0 0/0/0
+.1/0 0/0/0 (+78)+.1/0 0/0/0
.0/0 0/0/0 (+78).0/0 0/0/0
+.2/0 0/0/0 (+78)+.2/0 0/0/0
+.2/0 0/0/0 (+78)+.2/0 0/0/0
+.2/0 0/0/0 (+78).0/0 0/0/0
LABEL FOR INFLUENCE
DW (1000 LB) DTFLEX
DV1-DVR-DV2 (KT)
(TVMC OAT C)
DW (1000 LB) DTFLEX
DV1-DVR-DV2 (KT)
MTOW(1000 LB) codes
V1min/VR/V2(KT)
*VMC
*LIMITATION
Tref (OAT) =54 C
Tmax (OAT) =54 C
Min acc height 809Ft
Max acc height 1054Ft
Min QNH alt 1304Ft
Max QNH alt 1550Ft
LIMITATION CODES:
1=1st segment 2=2nd segment 3=runway length 4=obstacles
5=tire speed 6=brake energy 7=max weight 8=final takeoff 9=VMU
MIN V1/VR/V2 = 107/12/17
CHECK VMU LIMITATION
CORRECT. V1/VR/V2 = .5Kt/1000 LB
MINIMUM & MAXIMUM ACC. HEIGHT AND ALT
INFLUENCE CORRECTION
ΔWEIGHT ΔTFLEX
ΔV1/ΔVR / ΔV2
(TVMCT) ΔWEIGHT ΔTFLEX
ΔV1/ΔVR / ΔV2
MINIMUM VALUES OF V1/VR/V2 TO WHICH TAKEOFF SPEEDS MUST BE LIMITED WHEN DECREMENTS ARE APPLIED
V1/VR/V2 DECREMENTS FOR WEIGHTS BELOW THE LOWEST WEIGHT OF A COLUMN

DESCRIPTION OF TAKEOFF CHART

Ident.: PER-TOF-TOC-10-30-00001710.0006001 / 23 FEB 11
Applicable to: MSN 02135, 02139



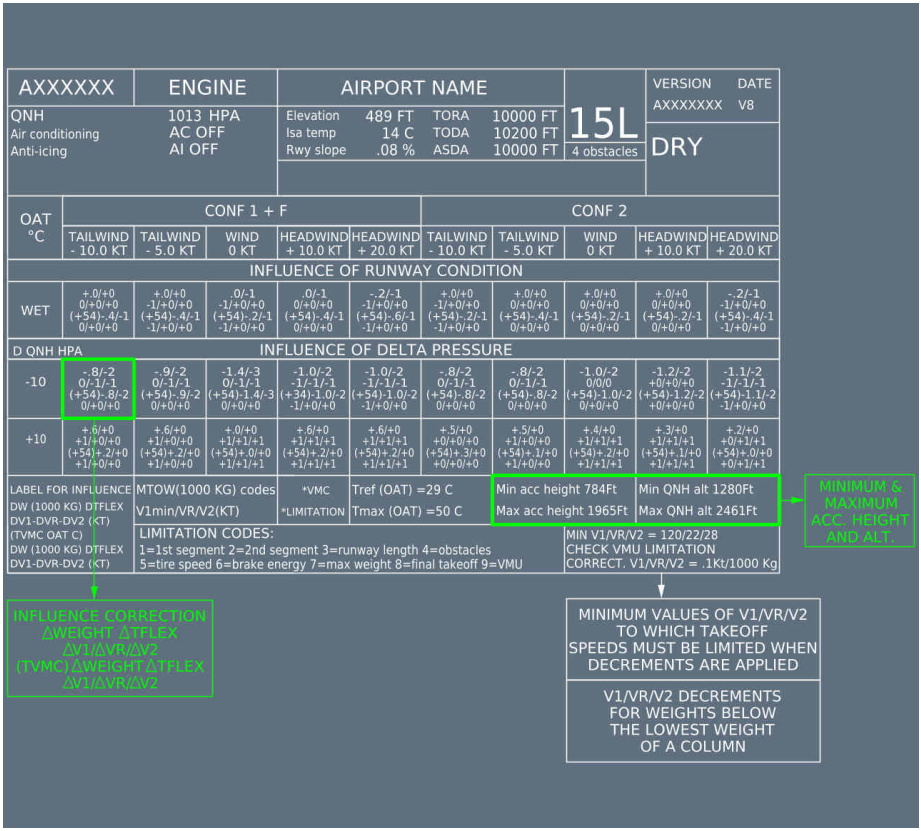
OAT °C	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND 0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND 0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
-20	86.5 3/4 151/56/58	88.5 3/4 156/59/61	90.6 3/4 161/62/64	92.0 3/4 164/65/67	93.0 3/4 167/69/71	86.4 3/4 151/57/57	88.4 3/4 156/60/60	90.4 3/4 161/64/64	91.8 3/4 164/66/66	92.9 3/4 167/70/70
-10	85.8 3/4 149/55/57	87.8 3/4 154/57/59	89.8 3/4 159/60/62	91.2 3/4 162/63/65	92.3 3/4 165/67/68	85.7 3/4 149/55/55	87.7 3/4 154/59/59	89.7 3/4 159/62/62	91.1 3/4 162/64/64	92.3 3/4 165/67/67
0	85.0 3/4 147/54/56	87.0 3/4 152/56/58	89.1 3/4 157/58/61	90.5 3/4 160/61/63	91.6 3/4 163/65/66	85.0 3/4 147/54/54	87.0 3/4 152/57/57	88.9 3/4 157/60/60	90.3 3/4 160/62/62	91.6 3/4 163/65/65
10	84.2 3/4 145/53/56	86.3 3/4 150/55/58	88.3 3/4 155/57/59	89.7 3/4 158/59/61	90.9 3/4 161/63/64	84.3 3/4 145/52/52	86.3 3/4 150/56/56	88.2 3/4 155/58/58	89.6 3/4 158/61/61	91.0 3/4 161/63/63
20	83.3 3/4 144/53/55	85.4 3/4 149/55/57	87.4 3/4 153/57/59	88.8 3/4 156/58/60	90.1 3/4 160/61/62	83.5 3/4 144/51/51	85.5 3/4 149/54/54	87.4 3/4 153/57/57	88.8 3/4 156/59/59	90.1 3/4 159/61/61
30	82.1 3/4 143/52/54	84.2 3/4 147/54/56	86.2 3/4 152/56/57	87.5 3/4 155/57/59	88.9 3/4 158/59/60	82.4 3/4 142/50/50	84.3 3/4 147/53/53	86.2 3/4 152/55/55	87.5 3/4 155/57/57	88.9 3/4 158/59/59

AXXXXXX	ENGINE	AIRPORT NAME					VERSION	DATE
QNH	1013 HPA	Elevation	489 FT	TORA	10000 FT	15L	AXXXXXXX	V8
Air conditioning	AC OFF	Isa temp	14 C	TODA	10200 FT	4 obstacles	DRY	
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	10000 FT			

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND 0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND 0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
46	72.8 3/4 141/45/47	74.3 3/4 145/48/49	75.9 3/4 150/50/51	76.9 3/4 153/53/54	78.0 3/4 154/54/55	72.6 3/4 141/46/46	74.2 3/4 145/49/49	75.7 3/4 150/51/51	76.9 3/4 153/53/53	77.9 3/4 155/55/55
48	71.4 3/4 141/45/46	73.0 3/4 145/47/48	74.5 3/4 149/50/51	DO NOT USE FOR OPERATIONAL PURPOSE				74.3 3/4 150/51/51	75.4 3/4 153/53/53	76.4 3/4 154/54/54
50	70.1 3/4 140/44/46	71.6 3/4 145/47/48	73.1 3/4 149/49/50					72.9 3/4 150/50/50	73.9 3/4 152/52/52	74.9 4/4 153/53/53
*52	68.8 3/4 140/44/45	70.2 3/4 145/46/47	71.7 3/4 149/49/50	72.6 4/4 150/50/51	73.5 4/4 151/51/52	68.6 3/4 140/45/45	70.0 3/4 145/47/47	71.5 3/4 150/50/50	72.5 3/4 151/51/51	73.4 4/4 153/53/53
*54	67.4 3/4 140/43/44	68.9 3/4 145/46/47	70.2 3/4 148/48/49	71.1 4/4 149/49/50	72.0 4/4 150/50/51	67.3 3/4 140/44/44	68.7 3/4 145/47/47	70.1 3/4 149/49/49	71.0 4/4 151/51/51	71.9 4/4 152/52/52

TAKEOFF PARAMETERS		
MAX WEIGHT (1000 KG) (72.0)		LIMITATION CODE (4-4)
V1 (KT IAS) (150)	VR (KT IAS) (130)	V2 (KT IAS) (151)

TAKEOFF CHARTS - GENERAL (TEMPERATURE ENTRY)



EXAMPLE OF TAKEOFF CHART

Ident.: PER-TOF-TOC-10-30-00014705.0001001 / 29 JUL 16
Applicable to: ALL

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.

A3XXXXX	ENGINES	AIRPORT NAME				Version	Date
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M	A3XXXXX	**V20
Air cond.	AC OFF	Isa temp	14 C	TODA	3000 M	**15L**	
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M	4 obstacles	**DRY**
All reversers operating							
No reversers on dry runway							

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND − 10.0 KT	TAILWIND − 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND − 10.0 KT	TAILWIND − 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
−20	80.2 4/6 156/56/58	80.2 4/6 162/62/64	83.6 3/4 167/67/69	84.8 3/4 170/70/72	85.8 3/4 173/73/75	80.4 4/6 154/54/59	81.9 3/4 159/59/64	83.4 3/4 164/64/69	84.4 3/4 167/67/72	85.2 2/4 169/69/74
−10	79.5 4/6 153/56/58	81.3 4/6 159/59/62	83.1 4/6 164/64/66	84.3 3/4 167/67/69	85.3 3/4 171/71/72	79.7 4/6 151/52/57	81.4 4/6 156/56/62	82.9 3/4 161/61/66	84.0 3/4 164/64/69	84.9 3/4 167/67/72
0	78.8 4/6 151/54/57	80.6 4/6 156/57/59	82.5 4/6 162/62/64	83.7 3/4 165/65/67	84.7 3/4 168/68/70	79.0 4/6 149/51/56	80.8 4/6 154/54/60	82.4 3/4 159/59/64	83.5 3/4 162/62/67	84.5 3/4 165/65/70
10	78.2 4/6 148/53/55	80.0 4/6 154/57/59	81.8 4/6 159/60/62	83.1 4/6 163/63/65	84.2 3/4 166/66/67	78.4 4/6 147/50/54	80.2 4/6 152/52/58	81.9 3/4 156/56/62	83.00 3/4 159/59/65	83.9 3/4 162/63/68
20	77.6 4/6 146/51/53	79.3 4/6 151/55/57	81.1 4/6 157/57/61	82.5 4/6 160/60/62	83.6 4/6 163/63/65	77.7 4/6 145/48/52	79.5 4/6 150/51/56	81.3 4/6 154/54/60	82.4 3/4 157/57/63	83.4 3/4 160/61/66
30	76.9 4/6 144/50/52	78.7 4/6 149/54/56	80.5 4/6 154/57/60	81.8 4/6 158/58/60	83.0 4/6 161/61/63	77.1 4/6 143/46/50	78.9 4/6 148/50/55	80.7 4/6 153/53/58	81.9 3/4 155/56/61	82.9 3/4 158/59/64
32	76.8 4/6 144/50/52	78.6 4/6 149/53/55	80.4 4/6 154/56/55	81.7 4/6 157/58/60	82.9 4/6 161/61/63	77.0 4/6 142/45/50	78.7 4/6 147/50/55	80.6 4/6 152/53/58	81.8 4/6 155/55/60	82.8 3/4 157/59/64
34	76.7 4/6 143/50/52	78.4 4/6 148/53/55	80.2 4/6 154/56/58	81.5 4/6 157/57/60	82.8 4/6 160/60/62	76.9 4/6 142/45/50	78.6 4/6 147/52/57	80.5 4/6 152/52/57	81.7 4/6 154/55/60	82.7 3/4 157/58/64
36	76.6 4/6 143/49/52	78.4 4/6 148/52/54	80.1 4/6 153/56/58	81.4 4/6 156/57/59	82.7 4/6 160/60/62	76.8 4/6 141/45/50	78.5 4/6 148/50/55	80.3 4/6 151/52/57	76.1 4/6 154/55/60	76.6 3/4 157/58/63
38	76.5 4/6 142/49/52	78.3 4/6 147/52/54	80.0 4/6 153/56/58	81.3 4/6 156/58/60	82.6 4/6 159/60/62	76.7 4/6 141/45/50	78.4 4/6 146/48/53	80.2 4/6 151/52/57	81.5 4/6 154/54/59	82.5 3/4 156/58/63
40	76.4 4/6 142/49/52	78.2 4/6 147/52/54	79.9 4/6 152/56/58	81.2 4/6 156/58/60	82.5 4/6 159/59/61	76.6 4/6 141/45/50	78.3 4/6 146/48/53	80.1 4/6 150/51/56	81.4 4/6 153/54/59	82.4 3/4 156/57/63
42	76.3 4/6 142/49/51	78.0 4/6 147/52/54	DO NOT USE FOR OPERATIONAL PURPOSE						81.3 4/6 153/54/59	82.3 3/4 156/57/62
44	76.1 4/6 142/49/51	77.9 4/6 146/51/53							81.1 4/6 153/53/58	82.1 3/4 155/57/62
46	75.5 4/6 142/48/50	77.2 4/6 148/50/52	78.9 4/6 152/55/57	80.2 4/6 155/56/58	80.7 4/6 154/56/58	75.7 4/6 141/45/49	77.3 4/6 145/47/52	79.1 4/6 150/50/55	74.5 4/6 152/53/58	75.1 2/4 152/55/60
48	74.5 4/6 143/48/50	76.2 4/6 148/50/52	77.9 4/6 153/53/55	79.1 4/6 155/53/55	79.3 2/4 153/55/57	74.7 4/6 141/44/48	76.4 4/6 146/47/51	78.0 3/4 150/50/55	79.1 3/4 152/53/57	79.5 4/8 155/58/63
50	73.6 4/6 143/47/49	75.3 4/6 148/49/51	76.9 4/6 153/53/55	77.9 4/8 154/54/55	77.9 2/4 151/54/55	73.8 4/6 142/42/46	75.4 4/6 146/47/51	76.9 3/4 150/50/54	78.0 3/4 152/52/57	78.0 2/4 149/52/57
52	72.7 4/6 144/46/48	74.4 4/6 149/49/51	75.8 3/4 153/53/54	76.3 2/4 152/52/53	76.3 2/4 147/52/53	72.9 4/6 142/44/48	74.3 3/4 146/46/50	75.8 3/4 150/50/54	76.4 2/4 150/50/55	76.4 2/4 146/50/55
54	71.8 4/6 145/46/47	73.3 3/4 149/49/51	74.8 3/4 152/52/54	75.0 2/4 150/50/52	75.0 2/4 145/50/52	71.9 3/4 142/43/47	73.3 3/4 146/46/50	74.7 3/4 149/49/54	75.1 2/4 148/49/54	75.1 2/4 144/49/54
	INFLUENCE OF RUNWAY CONDITION									
WET	−2.0/ −5 −16/ 1/ −1 (+54) +2.0/ −5 −16/0/0	−1.5/ −4 −15/ −2/ −2 (+54) −1.5 −4 −15/ 0/ 0	−1.2/ −3 −13/ −4/ −4 (+54) −1.3 −3 −13/ 0/ 0	−1.1/ −2 −11/ −3/ −3 (+54) −1.1 / −2 −11/ 0/ 0	1.8/ −2 −10/ −2 /2 (+54) −0.8 −2 −10/ 0/ 0	−0.9/ −4 −14/ 0 / (+54) −0.9/ −4 −14/ 0/ 0	−1.5/ −4 −13/ 0/ (+54) −1.5/ −4 −13/ 0/ 0	−1.2/ −3 −12/ −2/ −2 (+54) −1.3/ −3 −11/ 0/ 0	−1.2/ −2 −10/ −1/ −1 (+54) −1.2/ −2 −10/ 0/ 0	−1.5/ −3 −4/ −2/ −2 (+54) −1.5 −3 −4/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE									
−10.0	−0.8/ −2 0/ 0/ (+54) −0.8/ −2 0/ 0/	−0.7/ −2 0/ 0/ (+54) −0.7/ −2 0/ 0/	−0.7/ −2 0/ 0/ (+54) −0.7/ −2 0/ 0/	−1.3/ −3 −1/ 0/ (+54) −1.3/ −3 0/ 0/	−0.7/ −2 0/ 0/ (+54) −0.7/ −2 0/ 0/	−0.7/ −2 0/ 0/ (+54) −0.7/ −2 0/ 0/	−1.2/ −3 0/ 0/ (+54) −1.2/ −3 0/ 0/	−0.8/ −2 −1/ −1/ −2 (+54) −0.8/ −2 −1/ 0/	−0.8 −2 −1/ 0/ (+54) −0.8/ −2 −1/ 0/	−0.8 −1 −1/ −1/ −1 (+54) −0.8/ −2 −1/ 0/
+10.0	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	0.0/ 0 0/ 0/ (+54) +0.0 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 0/ +1/ +1 (+54) +0.2 /0 0/ +1/ +1	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1−DVR−DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1−DVR−DV2 (KT)	MTOW(1000 KG) codes V1min/VR/V2 (kt)	*VMC *LIMITATION	Tref (OAT) = 44 C Tmax (OAT) = 54 C	Min acc height 464 FT Max acc height 1917 FT	Min QNH alt 953 FT Max QNH alt 2406 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take−off 9=VMU			Min V1/VR/V2 = 109/114/117 CHECK VMU LIMITATION Correct. V1/VR/V2 = 1.0 KT/1000 KG	

DETERMINATION OF MAXIMUM TAKEOFF WEIGHT AND SPEEDS

DIRECT CHART READING

Ident.: PER-TOF-TOC-12-10-00001712.0002001 / 23 FEB 11
Applicable to: ALL

The takeoff chart is computed for a given runway under a set of conditions, which are:

- OAT
- Wind
- Configuration
- QNH, air conditioning, anti ice...

Two configurations are produced on the chart. This enables the crew to select that giving the highest permissible takeoff weight. In case of equivalent performance, retain the configuration giving the lower takeoff speeds.
For a given configuration, enter the chart with the OAT and wind value to determine the maximum permissible weight. For an OAT or wind value not presented on the chart, interpolate between two consecutive temperature rows and/or two consecutive wind columns. Conservative OAT or wind values can also be considered. No extrapolation is allowed.

CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS

Ident.: PER-TOF-TOC-12-10-00001713.0002001 / 28 JAN 11
Applicable to: ALL

Retain the maximum takeoff weight, associated configuration and speeds from above.
For conditions different from those of the chart, apply relevant corrections.

CONSERVATIVE CORRECTIONS FOR QNH AND BLEEDS

Ident.: PER-TOF-TOC-12-10-00014706.0001001 / 29 JUL 16
Applicable to: ALL

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.

Corrections are given for QNH ≠ 1 013 hPa, air conditioning ON, anti ice ON(*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS*).

1. For the given wind and temperature conditions, read the maximum takeoff weight.
2. Apply the published weight correction(s) to the maximum takeoff weight (for each correction) to determine the maximum permissible takeoff weight.
3. Read the speeds associated with the maximum permissible takeoff weight by entering the chart in the wind column.

EXAMPLE 1

DATA: OAT = 25 °C
Head Wind = 10 kt
Air conditioning ON
QNH = 1 013 hPa

Use the chart (*Refer to PER-TOF-TOC-10-30 EXAMPLE OF TAKEOFF CHART*):

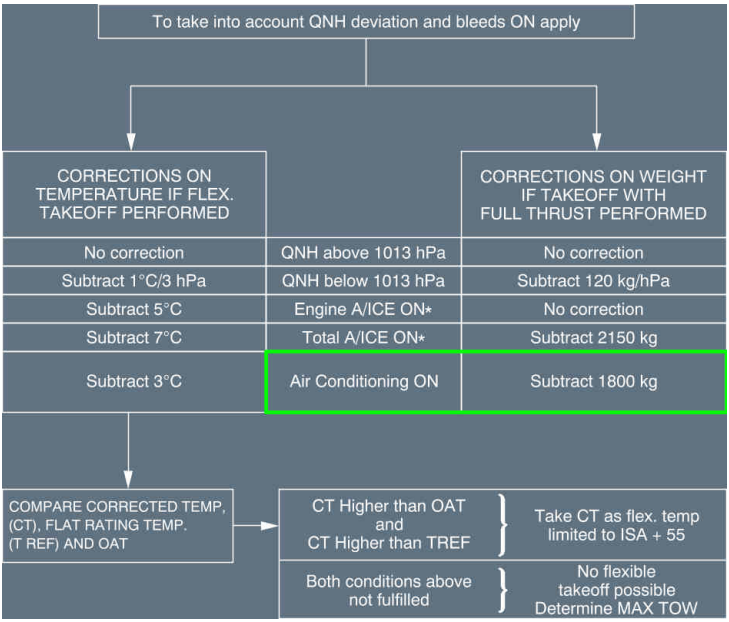
A3XXXXX	ENGINES	AIRPORT NAME	15L	Version A3XXXXXX	Date **V20
QNH 1013.25 HPA Air cond. AC OFF Anti-icing AI OFF All reversers operating No reversers on dry runway		Elevation 489 FT TORA 3000 M Isa temp 14 C TODA 3000 M Rwy slope .08 % ASDA 3000 M	4 obstacles	DRY	

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
-20	80.2 4/6 156/56/58	80.2 4/6 162/62/64	83.6 3/4 167/67/69	84.8 3/4 170/70/72	85.8 3/4 173/73/75	80.4 4/6 154/54/59	81.9 3/4 159/59/64	83.4 3/4 164/64/69	84.4 3/4 167/67/72	85.2 2/4 169/69/74
-10	79.5 4/6 153/56/58	81.3 4/6 159/59/62	83.1 4/6 164/64/66	84.3 3/4 167/67/69	85.3 3/4 171/71/72	79.7 4/6 151/52/57	81.4 4/6 156/56/62	82.9 3/4 161/61/66	84.0 3/4 164/64/69	84.9 3/4 167/67/72
0	78.8 4/6 151/54/57	80.6 4/6 156/57/59	82.5 4/6 162/62/64	83.7 3/4 165/65/67	84.7 3/4 168/68/70	79.0 4/6 149/51/56	80.8 4/6 154/54/60	82.4 3/4 159/59/64	83.5 3/4 162/62/67	84.5 3/4 165/65/70
10	78.2 4/6 148/53/55	80.0 4/6 154/57/59	81.8 4/6 159/60/62	83.1 4/6 163/63/65	84.2 3/4 166/66/67	78.4 4/6 147/50/54	80.2 4/6 152/52/58	81.9 3/4 156/56/62	83.00 3/4 159/59/65	83.9 3/4 162/63/68
20	77.6 4/6 146/51/53	79.3 4/6 151/55/57	81.1 4/6 157/57/61	82.5 4/6 160/60/62	83.6 4/6 163/63/65	77.7 4/6 145/48/52	79.5 4/6 150/51/56	81.3 4/6 154/54/60	82.4 3/4 157/57/63	83.4 3/4 160/61/66
30	76.9 4/6 144/50/52	78.7 4/6 149/54/56	80.5 4/6 154/57/60	81.8 4/6 158/58/60	83.0 4/6 161/61/63	77.1 4/6 143/46/50	78.9 4/6 148/50/55	80.7 4/6 153/53/58	81.9 3/4 155/56/61	82.9 3/4 158/59/64
32	76.8 4/6 144/50/52	78.6 4/6 149/53/55	80.4 4/6 154/56/55	81.7 4/6 157/58/60	82.9 4/6 161/61/63	77.0 4/6 142/45/50	78.7 4/6 147/50/55	80.6 4/6 152/53/58	81.8 4/6 155/55/60	82.8 3/4 157/59/64
34	76.7 4/6 143/50/52	78.4 4/6 148/53/55	DO NOT USE FOR OPERATIONAL PURPOSE						81.7 4/6 154/55/60	82.7 3/4 157/58/64
36	76.6 4/6 143/49/52	78.4 4/6 148/52/54							76.1 4/6 154/55/60	76.6 3/4 157/58/63
38	76.5 4/6 142/49/52	78.3 4/6 147/52/54	80.0 4/6 153/56/58	81.3 4/6 156/58/60	82.6 4/6 159/60/62	76.7 4/6 141/45/50	78.4 4/6 146/48/53	80.2 4/6 151/52/57	81.5 4/6 154/54/59	82.5 3/4 156/58/63

Enter the 10 kt head wind column and interpolate for 25 °C, CONF 1+F,

Maximum TO weight (1 000 kg) air conditioning OFF.....82.1
Enter the 10 kt head wind column and interpolate for 25 °C, CONF 2,
Maximum TO weight (1 000 kg) air conditioning OFF.....82.1
Retain CONF 2 as takeoff configuration as the speeds are lower.
Maximum TO weight (1 000 kg) air conditioning OFF.....82.1

Use the QNH/BLEEDS correction page:(*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS*).
For example:



Air conditioning correction..... -1.8
Maximum permissible TO weight (1 000 kg) air conditioning ON..... 80.3
Determine takeoff speeds for 80.3 (1 000 kg) in the 10 kt head wind column CONF 2 (interpolate when necessary).

A3XXXXX	ENGINES	AIRPORT NAME				Version	Date
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M	A3XXXXXX	**V20
Air cond.	AC OFF	Isa temp	14 C	TODA	3000 M	15L	
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M	4 obstacles	DRY
All reversers operating							
No reversers on dry runway							

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND − 10.0 KT	TAILWIND − 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND − 10.0 KT	TAILWIND − 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
44	76.1 4/6 142/49/51	77.9 4/6 146/51/53	75.1 2/3 153/54/55	75.7 2/3 156/57/58	76.3 2/3 158/59/60	73.0 2/3 142/44/47	74.1 2/3 146/47/51	75.1 2/3 150/51/55	81.1 4/6 153/53/58	82.1 3/4 155/57/62
46	75.5 4/6 142/48/50	77.2 4/6 148/50/52	78.9 4/6 152/55/57	80.2 4/6 155/56/58	80.7 4/6 154/56/58	75.7 4/6 141/45/49	77.3 4/6 145/47/52	79.1 4/6 150/50/55	80.3 3/4 152/53/58	80.7 2/4 152/55/60
48	74.5 4/6 143/48/50	76.2 4/6 148/50/52	77.9 4/6 153/53/55	79.1 4/6 155/53/55	79.3 2/4 153/55/57	74.7 4/6 141/44/48	76.4 4/6 146/47/51	78.0 3/4 150/50/55	79.1 3/4 152/53/57	79.5 4/8 155/58/63

V1 = 152 kt, VR = 153 kt, V2 = 158 kt.

CORRECTIONS FOR WET OR CONTAMINATED RUNWAYS

Ident.: PER-TOF-TOC-12-10-00001715.0001001 / 28 JAN 11
Applicable to: ALL

(*Refer to PER-TOF-CTA-10 GENERAL*)

CORRECTIONS PRODUCED ON THE RTOW CHART

Ident.: PER-TOF-TOC-12-10-00014707.0001001 / 27 JUL 18
Applicable to: ALL

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.
For example: *Refer to PER-TOF-TOC-10-30 EXAMPLE OF TAKEOFF CHART*
A description of this correction is given on *Refer to PER-TOF-TOC-10-20 DESCRIPTION OF THE CORRECTIONS ON TAKEOFF CHART*. The list of corrections is not exhaustive, however the most commonly used corrections are wet runway, QNH, air conditioning and/or anti ice. A maximum of three corrections can be produced on one chart.

To apply the corrections, proceed as follows:

1. Enter the chart with given OAT and wind to determine the maximum takeoff weight before correction.
2. Apply the first correction:
   If OAT is less than or equal to TVMC (line 3), apply ΔW correction from line 1 and ΔV1/ΔVR/ΔV2 corrections from line 2.
   Else, (for OAT greater than TVMC), apply ΔW correction from line 3 and ΔV1/ΔVR/ΔV2 corrections from line 4.
3. To combine a second (and third, as applicable) correction:
   If OAT is less than or equal to TVMC (line 3), apply ΔW correction from line 1 and ΔV1/ΔVR/ΔV2 corrections from line 2.
   Check that the resulting speeds are higher than the minimum speeds displayed on the RTOW chart and that V2 is higher than the VMU limited speed (*Refer to PER-TOF-TOD-25-20 MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)*).
   If OAT is higher than TVMC (line 3) or if the above speed check is not fulfilled, apply ΔW correction from line 3 and ΔV1/ΔVR/ΔV2 corrections from line 4. No speed check is required.

Note:
- *QNH correction is given for ±10 hPa . It is allowed to extrapolate linearly for greater QNH deviation.*
- *When using a takeoff chart with failure cases, it is not allowed to combine two failure cases.*
- *Corrections from the chart must be applied from top to bottom, i.e. in the RTOW on Refer to PER-TOF-TOC-10-30 EXAMPLE OF TAKEOFF CHART, apply the wet correction first.*
- *If asterisk or dotted lines appear in the correction boxes, refer to more conservative corrections provided in the FCOM.*
- *No speed check is required for the first correction. However, if the first influence correction follows a conservative FCOM correction, a speed check is required.*

EXAMPLE 2

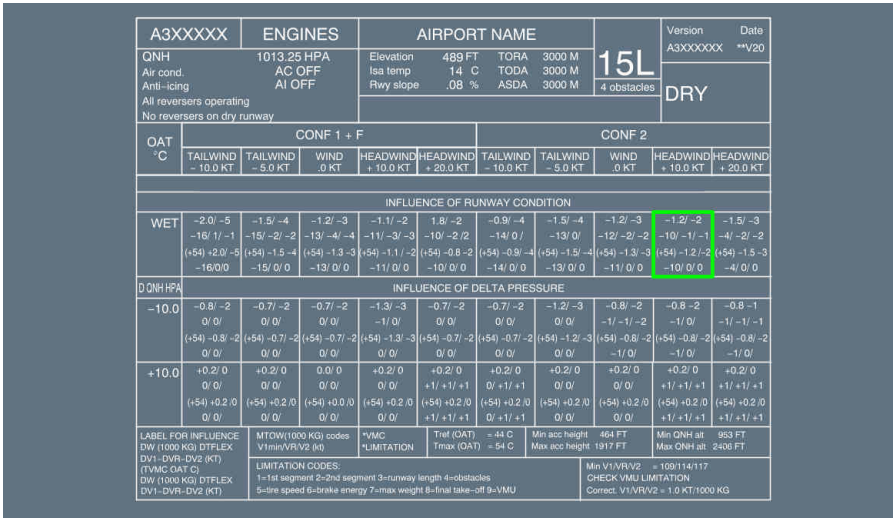
DATA : CONF 2
OAT = 25 °C
Head Wind = 10 kt
QNH = 1 028 hPa
WET runway

In this example, we will consider CONF 2 as takeoff configuration. But same computation has to be done in CONF 1 and you must retain the best configuration.
Use the chart (*Refer to PER-TOF-TOC-10-30 EXAMPLE OF TAKEOFF CHART*)

A3XXXXX	ENGINES	AIRPORT NAME				Version	Date
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M	A3XXXXXX	**V20
Air cond.	AC OFF	Isa temp	14 C	TODA	3000 M	15L	
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M	4 obstacles	DRY
All reversers operating							
No reversers on dry runway							

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND 0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND 0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
-20	80.2 4/6 156/56/58	80.2 4/6 162/62/64	83.6 3/4 167/67/69	84.8 3/4 170/70/72	85.8 3/4 173/73/75	80.4 4/6 154/54/59	81.9 3/4 159/59/64	83.4 3/4 164/64/69	84.4 3/4 167/67/72	85.2 2/4 169/69/74
-10	79.5 4/6 153/56/58	81.3 4/6 159/59/62	83.1 4/6 164/64/66	84.3 3/4 167/67/69	85.3 3/4 171/71/72	79.7 4/6 151/52/57	81.4 4/6 156/56/62	82.9 3/4 161/61/66	84.0 3/4 164/64/69	84.9 3/4 167/67/72
0	78.8 4/6 151/54/57	80.6 4/6 156/57/59	82.5 4/6 162/62/64	83.7 3/4 165/65/67	84.7 3/4 168/68/70	79.0 4/6 149/51/56	80.8 4/6 154/54/60	82.4 3/4 159/59/64	83.5 3/4 162/62/67	84.5 3/4 165/65/70
10	78.2 4/6 148/53/55	80.0 4/6 154/57/59	81.8 4/6 159/60/62	83.1 4/6 163/63/65	84.2 3/4 166/66/67	78.4 4/6 147/50/54	80.2 4/6 152/52/58	81.9 3/4 156/56/62	83.00 3/4 159/59/65	83.9 3/4 162/63/68
20	77.6 4/6 146/51/53	79.3 4/6 151/55/57	81.1 4/6 157/57/61	82.5 4/6 160/60/62	83.6 4/6 163/63/65	77.7 4/6 145/48/52	79.5 4/6 150/51/56	81.3 4/6 154/54/60	82.4 3/4 157/57/63	83.4 3/4 160/61/66
30	76.9 4/6 144/50/52	78.7 4/6 149/54/56	80.5 4/6 154/57/60	81.8 4/6 158/58/60	83.0 4/6 161/61/63	77.1 4/6 143/46/50	78.9 4/6 148/50/55	80.7 4/6 153/53/58	81.9 3/4 155/56/61	82.9 3/4 158/59/64
32	76.8 4/6 144/50/52	78.6 4/6 149/53/55	80.4 4/6 154/56/55	81.7 4/6 157/58/60	82.9 4/6 161/61/63	77.0 4/6 142/45/50	78.7 4/6 147/50/55	80.6 4/6 152/53/58	81.8 4/6 155/55/60	82.8 3/4 157/59/64
34	76.7 4/6 143/50/52	78.4 4/6 148/53/55	DO NOT USE FOR OPERATIONAL PURPOSE						81.7 4/6 154/55/60	82.7 3/4 157/58/64
36	76.6 4/6 143/49/52	78.4 4/6 148/52/54							76.1 4/6 154/55/60	76.6 3/4 157/58/63
38	76.5 4/6 142/49/52	78.3 4/6 147/52/54	80.0 4/6 153/56/58	81.3 4/6 156/58/60	82.6 4/6 159/60/62	76.7 4/6 141/45/50	78.4 4/6 146/48/53	80.2 4/6 151/52/57	81.5 4/6 154/54/59	82.5 3/4 156/58/63

- Enter the 10 kt head wind column and interpolate for 25 °C, CONF 2, max TO weight (1 000 kg).....82.1
- Read associated speeds as V1 = 156 kt, VR = 157 kt, V2 = 162 kt
- Apply WET correction



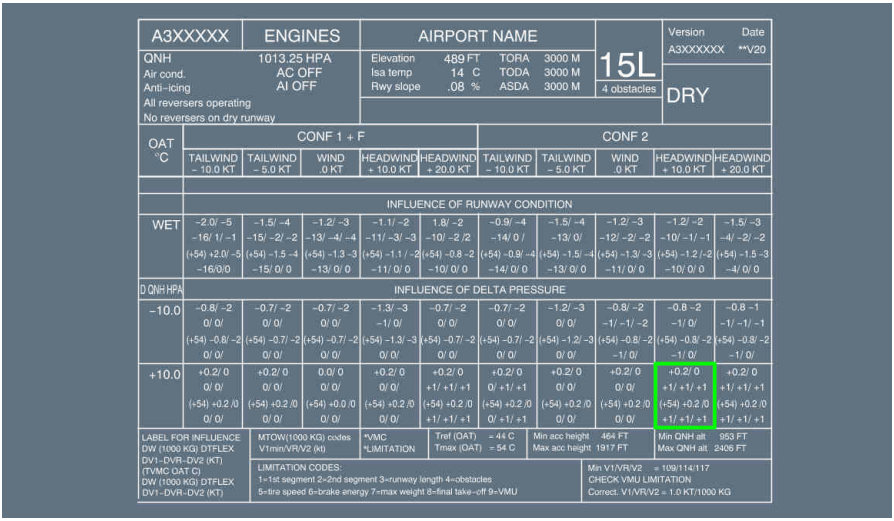
A3XXXXX	ENGINES	AIRPORT NAME				Version	Date
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M	A3XXXXXX	**V20
Air cond.	AC OFF	Isa temp	14 C	TODA	3000 M	15L	
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M	4 obstacles	DRY
All reversers operating							
No reversers on dry runway							

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND – 10.0 KT	TAILWIND – 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND – 10.0 KT	TAILWIND – 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
INFLUENCE OF RUNWAY CONDITION										
WET	–2.0/ –5 –16/ 1/ –1 (+54) +2.0/ –5 –16/0/0	–1.5/ –4 –15/ –2/ –2 (+54) +1.5 –4 –15/ 0/ 0	–1.2/ –3 –13/ –4/ –4 (+54) –1.3 –3 –13/ 0/ 0	–1.1/ –2 –11/ –3/ –3 (+54) –1.1 / –2 –11/ 0/ 0	1.8/ –2 –10/ –2 /2 (+54) –0.8 –2 –10/ 0/ 0	–0.9/ –4 –14/ 0 / (+54) –0.9/ –4 –14/ 0/ 0	–1.5/ –4 –13/ 0/ (+54) –1.5/ –4 –13/ 0/ 0	–1.2/ –3 –12/ –2/ –2 (+54) –1.3/ –3 –11/ 0/ 0	–1.2/ –2 –10/ –1/ –1 (+54) –1.2/ –2 –10/ 0/ 0	–1.5/ –3 –4/ –2/ –2 (+54) –1.5 –3 –4/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE									
–10.0	–0.8/ –2 0/ 0/ (+54) –0.8/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–1.3/ –3 –1/ 0/ (+54) –1.3/ –3 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–1.2/ –3 0/ 0/ (+54) –1.2/ –3 0/ 0/	–0.8/ –2 –1/ –1/ –2 (+54) –0.8/ –2 –1/ 0/	–0.8 –2 –1/ 0/ (+54) –0.8/ –2 –1/ 0/	–0.8 –1 –1/ –1/ –1 (+54) –0.8/ –2 –1/ 0/
+10.0	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	0.0/ 0 0/ 0/ (+54) +0.0 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 0/ +1/ +1 (+54) +0.2 /0 0/ +1/ +1	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT)	MTOW(1000 KG) codes V1min/VR/V2 (kt)	*VMC *LIMITATION	Tref (OAT) = 44 C Tmax (OAT) = 54 C	Min acc height 464 FT Max acc height 1917 FT	Min QNH alt 953 FT Max QNH alt 2406 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take–off 9=VMU			Min V1/VR/V2 = 109/114/117 CHECK VMU LIMITATION Correct: V1/VR/V2 = 1.0 KT/1000 KG	

For OAT < TVMC (54 °C), ΔW =..... -1.2
Intermediate weight (1 000 kg).....= 80.9
Associated speeds,
V1 = 156 kt - 10 = 146 kt
VR = 157 kt - 1 = 156 kt
V2 = 162 kt - 1 = 161 kt
(No speed check required for first correction)

- Apply QNH correction



A3XXXXX	ENGINES	AIRPORT NAME					Version	Date
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M	15L	A3XXXXXX	**V20
Air cond.	AC OFF	Isa temp	14 C	TODA	3000 M	4 obstacles	DRY	
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M			
All reversers operating								
No reversers on dry runway								

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND − 10.0 KT	TAILWIND − 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND − 10.0 KT	TAILWIND − 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
	INFLUENCE OF RUNWAY CONDITION									
WET	−2.0/ −5 −16/ 1/ −1 (+54) +2.0/ −5 −16/0/0	−1.5/ −4 −15/ −2/ −2 (+54) −1.5 −4 −15/ 0/ 0	−1.2/ −3 −13/ −4/ −4 (+54) −1.3 −3 −13/ 0/ 0	−1.1/ −2 −11/ −3/ −3 (+54) −1.1 / −2 −11/ 0/ 0	1.8/ −2 −10/ −2 /2 (+54) −0.8 −2 −10/ 0/ 0	−0.9/ −4 −14/ 0 / (+54) −0.9/ −4 −14/ 0/ 0	−1.5/ −4 −13/ 0/ (+54) −1.5/ −4 −13/ 0/ 0	−1.2/ −3 −12/ −2/ −2 (+54) −1.3/ −3 −11/ 0/ 0	−1.2/ −2 −10/ −1/ −1 (+54) −1.2 /−2 −10/ 0/ 0	−1.5/ −3 −4/ −2/ −2 (+54) −1.5 −3 −4/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE									
−10.0	−0.8/ −2 0/ 0/ (+54) −0.8/ −2 0/ 0/	−0.7/ −2 0/ 0/ (+54) −0.7/ −2 0/ 0/	−0.7/ −2 0/ 0/ (+54) −0.7/ −2 0/ 0/	−1.3/ −3 −1/ 0/ (+54) −1.3/ −3 0/ 0/	−0.7/ −2 0/ 0/ (+54) −0.7/ −2 0/ 0/	−0.7/ −2 0/ 0/ (+54) −0.7/ −2 0/ 0/	−1.2/ −3 0/ 0/ (+54) −1.2/ −3 0/ 0/	−0.8/ −2 −1/ −1/ −2 (+54) −0.8/ −2 −1/ 0/	−0.8 −2 −1/ 0/ (+54) −0.8/ −2 −1/ 0/	−0.8 −1 −1/ −1/ −1 (+54) −0.8/ −2 −1/ 0/
+10.0	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	0.0/ 0 0/ 0/ (+54) +0.0 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 0/ +1/ +1 (+54) +0.2 /0 0/ +1/ +1	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1−DVR−DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1−DVR−DV2 (KT)	MTOW(1000 KG) codes V1min/VR/V2 (kt)	*VMC *LIMITATION	Tref (OAT) = 44 C Tmax (OAT) = 54 C	Min acc height 464 FT Max acc height 1917 FT	Min QNH alt 953 FT Max QNH alt 2406 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take−off 9=VMU			Min V1/VR/V2 = 109/114/117 CHECK VMU LIMITATION Correct. V1/VR/V2 = 1.0 KT/1000 KG	

For OAT < TVMC (54 °C), ΔW = 0.2 × 15/10 =.....+ 0.3
Maximum permissible takeoff weight (1 000 kg).....= 81.2
Associated speeds,
V1 = 146 kt + 1 × 15/10 = 147 kt
VR = 156 kt + 1 × 15/10 = 158 kt
V2 = 161 kt + 1 × 15/10 = 163 kt

- Check that the speeds are higher than minimum speeds from the chart and from VMU table (*Refer to PER-TOF-TOD-25-20 MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)*).
  It is reminded that if the speed checks are not fulfilled, the corrections must be recalculated using those provided on lines 3 and 4.

	Takeoff Configuration : 2			
	TOW	**V1**	**VR**	**V2**
TOW (RTOW)	82.1	156	157	162
FCOM correction(s)				
Intermediate value	82.1	156	157	162
WET Correction	- 1.2	-10	-1	-1
Intermediate value	80.9	146	156	161
QNH Correction	+ 0.3	+1	+2	+2
Final value	81.2	147	158	163

COMBINING CORRECTIONS FROM FCOM AND CHART

Ident.: PER-TOF-TOC-12-10-00014713.0001001 / 29 JUL 16
Applicable to: ALL

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.

Proceed as follows:

1. Enter the chart with selected configuration, OAT and wind to read the maximum takeoff weight.
2. Apply corrections from FCOM to determine an intermediate weight. Interpolate associated speeds for intermediate weight in the same column (same wind and configuration).
3. Apply corrections from RTOW chart as explained above.

EXAMPLE 3

DATA :
CONF 2
OAT = 25 °C
Head wind = 10 kt
Air conditioning ON
QNH = 1 028 hPa
WET runway

In this example, we will consider CONF 2 as takeoff configuration. But same computation has to be done in CONF 1 and you must retain the best configuration.

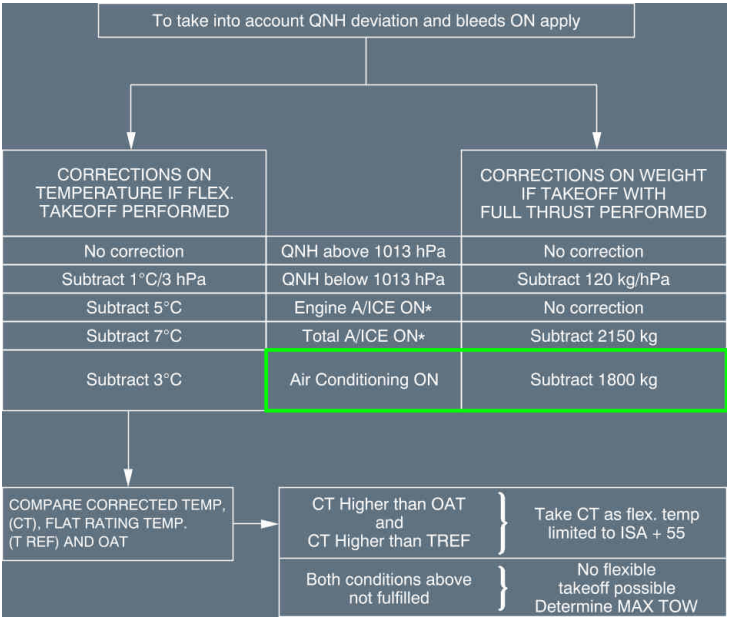
1. Use the chart (*Refer to PER-TOF-TOC-10-30 EXAMPLE OF TAKEOFF CHART*).

A3XXXXX	ENGINES	AIRPORT NAME			15L	Version	Date
QNH	1013.25 HPA	Elevation	489 FT	TORA 3000 M	4 obstacles	A3XXXXX	**V20
Air cond.	AC OFF	Isa temp	14 C	TODA 3000 M		DRY	
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA 3000 M			
All reversers operating							
No reversers on dry runway							

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
-20	80.2 4/6 156/56/58	80.2 4/6 162/62/64	83.6 3/4 167/67/69	84.8 3/4 170/70/72	85.8 3/4 173/73/75	80.4 4/6 154/54/59	81.9 3/4 159/59/64	83.4 3/4 164/64/69	84.4 3/4 167/67/72	85.2 2/4 169/69/74
-10	79.5 4/6 153/56/58	81.3 4/6 159/59/62	83.1 4/6 164/64/66	84.3 3/4 167/67/69	85.3 3/4 171/71/72	79.7 4/6 151/52/57	81.4 4/6 156/56/62	82.9 3/4 161/61/66	84.0 3/4 164/64/69	84.9 3/4 167/67/72
0	78.8 4/6 151/54/57	80.6 4/6 156/57/59	82.5 4/6 162/62/64	83.7 3/4 165/65/67	84.7 3/4 168/68/70	79.0 4/6 149/51/56	80.8 4/6 154/54/60	82.4 3/4 159/59/64	83.5 3/4 162/62/67	84.5 3/4 165/65/70
10	78.2 4/6 148/53/55	80.0 4/6 154/57/59	81.8 4/6 159/60/62	83.1 4/6 163/63/65	84.2 3/4 166/66/67	78.4 4/6 147/50/54	80.2 4/6 152/52/58	81.9 3/4 156/56/62	83.00 3/4 159/59/65	83.9 3/4 162/63/68
20	77.6 4/6 146/51/53	79.3 4/6 151/55/57	81.1 4/6 157/57/61	82.5 4/6 160/60/62	83.6 4/6 163/63/65	77.7 4/6 145/48/52	79.5 4/6 150/51/56	81.3 4/6 154/54/60	82.4 3/4 157/57/63	83.4 3/4 160/61/66
30	76.9 4/6 144/50/52	78.7 4/6 149/54/56	80.5 4/6 154/57/60	81.8 4/6 158/58/60	83.0 4/6 161/61/63	77.1 4/6 143/46/50	78.9 4/6 148/50/55	80.7 4/6 153/53/58	81.9 3/4 155/56/61	82.9 3/4 158/59/64
32	76.8 4/6 144/50/52	78.6 4/6 149/53/55	80.4 4/6 154/56/55	81.7 4/6 157/58/60	82.9 4/6 161/61/63	77.0 4/6 142/45/50	78.7 4/6 147/50/55	80.6 4/6 152/53/58	81.8 4/6 155/55/60	82.8 3/4 157/59/64
34	76.7 4/6 143/50/52	78.4 4/6 148/53/55	DO NOT USE FOR OPERATIONAL PURPOSE						81.7 4/6 154/55/60	82.7 3/4 157/58/64
36	76.6 4/6 143/49/52	78.4 4/6 148/52/54							76.1 4/6 154/55/60	76.6 3/4 157/58/63
38	76.5 4/6 142/49/52	78.3 4/6 147/52/54	80.0 4/6 153/56/58	81.3 4/6 156/58/60	82.6 4/6 159/60/62	76.7 4/6 141/45/50	78.4 4/6 146/48/53	80.2 4/6 151/52/57	81.5 4/6 154/54/59	82.5 3/4 156/58/63

Enter the 10 kt head wind column and interpolate for 25 °C, CONF 2,
Max TO weight (1 000 kg) air conditioning OFF..... 82.1

2. First, apply the QNH/Bleeds correction (*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS*).



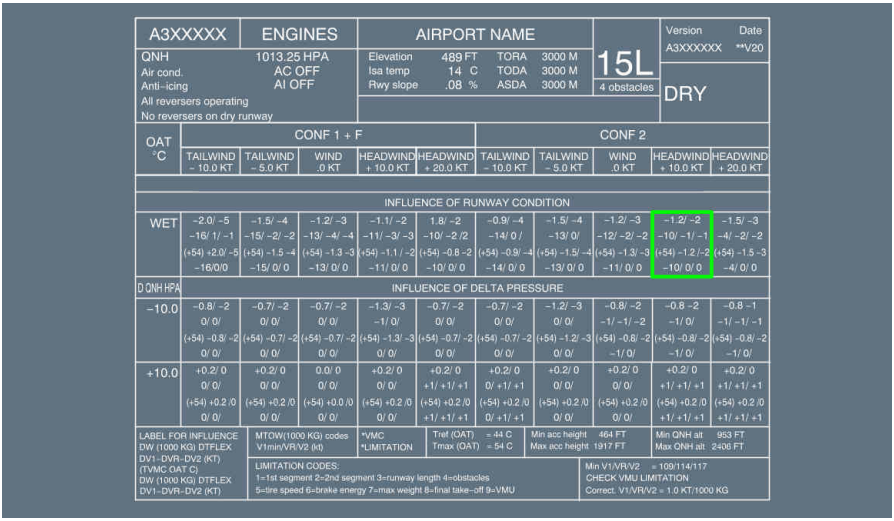
Max TO weight (1 000 kg) air conditioning OFF..... 82.1
Air conditioning correction..... - 1.8
Intermediate weight..... = 80.3
Determine the takeoff speeds for 80.3 (1 000 kg) in the 10 kt head wind column CONF 2 (interpolate when necessary)

A3XXXXX	ENGINES	AIRPORT NAME	15L	Version Date
QNH 1013.25 HPA Air cond. AC OFF Anti-icing AI OFF All reversers operating No reversers on dry runway		Elevation 489 FT TORA 3000 M Isa temp 14 C TODA 3000 M Rwy slope .08 % ASDA 3000 M	4 obstacles	A3XXXXXX **V20 DRY

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND − 10.0 KT	TAILWIND − 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND − 10.0 KT	TAILWIND − 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
44	76.1 4/6 142/49/51	77.9 4/6 146/51/53	75.1 2/3 153/54/55	75.7 2/3 156/57/58	76.3 2/3 158/59/60	73.0 2/3 142/44/47	74.1 2/3 146/47/51	75.1 2/3 150/51/55	81.1 4/6 153/53/58	82.1 3/4 155/57/62
46	75.5 4/6 142/48/50	77.2 4/6 148/50/52	78.9 4/6 152/55/57	80.2 4/6 155/56/58	80.7 4/6 154/56/58	75.7 4/6 141/45/49	77.3 4/6 145/47/52	79.1 4/6 150/50/55	80.3 3/4 152/53/58	80.7 2/4 152/55/60
48	74.5 4/6 143/48/50	76.2 4/6 148/50/52	77.9 4/6 153/53/55	79.1 4/6 155/53/55	79.3 2/4 153/55/57	74.7 4/6 141/44/48	76.4 4/6 146/47/51	78.0 3/4 150/50/55	79.1 3/4 152/53/57	79.5 4/8 155/58/63

V1 = 152 kt , VR = 153 kt , V2 = 158 kt

3. Apply WET correction

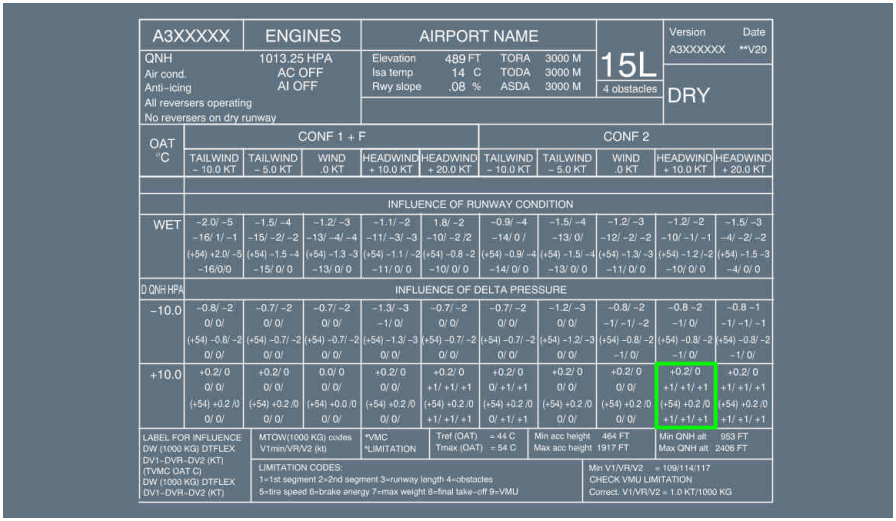


A3XXXXX	ENGINES	AIRPORT NAME				Version	Date
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M	A3XXXXX	**V20
Air cond.	AC OFF	Isa temp	14 C	TODA	3000 M	15L	
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M	4 obstacles	DRY
All reversers operating							
No reversers on dry runway							

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND – 10.0 KT	TAILWIND – 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND – 10.0 KT	TAILWIND – 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
INFLUENCE OF RUNWAY CONDITION										
WET	–2.0/ –5 –16/ 1/ –1 (+54) +2.0/ –5 –16/0/0	–1.5/ –4 –15/ –2/ –2 (+54) –1.5 –4 –15/ 0/ 0	–1.2/ –3 –13/ –4/ –4 (+54) –1.3 –3 –13/ 0/ 0	–1.1/ –2 –11/ –3/ –3 (+54) –1.1 / –2 –11/ 0/ 0	1.8/ –2 –10/ –2 /2 (+54) –0.8 –2 –10/ 0/ 0	–0.9/ –4 –14/ 0 / (+54) –0.9/ –4 –14/ 0/ 0	–1.5/ –4 –13/ 0/ (+54) –1.5/ –4 –13/ 0/ 0	–1.2/ –3 –12/ –2/ –2 (+54) –1.3/ –3 –11/ 0/ 0	–1.2/ –2 –10/ –1/ –1 (+54) –1.2/ –2 –10/ 0/ 0	–1.5/ –3 –4/ –2/ –2 (+54) –1.5 –3 –4/ 0/ 0
DQNH HPA	INFLUENCE OF DELTA PRESSURE									
–10.0	–0.8/ –2 0/ 0/ (+54) –0.8/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–1.3/ –3 –1/ 0/ (+54) –1.3/ –3 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–1.2/ –3 0/ 0/ (+54) –1.2/ –3 0/ 0/	–0.8/ –2 –1/ –1/ –2 (+54) –0.8/ –2 –1/ 0/	–0.8 –2 –1/ 0/ (+54) –0.8/ –2 –1/ 0/	–0.8 –1 –1/ –1/ –1 (+54) –0.8/ –2 –1/ 0/
+10.0	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	0.0/ 0 0/ 0/ (+54) +0.0 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 0/ +1/ +1 (+54) +0.2 /0 0/ +1/ +1	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT)	MTOW(1000 KG) codes V1min/VR/V2 (kt)	*VMC *LIMITATION	Tref (OAT) = 44 C Tmax (OAT) = 54 C	Min acc height 464 FT Max acc height 1917 FT	Min QNH alt 953 FT Max QNH alt 2406 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take–off 9=VMU			Min V1/VR/V2 = 109/114/117 CHECK VMU LIMITATION Correct. V1/VR/V2 = 1.0 KT/1000 KG	

For OAT < TVMC (54 °C), ΔW =.....-1.2
Intermediate weight..... = 79.1
Associated speeds,
V1 = 152 kt - 10 = 142 kt
VR = 153 kt - 1 = 152 kt
V2 = 158 kt - 1 = 157 kt
(No speed check required for first correction).
Apply QNH correction



A3XXXXX	ENGINES	AIRPORT NAME				Version	Date
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M	A3XXXXXX	**V20
Air cond.	AC OFF	Isa temp	14 C	TODA	3000 M	15L	
Anti-icing	AI OFF	Rwy slope	,08 %	ASDA	3000 M	4 obstacles	DRY
All reversers operating							
No reversers on dry runway							

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND – 10.0 KT	TAILWIND – 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND – 10.0 KT	TAILWIND – 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
	INFLUENCE OF RUNWAY CONDITION									
WET	–2.0/ –5 –16/ 1/ –1 (+54) +2.0/ –5 –16/0/0	–1.5/ –4 –15/ –2/ –2 (+54) –1.5 –4 –15/ 0/ 0	–1.2/ –3 –13/ –4/ –4 (+54) –1.3 –3 –13/ 0/ 0	–1.1/ –2 –11/ –3/ –3 (+54) –1.1 / –2 –11/ 0/ 0	1.8/ –2 –10/ –2 /2 (+54) –0.8 –2 –10/ 0/ 0	–0.9/ –4 –14/ 0 / (+54) –0.9/ –4 –14/ 0/ 0	–1.5/ –4 –13/ 0/ (+54) –1.5/ –4 –13/ 0/ 0	–1.2/ –3 –12/ –2/ –2 (+54) –1.3/ –3 –11/ 0/ 0	–1.2/ –2 –10/ –1/ –1 (+54) –1.2 /–2 –10/ 0/ 0	–1.5/ –3 –4/ –2/ –2 (+54) –1.5 –3 –4/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE									
–10.0	–0.8/ –2 0/ 0/ (+54) –0.8/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–1.3/ –3 –1/ 0/ (+54) –1.3/ –3 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–1.2/ –3 0/ 0/ (+54) –1.2/ –3 0/ 0/	–0.8/ –2 –1/ –1/ –2 (+54) –0.8/ –2 –1/ 0/	–0.8 –2 –1/ 0/ (+54) –0.8/ –2 –1/ 0/	–0.8 –1 –1/ –1/ –1 (+54) –0.8/ –2 –1/ 0/
+10.0	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	0.0/ 0 0/ 0/ (+54) +0.0 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 0/ +1/ +1 (+54) +0.2 /0 0/ +1/ +1	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT)	MTOW(1000 KG) codes V1min/VR/V2 (kt)	*VMC *LIMITATION	Tref (OAT) = 44 C Tmax (OAT) = 54 C	Min acc height 464 FT Max acc height 1917 FT	Min QNH alt 953 FT Max QNH alt 2406 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take–off 9=VMU			Min V1/VR/V2 = 109/114/117 CHECK VMU LIMITATION Correct. V1/VR/V2 = 1.0 KT/1000 KG	

For OAT < TVMC (54 °C), ΔW = 0.2 × 15/10 =.....+0.3
Max permissible takeoff weight..... = 79.4
Associated speed,
V1 = 142 kt + 1 × 15/10 = 143 kt
VR = 152 kt + 1 × 15/10 = 154 kt
V2 = 157 kt + 1 × 15/10 = 159 kt

Check that the speeds are higher than minimum speeds from the chart and from VMU table (*Refer to PER-TOF-TOD-25-20 MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)*)(it is reminded that if the speed checks are not fulfilled, the corrections must be recalculated using those provided on lines 3 and 4).
Since the speed check is fulfilled:
Max permissible takeoff weight = 79.4 (1 000 kg)
V1 = 143 kt, VR = 154 kt, V2 = 159 kt.

	Takeoff Configuration : 2			
	TOW	**V1**	**VR**	**V2**
TOW (RTOW)	82.1			
FCOM correction(s)	- 1.8			
Intermediate value	80.3	152	153	158
WET Correction	- 1.2	-10	-1	-1
Intermediate value	79.1	142	152	157
QNH Correction	+ 0.3	+1	+2	+2

Continued on the following page

Continued from the previous page

	Takeoff Configuration : 2			
	TOW	**V1**	**VR**	**V2**
Final value	79.4	143	154	159

EXTRAPOLATION

EXTRAPOLATION

Ident.: PER-TOF-TOC-12-30-00001716.0001001 / 01 MAR 11

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

For a takeoff weight lower than those displayed on the chart, associated speeds are calculated as follows :

1. For a given wind, note the speeds associated with the takeoff weight in the row displaying the highest permissible temperature.
2. Apply a speed correction of 1 kt per 1 000 kg (0.5 kt per 1 000 lb) weight decrement to V1, VR and V2 limited to minimum speeds.

EXTRAPOLATION

Ident.: PER-TOF-TOC-12-30-00001716.0002001 / 01 MAR 11

2 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

For a takeoff weight lower than those displayed on the chart, associated speeds are calculated as follows :

1. For given configuration and wind, note the speeds associated with the takeoff weight in the row displaying the highest permissible temperature.
2. Apply speed corrections provided at the bottom of the RTOW chart to V1, VR and V2 limited to the minimum speeds.

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MAXIMUM STRUCTURAL TAKEOFF WEIGHT

MAXIMUM STRUCTURAL TAKEOFF WEIGHT

Ident.: PER-TOF-TOC-12-40-00001717.0001001 / 18 MAR 11
Applicable to: ALL

The maximum structural takeoff weight is a weight limitation depending on the aircraft. This limitation is provided in the Flight Manual and in *Refer to LIM-AG-WGHT Weight Limitations*. Compare the maximum structural takeoff weight to the maximum permissible takeoff weight computed for given conditions and retain the lower of the two values.

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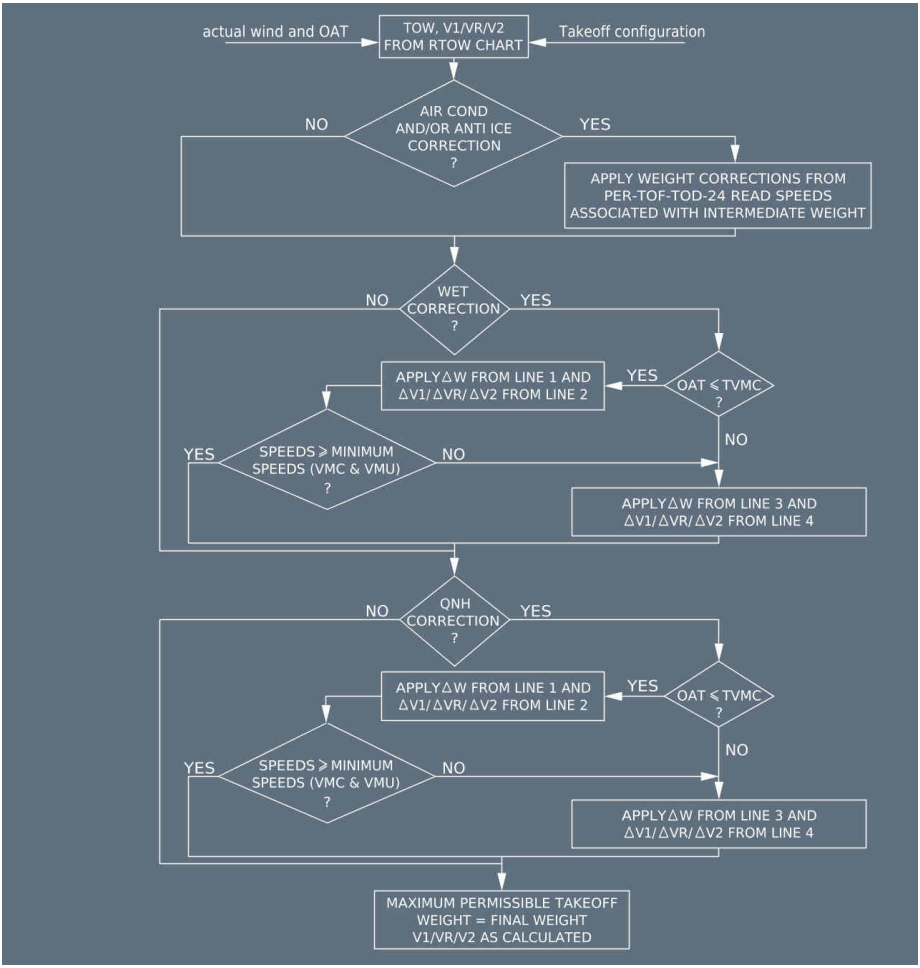
SUMMARY

SUMMARY

Ident.: PER-TOF-TOC-12-50-00006313.0001001 / 11 MAR 11
Applicable to: ALL

The following flow diagram gives the different steps to follow.



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DETERMINATION OF FLEXIBLE TAKEOFF TEMPERATURE AND SPEEDS

GENERAL

Ident.: PER-TOF-TOC-14-10-00001722.0002001 / 17 MAR 11
Applicable to: ALL

Before determining the flexible temperature, calculate the maximum permissible takeoff weight (see previous section) and ensure that the actual takeoff weight is lower than the determined maximum takeoff weight.

- Enter the RTOW chart with the wind condition to interpolate for the actual takeoff weight. Read the flexible temperature in the temperature column corresponding to the actual weight.
- Repeat this process for the other configuration available. Select the configuration giving the highest flexible temperature.

CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS

Ident.: PER-TOF-TOC-14-10-00001723.0001001 / 03 MAR 14
1 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

When the takeoff conditions are different from those provided on the chart, apply the associated corrections.

Note: - *If the RTOW chart is based on the CG being at 25 %, the crew can determine the flexible temperature at a more forward CG by decreasing the flexible temperature by 2 °C. V1, VR and V2 must be increased by 1 kt.*
- *25 % CG is the basic certified limit, on which all takeoff computations are based. To take into account the operational margins, the above penalties must be applied when operational CG is forward 27 % CG.*

CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS

Ident.: PER-TOF-TOC-14-10-00001723.0002001 / 14 MAR 11
2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

When the takeoff conditions are different from those provided on the chart, apply the associated corrections.

CONSERVATIVE CORRECTIONS FOR QNH AND BLEEDS

Ident.: PER-TOF-TOC-14-10-00014714.0001001 / 29 JUL 16
Applicable to: ALL

CONSERVATIVE CORRECTIONS FOR QNH AND BLEEDS

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.

Corrections are given for QNH ≠ 1 013 hPa , air conditioning ON, anti ice ON (*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS*).

1. For a given takeoff weight, wind condition and selected configuration, determine the flexible temperature. Retain the takeoff speeds associated with the actual weight.
2. Apply the published temperature correction. To combine two or more corrections, add the different corrections and apply to temperature value.
   (No speed corrections required).

EXAMPLE 2

DATA : Actual takeoff weight = 75 600 kg
Head wind = 10 kt
Air conditioning ON
QNH = 1 013 hPa

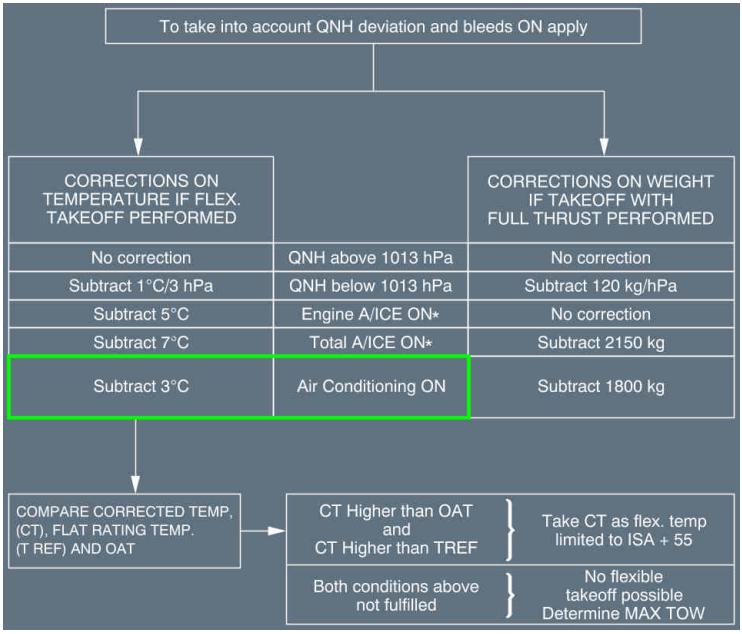
Use the chart: (*Refer to PER-TOF-TOC-10-30 EXAMPLE OF TAKEOFF CHART*).

A3XXXXX	ENGINES	AIRPORT NAME				Version	Date
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M	A3XXXXXX	**V20
Air cond.	AC OFF	Isa temp	14 C	TODA	3000 M	15L	
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M	4 obstacles	DRY
All reversers operating							
No reversers on dry runway							

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
48	74.5 4/6 143/48/50	76.2 4/6 148/50/52	77.9 4/6 153/53/55	79.1 4/6 155/53/55	79.3 2/4 153/55/57	74.7 4/6 141/44/48	76.4 4/6 146/47/51	78.0 3/4 150/50/55	79.1 3/4 152/53/57	79.5 4/8 155/58/63
50	73.6 4/6 143/47/49	75.3 4/6 148/49/51	76.9 4/6 153/53/55	77.9 4/8 154/54/55	77.9 2/4 151/54/55	73.8 4/6 142/42/46	75.4 4/6 146/47/51	76.9 3/4 150/50/54	78.0 3/4 152/52/57	78.0 2/4 149/52/57
52	72.7 4/6 144/46/48	74.4 4/6 149/49/51	75.8 3/4 153/53/54	76.3 2/4 152/52/53	76.3 2/4 147/52/53	72.9 4/6 142/44/48	74.3 3/4 146/46/50	75.8 3/4 150/50/54	76.4 2/4 150/50/55	76.4 2/4 146/50/55
54	71.8 4/6 145/46/47	73.3 3/4 149/49/51	74.8 3/4 152/52/54	75.0 2/4 150/50/52	75.0 2/4 145/50/52	71.9 3/4 142/43/47	73.3 3/4 146/46/50	74.7 3/4 149/49/54	75.1 2/4 148/49/54	75.1 2/4 144/49/54

Determine the maximum permissible takeoff weight. The actual weight being lower than the maximum one, flexible takeoff is possible.
Enter the 10 kt head wind column and interpolate for 75 600 kg, CONF 1+F,
Flexible temperature..... 53 °C
Enter the 10 kt head wind column and interpolate for 75 600 kg, CONF 2,
Flexible temperature..... 53 °C

Retain CONF 2 as the speeds are lower.
Takeoff speeds are V1 = 149 kt, VR = 150 kt, V2 = 155 kt
Flexible temperature with air conditioning OFF.....53 °C
Use the QNH/Bleeds corrections:(*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS*).
For example:



Air conditioning correction .....-3 °C
Flexible temperature.....= 50 °C
Check that OAT/TREF < flex temperature ≤ TMAXFLEX
TMAXFLEX is specified in LIM-70.

CORRECTIONS FOR WET RUNWAY

Ident.: PER-TOF-TOC-14-10-00001725.0001001 / 28 JAN 11
Applicable to: ALL

CORRECTIONS FOR WET RUNWAY

(*Refer to PER-TOF-CTA-10 GENERAL*)

CORRECTIONS PRODUCED ON THE RTOW CHART

Ident.: PER-TOF-TOC-14-10-00014717.0001001 / 29 JUL 16
Applicable to: ALL

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.
For a description of this correction *Refer to PER-TOF-TOC-10-20 DESCRIPTION OF THE CORRECTIONS ON TAKEOFF CHART*. The list of corrections is not exhaustive, however the most commonly used corrections are wet runway, QNH, air conditioning and/or anti-icing. A maximum of three corrections can be produced on one chart.

To apply the correction, proceed as follows:

1. Enter the chart with wind and selected configuration. Interpolate for actual takeoff weight. Read flexible temperature associated with this weight.
2. Apply the first correction:
   Apply ΔTflex correction and apply speed corrections (ΔV1/ ΔVR/ ΔV2).
   Check that the resulting V2 is higher than the VMU Limited speed (*Refer to PER-TOF-TOD-25-20 MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)*). If the speed checks are not fulfilled, flexible takeoff is not possible. Set TOGA thrust and retain the speeds associated with maximum permissible takeoff weight or the speeds read in the chart of the actual weight if they are all lower.
   No speed correction is required for QNH and bleeds influence (Not applicable to maximum takeoff weight determination).
3. To combine a second and/or a third correction, proceed as per point 2, except that also the resulting speeds must be checked higher than the minimum speed displayed on the RTOW chart.
4. Check that the final flexible temperature is:
   - higher than OAT and TREF
   - limited to TMAXFLEX

   If the check is fulfilled, retain final flexible temperature as the one to be inserted in the MCDU.
   If the check is not fulfilled, (final flexible temperature lower than OAT or TREF), no flexible takeoff is possible.
   Use TOGA thrust and retain speeds that have been calculated for the maximum permissible takeoff weight. (*Refer to PER-TOF-TOC-14-20 FLEXIBLE TAKEOFF NOT POSSIBLE*)

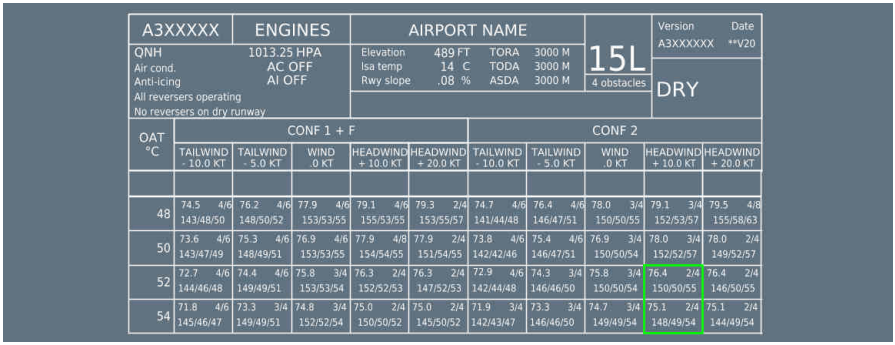
Note:
- *QNH correction is given for ±10 hPa. It is allowed to extrapolate linearly for greater QNH deviation.*
- *Corrections from the chart must be applied from top to bottom, i.e. in the RTOW on Refer to PER-TOF-TOC-10-30 EXAMPLE OF TAKEOFF CHART, apply the wet influence first.*

Note:
- *If asterisk or dotted lines appear in the influence boxes, refer to more conservative corrections provided in the FCOM.*

EXAMPLE 5

DATA : CONF 2
Actual takeoff weight = 75 600 kg
Head wind = 10 kt
WET runway
Air conditioning OFF
QNH = 1 023 hPa

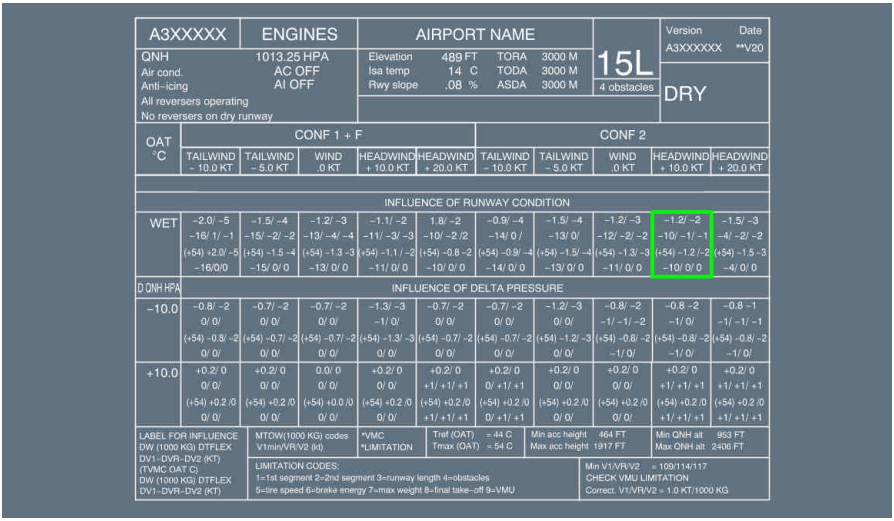
In this example, we will consider CONF 2 as takeoff configuration. But same computation has to be done in CONF 1 and you must retain the best configuration.
Use the chart:(*Refer to PER-TOF-TOC-10-30 EXAMPLE OF TAKEOFF CHART*).



A3XXXXX	ENGINES	AIRPORT NAME				15L	Version	Date
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M	4 obstacles	A3XXXXXX	**V20
Air cond.	AC OFF	Isa temp	14 C	TODA	3000 M		DRY	
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M			
All reversers operating								
No reversers on dry runway								

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
48	74.5 4/6 143/48/50	76.2 4/6 148/50/52	77.9 4/6 153/53/55	79.1 4/6 155/53/55	79.3 2/4 153/55/57	74.7 4/6 141/44/48	76.4 4/6 146/47/51	78.0 3/4 150/50/55	79.1 3/4 152/53/57	79.5 4/8 155/58/63
50	73.6 4/6 143/47/49	75.3 4/6 148/49/51	76.9 4/6 153/53/55	77.9 4/8 154/54/55	77.9 2/4 151/54/55	73.8 4/6 142/42/46	75.4 4/6 146/47/51	76.9 3/4 150/50/54	78.0 3/4 152/52/57	78.0 2/4 149/52/57
52	72.7 4/6 144/46/48	74.4 4/6 149/49/51	75.8 3/4 153/53/54	76.3 2/4 152/52/53	76.3 2/4 147/52/53	72.9 4/6 142/44/48	74.3 3/4 146/46/50	75.8 3/4 150/50/54	76.4 2/4 150/50/55	76.4 2/4 146/50/55
54	71.8 4/6 145/46/47	73.3 3/4 149/49/51	74.8 3/4 152/52/54	75.0 2/4 150/50/52	75.0 2/4 145/50/52	71.9 3/4 142/43/47	73.3 3/4 146/46/50	74.7 3/4 149/49/54	75.1 2/4 148/49/54	75.1 2/4 144/49/54

Determine the maximum permissible takeoff weight (see example 2). The actual weight being lower than the maximum one, flexible takeoff is possible.
Enter the 10 kt head wind column and interpolate for 75 600 kg, CONF 2,
Flexible temperature..... 53 °C
Takeoff speeds are V1 = 149 kt, VR = 150 kt, V2 = 155 kt
Apply WET correction

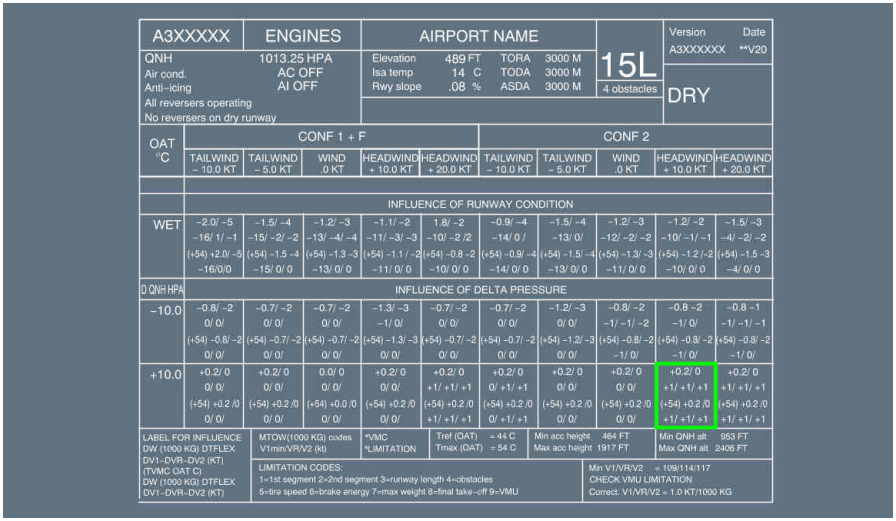


A3XXXXX	ENGINES	AIRPORT NAME					Version	Date
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M	15L	A3XXXXX	**V20
Air cond.	AC OFF	Isa temp	14 C	TODA	3000 M	4 obstacles	DRY	
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M			
All reversers operating								
No reversers on dry runway								

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND – 10.0 KT	TAILWIND – 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND – 10.0 KT	TAILWIND – 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
INFLUENCE OF RUNWAY CONDITION										
WET	–2.0/ –5 –16/ 1/ –1 (+54) +2.0/ –5 –16/0/0	–1.5/ –4 –15/ –2/ –2 (+54) –1.5 –4 –15/ 0/ 0	–1.2/ –3 –13/ –4/ –4 (+54) –1.3 –3 –13/ 0/ 0	–1.1/ –2 –11/ –3/ –3 (+54) –1.1 / –2 –11/ 0/ 0	1.8/ –2 –10/ –2 /2 (+54) –0.8 –2 –10/ 0/ 0	–0.9/ –4 –14/ 0 / (+54) –0.9/ –4 –14/ 0/ 0	–1.5/ –4 –13/ 0/ (+54) –1.5/ –4 –13/ 0/ 0	–1.2/ –3 –12/ –2/ –2 (+54) –1.3/ –3 –11/ 0/ 0	–1.2/ –2 –10/ –1/ –1 (+54) –1.2/ –2 –10/ 0/ 0	–1.5/ –3 –4/ –2/ –2 (+54) –1.5 –3 –4/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE									
–10.0	–0.8/ –2 0/ 0/ (+54) –0.8/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–1.3/ –3 –1/ 0/ (+54) –1.3/ –3 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–1.2/ –3 0/ 0/ (+54) –1.2/ –3 0/ 0/	–0.8/ –2 –1/ –1/ –2 (+54) –0.8/ –2 –1/ 0/	–0.8 –2 –1/ 0/ (+54) –0.8/ –2 –1/ 0/	–0.8 –1 –1/ –1/ –1 (+54) –0.8/ –2 –1/ 0/
+10.0	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	0.0/ 0 0/ 0/ (+54) +0.0 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 0/ +1/ +1 (+54) +0.2 /0 0/ +1/ +1	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT)	MTOW(1000 KG) codes V1min/VR/V2 (kt)	*VMC *LIMITATION	Tref (OAT) = 44 C Tmax (OAT) = 54 C	Min acc height 464 FT Max acc height 1917 FT	Min QNH alt 953 FT Max QNH alt 2406 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take–off 9=VMU			Min V1/VR/V2 = 109/114/117 CHECK VMU LIMITATION Correct. V1/VR/V2 = 1.0 KT/1000 KG	

ΔTflex =..... -2 °C
Intermediate flex temperature..... = 51 °C
Associated speeds,
V1 = 149 kt – 10 = 139 kt
VR = 150 kt – 1 = 149 kt
V2 = 155 kt – 1 = 154 kt
Check that V2 is higher than the VMU. (*Refer to PER-TOF-TOD-25-20 MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)*).
Apply QNH correction



A3XXXXX	ENGINES	AIRPORT NAME					Version	Date
QNH Air cond. Anti-icing All reversers operating No reversers on dry runway	1013.25 HPA AC OFF AI OFF	Elevation 489 FT Isa temp 14 C Rwy slope ,08 %		TORA 3000 M TODA 3000 M ASDA 3000 M	15L 4 obstacles		A3XXXXXX DRY	**V20

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND – 10.0 KT	TAILWIND – 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND – 10.0 KT	TAILWIND – 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
	INFLUENCE OF RUNWAY CONDITION									
WET	–2.0/ –5 –16/ 1/ –1 (+54) +2.0/ –5 –16/0/0	–1.5/ –4 –15/ –2/ –2 (+54) –1.5 –4 –15/ 0/ 0	–1.2/ –3 –13/ –4/ –4 (+54) –1.3 –3 –13/ 0/ 0	–1.1/ –2 –11/ –3/ –3 (+54) –1.1 / –2 –11/ 0/ 0	1.8/ –2 –10/ –2 /2 (+54) –0.8 –2 –10/ 0/ 0	–0.9/ –4 –14/ 0 / (+54) –0.9/ –4 –14/ 0/ 0	–1.5/ –4 –13/ 0/ (+54) –1.5/ –4 –13/ 0/ 0	–1.2/ –3 –12/ –2/ –2 (+54) –1.3/ –3 –11/ 0/ 0	–1.2/ –2 –10/ –1/ –1 (+54) –1.2 /–2 –10/ 0/ 0	–1.5/ –3 –4/ –2/ –2 (+54) –1.5 –3 –4/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE									
–10.0	–0.8/ –2 0/ 0/ (+54) –0.8/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–1.3/ –3 –1/ 0/ (+54) –1.3/ –3 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–1.2/ –3 0/ 0/ (+54) –1.2/ –3 0/ 0/	–0.8/ –2 –1/ –1/ –2 (+54) –0.8/ –2 –1/ 0/	–0.8 –2 –1/ 0/ (+54) –0.8/ –2 –1/ 0/	–0.8 –1 –1/ –1/ –1 (+54) –0.8/ –2 –1/ 0/
+10.0	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	0.0/ 0 0/ 0/ (+54) +0.0 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 0/ +1/ +1 (+54) +0.2 /0 0/ +1/ +1	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT)	MTOW(1000 KG) codes V1min/VR/V2 (kt)	*VMC *LIMITATION	Tref (OAT) = 44 C Tmax (OAT) = 54 C	Min acc height 464 FT Max acc height 1917 FT	Min QNH alt 953 FT Max QNH alt 2406 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take–off 9=VMU			Min V1/VR/V2 = 109/114/117 CHECK VMU LIMITATION Correct. V1/VR/V2 = 1.0 KT/1000 KG	

ΔTflex =.....0 °C
Maximum flexible temperature.....= 51 °C
No speed correction is required for QNH and bleed influence.
Takeoff speeds are V1 = 139 kt, VR = 149 kt, V2 = 154 kt
Check that OAT/TREF < flex temperature ≤ TMAXFLEX
TMAXFLEX is specified in LIM-70.

	Takeoff Configuration: 1 + F			
	Tflex	**V1**	**VR**	**V2**
Chart temperature	53	149	150	155
FCOM correction(s)				
Intermediate value	53	149	150	155
WET Correction	-2	-10	-1	-1
Intermediate value	51	139	149	154
QNH Correction	0	0	0	0
Final value	51	139	149	154

COMBINING CORRECTIONS FROM FCOM AND CHART

Ident.: PER-TOF-TOC-14-10-00014718.0001001 / 29 JUL 16
Applicable to: ALL

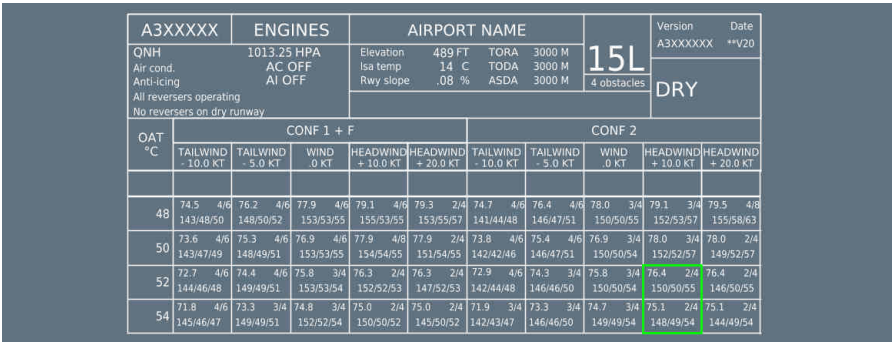
The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.

1. Apply corrections from FCOM (*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS*).
2. Apply corrections from the RTOW chart.
   Apply speed corrections except for QNH and bleed influences.

EXAMPLE 6

DATA: CONF 2
Actual takeoff weight = 75 600 kg
Head wind = 10 kt
Air conditioning ON
QNH = 1 028 hPa
WET runway

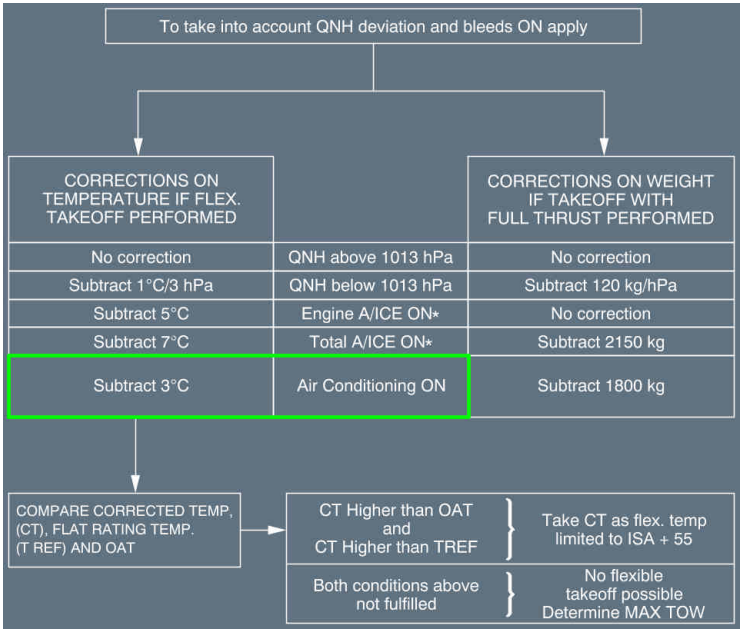
In this example, we will consider CONF 2 as takeoff configuration. But same computation has to be done in CONF 1 and you must retain the best configuration.
Use the chart (*Refer to PER-TOF-TOC-10-20 DESCRIPTION OF THE CORRECTIONS ON TAKEOFF CHART*). Determine the maximum permissible takeoff weight (*Refer to PER-TOF-TOC-12-10 COMBINING CORRECTIONS FROM FCOM AND CHART*: example 3).
The actual weight being lower than the maximum one, flexible takeoff is possible.



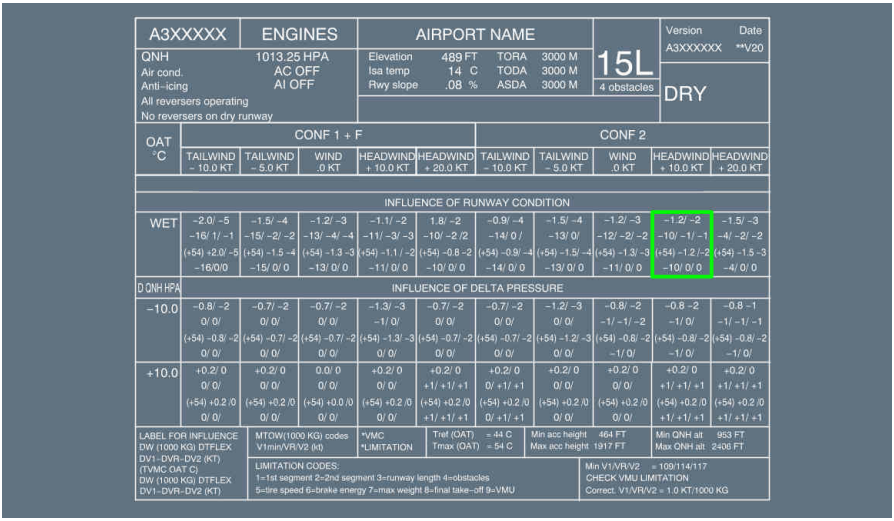
A3XXXXX	ENGINES	AIRPORT NAME			Version	Date
QNH 1013.25 HPA Air cond. AC OFF Anti-icing AI OFF All reversers operating No reversers on dry runway		Elevation 489 FT TORA 3000 M Isa temp 14 C TODA 3000 M Rwy slope .08 % ASDA 3000 M		15L 4 obstacles	A3XXXXXX	**V20 DRY

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND - 10.0 KT	TAILWIND - 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
48	74.5 4/6 143/48/50	76.2 4/6 148/50/52	77.9 4/6 153/53/55	79.1 4/6 155/53/55	79.3 2/4 153/55/57	74.7 4/6 141/44/48	76.4 4/6 146/47/51	78.0 3/4 150/50/55	79.1 3/4 152/53/57	79.5 4/8 155/58/63
50	73.6 4/6 143/47/49	75.3 4/6 148/49/51	76.9 4/6 153/53/55	77.9 4/8 154/54/55	77.9 2/4 151/54/55	73.8 4/6 142/42/46	75.4 4/6 146/47/51	76.9 3/4 150/50/54	78.0 3/4 152/52/57	78.0 2/4 149/52/57
52	72.7 4/6 144/46/48	74.4 4/6 149/49/51	75.8 3/4 153/53/54	76.3 2/4 152/52/53	76.3 2/4 147/52/53	72.9 4/6 142/44/48	74.3 3/4 146/46/50	75.8 3/4 150/50/54	76.4 2/4 150/50/55	76.4 2/4 146/50/55
54	71.8 4/6 145/46/47	73.3 3/4 149/49/51	74.8 3/4 152/52/54	75.0 2/4 150/50/52	75.0 2/4 145/50/52	71.9 3/4 142/43/47	73.3 3/4 146/46/50	74.7 3/4 149/49/54	75.1 2/4 148/49/54	75.1 2/4 144/49/54

Enter the 10 kt head wind column and interpolate for 75 600 kg, CONF 2,
Flexible temperature..... 53 °C
Takeoff speeds are V1 = 149 kt, VR = 150 kt, V2 = 155 kt
First, apply the correction (*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS*).
Flexible temperature with air conditioning OFF..... 53 °C



Air conditioning correction.....-3 °C
Intermediate flexible temperature.....= 50 °C
No speed correction.
Apply WET correction

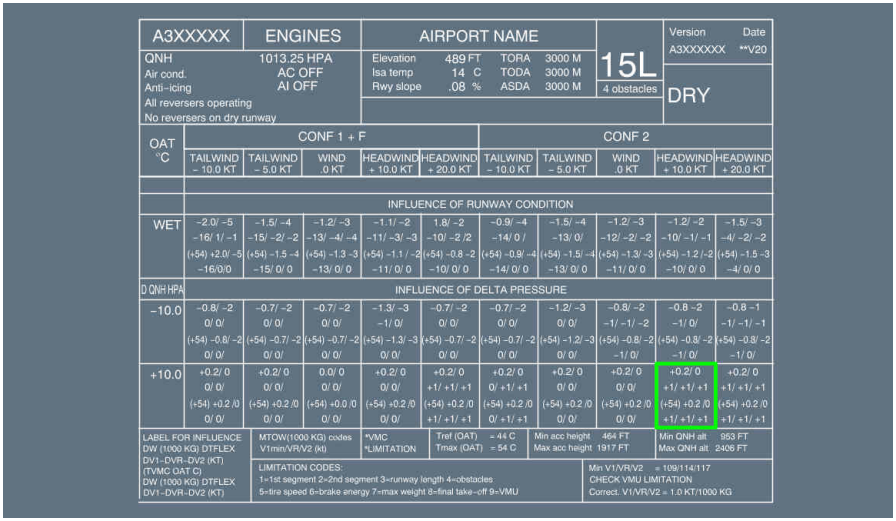


A3XXXXX	ENGINES	AIRPORT NAME					Version	Date
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M	15L	A3XXXXX	**V20
Air cond.	AC OFF	Isa temp	14 C	TODA	3000 M	4 obstacles	DRY	
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M			
All reversers operating								
No reversers on dry runway								

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND – 10.0 KT	TAILWIND – 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND – 10.0 KT	TAILWIND – 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
INFLUENCE OF RUNWAY CONDITION										
WET	–2.0/ –5 –16/ 1/ –1 (+54) +2.0/ –5 –16/0/0	–1.5/ –4 –15/ –2/ –2 (+54) –1.5 –4 –15/ 0/ 0	–1.2/ –3 –13/ –4/ –4 (+54) –1.3 –3 –13/ 0/ 0	–1.1/ –2 –11/ –3/ –3 (+54) –1.1 / –2 –11/ 0/ 0	1.8/ –2 –10/ –2 /2 (+54) –0.8 –2 –10/ 0/ 0	–0.9/ –4 –14/ 0 / (+54) –0.9/ –4 –14/ 0/ 0	–1.5/ –4 –13/ 0/ (+54) –1.5/ –4 –13/ 0/ 0	–1.2/ –3 –12/ –2/ –2 (+54) –1.3/ –3 –11/ 0/ 0	–1.2/ –2 –10/ –1/ –1 (+54) –1.2/ –2 –10/ 0/ 0	–1.5/ –3 –4/ –2/ –2 (+54) –1.5 –3 –4/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE									
–10.0	–0.8/ –2 0/ 0/ (+54) –0.8/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–1.3/ –3 –1/ 0/ (+54) –1.3/ –3 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–1.2/ –3 0/ 0/ (+54) –1.2/ –3 0/ 0/	–0.8/ –2 –1/ –1/ –2 (+54) –0.8/ –2 –1/ 0/	–0.8 –2 –1/ 0/ (+54) –0.8/ –2 –1/ 0/	–0.8 –1 –1/ –1/ –1 (+54) –0.8/ –2 –1/ 0/
+10.0	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	0.0/ 0 0/ 0/ (+54) +0.0 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 0/ +1/ +1 (+54) +0.2 /0 0/ +1/ +1	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT)	MTOW(1000 KG) codes V1min/VR/V2 (kt)	*VMC *LIMITATION	Tref (OAT) = 44 C Tmax (OAT) = 54 C	Min acc height 464 FT Max acc height 1917 FT	Min QNH alt 953 FT Max QNH alt 2406 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take–off 9=VMU			Min V1/VR/V2 = 109/114/117 CHECK VMU LIMITATION Correct. V1/VR/V2 = 1.0 KT/1000 KG	

For flexible temperature < TVMC (54 °C), ΔTflex = ...-2 °C
Intermediate flex temperature..... = 48 °C
Associated speeds,
V1 = 149 kt - 10 = 139 kt
VR = 150 kt - 1 = 149 kt
V2 = 155 kt - 1 = 154 kt
Check that V2 is higher than the VMU (*Refer to PER-TOF-TOD-25-20 MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)*).
Apply QNH correction



A3XXXXX	ENGINES	AIRPORT NAME					Version	Date
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M	15L	A3XXXXXX	**V20
Air cond.	AC OFF	Isa temp	14 C	TODA	3000 M	4 obstacles	DRY	
Anti-icing	AI OFF	Rwy slope	,08 %	ASDA	3000 M			
All reversers operating								
No reversers on dry runway								

OAT °C	CONF 1 + F					CONF 2				
	TAILWIND – 10.0 KT	TAILWIND – 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT	TAILWIND – 10.0 KT	TAILWIND – 5.0 KT	WIND .0 KT	HEADWIND + 10.0 KT	HEADWIND + 20.0 KT
	INFLUENCE OF RUNWAY CONDITION									
WET	–2.0/ –5 –16/ 1/ –1 (+54) +2.0/ –5 –16/0/0	–1.5/ –4 –15/ –2/ –2 (+54) –1.5 –4 –15/ 0/ 0	–1.2/ –3 –13/ –4/ –4 (+54) –1.3 –3 –13/ 0/ 0	–1.1/ –2 –11/ –3/ –3 (+54) –1.1 / –2 –11/ 0/ 0	1.8/ –2 –10/ –2 /2 (+54) –0.8 –2 –10/ 0/ 0	–0.9/ –4 –14/ 0 / (+54) –0.9/ –4 –14/ 0/ 0	–1.5/ –4 –13/ 0/ (+54) –1.5/ –4 –13/ 0/ 0	–1.2/ –3 –12/ –2/ –2 (+54) –1.3/ –3 –11/ 0/ 0	–1.2/ –2 –10/ –1/ –1 (+54) –1.2 /–2 –10/ 0/ 0	–1.5/ –3 –4/ –2/ –2 (+54) –1.5 –3 –4/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE									
–10.0	–0.8/ –2 0/ 0/ (+54) –0.8/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–1.3/ –3 –1/ 0/ (+54) –1.3/ –3 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–0.7/ –2 0/ 0/ (+54) –0.7/ –2 0/ 0/	–1.2/ –3 0/ 0/ (+54) –1.2/ –3 0/ 0/	–0.8/ –2 –1/ –1/ –2 (+54) –0.8/ –2 –1/ 0/	–0.8 –2 –1/ 0/ (+54) –0.8/ –2 –1/ 0/	–0.8 –1 –1/ –1/ –1 (+54) –0.8/ –2 –1/ 0/
+10.0	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	0.0/ 0 0/ 0/ (+54) +0.0 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 0/ +1/ +1 (+54) +0.2 /0 0/ +1/ +1	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 0/ 0/ (+54) +0.2 /0 0/ 0/	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1	+0.2/ 0 +1/ +1/ +1 (+54) +0.2 /0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT)

MTOW(1000 KG) codes V1min/VR/V2 (kt) | *VMC *LIMITATION | Tref (OAT) = 44 C Tmax (OAT) = 54 C | Min acc height 464 FT Max acc height 1917 FT | Min QNH alt 953 FT Max QNH alt 2406 FT

LIMITATION CODES:
1=1st segment 2=2nd segment 3=runway length 4=obstacles
5=tire speed 6=brake energy 7=max weight 8=final take–off 9=VMU

Min V1/VR/V2 = 109/114/117
CHECK VMU LIMITATION
Correct. V1/VR/V2 = 1.0 KT/1000 KG

For flexible temperature < TVMC (54 °C), ΔTflex =.....0 °C
Flexible temperature.....= 48 °C
No speed correction is required for QNH and bleed influence.
Takeoff speeds are,
V1 = 139 kt
VR = 149 kt
V2 = 154 kt
Check that OAT/TREF < flex temperature ≤ TMAXFLEX.
TMAXFLEX is specified in LIM-70.

	Takeoff Configuration : 2			
	Tflex	**V1**	**VR**	**V2**
Chart temperature	53	149	150	155
FCOM correction(s)	-3	0	0	0
Intermediate value	50	149	150	155
WET Correction	-2	-10	-1	-1
Intermediate value	48	139	149	154
QNH Correction	0	0	0	0
Final value	48	139	149	154

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FLEXIBLE TAKEOFF NOT POSSIBLE

FLEXIBLE TAKEOFF NOT POSSIBLE

Ident.: PER-TOF-TOC-14-20-00001726.0001001 / 30 SEP 13
Applicable to: ALL

In some cases when the actual takeoff weight is lower than the maximum permissible takeoff weight, but the flexible temperature is lower than TREF or OAT, flexible takeoff is not possible. It is mandatory to use TOGA thrust.

For speed determination:

- You can retain the speeds that have been calculated for the maximum permissible takeoff weight; OR
- You can retain the speeds associated with the actual takeoff weight provided they are all lower than the speeds calculated for the maximum permissible takeoff weight.

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FLEXIBLE TAKEOFF POSSIBLE BUT NOT USED

FLEXIBLE TAKEOFF POSSIBLE BUT NOT USED

Ident.: PER-TOF-TOC-14-25-00015228.0001001 / 30 SEP 13
Applicable to: ALL

If the flexible takeoff is possible, but the flight crew elects to perform the takeoff with TOGA thrust, for speed determination:

- You can retain the speeds that have been calculated for the maximum permissible takeoff weight; OR
- You can retain the speeds associated with the actual takeoff weight provided they are all lower than the speeds calculated for the maximum permissible takeoff weight.

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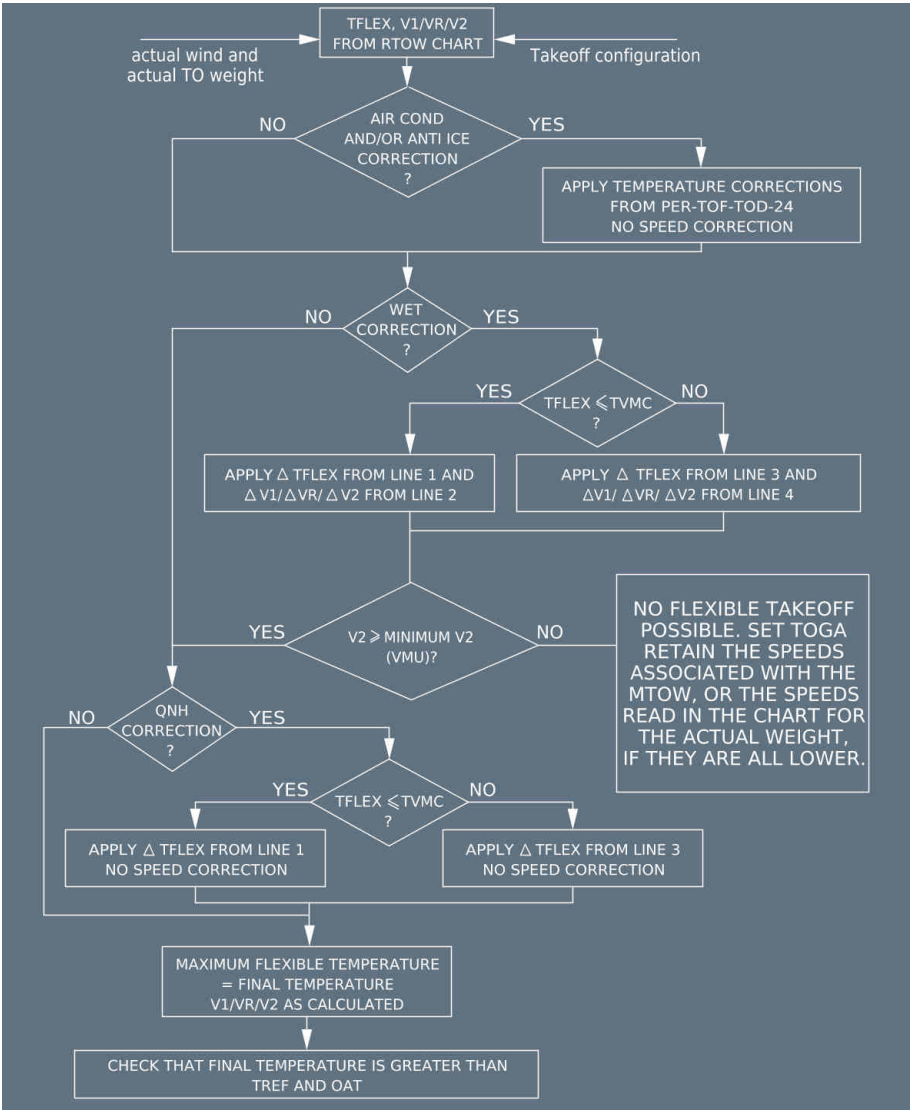
SUMMARY

SUMMARY

Ident.: PER-TOF-TOC-14-30-00006034.0001001 / 24 MAR 11
Applicable to: ALL

The flow diagram gives the different steps to follow.


TFLEX, V1/VR/V2
FROM RTOW CHART
actual wind and
actual TO weight
Takeoff configuration
AIR COND
AND/OR ANTI ICE
CORRECTION
?
NO
YES
APPLY TEMPERATURE CORRECTIONS
FROM PER-TOF-TOD-24
NO SPEED CORRECTION
WET
CORRECTION
?
NO
YES
TFLEX ⩽ TVMC
?
YES
NO
APPLY Δ TFLEX FROM LINE 1 AND
Δ V1/ Δ VR/ Δ V2 FROM LINE 2
APPLY Δ TFLEX FROM LINE 3 AND
Δ V1/ Δ VR/ Δ V2 FROM LINE 4
V2 ⩾ MINIMUM V2
(VMU)?
YES
NO
NO FLEXIBLE TAKEOFF
POSSIBLE. SET TOGA
RETAIN THE SPEEDS
ASSOCIATED WITH THE
MTOW, OR THE SPEEDS
READ IN THE CHART FOR
THE ACTUAL WEIGHT,
IF THEY ARE ALL LOWER.
QNH
CORRECTION
?
NO
YES
TFLEX ⩽ TVMC
?
YES
NO
APPLY Δ TFLEX FROM LINE 1
NO SPEED CORRECTION
APPLY Δ TFLEX FROM LINE 3
NO SPEED CORRECTION
MAXIMUM FLEXIBLE TEMPERATURE
= FINAL TEMPERATURE
V1/VR/V2 AS CALCULATED
CHECK THAT FINAL TEMPERATURE IS GREATER THAN
TREF AND OAT

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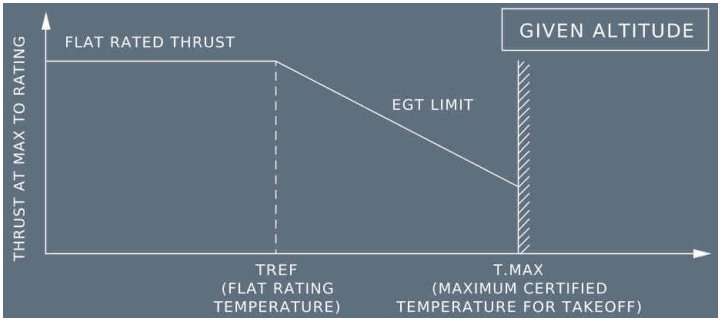
TAKEOFF PERFORMANCE

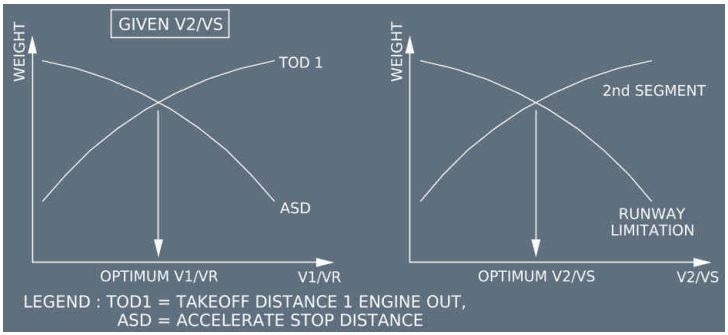
TAKEOFF PERFORMANCE

Ident.: PER-TOF-TOC-16-10-00001727.0001001 / 23 JUN 15
Applicable to: ALL

Takeoff optimization is calculated for a given runway and its obstacles and for given conditions of flap setting, temperature, wind and QNH. The calculation produces a maximum permissible takeoff weight (or a maximum takeoff temperature for an actual weight).
The takeoff thrust produced by the engine varies as follows :



The optimization process calculates the speeds which will produce the maximum takeoff weight. To do so, it takes into account the different takeoff limitations such as TOD, ASD, TOR, second segment..., as shown on the charts below.



On a typical runway, the performance of a twin engine aircraft, is generally limited by the one engine out operation at takeoff. The optimum V2/VS and optimum V1/VR are consequently unique.

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TAKEOFF CHART DESCRIPTION

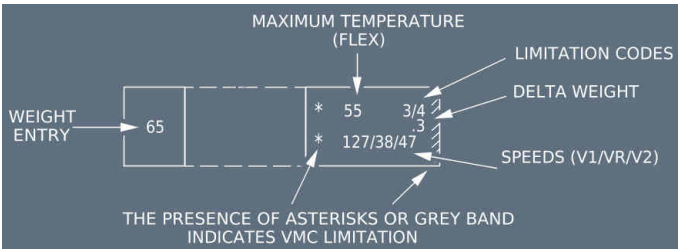
GENERAL

Ident.: PER-TOF-TOC-16-20-00001728.0003001 / 28 FEB 11
Applicable to: ALL

The takeoff chart (RTOW : Regulatory Takeoff Weight) is calculated for a specific aircraft version and for a particular runway specified at the top of the chart. The top of the chart also gives some information about the runway and lists the calculation assumptions.

The chart is given for 2 different configurations and 4 wind values per configuration. This allows the crew to select the configuration that gives either :
- the highest permissible takeoff weight, or, for a given weight,
- the highest flexible temperature.

If different configurations give equivalent performance, the crew should select the configuration associated with the lowest takeoff speeds.
The left column of the chart contains weight entry. For each weight entry (and for a given configuration and wind), the chart provides the following information :



Note: *The takeoff weight is the sum of the weight entry and the delta weight.*

The available limitation codes are :

- First segment	:	1
- Second segment	:	2
- Runway length	:	3
- Obstacles	:	4
- Tire speed	:	5
- Brake energy	:	6
- Maximum computation weight	:	7
- Final takeoff	:	8
- VMU	:	9

CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS

Ident.: PER-TOF-TOC-16-20-00001729.0002001 / 16 MAR 11

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Each takeoff chart is computed for a given set of conditions (air conditioning, QNH, anti ice...) specified at the top of the chart. If the actual takeoff conditions are different, the crew must apply corrections.

Two types of corrections are available :

- Conservative corrections (*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS*) (to be used when not provided on the chart).
- Corrections (less restrictive) listed on the chart, to be applied as explained below.

CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS

Ident.: PER-TOF-TOC-16-20-00001729.0105001 / 19 DEC 14

2 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Each takeoff chart is computed for a given set of conditions (air conditioning, QNH, anti ice...) specified at the top of the chart. If the actual takeoff conditions are different, the crew must apply corrections.

Two types of corrections are available :

- Conservative corrections (*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS*) (to be used when not provided on the chart).
- Corrections (less restrictive) listed on the chart, to be applied as explained below.

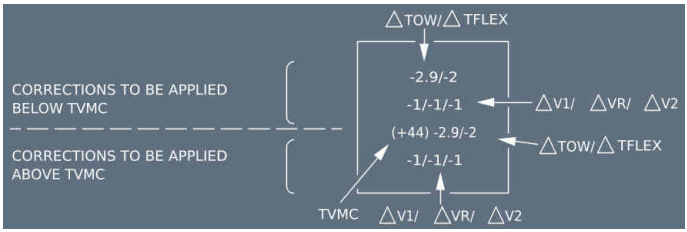
Note: *1. If the RTOW chart is based on the CG being at 25 %, the crew can find the takeoff performance at a more forward CG by decreasing the takeoff weight by 1 000 kg (2 200 lb) and increasing V1, VR and V2 by 1 kt.*

2. 25 % CG is the basic certified limit, on which all takeoff computations are based. To take into account the operational margins, the above penalties must be applied when operational CG is forward 27 % CG.

DESCRIPTION OF THE CORRECTIONS ON TAKEOFF CHART

Ident.: PER-TOF-TOC-16-20-00006633.0001001 / 08 JUL 15
Applicable to: ALL

The corrections are presented on 4 lines :



TVMC is a temperature value given per column. This is a fictitious value that indicates the temperature above which the speeds are close to a VMCG/VMCA limitation or are VMCG/VMCA limited.

Note: *The lower two lines may be shaded on certain chart formats.*

MINIMUM SPEED

Ident.: PER-TOF-TOC-16-20-00006634.0001001 / 08 JUL 15
Applicable to: ALL

Minimum V1/VR/V2 due to VMCG/VMCA are provided on the bottom right side of the takeoff chart. They are only applicable in case of speed corrections.
These speeds are conservative. They may be slightly higher than V1/VR/V2 displayed on the takeoff chart.

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ADDITIONAL INFORMATION

ONE ENGINE OUT CLIMB PROCEDURE

Ident.: PER-TOF-TOC-16-30-00001730.0001001 / 10 DEC 09
Applicable to: ALL

The performance given in the chart is consistent with the flight path specified for the aircraft with one engine out and takes into account significant obstacles.
When the procedure to be followed is not the standard instrument departure, the chart describes a specific procedure (EOSID).
When the specified procedure requires a turn, except if otherwise stated on the RTOW chart, the turn should be performed with a maximum bank of 15 ° until the aircraft reaches 1 500 ft or until green dot.
The acceleration height (or altitude) ensures that the net flight path clears the highest obstacle by at least 35 ft when accelerating in level flight to green dot speed after an engine failure, in the most adverse conditions.

TAKEOFF ON A WET RUNWAY

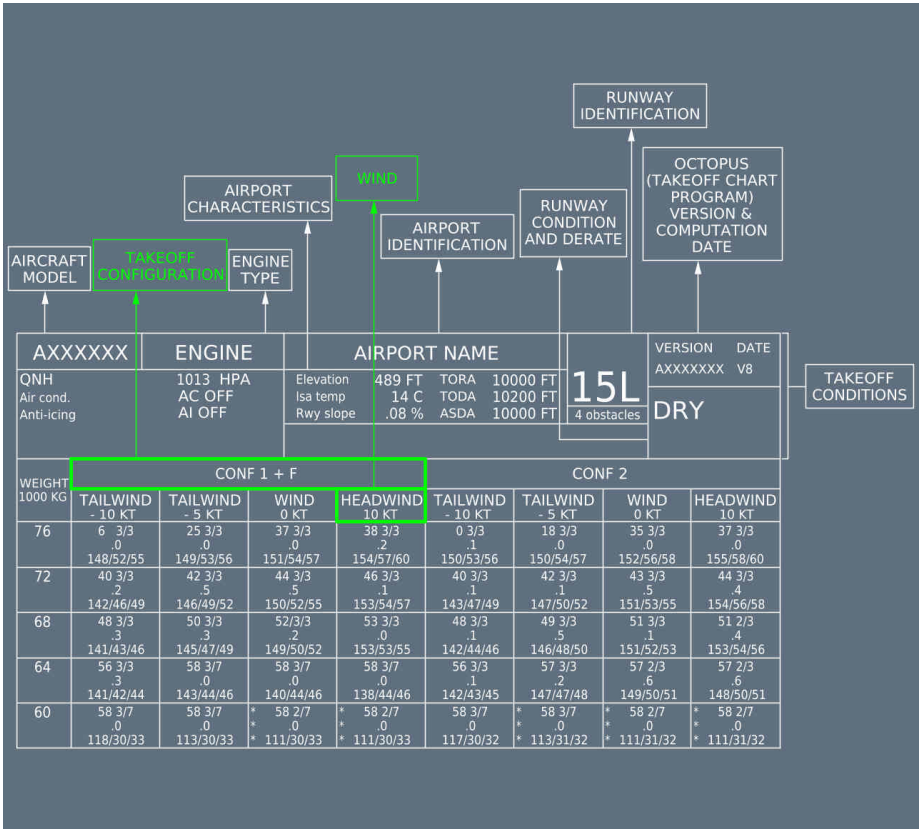
Ident.: PER-TOF-TOC-16-30-00001731.0002001 / 10 DEC 09
Applicable to: ALL

Takeoff charts computed for wet runway with a 15 ft screen height and/or use of reverse thrust may produce, in some conditions, a maximum takeoff weight (or flexible temperature) higher than that obtained for a dry runway. It is thus mandatory to compare both charts (dry and wet) and retain the lower of the two weights (or flexible temperature) and the associated speeds determined for a wet runway.

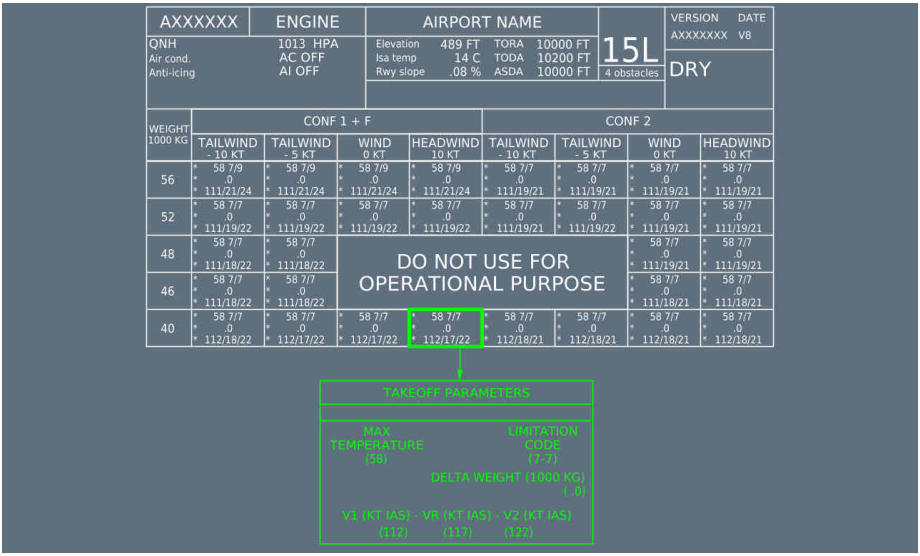
Note: *The crew need not compare the charts if the top of the wet runway chart specifies "DRY CHECK". (The comparison has already been inserted in the WET runway calculation).*

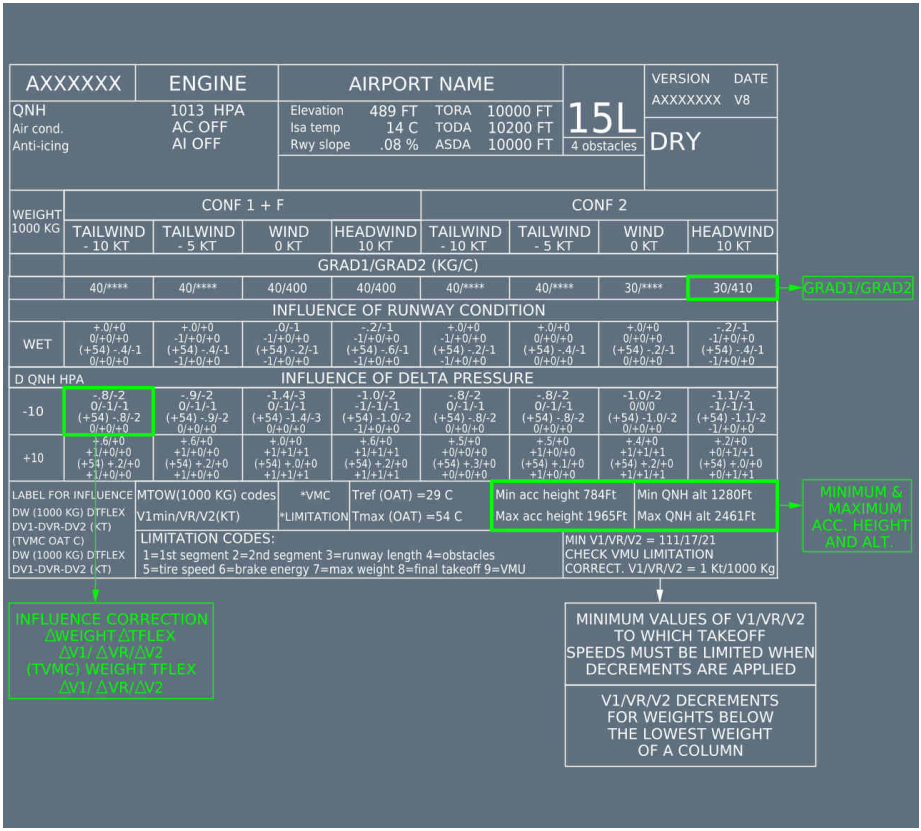
RTOW CHARTS - COMPLEMENTARY INFORMATION

Ident.: PER-TOF-TOC-16-30-00001732.0063001 / 10 DEC 09
Applicable to: MSN 02135, 02139



WEIGHT 1000 KG	CONF 1 + F TAILWIND - 10 KT	CONF 1 + F TAILWIND - 5 KT	CONF 1 + F WIND 0 KT	CONF 1 + F HEADWIND 10 KT	CONF 2 TAILWIND - 10 KT	CONF 2 TAILWIND - 5 KT	CONF 2 WIND 0 KT	CONF 2 HEADWIND 10 KT
76	6 3/3 .0 148/52/55	25 3/3 .0 149/53/56	37 3/3 .0 151/54/57	38 3/3 .2 154/57/60	0 3/3 .1 150/53/56	18 3/3 .0 150/54/57	35 3/3 .0 152/56/58	37 3/3 .0 155/58/60
72	40 3/3 .2 142/46/49	42 3/3 .5 146/49/52	44 3/3 .5 150/52/55	46 3/3 .1 153/54/57	40 3/3 .1 143/47/49	42 3/3 .1 147/50/52	43 3/3 .5 151/53/55	44 3/3 .4 154/56/58
68	48 3/3 .3 141/43/46	50 3/3 .3 145/47/49	52/3/3 .2 149/50/52	53 3/3 .0 153/53/55	48 3/3 .1 142/44/46	49 3/3 .5 146/48/50	51 3/3 .1 151/52/53	51 2/3 .4 153/54/56
64	56 3/3 .3 141/42/44	58 3/7 .0 143/44/46	58 3/7 .0 140/44/46	58 3/7 .0 138/44/46	56 3/3 .1 142/43/45	57 3/3 .2 147/47/48	57 2/3 .6 149/50/51	57 2/3 .6 148/50/51
60	58 3/7 .0 118/30/33	58 3/7 .0 113/30/33	* 58 2/7 * .0 * 111/30/33	* 58 2/7 * .0 * 111/30/33	58 3/7 .0 117/30/32	* 58 3/7 * .0 * 113/31/32	* 58 2/7 * .0 * 111/31/32	* 58 2/7 * .0 * 111/31/32

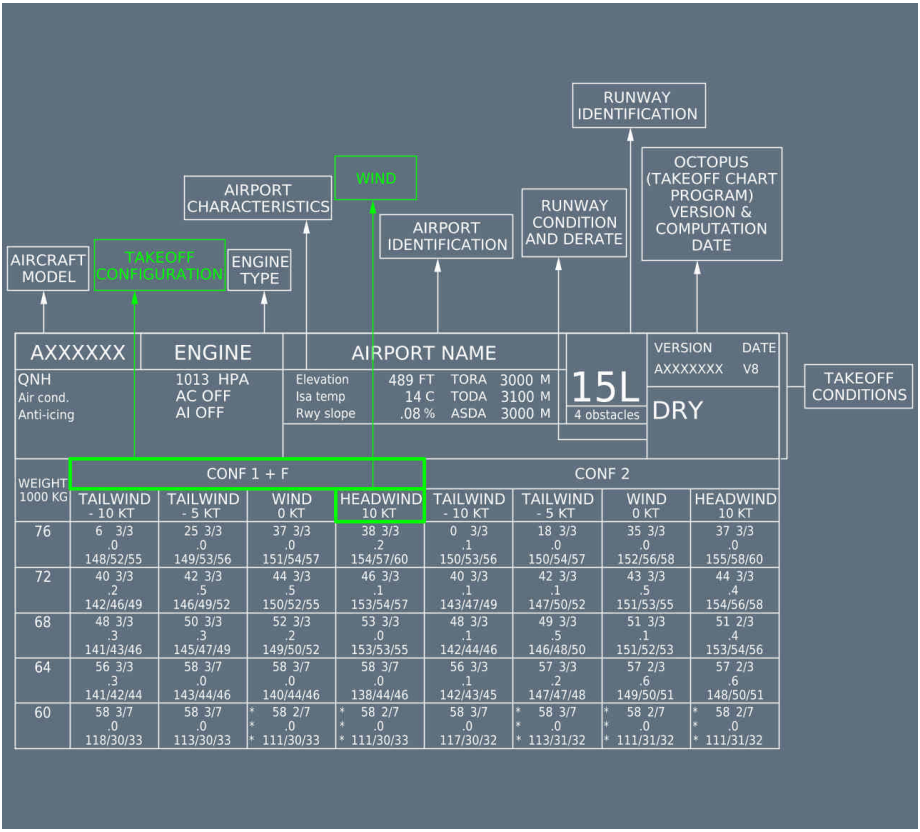

AXXXXXX
ENGINE
AIRPORT NAME
15L
4 obstacles
VERSION DATE
AXXXXXXX V8
QNH 1013 HPA
Air cond. AC OFF
Anti-icing AI OFF
Elevation 489 FT
Isa temp 14 C
Rwy slope .08 %
TORA 10000 FT
TODA 10200 FT
ASDA 10000 FT
DRY
WEIGHT 1000 KG
CONF 1 + F
CONF 2
TAILWIND - 10 KT
TAILWIND - 5 KT
WIND 0 KT
HEADWIND 10 KT
56
52
48
46
40
DO NOT USE FOR OPERATIONAL PURPOSE
TAKEOFF PARAMETERS
MAX TEMPERATURE (58)
LIMITATION CODE (7:7)
DELTA WEIGHT (1000 KG) (.0)
V1 (KT IAS) (112)
VR (KT IAS) (117)
V2 (KT IAS) (122)


AXXXXXX
ENGINE
AIRPORT NAME
VERSION DATE
AXXXXXXX V8
QNH 1013 HPA
Air cond. AC OFF
Anti-icing AI OFF
Elevation 489 FT TORA 10000 FT
Isa temp 14 C TODA 10200 FT
Rwy slope .08 % ASDA 10000 FT
15L
4 obstacles
DRY
WEIGHT 1000 KG
CONF 1 + F
CONF 2
TAILWIND - 10 KT
TAILWIND - 5 KT
WIND 0 KT
HEADWIND 10 KT
GRAD1/GRAD2 (KG/C)
40/**** 40/**** 40/400 40/400 40/**** 40/**** 30/**** 30/410
GRAD1/GRAD2
INFLUENCE OF RUNWAY CONDITION
WET
INFLUENCE OF DELTA PRESSURE
D QNH HPA
-10
+10
LABEL FOR INFLUENCE
DW (1000 KG) DTFLEX
DV1-DVR-DV2 (KT)
(TVMC OAT C)
DW (1000 KG) DTFLEX
DV1-DVR-DV2 (KT)
MTOW(1000 KG) codes
V1min/VR/V2(KT)
*VMC
*LIMITATION
Tref (OAT) =29 C
Tmax (OAT) =54 C
Min acc height 784Ft
Max acc height 1965Ft
Min QNH alt 1280Ft
Max QNH alt 2461Ft
MINIMUM & MAXIMUM ACC. HEIGHT AND ALT.
LIMITATION CODES:
1=1st segment 2=2nd segment 3=runway length 4=obstacles
5=tire speed 6=brake energy 7=max weight 8=final takeoff 9=VMU
MIN V1/VR/V2 = 111/17/21
CHECK VMU LIMITATION
CORRECT. V1/VR/V2 = 1 Kt/1000 Kg
INFLUENCE CORRECTION
ΔWEIGHT/ΔTFLEX
ΔV1/ ΔVR/ΔV2
(TVMC) WEIGHT TFLEX
ΔV1/ ΔVR/ΔV2
MINIMUM VALUES OF V1/VR/V2 TO WHICH TAKEOFF SPEEDS MUST BE LIMITED WHEN DECREMENTS ARE APPLIED
V1/VR/V2 DECREMENTS FOR WEIGHTS BELOW THE LOWEST WEIGHT OF A COLUMN

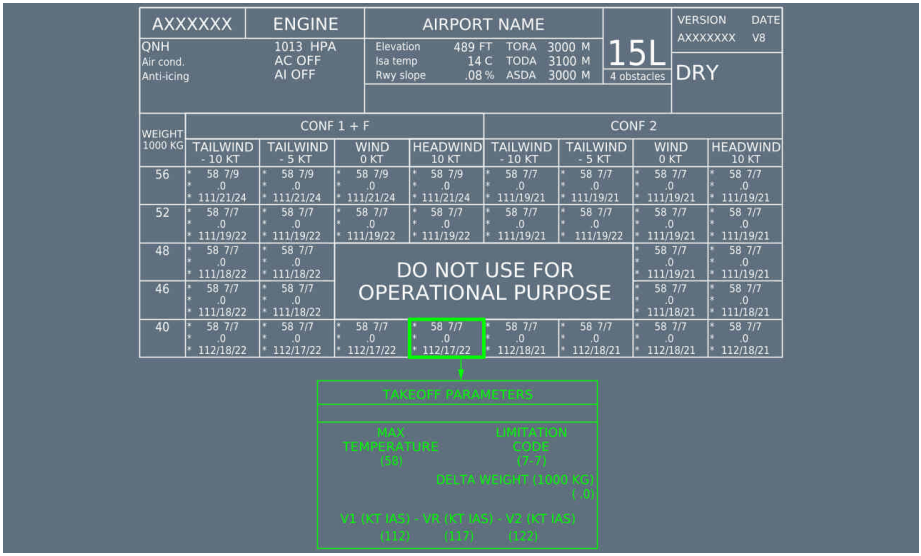
RTOW CHARTS - COMPLEMENTARY INFORMATION

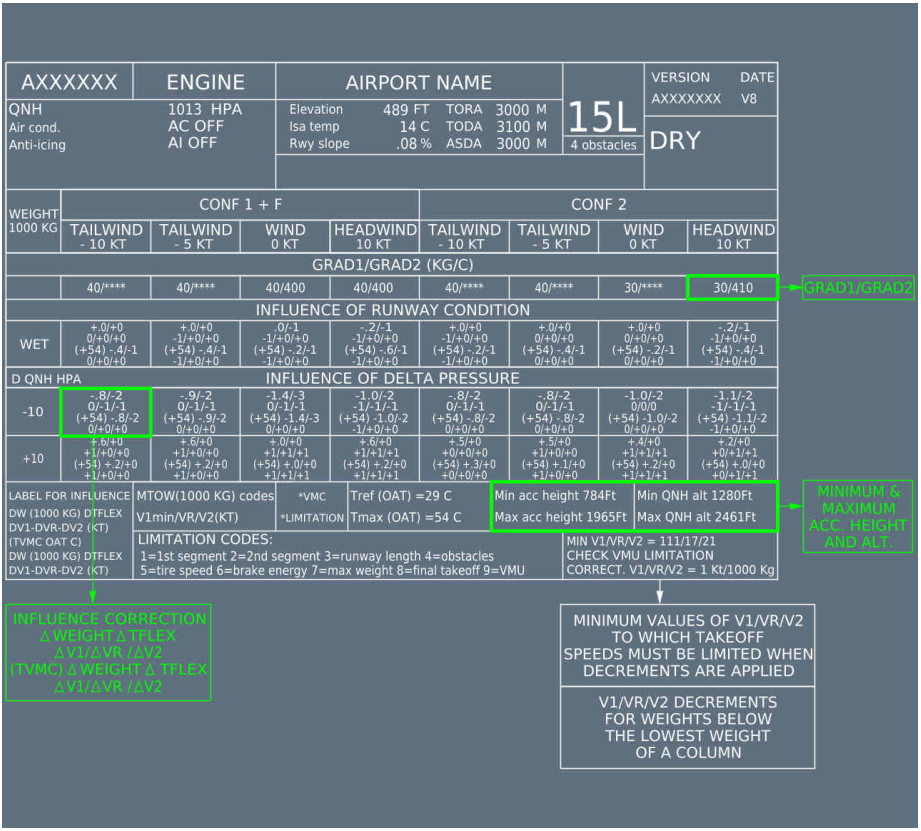
Ident.: PER-TOF-TOC-16-30-00001732.0002001 / 10 DEC 09

[1] **Applicable to: MSN 01767-02121, 02138, 02195-09063**



WEIGHT 1000 KG	TAILWIND - 10 KT	TAILWIND - 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND - 10 KT	TAILWIND - 5 KT	WIND 0 KT	HEADWIND 10 KT
76	6 3/3 .0 148/52/55	25 3/3 .0 149/53/56	37 3/3 .0 151/54/57	38 3/3 .2 154/57/60	0 3/3 .1 150/53/56	18 3/3 .0 150/54/57	35 3/3 .0 152/56/58	37 3/3 .0 155/58/60
72	40 3/3 .2 142/46/49	42 3/3 .5 146/49/52	44 3/3 .5 150/52/55	46 3/3 .1 153/54/57	40 3/3 .1 143/47/49	42 3/3 .1 147/50/52	43 3/3 .5 151/53/55	44 3/3 .4 154/56/58
68	48 3/3 .3 141/43/46	50 3/3 .3 145/47/49	52 3/3 .2 149/50/52	53 3/3 .0 153/53/55	48 3/3 .1 142/44/46	49 3/3 .5 146/48/50	51 3/3 .1 151/52/53	51 2/3 .4 153/54/56
64	56 3/3 .3 141/42/44	58 3/7 .0 143/44/46	58 3/7 .0 140/44/46	58 3/7 .0 138/44/46	56 3/3 .1 142/43/45	57 3/3 .2 147/47/48	57 2/3 .6 149/50/51	57 2/3 .6 148/50/51
60	58 3/7 .0 118/30/33	58 3/7 .0 113/30/33	* 58 2/7 * .0 * 111/30/33	* 58 2/7 * .0 * 111/30/33	58 3/7 .0 117/30/32	* 58 3/7 * .0 * 113/31/32	* 58 2/7 * .0 * 111/31/32	* 58 2/7 * .0 * 111/31/32


AXXXXXX
ENGINE
AIRPORT NAME
15L
4 obstacles
VERSION
DATE
AXXXXXXX
V8
DRY
QNH
1013 HPA
Air cond.
AC OFF
Anti-icing
AI OFF
Elevation 489 FT
Isa temp 14 C
Rwy slope .08 %
TORA 3000 M
TODA 3100 M
ASDA 3000 M
WEIGHT 1000 KG
CONF 1 + F
CONF 2
TAILWIND - 10 KT
TAILWIND - 5 KT
WIND 0 KT
HEADWIND 10 KT
56
52
48
46
40
DO NOT USE FOR OPERATIONAL PURPOSE
TAKEOFF PARAMETERS
MAX TEMPERATURE (58)
LIMITATION CODE (7-7)
DELTA WEIGHT (1000 KG) (.0)
V1 (KT IAS) - VR (KT IAS) - V2 (KT IAS)
(112) (117) (122)


AXXXXXX
ENGINE
AIRPORT NAME
15L
4 obstacles
VERSION
DATE
AXXXXXXX
V8
DRY
QNH
1013 HPA
Air cond.
AC OFF
Anti-icing
AI OFF
Elevation 489 FT
Isa temp 14 C
Rwy slope .08 %
TORA 3000 M
TODA 3100 M
ASDA 3000 M
WEIGHT 1000 KG
CONF 1 + F
CONF 2
TAILWIND - 10 KT
TAILWIND - 5 KT
WIND 0 KT
HEADWIND 10 KT
GRAD1/GRAD2 (KG/C)
40/**** 40/**** 40/400 40/400 40/**** 40/**** 30/**** 30/410
GRAD1/GRAD2
INFLUENCE OF RUNWAY CONDITION
WET
D QNH HPA
INFLUENCE OF DELTA PRESSURE
-10
+10
LABEL FOR INFLUENCE
DW (1000 KG) DTFLEX
DV1-DVR-DV2 (KT)
(TVMC OAT C)
DW (1000 KG) DTFLEX
DV1-DVR-DV2 (KT)
MTOW(1000 KG) codes
V1min/VR/V2(KT)
*VMC
*LIMITATION
Tref (OAT) =29 C
Tmax (OAT) =54 C
Min acc height 784Ft
Max acc height 1965Ft
Min QNH alt 1280Ft
Max QNH alt 2461Ft
MINIMUM & MAXIMUM ACC. HEIGHT AND ALT.
LIMITATION CODES:
1=1st segment 2=2nd segment 3=runway length 4=obstacles
5=tire speed 6=brake energy 7=max weight 8=final takeoff 9=VMU
MIN V1/VR/V2 = 111/17/21
CHECK VMU LIMITATION
CORRECT. V1/VR/V2 = 1 Kt/1000 Kg
INFLUENCE CORRECTION
Δ WEIGHT Δ TFLEX
ΔV1/ΔVR /ΔV2
(TVMC) Δ WEIGHT Δ TFLEX
ΔV1/ΔVR /ΔV2
MINIMUM VALUES OF V1/VR/V2 TO WHICH TAKEOFF SPEEDS MUST BE LIMITED WHEN DECREMENTS ARE APPLIED
V1/VR/V2 DECREMENTS FOR WEIGHTS BELOW THE LOWEST WEIGHT OF A COLUMN

RTOW EXAMPLE

Ident.: PER-TOF-TOC-16-30-00014719.0001001 / 29 JUL 16
Applicable to: ALL

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.

A320XXX	ENGINES	AIRPORT NAME	15L	VERSION DATE
QNH	1013.25 HPA	Elevation 489 FT	TORA 3000 M	AXXXXXXX * *20
Air cond.	AC OFF	Isa temp 15 C	TODA 3000 M	
Anti-icing	AI OFF	Rwy slope .08 %	ASDA 3000 M	
All reversers operating			4 obstacles	DRY
No reversers on dry runway				

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT
80	−18 4/6 0.0 155/56/58	9 4/6 0.0 154/57/59	37 4/6 0.0 153/55/57	45 4/6 0.6 155/56/58	−15 4/6 0.0 153/53/58	12 4/6 0.0 151/52/57	40 4/6 0.1 150/51/56	46 3/4 0.3 152/53/58
76	44 4/6 0.1 141/49/51	48 4/6 0.2 148/50/52	51 3/4 0.4 153/53/55	52 2/4 0.3 152/52/53	44 4/6 0.3 140/45/49	48 4/6 0.4 146/47/51	51 3/4 0.4 150/50/54	52 2/4 0.4 150/50/55
72	53 4/6 0.3 145/46/48	56 3/4 0.2 148/48/50	59 3/4 0.0 152/52/53	60 3/4 0.4 154/54/55	53 3/4 0.4 142/43/47	56 3/4 0.2 146/46/50	58 3/4 0.5 149/49/53	60 3/4 0.3 151/51/55
68	61 3/4 0.3 144/44/45	63 3/4 0.5 148/48/49	65 3/4 0.6 151/51/52	67 3/4 0.3 153/53/54	61 3/4 0.3 142/42/45	63 3/4 0.5 145/45/48	65 3/4 0.4 148/48/52	66 4/4 0.6 149/49/53
64	68 3/4 0.5 143/43/44	69 3/4 1.1 147/47/48	69 3/4 2.2 151/51/52	69 3/4 3.0 153/53/54	68 3/4 0.6 141/41/44	69 3/4 1.0 144/44/47	69 4/4 2.0 147/47/50	69 4/4 2.7 147/47/50
60	69 3/4 4.0 143/43/44	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 4.0 * 141/41/44	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29
56	* 69 7/9 * 0.0 * 114/27/29	* 69 7/9 * 0.0 * 114/27/29	DO NOT USE FOR OPERATIONAL PURPOSE				* 69 7/9 * 0.0 * 112/21/24	* 69 7/9 * 0.0 * 112/21/24
52	* 69 7/9 * 0.0 * 114/22/24	* 69 7/9 * 0.0 * 114/22/24					* 69 7/7 * 0.0 * 112/19/22	* 69 7/7 * 0.0 * 112/19/22
48	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22
GRAD1/GRAD2 (KG/C)								
	50/****	50/****	60/****	60/ 460	50/****	50/****	60/****	50/ 470
	INFLUENCE OF RUNWAY CONDITION							
WET	−1.4/ −3 −11/ −1/ −1 (+69) −1.4/ −3 −11/ 0/ 0	−1.1/ −3 −10 /−1/ −1 (+69) −1.1/ −3 −10/ 0/ 0	−0.7/ −2 −9/ −2/ −2 (+69) −0.7/ −2 −9/ 0/ 0	−0.7/ −2 −8/ −2/ −2 (+69) −0.7/ −2 −8/ 0/ 0	−1.3/ −3 −10/ −2/ −2 (+69) −1.3/ −3 −10/ 0/ 0	−1.3/ −3 −9/ −4/ −4 (+69) −1.3/ −3 −9/ 0/ 0	−0.4/ −1 −7/ −2 /−2 (+69) −0.4/ −1 −7/ 0/ 0	−0.2/ −1 −5/ 0/ 0 (+69) −0.2/ −1 −5/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE							
−10.0	−0.8/ −2 0/ 0/ −1 (+61) −0.8/ −2 0/ 0/ 0	−1.2/ −3 0/ 0/ −1 (+61) −1.2/ −3 0/ 0/ 0	−0.7/ −2 −1/ −1/ −1 (+61) −0.7/ −2 −1/ 0/ 0	−0.7/ −2 −1/ −1/ −1 (+61) −0.7/ −2 −1/ 0/ 0	−0.7/ −2 0/ 0/ 0 (+61) −0.7/ −2 0/ 0/ 0	−0.7/ −2 0/ 0/ −1 (+61) −0.7/ −2 0/ 0/ 0	−0.7/ −2 0/ 0/ −1 (+61) −0.7/ −2 0/ 0/ 0	−0.7/ −2 0/ 0/ −1 (+61) −0.7/ −2 0/ 0/ 0
+10.0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	0.0/ 0 0/ 0/ 0 (+69) 0.0/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 +1/ +1/ +1 (+69) +0.2/ 0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1-DVR-DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1-DVR-DV2 (KT)	OAT C DW CODES V1min/VR/V2 (kt)	* VMC * LIMITATION	Tref (OAT) = 44 C Tmax(OAT) = 54 C	Min acc height 515 FT Max acc height 1934 FT	Min QNH alt 1004 FT MaxQNH alt 2423 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take-off 9=VMU			Min V1/VR/V2 = 115/20/22 CHECK VMU LIMITATION Correct. V1/VR/V2 = 0.1 KT/1000 KG	

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DETERMINATION OF MAXIMUM TAKEOFF WEIGHT AND SPEEDS

GENERAL

Ident.: PER-TOF-TOC-18-10-00001734.0002001 / 10 DEC 09
Applicable to: ALL

The takeoff chart is computed for a given runway under a set of conditions, which are :

- OAT
- Wind
- Configuration
- QNH, air conditioning, anti ice...

Two configurations are produced on the chart. This enables the crew to select that giving the highest permissible takeoff weight.
In case of equivalent performance, retain the configuration giving the lower takeoff speeds.

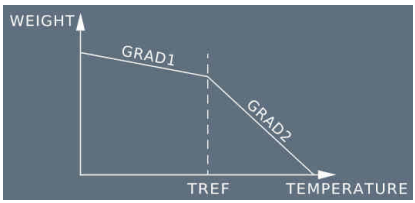
MTOW DETERMINATION

Ident.: PER-TOF-TOC-18-10-00013648.0002001 / 01 MAR 11
Applicable to: ALL

Enter the chart with the given configuration and actual wind column reading the temperature value. This temperature value stands for the OAT. Read the maximum takeoff weight corresponding to the actual OAT. Note that it is allowed to interpolate between two consecutive lines to obtain the maximum takeoff weight.
It is reminded that the takeoff weight is the sum of the weight entry and the delta weight. Similarly determine the takeoff speeds associated with the maximum takeoff weight.
In some cases, it may happen that the first temperature value (displayed for the highest weight entry) is higher than OAT. In this case, it is allowed to extrapolate the weight value to avoid unnecessary penalty. Use the Grad 1/Grad 2 gradients provided at the bottom of the corresponding column.

CORRECTION TO WEIGHT

Grad 1/Grad 2 are gradients provided for both sides of the flat rating temperature (TREF).
Grad 1 applies to temperatures below TREF and Grad 2 applies above TREF.
Read the lowest temperature of the column (corresponding to the highest weight entry).



- **If the lowest temperature and OAT are above TREF.**
  Obtain weight increment by multiplying Grad 2 by the difference in temperature between OAT and lowest temperature. Add this weight increment to the maximum takeoff weight calculated for the lowest temperature.
- **If the lowest temperature and OAT are below TREF.**
  Obtain weight increment by multiplying Grad 1 by the difference in temperature between OAT and lowest temperature. Add this weight increment to the maximum takeoff weight calculated for the lowest temperature.
- **If OAT is below TREF and lowest temperature is above TREF.**
  The weight increment is calculated in two steps. Step one is multiplying Grad 2 by temperature difference between lowest temperature and TREF. Step two is multiplying Grad 1 by temperature difference between TREF and OAT. Add results from step one and two to maximum takeoff weight calculated for lowest temperature.

Note: *Use the weight gradients only to extrapolate above the maximum weight shown in the RTOW chart. They are not valid for interpolation between two boxes, between filled boxes or between one filled and one blank box.*

Repeat the above process for the other available configuration and retain the configuration giving the highest takeoff weight.

CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS

Ident.: PER-TOF-TOC-18-10-00001736.0002001 / 11 FEB 11
Applicable to: ALL

Retain the maximum takeoff weight, associated configuration and speeds from above.
For conditions different from those of the chart, apply relevant corrections.

CONSERVATIVE CORRECTIONS FOR QNH AND BLEEDS

Ident.: PER-TOF-TOC-18-10-00014720.0001001 / 29 JUL 16
Applicable to: ALL

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.

Corrections are given for QNH ≠ 1 013 hPa, air conditioning ON, anti ice ON.

1. For the given wind and temperature conditions, determine the maximum takeoff weight.
2. Apply the published weight correction(s) to the maximum takeoff weight (for each correction) to determine the maximum permissible takeoff weight.
3. Read the speeds associated with the maximum permissible takeoff weight by entering the chart in the wind column with the retained weight value.

EXAMPLE A

DATA : OAT = 25 °C
Head Wind = 10 kt
Air conditioning ON
QNH = 1 013 hPa

Use the chart from (*Refer to PER-TOF-TOC-16-30 RTOW EXAMPLE*).

A320XXX	ENGINES	AIRPORT NAME				15L	VERSION	DATE
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M		AXXXXXXX *	*20
Air cond.	AC OFF	Isa temp	15 C	TODA	3000 M	4 obstacles		
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M		DRY	
All reversers operating								
No reversers on dry runway								

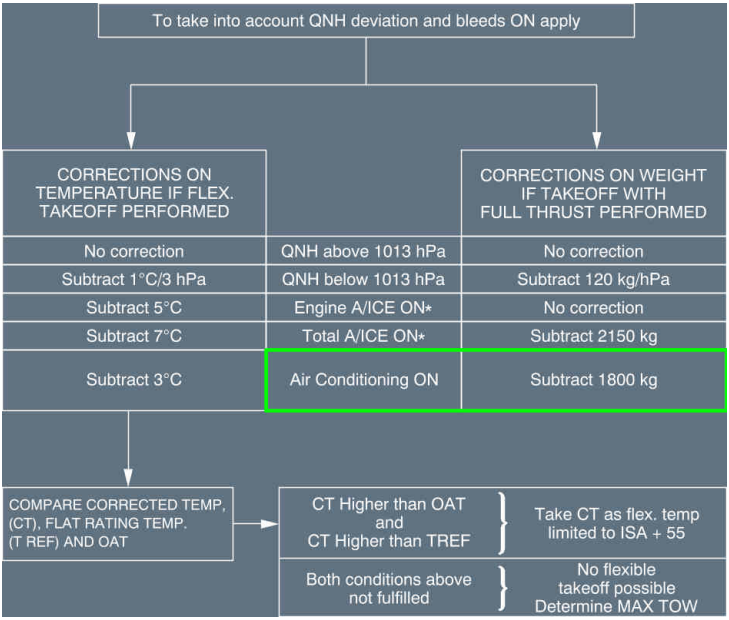
WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT
80	−18 4/6 0.0 155/56/58	9 4/6 0.0 154/57/59	37 4/6 0.0 153/55/57	45 4/6 0.6 155/56/58	−15 4/6 0.0 153/53/58	12 4/6 0.0 151/52/57	40 4/6 0.1 150/51/56	46 3/4 0.3 152/53/58
76	44 4/6 0.1 141/49/51	48 4/6 0.2 148/50/52	51 3/4 0.4 153/53/55	52 2/4 0.3 152/52/53	44 4/6 0.3 140/45/49	48 4/6 0.4 146/47/51	51 3/4 0.4 150/50/54	52 2/4 0.4 150/50/55
72	53 4/6 0.3 145/46/48	56 3/4 0.2 148/48/50	59 3/4 0.0 152/52/53	60 3/4 0.4 154/54/55	53 3/4 0.4 142/43/47	56 3/4 0.2 146/46/50	58 3/4 0.5 149/49/53	60 3/4 0.3 151/51/55
68	61 3/4 0.3 144/44/45	63 3/4 0.5 148/48/49	65 3/4 0.6 151/51/52	67 3/4 0.3 153/53/54	61 3/4 0.3 142/42/45	63 3/4 0.5 145/45/48	65 3/4 0.4 148/48/52	66 4/4 0.6 149/49/53
64	68 3/4 0.5 143/43/44	69 3/4 1.1 147/47/48	69 3/4 2.2 151/51/52	69 3/4 3.0 153/53/54	68 3/4 0.6 141/41/44	69 3/4 1.0 144/44/47	69 4/4 2.0 147/47/50	69 4/4 2.7 147/47/50
60	69 3/4 4.0 143/43/44	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 4.0 * 141/41/44	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29
56	* 69 7/9 * 0.0 * 114/27/29	* 69 7/9 * 0.0 * 114/27/29	DO NOT USE FOR OPERATIONAL PURPOSE				* 69 7/9 * 0.0 * 112/21/24	* 69 7/9 * 0.0 * 112/21/24
52	* 69 7/9 * 0.0 * 114/22/24	* 69 7/9 * 0.0 * 114/22/24					* 69 7/7 * 0.0 * 112/19/22	* 69 7/7 * 0.0 * 112/19/22
48	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22
	GRAD1/GRAD2 (KG/C)							
	50/****	50/****	60/****	60/ 460	50/****	50/****	60/****	50/ 470

Enter the 10 kt head wind column CONF 1 + F, to read for 25 °C
The lowest temperature of the column is 45 °C, use Grad 1/Grad 2 to extrapolate the maximum takeoff weight.

A320XXX	ENGINES	AIRPORT NAME				15L	VERSION	DATE
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M		AXXXXXXX *	*20
Air cond.	AC OFF	Isa temp	15 C	TODA	3000 M	4 obstacles		
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M		DRY	
All reversers operating								
No reversers on dry runway								

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT
80	−18 4/6 0.0 155/56/58	9 4/6 0.0 154/57/59	37 4/6 0.0 153/55/57	45 4/6 0.6 155/56/58	−15 4/6 0.0 153/53/58	12 4/6 0.0 151/52/57	40 4/6 0.1 150/51/56	46 3/4 0.3 152/53/58
76	44 4/6 0.1 141/49/51	48 4/6 0.2 148/50/52	51 3/4 0.4 153/53/55	52 2/4 0.3 152/52/53	44 4/6 0.3 140/45/49	48 4/6 0.4 146/47/51	51 3/4 0.4 150/50/54	52 2/4 0.4 150/50/55
72	53 4/6 0.3 145/46/48	56 3/4 0.2 148/48/50	59 3/4 0.0 152/52/53	60 3/4 0.4 154/54/55	53 3/4 0.4 142/43/47	56 3/4 0.2 146/46/50	58 3/4 0.5 149/49/53	60 3/4 0.3 151/51/55
68	61 3/4 0.3 144/44/45	63 3/4 0.5 148/48/49	65 3/4 0.6 151/51/52	67 3/4 0.3 153/53/54	61 3/4 0.3 142/42/45	63 3/4 0.5 145/45/48	65 3/4 0.4 148/48/52	66 4/4 0.6 149/49/53
64	68 3/4 0.5 143/43/44	69 3/4 1.1 147/47/48	69 3/4 2.2 151/51/52	69 3/4 3.0 153/53/54	68 3/4 0.6 141/41/44	69 3/4 1.0 144/44/47	69 4/4 2.0 147/47/50	69 4/4 2.7 147/47/50
60	69 3/4 4.0 143/43/44	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 4.0 * 141/41/44	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29
56	* 69 7/9 * 0.0 * 114/27/29	* 69 7/9 * 0.0 * 114/27/29	DO NOT USE FOR OPERATIONAL PURPOSE				* 69 7/9 * 0.0 * 112/21/24	* 69 7/9 * 0.0 * 112/21/24
52	* 69 7/9 * 0.0 * 114/22/24	* 69 7/9 * 0.0 * 114/22/24					* 69 7/7 * 0.0 * 112/19/22	* 69 7/7 * 0.0 * 112/19/22
48	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22
GRAD1/GRAD2 (KG/C)								
	50/****	50/****	60/****	60/ 460	50/****	50/****	60/****	50/ 470

TRef value is available on the bottom of this table.
Here, TRef is equal to 44 °C.
MAX TO weight (1 000 kg) air conditioning OFF = 80.6 + 0.46 x 1 + 0.06 x 19 = 82.2
Enter the 10 kt head wind column CONF 2, to read for 25 °C
The lowest temperature of the column is 46 °C, use Grad 1/Grad 2 to extrapolate the maximum takeoff weight.
MAX TO weight (1 000 kg) air conditioning OFF = 80.3 + 0.47 x 2 + 0.05 x 19 = 82.1
Retain CONF 1 + F as takeoff configuration.
Maximum TO weight (1 000 kg) air conditioning OFF..... 82.2
Use the QNH/BLEEDS correction page (*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS*):



Air conditioning correction..... -1.8
Maximum permissible TO weight (1 000 kg) air conditioning ON..... = 80.4
Determine takeoff speeds for 80.4 (1 000 kg) in the 10 kt head wind column CONF 1 + F (interpolate when necessary).

A320XXX	ENGINES	AIRPORT NAME					15L	VERSION	DATE
QNH	1013.25 HPA	Elevation	489	FT	TORA	3000 M		AXXXXXXX *	*20
Air cond.	AC OFF	Isa temp	15	C	TODA	3000 M			
Anti-icing	AI OFF	Rwy slope	.08	%	ASDA	3000 M	4 obstacles	DRY	
All reversers operating									
No reversers on dry runway									

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT
80	–18 4/6 0.0 155/56/58	9 4/6 0.0 154/57/59	37 4/6 0.0 153/55/57	45 4/6 0.6 155/56/58	–15 4/6 0.0 153/53/58	12 4/6 0.0 151/52/57	40 4/6 0.1 150/51/56	46 3/4 0.3 152/53/58
76	44 4/6 0.1 141/49/51	48 4/6 0.2 148/50/52	51 3/4 0.4 153/53/55	52 2/4 0.3 152/52/53	44 4/6 0.3 140/45/49	48 4/6 0.4 146/47/51	51 3/4 0.4 150/50/54	52 2/4 0.4 150/50/55
72	53 4/6 0.3 145/46/48	56 3/4 0.2 148/48/50	59 3/4 0.0 152/52/53	60 3/4 0.4 154/54/55	53 3/4 0.4 142/43/47	56 3/4 0.2 146/46/50	58 3/4 0.5 149/49/53	60 3/4 0.3 151/51/55
68	61 3/4 0.3 144/44/45	63 3/4 0.5 148/48/49	65 3/4 0.6 151/51/52	67 3/4 0.3 153/53/54	61 3/4 0.3 142/42/45	63 3/4 0.5 145/45/48	65 3/4 0.4 148/48/52	66 4/4 0.6 149/49/53
64	68 3/4 0.5 143/43/44	69 3/4 1.1 147/47/48	69 3/4 2.2 151/51/52	69 3/4 3.0 153/53/54	68 3/4 0.6 141/41/44	69 3/4 1.0 144/44/47	69 4/4 2.0 147/47/50	69 4/4 2.7 147/47/50
60	69 3/4 4.0 143/43/44	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 4.0 * 141/41/44	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29
56	* 69 7/9 * 0.0 * 114/27/29	* 69 7/9 * 0.0 * 114/27/29	DO NOT USE FOR OPERATIONAL PURPOSE				* 69 7/9 * 0.0 * 112/21/24	* 69 7/9 * 0.0 * 112/21/24
52	* 69 7/9 * 0.0 * 114/22/24	* 69 7/9 * 0.0 * 114/22/24					* 69 7/7 * 0.0 * 112/19/22	* 69 7/7 * 0.0 * 112/19/22
48	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22
GRAD1/GRAD2 (KG/C)								
	50/****	50/****	60/****	60/ 460	50/****	50/****	60/****	50/ 470

V1 = 155 kt, VR = 156 kt, V2 = 158 kt

CORRECTIONS FOR WET OR CONTAMINATED RUNWAYS

Ident.: PER-TOF-TOC-18-10-00004071.0001001 / 10 DEC 09
Applicable to: ALL

(*Refer to PER-TOF-CTA-10 GENERAL*)

CORRECTIONS PRODUCED ON THE RTOW CHART

Ident.: PER-TOF-TOC-18-10-00014721.0001001 / 29 JUL 16
Applicable to: ALL

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”. (*Refer to PER-TOF-TOC-16-30 RTOW EXAMPLE*).
A description of this correction is given in PER-TOF-TOC-16-20 (*Refer to PER-TOF-TOC-16-20 DESCRIPTION OF THE CORRECTIONS ON TAKEOFF CHART*). The list of corrections is not exhaustive, however the most commonly used corrections are wet runway, QNH, air conditioning and/or anti ice. A maximum of three corrections can be produced on one chart.

To apply the corrections, proceed as follows:
1. Determine the maximum takeoff weight before correction for the given OAT and wind condition.
2. Apply the first correction:
   If OAT is less than or equal to TVMC (line 3), apply ΔW correction from line 1 and ΔV1/ΔVR/ΔV2 corrections from line 2.
   Else, (for OAT greater than TVMC), apply ΔW correction from line 3 and ΔV1/ΔVR/ΔV2 corrections from line 4.
3. To combine a second (and third, as applicable) correction:
   If OAT is less than or equal to TVMC (line 3), apply ΔW correction from line 1 and ΔV1/ΔVR/ΔV2 corrections from line 2.
   Check that the resulting speeds are higher than the minimum speeds displayed on the RTOW chart and that V2 is higher than the VMU limited speed (*Refer to PER-TOF-TOD-25-20 MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)*).
   If OAT is higher than TVMC (line 3) or if the above speed check is not fulfilled, apply ΔW correction from line 3 and ΔV1/ΔVR/ΔV2 corrections from line 4. No speed check is required.

Note:
- *QNH correction is given for ±10 hPa. It is allowed to extrapolate linearly for greater QNH deviation.*
- *When using a takeoff chart with failure cases, it is not allowed to combine two failure cases.*
- *Corrections from the chart must be applied from top to bottom, i.e. in the RTOW (Refer to PER-TOF-TOC-16-30 RTOW EXAMPLE), apply the wet correction first.*
- *If asterisk or dotted lines appear in the correction boxes, refer to more conservative corrections provided in the FCOM.*
- *No speed check is required for the first correction. However, if the first influence correction follows a conservative FCOM correction, a speed check is required.*

EXAMPLE B

DATA : CONF 1+F

OAT = 45 °C
Head wind = 10 kt
QNH = 998 hPa
WET runway

In this example, we will consider CONF 1+F as takeoff configuration. But same computation has to be done in CONF 2 and you must retain the best configuration.
Use the chart *Refer to PER-TOF-TOC-16-30 RTOW EXAMPLE*).

A320XXX	ENGINES	AIRPORT NAME				15L	VERSION	DATE
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M		AXXXXXXX *	*20
Air cond.	AC OFF	Isa temp	15 C	TODA	3000 M	4 obstacles	DRY	
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M			
All reversers operating								
No reversers on dry runway								

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT
80	−18 4/6 0.0 155/56/58	9 4/6 0.0 154/57/59	37 4/6 0.0 153/55/57	45 4/6 0.6 155/56/58	−15 4/6 0.0 153/53/58	12 4/6 0.0 151/52/57	40 4/6 0.1 150/51/56	46 3/4 0.3 152/53/58
76	44 4/6 0.1 141/49/51	48 4/6 0.2 148/50/52	51 3/4 0.4 153/53/55	52 2/4 0.3 152/52/53	44 4/6 0.3 140/45/49	48 4/6 0.4 146/47/51	51 3/4 0.4 150/50/54	52 2/4 0.4 150/50/55
72	53 4/6 0.3 145/46/48	56 3/4 0.2 148/48/50	59 3/4 0.0 152/52/53	60 3/4 0.4 154/54/55	53 3/4 0.4 142/43/47	56 3/4 0.2 146/46/50	58 3/4 0.5 149/49/53	60 3/4 0.3 151/51/55
68	61 3/4 0.3 144/44/45	63 3/4 0.5 148/48/49	65 3/4 0.6 151/51/52	67 3/4 0.3 153/53/54	61 3/4 0.3 142/42/45	63 3/4 0.5 145/45/48	65 3/4 0.4 148/48/52	66 4/4 0.6 149/49/53
64	68 3/4 0.5 143/43/44	69 3/4 1.1 147/47/48	69 3/4 2.2 151/51/52	69 3/4 3.0 153/53/54	68 3/4 0.6 141/41/44	69 3/4 1.0 144/44/47	69 4/4 2.0 147/47/50	69 4/4 2.7 147/47/50
60	69 3/4 4.0 143/43/44	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 4.0 * 141/41/44	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29
56	* 69 7/9 * 0.0 * 114/27/29	* 69 7/9 * 0.0 * 114/27/29	DO NOT USE FOR OPERATIONAL PURPOSE				* 69 7/9 * 0.0 * 112/21/24	* 69 7/9 * 0.0 * 112/21/24
52	* 69 7/9 * 0.0 * 114/22/24	* 69 7/9 * 0.0 * 114/22/24					* 69 7/7 * 0.0 * 112/19/22	* 69 7/7 * 0.0 * 112/19/22
48	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22
GRAD1/GRAD2 (KG/C)								
	50/****	50/****	60/****	60/ 460	50/****	50/****	60/****	50/ 470

- Enter the 10 kt head wind column CONF 1+F, to read for 45 °C max TO weight (1 000 kg).....80.6
- Read associated speeds as V1 = 155 kt, VR = 156 kt, V2 = 158 kt
- Apply WET correction

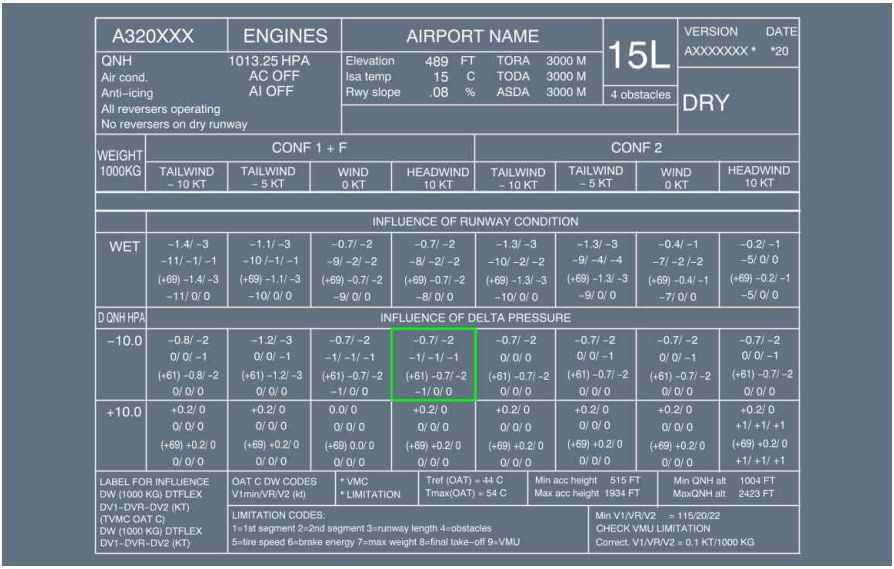
A320XXX	ENGINES	AIRPORT NAME	15L	VERSION DATE
QNH	1013.25 HPA	Elevation 489 FT	TORA 3000 M	AXXXXXXX * *20
Air cond.	AC OFF	Isa temp 15 C	TODA 3000 M	
Anti-icing	AI OFF	Rwy slope .08 %	ASDA 3000 M	DRY
All reversers operating			4 obstacles	
No reversers on dry runway				

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT
	INFLUENCE OF RUNWAY CONDITION							
WET	–1.4/ –3 –11/ –1/ –1 (+69) –1.4/ –3 –11/ 0/ 0	–1.1/ –3 –10 /–1/ –1 (+69) –1.1/ –3 –10/ 0/ 0	–0.7/ –2 –9/ –2/ –2 (+69) –0.7/ –2 –9/ 0/ 0	–0.7/ –2 –8/ –2/ –2 (+69) –0.7/ –2 –8/ 0/ 0	–1.3/ –3 –10/ –2/ –2 (+69) –1.3/ –3 –10/ 0/ 0	–1.3/ –3 –9/ –4/ –4 (+69) –1.3/ –3 –9/ 0/ 0	–0.4/ –1 –7/ –2 /–2 (+69) –0.4/ –1 –7/ 0/ 0	–0.2/ –1 –5/ 0/ 0 (+69) –0.2/ –1 –5/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE							
–10.0	–0.8/ –2 0/ 0/ –1 (+61) –0.8/ –2 0/ 0/ 0	–1.2/ –3 0/ 0/ –1 (+61) –1.2/ –3 0/ 0/ 0	–0.7/ –2 –1/ –1/ –1 (+61) –0.7/ –2 –1/ 0/ 0	–0.7/ –2 –1/ –1/ –1 (+61) –0.7/ –2 –1/ 0/ 0	–0.7/ –2 0/ 0/ 0 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0
+10.0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	0.0/ 0 0/ 0/ 0 (+69) 0.0/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 +1/ +1/ +1 (+69) +0.2/ 0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT)	OAT C DW CODES V1min/VR/V2 (kt)	* VMC * LIMITATION	Tref (OAT) = 44 C Tmax(OAT) = 54 C	Min acc height 515 FT Max acc height 1934 FT	Min QNH alt 1004 FT MaxQNH alt 2423 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take–off 9=VMU			Min V1/VR/V2 = 115/20/22 CHECK VMU LIMITATION Correct. V1/VR/V2 = 0.1 KT/1000 KG	

For OAT < TVMC (69 °C), ΔW =..... – 0.7
Intermediate weight (1 000 kg).....= 79.9
Associated speeds,
V1 = 155 kt – 8 = 147 kt
VR = 156 kt – 2 = 154 kt
V2 = 158 kt – 2 = 156 kt
(No speed check required for first correction)

- Apply QNH correction



A320XXX	ENGINES	AIRPORT NAME				15L	VERSION	DATE
QNH Air cond. Anti-icing All reversers operating No reversers on dry runway	1013.25 HPA AC OFF AI OFF	Elevation 489 FT Isa temp 15 C Rwy slope .08 %		TORA 3000 M TODA 3000 M ASDA 3000 M		4 obstacles	AXXXXXXX * *20	DRY

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT
	INFLUENCE OF RUNWAY CONDITION							
WET	–1.4/ –3 –11/ –1/ –1 (+69) –1.4/ –3 –11/ 0/ 0	–1.1/ –3 –10 /–1/ –1 (+69) –1.1/ –3 –10/ 0/ 0	–0.7/ –2 –9/ –2/ –2 (+69) –0.7/ –2 –9/ 0/ 0	–0.7/ –2 –8/ –2/ –2 (+69) –0.7/ –2 –8/ 0/ 0	–1.3/ –3 –10/ –2/ –2 (+69) –1.3/ –3 –10/ 0/ 0	–1.3/ –3 –9/ –4/ –4 (+69) –1.3/ –3 –9/ 0/ 0	–0.4/ –1 –7/ –2 /–2 (+69) –0.4/ –1 –7/ 0/ 0	–0.2/ –1 –5/ 0/ 0 (+69) –0.2/ –1 –5/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE							
–10.0	–0.8/ –2 0/ 0/ –1 (+61) –0.8/ –2 0/ 0/ 0	–1.2/ –3 0/ 0/ –1 (+61) –1.2/ –3 0/ 0/ 0	–0.7/ –2 –1/ –1/ –1 (+61) –0.7/ –2 –1/ 0/ 0	–0.7/ –2 –1/ –1/ –1 (+61) –0.7/ –2 –1/ 0/ 0	–0.7/ –2 0/ 0/ 0 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0
+10.0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	0.0/ 0 0/ 0/ 0 (+69) 0.0/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 +1/ +1/ +1 (+69) +0.2/ 0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT)	OAT C DW CODES V1min/VR/V2 (kt)	* VMC * LIMITATION	Tref (OAT) = 44 C Tmax(OAT) = 54 C	Min acc height 515 FT Max acc height 1934 FT	Min QNH alt 1004 FT MaxQNH alt 2423 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take–off 9=VMU			Min V1/VR/V2 = 115/20/22 CHECK VMU LIMITATION Correct. V1/VR/V2 = 0.1 KT/1000 KG	

For OAT < TVMC (61 °C), ΔW = – 0.7 × 15/10 =.....– 1
Maximum permissible takeoff weight (1 000 kg)..... = 78.9
Associated speeds,
V1 = 147 kt – 1 × 15/10 = 145 kt
VR = 154 kt – 1 × 15/10 = 153 kt
V2 = 156 kt – 1 × 15/10 = 155 kt

- Check that the speeds are higher than minimum speeds from the chart and from VMU table (*Refer to PER-TOF-TOD-25-20 MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)*).
  It is reminded that if the speed checks are not fulfilled, the corrections must be recalculated using those provided on lines 3 and 4.

	Takeoff Configuration: 1 + F			
	TOW	**V1**	**VR**	**V2**
TOW (RTOW)	80.6	155	156	158
FCOM correction(s)				
Intermediate value	80.6	155	156	158
WET Correction	- 0.7	-8	-2	-2
Intermediate value	79.9	147	154	156
QNH Correction	- 1	-2	-1	-1
Final value	78.9	145	153	155

COMBINING CORRECTIONS FROM FCOM AND CHART

Ident.: PER-TOF-TOC-18-10-00014722.0001001 / 29 JUL 16
Applicable to: ALL

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.

Proceed as follows:

1. Determine the maximum takeoff weight by entering the chart with selected configuration, OAT and wind.
2. Apply corrections from FCOM to determine an intermediate weight. Interpolate associated speeds for intermediate weight in the same column (same wind and configuration).
3. Apply corrections from RTOW chart as explained above.

EXAMPLE C

DATA : OAT = 25 °C
CONF 1+F
Head wind = 10 kt
Air conditioning ON
QNH = 998 hPa
WET runway

In this example, we will consider CONF 1+F as takeoff configuration. But same computation has to be done in CONF 2 and you must retain the best configuration.

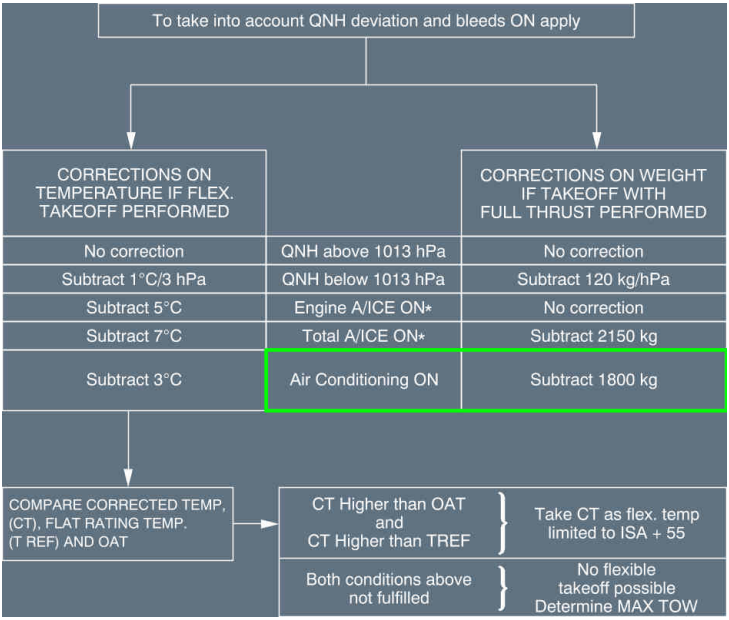
1. Use the chart (*Refer to PER-TOF-TOC-16-30 RTOW EXAMPLE*).

A320XXX	ENGINES	AIRPORT NAME				15L	VERSION	DATE
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M		AXXXXXXX *	*20
Air cond.	AC OFF	Isa temp	15 C	TODA	3000 M	4 obstacles		
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M		DRY	
All reversers operating								
No reversers on dry runway								

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND - 10 KT	TAILWIND - 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND - 10 KT	TAILWIND - 5 KT	WIND 0 KT	HEADWIND 10 KT
80	-18 4/6 0.0 155/56/58	9 4/6 0.0 154/57/59	37 4/6 0.0 153/55/57	45 4/6 0.6 155/56/58	-15 4/6 0.0 153/53/58	12 4/6 0.0 151/52/57	40 4/6 0.1 150/51/56	46 3/4 0.3 152/53/58
76	44 4/6 0.1 141/49/51	48 4/6 0.2 148/50/52	51 3/4 0.4 153/53/55	52 2/4 0.3 152/52/53	44 4/6 0.3 140/45/49	48 4/6 0.4 146/47/51	51 3/4 0.4 150/50/54	52 2/4 0.4 150/50/55
72	53 4/6 0.3 145/46/48	56 3/4 0.2 148/48/50	59 3/4 0.0 152/52/53	60 3/4 0.4 154/54/55	53 3/4 0.4 142/43/47	56 3/4 0.2 146/46/50	58 3/4 0.5 149/49/53	60 3/4 0.3 151/51/55
68	61 3/4 0.3 144/44/45	63 3/4 0.5 148/48/49	65 3/4 0.6 151/51/52	67 3/4 0.3 153/53/54	61 3/4 0.3 142/42/45	63 3/4 0.5 145/45/48	65 3/4 0.4 148/48/52	66 4/4 0.6 149/49/53
64	68 3/4 0.5 143/43/44	69 3/4 1.1 147/47/48	69 3/4 2.2 151/51/52	69 3/4 3.0 153/53/54	68 3/4 0.6 141/41/44	69 3/4 1.0 144/44/47	69 4/4 2.0 147/47/50	69 4/4 2.7 147/47/50
60	69 3/4 4.0 143/43/44	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 4.0 * 141/41/44	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29
56	* 69 7/9 * 0.0 * 114/27/29	* 69 7/9 * 0.0 * 114/27/29	DO NOT USE FOR OPERATIONAL PURPOSE				* 69 7/9 * 0.0 * 112/21/24	* 69 7/9 * 0.0 * 112/21/24
52	* 69 7/9 * 0.0 * 114/22/24	* 69 7/9 * 0.0 * 114/22/24					* 69 7/7 * 0.0 * 112/19/22	* 69 7/7 * 0.0 * 112/19/22
48	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22
GRAD1/GRAD2 (KG/C)								
	50/****	50/****	60/****	60/ 460	50/****	50/****	60/****	50/ 470

Enter the 10 kt head wind column CONF 1 + F, to read for 25 °C
MAX TO weight (1 000 kg) air conditioning OFF = 80.6 + 0.46 × 1 + 0.06 × 19 = 82.2
In this example, Tref is equal to 44 °C, therefore the correction for 25 °C is 19 × GRAD1 correction (60kg) + 1 × GRAD2 correction(460kg).

2. First, apply the QNH/BLEEDS correction (*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS*).



Max TO weight (1 000 kg) air conditioning OFF..... 82.2
Air conditioning correction..... -1.8
Intermediate weight..... = 80.4
Interpolate takeoff speeds for 80.4 (1 000 kg) in the 10 kt head wind column,
V1 = 155 kt, VR = 156 kt, V2 = 158 kt

A320XXX	ENGINES	AIRPORT NAME				15L	VERSION	DATE
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M		AXXXXXXX *	*20
Air cond.	AC OFF	Isa temp	15 C	TODA	3000 M	4 obstacles		
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M		DRY	
All reversers operating								
No reversers on dry runway								

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT
80	–18 4/6 0.0 155/56/58	9 4/6 0.0 154/57/59	37 4/6 0.0 153/55/57	45 4/6 0.6 155/56/58	–15 4/6 0.0 153/53/58	12 4/6 0.0 151/52/57	40 4/6 0.1 150/51/56	46 3/4 0.3 152/53/58
76	44 4/6 0.1 141/49/51	48 4/6 0.2 148/50/52	51 3/4 0.4 153/53/55	52 2/4 0.3 152/52/53	44 4/6 0.3 140/45/49	48 4/6 0.4 146/47/51	51 3/4 0.4 150/50/54	52 2/4 0.4 150/50/55
72	53 4/6 0.3 145/46/48	56 3/4 0.2 148/48/50	59 3/4 0.0 152/52/53	60 3/4 0.4 154/54/55	53 3/4 0.4 142/43/47	56 3/4 0.2 146/46/50	58 3/4 0.5 149/49/53	60 3/4 0.3 151/51/55
68	61 3/4 0.3 144/44/45	63 3/4 0.5 148/48/49	65 3/4 0.6 151/51/52	67 3/4 0.3 153/53/54	61 3/4 0.3 142/42/45	63 3/4 0.5 145/45/48	65 3/4 0.4 148/48/52	66 4/4 0.6 149/49/53
64	68 3/4 0.5 143/43/44	69 3/4 1.1 147/47/48	69 3/4 2.2 151/51/52	69 3/4 3.0 153/53/54	68 3/4 0.6 141/41/44	69 3/4 1.0 144/44/47	69 4/4 2.0 147/47/50	69 4/4 2.7 147/47/50
60	69 3/4 4.0 143/43/44	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 4.0 * 141/41/44	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29
56	* 69 7/9 * 0.0 * 114/27/29	* 69 7/9 * 0.0 * 114/27/29	DO NOT USE FOR OPERATIONAL PURPOSE				* 69 7/9 * 0.0 * 112/21/24	* 69 7/9 * 0.0 * 112/21/24
52	* 69 7/9 * 0.0 * 114/22/24	* 69 7/9 * 0.0 * 114/22/24					* 69 7/7 * 0.0 * 112/19/22	* 69 7/7 * 0.0 * 112/19/22
48	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22
GRAD1/GRAD2 (KG/C)								
	50/****	50/****	60/****	60/ 460	50/****	50/****	60/****	50/ 470

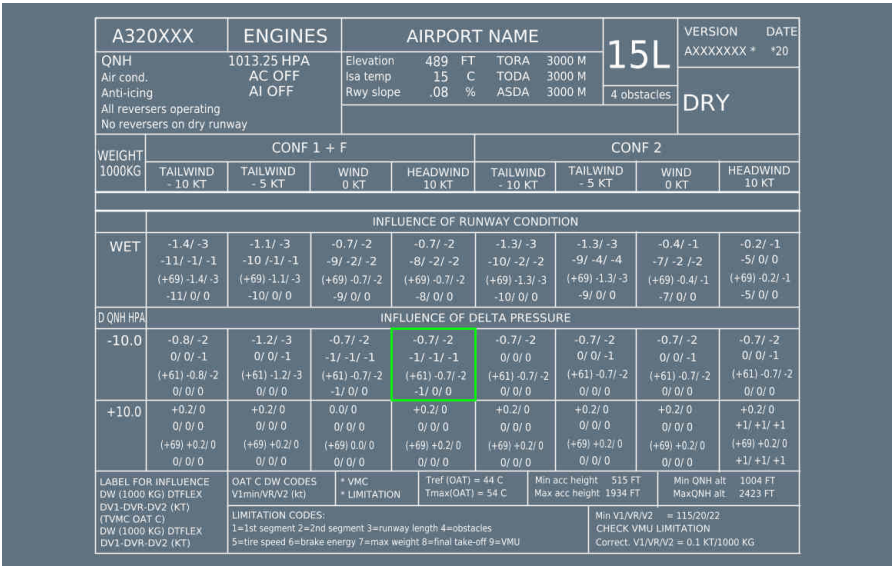
3. Apply WET correction

A320XXX	ENGINES	AIRPORT NAME				15L	VERSION	DATE
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M		AXXXXXXX *	*20
Air cond.	AC OFF	Isa temp	15 C	TODA	3000 M			
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M	4 obstacles	DRY	
All reversers operating								
No reversers on dry runway								

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT
	INFLUENCE OF RUNWAY CONDITION							
WET	–1.4/ –3 –11/ –1/ –1 (+69) –1.4/ –3 –11/ 0/ 0	–1.1/ –3 –10 /–1/ –1 (+69) –1.1/ –3 –10/ 0/ 0	–0.7/ –2 –9/ –2/ –2 (+69) –0.7/ –2 –9/ 0/ 0	–0.7/ –2 –8/ –2/ –2 (+69) –0.7/ –2 –8/ 0/ 0	–1.3/ –3 –10/ –2/ –2 (+69) –1.3/ –3 –10/ 0/ 0	–1.3/ –3 –9/ –4/ –4 (+69) –1.3/ –3 –9/ 0/ 0	–0.4/ –1 –7/ –2 /–2 (+69) –0.4/ –1 –7/ 0/ 0	–0.2/ –1 –5/ 0/ 0 (+69) –0.2/ –1 –5/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE							
–10.0	–0.8/ –2 0/ 0/ –1 (+61) –0.8/ –2 0/ 0/ 0	–1.2/ –3 0/ 0/ –1 (+61) –1.2/ –3 0/ 0/ 0	–0.7/ –2 –1/ –1/ –1 (+61) –0.7/ –2 –1/ 0/ 0	–0.7/ –2 –1/ –1/ –1 (+61) –0.7/ –2 –1/ 0/ 0	–0.7/ –2 0/ 0/ 0 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0
+10.0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	0.0/ 0 0/ 0/ 0 (+69) 0.0/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 +1/ +1/ +1 (+69) +0.2/ 0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT)	OAT C DW CODES V1min/VR/V2 (kt)	* VMC * LIMITATION	Tref (OAT) = 44 C Tmax(OAT) = 54 C	Min acc height 515 FT Max acc height 1934 FT	Min QNH alt 1004 FT MaxQNH alt 2423 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take–off 9=VMU			Min V1/VR/V2 = 115/20/22 CHECK VMU LIMITATION Correct. V1/VR/V2 = 0.1 KT/1000 KG	

For OAT < TVMC (69 °C), ΔW =..... -0.7
Intermediate weight..... = 79.7
Associated speeds,
V1 = 155 kt - 8 = 147 kt
VR = 156 kt - 2 = 154 kt
V2 = 158 kt - 2 = 156 kt
Apply QNH correction



A320XXX	ENGINES	AIRPORT NAME	15L	VERSION DATE
QNH Air cond. Anti-icing All reversers operating No reversers on dry runway	1013.25 HPA AC OFF AI OFF	Elevation 489 FT TORA 3000 M Isa temp 15 C TODA 3000 M Rwy slope .08 % ASDA 3000 M	4 obstacles	AXXXXXXX * *20 DRY

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND - 10 KT	TAILWIND - 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND - 10 KT	TAILWIND - 5 KT	WIND 0 KT	HEADWIND 10 KT
	INFLUENCE OF RUNWAY CONDITION							
WET	-1.4/ -3 -11/ -1/ -1 (+69) -1.4/ -3 -11/ 0/ 0	-1.1/ -3 -10 /-1/ -1 (+69) -1.1/ -3 -10/ 0/ 0	-0.7/ -2 -9/ -2/ -2 (+69) -0.7/ -2 -9/ 0/ 0	-0.7/ -2 -8/ -2/ -2 (+69) -0.7/ -2 -8/ 0/ 0	-1.3/ -3 -10/ -2/ -2 (+69) -1.3/ -3 -10/ 0/ 0	-1.3/ -3 -9/ -4/ -4 (+69) -1.3/ -3 -9/ 0/ 0	-0.4/ -1 -7/ -2 /-2 (+69) -0.4/ -1 -7/ 0/ 0	-0.2/ -1 -5/ 0/ 0 (+69) -0.2/ -1 -5/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE							
-10.0	-0.8/ -2 0/ 0/ -1 (+61) -0.8/ -2 0/ 0/ 0	-1.2/ -3 0/ 0/ -1 (+61) -1.2/ -3 0/ 0/ 0	-0.7/ -2 -1/ -1/ -1 (+61) -0.7/ -2 -1/ 0/ 0	-0.7/ -2 -1/ -1/ -1 (+61) -0.7/ -2 -1/ 0/ 0	-0.7/ -2 0/ 0/ 0 (+61) -0.7/ -2 0/ 0/ 0	-0.7/ -2 0/ 0/ -1 (+61) -0.7/ -2 0/ 0/ 0	-0.7/ -2 0/ 0/ -1 (+61) -0.7/ -2 0/ 0/ 0	-0.7/ -2 0/ 0/ -1 (+61) -0.7/ -2 0/ 0/ 0
+10.0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	0.0/ 0 0/ 0/ 0 (+69) 0.0/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 +1/ +1/ +1 (+69) +0.2/ 0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1-DVR-DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1-DVR-DV2 (KT)	OAT C DW CODES V1min/VR/V2 (kt)	* VMC * LIMITATION	Tref (OAT) = 44 C Tmax(OAT) = 54 C	Min acc height 515 FT Max acc height 1934 FT	Min QNH alt 1004 FT MaxQNH alt 2423 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take-off 9=VMU			Min V1/VR/V2 = 115/20/22 CHECK VMU LIMITATION Correct. V1/VR/V2 = 0.1 KT/1000 KG	

For OAT < TVMC (61 °C), ΔW = -0.7 × 15/10 =..... -1
Maximum permissible takeoff weight.....= 78.7
Associated speed,
V1 = 147 kt - 1 × 15/10 = 145 kt
VR = 154 kt - 1 × 15/10 = 153 kt
V2 = 156 kt - 1 × 15/10 = 155 kt

Check that the speeds are higher than minimum speeds from the chart and from VMU table (*Refer to PER-TOF-TOD-25-20 MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)*).It is reminded that if the speed checks are not fulfilled, the corrections must be recalculated using those provided on lines 3 and 4.

Since the speed check is fulfilled:
MAX permissible takeoff weight = 78.7 (1 000 kg)
V1 = 145 kt, VR = 153 kt, V2 = 155 kt.

	Takeoff Configuration: 1 + F			
	TOW	**V1**	**VR**	**V2**
TOW (RTOW)	82.2			
FCOM correction(s)	-1.8			
Intermediate value	80.4	155	156	158

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Continued from the previous page

	Takeoff Configuration: 1 + F			
	TOW	**V1**	**VR**	**V2**
WET Correction	-0.7	-9	-2	-2
Intermediate value	79.7	147	154	156
QNH Correction	-1	-2	-1	-1
Final value	78.7	145	153	155

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EXTRAPOLATION

EXTRAPOLATION

Ident.: PER-TOF-TOC-18-20-00001740.0001001 / 10 DEC 09

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

For a takeoff weight lower than those displayed on the chart, associated speeds are calculated as follows :

1. For a given wind, note the speeds associated with the takeoff weight in the row displaying the highest permissible temperature.
2. Apply a speed correction of 1 kt per 1 000 kg (0.5 kt per 1 000 lb) weight decrement to V1, VR and V2 limited to minimum speeds.

EXTRAPOLATION

Ident.: PER-TOF-TOC-18-20-00001740.0002001 / 08 MAR 11

2 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

For OAT lower than the lowest temperature value of a wind column, it is possible to obtain a higher maximum permissible takeoff weight by using Grad 1/Grad 2 values. *Refer to PER-TOF-TOC-18-10 MTOW DETERMINATION* for more details.

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MAXIMUM STRUCTURAL TAKEOFF WEIGHT

MAXIMUM STRUCTURAL TAKEOFF WEIGHT

Ident.: PER-TOF-TOC-18-30-00001741.0001001 / 01 MAR 11
Applicable to: ALL

The maximum structural takeoff weight is a weight limitation depending on the aircraft. This limitation is provided in the Flight Manual and in the limitation chapter (*Refer to LIM-AG-WGHT Weight Limitations*).

Compare the maximum structural takeoff weight to the maximum permissible takeoff weight computed for given conditions and retain the lower of the two values.

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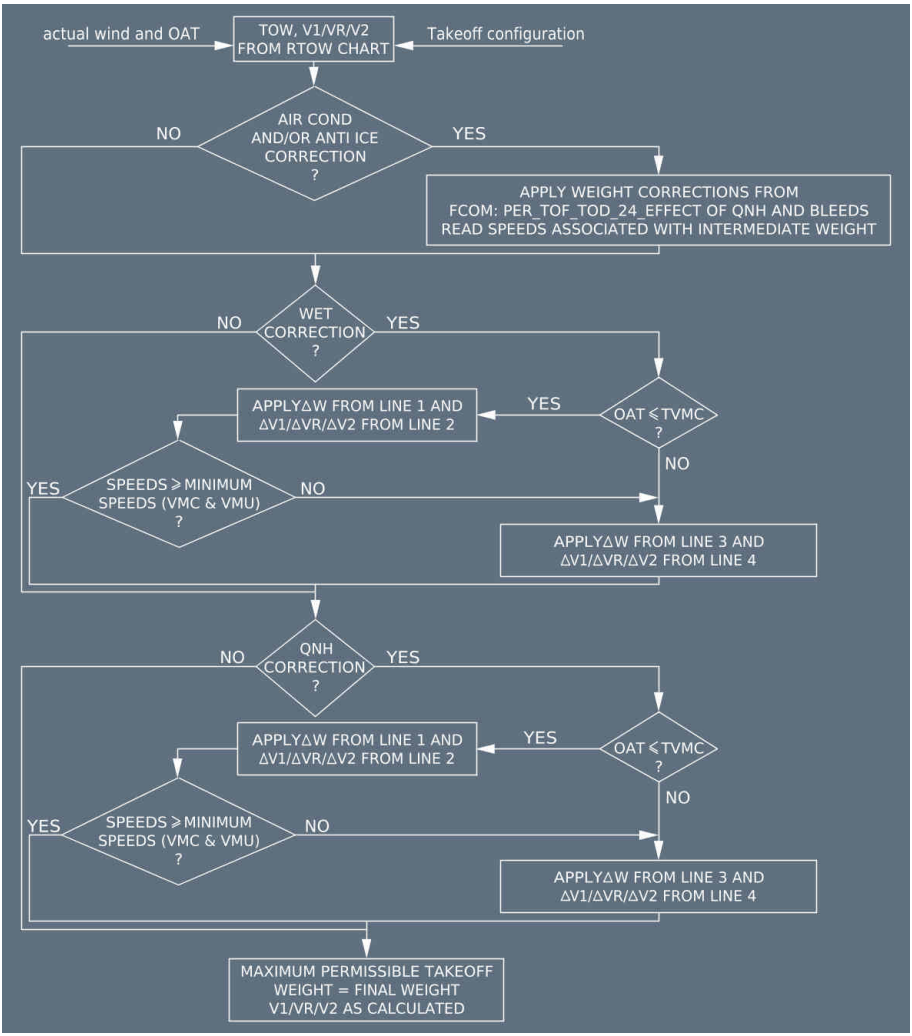
SUMMARY

SUMMARY

Ident.: PER-TOF-TOC-18-40-00006114.0001001 / 17 MAR 11
Applicable to: ALL

The following flow diagram gives the different steps to follow.



DETERMINATION OF FLEXIBLE TAKEOFF TEMPERATURE AND SPEEDS

GENERAL

Ident.: PER-TOF-TOC-20-10-00013509.0002001 / 23 FEB 11
Applicable to: ALL

Before determining the flexible temperature, calculate the maximum permissible takeoff weight (see previous section) and ensure that the actual takeoff weight is lower than the determined maximum takeoff weight.

- For a given configuration and wind value, enter the RTOW chart with the actual takeoff weight to read the flexible temperature and associated speeds. It is reminded that the takeoff weight is the sum of the weight entry and the delta weight displayed in each box. It is allowed to interpolate between two consecutive rows and/or columns for weight and for wind values not displayed on the chart.
- Repeat this process for the other configuration available. Select that configuration giving the highest flexible temperature.

CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS

Ident.: PER-TOF-TOC-20-10-00013506.0001001 / 12 MAY 16
1 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

When the takeoff conditions are different from those provided on the chart, apply the associated corrections.

Note: - *If the RTOW chart is based on the CG being at 25 %, the crew can determine the flexible temperature at a more forward CG by decreasing the flexible temperature by 2 °C. V1, VR and V2 must be increased by 1 kt.*
- *25 % CG is the basic certified limit, on which all takeoff computation are based. To take into account the operational margins, the above penalties must be applied when operational CG is forward 27 %CG.*

CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS

Ident.: PER-TOF-TOC-20-10-00013506.0002001 / 23 FEB 11
2 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

When the takeoff conditions are different from those provided on the chart, apply the associated corrections.

CONSERVATIVE CORRECTIONS FOR QNH AND BLEEDS

Ident.: PER-TOF-TOC-20-10-00014723.0001001 / 29 JUL 16
Applicable to: ALL

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.

Corrections are given for QNH ≠ 1 013 hPa, air conditioning ON, anti ice ON.

1. For a given takeoff weight and wind condition, read the flexible temperature. Retain the takeoff speeds associated with the actual weight.
2. Apply the published temperature correction. To combine two or more corrections, add the different corrections and apply to temperature value.
   (No speed corrections required).

EXAMPLE D

DATA :

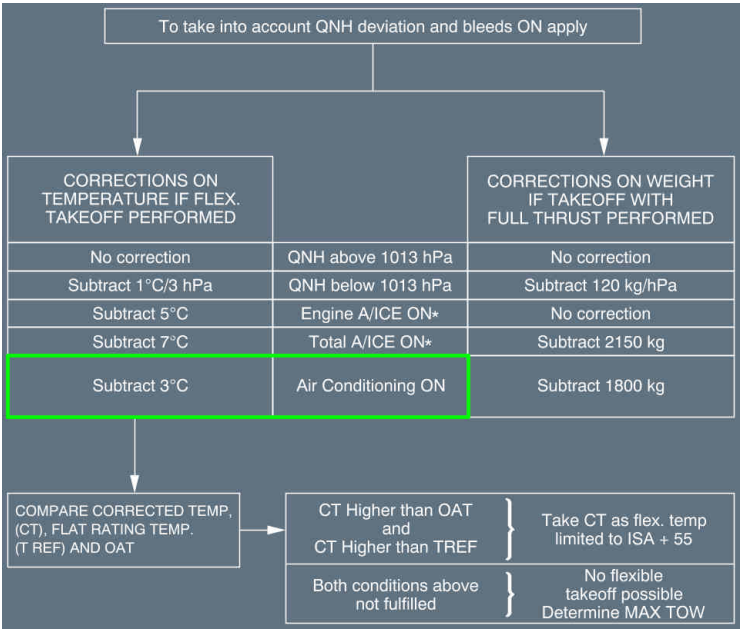
	Actual takeoff weight	=	68 000 kg
	Head wind	=	10 kt
	Air conditioning ON		
	QNH	=	1 013 hPa

Use the chart from *Refer to PER-TOF-TOC-16-30 RTOW EXAMPLE*. Determine the maximum permissible takeoff weight. The actual weight being lower than the maximum one, flexible takeoff is possible.

A320XXX	ENGINES	AIRPORT NAME	15L	VERSION DATE
QNH Air cond. Anti-icing All reversers operating No reversers on dry runway	1013.25 HPA AC OFF AI OFF	Elevation 489 FT TORA 3000 M Isa temp 15 C TODA 3000 M Rwy slope .08 % ASDA 3000 M	4 obstacles	AXXXXXXX * *20 DRY

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT
80	−18 4/6 0.0 155/56/58	9 4/6 0.0 154/57/59	37 4/6 0.0 153/55/57	45 4/6 0.6 155/56/58	−15 4/6 0.0 153/53/58	12 4/6 0.0 151/52/57	40 4/6 0.1 150/51/56	46 3/4 0.3 152/53/58
76	44 4/6 0.1 141/49/51	48 4/6 0.2 148/50/52	51 3/4 0.4 153/53/55	52 2/4 0.3 152/52/53	44 4/6 0.3 140/45/49	48 4/6 0.4 146/47/51	51 3/4 0.4 150/50/54	52 2/4 0.4 150/50/55
72	53 4/6 0.3 145/46/48	56 3/4 0.2 148/48/50	59 3/4 0.0 152/52/53	60 3/4 0.4 154/54/55	53 3/4 0.4 142/43/47	56 3/4 0.2 146/46/50	58 3/4 0.5 149/49/53	60 3/4 0.3 151/51/55
68	61 3/4 0.3 144/44/45	63 3/4 0.5 148/48/49	65 3/4 0.6 151/51/52	67 3/4 0.3 153/53/54	61 3/4 0.3 142/42/45	63 3/4 0.5 145/45/48	65 3/4 0.4 148/48/52	66 4/4 0.6 149/49/53
64	68 3/4 0.5 143/43/44	69 3/4 1.1 147/47/48	69 3/4 2.2 151/51/52	69 3/4 3.0 153/53/54	68 3/4 0.6 141/41/44	69 3/4 1.0 144/44/47	69 4/4 2.0 147/47/50	69 4/4 2.7 147/47/50
60	69 3/4 4.0 143/43/44	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 4.0 * 141/41/44	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29
56	* 69 7/9 * 0.0 * 114/27/29	* 69 7/9 * 0.0 * 114/27/29	DO NOT USE FOR OPERATIONAL PURPOSE				* 69 7/9 * 0.0 * 112/21/24	* 69 7/9 * 0.0 * 112/21/24
52	* 69 7/9 * 0.0 * 114/22/24	* 69 7/9 * 0.0 * 114/22/24					* 69 7/7 * 0.0 * 112/19/22	* 69 7/7 * 0.0 * 112/19/22
48	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22
	GRAD1/GRAD2 (KG/C)							
	50/****	50/****	60/****	60/ 460	50/****	50/****	60/****	50/ 470

Enter the 10 kt head wind column and interpolate for 68 000 kg, CONF 1 + F,
Flexible temperature.....67 °C
Enter the 10 kt head wind column and interpolate for 68 000 kg, CONF 2,
Flexible temperature.....66 °C
Retain CONF 1 + F for takeoff configuration.
Takeoff speeds are V1 = 153 kt, VR = 153 kt, V2 = 154 kt
Flexible temperature with air conditioning OFF.....67 °C
Use the QNH/BLEEDS corrections (*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS*):



Air conditioning correction.....-3 °C
Flexible temperature.....= 64 °C

CORRECTIONS FOR WET RUNWAY

Ident.: PER-TOF-TOC-20-10-00013280.0001001 / 18 FEB 11
Applicable to: ALL

Refer to PER-TOF-CTA-10 GENERAL

CORRECTIONS PRODUCED ON THE RTOW CHART

Ident.: PER-TOF-TOC-20-10-00014724.0001001 / 29 JUL 16
Applicable to: ALL

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.
A description of this correction is given on *Refer to PER-TOF-TOC-16-20 CORRECTIONS DUE TO DIFFERENT TAKEOFF CONDITIONS*. The list of corrections is not exhaustive, however the most commonly used corrections are wet runway, QNH, air conditioning and/or anti-icing. A maximum of three corrections can be produced on one chart.

To apply the correction, proceed as follows:

1. Enter the chart with selected configuration, wind and actual takeoff weight to read the flexible temperature associated with this weight.
2. Apply the first correction:
   If the flexible temperature is less than or equal to TVMC (line 3), apply ΔTflex correction from line 1 and apply speed corrections (ΔV1/ΔVR/ΔV2) from line 2.
   Else, (flexible temperature greater than TVMC), apply ΔTflex from line 3 and ΔV1/ ΔVR/ ΔV2 corrections from line 4.
   Check V2 against VMU limitation (*Refer to PER-TOF-TOD-25-20 MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)*). If V2 is lower than V2 limited by VMU, flexible takeoff is not possible. Set TOGA thrust and retain the speeds associated with maximum permissible takeoff weight or the speeds read in the chart for the actual weight if they are all lower.
   No speed correction is required for QNH and bleeds influence (Not applicable to maximum takeoff weight determination).
3. To combine a second and/or a third correction, proceed as per point 2.
4. Check that the final flexible temperature is:
   - Higher than OAT and TREF
   - Limited to TMAX FLEX

   If the check is fulfilled, retain final flexible temperature as the one to be inserted in the MCDU
   If the check is not fulfilled, (final flexible temperature lower than OAT or TREF), no flexible takeoff is possible.
   Use TOGA thrust and retain speeds that have been calculated for the maximum permissible takeoff weight. (*Refer to PER-TOF-TOC-20-20 FLEXIBLE TAKEOFF NOT POSSIBLE*)

Note: - *QNH correction is given for ± 10 hPa . It is allowed to extrapolate linearly for greater QNH deviation.*
- *Corrections from the chart must be applied from the top to bottom, i.e in the RTOW on Refer to PER-TOF-TOC-16-30 RTOW EXAMPLE, apply the wet influence first*

Note: - *When the flexible temperature is higher than TVMC, it is allowed to limit the flexible temperature to TVMC and apply only corrections from lines 1 and 2.*

- *If asterisk or dotted lines appear in the correction boxes, refer to more conservative corrections provided in the FCOM.*

EXAMPLE E

DATA : CONF 1+F
Actual takeoff weight = 68 000 kg
Head wind = 10 kt
QNH = 998 hPa
WET runway
Air conditioning OFF

In this example, we will consider CONF 1+F as takeoff configuration. But same computation has to be done in CONF 2 and you must retain the best configuration.
Use the chart from *Refer to PER-TOF-TOC-16-30 RTOW EXAMPLE*.
Determine the maximum permissible takeoff weight.
The actual weight being lower than the maximum one, flexible takeoff is possible.

A320XXX	ENGINES	AIRPORT NAME			15L	VERSION DATE
QNH	1013.25 HPA	Elevation	489 FT	TORA 3000 M		AXXXXXXX * *20
Air cond.	AC OFF	Isa temp	15 C	TODA 3000 M	4 obstacles	DRY
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA 3000 M		
All reversers operating						
No reversers on dry runway						

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND - 10 KT	TAILWIND - 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND - 10 KT	TAILWIND - 5 KT	WIND 0 KT	HEADWIND 10 KT
80	-18 4/6 0.0 155/56/58	9 4/6 0.0 154/57/59	37 4/6 0.0 153/55/57	45 4/6 0.6 155/56/58	-15 4/6 0.0 153/53/58	12 4/6 0.0 151/52/57	40 4/6 0.1 150/51/56	46 3/4 0.3 152/53/58
76	44 4/6 0.1 141/49/51	48 4/6 0.2 148/50/52	51 3/4 0.4 153/53/55	52 2/4 0.3 152/52/53	44 4/6 0.3 140/45/49	48 4/6 0.4 146/47/51	51 3/4 0.4 150/50/54	52 2/4 0.4 150/50/55
72	53 4/6 0.3 145/46/48	56 3/4 0.2 148/48/50	59 3/4 0.0 152/52/53	60 3/4 0.4 154/54/55	53 3/4 0.4 142/43/47	56 3/4 0.2 146/46/50	58 3/4 0.5 149/49/53	60 3/4 0.3 151/51/55
68	61 3/4 0.3 144/44/45	63 3/4 0.5 148/48/49	65 3/4 0.6 151/51/52	67 3/4 0.3 153/53/54	61 3/4 0.3 142/42/45	63 3/4 0.5 145/45/48	65 3/4 0.4 148/48/52	66 4/4 0.6 149/49/53
64	68 3/4 0.5 143/43/44	69 3/4 1.1 147/47/48	69 3/4 2.2 151/51/52	69 3/4 3.0 153/53/54	68 3/4 0.6 141/41/44	69 3/4 1.0 144/44/47	69 4/4 2.0 147/47/50	69 4/4 2.7 147/47/50
60	69 3/4 4.0 143/43/44	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 4.0 * 141/41/44	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29
56	* 69 7/9 * 0.0 * 114/27/29	* 69 7/9 * 0.0 * 114/27/29	DO NOT USE FOR OPERATIONAL PURPOSE				* 69 7/9 * 0.0 * 112/21/24	* 69 7/9 * 0.0 * 112/21/24
52	* 69 7/9 * 0.0 * 114/22/24	* 69 7/9 * 0.0 * 114/22/24					* 69 7/7 * 0.0 * 112/19/22	* 69 7/7 * 0.0 * 112/19/22
48	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22
GRAD1/GRAD2 (KG/C)								
	50/****	50/****	60/****	60/ 460	50/****	50/****	60/****	50/ 470

Enter the 10 kt head wind column and interpolate for 68 000 kg, CONF 1+F,
Flexible temperature..... 67 °C

Takeoff speeds are V1 = 153 kt, VR = 153 kt, V2 = 154 kt
Apply WET correction

A320XXX	ENGINES	AIRPORT NAME				15L	VERSION	DATE
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M		AXXXXXXX *	*20
Air cond.	AC OFF	Isa temp	15 C	TODA	3000 M			
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M	4 obstacles	DRY	
All reversers operating								
No reversers on dry runway								

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT
	INFLUENCE OF RUNWAY CONDITION							
WET	–1.4/ –3 –11/ –1/ –1 (+69) –1.4/ –3 –11/ 0/ 0	–1.1/ –3 –10 /–1/ –1 (+69) –1.1/ –3 –10/ 0/ 0	–0.7/ –2 –9/ –2/ –2 (+69) –0.7/ –2 –9/ 0/ 0	–0.7/ –2 –8/ –2/ –2 (+69) –0.7/ –2 –8/ 0/ 0	–1.3/ –3 –10/ –2/ –2 (+69) –1.3/ –3 –10/ 0/ 0	–1.3/ –3 –9/ –4/ –4 (+69) –1.3/ –3 –9/ 0/ 0	–0.4/ –1 –7/ –2 /–2 (+69) –0.4/ –1 –7/ 0/ 0	–0.2/ –1 –5/ 0/ 0 (+69) –0.2/ –1 –5/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE							
–10.0	–0.8/ –2 0/ 0/ –1 (+61) –0.8/ –2 0/ 0/ 0	–1.2/ –3 0/ 0/ –1 (+61) –1.2/ –3 0/ 0/ 0	–0.7/ –2 –1/ –1/ –1 (+61) –0.7/ –2 –1/ 0/ 0	–0.7/ –2 –1/ –1/ –1 (+61) –0.7/ –2 –1/ 0/ 0	–0.7/ –2 0/ 0/ 0 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0
+10.0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	0.0/ 0 0/ 0/ 0 (+69) 0.0/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 +1/ +1/ +1 (+69) +0.2/ 0 +1/ +1/ +1

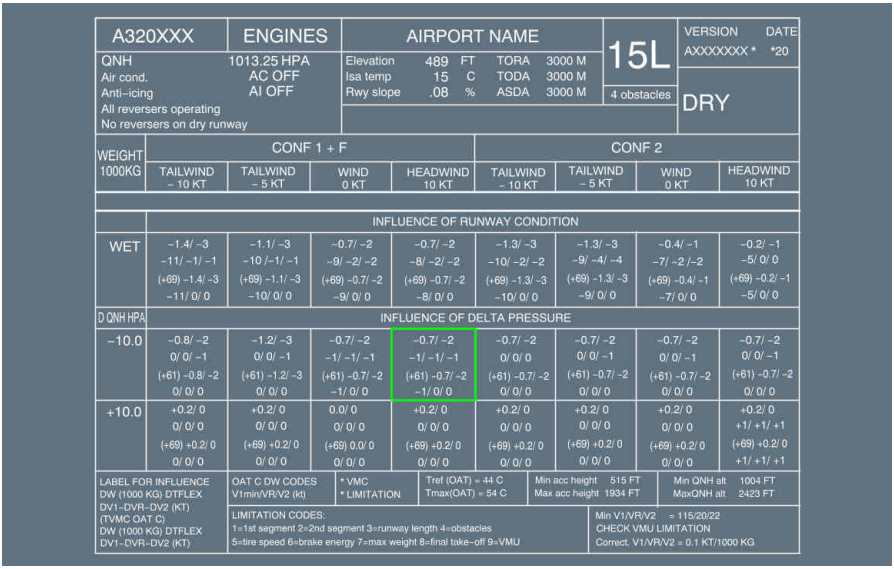
LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT)	OAT C DW CODES V1min/VR/V2 (kt)	* VMC * LIMITATION	Tref (OAT) = 44 C Tmax(OAT) = 54 C	Min acc height 515 FT Max acc height 1934 FT	Min QNH alt 1004 FT MaxQNH alt 2423 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take–off 9=VMU			Min V1/VR/V2 = 115/20/22 CHECK VMU LIMITATION Correct. V1/VR/V2 = 0.1 KT/1000 KG	

For flexible temperature < TVMC (69 °C), ΔTflex =.....-2 °C
Intermediate flex temperature..... = 65 °C

Associated speeds,

V1 = 153 kt – 8 = 145 kt
VR = 153 kt –2 = 151 kt
V2 = 154 kt – 2 = 152 kt

Check V2 against VMU limitation (*Refer to PER-TOF-TOD-25-20 MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)*).It is reminded that if the speed checks are not fulfilled, the corrections must be recalculated using those provided on lines 3 and 4.
Apply QNH correction



A320XXX	ENGINES	AIRPORT NAME				15L	VERSION	DATE
QNH Air cond. Anti-icing All reversers operating No reversers on dry runway	1013.25 HPA AC OFF AI OFF	Elevation 489 FT Isa temp 15 C Rwy slope .08 %		TORA 3000 M TODA 3000 M ASDA 3000 M		4 obstacles	AXXXXXXX *	*20 DRY

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT
	INFLUENCE OF RUNWAY CONDITION							
WET	–1.4/ –3 –11/ –1/ –1 (+69) –1.4/ –3 –11/ 0/ 0	–1.1/ –3 –10 /–1/ –1 (+69) –1.1/ –3 –10/ 0/ 0	–0.7/ –2 –9/ –2/ –2 (+69) –0.7/ –2 –9/ 0/ 0	–0.7/ –2 –8/ –2/ –2 (+69) –0.7/ –2 –8/ 0/ 0	–1.3/ –3 –10/ –2/ –2 (+69) –1.3/ –3 –10/ 0/ 0	–1.3/ –3 –9/ –4/ –4 (+69) –1.3/ –3 –9/ 0/ 0	–0.4/ –1 –7/ –2 /–2 (+69) –0.4/ –1 –7/ 0/ 0	–0.2/ –1 –5/ 0/ 0 (+69) –0.2/ –1 –5/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE							
–10.0	–0.8/ –2 0/ 0/ –1 (+61) –0.8/ –2 0/ 0/ 0	–1.2/ –3 0/ 0/ –1 (+61) –1.2/ –3 0/ 0/ 0	–0.7/ –2 –1/ –1/ –1 (+61) –0.7/ –2 –1/ 0/ 0	–0.7/ –2 –1/ –1/ –1 (+61) –0.7/ –2 –1/ 0/ 0	–0.7/ –2 0/ 0/ 0 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0
+10.0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	0.0/ 0 0/ 0/ 0 (+69) 0.0/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 +1/ +1/ +1 (+69) +0.2/ 0 +1/ +1/ +1

LABEL FOR INFLUENCE	OAT C DW CODES	* VMC	Tref (OAT) = 44 C	Min acc height 515 FT	Min QNH alt 1004 FT
DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT) (TVMC OAT C)	V1min/VR/V2 (kt)	* LIMITATION	Tmax(OAT) = 54 C	Max acc height 1934 FT	MaxQNH alt 2423 FT
DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT)	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take–off 9=VMU			Min V1/VR/V2 = 115/20/22 CHECK VMU LIMITATION Correct. V1/VR/V2 = 0.1 KT/1000 KG	

For flex temperature ≥ TVMC (61 °C), ΔTflex = -2 x 15/10 =.....-3 °C
Flexible temperature.....= 62 °C
No speed correction is required for QNH and bleed influence.
Takeoff speeds are V1 = 145 kt, VR = 151 kt, V2 = 152 kt
Check that OAT/TREF < flex temperature ≤ TMAXFLEX.
TMAXFLEX is specified in LIM-70.
For this example, if TMAXFLEX is equal to ISA + 45 °C (60 °C at airport elevation), Flex takeoff is not possible.

	Takeoff Configuration : 1 + F			
	Tflex	**V1**	**VR**	**V2**
Chart temperature	67	153	153	154
FCOM correction(s)				
Intermediate value	67	153	153	154
WET Correction	-2	-8	-2	-2
Intermediate value	65	145	151	152
QNH Correction	-3	0	0	0
Final value	62	145	151	152

COMBINING CORRECTIONS FROM FCOM AND CHART

Ident.: PER-TOF-TOC-20-10-00014725.0001001 / 29 JUL 16
Applicable to: ALL

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.

1. Apply corrections from FCOM (*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS*).
2. Apply corrections from the RTOW chart.
   Apply speed corrections except for QNH and bleed influences.

EXAMPLE F

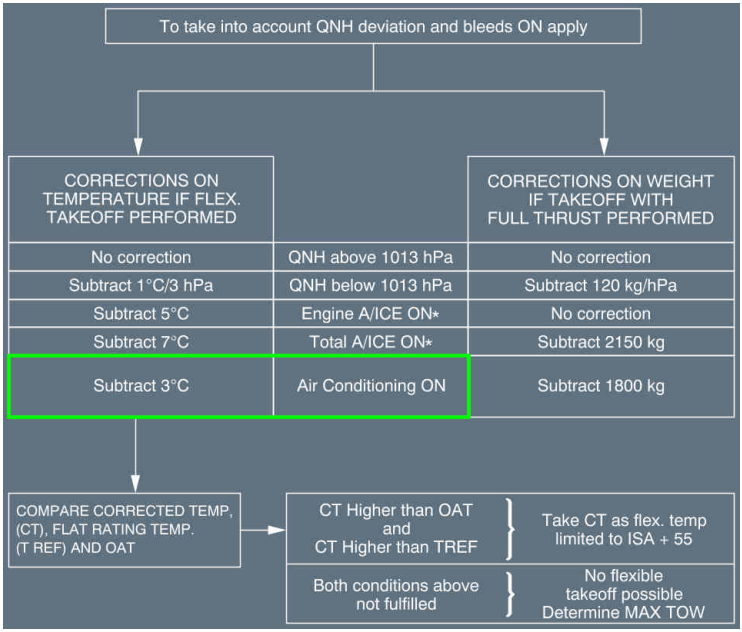
DATA : Actual takeoff weight = 68 000 kg
CONF 1+F
Head wind = 10 kt
Air conditioning ON
QNH = 998 hPa
WET runway

In this example, we will consider CONF 1+F as takeoff configuration. But same computation has to be done in CONF 2 and you must retain the best configuration.
Use the chart (*Refer to PER-TOF-TOC-16-30 RTOW EXAMPLE*).
Determine the maximum permissible takeoff weight (see example C). The actual weight being lower than the maximum one, flexible takeoff is possible.

A320XXX	ENGINES	AIRPORT NAME				15L	VERSION	DATE
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M	4 obstacles	AXXXXXXX *	*20
Air cond.	AC OFF	Isa temp	15 C	TODA	3000 M		DRY	
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M			
All reversers operating								
No reversers on dry runway								

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND - 10 KT	TAILWIND - 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND - 10 KT	TAILWIND - 5 KT	WIND 0 KT	HEADWIND 10 KT
80	-18 4/6 0.0 155/56/58	9 4/6 0.0 154/57/59	37 4/6 0.0 153/55/57	45 4/6 0.6 155/56/58	-15 4/6 0.0 153/53/58	12 4/6 0.0 151/52/57	40 4/6 0.1 150/51/56	46 3/4 0.3 152/53/58
76	44 4/6 0.1 141/49/51	48 4/6 0.2 148/50/52	51 3/4 0.4 153/53/55	52 2/4 0.3 152/52/53	44 4/6 0.3 140/45/49	48 4/6 0.4 146/47/51	51 3/4 0.4 150/50/54	52 2/4 0.4 150/50/55
72	53 4/6 0.3 145/46/48	56 3/4 0.2 148/48/50	59 3/4 0.0 152/52/53	60 3/4 0.4 154/54/55	53 3/4 0.4 142/43/47	56 3/4 0.2 146/46/50	58 3/4 0.5 149/49/53	60 3/4 0.3 151/51/55
68	61 3/4 0.3 144/44/45	63 3/4 0.5 148/48/49	65 3/4 0.6 151/51/52	67 3/4 0.3 153/53/54	61 3/4 0.3 142/42/45	63 3/4 0.5 145/45/48	65 3/4 0.4 148/48/52	66 4/4 0.6 149/49/53
64	68 3/4 0.5 143/43/44	69 3/4 1.1 147/47/48	69 3/4 2.2 151/51/52	69 3/4 3.0 153/53/54	68 3/4 0.6 141/41/44	69 3/4 1.0 144/44/47	69 4/4 2.0 147/47/50	69 4/4 2.7 147/47/50
60	69 3/4 4.0 143/43/44	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 0.0 * 114/32/33	* 69 7/9 * 4.0 * 141/41/44	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29	* 69 7/9 * 0.0 * 112/26/29
56	* 69 7/9 * 0.0 * 114/27/29	* 69 7/9 * 0.0 * 114/27/29	DO NOT USE FOR OPERATIONAL PURPOSE				* 69 7/9 * 0.0 * 112/21/24	* 69 7/9 * 0.0 * 112/21/24
52	* 69 7/9 * 0.0 * 114/22/24	* 69 7/9 * 0.0 * 114/22/24					* 69 7/7 * 0.0 * 112/19/22	* 69 7/7 * 0.0 * 112/19/22
48	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 115/20/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22	* 69 7/7 * 0.0 * 113/18/22
GRAD1/GRAD2 (KG/C)								
	50/****	50/****	60/****	60/ 460	50/****	50/****	60/****	50/ 470

- Enter the 10 kt head wind column and interpolate for 68 000 kg, CONF 1+F, Flexible temperature..... 67 °C
- Takeoff speeds are V1 = 153 kt, VR = 153 kt, V2 = 154 kt
- First, apply the correction from FCOM (*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS*).



Flexible temperature with air conditioning OFF.....67 °C
Air conditioning correction.....-3 °C
Intermediate flexible temperature.....= 64 °C
No speed correction.

- Apply WET correction

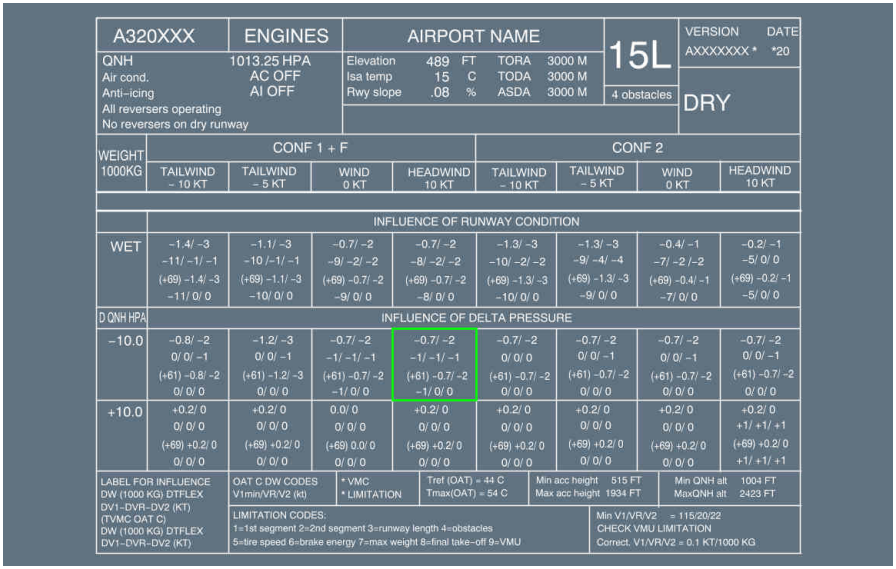
A320XXX	ENGINES	AIRPORT NAME				15L	VERSION	DATE
QNH	1013.25 HPA	Elevation	489 FT	TORA	3000 M		AXXXXXXX *	*20
Air cond.	AC OFF	Isa temp	15 C	TODA	3000 M	4 obstacles		
Anti-icing	AI OFF	Rwy slope	.08 %	ASDA	3000 M		DRY	
All reversers operating								
No reversers on dry runway								

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT
	INFLUENCE OF RUNWAY CONDITION							
WET	–1.4/ –3 –11/ –1/ –1 (+69) –1.4/ –3 –11/ 0/ 0	–1.1/ –3 –10 /–1/ –1 (+69) –1.1/ –3 –10/ 0/ 0	–0.7/ –2 –9/ –2/ –2 (+69) –0.7/ –2 –9/ 0/ 0	–0.7/ –2 –8/ –2/ –2 (+69) –0.7/ –2 –8/ 0/ 0	–1.3/ –3 –10/ –2/ –2 (+69) –1.3/ –3 –10/ 0/ 0	–1.3/ –3 –9/ –4/ –4 (+69) –1.3/ –3 –9/ 0/ 0	–0.4/ –1 –7/ –2 /–2 (+69) –0.4/ –1 –7/ 0/ 0	–0.2/ –1 –5/ 0/ 0 (+69) –0.2/ –1 –5/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE							
–10.0	–0.8/ –2 0/ 0/ –1 (+61) –0.8/ –2 0/ 0/ 0	–1.2/ –3 0/ 0/ –1 (+61) –1.2/ –3 0/ 0/ 0	–0.7/ –2 –1/ –1/ –1 (+61) –0.7/ –2 –1/ 0/ 0	–0.7/ –2 –1/ –1/ –1 (+61) –0.7/ –2 –1/ 0/ 0	–0.7/ –2 0/ 0/ 0 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0
+10.0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	0.0/ 0 0/ 0/ 0 (+69) 0.0/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 +1/ +1/ +1 (+69) +0.2/ 0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT)	OAT C DW CODES V1min/VR/V2 (kt)	* VMC * LIMITATION	Tref (OAT) = 44 C Tmax(OAT) = 54 C	Min acc height 515 FT Max acc height 1934 FT	Min QNH alt 1004 FT MaxQNH alt 2423 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take–off 9=VMU			Min V1/VR/V2 = 115/20/22 CHECK VMU LIMITATION Correct. V1/VR/V2 = 0.1 KT/1000 KG	

For flexible temperature < TVMC (69 °C), ΔTflex =.....-2 °C
Intermediate flex temperature..... = 62 °C
Associated speeds,
V1 = 153 kt - 8 = 145 kt
VR = 153 kt - 2 = 151 kt
V2 = 154 kt - 2 = 152 kt
Check V2 against VMU limitation on FCOM*Refer to PER-TOF-TOD-25-10 SPEEDS LIMITED BY VMCG/VMCA*.
It is reminded that if the speed checks are not fulfilled, the corrections must be recalculated using those provided on lines 3 and 4.

- Apply QNH correction



A320XXX	ENGINES	AIRPORT NAME	15L	VERSION DATE
QNH 1013.25 HPA Air cond. AC OFF Anti-icing AI OFF All reversers operating No reversers on dry runway		Elevation 489 FT TORA 3000 M Isa temp 15 C TODA 3000 M Rwy slope .08 % ASDA 3000 M	4 obstacles	AXXXXXXX * *20 DRY

WEIGHT 1000KG	CONF 1 + F				CONF 2			
	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT	TAILWIND – 10 KT	TAILWIND – 5 KT	WIND 0 KT	HEADWIND 10 KT
	INFLUENCE OF RUNWAY CONDITION							
WET	–1.4/ –3 –11/ –1/ –1 (+69) –1.4/ –3 –11/ 0/ 0	–1.1/ –3 –10 /–1/ –1 (+69) –1.1/ –3 –10/ 0/ 0	–0.7/ –2 –9/ –2/ –2 (+69) –0.7/ –2 –9/ 0/ 0	–0.7/ –2 –8/ –2/ –2 (+69) –0.7/ –2 –8/ 0/ 0	–1.3/ –3 –10/ –2/ –2 (+69) –1.3/ –3 –10/ 0/ 0	–1.3/ –3 –9/ –4/ –4 (+69) –1.3/ –3 –9/ 0/ 0	–0.4/ –1 –7/ –2 /–2 (+69) –0.4/ –1 –7/ 0/ 0	–0.2/ –1 –5/ 0/ 0 (+69) –0.2/ –1 –5/ 0/ 0
D QNH HPA	INFLUENCE OF DELTA PRESSURE							
–10.0	–0.8/ –2 0/ 0/ –1 (+61) –0.8/ –2 0/ 0/ 0	–1.2/ –3 0/ 0/ –1 (+61) –1.2/ –3 0/ 0/ 0	–0.7/ –2 –1/ –1/ –1 (+61) –0.7/ –2 –1/ 0/ 0	–0.7/ –2 –1/ –1/ –1 (+61) –0.7/ –2 –1/ 0/ 0	–0.7/ –2 0/ 0/ 0 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0	–0.7/ –2 0/ 0/ –1 (+61) –0.7/ –2 0/ 0/ 0
+10.0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	0.0/ 0 0/ 0/ 0 (+69) 0.0/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 0/ 0/ 0 (+69) +0.2/ 0 0/ 0/ 0	+0.2/ 0 +1/ +1/ +1 (+69) +0.2/ 0 +1/ +1/ +1

LABEL FOR INFLUENCE DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT) (TVMC OAT C) DW (1000 KG) DTFLEX DV1–DVR–DV2 (KT)	OAT C DW CODES V1min/VR/V2 (kt)	* VMC * LIMITATION	Tref (OAT) = 44 C Tmax(OAT) = 54 C	Min acc height 515 FT Max acc height 1934 FT	Min QNH alt 1004 FT MaxQNH alt 2423 FT
	LIMITATION CODES: 1=1st segment 2=2nd segment 3=runway length 4=obstacles 5=tire speed 6=brake energy 7=max weight 8=final take–off 9=VMU			Min V1/VR/V2 = 115/20/22 CHECK VMU LIMITATION Correct. V1/VR/V2 = 0.1 KT/1000 KG	

For flexible temperature ≥ TVMC (61 °C), ΔTflex = -2 x 15/10 = ...-3 °C
Flexible temperature.....= 59 °C
No speed correction is required for QNH and bleed influence.
Takeoff speeds are V1 = 145 kt, VR = 151 kt, V2 = 152 kt
Check that OAT/TREF < flex temperature ≤ TMAXFLEX
TMAXFLEX is specified in LIM-70.

	Takeoff Configuration : 1 + F			
	Tflex	**V1**	**VR**	**V2**
Chart temperature	67	153	153	154
FCOM correction(s)	-3	0	0	0
Intermediate value	64	153	153	154
WET Correction	-2	-8	-2	-2
Intermediate value	62	145	151	152
QNH Correction	-3	0	0	0
Final value	59	145	151	152

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FLEXIBLE TAKEOFF NOT POSSIBLE

FLEXIBLE TAKEOFF NOT POSSIBLE

Ident.: PER-TOF-TOC-20-20-00013281.0001001 / 18 FEB 11
Applicable to: ALL

In some cases when the actual takeoff weight is lower than the maximum permissible one but no flexible takeoff possible (that is flexible temperature lower than TREF or OAT):

- It is mandatory to use TOGA thrust
- You can retain the speeds that have been calculated for the maximum permissible takeoff weight; OR
- You can retain the speeds associated with the actual takeoff weight provided they are all lower than the speeds calculated for the maximum permissible takeoff weight.

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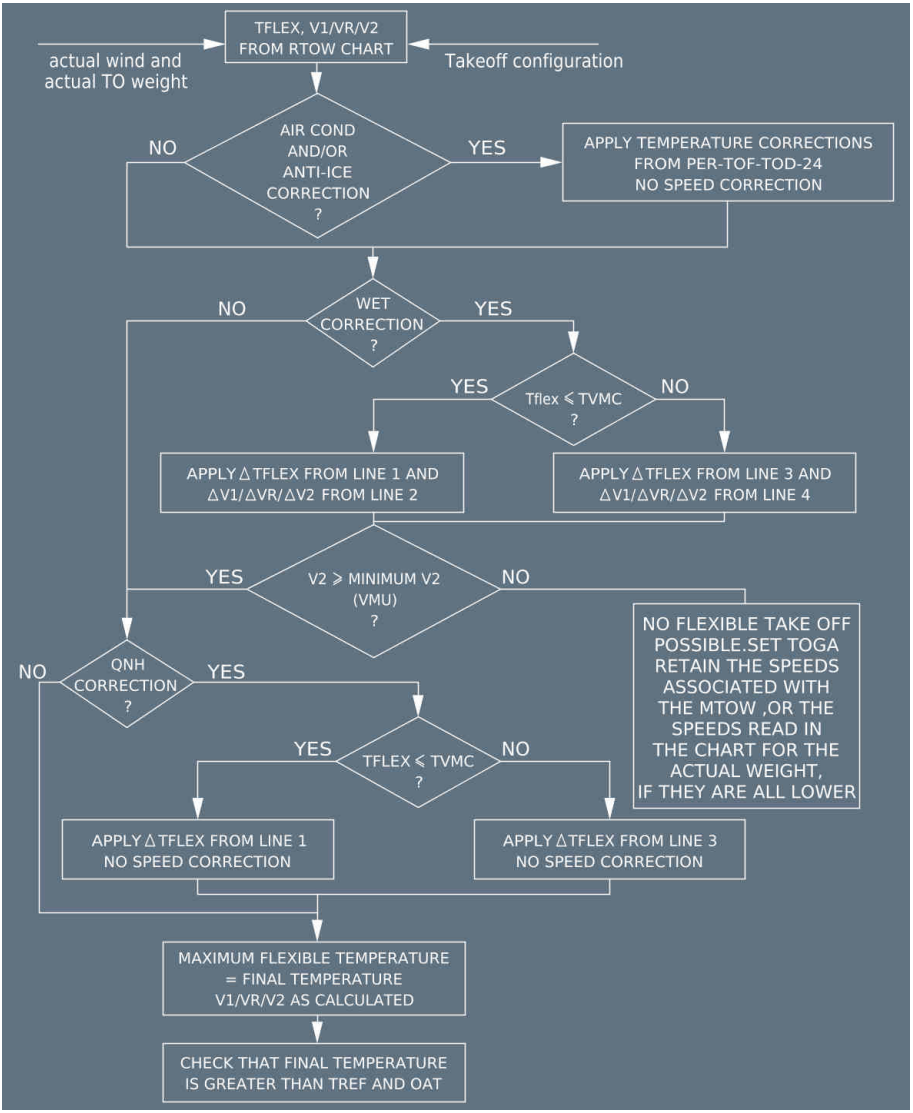
SUMMARY

SUMMARY

Ident.: PER-TOF-TOC-20-30-00013282.0001001 / 24 MAR 11
Applicable to: ALL

The flow diagram gives the different steps to follow


TFLEX, V1/VR/V2
FROM RTOW CHART
actual wind and
actual TO weight
Takeoff configuration
AIR COND
AND/OR
ANTI-ICE
CORRECTION
?
NO
YES
APPLY TEMPERATURE CORRECTIONS
FROM PER-TOF-TOD-24
NO SPEED CORRECTION
WET
CORRECTION
?
NO
YES
Tflex ⩽ TVMC
?
YES
NO
APPLY △TFLEX FROM LINE 1 AND
△V1/△VR/△V2 FROM LINE 2
APPLY △TFLEX FROM LINE 3 AND
△V1/△VR/△V2 FROM LINE 4
V2 ⩾ MINIMUM V2
(VMU)
?
YES
NO
NO FLEXIBLE TAKE OFF
POSSIBLE.SET TOGA
RETAIN THE SPEEDS
ASSOCIATED WITH
THE MTOW ,OR THE
SPEEDS READ IN
THE CHART FOR THE
ACTUAL WEIGHT,
IF THEY ARE ALL LOWER
QNH
CORRECTION
?
NO
YES
TFLEX ⩽ TVMC
?
YES
NO
APPLY △TFLEX FROM LINE 1
NO SPEED CORRECTION
APPLY △TFLEX FROM LINE 3
NO SPEED CORRECTION
MAXIMUM FLEXIBLE TEMPERATURE
= FINAL TEMPERATURE
V1/VR/V2 AS CALCULATED
CHECK THAT FINAL TEMPERATURE
IS GREATER THAN TREF AND OAT

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EFFECT OF QNH AND BLEEDS

Ident.: PER-TOF-TOD-24-00012927.0476001 / 15 FEB 17

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

To take into account QNH deviation and/or bleeds ON apply

CORRECTIONS ON TEMPERATURE IF FLEX TAKEOFF IS PERFORMED		CORRECTIONS ON WEIGHT IF TAKEOFF WITH FULL THRUST IS PERFORMED
Add 1 °C/ 12 hPa	QNH above 1 013 hPa	No correction
Subtract 1 °C/2 hPa	QNH below 1 013 hPa	Subtract 120 kg/ hPa
Subtract 2 °C	Engine A/ICE ON (1)	No correction
Subtract 11 °C	Total A/ICE ON (1)	For pressure altitude at or below 6 000 ft subtract 430 kg For pressure altitude above 6 000 ft subtract 2 700 kg
Subtract 3 °C	Air Conditioning ON	Subtract 4 600 kg

(1) *Corrections valid only for OAT ≤ 10 °C*

Compare corrected temp (CT), flat rating temp (TREF) and OAT		
CT higher than OAT and CT higher than TREF	->	Take CT as flex temp limited to ISA+49 °C
Either condition above not fulfilled	->	No flexible takeoff possible. Determine MAX TOW

Note: - *For high altitude operation, Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS FOR HIGH ALTITUDE OPERATIONS (if applicable).*

EFFECT OF QNH AND BLEEDS

Ident.: PER-TOF-TOD-24-00012927.0462001 / 28 JUL 16

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

To take into account QNH deviation and/or bleeds ON apply

CORRECTIONS ON TEMPERATURE IF FLEX TAKEOFF IS PERFORMED		CORRECTIONS ON WEIGHT IF TAKEOFF WITH FULL THRUST IS PERFORMED
Add 1 °C/14 hPa	QNH above 1 013 hPa	Add 10 kg/ hPa
Subtract 1 °C/3 hPa	QNH below 1 013 hPa	Subtract 100 kg/ hPa
subtract 2 °C	Engine A/ICE ON (1)	No correction
subtract 11 °C	Total A/ICE ON (1)	Subtract 700 kg
subtract 3 °C	Air Conditioning ON	subtract 4 000 kg

(1) *Corrections valid only for OAT < 10 °C*

Compare corrected temp (CT), flat rating temp (TREF) and OAT		
CT higher than OAT and CT higher than TREF	->	Take CT as flex temp limited to ISA+50 °C
Either condition above not fulfilled	->	No flexible takeoff possible. Determine MAX TOW

Note: - For high altitude operation, Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS FOR HIGH ALTITUDE OPERATIONS (if applicable).

EFFECT OF QNH AND BLEEDS (UP TO 9200 FT)

Ident.: PER-TOF-TOD-24-00012927.0416001 / 08 FEB 13

Applicable to: MSN 05437-06336

To take into account QNH deviation and/or bleeds ON apply

CORRECTIONS ON TEMPERATURE IF FLEX TAKEOFF IS PERFORMED		CORRECTIONS ON WEIGHT IF TAKEOFF WITH FULL THRUST IS PERFORMED
No correction	QNH above 1 013 hPa	No correction
Substract 1 °C/5 hPa	QNH below 1 013 hPa	Substract 120 kg/hPa
Substract 6 °C	Engine A/ICE ON(1)	No correction
Substract 10 °C	Total A/ICE ON(1)	Substract 2 350 kg
Substract 4 °C	Air Conditioning ON	Substract 1 750 kg

(1) *Corrections valid only for OAT < 10 °C*

Compare corrected temp (CT), flat rating temp (TREF) and OAT		
CT higher than OAT and CT higher than TREF	->	Take CT as flex temp limited to ISA+55
Either condition above not fulfilled	->	No flexible takeoff possible. Determine MAX TOW

Note: For high altitude operation, REFER TO PER-TOF-TOD-24 EFFECT OF QNH FOR HIGH ALTITUDE OPERATIONS (if applicable).

EFFECT OF QNH AND BLEEDS (UP TO 9200 FT)

Ident.: PER-TOF-TOD-24-00012927.0081001 / 09 NOV 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

To take into account QNH deviation and/or bleeds ON apply

CORRECTIONS ON TEMPERATURE IF FLEX TAKEOFF IS PERFORMED		CORRECTIONS ON WEIGHT IF TAKEOFF WITH FULL THRUST IS PERFORMED
Add 1 °C/13 hPa	QNH above 1 013 hPa	Add 80 kg/hPa
Subtract 1 °C/2 hPa	QNH below 1 013 hPa	Subtract 140 kg/hPa
Subtract 5 °C	Engine A/ICE ON(1)	Subtract 300 kg
Subtract 11 °C	Total A/ICE ON(1)	OAT≤ ISA + 5 °C Subtract 950 kg OAT> ISA + 5 °C Subtract 1 650 kg
Subtract 7 °C	Air Conditioning ON	Subtract 2 200 kg

(1) *Corrections valid only for OAT < 10 °C*

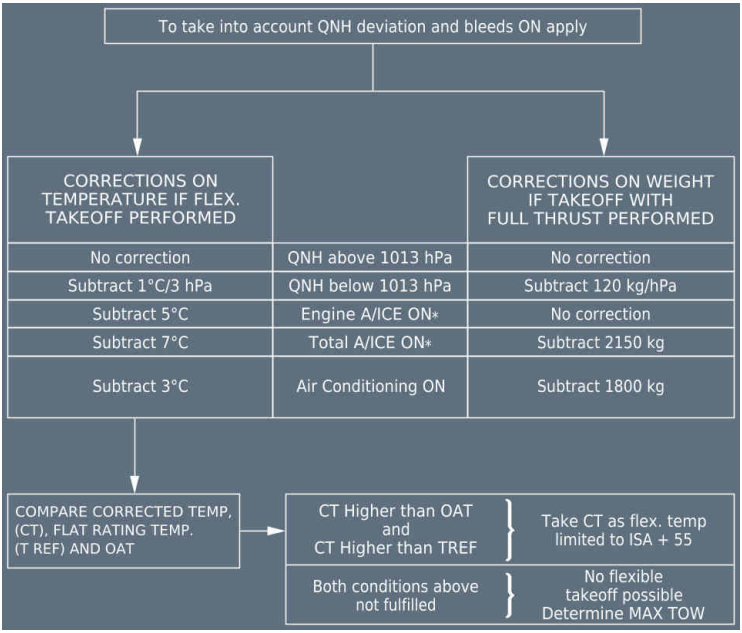
Compare corrected temp (CT), flat rating temp (TREF) and OAT		
CT higher than OAT and CT higher than TREF	->	Take CT as flex temp limited to ISA+53
Either condition above not fulfilled	->	No flexible takeoff possible. Determine MAX TOW

Note: - *For high altitude operation, REFER TO PER-TOF-TOD-24 EFFECT OF QNH FOR HIGH ALTITUDE OPERATIONS (if applicable).*

EFFECT OF QNH AND BLEEDS (UP TO 9200 FT)

Ident.: PER-TOF-TOD-24-00012927.0085001 / 31 MAR 11

Applicable to: MSN 02108, 02135, 02139-02359, 02405-02482, 02609-02670, 02737-02914, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155-05190, 05230-05411

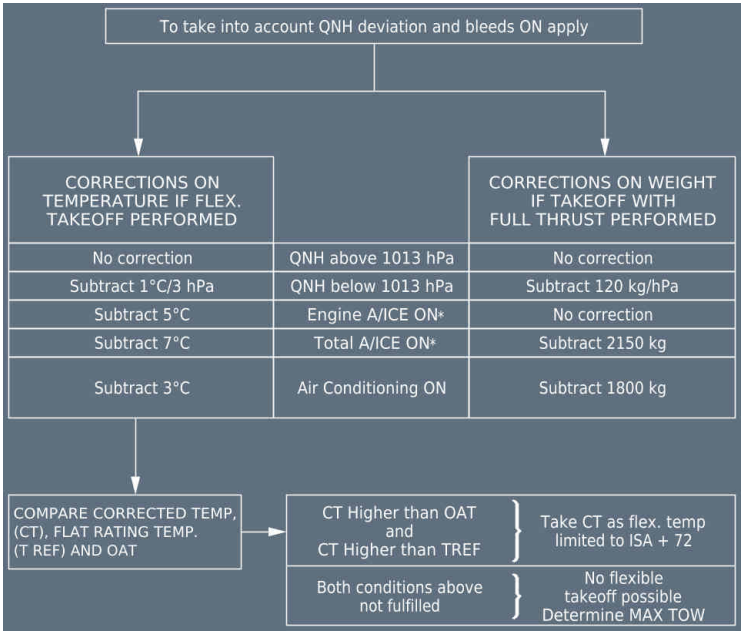


Note: - ** Corrections valid only for OAT < 10 °C*
- *For high altitude operation, REFER TO PER-TOF-TOD-24 EFFECT OF QNH FOR HIGH ALTITUDE OPERATIONS (if applicable).*

EFFECT OF QNH AND BLEEDS (UP TO 9200 FT)

Ident.: PER-TOF-TOD-24-00012927.0092001 / 31 MAR 11

[3] **Applicable to: MSN 01957-02097, 02121, 02138, 03071, 04491, 04532, 04645, 05120, 05218**



Note: - ** Corrections valid only for OAT < 10 °C*
- *For high altitude operation, REFER TO PER-TOF-TOD-24 EFFECT OF QNH FOR HIGH ALTITUDE OPERATIONS (if applicable).*

EXAMPLE

Ident.: PER-TOF-TOD-24-00014726.0001001 / 29 JUL 16
Applicable to: ALL

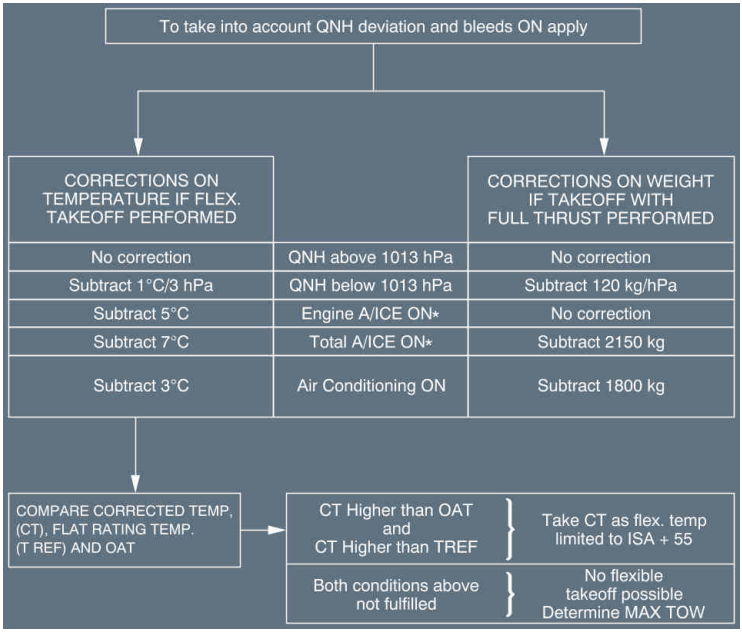
TAKEOFF CHART DATA

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.
Airport geometric elevation = 450 ft
QNH = 1 013 hPa
Anti ice OFF
Air conditioning OFF

EXAMPLE 1 - FULL THRUST TAKEOFF

Actual data : OAT = 5 °C
QNH = 998 hPa
Engine anti ice ON
Air conditioning OFF

Weight read in the takeoff chart: 73 000 kg.
Use the QNH/BLEEDS corrections (*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS*) or (*Refer to PER-TOF-TOD-24 EFFECT OF QNH AND BLEEDS FOR HIGH ALTITUDE OPERATIONS*) for high altitude operations.



Read in the above table the corrections for high QNH and engine anti ice ON.
QNH correction: 120 kg x (1013 - 998) = 1 800 kg
Engine anti ice correction: No correction.
The maximum permissible takeoff weight is 73 000 - 1800 - 0 = 71 200 kg

EXAMPLE 2 - FLEXIBLE THRUST TAKEOFF

Actual data : OAT = 5 °C
QNH = 1 004 hPa
Anti ice OFF
Air conditioning ON
TOW = 65 000 kg

Flexible temperature read on the takeoff chart: TFLEX = 55 °C.
Read TREF on the takeoff chart or on the quick reference table.
Read in the above table the correction for QNH and air conditioning ON:
QNH correction = 1 °C / 3 hPa x (1 004 - 1 013) = -3 °C
Air conditioning ON correction: -3 °C
New flexible temperature = 55 - 3 - 3 = 49 °C
Check that the flexible temperature is above TREF and actual OAT.

Check that the flexible temperature is less than the maximum flexible temperature.

EFFECT OF QNH AND BLEEDS FOR HIGH ALTITUDE OPERATIONS

Ident.: PER-TOF-TOD-24-00012926.0295001 / 15 FEB 17

4 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

To take into account QNH deviation and/or bleeds ON apply

CORRECTIONS ON TEMPERATURE IF FLEX TAKEOFF IS PERFORMED		CORRECTIONS ON WEIGHT IF TAKEOFF WITH FULL THRUST IS PERFORMED
Add 1 °C/12 hPa	QNH above 1 013 hPa	No correction
Subtract 1 °C/2 hPa	QNH below 1 013 hPa	Subtract 100 kg/ hPa
Subtract 2 °C	Engine A/ICE ON (1)	Subtract 400 kg
Subtract 11 °C	Total A/ICE ON (1)	Subtract 4 100 kg
Subtract 3 °C	Air Conditioning ON	Subtract 3 600 kg

(1) *Corrections valid only for OAT < 10 °C*

Compare corrected temp (CT), flat rating temp (TREF) and OAT		
CT higher than OAT and CT higher than TREF	->	Take CT as flex temp limited to ISA+49 °C
Either condition above not fulfilled	->	No flexible takeoff possible. Determine MAX TOW

EFFECT OF QNH AND BLEEDS FOR HIGH ALTITUDE OPERATIONS

Ident.: PER-TOF-TOD-24-00012926.0274001 / 28 JUL 16

5 **Applicable to: MSN 06744-06829, 06904, 06946, 07053-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

To take into account QNH deviation and/or bleeds ON apply

CORRECTIONS ON TEMPERATURE IF FLEX TAKEOFF IS PERFORMED		CORRECTIONS ON WEIGHT IF TAKEOFF WITH FULL THRUST IS PERFORMED
Add 1 °C/14 hPa	QNH above 1 013 hPa	Add 10 kg/ hPa
Substract 1 °C/3 hPa	QNH below 1 013 hPa	Substract 90 kg/ hPa
Substract 3 °C	Engine A/ICE ON (1)	Substract 400 kg
Substract 20 °C	Total A/ICE ON (1)	Substract 4 200 kg
Substract 5 °C	Air Conditioning ON	Substract 3 200 kg

(1) *Corrections valid only for OAT < 10 °C*

Compare corrected temp (CT), flat rating temp (TREF) and OAT		
CT higher than OAT and CT higher than TREF	->	Take CT as flex temp limited to ISA+50 °C
Either condition above not fulfilled	->	No flexible takeoff possible. Determine MAX TOW

EFFECT OF QNH AND BLEEDS FOR HIGH ALTITUDE OPERATIONS (ABOVE 9200 FT)

Ident.: PER-TOF-TOD-24-00012926.0240001 / 23 JUN 15
Applicable to: MSN 05437-06336

To take into account QNH deviation and/or bleeds ON apply

CORRECTIONS ON TEMPERATURE IF FLEX TAKEOFF IS PERFORMED		CORRECTIONS ON WEIGHT IF TAKEOFF WITH FULL THRUST IS PERFORMED
Add 1 °C/13 hPa	QNH above 1 013 hPa	Add 40 kg/hPa
Substract 1 °C/3 hPa	QNH below 1 013 hPa	Substract 90 kg/hPa
Substract 8 °C	Engine A/ICE ON	No correction
Substract 12 °C	Total A/ICE ON	Substract 1 900 kg
Substract 6 °C	Air Conditioning ON	Substract 1 800 kg

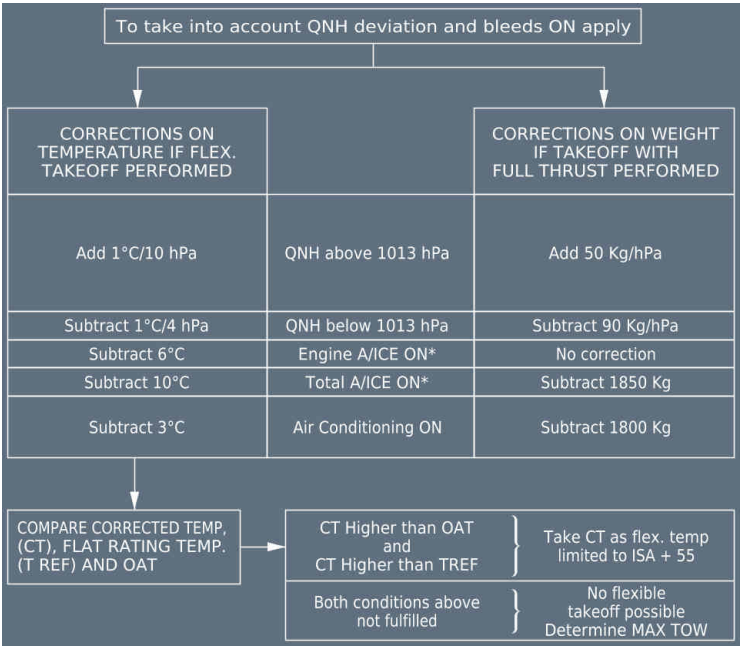
Compare corrected temp (CT), flat rating temp (TREF) and OAT		
CT higher than OAT and CT higher than TREF	->	Take CT as flex temp limited to ISA+55
Either condition above not fulfilled	->	No flexible takeoff possible. Determine MAX TOW

Note: ** Corrections valid only for OAT < 10 °C*

EFFECT OF QNH AND BLEEDS FOR HIGH ALTITUDE OPERATIONS (ABOVE 9200 FT)

Ident.: PER-TOF-TOD-24-00012926.0205001 / 24 MAR 11

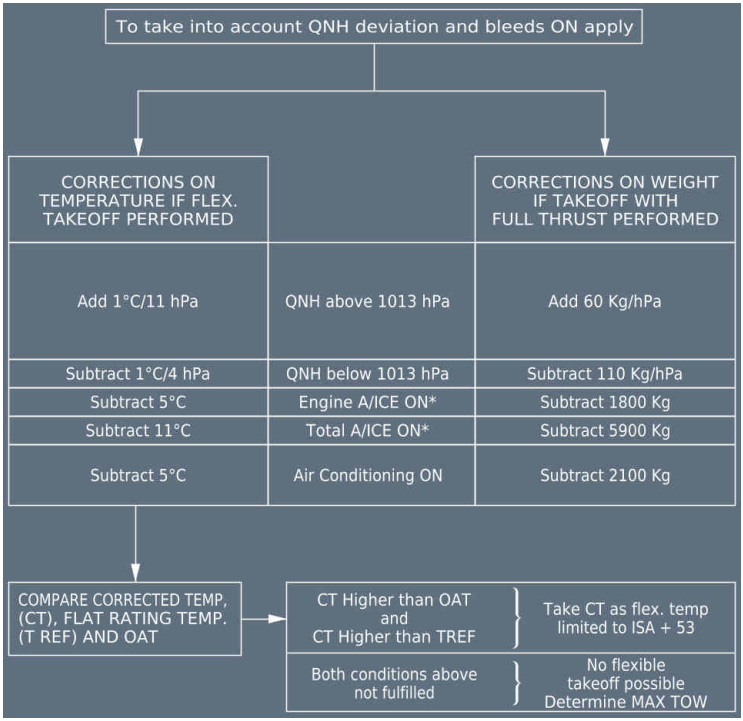
Applicable to: MSN 02443, 02670, 02908-02914, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-05411



Note: ** Corrections valid only for OAT < 10 °C*

EFFECT OF QNH AND BLEEDS FOR HIGH ALTITUDE OPERATIONS (ABOVE 9200 FT)

Ident.: PER-TOF-TOD-24-00012926.0055001 / 24 MAR 11
Applicable to: MSN 03750, 04399, 04438



Note: ** Corrections valid only for OAT < 10 °C*

EXAMPLES FOR HIGH ALTITUDE OPERATIONS

Ident.: PER-TOF-TOD-24-00012925.0064001 / 18 MAR 11
Applicable to: MSN 02443, 02670, 02908-02914, 03308, 03357-03618, 03782-04216, 04312, 04328-04384, 04481-04488, 04506, 04518, 04535-04637, 04752-05094, 05155, 05190, 05230-06336

TAKEOFF CHART DATA

Airport geometric elevation = 11 500 ft
QNH = 1 013 hPa
Anti ice OFF
Air conditioning OFF
OAT = 0 °C
MTOW = 73 000 kg

EXAMPLE 1 - FULL THRUST TAKEOFF

Actual data : QNH = 1 040 hPa
Engine anti ice ON
Air conditioning OFF

Determine the actual airport pressure altitude (1 hPa is equivalent to 28 ft according to the ISA model).
Pressure altitude = 11 500 - (1 040 - 1 013) × 28 = 10 744 ft
Read in the above table the corrections for high QNH and engine anti ice ON.
QNH correction = 50 kg × (11 500 - 10 744)/28 hPa = +1 350 kg
Engine anti ice correction: 0 kg
The maximum permissible takeoff weight is 73 000 + 1 350 - 0 = 74 350 kg

EXAMPLE 2 - FLEXIBLE THRUST TAKEOFF

Actual data : QNH = 1 040 hPa
Anti ice OFF
Air conditioning ON
TOW = 65 000 kg
TFLEX = 55 °C

Read TREF on the takeoff chart or on the quick reference table.
Determine the actual airport pressure altitude (1 hPa is equivalent to 28 ft according to the ISA model).
Pressure altitude = 11 500 - (1 040 - 1 013) × 28 = 10 744 ft
Read in the above table the correction for QNH and air conditioning ON:
QNH correction = 1 °C/10 hPa × (11 500 - 10 744)/28 hPa = +3 °C
Air conditioning ON correction = -3 °C
New flexible temperature = 55 + 3 - 3 = 55 °C
Check that the flexible temperature is above TREF and actual OAT.

Check that the flexible temperature is less than the maximum flexible temperature and retain the lower of the two.

EXAMPLES FOR HIGH ALTITUDE OPERATIONS

Ident.: PER-TOF-TOD-24-00012925.0070001 / 18 MAR 11
Applicable to: MSN 03750, 04399, 04438

TAKEOFF CHART DATA

Airport geometric elevation = 11 500 ft
QNH = 1 013 hPa
Anti ice OFF
Air conditioning OFF
OAT = 0 °C
MTOW = 73 000 kg

EXAMPLE 1 - FULL THRUST TAKEOFF

Actual data : QNH = 1 040 hPa
Engine anti ice ON
Air conditioning OFF

Determine the actual airport pressure altitude (1 hPa is equivalent to 28 ft according to the ISA model).
Pressure altitude = 11 500 - (1 040 - 1 013) x 28 = 10 744 ft
Read in the above table the corrections for high QNH and engine anti ice ON.
QNH correction = 60 kg x (11 500 - 10 744)/28 hPa = +1 620 kg
Engine anti ice correction: 1 800 kg
The maximum permissible takeoff weight is 73 000 + 1 620 - 1 800 = 72 820 kg

EXAMPLE 2 - FLEXIBLE THRUST TAKEOFF

Actual data : QNH = 1 040 hPa
Anti ice OFF
Air conditioning ON
TOW = 65 000 kg
TFLEX = 55 °C

Read TREF on the takeoff chart or on the quick reference table.
Determine the actual airport pressure altitude (1 hPa is equivalent to 28 ft according to the ISA model).
Pressure altitude = 11 500 - (1 040 - 1 013) x 28 = 10 744 ft
Read in the above table the correction for QNH and air conditioning ON:
QNH correction = 1 °C/11 hPa x (11 500 - 10 744)/28 hPa = +3 °C
Air conditioning ON correction = -5 °C
New flexible temperature = 55 + 3 - 5 = 53 °C
Check that the flexible temperature is above TREF and actual OAT.

Check that the flexible temperature is less than the maximum flexible temperature and retain the lower of the two.

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SPEEDS LIMITED BY VMCG/VMCA

SPEEDS LIMITED BY VMCG/VMCA

Ident.: PER-TOF-TOD-25-10-00001754.0391001 / 15 FEB 17

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

All takeoff speeds have a minimum value limited by control. These minimum speeds are usually provided on each RTOW chart. If these speeds are not available, use the following conservative values. These speeds may be slightly higher than the minimum control speeds displayed on the RTOW chart.

MINIMUM V1 (KT IAS)											
CONF	PRESSURE ALTITUDE (FT)										
	-2000	0	1000	2000	3000	4000	6000	8000	9200	14000	15000
1+F	117	117	116	114	113	112	108	105	104	98	97
2	117	117	116	114	113	112	108	105	104	98	97
3	117	117	116	115	113	112	109	106	104	99	97

MINIMUM VR (KT IAS)											
CONF	PRESSURE ALTITUDE (FT)										
	-2000	0	1000	2000	3000	4000	6000	8000	9200	14000	15000
1+F	119	118	117	116	114	113	109	105	104	98	97
2	119	118	117	116	114	113	109	105	104	98	97
3	119	119	117	116	114	113	109	106	104	99	97

MINIMUM V2 (KT IAS)											
CONF	PRESSURE ALTITUDE (FT)										
	-2000	0	1000	2000	3000	4000	6000	8000	9200	14000	15000
1+F	122	121	120	118	117	115	111	107	105	98	97
2	122	121	120	118	117	115	111	107	105	98	97
3	121	121	120	118	117	115	111	107	105	99	97

SPEEDS LIMITED BY VMCG/VMCA

Ident.: PER-TOF-TOD-25-10-00001754.0387001 / 16 NOV 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

All takeoff speeds have a minimum value limited by control. These minimum speeds are usually provided on each RTOW chart. If these speeds are not available, use the following conservative values. These speeds may be slightly higher than the minimum control speeds displayed on the RTOW chart.

MINIMUM V1 (KT IAS)

CONF	PRESSURE ALTITUDE (FT)										
	-1 000	0	1 000	2 000	3 000	4 000	6000	8 000	9 200	14 100	15 100
1 + F	118	118	117	116	115	114	113	109	106	85	82
2	118	118	117	116	115	114	113	103	106	85	82
3	118	118	117	116	115	114	113	109	106	85	82

MINIMUM VR (KT IAS)

CONF	PRESSURE ALTITUDE (FT)										
	-1 000	0	1 000	2 000	3 000	4 000	6000	8 000	9 200	14 100	15 100
1 + F	122	122	121	121	120	120	119	117	115	108	106
2	122	122	121	121	120	120	119	117	115	108	106
3	122	122	121	121	120	120	119	117	115	108	106

MINIMUM V2 (KT IAS)

CONF	PRESSURE ALTITUDE (FT)										
	-1 000	0	1 000	2 000	3 000	4 000	6000	8 000	9 200	14 100	15 100
1 + F	126	125	125	124	124	123	122	120	118	110	108
2	126	125	125	124	124	123	122	120	118	110	108
3	125	124	124	123	123	122	121	119	117	109	107

SPEEDS LIMITED BY VMCG/VMCA

Ident.: PER-TOF-TOD-25-10-00001754.0345001 / 08 JUL 15
Applicable to: MSN 05437-06336

All takeoff speeds have a minimum value limited by control. These minimum speeds are usually provided on each RTOW chart. If these speeds are not available, use the following conservative values. These speeds may be slightly higher than the minimum control speeds displayed on the RTOW chart.

MINIMUM V1 (KT IAS)

CONF	PRESSURE ALTITUDE (FT)									
	-1000	0	1000	2000	3000	4000	6000	8000	9200	14100
1+F	117	117	116	116	114	113	110	108	106	100
2	115	115	114	114	112	111	108	106	104	98
3	115	114	114	113	112	111	108	105	104	98

MINIMUM VR (KT IAS)

CONF	PRESSURE ALTITUDE (FT)									
	-1000	0	1000	2000	3000	4000	6000	8000	9200	14100
1+F	121	120	120	119	118	116	113	111	109	102
2	119	118	118	117	116	115	111	109	107	100
3	119	118	117	117	115	114	111	108	107	99

MINIMUM V2 (KT IAS)

CONF	PRESSURE ALTITUDE (FT)									
	-1000	0	1000	2000	3000	4000	6000	8000	9200	14100
1+F	124	123	122	122	120	119	116	113	111	103
2	124	123	123	122	121	119	116	113	111	103
3	124	123	123	122	121	119	116	113	111	103

SPEEDS LIMITED BY VMCG/VMCA

Ident.: PER-TOF-TOD-25-10-00001754.0268001 / 08 JUL 15
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

All takeoff speeds have a minimum value limited by control. These minimum speeds are usually provided on each RTOW chart. If these speeds are not available, use the following conservative values. These speeds may be slightly higher than the minimum control speeds displayed on the RTOW chart.

MINIMUM V1 (KT IAS)

CONF	PRESSURE ALTITUDE (FT)											
	-2 000	0	1 000	2 000	3 000	4 000	5000	6 000	7 000	8 000	9 200	14 100
1 + F	117	115	114	113	112	112	111	110	109	108	106	100
2	115	113	112	111	111	110	109	108	107	106	104	100
3	114	112	111	110	110	110	109	108	107	105	104	100

MINIMUM VR (KT IAS)

CONF	PRESSURE ALTITUDE (FT)											
	-2 000	0	1 000	2 000	3 000	4 000	5000	6 000	7 000	8 000	9 200	10 200
1 + F	121	119	118	116	116	116	115	114	113	111	110	102
2	119	117	116	115	114	114	113	112	111	109	108	100
3	118	116	115	114	114	114	113	112	110	109	107	100

MINIMUM V2 (KT IAS)

CONF	PRESSURE ALTITUDE (FT)											
	-2 000	0	1 000	2 000	3 000	4 000	5000	6 000	7 000	8 000	9 200	10 200
1 + F	124	121	120	119	119	119	118	117	115	114	112	104
2	123	121	120	119	119	119	117	116	115	114	112	103
3	123	121	120	119	119	118	117	116	115	114	112	103

SPEEDS LIMITED BY VMC

Ident.: PER-TOF-TOD-25-10-00001754.0270001 / 16 MAY 12

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

All takeoff speeds have a minimum value limited by control. These minimum speeds are usually provided on each RTOW chart. If these speeds are not available, use the following conservative values. These speeds may be slightly higher than the minimum control speeds displayed on the RTOW chart.

MINIMUM V1 (KT IAS)										
CONF	PRESSURE ALTITUDE (FT)									
	-1 000	0	1 000	2 000	3 000	4 000	6 000	8 000	9 200	14 100
1 + F	116	116	115	115	113	112	109	107	105	99
2	114	114	113	113	111	110	107	105	103	97
3	114	113	113	112	111	110	107	104	103	97

MINIMUM VR (KT IAS)										
CONF	PRESSURE ALTITUDE (FT)									
	-1 000	0	1 000	2 000	3 000	4 000	6 000	8 000	9 200	14 100
1 + F	121	120	120	119	118	116	113	111	109	101
2	119	118	118	117	116	115	111	109	107	99
3	119	118	117	117	115	114	111	108	107	99

MINIMUM V2 (KT IAS)										
CONF	PRESSURE ALTITUDE (FT)									
	-1 000	0	1 000	2 000	3 000	4 000	6 000	8 000	9 200	14 100
1 + F	124	123	122	122	120	119	116	113	111	103
2	124	123	122	122	121	119	116	113	111	103
3	124	123	122	122	121	119	116	113	111	103

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V2 LIMITED BY VMU/VMCA

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)

Ident.: PER-TOF-TOD-25-20-00001756.1108001 / 15 FEB 17

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)

CONFIGURATION 1+F

PRESSURE ALTITUDE (FT)	TAKE OFF WEIGHT (1000 KG)										
	54	58	62	66	70	74	78	82	86	90	95
-2000	131	134	138	141	145	148	150	153	156	159	162
-1000	131	134	138	141	145	148	150	153	156	159	162
0	131	134	138	141	145	148	150	153	156	159	162
1000	131	134	138	141	144	147	150	153	156	159	162
2000	130	134	137	141	144	147	150	153	156	159	162
3000	130	133	137	140	143	147	150	153	156	159	162
4000	129	133	136	140	143	146	149	152	156	159	162
5000	129	132	136	139	143	146	149	152	156	159	162
6000	128	132	135	139	142	145	149	152	155	159	162
7000	128	131	135	139	142	145	149	152	156	159	163
8000	127	131	135	138	142	145	149	152	156	159	163
9000	127	131	134	138	142	145	149	152	156	160	163
10000	127	130	134	138	142	145	149	152	156	160	163
11000	126	130	134	138	142	145	149	153	156	160	164
12000	126	130	134	138	142	145	149	153	157	160	164
13000	126	129	134	138	142	146	149	153	157	161	165
14100	125	129	133	138	142	146	150	153	157	161	165
15100	125	129	133	138	142	146	150	154	158	162	166

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)

CONFIGURATION 2

PRESSURE ALTITUDE (FT)	TAKE OFF WEIGHT (1000 KG)										
	54	58	62	66	70	74	78	82	86	90	95
-2000	123	127	130	133	137	140	143	146	149	152	156
-1000	123	127	130	133	137	140	143	146	149	152	156
0	123	127	130	133	137	140	143	146	149	152	156
1000	123	126	130	133	137	140	143	146	149	152	156
2000	123	126	129	133	136	140	143	146	149	152	158

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MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)											
CONFIGURATION 2											
PRESSURE ALTITUDE (FT)	TAKE OFF WEIGHT (1000 KG)										
	54	58	62	66	70	74	78	82	86	90	95
3000	122	126	129	133	136	140	143	146	149	152	162
4000	122	125	129	132	136	139	143	146	149	156	165
5000	121	125	129	132	136	139	142	146	151	159	169
6000	121	125	128	132	136	139	142	147	155	164	174
7000	121	124	128	132	136	139	143	150	159	168	178
8000	120	124	128	132	135	139	145	154	163	172	182
9000	120	124	128	132	135	140	148	158	167	176	186
10000	120	124	128	132	136	143	152	162	171	180	189
11000	120	124	128	132	137	146	156	165	174	183	192
12000	120	124	128	132	140	150	159	168	177	185	194
13000	120	124	128	134	143	153	162	171	179	187	196
14100	119	124	128	137	148	157	166	174	182	190	199
15100	119	124	131	141	152	160	169	177	185	193	201

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)											
CONFIGURATION 3											
PRESSURE ALTITUDE (FT)	TAKE OFF WEIGHT (1000 KG)										
	54	58	62	66	70	74	78	82	86	90	95
-2000	121	121	122	126	129	132	135	138	141	144	147
-1000	121	121	122	126	129	132	135	138	141	144	147
0	121	121	122	126	129	132	135	138	141	144	147
1000	120	120	122	125	129	132	135	138	141	144	147
2000	118	119	122	125	129	132	135	138	141	144	147
3000	117	118	122	125	128	131	135	138	141	144	148
4000	115	118	121	125	128	131	135	138	141	144	148
5000	114	118	121	125	128	131	135	138	141	145	148
6000	114	117	121	124	128	131	135	138	141	145	148
7000	114	117	121	124	128	132	135	138	142	145	148
8000	113	117	121	124	128	132	135	138	142	145	148
9000	113	117	121	124	128	132	135	138	142	145	149

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MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)											
	CONFIGURATION 3										
PRESSURE ALTITUDE (FT)	TAKE OFF WEIGHT (1000 KG)										
	54	**58**	**62**	**66**	**70**	**74**	**78**	**82**	**86**	**90**	**95**
10000	113	117	121	125	128	132	135	139	142	146	149
11000	113	117	121	125	129	132	136	139	142	146	149
12000	113	117	121	125	129	132	136	139	143	146	149
13000	113	117	121	125	129	132	136	139	143	146	150
14100	113	117	121	125	129	133	136	140	143	147	150
15100	113	117	121	125	129	133	136	140	143	147	150

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)

Ident.: PER-TOF-TOD-25-20-00001756.1095001 / 18 JAN 19

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

[3]

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)								
CONFIGURATION 1+F								
PRESSURE ALTITUDE (FT)	TAKE OFF WEIGHT (1000 KG)							
	45	50	55	60	65	70	75	80
-2000	126	126	127	132	137	142	147	151
-1000	126	126	127	132	137	142	147	151
0	125	125	127	132	137	142	147	151
1000	125	125	127	132	137	142	147	151
2000	124	124	127	132	137	142	147	152
3000	124	124	127	132	137	142	147	152
4000	123	123	127	132	137	142	147	152
5000	123	123	127	132	137	142	147	152
6000	122	122	127	132	137	143	148	152
7000	122	122	127	132	138	143	148	152
8000	120	121	127	132	138	143	148	153
9000	118	121	127	132	138	143	148	153
10000	116	121	127	132	138	143	149	154
11000	115	121	127	132	138	143	149	154
12000	115	121	127	132	138	144	149	155
13000	115	121	127	133	138	144	150	155
14100	115	121	127	133	139	145	150	156
15100	115	121	127	133	139	145	151	156

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)								
CONFIGURATION 2								
PRESSURE ALTITUDE (FT)	TAKE OFF WEIGHT (1000 KG)							
	45	50	55	60	65	70	75	80
-2000	126	126	126	128	132	137	142	146
-1000	126	126	126	128	132	137	142	146
0	125	125	125	128	132	137	142	146
1000	125	125	125	128	132	137	142	146

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MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)								
CONFIGURATION 2								
PRESSURE ALTITUDE (FT)	TAKE OFF WEIGHT (1000 KG)							
	45	50	55	60	65	70	75	80
2000	124	124	124	128	132	137	142	146
3000	124	124	124	128	132	137	142	146
4000	123	123	123	128	133	137	142	146
5000	123	123	123	128	133	137	142	147
6000	122	122	122	128	133	138	142	147
7000	122	122	123	128	133	138	143	147
8000	120	120	123	128	133	138	143	147
9000	118	118	122	128	133	138	143	147
10000	116	117	122	128	133	138	143	147
11000	115	117	122	128	133	138	143	147
12000	114	117	122	128	133	138	143	148
13000	112	117	122	128	133	138	143	148
14100	111	117	122	128	133	138	143	148
15100	111	117	122	128	133	139	144	148

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)								
CONFIGURATION 3								
PRESSURE ALTITUDE (FT)	TAKE OFF WEIGHT (1000 KG)							
	45	50	55	60	65	70	75	80
-2000	125	125	125	125	128	133	137	141
-1000	125	125	125	125	128	133	137	141
0	124	124	124	124	128	133	137	141
1000	124	124	124	124	128	133	137	141
2000	123	123	123	123	128	133	137	142
3000	123	123	123	123	128	133	137	142
4000	122	122	122	123	128	133	138	142
5000	122	122	122	123	128	133	138	142
6000	121	121	121	123	128	133	138	142
7000	121	121	121	124	128	133	138	142
8000	119	119	119	124	128	133	138	142

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MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)								
CONFIGURATION 3								
PRESSURE ALTITUDE (FT)	TAKE OFF WEIGHT (1000 KG)							
	45	50	55	60	65	70	75	80
9000	117	117	118	123	128	133	138	142
10000	115	115	118	123	128	133	138	143
11000	114	114	118	124	129	133	138	143
12000	113	113	118	124	129	134	139	143
13000	111	113	118	124	129	134	139	143
14100	109	113	118	124	129	134	139	144
15100	107	113	118	124	129	134	139	144

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)

Ident.: PER-TOF-TOD-25-20-00001756.1070001 / 15 DEC 15
Applicable to: MSN 05437-06336

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)

CONFIGURATION 1+F

PRESSURE ALTITUDE (FT)	TAKE OFF WEIGHT (1000 KG)							
	45	50	55	60	65	70	75	80
-1000	124	124	129	135	140	145	150	155
0	123	124	129	135	140	145	151	155
1000	122	124	129	135	140	146	151	156
2000	122	124	129	135	140	146	151	156
3000	120	124	129	135	140	146	151	156
4000	119	124	129	135	140	146	151	156
5000	118	124	129	135	141	146	152	156
6000	118	123	129	135	141	146	152	157
7000	118	123	129	135	141	146	152	157
8000	117	123	129	135	141	147	152	157
9000	117	123	129	135	141	147	152	157

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)

CONFIGURATION 2

PRESSURE ALTITUDE (FT)	TAKE OFF WEIGHT (1000 KG)							
	45	50	55	60	65	70	75	80
-1000	124	124	124	129	135	140	145	150
0	123	123	124	129	135	140	145	150
1000	123	123	124	129	135	140	145	150
2000	122	122	124	129	135	140	145	150
3000	121	121	124	130	135	140	146	150
4000	119	119	124	130	135	141	146	150
5000	118	118	124	130	135	141	146	151
6000	116	118	124	130	135	141	146	151
7000	115	118	124	130	136	141	146	151
8000	113	118	124	130	136	141	146	151
9000	112	118	124	130	136	141	147	151

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)								
CONFIGURATION 3								
PRESSURE ALTITUDE (FT)	TAKE OFF WEIGHT (1000 KG)							
	45	50	55	60	65	70	75	80
-1000	124	124	124	124	129	134	139	143
0	123	123	123	124	129	134	139	143
1000	123	123	123	124	129	134	139	143
2000	122	122	122	124	129	134	139	144
3000	121	121	121	124	129	134	139	144
4000	119	119	119	124	130	134	139	144
5000	118	118	119	125	130	135	140	144
6000	116	116	119	125	130	135	140	144
7000	115	115	119	125	130	135	140	144
8000	113	114	119	125	130	135	140	145
9000	112	114	119	125	130	135	140	145

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)

Ident.: PER-TOF-TOD-25-20-00001756.0027001 / 25 MAR 11

[4] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

The following tables, one per configuration, provide the V2 limited by minimum unstick speed and minimum control speed in the air.

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)

CONFIGURATION 1+F

PRESSURE ALTITUDE (FT)	TAKEOFF WEIGHT (1000 KG)							
	45	50	55	60	65	70	75	80
-1000	124	124	129	135	140	146	151	156
0	123	123	129	135	140	146	151	156
1000	122	123	129	135	140	146	151	156
2000	122	123	129	135	140	146	151	156
3000	121	123	129	135	140	146	151	156
4000	119	123	129	135	140	146	151	156
5000	118	123	129	135	140	146	151	156
6000	118	123	129	135	140	146	151	156
7000	118	123	129	135	140	146	151	156
8000	118	123	129	135	140	146	151	156
9000	118	123	129	135	140	146	151	156

TAB M MD2QC69C A320[0096]232

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)								
CONFIGURATION 2								
PRESSURE ALTITUDE (FT)	TAKEOFF WEIGHT (1000 KG)							
	45	50	55	60	65	70	75	80
-1000	124	124	124	130	135	141	146	150
0	123	123	124	130	135	141	146	150
1000	122	122	124	130	135	141	146	150
2000	122	122	124	130	135	141	146	150
3000	121	121	124	130	135	141	146	150
4000	119	119	124	130	135	141	146	150
5000	118	118	124	130	135	141	146	150
6000	116	118	124	130	135	141	146	150
7000	115	118	124	130	135	141	146	150
8000	113	118	124	130	135	141	146	150
9000	112	118	124	130	135	141	146	150

TAB M MD2QC69C A320|0096|232

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)								
CONFIGURATION 3								
PRESSURE ALTITUDE (FT)	TAKEOFF WEIGHT (1000 KG)							
	45	50	55	60	65	70	75	80
-1000	124	124	124	124	129	135	139	144
0	123	123	123	124	129	135	139	144
1000	122	122	122	124	129	135	139	144
2000	122	122	122	124	129	135	139	144
3000	121	121	121	124	129	135	139	144
4000	119	119	119	124	129	135	139	144
5000	118	118	119	124	129	135	139	144
6000	116	116	119	124	129	135	139	144
7000	115	115	119	124	129	135	139	144
8000	113	114	119	124	129	135	139	144
9000	112	114	119	124	129	135	139	144

TAB M MD2QC69C A320|0096|232

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)

Ident.: PER-TOF-TOD-25-20-00001756.0095001 / 25 MAR 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The following tables, one per configuration, provide the V2 limited by minimum unstick speed and minimum control speed in the air.

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)

CONFIGURATION 1+F

PRESSURE ALTITUDE (FT)	TAKEOFF WEIGHT (1000 KG)							
	45	50	55	60	65	70	75	80
–2000	124	124	130	135	140	145	150	155
0	121	124	130	135	140	145	150	155
1000	120	124	130	135	140	145	151	155
2000	119	124	129	135	140	146	151	155
3000	119	124	130	135	140	146	151	156
4000	119	124	130	135	141	146	151	156
5000	119	124	130	135	141	146	151	156
6000	119	124	130	135	141	146	152	156
7000	119	124	130	136	141	146	152	156
8000	118	124	130	136	141	147	152	157
9000	118	124	130	136	141	147	152	157
10000	118	124	130	136	141	147	152	157
11000	118	124	130	136	142	147	153	157
12000	118	124	130	136	142	147	153	158
13000	118	124	130	136	142	148	153	158
14100	118	124	130	136	142	148	153	158

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)								
CONFIGURATION 2								
PRESSURE ALTITUDE (FT)	TAKEOFF WEIGHT (1000 KG)							
	45	50	55	60	65	70	75	80
–2000	123	123	124	129	134	139	144	149
0	121	121	124	129	134	140	145	149
1000	120	120	124	129	135	140	145	149
2000	119	119	124	129	135	140	145	149
3000	119	119	124	129	135	140	145	150
4000	119	119	124	130	135	140	145	150
5000	117	119	124	130	135	140	146	150
6000	116	119	124	130	135	141	146	150
7000	115	119	124	130	135	141	146	150
8000	114	119	124	130	136	141	146	151
9000	113	119	124	130	136	141	146	151
10000	113	119	125	130	136	141	147	151
11000	113	119	125	130	136	141	147	151
12000	113	119	125	131	136	142	147	152
13000	113	119	125	131	136	142	147	152
14100	113	119	125	131	137	142	147	152

MINIMUM V2 LIMITED BY VMU/VMCA (KT IAS)								
CONFIGURATION 3								
PRESSURE ALTITUDE (FT)	TAKEOFF WEIGHT (1000 KG)							
	45	50	55	60	65	70	75	80
–2000	123	123	123	124	129	134	139	143
0	121	121	121	124	129	135	140	144
1000	120	120	120	124	129	135	140	144
2000	119	119	119	124	130	135	140	144
3000	119	119	119	124	130	135	140	144
4000	118	118	119	124	130	135	140	144
5000	117	117	119	125	130	135	140	144
6000	116	116	120	125	130	135	140	145
7000	115	115	120	125	130	136	141	145
8000	114	114	119	125	130	136	141	145
9000	112	114	120	125	131	136	141	145
10000	110	114	120	125	131	136	141	145
11000	109	114	120	125	131	136	141	145
12000	109	114	120	126	131	137	142	146
13000	108	114	120	126	131	137	142	146
14100	109	115	120	126	132	137	142	146

GENERAL

Ident.: PER-TOF-CTA-10-00001781.0001001 / 21 JUL 14
Applicable to: ALL

This section presents the recommendations of Airbus for operations from wet runways or from runways which are covered with contaminants such as standing water, slush or snow.

CAUTION	Takeoff is not recommended: - From an icy runway - From a runway for which the depth of contaminant is greater than the performance levels or the equivalences published in the documentation or performance software.

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DEFINITIONS

Ident.: PER-TOF-CTA-20-00001782.0001001 / 03 OCT 17
Applicable to: ALL

DAMP	:	A runway is considered as damp, when the surface of the runway is not dry, but the water on the surface does not cause a shiny appearance.
WET	:	A runway is considered as wet, when the surface of the runway has a shiny appearance due to a thin film of water. When this film does not exceed 3 mm, there is no significant danger of hydroplaning.
FROST	:	The deposit of ice crystals on the runway is referred to as frost. The direct sublimation of humidity contained in the air on a runway, when the surface temperature is below freezing, causes frost.
COMPACTED SNOW	:	The maintenance personnel use a snow groomer to compress snow on a runway in order to obtain a hard surface.
SLIPPERY WHEN WET:		Notice to Airmen (NOTAM) report a runway as "slippery when wet", when the runway partially or entirely fails to satisfy the minimum (regulatory) friction requirement of the responsible authority.
DRY SNOW	:	Dry snow is snow that, if compacted by hand, does not stay compressed when released. The wind can blow dry snow. The density of dry snow is approximately 0.2 kg/l (1.7 lb/US Gal).
WET SNOW	:	Wet snow is snow that, if compacted by hand, stays compressed when released, and with which snowballs can be created. The density of wet snow is approximately 0.4 kg/l (3.35 lb/US Gal).
STANDING WATER	:	Standing water occurs due to heavy rain and/or insufficient runway drainage with a depth of more than 3 mm.
SLUSH	:	Slush is snow soaked with water, which spatters when stepped on firmly. Slush occurs at temperatures around 5 °C and has a density of approximately 0.85 kg/l (7.1 lb/US Gal).
ICE (Cold and Dry)	:	Situation in which ice occurs on the runway in cold and dry conditions.
WET ICE	:	When the ice on a runway melts, or there are loose/fluid contaminants on top of the ice, the ice is referred to as "wet ice". When there is wet ice on a runway, braking and directional control are difficult or not possible, because the runway surface is very slippery.

EQUIVALENCES

Ident.: PER-TOF-CTA-20-00014919.0002001 / 21 JUL 14
Applicable to: ALL

For the below-listed reported contaminants, the following equivalent runway conditions can be retained for the takeoff performance determination.

Reported contaminant		Equivalent Runway Condition
Type of contaminant	**Depth of contaminant**	
Slush	≤ 3 mm (1/8 in)	Wet
Water		
Wet snow		
Dry snow		

OPERATIONAL CONDITIONS

Ident.: PER-TOF-CTA-30-00001783.0001001 / 14 SEP 18
Applicable to: ALL

Performance penalties for takeoff as published in this section are computed with the following assumptions :

- The contaminant is in a layer of uniform depth and density over the entire length of the runway.
- Antiskid and spoilers are operative.
- The friction coefficient is based on studies and checked by actual tests.
- The screen height at the end of takeoff segment is 15 ft, not 35 ft.

In addition, for contaminated runways only :

- There is drag due to rolling resistance of the wheels.
- There is drag due to spray on the airframe and gears.
- Reverse thrust is used for the deceleration phase.
- Maximum thrust is used for takeoff.

Note: The gross flight path clears close-in obstacles by 15 ft instead of 35 ft.

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TAKEOFF PERFORMANCE

TAKEOFF PERFORMANCE

Ident.: PER-TOF-CTA-40-10-00013660.0001001 / 04 MAR 11
Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-08864, 08901

CAUTION	The method is based on the use of the RTOW charts established at optimum V2/VS and optimum V1/VR. The method should not be used with takeoff charts computed for other conditions. All tables have been established for TOGA (and Flexible Takeoff for wet runways). Do not use them for Derated thrust.

Correct the determined maximum takeoff weight on dry runway to take into account QNH and bleed effects, then apply the corrections given on the following pages.

Note: *1. On contaminated runway, in some cases, no MTOW can be determined with this method (box dashed below a given weight). A specific RTOW chart must then be computed.*
2. The published corrections are valid for charts calculated with forward CG and basic CG.

TAKEOFF PERFORMANCE

Ident.: PER-TOF-CTA-40-10-00013660.0002001 / 23 JUN 15
1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CAUTION	The method is based on the use of the RTOW charts established at optimum V2/VS and optimum V1/VR. In addition, when applying corrections for a wet runway, the RTOW charts should also have been established with V1 min (minimum V1 of the V1 range). The method should not be used with takeoff charts computed for other conditions. All tables have been established for TOGA (and Flexible Takeoff for wet runways). Do not use them for Derated thrust.

Correct the determined maximum takeoff weight on dry runway to take into account QNH and bleed effects, then apply the corrections given on the following pages.

Note: *1. The results obtained with this method may be different from the influence given at the bottom of the RTOW chart.*
2. On contaminated runway, in some cases, no MTOW can be determined with this method (box dashed below a given weight). A specific RTOW chart must then be computed.

TAKEOFF PERFORMANCE

Ident.: PER-TOF-CTA-40-10-00013660.0003001 / 23 JUN 15

[2] **Applicable to: MSN 01767-06336, 08877-08896, 08905-09045**

CAUTION	The method is based on the use of the RTOW charts established at optimum V2/VS and optimum V1/VR. In addition, when applying corrections for a wet runway, the RTOW charts should also have been established with V1 min (minimum V1 of the V1 range). The method should not be used with takeoff charts computed for other conditions. All tables have been established for TOGA (and Flexible Takeoff for wet runways). Do not use them for Derated thrust.

Correct the determined maximum takeoff weight on dry runway to take into account QNH and bleed effects, then apply the corrections given on the following pages.

Note:

1. *The results obtained with this method may be different from the influence given at the bottom of the RTOW chart.*
2. *On contaminated runway, in some cases, no MTOW can be determined with this method (box dashed below a given weight). A specific RTOW chart must then be computed.*
3. *The published corrections are valid for charts calculated with forward CG and basic CG.*

TAKEOFF FROM A WET RUNWAY

HOW TO PROCEED

Ident.: PER-TOF-CTA-40-20-00012966.0004001 / 24 MAR 11
Applicable to: ALL

1. Determine the maximum takeoff weight or flexible temperature and associated speeds on dry runway.
2. Two sets of tables are given depending on the use of thrust reversers and the presence of clearway. Select the table to use as applicable to your case.
   The runway length in the table corresponds to the available takeoff run (TORA).
3. Apply the corrections shown in the table to the maximum takeoff weight or flexible temperature and associated speeds determined on dry runway.
4. Check that takeoff speeds are greater than the minimum values shown on the RTOW chart.

   If one or more speeds are lower than these minimum values, apply the following procedure :
   - Actual TOW = maximum TOW
     - If V1 is lower than the minimum V1 (V1 limited by VMCG), take this last value as V1 and further decrease weight by 3 000 kg (6 600 lb) per knot difference between them. Check that VR and V2 are higher than or equal to the minimum values.
     - If VR or/and V2 falls below the minimum values, takeoff is not possible.
   - Actual TOW lower than maximum TOW
     - If V1 corresponding to actual TOW is lower than the minimum V1 (V1 limited by VMCG) :
       - If maximum TOW has a V1 equal to or above minimum V1, retain minimum V1 as V1 and decrease the flexible temperature by 4 °C per knot difference between them.
       - In the rare case when the V1 corresponding to maximum TOW falls below the minimum V1, decrease maximum TOW by 3 000 kg (6 600 lb) per knot difference between them. Limit the actual TOW to the value found after this decrement. Take V1 equal to minimum V1 and decrease the flexible temperature by 4 °C per knot difference between this last value and the V1 corresponding to the actual TOW. Check that VR and V2 are higher than or equal to the minimum values.
     - If VR or V2 corresponding to actual TOW falls below the minimum values, and if VR and V2 corresponding to maximum TOW are above the minimum values, retain the minimum speed value for VR and V2.

5. Check that V2 is above the minimum V2 value due to VMU (*Refer to PER-TOF-TOD-25-10 SPEEDS LIMITED BY VMCG/VMCA*).
6. Check that the corrected flexible temperature is higher than OAT and Tref.

Note: - *Do not extrapolate below the shortest runway length provided in the table.*

- *If no minimum speed value is available, use the conservative values provided on Refer to PER-TOF-TOD-25-10 SPEEDS LIMITED BY VMCG/VMCA.*

NO THRUST REVERSERS OPERATIVE (NO CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012743.0280001 / 01 JUN 17

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2 500 8 000	3 000 10 000	3 500 11 500 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above	1 750 5 750	2 000 6 500	2 500 8 000 and above
FLEX TO Temperature decrement (°C)	11	5	11	21	8	5	28	6	7
MAX TO Weight decrement (1 000 kg) (1 000 lb)	5.9 13.1	3.9 8.6	11.1 24.5	14.1 31.1	6.1 13.5	4.3 9.5	18.2 40.2	4.1 9.1	5.8 12.8
V1 decrement (kt)	16	16	11	15	15	15	13	15	15
VR and V2 decrement (kt)	2	2	3	9	1	3	0	2	4

NO THRUST REVERSERS OPERATIVE (NO CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012743.0274001 / 16 NOV 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2 500 8 000	3 000 10 000	3 500 11 500 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above
FLEX TO Temperature decrement (°C)	9	9	36	33	11	50	27	7	50
MAX TO Weight decrement (1 000 kg) (1 000 lb)	3.3 7.3	3.9 8.6	8.8 19.4	10.4 22.9	3.8 8.4	15.5 34.2	9.5 20.9	2.4 5.3	14.0 30.8
V1 decrement (kt)	15	14	0	13	14	6	12	14	7
VR and V2 decrement (kt)	2	3	6	9	1	7	0	2	9

NO THRUST REVERSERS OPERATIVE (NO CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012743.0245001 / 21 DEC 12

Applicable to: MSN 05437-06336

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2 500 8 000	3 000 10 000	3 500 11 500 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above
FLEX TO Temperature decrement (°C)	10	12	6	19	10	7	38	12	7
MAX TO Weight decrement (1 000 kg) (1 000 lb)	3.5 7.8	5.5 12.2	2.7 5.9	6.2 13.7	4.1 9.1	3.0 6.7	15.5 34.2	4.5 10.0	3.0 6.7
V1 decrement (kt)	16	14	15	15	13	13	10	14	13
VR and V2 decrement (kt)	2	0	0	0	0	5	0	0	2

NO THRUST REVERSERS OPERATIVE (NO CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012743.0053001 / 04 MAR 11

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2 500 8 000	3 000 10 000	3 500 11 500 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above	1 750 5 750	2 000 6 500	2 500 8 000 and above
FLEX TO Temperature decrement (°C)	8	3	2	10	7	6	9	5	5
MAX TO Weight decrement (1 000 kg) (1 000 lb)	2.4 5.3	0.9 2.0	0.8 1.8	2.8 6.2	2.2 4.9	2.2 4.9	2.5 5.6	1.5 3.4	1.5 3.4
V1 decrement (kt)	16	16	14	16	15	15	15	15	15
VR and V2 decrement (kt)	3	3	2	3	4	7	1	3	4

NO THRUST REVERSERS OPERATIVE (NO CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012743.0048001 / 04 MAR 11

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2 500 8 000	3 000 10 000	3 500 11 500 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above	1 750 5 750	2 000 6 500	2 500 8 000 and above
FLEX TO Temperature decrement (°C)	8	5	3	8	6	2	6	6	2
MAX TO Weight decrement (1 000 kg) (1 000 lb)	2.6 5.8	2.0 4.5	1.3 2.9	2.5 5.6	2.2 4.9	0.7 1.6	2.1 4.7	2.1 4.7	0.7 1.6
V1 decrement (kt)	15	14	14	16	14	14	14	15	13
VR and V2 decrement (kt)	2	1	1	2	1	2	1	2	0

ALL THRUST REVERSERS OPERATIVE (NO CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012744.0318001 / 01 JUN 17

4 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2500 8000	3000 10000	3500 11500 and above	2000 6500	2500 8000	3000 10000 and above	1750 5750	2000 6500	2500 8000 and above
FLEX TO Temperature decrement (°C)	5	2	10	4	3	8	10	3	4
MAX TO Weight decrement (1000 kg) (1000 lb)	2.6 5.8	1.8 4.0	10.3 22.8	2.4 5.3	2.4 5.3	7.8 17.2	6.4 14.2	2.0 4.5	3.5 7.8
V1 decrement (kt)	10	10	3	11	11	6	8	10	10
VR and V2 decrement (kt)	1	1	4	1	1	2	5	0	4

ALL THRUST REVERSERS OPERATIVE (NO CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012744.0312001 / 16 NOV 15

5 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2 500 8 000	3 000 10 000	3 500 11500 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above
FLEX TO Temperature decrement (°C)	4	3	31	10	4	50	7	4	26
MAX TO Weight decrement (1000 kg) (1000 lb)	1.4 3.1	1.2 2.7	9 19.8	3 6.6	1.2 2.7	8.0 17.6	2.2 4.9	1.3 2.9	5.0 11
V1 decrement (kt)	10	11	0	8	8	3	8	8	5
VR and V2 decrement (kt)	1	0	0	0	0	4	0	1	6

ALL THRUST REVERSERS OPERATIVE (NO CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012744.0283001 / 21 DEC 12

Applicable to: MSN 05437-06336

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2500 8000	3000 10000	3500 11500 and above	2000 6500	2500 8000	3000 10000 and above	1750 5750	2000 6500	2500 8000 and above
FLEX TO Temperature decrement (°C)	14	7	7	5	4	5	6	5	5
MAX TO Weight decrement (1000 kg) (1000 lb)	5.3 11.8	3.2 7.1	3.1 6.9	1.5 3.3	1.5 3.4	2.0 4.5	2.4 5.3	1.9 4.2	2.0 4.5
V1 decrement (kt)	8	8	8	9	9	8	8	8	8
VR and V2 decrement (kt)	4	1	1	1	1	5	1	1	5

ALL THRUST REVERSERS OPERATIVE (NO CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012744.0089001 / 04 MAR 11

6 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2500 8000	3000 10000	3500 11500 and above	2000 6500	2500 8000	3000 10000 and above	1750 5750	2000 6500	2500 8000 and above
FLEX TO Temperature decrement (°C)	5	2	2	5	3	2	4	3	2
MAX TO Weight decrement (1000 kg) (1000 lb)	1.4 3.1	0.6 1.4	0.6 1.4	1.3 2.9	0.8 1.8	0.5 1.2	0.9 2.0	0.7 1.6	0.7 1.6
V1 decrement (kt)	10	11	8	10	10	10	9	9	9
VR and V2 decrement (kt)	1	1	2	1	2	2	1	1	2

ALL THRUST REVERSERS OPERATIVE (NO CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012744.0084001 / 04 MAR 11

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2500 8000	3000 10000	3500 11500 and above	2000 6500	2500 8000	3000 10000 and above	1750 5750	2000 6500	2500 8000 and above
FLEX TO Temperature decrement (°C)	3	2	0	3	1	0	2	1	1
MAX TO Weight decrement (1000 kg) (1000 lb)	1.0 2.3	0.6 1.4	0.0 0.0	0.8 1.8	0.3 0.7	0.0 0.0	0.6 1.4	0.2 0.5	0.1 0.3
V1 decrement (kt)	9	9	9	10	8	9	10	9	8
VR and V2 decrement (kt)	0	0	0	0	0	0	0	0	0

NO THRUST REVERSERS OPERATIVE (WITH CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012745.0088001 / 01 JUN 17

7 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2 500 8 000	3 000 10 000	3 500 11 500 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above	1 750 5 750	2 000 6 500	2 500 8 000 and above
FLEX TO Temperature decrement (°C)	14	8	7	24	8	6	39	12	7
MAX TO Weight decrement (1 000 kg) (1 000 lb)	9.0 19.9	7.5 16.6	7.4 16.4	16.3 36.0	7.3 16.1	5.5 12.2	22.2 49.0	10.0 22.1	5.8 12.8
V1 decrement (kt)	14	14	13	14	14	15	11	13	15
VR and V2 decrement (kt)	4	4	4	5	4	6	2	4	7

NO THRUST REVERSERS OPERATIVE (WITH CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012745.0081001 / 16 NOV 15

[8] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2 500 8 000	3 000 10 000	3 500 11 500 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above
FLEX TO Temperature decrement (°C)	18	22	50	36	24	50	50	24	50
MAX TO Weight decrement (1 000 kg)	5.5	11.5	16	10.4	8.7	17	16.9	10.5	4.5
(1 000 lb)	12.2	25.4	35.3	22.9	19.2	37.5	37.3	23.2	10.0
V1 decrement (kt)	15	10	4	11	10	6	9	10	13
VR and V2 decrement (kt)	4	10	4	2	2	10	0	2	2

NO THRUST REVERSERS OPERATIVE (WITH CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012745.0052001 / 21 DEC 12

Applicable to: MSN 05437-06336

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2500 8000	3000 10000	3500 11500 and above	2000 6500	2500 8000	3000 10000 and above	1750 5750	2000 6500	2500 8000 and above
FLEX TO Temperature decrement (°C)	19	13	7	23	16	9	33	10	6
MAX TO Weight decrement (1000 kg)	9.5	6.5	3.1	11.8	8.2	4.3	17.0	5.0	2.8
(1000 lb)	21.0	14.4	6.9	26.1	18.1	9.5	37.5	11.0	6.2
V1 decrement (kt)	13	13	13	12	11	12	8	13	13
VR and V2 decrement (kt)	0	0	1	0	0	9	0	4	6

NO THRUST REVERSERS OPERATIVE (WITH CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012745.0049001 / 08 FEB 11

9 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2 500 8 000	3 000 10 000	3 500 11 500 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above	1 750 5 750	2 000 6 500	2 500 8 000 and above
FLEX TO Temperature decrement (°C)	13	5	5	17	8	8	14	8	7
MAX TO Weight decrement (1 000 kg)	4.0	1.8	1.8	4.8	3.0	3.0	4.2	2.4	2.4
(1 000 lb)	8.9	4.0	4.0	10.6	6.7	6.7	10.4	5.3	5.3
V1 decrement (kt)	15	16	16	15	15	14	13	14	14
VR and V2 decrement (kt)	5	6	6	5	7	11	4	6	7

NO THRUST REVERSERS OPERATIVE (WITH CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012745.0044001 / 08 FEB 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2 500 8 000	3 000 10 000	3 500 11 500 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above	1 750 5 750	2 000 6 500	2 500 8 000 and above
FLEX TO Temperature decrement (°C)	15	9	9	14	11	4	15	12	5
MAX TO Weight decrement (1 000 kg)	5.4	4.1	3.8	4.6	4.2	1.6	4.5	4.5	2.2
(1 000 lb)	12.0	9.1	8.4	10.2	9.3	3.6	10.0	10.0	4.9
V1 decrement (kt)	14	15	15	14	14	15	13	13	14
VR and V2 decrement (kt)	4	3	6	4	4	6	3	4	5

ALL THRUST REVERSERS OPERATIVE (WITH CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012941.0087001 / 01 JUN 17
10 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2 500 8 000	3 000 10 000	3 500 11 500 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above	1 750 5 750	2 000 6 500	2 500 8 000 and above
FLEX TO Temperature decrement (°C)	9	12	10	8	4	13	18	6	5
MAX TO Weight decrement (1 000 kg)	5.5	11.5	10.8	5.1	3.5	13.1	9.9	5.2	4.5
(1 000 lb)	12.2	25.4	23.9	11.3	7.8	28.9	21.9	11.5	10.0
V1 decrement (kt)	9	4	3	10	9	3	6	10	9
VR and V2 decrement (kt)	3	4	4	3	3	4	2	3	6

ALL THRUST REVERSERS OPERATIVE (WITH CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012941.0081001 / 16 NOV 15

11 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2 500 8 000	3 000 10 000	3 500 11 500 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above
FLEX TO Temperature decrement (°C)	27	21	50	16	10	50	16	8	50
MAX TO Weight decrement (1 000 kg) (1 000 lb)	8.5 18.8	10.8 23.8	8.1 17.9	4.6 10.2	3.4 7.5	13.7 30.2	5.0 11.1	3.3 7.3	14 30.9
V1 decrement (kt)	10	2	0	8	8	0	8	9	0
VR and V2 decrement (kt)	2	2	0	2	2	5	2	3	5

ALL THRUST REVERSERS OPERATIVE (WITH CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012941.0052001 / 21 DEC 12

Applicable to: MSN 05437-06336

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2500 8000	3000 10000	3500 11500 and above	2000 6500	2500 8000	3000 10000 and above	1750 5750	2000 6500	2500 8000 and above
FLEX TO Temperature decrement (°C)	14	6	1	7	9	6	11	10	5
MAX TO Weight decrement (1000 kg) (1000 lb)	6.9 15.3	3.0 6.6	0.1 0.3	3.5 7.7	4.2 9.3	3.0 6.7	5.7 12.6	5.2 11.5	2.2 4.9
V1 decrement (kt)	9	8	9	8	6	7	7	7	8
VR and V2 decrement (kt)	0	0	1	3	0	8	0	0	6

ALL THRUST REVERSERS OPERATIVE (WITH CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012941.0049001 / 28 JAN 11

12 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2 500 8 000	3 000 10 000	3 500 11 500 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above	1 750 5 750	2 000 6 500	2 500 8 000 and above
FLEX TO Temperature decrement (°C)	9	3	3	12	4	4	9	5	5
MAX TO Weight decrement (1 000 kg) (1 000 lb)	2.7 6.0	1.1 2.5	1.0 2.3	3.3 7.3	1.6 3.6	1.5 3.4	2.7 6.0	1.6 3.6	1.6 3.6
V1 decrement (kt)	9	11	10	9	10	9	8	9	9
VR and V2 decrement (kt)	3	4	3	3	5	5	3	4	5

ALL THRUST REVERSERS OPERATIVE (WITH CLEARWAY)

Ident.: PER-TOF-CTA-40-20-00012941.0044001 / 28 JAN 11

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

TAKEOFF CONFIGURATION	1 + F			2			3		
RUNWAY LENGTH (m) (ft)	2 500 8 000	3 000 10 000	3 500 11 500 and above	2 000 6 500	2 500 8 000	3 000 10 000 and above	1 750 5 750	2 000 6 500	2 500 8 000 and above
FLEX TO Temperature decrement (°C)	11	5	2	10	8	3	11	9	3
MAX TO Weight decrement (1 000 kg) (1 000 lb)	3.9 8.6	2.3 5.1	0.9 2.0	3.3 7.3	3.1 6.9	1.0 2.3	3.3 7.3	3.3 7.3	1.3 2.5
V1 decrement (kt)	9	10	12	9	9	10	8	9	9
VR and V2 decrement (kt)	3	2	3	3	3	4	2	2	4

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EXAMPLE

TAKEOFF PERFORMANCE ON DRY RUNWAY

Ident.: PER-TOF-CTA-40-40-00014730.0001001 / 29 JUL 16
Applicable to: ALL

DATA

The following data and graph are for example only, and are not for operational use. Even if the data in the following example is in "kg" and "m", the same method can be applied for "lb" and "ft".
Runway length : 3 000 m, OAT = 36 °C, no wind, CONF 1+F
Determine maximum takeoff weight on dry runway from RTOW chart (*Refer to PER-TOF-TOC-10-30 EXAMPLE OF TAKEOFF CHART*).

OAT °C	CONF 1 + F				
	TAILWIND -10 KT	TAILWIND -5 KT	WIND 0 KT	HEADWIND 10 KT	HEADWIND 20 KT
34.0	76.7 4/6 143/50/52	78.4 4/6 148/53/55	80.2 4/6 154/56/58	81.5 4/6 157/57/60	82.8 4/6 160/60/62
36.0	76.6 4/6 143/49/52	78.4 4/6 148/52/54	80.1 4/6 153/56/58	81.4 4/6 156/57/59	82.7 4/6 160/60/62

Maximum TOW = 80 100 kg, V1 = 153 kt, VR = 156 kt, V2 = 158 kt.

TAKEOFF PERFORMANCE ON WET RUNWAY

Ident.: PER-TOF-CTA-40-40-00014731.0001001 / 29 JUL 16
Applicable to: ALL

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.
With no thrust reversers operating and assuming that no clearway was used to compute the dry RTOW chart, use the table *Refer to PER-TOF-CTA-40-20 NO THRUST REVERSERS OPERATIVE (NO CLEARWAY)*.

TAKEOFF CONFIGURATION	1+F			2			3		
RUNWAY LENGTH (m) (ft)	2500 8000	3000 10000	3500 11500 AND ABOVE	2000 6500	2500 8000	3000 10000 AND ABOVE	1750 5750	2000 6500	2500 8000 AND ABOVE
FLEX TO TEMPERATURE DECREMENT (°C)	8	3	2	10	7	6	9	5	5
MAX TO WEIGHT DECREMENT (1000 kg) (1000 lb)	2.4 5.3	0.9 2.0	0.8 1.8	2.8 6.2	2.2 4.9	2.2 4.9	2.5 5.6	1.5 3.4	1.5 3.4
V1 DECREMENT (kt)	16	16	14	16	15	15	15	15	15
VR AND V2 DECREMENT (kt)	3	3	2	3	4	7	1	3	4

- Maximum takeoff weight correction :
  MTOW = 80 100 - 900 = 79 200 kg, V1 = 153 - 16 = 137 kt, VR = 156 - 3 = 153 kt, V2 = 158 - 3 = 155 kt.
- Flex temperature correction :
  Assuming an actual takeoff weight of 75 000 kg and an initial flex temperature of 53 °C
  TOW = 75 000 kg ⇒ Flex temperature = 53 - 3 = 50 °C
  V1 = 152 - 16 = 136 kt, VR = 153 - 3 = 150 kt, V2 = 154 - 3 = 151 kt.

Check the resulting speeds against the minimum speeds as per procedure *Refer to PER-TOF-CTA-40-20 HOW TO PROCEED*.

PERFORMANCE

FLIGHT PLANNING

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PER-FPL-GEN GENERAL

PER-FPL-GEN-MFR MINIMUM RECOMMENDED FUEL REQUIREMENTS

MINIMUM RECOMMENDED FUEL REQUIREMENTS ..... A

PER-FPL-GEN-FPL FLIGHT PLAN

FLIGHT PLAN ..... A

PER-FPL-FLP FLIGHT PREPARATION

PER-FPL-FLP-QFP QUICK DETERMINATION OF FLIGHT PLANNING

PER-FPL-FLP-QFP-10 INTRODUCTION

INTRODUCTION ..... A

PER-FPL-FLP-QFP-20 CORRECTION FOR DEVIATION FROM REFERENCE LANDING WEIGHT

CORRECTION FOR DEVIATION FROM REFERENCE LANDING WEIGHT ..... A

PER-FPL-FLP-QFP-30 EXAMPLE

EXAMPLE ..... A

PER-FPL-FLP-QFP-40 FLIGHT PLANNING AT A GIVEN MACH NUMBER

FLIGHT PLANNING M.78 ..... A

PER-FPL-FLP-QFP-50 FLIGHT PLANNING AT LONG RANGE SPEED

FLIGHT PLANNING LRC ..... A

PER-FPL-FLP-ALN ALTERNATE

PER-FPL-FLP-ALN-20 ALL ENGINES OPERATIVE

GENERAL ..... A
CORRECTION FOR DEVIATION FROM REFERENCE WEIGHT ..... B
ALTERNATE PLANNING ISA C

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Localization Title	Toc Index	ID	Reason
PER-FPL-GEN-MFR MINIMUM RECOMMENDED FUEL REQUIREMENTS	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-FPL-GEN-MFR MINIMUM RECOMMENDED FUEL REQUIREMENTS	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-FPL-FLP-QFP-10 INTRODUCTION	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-FPL-FLP-QFP-10 INTRODUCTION	A	2	Effectivity update: The information now also applies to MSN 09063.
PER-FPL-FLP-QFP-40 FLIGHT PLANNING M.78	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-FPL-FLP-QFP-40 FLIGHT PLANNING M.78	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-FPL-FLP-QFP-40 FLIGHT PLANNING M.78	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-FPL-FLP-QFP-50 FLIGHT PLANNING LRC	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-FPL-FLP-QFP-50 FLIGHT PLANNING LRC	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-FPL-FLP-QFP-50 FLIGHT PLANNING LRC	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-FPL-FLP-ALN-20 GENERAL	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-FPL-FLP-ALN-20 GENERAL	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-FPL-FLP-ALN-20 ALTERNATE PLANNING ISA	C	3	Effectivity update: The information now also applies to MSN 09063.
PER-FPL-FLP-ALN-20 ALTERNATE PLANNING ISA	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-FPL-FLP-ALN-20 ALTERNATE PLANNING ISA	C	5	Effectivity update: The information no longer applies to MSN 05449.

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MINIMUM RECOMMENDED FUEL REQUIREMENTS

Ident.: PER-FPL-GEN-MFR-00001837.0006001 / 25 JAN 17

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The total fuel quantity required to fly a given sector is the sum of the following quantities:

TAXI FUEL

Quantity required for startup and taxi. Fuel calculation is based on a consumption of 10.3 kg/min or 23 lb/min.
Average quantity (14 min) → 164 kg or 362 lb.

TRIP FUEL

Fuel required from departure to destination includes the following quantities:
- Takeoff and climb at selected speed
- Cruise at selected speed
- Descent from cruising level to 1 500 ft above destination airport
- Approach and landing. Fuel calculation is based on a consumption of 23 kg/min or 50 lb/min
  Average quantity (6 min IFR) →140 kg or 310 lb.

RESERVE FUEL

This quantity includes :

"EN ROUTE" RESERVE FUEL (CONTINGENCY FUEL)

- According to national regulations and company policy (generally based on a percentage of trip fuel).

ALTERNATE FUEL

Fuel required to fly from destination to alternate airport.
It includes go-around 100 kg or 220 lb, climb to cruising level, cruise at long range speed, descent and approach procedure.
120 kg or 270 lb for 4 min VFR.

HOLDING FUEL

Calculation of holding fuel should take into account the altitude of the alternate and the landing weight at the alternate. To use holding charts *Refer to PER-HLD-GEN GENERAL*.
A conservative quantity corresponding to a 30 min holding at 1 500 ft above alternate airport elevation at "green dot" speed in the clean configuration is 1 450 kg or 3 200 lb.

APU FUEL

During ground operations, APU fuel consumption is about 130 kg/h or 290 lb/h (Packs ON, 90 KVA load on APU GEN).

MINIMUM RECOMMENDED FUEL REQUIREMENTS

Ident.: PER-FPL-GEN-MFR-00001837.0001001 / 08 FEB 11

[2] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The total fuel quantity required to fly a given sector is the sum of the following quantities:

TAXI FUEL

Quantity required for startup and taxi. Fuel calculation is based on a consumption of 11.5 kg/min or 25 lb/min
Average quantity (12 min) → 140 kg or 300 lb

TRIP FUEL

Fuel required from departure to destination includes the following quantities:
- Takeoff and climb at selected speed.
- Cruise at selected speed.
- Descent from cruising level to 1 500 ft above destination airport.
- Approach and landing. Fuel calculation is based on a consumption of 20 kg/min or 45 lb/min
  Average quantity (6 min IFR) →120 kg or 270 lb

RESERVE FUEL

This quantity includes :

"EN ROUTE" RESERVE FUEL (CONTINGENCY FUEL)

- According to national regulations and company policy (generally based on a percentage of trip fuel).

ALTERNATE FUEL

- Fuel required to fly from destination to alternate airport.

It includes go-around 100 kg or 220 lb, climb to cruising level, cruise at long range speed, descent and approach procedure.
80 kg or 180 lb for 4 min VFR

HOLDING FUEL

Calculation of holding fuel should take into account the altitude of the alternate and the landing weight at the alternate. To use holding charts *Refer to PER-HLD-GEN GENERAL*.
A conservative quantity corresponding to a 30 min holding at 1 500 ft above alternate airport elevation at "green dot" speed in the clean configuration is 1 200 kg or 2 700 lb

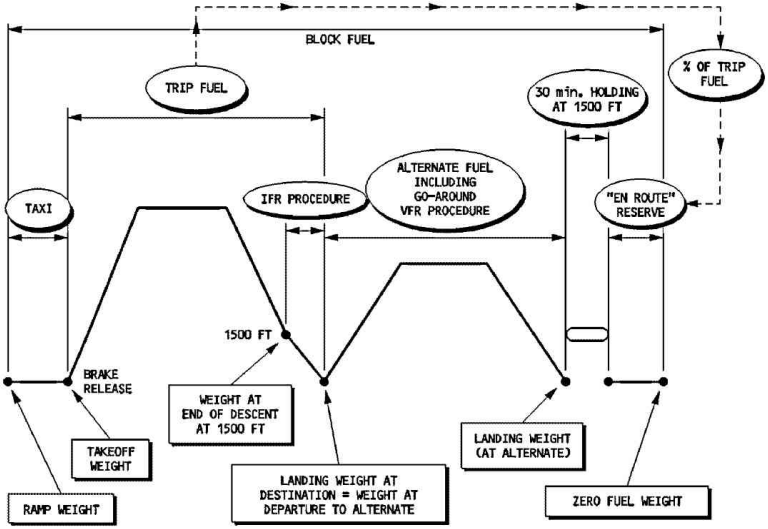
APU FUEL

During ground operations, APU fuel consumption is about 130 kg/h or 290 lb/h (Packs ON, 90 KVA load on APU GEN).

FLIGHT PLAN

Ident.: PER-FPL-GEN-FPL-00001835.0001001 / 22 MAR 11
Applicable to: ALL

When no precalculated flight plan is available, flight planning can be determined by using the tables given in this chapter.
Fuel policy will be the same as for precalculated flight plan.
The graph on the following page defines the different terms used in this chapter.



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INTRODUCTION

INTRODUCTION

Ident.: PER-FPL-FLP-QFP-10-00001827.0001001 / 25 FEB 11

[1] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The following flight planning tables allow the planner to determine trip fuel consumption and trip time required to cover a given air distance.

These tables are established for:

- Takeoff
- Climb profile 250 kt/300 kt/M 0.78
- Cruise Mach number M 0.78/LR
- Descent profile M 0.78/300 kt/250 kt
- Approach and landing 120 kg - 6 min IFR
- ISA
- CG = 33 %
- Normal air conditioning
- Anti ice OFF

They are based upon a reference landing weight of 55 000 kg.

Note: *1. In the tables, the asterisk (*) means that a step climb of 4 000 ft must be flown to reach the corresponding FL.*

2. To obtain a flight plan at optimum cruise level, the highest flight level desired within the flight has to be selected in the table.

3. For each degree Celcius above ISA temperature apply fuel correction 0.015 (kg/°C/NM) x ΔISA (°C) x Air Distance (NM).

INTRODUCTION

Ident.: PER-FPL-FLP-QFP-10-00001827.0032002 / 12 JUL 12

[2] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The following flight planning tables allow the planner to determine trip fuel consumption and trip time required to cover a given air distance.

These tables are established for:

- Takeoff
- Climb profile 250 kt/300 kt/M 0.78
- Cruise Mach number M 0.78/LR
- Descent profile M 0.78/300 kt/250 kt
- Approach and landing 140 kg - 6 min IFR
- ISA
- CG = 33 %
- Normal air conditioning
- Anti ice OFF

They are based upon a reference landing weight of 60 000 kg.

Note: *1. In the tables, the asterisk (*) means that a step climb of 4 000 ft must be flown to reach the corresponding FL.*

2. To obtain a flight plan at optimum cruise level, the highest flight level desired within the flight has to be selected in the table.

3. For each degree Celcius above ISA temperature apply fuel correction 0.015 (kg/°C/NM) x ΔISA (°C) x Air Distance (NM).

INTRODUCTION

Ident.: PER-FPL-FLP-QFP-10-00001827.0003001 / 02 MAY 12
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The following flight planning tables allow the planner to determine trip fuel consumption and trip time required to cover a given air distance.

These tables are established for:
- Takeoff
- Climb profile 250 kt/300 kt/M 0.78
- Cruise Mach number M 0.78/LR
- Descent profile M 0.78/300 kt/250 kt
- Approach and landing 120 kg - 6 min IFR
- ISA
- CG = 33 %
- Normal air conditioning
- Anti ice OFF

They are based upon a reference landing weight of 55 000 kg and have been calculated using databases for CFM 56–5–B/P. If the engines fitted on the aircraft are neither /P, nor /3, the fuel consumption has to be increased by 3 %.

Note: *1. In the tables, the asterisk (*) means that a step climb of 4 000 ft must be flown to reach the corresponding FL.*
2. To obtain a flight plan at optimum cruise level, the highest flight level desired within the flight has to be selected in the table.
3. For each degree Celcius above ISA temperature apply fuel correction 0.015 (kg/°C/NM) x ΔISA (°C) x Air Distance (NM).

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CORRECTION FOR DEVIATION FROM REFERENCE LANDING WEIGHT

CORRECTION FOR DEVIATION FROM REFERENCE LANDING WEIGHT

Ident.: PER-FPL-FLP-QFP-20-00001828.0001001 / 03 MAR 11
Applicable to: ALL

The fuel consumption must be corrected when the actual landing weight is different from the reference landing weight.
If it is lower (or greater) than the reference landing weight, subtract (or add) the value given in the correction part of the table per 1 000 kg below (or above) the reference landing weight.

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EXAMPLE

EXAMPLE

Ident.: PER-FPL-FLP-QFP-30-00014738.0001001 / 04 JUL 17
Applicable to: ALL

INTRODUCTION

This section provides an example explaining step by step how to perform a quick planning.
This example is based on an A320-232 aircraft, which most likely does not reflect your actual aircraft. Nevertheless, the principle is valid for any aircraft, provided the appropriate performance tables are used.
For actual calculations, access the appropriate tables corresponding to your current aircraft and desired flight profile by following the "refer to" indications specified at each step, and do not use the tables provided in the example.

EXAMPLE

The example is based on the following parameters:

- Aircraft used for the example	A320-232
- Zero Fuel Weight	60 000 kg
- Temperature	ISA conditions
- Air conditioning	Normal
- Anti-ice	Off
- Cruise	M 0.78 at FL 370
- Departure - destination ground distance	1 800 NM
- Average wind on the leg to destination	-40 kt (headwind)
- Reserve fuel	5 %
- Destination - alternate ground distance	200 NM at FL 200
- Average wind on the leg to alternate	0 kt

To calculate the flight plan, it is necessary to start from the minimum landing fuel at the alternate airport.

1. Determine the 30 minutes holding fuel required at alternate airport (at 1 500 ft AGL).
   (*Refer to PER-FPL-GEN-MFR MINIMUM RECOMMENDED FUEL REQUIREMENTS* for actual 30 min fuel value).
   For the example, the conservative value of 1 200 kg is chosen.
   The resulting landing weight at alternate is 60 000 + 1 200 = 61 200 kg.
2. Determine time, trip fuel, and fuel correction for the leg from destination to alternate airport:

ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT
GO-AROUND : 100 KG - CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE
DESCENT : M.78/300KT/250KT - VMC PROCEDURE : 80 KG (4MIN)

REF. LDG. WT AT ALTERNATE = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 100	120	140	160	180	200	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL100 FL120	FL140 FL160	FL180 FL200
20									
40	529 0.12						2		
60	680 0.16	658 0.16					3		
80	832 0.20	805 0.20	803 0.20	803 0.20	805 0.19		5	4	4
100	984 0.24	952 0.24	945 0.24	941 0.23	939 0.23	938 0.22	6	6	5
120	1136 0.28	1099 0.28	1088 0.28	1080 0.27	1072 0.26	065 0.26	7	7	6
140	1289 0.32	1246 0.32	1230 0.32	1218 0.30	1206 0.29	192 0.29	9	8	6
160	1441 0.36	1393 0.36	1373 0.35	1357 0.34	1340 0.33	319 0.32	10	10	7
180	1594 0.40	1541 0.40	1517 0.39	1496 0.38	1474 0.36	446 0.35	11	11	8
200	1747 0.45	1689 0.44	1660 0.43	1635 0.41	1608 0.39	1573 0.38	13	12	9
220	1900 0.49	1837 0.48	1804 0.47	1774 0.45	1742 0.42	1701 0.42	14	14	9
240	2054 0.53	1985 0.52	1947 0.51	1914 0.48	1877 0.46	1828 0.45	15	15	10
260	2208 0.57	2134 0.56	2091 0.55	2054 0.52	2011 0.49	1955 0.48	17	16	11
280	2361 1.01						18	18	12
300	2515 1.05						20	19	12
320	2670 1.09	2580 1.08	2525 1.06	2474 1.02	2416 0.58	2338 0.58	21	20	13
340	2824 1.13	2730 1.12	2670 1.10	2615 1.06	2551 1.02	2466 1.01	22	22	14
360	2979 1.17	2879 1.16	2815 1.14	2755 1.09	2686 1.05	2593 1.04	24	23	14
380	3134 1.21	3029 1.20	2960 1.17	2896 1.13	2821 1.08	2721 1.07	25	24	15
400	3289 1.25	3179 1.23	3105 1.21	3037 1.16	2957 1.11	2849 1.10	26	26	16
420	3444 1.29	3329 1.27	3251 1.25	3178 1.20	3092 1.14	2977 1.13	28	27	17
440	3599 1.33	3479 1.31	3396 1.29	3319 1.23	3227 1.18	3105 1.17	29	28	17
460	3755 1.37	3629 1.35	3542 1.32	3461 1.27	3362 1.21	3233 1.20	31	30	18
480	3911 1.41	3780 1.39	3688 1.36	3602 1.30	3498 1.24	3361 1.23	32	31	19
500	4067 1.45	3931 1.43	3834 1.40	3744 1.33	3633 1.27	3489 1.26	33	32	19

DO NOT USE FOR OPERATIONAL PURPOSE

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
ΔFUEL = – 0.3 %	ΔFUEL = + 2 %	ΔFUEL = + 5 %

a. Convert the ground distance to air distance.
(*Refer to PER-OPD-CON-AEO GENERAL* for conversion).
On this leg, the average wind is zero. Therefore, the air distance equals the ground distance.
b. Enter the table with the air distance and desired flight level to obtain time, trip fuel, and fuel correction.

(*Refer to PER-FPL-FLP-ALN-20 GENERAL* for actual table).
For 200 NM air distance at FL 200, the table provides 0 h 38 min, 1 573 kg and 9 kg/1 000 kg.

c. Calculate the fuel burn correction regarding the estimated landing weight at the alternate airport.
Table reference weight : 55 000 kg
Estimated landing weight : 61 200 kg
Fuel correction 9 kg per 1 000 kg difference
The extra fuel burn is (61.2 - 55.0) x 9 = 56 kg.

d. Calculate the total trip fuel from destination to alternate.
Trip fuel : 1 573 + 56 = 1 629 kg
The estimated landing weight at destination is 61 200 + 1 629 = 62 829 kg.

3. Determine time, trip fuel, and fuel correction for the leg from departure to destination airport at M 0.78:

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
1450	8794 3.22	8379 3.23	8063 3.25	7792 3.26	569 3.27	7563 3.27	46	67	103
1475	8940 3.25	8518 3.26	8196 3.28	7919 3.29	693 3.30	7689 3.30	47	68	105
1500	9085 3.28	8657 3.30	8328 3.31	8046 3.33	816 3.34	7814 3.34	48	69	107
1525	9231 3.32	8795 3.33	8461 3.35	8174 3.36	939 3.37	7940 3.37	49	71	109
1550	9377 3.35	8934 3.36	8594 3.38	8301 3.39	063 3.40	8067 3.40	50	72	111
1575	9523 3.38	9073 3.40	8727 3.41	8429 3.43	187 3.44	8193 3.44	50	73	113
1600	9669 3.41	9213 3.43	8861 3.45	8557 3.46	311 3.47	8320 3.47	51	74	115
1625	9815 3.45	9352 3.46	8994 3.48	8685 3.50	435 3.50	8447 3.50	52	75	117
1650	9962 3.48	9492 3.49	9128 3.51	8813 3.53	559 3.54	8575 3.54	53	76	119
1675	DO NOT USE FOR OPERATIONAL PURPOSE				683 3.57	8703 3.57	54	78	121
1700					808 4.01	8831 4.01	55	79	123
1725	10401 3.58	9911 3.59	9530 4.01	9198 4.03	933 4.04	8959 4.04	56	80	125
1750	10548 4.01	10051 4.03	9664 4.04	9326 4.06	058 4.07	9087 4.07	57	81	127
1775	10695 4.04	10191 4.06	9798 4.08	9455 4.10	183 4.11	9216 4.11	58	82	129
1800	10842 4.07	10332 4.09	9933 4.11	9584 4.13	309 4.14	9345 4.14	59	84	132
1825	10988 4.11	10472 4.12	10068 4.14	9713 4.16	436 4.17	9475 4.17	60	85	134
1850	11135 4.14	10613 4.16	10203 4.18	9842 4.20	563 4.21	9605 4.21	61	86	136
1875	11282 4.17	10754 4.19	10338 4.21	9972 4.23	691 4.24	9747 4.24*	62	87	138
1900	11430 4.20	10895 4.22	10473 4.24	10101 4.26	819 4.27	9877 4.27*	63	89	140
1925	11577 4.24	11036 4.26	10608 4.28	10231 4.30	948 4.31	10006 4.31*	64	90	142
1950	11724 4.27	11177 4.29	10744 4.31	10361 4.33	076 4.34	10136 4.34*	65	91	144
1975	11872 4.30	11318 4.32	10879 4.34	10491 4.36	10205 4.37	10266 4.38*	66	93	146
2000	12019 4.33	11460 4.35	11015 4.38	10621 4.40	10334 4.41	10396 4.41*	67	94	149
2025	12167 4.37	11601 4.39	11151 4.41	10751 4.43	10464 4.44	10526 4.44*	68	95	151
2050	12314 4.40	11743 4.42	11287 4.44	10881 4.46	10593 4.48	10657 4.48*	70	97	153
2075	12462 4.43	11885 4.45	11424 4.48	11012 4.50	10723 4.51	10787 4.51*	71	98	155

LOW AIR CONDITIONING ΔFUEL = – 0.4 %
ENGINE ANTI ICE ON ΔFUEL = + 3 %
TOTAL ANTI ICE ON ΔFUEL = + 5.5 %

a. Convert the ground distance to air distance.
(*Refer to PER-OPD-CON-AEO GENERAL* for conversion).
For 1 800 NM ground distance and 40 kt headwind at M 0.78, the interpolation from the table provides 1 979 NM air distance.

b. Enter the table with the air distance and desired flight level to obtain time, trip fuel, and fuel correction.
(*Refer to PER-FPL-FLP-QFP-40 FLIGHT PLANNING M.78* for actual M 0.78 table).
For 1 979 NM air distance at FL 370, the interpolation from the M 0.78 table provides 4 h 38 min, 10 226 kg and 146 kg/10 000 kg.

c. Calculate the fuel burn correction regarding the estimated landing weight at the destination airport.
Table reference weight : 55 000 kg
Estimated landing weight : 62 829 kg
Fuel correction 146 kg per 1 000 kg difference
The extra fuel burn is (62.829 - 55) x 146 = 1 143 kg.

d. Calculate the total trip fuel from departure to destination.
Trip fuel : 10 226 + 1 143 = 11 369 kg

4. Determine the contingency (reserve) fuel.
(Refer to company policy for fuel reserve value).
The five percent of the departure - destination trip fuel is:
11 369 x 0.05 = 568 kg.
5. Determine the taxi fuel at departure.
(*Refer to PER-FPL-GEN-MFR MINIMUM RECOMMENDED FUEL REQUIREMENTS* for actual taxi fuel).
For the example, the conservative value of 140 kg (12 min taxi time) is chosen.
6. Calculate the final block fuel.

- 30 min holding at alternate (1 500 ft AGL)	1 200 kg
- Trip fuel to alternate	1 629 kg
- Trip fuel to destination	11 369 kg
- Contingency (reserve) fuel	568 kg
- Taxi fuel	140 kg
Total block fuel	14 906 kg
Block weight	74 906 kg

FLIGHT PLANNING AT A GIVEN MACH NUMBER

FLIGHT PLANNING M.78

Ident.: PER-FPL-FLP-QFP-40-00001830.0206001 / 20 DEC 16

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG
NORMAL AIR CONDITIONING
ANTI ICE OFF

ISA
CG=33.0%

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
200	1524 0.38	1509 0.38	1499 0.38	1496 0.38	1498 0.38		10	12	13
225	1662 0.41	1638 0.42	1621 0.42	1611 0.42	1609 0.42	1613 0.42	11	13	15
250	1799 0.45	1767 0.45	1743 0.45	1726 0.45	1719 0.45	1720 0.45	11	14	16
275	1936 0.48	1896 0.48	1864 0.48	1842 0.48	1830 0.48	1828 0.48	12	14	17
300	2073 0.51	2025 0.51	1986 0.52	1958 0.52	1941 0.52	1936 0.52	13	15	18
325	2210 0.55	2154 0.55	2108 0.55	2073 0.55	2052 0.55	2043 0.55	13	16	19
350	2348 0.58	2283 0.58	2230 0.58	2189 0.58	2162 0.59	2151 0.59	14	16	20
375	2485 1.01	2413 1.01	2352 1.02	2305 1.02	2274 1.02	2259 1.02	14	17	21
400	2623 1.04	2542 1.05	2475 1.05	2421 1.05	2385 1.05	2368 1.05	15	18	23
425	2760 1.08	2672 1.08	2597 1.08	2537 1.08	2496 1.09	2476 1.09	15	18	24
450	2898 1.11	2801 1.11	2719 1.11	2653 1.12	2607 1.12	2585 1.12	16	19	25

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.6 %	+ 1.1 %	+ 3.9 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
475	3036 1.14	2931 1.14	2842 1.15	2769 1.15	2719 1.15	2693 1.15	16	20	26
500	3173 1.17	3061 1.18	2964 1.18	2886 1.18	2830 1.19	2802 1.19	17	21	27
525	3311 1.21	3190 1.21	3087 1.21	3002 1.22	2942 1.22	2911 1.22	17	21	28
550	3449 1.24	3320 1.24	3209 1.25	3119 1.25	3054 1.25	3020 1.25	18	22	29
575	3587 1.27	3450 1.28	3332 1.28	3235 1.29	3166 1.29	3129 1.29	19	23	30
600	3725 1.30	3580 1.31	3455 1.31	3352 1.32	3278 1.32	3239 1.32	19	23	32
625	3863 1.34	3710 1.34	3578 1.35	3469 1.35	3390 1.35	3348 1.35	20	24	33
650	4002 1.37	3841 1.37	3701 1.38	3585 1.39	3502 1.39	3458 1.39	20	25	34
675	4140 1.40	3971 1.41	3824 1.41	3702 1.42	3615 1.42	3567 1.42	21	26	35
700	4278 1.43	4101 1.44	3947 1.45	3819 1.45	3727 1.46	3677 1.46	21	26	36
725	4417 1.47	4231 1.47	4070 1.48	3936 1.49	3839 1.49	3787 1.49	22	27	37
750	4555 1.50	4362 1.51	4194 1.51	4054 1.52	3952 1.52	3897 1.52	22	28	39
775	4694	4492	4317	4171	4065	4008	23	29	40

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.1 %	+ 3.9 %

Continued on the following page

Continued from the previous page

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	1.53	1.54	1.55	1.55	1.56	1.56			
800	4832 1.56	4623 1.57	4440 1.58	4288 1.59	4178 1.59	4118 1.59	24	29	41
825	4971 2.00	4754 2.00	4564 2.01	4406 2.02	4291 2.02	4229 2.02	24	30	42

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.1 %	+ 3.9 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
825	4971 2.00	4754 2.00	4564 2.01	4406 2.02	4291 2.02	4229 2.02	24	30	42
850	5110 2.03	4884 2.04	4688 2.04	4523 2.05	4404 2.06	4340 2.06	25	31	44
875	5249 2.06	5015 2.07	4811 2.08	4641 2.09	4517 2.09	4450 2.09	25	32	45

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.1 %	+ 4 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
900	5388 2.09	5146 2.10	4935 2.11	4759 2.12	4630 2.12	4561 2.12	26	32	46
925	5527 2.13	5277 2.14	5059 2.14	4877 2.15	4744 2.16	4673 2.16	26	33	47
950	5666 2.16	5408 2.17	5183 2.18	4995 2.19	4857 2.19	4784 2.19	27	34	49
975	5805 2.19	5539 2.20	5307 2.21	5113 2.22	4971 2.23	4896 2.23	27	35	50
1000	5944 2.22	5670 2.23	5431 2.24	5231 2.25	5085 2.26	5008 2.26	28	35	51
1025	6084 2.26	5802 2.27	5555 2.28	5349 2.29	5198 2.29	5120 2.29	29	36	52
1050	6223 2.29	5933 2.30	5680 2.31	5467 2.32	5312 2.33	5232 2.33	29	37	54
1075	6362 2.32	6064 2.33	5804 2.34	5586 2.35	5426 2.36	5344 2.36	30	38	55
1100	6502 2.35	6196 2.37	5929 2.38	5704 2.39	5541 2.39	5456 2.39	30	38	56
1125	6641 2.39	6327 2.40	6053 2.41	5823 2.42	5655 2.43	5569 2.43	31	39	58
1150	6781 2.42	6459 2.43	6178 2.44	5942 2.45	5769 2.46	5681 2.46	32	40	59
1175	6921 2.45	6591 2.46	6302 2.48	6060 2.49	5884 2.49	5794 2.49	32	41	60
1200	7061	6723	6427	6179	5999	5907	33	42	62

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.1 %	+ 4 %

Continued on the following page

Continued from the previous page

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	2.48	2.50	2.51	2.52	2.53	2.53			
1225	7201 2.52	6855 2.53	6552 2.54	6298 2.55	6114 2.56	6021 2.56	33	42	63
1250	7341 2.55	6986 2.56	6677 2.57	6417 2.59	6228 2.59	6134 2.59	34	43	64
1275	7481 2.58	7119 3.00	6802 3.01	6536 3.02	6344 3.03	6247 3.03	34	44	66
1300	7621 3.02	7251 3.03	6927 3.04	6656 3.05	6459 3.06	6361 3.06	35	45	67
1325	7761 3.05	7383 3.06	7053 3.07	6775 3.09	6574 3.10	6475 3.10	36	46	69
1350	7901 3.08	7515 3.09	7178 3.11	6895 3.12	6689 3.13	6589 3.13	36	46	70
1375	8041 3.11	7648 3.13	7303 3.14	7014 3.15	6805 3.16	6703 3.16	37	47	71
1400	8182 3.15	7780 3.16	7429 3.17	7134 3.19	6921 3.20	6818 3.20	37	48	73
1425	8322 3.18	7913 3.19	7554 3.21	7254 3.22	7036 3.23	6932 3.23	38	49	74
1450	8463 3.21	8045 3.23	7680 3.24	7374 3.25	7152 3.26	7047 3.26	39	50	76

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.1 %	+ 4 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
1450	8463 3.21	8045 3.23	7680 3.24	7374 3.25	7152 3.26	7047 3.26	39	50	76
1475	8604 3.24	8178 3.26	7806 3.27	7494 3.29	7268 3.30	7162 3.30	39	51	77
1500	8744 3.28	8311 3.29	7932 3.31	7614 3.32	7385 3.33	7277 3.33	40	51	79
1525	8885 3.31	8443 3.32	8058 3.34	7734 3.36	7501 3.36	7393 3.36	40	52	80
1550	9026 3.34	8576 3.36	8184 3.37	7854 3.39	7617 3.40	7508 3.40	41	53	82
1575	9167 3.37	8709 3.39	8310 3.41	7975 3.42	7734 3.43	7624 3.43	42	54	83
1600	9308 3.41	8843 3.42	8436 3.44	8095 3.46	7851 3.46	7740 3.46	42	55	85
1625	9449 3.44	8976 3.45	8563 3.47	8216 3.49	7968 3.50	7856 3.50	43	56	86
1650	9590 3.47	9109 3.49	8689 3.50	8337 3.52	8085 3.53	7972 3.53	44	57	88
1675	9731 3.50	9242 3.52	8816 3.54	8458 3.56	8202 3.57	8089 3.57	44	57	89
1700	9873 3.54	9376 3.55	8942 3.57	8579 3.59	8319 4.00	8205 4.00	45	58	91
1725	10014 3.57	9509 3.59	9069 4.00	8700 4.02	8436 4.03	8322 4.03	45	59	92
1750	10156 4.00	9643 4.02	9196 4.04	8821 4.06	8554 4.07	8439 4.07	46	60	94

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.2 %	+ 4 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
1775	10297 4.03	9777 4.05	9323 4.07	8942 4.09	8671 4.10	8556 4.10	47	61	95
1800	10439 4.07	9910 4.08	9450 4.10	9063 4.12	8789 4.13	8674 4.13	47	62	97
1825	10581 4.10	10044 4.12	9577 4.14	9185 4.16	8907 4.17	8791 4.17	48	63	100
1850	10722 4.13	10178 4.15	9704 4.17	9307 4.19	9025 4.20	8909 4.20	49	64	101
1875	10864 4.16	10312 4.18	9831 4.20	9428 4.22	9143 4.23	9027 4.23	49	65	103
1900	11006 4.20	10446 4.22	9959 4.24	9550 4.26	9262 4.27	9145 4.27	50	65	104
1925	11148 4.23	10580 4.25	10086 4.27	9672 4.29	9380 4.30	9264 4.30	51	66	106
1950	11290 4.26	10715 4.28	10214 4.30	9794 4.32	9499 4.33	9382 4.33	51	67	107
1975	11433 4.29	10849 4.31	10342 4.34	9917 4.36	9618 4.37	9501 4.37	52	68	109
2000	11575 4.33	10984 4.35	10469 4.37	10039 4.39	9737 4.40	9620 4.40	52	69	110
2025	11717 4.36	11118 4.38	10597 4.40	10161 4.42	9856 4.44	9739 4.44	53	70	112
2050	11860 4.39	11253 4.41	10725 4.44	10284 4.46	9975 4.47	9859 4.47	54	71	114
2075	12002	11387	10853	10407	10095	9979	54	72	115

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.2 %	+ 4 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	4.42	4.45	4.47	4.49	4.50	4.50			

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.2 %	+ 4 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
2075	12002 4.42	11387 4.45	10853 4.47	10407 4.49	10095 4.50	9979 4.50	54	72	115
2100	12145 4.46	11522 4.48	10982 4.50	10529 4.52	10214 4.54	10098 4.54	55	73	117
2125	12288 4.49	11657 4.51	11110 4.53	10652 4.56	10334 4.57	10219 4.57	56	74	118
2150	12431 4.52	11792 4.54	11238 4.57	10775 4.59	10454 5.00	10339 5.00	56	75	120
2175	12573 4.56	11927 4.58	11367 5.00	10899 5.02	10574 5.04	10459 5.04	57	76	121

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.2 %	+ 3.9 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
2200	12716 4.59	12063 5.01	11495 5.03	11022 5.06	10694 5.07	10580 5.07	58	77	123
2225	12859 5.02	12198 5.04	11624 5.07	11145 5.09	10815 5.10	10701 5.10	58	78	125
2250	13003 5.05	12333 5.08	11753 5.10	11269 5.12	10935 5.14	10822 5.14	59	79	126
2275	13146 5.09	12469 5.11	11882 5.13	11392 5.16	11056 5.17	10943 5.17	60	80	128
2300	13289 5.12	12604 5.14	12011 5.17	11516 5.19	11177 5.21	11065 5.21	60	81	130
2325	13432 5.15	12740 5.17	12140 5.20	11640 5.22	11298 5.24	11187 5.24	61	82	131
2350	13576 5.18	12876 5.21	12269 5.23	11764 5.26	11419 5.27	11309 5.27	62	82	133
2375	13719 5.22	13012 5.24	12398 5.27	11888 5.29	11541 5.31	11431 5.31	63	83	134
2400	13863 5.25	13147 5.27	12528 5.30	12012 5.33	11662 5.34	11553 5.34	63	84	136
2425	14007 5.28	13283 5.31	12657 5.33	12137 5.36	11784 5.37	11676 5.37	64	85	138
2450	14151 5.31	13420 5.34	12787 5.37	12261 5.39	11906 5.41	11799 5.41	65	87	139
2475	14295 5.35	13556 5.37	12916 5.40	12386 5.43	12028 5.44	11922 5.44	65	88	141
2500	14439	13692	13046	12510	12150	12046	66	89	143

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.2 %	+ 3.9 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	5.38	5.40	5.43	5.46	5.47	5.47			
2525	14583 5.41	13829 5.44	13176 5.46	12635 5.49	12272 5.51	12169 5.51	67	90	144
2550	14727 5.44	13965 5.47	13306 5.50	12760 5.53	12395 5.54	12293 5.54	67	91	146
2575	14871 5.48	14102 5.50	13436 5.53	12885 5.56	12518 5.57	12418 5.57	68	92	148
2600	15015 5.51	14238 5.54	13566 5.56	13011 5.59	12641 6.01	12542 6.01	69	93	149
2625	15160 5.54	14375 5.57	13697 6.00	13136 6.03	12764 6.04	12666 6.04	70	94	151
2650	15304 5.57	14512 6.00	13827 6.03	13261 6.06	12887 6.08	12791 6.08	70	95	153
2675	15449 6.01	14649 6.03	13958 6.06	13387 6.09	13011 6.11	12916 6.11	71	96	154
2700	15594 6.04	14786 6.07	14088 6.10	13513 6.13	13134 6.14	13042 6.14	72	97	156

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.2 %	+ 3.9 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG
NORMAL AIR CONDITIONING
ANTI ICE OFF

ISA
CG=33.0%

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
2700	15594 6.04	14786 6.07	14088 6.10	13513 6.13	13134 6.14	13042 6.14	72	97	156
2725	15738 6.07	14923 6.10	14219 6.13	13639 6.16	13258 6.18	13167 6.18	72	98	158
2750	15883 6.10	15061 6.13	14350 6.16	13765 6.19	13382 6.21	13293 6.21	73	99	160
2775	16028 6.14	15198 6.17	14481 6.20	13891 6.23	13506 6.24	13419 6.24	74	100	161
2800	16173 6.17	15336 6.20	14612 6.23	14017 6.26	13631 6.28	13545 6.28	75	101	163
2825	16318 6.20	15473 6.23	14744 6.26	14144 6.29	13755 6.31	13672 6.31	75	102	165
2850	16464 6.23	15611 6.26	14875 6.30	14270 6.33	13880 6.34	13799 6.34	76	104	167
2875	16609 6.27	15749 6.30	15007 6.33	14397 6.36	14005 6.38	13926 6.38	77	105	168
2900	16755 6.30	15887 6.33	15138 6.36	14524 6.39	14130 6.41	14054 6.41	78	106	170
2925	16900 6.33	16025 6.36	15270 6.39	14651 6.43	14256 6.44	14182 6.44	78	107	172
2950	17046 6.37	16163 6.40	15402 6.43	14778 6.46	14381 6.48	14310 6.48	79	108	174
2975	17191 6.40	16301 6.43	15534 6.46	14905 6.49	14507 6.51	14458 6.51	80	109	175
3000	17337 6.43	16439 6.46	15666 6.49	15033 6.53	14633 6.55	14585 6.55	81	110	177

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.6 %	+ 1.2 %	+ 3.5 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
3025	17483 6.46	16578 6.49	15798 6.53	15161 6.56	14760 6.58	14712 6.58	81	112	179
3050	17629 6.50	16716 6.53	15930 6.56	15288 6.59	14886 7.01	14839 7.01	82	113	181
3075	17775 6.53	16855 6.56	16063 6.59	15416 7.03	15013 7.05	14967 7.05	83	114	183
3100	17921 6.56	16994 6.59	16195 7.03	15544 7.06	15140 7.08	15094 7.08	84	115	185

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.2 %	+ 3.5 %

FLIGHT PLANNING M.78

Ident.: PER-FPL-FLP-QFP-40-00001830.0198001 / 16 MAR 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
200	1408 0.38	1390 0.38	1376 0.38	1368 0.38	1365 0.38		10	12	13
225	1535 0.41	1508 0.41	1488 0.42	1473 0.42	1465 0.42	1462 0.42	10	12	14
250	1662 0.45	1627 0.45	1600 0.45	1579 0.45	1564 0.45	1557 0.45	11	13	15
275	1790 0.48	1746 0.48	1711 0.48	1684 0.48	1664 0.48	1653 0.48	11	13	16
300	1917 0.51	1865 0.51	1823 0.51	1789 0.52	1764 0.52	1748 0.52	12	14	16
325	2044 0.54	1984 0.55	1935 0.55	1894 0.55	1863 0.55	1843 0.55	12	15	17
350	2171 0.58	2104 0.58	2047 0.58	2000 0.58	1963 0.58	1939 0.58	13	15	18
375	2298 1.01	2223 1.01	2159 1.01	2105 1.02	2063 1.02	2034 1.02	13	16	19
400	2426 1.04	2342 1.04	2271 1.05	2211 1.05	2163 1.05	2130 1.05	14	16	20
425	2553 1.07	2461 1.08	2383 1.08	2316 1.08	2263 1.09	2226 1.09	14	17	20
450	2680 1.11	2581 1.11	2495 1.11	2422 1.12	2363 1.12	2321 1.12	15	18	21

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
475	2808 1.14	2700 1.14	2608 1.15	2528 1.15	2463 1.15	2417 1.15	15	18	22
500	2936 1.17	2820 1.18	2720 1.18	2634 1.18	2563 1.19	2513 1.19	16	19	23
525	3063 1.20	2939 1.21	2832 1.21	2739 1.22	2664 1.22	2609 1.22	16	19	24
550	3191 1.24	3059 1.24	2945 1.25	2845 1.25	2764 1.25	2705 1.25	17	20	25
575	3319 1.27	3179 1.27	3057 1.28	2951 1.28	2865 1.29	2802 1.29	17	21	26
600	3446 1.30	3298 1.31	3170 1.31	3057 1.32	2965 1.32	2898 1.32	18	21	26
625	3574 1.33	3418 1.34	3283 1.35	3164 1.35	3066 1.35	2994 1.35	18	22	27
650	3702 1.37	3538 1.37	3395 1.38	3270 1.38	3166 1.39	3091 1.39	19	23	28
675	3830 1.40	3658 1.41	3508 1.41	3376 1.42	3267 1.42	3187 1.42	19	23	29
700	3958 1.43	3778 1.44	3621 1.44	3482 1.45	3368 1.45	3284 1.45	20	24	30
725	4086 1.46	3898 1.47	3734 1.48	3589 1.48	3469 1.49	3381 1.49	20	24	31
750	4214 1.50	4018 1.50	3847 1.51	3695 1.52	3570 1.52	3478 1.52	21	25	32
775	4343	4138	3960	3802	3671	3574	21	26	33

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	1.53	1.54	1.54	1.55	1.56	1.56			
800	4471 1.56	4259 1.57	4073 1.58	3908 1.58	3772 1.59	3671 1.59	22	26	34
825	4599 1.59	4379 2.00	4186 2.01	4015 2.02	3873 2.02	3769 2.02	22	27	34

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
825	4599 1.59	4379 2.00	4186 2.01	4015 2.02	3873 2.02	3769 2.02	22	27	34
850	4727 2.03	4499 2.04	4299 2.04	4122 2.05	3975 2.06	3866 2.06	23	28	35
875	4856 2.06	4620 2.07	4412 2.08	4229 2.08	4076 2.09	3963 2.09	23	28	36

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 2 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
900	4984 2.09	4741 2.10	4526 2.11	4336 2.12	4177 2.12	4060 2.12	24	29	37
925	5113 2.13	4861 2.13	4639 2.14	4442 2.15	4279 2.16	4158 2.16	24	30	38
950	5242 2.16	4982 2.17	4753 2.18	4549 2.19	4381 2.19	4255 2.19	25	30	39
975	5370 2.19	5103 2.20	4866 2.21	4657 2.22	4482 2.22	4353 2.22	25	31	40
1000	5499 2.22	5223 2.23	4980 2.24	4764 2.25	4584 2.26	4451 2.26	26	32	41
1025	5628 2.26	5344 2.27	5094 2.28	4871 2.29	4686 2.29	4549 2.29	26	32	42
1050	5757 2.29	5465 2.30	5207 2.31	4978 2.32	4788 2.32	4647 2.32	27	33	43
1075	5886 2.32	5586 2.33	5321 2.34	5086 2.35	4890 2.36	4745 2.36	27	34	44
1100	6015 2.35	5707 2.36	5435 2.37	5193 2.39	4992 2.39	4843 2.39	28	34	45
1125	6144 2.39	5828 2.40	5549 2.41	5301 2.42	5094 2.43	4941 2.43	28	35	46
1150	6273 2.42	5950 2.43	5663 2.44	5408 2.45	5197 2.46	5039 2.46	29	35	47
1175	6402 2.45	6071 2.46	5777 2.47	5516 2.49	5299 2.49	5138 2.49	30	36	48
1200	6532	6192	5892	5623	5401	5236	30	37	49

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 2 %

Continued on the following page

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	2.48	2.50	2.51	2.52	2.53	2.53			
1225	6661 2.52	6314 2.53	6006 2.54	5731 2.55	5504 2.56	5335 2.56	31	37	50
1250	6790 2.55	6435 2.56	6120 2.57	5839 2.59	5606 2.59	5434 2.59	31	38	51
1275	6920 2.58	6557 2.59	6235 3.01	5947 3.02	5709 3.03	5533 3.03	32	39	52
1300	7049 3.01	6678 3.03	6349 3.04	6055 3.05	5812 3.06	5632 3.06	32	39	53
1325	7179 3.05	6800 3.06	6464 3.07	6163 3.09	5915 3.09	5731 3.09	33	40	54
1350	7309 3.08	6922 3.09	6578 3.11	6271 3.12	6018 3.13	5830 3.13	33	41	55
1375	7438 3.11	7044 3.13	6693 3.14	6379 3.15	6121 3.16	5929 3.16	34	42	56
1400	7568 3.14	7166 3.16	6808 3.17	6488 3.19	6224 3.19	6029 3.19	34	42	57
1425	7698 3.18	7288 3.19	6923 3.21	6596 3.22	6327 3.23	6128 3.23	35	43	58
1450	7828 3.21	7410 3.22	7037 3.24	6705 3.25	6430 3.26	6228 3.26	36	44	59

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 2 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI ICE OFF

ISA
CG=33.0%

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
1450	7828 3.21	7410 3.22	7037 3.24	6705 3.25	6430 3.26	6228 3.26	36	44	59
1475	7958 3.24	7532 3.26	7152 3.27	6813 3.29	6534 3.30	6328 3.30	36	44	60
1500	8088 3.27	7654 3.29	7268 3.30	6922 3.32	6637 3.33	6428 3.33	37	45	61
1525	8218 3.31	7776 3.32	7383 3.34	7030 3.35	6741 3.36	6528 3.36	37	46	63
1550	8349 3.34	7898 3.36	7498 3.37	7139 3.39	6844 3.40	6628 3.40	38	46	64
1575	8479 3.37	8021 3.39	7613 3.40	7248 3.42	6948 3.43	6728 3.43	38	47	65
1600	8609 3.40	8143 3.42	7728 3.44	7357 3.45	7052 3.46	6829 3.46	39	48	66
1625	8740 3.44	8266 3.45	7844 3.47	7466 3.49	7155 3.50	6929 3.50	40	48	67
1650	8870 3.47	8389 3.49	7959 3.50	7575 3.52	7259 3.53	7030 3.53	40	49	68
1675	9001 3.50	8511 3.52	8075 3.54	7684 3.55	7363 3.56	7130 3.56	41	50	69
1700	9132 3.53	8634 3.55	8191 3.57	7793 3.59	7468 4.00	7231 4.00	41	51	70
1725	9262 3.57	8757 3.59	8306 4.00	7902 4.02	7572 4.03	7332 4.03	42	51	72
1750	9393 4.00	8880 4.02	8422 4.04	8012 4.05	7676 4.06	7433 4.06	42	52	73

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 1 %	+ 1.5 %

Continued on the following page

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
1775	9524 4.03	9003 4.05	8538 4.07	8121 4.09	7780 4.10	7535 4.10	43	53	74
1800	9655 4.07	9126 4.08	8654 4.10	8231 4.12	7885 4.13	7636 4.13	44	53	74
1825	9786 4.10	9249 4.12	8770 4.14	8340 4.15	7989 4.17	7738 4.17	44	54	75
1850	9917 4.13	9372 4.15	8886 4.17	8450 4.19	8094 4.20	7839 4.20	45	55	77
1875	10048 4.16	9495 4.18	9002 4.20	8560 4.22	8199 4.23	7941 4.23	45	56	78
1900	10179 4.20	9619 4.21	9119 4.23	8670 4.26	8304 4.27	8043 4.27	46	56	79
1925	10311 4.23	9742 4.25	9235 4.27	8780 4.29	8409 4.30	8145 4.30	47	57	81
1950	10442 4.26	9866 4.28	9351 4.30	8890 4.32	8514 4.33	8247 4.33	47	58	82
1975	10574 4.29	9989 4.31	9468 4.33	9000 4.36	8619 4.37	8350 4.37	48	58	83
2000	10705 4.33	10113 4.35	9584 4.37	9110 4.39	8724 4.40	8452 4.40	48	59	85
2025	10837 4.36	10236 4.38	9701 4.40	9220 4.42	8829 4.43	8555 4.43	49	60	86
2050	10968 4.39	10360 4.41	9818 4.43	9331 4.46	8935 4.47	8658 4.47	50	61	88
2075	11100	10484	9934	9441	9040	8761	50	61	89

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 1.5 %

Continued on the following page

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	4.42	4.44	4.47	4.49	4.50	4.50			

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 1.5 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
2075	11100 4.42	10484 4.44	9934 4.47	9441 4.49	9040 4.50	8761 4.50	50	61	89
2100	11232 4.46	10608 4.48	10051 4.50	9552 4.52	9146 4.54	8864 4.53	51	62	90
2125	11364 4.49	10732 4.51	10168 4.53	9662 4.56	9252 4.57	8967 4.57	51	63	92
2150	11495 4.52	10856 4.54	10285 4.57	9773 4.59	9357 5.00	9070 5.00	52	64	93
2175	11627 4.55	10980 4.58	10402 5.00	9884 5.02	9463 5.04	9174 5.04	53	64	95

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 1.5 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
2200	11759 4.59	11104 5.01	10519 5.03	9995 5.06	9569 5.07	9277 5.07	53	65	96
2225	11892 5.02	11229 5.04	10637 5.07	10106 5.09	9675 5.10	9381 5.10	54	66	97
2250	12024 5.05	11353 5.07	10754 5.10	10217 5.12	9782 5.14	9485 5.14	54	67	99
2275	12156 5.08	11477 5.11	10871 5.13	10328 5.16	9888 5.17	9590 5.17	55	68	100
2300	12288 5.12	11602 5.14	10989 5.17	10439 5.19	9994 5.20	9694 5.20	56	68	102
2325	12421 5.15	11726 5.17	11106 5.20	10550 5.22	10101 5.24	9798 5.24	56	69	103
2350	12553 5.18	11851 5.21	11224 5.23	10662 5.26	10207 5.27	9903 5.27	57	70	105
2375	12686 5.21	11976 5.24	11341 5.26	10773 5.29	10314 5.30	10008 5.30	58	71	106
2400	12819 5.25	12100 5.27	11459 5.30	10885 5.32	10421 5.34	10113 5.34	58	71	108
2425	12951 5.28	12225 5.30	11577 5.33	10996 5.36	10528 5.37	10218 5.37	59	72	109
2450	13084 5.31	12350 5.34	11695 5.36	11108 5.39	10635 5.41	10323 5.41	60	73	111
2475	13217 5.34	12475 5.37	11813 5.40	11220 5.42	10742 5.44	10428 5.44	60	74	112
2500	13350	12600	11931	11332	10849	10534	61	75	113

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 1.5 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	5.38	5.40	5.43	5.46	5.47	5.47			
2525	13483 5.41	12726 5.44	12049 5.46	11444 5.49	10956 5.51	10640 5.51	61	75	115
2550	13616 5.44	12851 5.47	12167 5.50	11556 5.52	11064 5.54	10746 5.54	62	76	116
2575	13749 5.48	12976 5.50	12285 5.53	11668 5.56	11171 5.57	10852 5.57	63	77	118
2600	13882 5.51	13102 5.53	12403 5.56	11780 5.59	11279 6.01	10958 6.01	63	78	119
2625	14016 5.54	13227 5.57	12522 6.00	11893 6.02	11387 6.04	11065 6.04	64	79	121
2650	14149 5.57	13353 6.00	12640 6.03	12005 6.06	11495 6.07	11172 6.07	65	80	123
2675	14282 6.01	13478 6.03	12759 6.06	12117 6.09	11603 6.11	11278 6.11	65	80	124
2700	14416 6.04	13604 6.07	12878 6.10	12230 6.12	11711 6.14	11385 6.14	66	81	126

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 1.5 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI ICE OFF

ISA
CG=33.0%

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
2700	14416 6.04	13604 6.07	12878 6.10	12230 6.12	11711 6.14	11385 6.14	66	81	126
2725	14550 6.07	13730 6.10	12996 6.13	12343 6.16	11819 6.17	11492 6.17	67	82	127
2750	14683 6.10	13856 6.13	13115 6.16	12456 6.19	11928 6.21	11600 6.21	67	83	129
2775	14817 6.14	13982 6.16	13234 6.19	12569 6.23	12036 6.24	11707 6.24	68	84	130
2800	14951 6.17	14108 6.20	13353 6.23	12681 6.26	12145 6.28	11815 6.28	69	85	132
2825	15085 6.20	14234 6.23	13472 6.26	12795 6.29	12253 6.31	11923 6.31	69	85	133
2850	15219 6.23	14360 6.26	13591 6.29	12908 6.33	12362 6.34	12031 6.34	70	86	135
2875	15353 6.27	14486 6.30	13710 6.33	13021 6.36	12471 6.38	12140 6.38	71	87	136
2900	15488 6.30	14613 6.33	13830 6.36	13134 6.39	12580 6.41	12248 6.41	71	88	138
2925	15622 6.33	14739 6.36	13949 6.39	13248 6.43	12690 6.44	12356 6.44	72	89	140
2950	15756 6.36	14866 6.39	14068 6.43	13361 6.46	12799 6.48	12465 6.48	73	90	141
2975	15891 6.40	14992 6.43	14188 6.46	13475 6.49	12909 6.51	12574 6.51	73	91	143
3000	16026 6.43	15119 6.46	14307 6.49	13588 6.53	13018 6.54	12684 6.54	74	92	144

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 1 %	+ 1.5 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
3025	16160 6.46	15246 6.49	14427 6.53	13702 6.56	13128 6.58	12793 6.58	75	92	146
3050	16295 6.49	15373 6.53	14547 6.56	13816 6.59	13238 7.01	12903 7.01	75	93	148
3075	16430 6.53	15500 6.56	14667 6.59	13930 7.03	13348 7.05	13013 7.04	76	94	149
3100	16565 6.56	15627 6.59	14787 7.03	14044 7.06	13458 7.08	13123 7.08	77	95	151

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 1.5 %

FLIGHT PLANNING M.78

Ident.: PER-FPL-FLP-QFP-40-00001830.0024001 / 25 FEB 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
200	1628 0.38	1616 0.38	1610 0.38	1610 0.38			13	15	
225	1775 0.42	1754 0.42	1741 0.42	1734 0.42	1734 0.42		13	16	17
250	1921 0.45	1892 0.45	1871 0.45	1858 0.45	1853 0.45	1855 0.45	14	17	19
275	2068 0.48	2030 0.48	2002 0.48	1982 0.48	1972 0.49	1972 0.49	15	18	21
300	2215 0.51	2168 0.52	2132 0.52	2107 0.52	2092 0.52	2089 0.52	15	19	22
325	2361 0.55	2306 0.55	2263 0.55	2231 0.55	2211 0.55	2206 0.55	16	19	24
350	2508 0.58	2444 0.58	2394 0.58	2355 0.58	2331 0.59	2324 0.59	16	20	25
375	2655 1.01	2583 1.01	2525 1.02	2480 1.02	2451 1.02	2441 1.02	17	21	27
400	2802 1.04	2721 1.05	2656 1.05	2605 1.05	2571 1.05	2559 1.05	18	22	28
425	2950 1.08	2860 1.08	2787 1.08	2730 1.09	2691 1.09	2677 1.09	18	23	29
450	3097 1.11	2998 1.11	2918 1.12	2855 1.12	2811 1.12	2795 1.12	19	24	31
475	3244 1.14	3137 1.15	3050 1.15	2980 1.15	2932 1.15	2913 1.15	20	25	32
500	3391 1.17	3276 1.18	3181 1.18	3105 1.19	3052 1.19	3032 1.19	20	26	34
525	3539 1.21	3415 1.21	3312 1.21	3230 1.22	3173 1.22	3151 1.22	21	27	36
550	3687 1.24	3554 1.24	3444 1.25	3355 1.25	3294 1.25	3269 1.25	22	28	37
575	3834 1.27	3693 1.28	3576 1.28	3481 1.29	3415 1.29	3389 1.29	22	29	39
600	3982 1.30	3832 1.31	3708 1.31	3607 1.32	3536 1.32	3508 1.32	23	30	41
625	4130 1.34	3971 1.34	3840 1.35	3732 1.35	3657 1.36	3627 1.36	24	31	42
650	4278 1.37	4111 1.38	3972 1.38	3858 1.39	3779 1.39	3747 1.39	25	32	44
675	4426 1.40	4250 1.41	4104 1.41	3984 1.42	3900 1.42	3867 1.42	25	33	46
700	4574 1.43	4390 1.44	4236 1.45	4110 1.45	4022 1.46	3987 1.46	26	34	48
725	4722 1.47	4530 1.47	4369 1.48	4237 1.49	4144 1.49	4107 1.49	27	35	49
750	4870 1.50	4670 1.51	4501 1.51	4363 1.52	4267 1.52	4228 1.52	27	36	51
775	5019 1.53	4810 1.54	4634 1.55	4490 1.55	4389 1.56	4349 1.56	28	37	53
800	5167 1.57	4950 1.57	4767 1.58	4617 1.59	4512 1.59	4471 1.59	29	38	55
825	5316 2.00	5090 2.01	4900 2.01	4744 2.02	4634 2.02	4592 2.02	29	39	56

LOW AIR CONDITIONING
△FUEL = −0.5 %

ENGINE ANTI ICE ON
△FUEL = + 2 %

TOTAL ANTI ICE ON
△FUEL = + 4.5 %

FLIP23D A320-214 CFM56-5B4/P SA3420 03301.000011 0250300 .7800 .00200 120 0300350 55 0 100100 40100 18590 FCOM-02-05-40-003-180

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE = M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
825	5316 2.00	5090 2.01	4900 2.01	4744 2.02	4634 2.02	4592 2.02	29	39	56
850	5464 2.03	5231 2.04	5033 2.05	4871 2.05	4757 2.06	4714 2.06	30	40	58
875	5613 2.06	5371 2.07	5166 2.08	4998 2.09	4880 2.09	4836 2.09	31	41	60
900	5762 2.10	5512 2.10	5299 2.11	5125 2.12	5004 2.13	4958 2.13	32	42	62
925	5911 2.13	5652 2.14	5433 2.15	5253 2.15	5127 2.16	5080 2.16	32	43	63
950	6060 2.16	5793 2.17	5566 2.18	5380 2.19	5251 2.19	5203 2.19	33	44	65
975	6209 2.19	5934 2.20	5700 2.21	5508 2.22	5374 2.23	5326 2.23	34	45	67
1000	6358 2.23	6075 2.24	5833 2.24	5636 2.25	5498 2.26	5449 2.26	35	46	69
1025	6507 2.26	6216 2.27	5967 2.28	5763 2.29	5622 2.29	5572 2.29	35	47	71
1050	6657 2.29	6357 2.30	6101 2.31	5892 2.32	5746 2.33	5695 2.33	36	48	73
1075	6806 2.32	6498 2.33	6235 2.34	6020 2.35	5871 2.36	5819 2.36	37	49	74
1100	6955 2.36	6639 2.37	6369 2.38	6148 2.39	5995 2.39	5943 2.39	38	50	76
1125	7105 2.39	6781 2.40	6503 2.41	6276 2.42	6120 2.43	6067 2.43	38	51	78
1150	7255 2.42	6923 2.43	6638 2.44	6405 2.45	6245 2.46	6191 2.46	39	52	80
1175	7405 2.45	7064 2.47	6772 2.48	6534 2.49	6370 2.49	6316 2.49	40	53	82
1200	7555 2.49	7206 2.50	6907 2.51	6662 2.52	6495 2.53	6441 2.53	41	55	84
1225	7705 2.52	7348 2.53	7041 2.54	6791 2.56	6621 2.56	6566 2.56	41	56	86
1250	7855 2.55	7490 2.56	7176 2.58	6921 2.59	6746 3.00	6691 3.00	42	57	87
1275	8005 2.58	7632 3.00	7311 3.01	7050 3.02	6872 3.03	6817 3.03	43	58	89
1300	8155 3.02	7775 3.03	7446 3.04	7179 3.06	6998 3.06	6943 3.06	44	59	91
1325	8305 3.05	7917 3.06	7582 3.08	7309 3.09	7124 3.10	7069 3.10	45	60	93
1350	8456 3.08	8059 3.10	7717 3.11	7439 3.12	7251 3.13	7195 3.13	45	61	95
1375	8606 3.12	8202 3.13	7852 3.14	7569 3.16	7377 3.16	7322 3.16	46	63	97
1400	8757 3.15	8345 3.16	7988 3.18	7699 3.19	7504 3.20	7449 3.20	47	64	99
1425	8908 3.18	8488 3.19	8124 3.21	7829 3.22	7631 3.23	7576 3.23	48	65	101
1450	9059 3.21	8630 3.23	8259 3.24	7959 3.26	7758 3.26	7704 3.26	49	66	103

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
ΔFUEL = –0.5 %	ΔFUEL = + 2 %	ΔFUEL = + 4.5 %

FLIP23D A320-214 CFM56-5B4/P SA3420 03301.000011 0250300 .7800 .00200 120 0300350 55 0 100100 40100 18590 FCOM-02-05-40-004-180

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
1450	9059 3.21	8630 3.23	8259 3.24	7959 3.26	7758 3.26	7704 3.26	49	66	103
1475	9210 3.25	8773 3.26	8395 3.27	8089 3.29	7885 3.30	7832 3.30	49	67	105
1500	9361 3.28	8917 3.29	8531 3.31	8220 3.32	8013 3.33	7944 3.33*	50	68	107
1525	9512 3.31	9060 3.33	8668 3.34	8351 3.36	8141 3.37	8074 3.37*	51	70	109
1550	9664 3.34	9203 3.36	8804 3.37	8481 3.39	8268 3.40	8205 3.40*	52	71	111
1575	9815 3.38	9347 3.39	8940 3.41	8612 3.42	8396 3.43	8336 3.43*	53	72	113
1600	9967 3.41	9490 3.42	9077 3.44	8744 3.46	8525 3.47	8467 3.47*	53	73	115
1625	10119 3.44	9634 3.46	9214 3.47	8875 3.49	8653 3.50	8598 3.50*	54	74	117
1650	10271 3.47	9778 3.49	9351 3.51	9006 3.52	8782 3.53	8730 3.53*	55	76	119
1675	10423 3.51	9922 3.52	9488 3.54	9138 3.56	8910 3.57	8862 3.57*	56	77	121
1700	10575 3.54	10066 3.56	9625 3.57	9270 3.59	9039 4.00	8993 4.00*	57	78	123
1725	10727 3.57	10210 3.59	9762 4.01	9402 4.02	9168 4.03	9125 4.03*	58	79	125
1750	10880 4.00	10354 4.02	9900 4.04	9534 4.06	9298 4.07	9257 4.07*	59	81	127
1775	11032 4.04	10499 4.05	10038 4.07	9667 4.09	9427 4.10	9390 4.10*	59	82	129
1800	11185 4.07	10643 4.09	10176 4.11	9800 4.12	9558 4.13	9522 4.13*	60	83	131
1825	11337 4.10	10788 4.12	10314 4.14	9933 4.16	9689 4.17	9655 4.17*	61	84	133
1850	11490 4.13	10932 4.15	10452 4.17	10066 4.19	9820 4.20	9788 4.20*	62	86	135
1875	11643 4.17	11077 4.19	10590 4.21	10199 4.22	9951 4.24	9921 4.23*	63	87	137
1900	11796 4.20	11222 4.22	10729 4.24	10333 4.26	10082 4.27	10054 4.27*	64	88	139
1925	11949 4.23	11367 4.25	10867 4.27	10466 4.29	10214 4.30	10188 4.30*	65	90	141
1950	12102 4.26	11512 4.28	11006 4.30	10600 4.33	10346 4.34	10321 4.33*	66	91	144
1975	12255 4.30	11658 4.32	11145 4.34	10734 4.36	10478 4.37	10455 4.37*	66	92	146
2000	12408 4.33	11803 4.35	11283 4.37	10868 4.39	10610 4.40	10589 4.40*	67	94	148
2025	12562 4.36	11948 4.38	11423 4.40	11002 4.43	10742 4.44	10723 4.44*	68	95	150
2050	12716 4.40	12094 4.42	11562 4.44	11137 4.46	10875 4.47	10858 4.47*	69	97	152
2075	12869 4.43	12240 4.45	11701 4.47	11271 4.49	11008 4.50	10992 4.50*	70	98	155

LOW AIR CONDITIONING
△FUEL = −0.5 %

ENGINE ANTI ICE ON
△FUEL = + 2 %

TOTAL ANTI ICE ON
△FUEL = + 4.5 %

FLIP23D A320-214 CFM56-5B4/P SA3420 03301.000011 0250300 .7800 .00200 120 0300350 55 0 100100 40100 18590 FCOM-02-05-40-005-180

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
2075	12869 4.43	12240 4.45	11701 4.47	11271 4.49	11008 4.50	10992 4.50*	70	98	155
2100	13023 4.46	12386 4.48	11840 4.50	11406 4.53	11141 4.54	11127 4.54*	71	99	157
2125	13177 4.49	12532 4.51	11980 4.54	11541 4.56	11275 4.57	11262 4.57*	72	101	159
2150	13331 4.53	12678 4.55	12120 4.57	11676 4.59	11408 5.01	11397 5.00*	73	102	161
2175	13485 4.56	12824 4.58	12260 5.00	11811 5.03	11542 5.04	11532 5.04*	74	104	163
2200	13640 4.59	12970 5.01	12400 5.04	11947 5.06	11676 5.07	11667 5.07*	75	105	165
2225	13794 5.02	13117 5.05	12540 5.07	12082 5.09	11810 5.11	11803 5.10*	76	107	168
2250	13948 5.06	13264 5.08	12680 5.10	12218 5.13	11945 5.14	11939 5.14*	77	108	170
2275	14103 5.09	13410 5.11	12821 5.14	12354 5.16	12080 5.17	12074 5.17*	78	109	172
2300	14258 5.12	13557 5.14	12962 5.17	12490 5.19	12214 5.21	12210 5.20*	79	111	174
2325	14412 5.15	13704 5.18	13102 5.20	12627 5.23	12350 5.24	12347 5.24*	80	112	177
2350	14567 5.19	13851 5.21	13243 5.24	12764 5.26	12485 5.27	12483 5.27*	81	114	179
2375	14723 5.22	13998 5.24	13384 5.27	12900 5.29	12621 5.31	12620 5.30*	81	115	181
2400	14878 5.25	14146 5.28	13526 5.30	13037 5.33	12758 5.34	12757 5.34*	82	117	183
2425	15034 5.28	14293 5.31	13667 5.33	13174 5.36	12894 5.37	12894 5.37*	83	119	186
2450	15190 5.32	14441 5.34	13808 5.37	13312 5.39	13031 5.41	13032 5.40*	84	120	188
2475	15346 5.35	14588 5.37	13950 5.40	13449 5.43	13168 5.44	13169 5.44*	85	122	190
2500	15502 5.38	14736 5.41	14092 5.43	13587 5.46	13305 5.48	13307 5.47*	86	123	192
2525	15658 5.41	14884 5.44	14234 5.47	13725 5.49	13442 5.51	13445 5.50*	87	125	195
2550	15815 5.45	15033 5.47	14376 5.50	13863 5.53	13580 5.54	13584 5.54*	88	126	197
2575	15971 5.48	15181 5.51	14518 5.53	14001 5.56	13718 5.58	13722 5.57*	89	128	199
2600	16128 5.51	15330 5.54	14660 5.57	14139 5.59	13856 6.01	13861 6.00*	90	129	201
2625	16284 5.55	15479 5.57	14803 6.00	14278 6.03	13994 6.04	14000 6.04*	91	131	204
2650	16441 5.58	15628 6.00	14946 6.03	14416 6.06	14133 6.08	14139 6.07*	92	133	206
2675	16598 6.01	15777 6.04	15089 6.07	14555 6.09	14271 6.11	14279 6.10*	93	134	209
2700	16755 6.04	15926 6.07	15232 6.10	14694 6.13	14410 6.14	14418 6.14*	94	136	211

LOW AIR CONDITIONING △FUEL = −0.5 %

ENGINE ANTI ICE ON △FUEL = + 2 %

TOTAL ANTI ICE ON △FUEL = + 4.5 %

FLIP23D A320-214 CFM56-5B4/P SA3420 03301.000011 0250300 .7800 .00200 120 0300350 55 0 100100 40100 18590 FCOM-02-05-40-006-180

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
2700	16755 6.04	15926 6.07	15232 6.10	14694 6.13	14410 6.14	14418 6.14*	94	136	211
2725	16912 6.08	16076 6.10	15375 6.13	14833 6.16	14550 6.18	14558 6.17*	95	137	214
2750	17070 6.11	16225 6.14	15519 6.17	14973 6.20	14689 6.21	14698 6.20*	96	139	216
2775	17227 6.14	16375 6.17	15663 6.20	15113 6.23	14829 6.25	14838 6.24*	97	141	218
2800	17385 6.17	16525 6.20	15807 6.23	15254 6.26	14969 6.28	14979 6.27*	99	142	220
2825	17542 6.21	16675 6.24	15951 6.27	15395 6.30	15109 6.31	15119 6.31*	100	144	222
2850	17700 6.24	16825 6.27	16095 6.30	15535 6.33	15251 6.35	15260 6.34*	101	146	225
2875	17858 6.27	16975 6.30	16240 6.33	15677 6.36	15393 6.38	15402 6.37*	102	148	227
2900	18016 6.30	17125 6.33	16384 6.36	15818 6.40	15535 6.41	15543 6.41*	103	150	229
2925	18175 6.34	17275 6.37	16529 6.40	15960 6.43	15675 6.45*	15685 6.44*	104	151	231
2950	18333 6.37	17426 6.40	16674 6.43	16101 6.46	15820 6.48*	15827 6.47*	105	153	234
2975	18492 6.40	17577 6.43	16819 6.46	16243 6.50	15964 6.52*	15969 6.51*	106	155	236
3000	18650 6.43	17727 6.47	16964 6.50	16385 6.53	16109 6.55*	16112 6.54*	107	157	238
3025	18809 6.47	17878 6.50	17109 6.53	16528 6.56	16255 6.58*	16254 6.57*	108	159	240
3050	18968 6.50	18030 6.53	17255 6.56	16670 7.00	16400 7.01*	16397 7.01*	109	161	243
3075	19127 6.53	18181 6.56	17401 7.00	16813 7.03	16545 7.05*	16540 7.04*	110	162	245
3100	19286 6.56	18333 7.00	17546 7.03	16956 7.06	16691 7.08*	16683 7.07*	111	164	247

LOW AIR CONDITIONING
△FUEL = –0.5 %

ENGINE ANTI ICE ON
△FUEL = + 2 %

TOTAL ANTI ICE ON
△FUEL = + 4.5 %

FLIP23D A320-214 CFM56-5B4/P SA3420 03301.000011 0250300 .7800 .00200 120 0300350 55 0 100100 40100 18590 FCOM-02-05-40-007-180

FLIGHT PLANNING M.78

Ident.: PER-FPL-FLP-QFP-40-00001830.0012001 / 25 FEB 11

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
200	1615 0.39	1603 0.39	1600 0.39	1601 0.39			11	14	
225	1757 0.42	1736 0.42	1726 0.42	1722 0.42	1722 0.42		12	15	16
250	1899 0.45	1869 0.45	1853 0.46	1843 0.46	1838 0.46	1841 0.46	12	16	18
275	2042 0.49	2003 0.49	1979 0.49	1964 0.49	1955 0.49	1955 0.49	13	17	19
300	2184 0.52	2136 0.52	2106 0.52	2085 0.52	2071 0.52	2069 0.52	13	18	21
325	2327 0.55	2269 0.55	2233 0.55	2206 0.56	2187 0.56	2183 0.56	14	19	22
350	2469 0.58	2402 0.59	2359 0.59	2328 0.59	2304 0.59	2297 0.59	15	20	24
375	2612 1.02	2536 1.02	2486 1.02	2449 1.02	2420 1.02	2412 1.02	15	21	26
400	2754 1.05	2669 1.05	2613 1.05	2571 1.06	2537 1.06	2527 1.06	16	22	27
425	2897 1.08	2803 1.08	2740 1.09	2693 1.09	2654 1.09	2642 1.09	16	23	29
450	3040 1.11	2936 1.12	2868 1.12	2815 1.12	2771 1.13	2757 1.13	17	24	30
475	3182 1.15	3070 1.15	2995 1.15	2937 1.16	2888 1.16	2873 1.16	17	25	32
500	3325 1.18	3204 1.18	3123 1.19	3059 1.19	3005 1.19	2988 1.19	18	26	33
525	3468 1.21	3338 1.22	3250 1.22	3181 1.22	3123 1.23	3104 1.23	19	27	35
550	3611 1.24	3472 1.25	3378 1.25	3303 1.26	3240 1.26	3220 1.26	19	28	37
575	3754 1.28	3606 1.28	3506 1.29	3426 1.29	3358 1.29	3337 1.29	20	29	38
600	3897 1.31	3741 1.31	3634 1.32	3548 1.32	3475 1.33	3453 1.33	20	30	40
625	4040 1.34	3875 1.35	3762 1.35	3671 1.36	3593 1.36	3570 1.36	21	31	42
650	4183 1.37	4010 1.38	3890 1.39	3794 1.39	3711 1.39	3687 1.39	22	32	43
675	4327 1.41	4145 1.41	4018 1.42	3917 1.42	3830 1.43	3804 1.43	22	33	45
700	4470 1.44	4279 1.45	4147 1.45	4040 1.46	3948 1.46	3922 1.46	23	34	47
725	4613 1.47	4414 1.48	4276 1.49	4163 1.49	4066 1.49	4039 1.49	23	35	48
750	4757 1.51	4550 1.51	4404 1.52	4286 1.52	4185 1.53	4157 1.53	24	36	51
775	4900 1.54	4685 1.54	4533 1.55	4410 1.56	4304 1.56	4276 1.56	25	37	53
800	5044 1.57	4820 1.58	4662 1.58	4534 1.59	4423 2.00	4394 2.00	25	38	54
825	5187 2.00	4956 2.01	4792 2.02	4657 2.03	4542 2.03	4513 2.03	26	39	56

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
ΔFUEL = – 0.4 %	ΔFUEL = + 3 %	ΔFUEL = + 5.5 %

FLIP23C A320-232 IAE V2527-A5 3420 03301.000011 0250300 .7800 .00200 120 0300350 55 0 100100 40100 18590 FCOM-N0-02-05-40-003-140

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
825	5187 2.00	4956 2.01	4792 2.02	4657 2.03	4542 2.03	4513 2.03	26	39	56
850	5331 2.04	5091 2.04	4921 2.05	4781 2.06	4661 2.06	4632 2.06	27	40	58
875	5475 2.07	5227 2.08	5050 2.08	4905 2.09	4781 2.10	4751 2.10	28	41	60
900	5618 2.10	5363 2.11	5180 2.12	5029 2.13	4901 2.13	4871 2.13	28	42	61
925	5762 2.13	5499 2.14	5310 2.15	5153 2.16	5020 2.16	4991 2.16	29	44	63
950	5906 2.17	5635 2.17	5439 2.18	5278 2.19	5140 2.20	5111 2.20	30	45	65
975	6050 2.20	5771 2.21	5569 2.22	5402 2.23	5260 2.23	5231 2.23	30	46	67
1000	6194 2.23	5907 2.24	5699 2.25	5527 2.26	5380 2.26	5351 2.26	31	47	69
1025	6338 2.26	6043 2.27	5830 2.28	5652 2.29	5501 2.30	5472 2.30	32	48	70
1050	6482 2.30	6180 2.31	5960 2.32	5776 2.33	5621 2.33	5593 2.33	33	49	72
1075	6626 2.33	6316 2.34	6090 2.35	5901 2.36	5742 2.37	5714 2.37	33	50	74
1100	6770 2.36	6453 2.37	6221 2.38	6026 2.39	5862 2.40	5835 2.40	34	51	76
1125	6914 2.39	6590 2.40	6351 2.42	6152 2.43	5983 2.43	5957 2.43	35	52	78
1150	7058 2.43	6727 2.44	6482 2.45	6277 2.46	6104 2.47	6079 2.47	36	53	80
1175	7203 2.46	6864 2.47	6613 2.48	6402 2.49	6225 2.50	6201 2.50	37	55	81
1200	7347 2.49	7001 2.50	6744 2.51	6528 2.53	6347 2.53	6323 2.53	37	56	83
1225	7492 2.52	7138 2.54	6875 2.55	6654 2.56	6468 2.57	6446 2.57	38	57	85
1250	7636 2.56	7276 2.57	7007 2.58	6780 2.59	6590 3.00	6569 3.00	39	58	87
1275	7781 2.59	7413 3.00	7138 3.01	6906 3.03	6712 3.03	6692 3.03	40	59	89
1300	7925 3.02	7551 3.03	7270 3.05	7032 3.06	6834 3.07	6815 3.07	41	60	91
1325	8070 3.05	7689 3.07	7402 3.08	7158 3.09	6956 3.10	6939 3.10	42	61	93
1350	8215 3.09	7827 3.10	7534 3.11	7285 3.13	7078 3.13	7064 3.13	43	62	95
1375	8360 3.12	7965 3.13	7666 3.15	7411 3.16	7201 3.17	7188 3.17	43	64	97
1400	8504 3.15	8103 3.17	7798 3.18	7538 3.19	7323 3.20	7313 3.20	44	65	99
1425	8649 3.19	8241 3.20	7930 3.21	7665 3.23	7446 3.24	7438 3.24	45	66	101
1450	8794 3.22	8379 3.23	8063 3.25	7792 3.26	7569 3.27	7563 3.27	46	67	103

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = − 0.4 %	△FUEL = + 3 %	△FUEL = + 5.5 %

FLIP23C A320-232 IAE V2527-A5 3420 03301.000011 0250300 .7800 .00200 120 0300350 55 0 100100 40100 18590 FCOM-N0-02-05-40-004-140

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
1450	8794 3.22	8379 3.23	8063 3.25	7792 3.26	7569 3.27	7563 3.27	46	67	103
1475	8940 3.25	8518 3.26	8196 3.28	7919 3.29	7693 3.30	7689 3.30	47	68	105
1500	9085 3.28	8657 3.30	8328 3.31	8046 3.33	7816 3.34	7814 3.34	48	69	107
1525	9231 3.32	8795 3.33	8461 3.35	8174 3.36	7939 3.37	7940 3.37	49	71	109
1550	9377 3.35	8934 3.36	8594 3.38	8301 3.39	8063 3.40	8067 3.40	50	72	111
1575	9523 3.38	9073 3.40	8727 3.41	8429 3.43	8187 3.44	8193 3.44	50	73	113
1600	9669 3.41	9213 3.43	8861 3.45	8557 3.46	8311 3.47	8320 3.47	51	74	115
1625	9815 3.45	9352 3.46	8994 3.48	8685 3.50	8435 3.50	8447 3.50	52	75	117
1650	9962 3.48	9492 3.49	9128 3.51	8813 3.53	8559 3.54	8575 3.54	53	76	119
1675	10108 3.51	9631 3.53	9261 3.54	8941 3.56	8683 3.57	8703 3.57	54	78	121
1700	10255 3.54	9771 3.56	9395 3.58	9069 4.00	8808 4.01	8831 4.01	55	79	123
1725	10401 3.58	9911 3.59	9530 4.01	9198 4.03	8933 4.04	8959 4.04	56	80	125
1750	10548 4.01	10051 4.03	9664 4.04	9326 4.06	9058 4.07	9087 4.07	57	81	127
1775	10695 4.04	10191 4.06	9798 4.08	9455 4.10	9183 4.11	9216 4.11	58	82	129
1800	10842 4.07	10332 4.09	9933 4.11	9584 4.13	9309 4.14	9345 4.14	59	84	132
1825	10988 4.11	10472 4.12	10068 4.14	9713 4.16	9436 4.17	9475 4.17	60	85	134
1850	11135 4.14	10613 4.16	10203 4.18	9842 4.20	9563 4.21	9605 4.21	61	86	136
1875	11282 4.17	10754 4.19	10338 4.21	9972 4.23	9691 4.24	9747 4.24*	62	87	138
1900	11430 4.20	10895 4.22	10473 4.24	10101 4.26	9819 4.27	9877 4.27*	63	89	140
1925	11577 4.24	11036 4.26	10608 4.28	10231 4.30	9948 4.31	10006 4.31*	64	90	142
1950	11724 4.27	11177 4.29	10744 4.31	10361 4.33	10076 4.34	10136 4.34*	65	91	144
1975	11872 4.30	11318 4.32	10879 4.34	10491 4.36	10205 4.37	10266 4.38*	66	93	146
2000	12019 4.33	11460 4.35	11015 4.38	10621 4.40	10334 4.41	10396 4.41*	67	94	149
2025	12167 4.37	11601 4.39	11151 4.41	10751 4.43	10464 4.44	10526 4.44*	68	95	151
2050	12314 4.40	11743 4.42	11287 4.44	10881 4.46	10593 4.48	10657 4.48*	70	97	153
2075	12462 4.43	11885 4.45	11424 4.48	11012 4.50	10723 4.51	10787 4.51*	71	98	155

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
ΔFUEL = – 0.4 %	ΔFUEL = + 3 %	ΔFUEL = + 5.5 %

FLIP23C A320-232 IAE V2527-A5 3420 03301.000011 0250300 .7800 .00200 120 0300350 55 0 100100 40100 18590 FCOM-N0-02-05-40-005-140

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
2075	12462 4.43	11885 4.45	11424 4.48	11012 4.50	10723 4.51	10787 4.51*	71	98	155
2100	12610 4.47	12027 4.49	11560 4.51	11143 4.53	10853 4.54	10918 4.54*	72	99	157
2125	12758 4.50	12169 4.52	11696 4.54	11273 4.56	10983 4.58	11049 4.58*	73	101	160
2150	12906 4.53	12311 4.55	11833 4.57	11404 5.00	11114 5.01	11180 5.01*	74	102	162
2175	13054 4.56	12453 4.59	11970 5.01	11535 5.03	11245 5.04	11311 5.04*	75	103	165
2200	13202 5.00	12596 5.02	12107 5.04	11667 5.06	11376 5.08	11442 5.08*	76	105	167
2225	13351 5.03	12739 5.05	12244 5.07	11798 5.10	11507 5.11	11574 5.11*	77	106	169
2250	13499 5.06	12881 5.08	12381 5.11	11929 5.13	11639 5.14	11705 5.14*	79	107	171
2275	13647 5.09	13024 5.12	12519 5.14	12061 5.16	11770 5.18	11837 5.18*	80	109	173
2300	13796 5.13	13168 5.15	12657 5.17	12193 5.20	11902 5.21	11970 5.21*	81	110	175
2325	13945 5.16	13311 5.18	12794 5.21	12325 5.23	12035 5.25	12102 5.24*	82	112	178
2350	14093 5.19	13454 5.22	12932 5.24	12457 5.26	12167 5.28	12235 5.28*	83	113	180
2375	14242 5.22	13598 5.25	13071 5.27	12589 5.30	12300 5.31	12367 5.31*	84	115	182
2400	14391 5.26	13741 5.28	13209 5.31	12722 5.33	12433 5.35	12501 5.34*	86	116	184
2425	14540 5.29	13885 5.31	13347 5.34	12854 5.37	12567 5.38	12634 5.38*	87	117	187
2450	14691 5.32	14029 5.35	13486 5.37	12987 5.40	12701 5.41	12768 5.41*	88	119	189
2475	14842 5.35	14173 5.38	13625 5.41	13120 5.43	12835 5.45	12901 5.44*	89	120	191
2500	14993 5.39	14317 5.41	13764 5.44	13253 5.47	12969 5.48	13035 5.48*	90	122	193
2525	15144 5.42	14462 5.45	13903 5.47	13387 5.50	13104 5.51	13170 5.51*	92	123	196
2550	15295 5.45	14606 5.48	14042 5.51	13520 5.53	13239 5.55	13304 5.54*	93	125	198
2575	15446 5.48	14751 5.51	14181 5.54	13654 5.57	13374 5.58	13439 5.58*	94	126	200
2600	15598 5.52	14896 5.54	14321 5.57	13787 6.00	13510 6.01	13574 6.01*	95	128	202
2625	15750 5.55	15041 5.58	14461 6.00	13921 6.03	13645 6.05	13709 6.04*	96	129	205
2650	15901 5.58	15186 6.01	14600 6.04	14055 6.07	13781 6.08	13844 6.08*	97	131	207
2675	16053 6.01	15332 6.04	14740 6.07	14189 6.10	13918 6.12	13980 6.11*	99	132	209
2700	16205 6.05	15478 6.08	14880 6.10	14324 6.13	14054 6.15	14115 6.15*	100	134	211

LOW AIR CONDITIONING
△FUEL = − 0.4 %

ENGINE ANTI ICE ON
△FUEL = + 3 %

TOTAL ANTI ICE ON
△FUEL = + 5.5 %

FLIP23C A320-232 IAE V2527-A5 3420 03301.000011 0250300 .7800 .00200 120 0300350 55 0 100100 40100 18590 FCOM-N0-02-05-40-006-140

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
2700	16205 6.05	15478 6.08	14880 6.10	14324 6.13	14054 6.15	14115 6.15*	100	134	211
2725	16358 6.08	15624 6.11	15020 6.14	14458 6.17	14191 6.18	14251 6.18*	101	135	214
2750	16510 6.11	15770 6.14	15160 6.17	14593 6.20	14328 6.22	14387 6.21*	102	137	216
2775	16662 6.15	15916 6.17	15301 6.20	14727 6.23	14466 6.25	14524 6.25*	104	138	218
2800	16815 6.18	16062 6.21	15441 6.24	14862 6.27	14603 6.28	14660 6.28*	105	140	221
2825	16968 6.21	16209 6.24	15582 6.27	14998 6.30	14741 6.32	14797 6.31*	106	142	223
2850	17121 6.24	16355 6.27	15723 6.30	15134 6.33	14879 6.35	14934 6.35*	107	143	225
2875	17273 6.28	16502 6.31	15864 6.34	15270 6.37	15018 6.38	15071 6.38*	109	145	228
2900	17427 6.31	16649 6.34	16005 6.37	15407 6.40	15157 6.42	15209 6.41*	110	147	230
2925	17580 6.34	16796 6.37	16146 6.40	15543 6.43	15297 6.45	15347 6.45*	111	148	232
2950	17733 6.37	16943 6.40	16288 6.44	15680 6.47	15437 6.49	15485 6.48*	113	150	235
2975	17887 6.41	17091 6.44	16429 6.47	15817 6.50	15578 6.52	15624 6.51*	114	152	237
3000	18040 6.44	17238 6.47	16571 6.50	15954 6.53	15719 6.55	15762 6.55*	115	154	239
3025	18194 6.47	17386 6.50	16713 6.54	16092 6.57	15860 6.59	15901 6.58*	117	155	242
3050	18348 6.50	17534 6.54	16855 6.57	16229 7.00	16001 7.02	16040 7.01*	118	157	244
3075	18502 6.54	17682 6.57	16997 7.00	16367 7.03	16143 7.05	16180 7.05*	119	159	246
3100	18657 6.57	17830 7.00	17140 7.03	16505 7.07	16285 7.09	16319 7.08*	121	161	248

LOW AIR CONDITIONING
△FUEL = − 0.4 %

ENGINE ANTI ICE ON
△FUEL = + 3 %

TOTAL ANTI ICE ON
△FUEL = + 5.5 %

FLIP23C A320-232 IAE V2527-A5 3420 03301.000011 0250300 .7800 .00200 120 0300350 55 0 100100 40100 18590 FCOM-N0-02-05-40-007-140

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FLIGHT PLANNING AT LONG RANGE SPEED

FLIGHT PLANNING LRC

Ident.: PER-FPL-FLP-QFP-50-00001831.0253001 / 20 DEC 16

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
200	1493 0.39	1489 0.39	1488 0.39	1491 0.39	1497 0.38		12	13	14
225	1618 0.43	1609 0.42	1602 0.42	1602 0.42	1606 0.42	1612 0.42	13	14	15
250	1744 0.46	1729 0.46	1717 0.46	1713 0.45	1714 0.45	1719 0.45	14	15	17
275	1870 0.50	1849 0.50	1832 0.49	1825 0.49	1823 0.49	1826 0.49	15	16	18
300	1995 0.53	1969 0.53	1948 0.53	1936 0.52	1932 0.52	1933 0.52	16	18	19
325	2121 0.57	2089 0.57	2063 0.56	2048 0.56	2040 0.56	2040 0.55	17	19	21
350	2247 1.01	2210 1.00	2178 1.00	2160 0.59	2149 0.59	2148 0.59	18	20	22
375	2373 1.04	2330 1.04	2294 1.04	2272 1.03	2259 1.02	2255 1.02	19	21	23
400	2500 1.08	2451 1.07	2410 1.07	2384 1.06	2368 1.06	2363 1.05	19	22	25
425	2626 1.11	2571 1.11	2525 1.11	2496 1.10	2477 1.09	2471 1.09	20	23	26
450	2753 1.15	2692 1.15	2641 1.14	2608 1.13	2587 1.13	2579 1.12	21	24	27

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1 %	+ 5.3 %

Continued on the following page

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
475	2879 1.19	2813 1.18	2757 1.18	2721 1.17	2697 1.16	2687 1.16	22	25	29
500	3006 1.22	2934 1.22	2873 1.21	2833 1.20	2806 1.19	2795 1.19	23	26	30
525	3133 1.26	3055 1.25	2990 1.25	2946 1.24	2916 1.23	2903 1.22	24	27	31
550	3260 1.29	3176 1.29	3106 1.28	3059 1.27	3026 1.26	3012 1.26	25	28	33
575	3387 1.33	3297 1.32	3222 1.32	3172 1.31	3137 1.30	3121 1.29	26	29	34
600	3514 1.36	3419 1.36	3339 1.35	3285 1.34	3247 1.33	3230 1.32	27	30	36
625	3641 1.40	3540 1.39	3456 1.39	3398 1.37	3357 1.37	3339 1.36	28	31	37
650	3769 1.43	3662 1.43	3573 1.42	3512 1.41	3468 1.40	3448 1.39	29	33	38
675	3896 1.47	3784 1.46	3690 1.46	3625 1.44	3579 1.43	3557 1.42	29	34	40
700	4024 1.51	3905 1.50	3807 1.49	3739 1.48	3689 1.47	3667 1.46	30	35	41
725	4152 1.54	4027 1.54	3924 1.53	3852 1.51	3800 1.50	3777 1.49	31	36	43
750	4280 1.58	4149 1.57	4041 1.56	3966 1.55	3911 1.54	3886 1.53	32	37	44
775	4408	4271	4159	4080	4023	3996	33	38	45

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1 %	+ 5.3 %

Continued on the following page

Continued from the previous page

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	2.01	2.01	2.00	1.58	1.57	1.56			
800	4535 2.05	4394 2.04	4276 2.03	4194 2.02	4134 2.00	4107 1.59	34	39	47
825	4664 2.08	4516 2.08	4394 2.07	4308 2.05	4245 2.04	4217 2.03	35	40	48

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1 %	+ 5.3 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
825	4664 2.08	4516 2.08	4394 2.07	4308 2.05	4245 2.04	4217 2.03	35	40	48
850	4792 2.12	4638 2.11	4512 2.11	4423 2.08	4357 2.07	4327 2.06	36	41	50
875	4920 2.15	4761 2.15	4630 2.14	4537 2.12	4469 2.11	4438 2.09	37	43	51

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1 %	+ 5.7 %

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Continued from the previous page

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
900	5049 2.19	4883 2.18	4748 2.18	4652 2.15	4580 2.14	4549 2.13	38	44	53
925	5177 2.22	5006 2.22	4866 2.21	4766 2.19	4692 2.17	4660 2.16	39	45	54
950	5306 2.26	5129 2.25	4984 2.25	4881 2.22	4805 2.21	4771 2.19	39	46	56
975	5435 2.29	5252 2.29	5103 2.28	4996 2.26	4917 2.24	4883 2.23	40	47	57
1000	5564 2.33	5375 2.33	5221 2.32	5111 2.29	5029 2.28	4994 2.26	41	48	59
1025	5692 2.36	5498 2.36	5340 2.35	5227 2.32	5142 2.31	5106 2.29	42	49	60
1050	5822 2.40	5621 2.40	5459 2.39	5342 2.36	5255 2.34	5218 2.33	43	50	62
1075	5951 2.43	5745 2.43	5578 2.42	5458 2.39	5367 2.38	5330 2.36	44	52	63
1100	6080 2.47	5868 2.47	5697 2.46	5573 2.43	5480 2.41	5442 2.39	45	53	65
1125	6210 2.51	5992 2.50	5816 2.49	5689 2.46	5594 2.45	5555 2.43	46	54	66
1150	6339 2.54	6116 2.54	5935 2.52	5805 2.49	5707 2.48	5667 2.46	47	55	68
1175	6468 2.58	6240 2.57	6055 2.56	5921 2.53	5820 2.51	5780 2.49	48	56	69
1200	6598	6364	6175	6037	5934	5893	49	57	71

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1 %	+ 5.7 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	3.01	3.01	2.59	2.56	2.55	2.53			
1225	6728 3.05	6488 3.04	6294 3.03	6153 3.00	6047 2.58	6006 2.56	50	59	72
1250	6858 3.08	6612 3.08	6414 3.06	6270 3.03	6161 3.02	6120 3.00	51	60	74
1275	6988 3.12	6736 3.11	6534 3.10	6386 3.07	6275 3.05	6233 3.03	52	61	75
1300	7118 3.15	6860 3.15	6654 3.13	6503 3.10	6389 3.08	6347 3.06	52	62	77
1325	7248 3.19	6985 3.18	6775 3.17	6620 3.13	6503 3.12	6461 3.10	53	63	79
1350	7378 3.22	7110 3.22	6895 3.20	6737 3.17	6618 3.15	6575 3.13	54	64	80
1375	7509 3.26	7234 3.25	7015 3.24	6854 3.20	6732 3.19	6689 3.16	55	66	82
1400	7639 3.29	7359 3.29	7136 3.27	6971 3.24	6847 3.22	6803 3.20	56	67	83
1425	7770 3.33	7484 3.32	7257 3.30	7088 3.27	6962 3.25	6918 3.23	57	68	85
1450	7901 3.36	7610 3.36	7378 3.34	7206 3.30	7077 3.29	7033 3.26	58	69	87

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1 %	+ 5.7 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
1450	7901 3.36	7610 3.36	7378 3.34	7206 3.30	7077 3.29	7033 3.26	58	69	87
1475	8031 3.40	7735 3.39	7499 3.37	7323 3.34	7192 3.32	7148 3.30	59	70	88
1500	8162 3.43	7860 3.43	7620 3.41	7441 3.37	7307 3.35	7264 3.33	60	71	90
1525	8293 3.47	7986 3.46	7741 3.44	7559 3.41	7423 3.39	7379 3.36	61	73	92
1550	8424 3.50	8111 3.50	7863 3.48	7677 3.44	7538 3.42	7495 3.40	62	74	93
1575	8556 3.54	8237 3.53	7984 3.51	7795 3.47	7654 3.46	7611 3.43	63	75	95
1600	8687 3.58	8363 3.57	8106 3.55	7913 3.51	7770 3.49	7727 3.46	64	76	97
1625	8818 4.01	8489 4.01	8228 3.58	8032 3.54	7886 3.52	7843 3.50	65	77	98
1650	8950 4.05	8615 4.04	8350 4.01	8150 3.58	8002 3.56	7960 3.53	66	79	100
1675	9082 4.08	8741 4.08	8472 4.05	8269 4.01	8119 3.59	8077 3.56	67	80	102
1700	9213 4.12	8868 4.11	8594 4.08	8387 4.04	8235 4.03	8194 4.00	68	81	104
1725	9345 4.15	8994 4.15	8717 4.12	8506 4.08	8352 4.06	8311 4.03	69	82	105
1750	9477 4.19	9121 4.18	8839 4.15	8625 4.11	8469 4.09	8428 4.07	70	83	107

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1 %	+ 5.7 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
1775	9609 4.22	9247 4.22	8962 4.18	8744 4.15	8586 4.13	8546 4.10	71	85	109
1800	9741 4.26	9374 4.25	9085 4.22	8864 4.18	8703 4.16	8663 4.13	72	86	111
1825	9874 4.29	9501 4.29	9207 4.25	8983 4.21	8820 4.19	8781 4.17	73	87	113
1850	10006 4.33	9628 4.32	9330 4.29	9103 4.25	8938 4.23	8899 4.20	74	88	114
1875	10139 4.36	9756 4.36	9454 4.32	9222 4.28	9055 4.26	9018 4.23	75	90	116
1900	10271 4.40	9883 4.39	9577 4.35	9342 4.31	9173 4.29	9136 4.27	76	91	118
1925	10404 4.43	10011 4.43	9700 4.39	9462 4.35	9291 4.33	9255 4.30	77	92	119
1950	10537 4.47	10138 4.46	9824 4.42	9582 4.38	9409 4.36	9374 4.33	78	93	121
1975	10670 4.50	10266 4.49	9948 4.46	9703 4.42	9527 4.40	9494 4.37	79	95	123
2000	10803 4.54	10394 4.53	10072 4.49	9823 4.45	9646 4.43	9613 4.40	80	96	124
2025	10936 4.57	10522 4.56	10196 4.52	9944 4.48	9765 4.46	9733 4.43	81	97	126
2050	11070 5.01	10650 5.00	10320 4.56	10064 4.52	9883 4.50	9853 4.47	82	98	128
2075	11203	10779	10444	10185	10002	9973	83	100	129

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1 %	+ 5.7 %

Continued on the following page

Continued from the previous page

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	5.04	5.03	4.59	4.55	4.53	4.50			

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1 %	+ 5.7 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
2075	11203 5.04	10779 5.03	10444 4.59	10185 4.55	10002 4.53	9973 4.50	83	100	129
2100	11337 5.08	10907 5.07	10569 5.03	10306 4.58	10122 4.56	10094 4.53	84	101	131
2125	11470 5.11	11036 5.10	10693 5.06	10427 5.02	10241 5.00	10214 4.57	85	102	133
2150	11604 5.15	11164 5.14	10818 5.09	10549 5.05	10360 5.03	10335 5.00	86	103	134
2175	11738 5.18	11293 5.17	10943 5.13	10670 5.09	10480 5.07	10456 5.03	87	105	136

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.1 %	+ 5.7 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
2200	11872 5.22	11422 5.21	11068 5.16	10792 5.12	10600 5.10	10577 5.07	88	106	138
2225	12006 5.25	11551 5.24	11193 5.19	10913 5.15	10720 5.13	10699 5.10	89	107	139
2250	12141 5.29	11681 5.28	11318 5.23	11035 5.19	10840 5.17	10821 5.13	90	108	141
2275	12275 5.32	11810 5.31	11443 5.26	11157 5.22	10961 5.20	10943 5.17	91	110	143
2300	12410 5.36	11940 5.35	11569 5.30	11279 5.26	11081 5.23	11065 5.20	92	111	145
2325	12544 5.39	12069 5.38	11694 5.33	11401 5.29	11202 5.27	11187 5.23	94	112	146
2350	12679 5.43	12199 5.42	11820 5.36	11524 5.32	11323 5.30	11310 5.27	95	114	148
2375	12814 5.46	12329 5.45	11946 5.40	11646 5.36	11444 5.33	11433 5.30	96	115	150
2400	12949 5.50	12459 5.49	12072 5.43	11769 5.39	11565 5.37	11556 5.33	97	116	152
2425	13084 5.53	12590 5.52	12198 5.46	11892 5.42	11687 5.40	11679 5.37	98	117	153
2450	13220 5.57	12720 5.55	12324 5.50	12015 5.46	11809 5.43	11803 5.40	99	119	155
2475	13355 6.00	12850 5.59	12451 5.53	12138 5.49	11930 5.47	11927 5.43	100	120	157
2500	13491	12981	12577	12261	12053	12051	101	121	159

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.1 %	+ 5.7 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	6.04	6.02	5.56	5.53	5.50	5.47			
2525	13626 6.07	13112 6.06	12704 6.00	12385 5.56	12175 5.53	12176 5.50	102	123	160
2550	13762 6.11	13243 6.09	12831 6.03	12508 5.59	12297 5.57	12300 5.53	103	124	162
2575	13898 6.14	13374 6.13	12958 6.06	12632 6.03	12420 6.00	12425 5.57	104	125	164
2600	14034 6.18	13505 6.16	13085 6.10	12756 6.06	12543 6.03	12550 6.00	106	127	166
2625	14170 6.21	13637 6.20	13212 6.13	12880 6.09	12665 6.07	12676 6.03	107	128	168
2650	14306 6.25	13768 6.23	13340 6.16	13004 6.13	12789 6.10	12801 6.07	108	129	169
2675	14443 6.28	13900 6.27	13467 6.20	13128 6.16	12912 6.13	12927 6.10	109	131	171
2700	14580 6.32	14031 6.30	13595 6.23	13253 6.19	13036 6.17	13053 6.13	110	132	173

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.1 %	+ 5.7 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
2700	14580 6.32	14031 6.30	13595 6.23	13253 6.19	13036 6.17	13053 6.13	110	132	173
2725	14716 6.35	14163 6.33	13723 6.26	13378 6.23	13160 6.20	13180 6.17	111	134	175
2750	14853 6.39	14295 6.37	13851 6.30	13502 6.26	13284 6.23	13306 6.20	112	135	177
2775	14990 6.42	14428 6.40	13979 6.33	13627 6.30	13408 6.27	13433 6.23	113	136	178
2800	15127 6.46	14560 6.44	14107 6.36	13752 6.33	13532 6.30	13561 6.27	115	138	180
2825	15264 6.49	14693 6.47	14235 6.40	13878 6.36	13657 6.33	13688 6.30	116	139	182
2850	15402 6.53	14825 6.51	14364 6.43	14003 6.40	13781 6.37	13816 6.33	117	140	184
2875	15539 6.56	14958 6.54	14493 6.46	14129 6.43	13906 6.40	13944 6.37	118	142	186
2900	15677 6.59	15091 6.58	14622 6.50	14255 6.46	14032 6.43	14072 6.40	119	143	188
2925	15815 7.03	15224 7.01	14751 6.53	14381 6.50	14157 6.47	14201 6.43	120	145	189
2950	15953 7.06	15357 7.04	14880 6.56	14507 6.53	14283 6.50	14330 6.47	121	146	191
2975	16091 7.10	15491 7.08	15009 7.00	14633 6.56	14409 6.53	14465 6.50	123	148	193
3000	16229 7.13	15624 7.11	15138 7.03	14760 7.00	14535 6.57	14591 6.53	124	149	195

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.2 %	+ 5.7 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
3025	16367 7.17	15758 7.15	15268 7.06	14886 7.03	14662 7.00	14718 6.57	125	150	197
3050	16506 7.20	15892 7.18	15398 7.10	15013 7.06	14788 7.03	14844 7.00	126	152	199
3075	16644 7.24	16026 7.21	15528 7.13	15140 7.10	14915 7.07	14971 7.03	127	153	201
3100	16783 7.27	16160 7.25	15657 7.16	15267 7.13	15042 7.10	15098 7.07	128	155	203

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 1.2 %	+ 5.7 %

FLIGHT PLANNING LRC

Ident.: PER-FPL-FLP-QFP-50-00001831.0245001 / 16 MAR 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
200	1362 0.40	1361 0.40	1361 0.39	1361 0.39	1364 0.38		13	13	13
225	1473 0.44	1468 0.43	1464 0.43	1461 0.42	1460 0.42	1461 0.42	14	14	14
250	1584 0.48	1575 0.47	1568 0.47	1562 0.46	1557 0.45	1555 0.45	15	15	16
275	1696 0.52	1683 0.51	1672 0.50	1662 0.49	1654 0.49	1650 0.48	16	16	17
300	1807 0.56	1790 0.55	1775 0.54	1762 0.53	1752 0.52	1744 0.52	17	17	18
325	1919 1.00	1898 0.59	1879 0.58	1863 0.57	1849 0.56	1838 0.55	18	19	19
350	2030 1.04	2006 1.03	1984 1.02	1963 1.00	1946 0.59	1933 0.59	19	20	20
375	2142 1.08	2113 1.07	2088 1.05	2064 1.04	2044 1.03	2027 1.02	20	21	21
400	2254 1.12	2221 1.11	2192 1.09	2165 1.07	2141 1.06	2122 1.05	21	22	22
425	2366 1.16	2329 1.14	2296 1.13	2266 1.11	2239 1.10	2216 1.09	22	23	23
450	2478 1.20	2437 1.18	2401 1.16	2367 1.15	2336 1.13	2311 1.12	23	24	24

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3.5 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
475	2590 1.24	2546 1.22	2505 1.20	2468 1.18	2434 1.17	2406 1.16	24	25	25
500	2703 1.28	2654 1.26	2610 1.24	2569 1.22	2532 1.20	2501 1.19	25	26	27
525	2815 1.32	2762 1.30	2715 1.28	2670 1.25	2630 1.23	2596 1.22	26	27	28
550	2927 1.36	2871 1.34	2820 1.31	2772 1.29	2728 1.27	2692 1.26	28	28	29
575	3040 1.40	2980 1.37	2925 1.35	2873 1.32	2826 1.30	2787 1.29	29	29	30
600	3153 1.44	3089 1.41	3030 1.39	2975 1.36	2925 1.34	2882 1.33	30	30	31
625	3266 1.48	3197 1.45	3135 1.42	3077 1.40	3023 1.37	2978 1.36	31	32	32
650	3379 1.52	3307 1.49	3241 1.46	3179 1.43	3122 1.41	3074 1.39	32	33	33
675	3492 1.55	3416 1.53	3346 1.50	3281 1.47	3220 1.44	3169 1.43	33	34	34
700	3605 1.59	3525 1.57	3452 1.53	3383 1.50	3319 1.48	3265 1.46	34	35	36
725	3719 2.03	3634 2.00	3557 1.57	3485 1.54	3418 1.51	3361 1.50	35	36	37
750	3832 2.07	3744 2.04	3663 2.01	3587 1.57	3517 1.54	3458 1.53	36	37	38
775	3946	3854	3769	3690	3616	3554	37	38	39

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3.5 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	2.11	2.08	2.05	2.01	1.58	1.56			
800	4059 2.15	3963 2.12	3875 2.08	3792 2.04	3715 2.01	3650 2.00	38	39	40
825	4173 2.19	4073 2.16	3981 2.12	3895 2.08	3814 2.05	3747 2.03	39	40	41

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3.5 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
825	4173 2.19	4073 2.16	3981 2.12	3895 2.08	3814 2.05	3747 2.03	39	40	41
850	4287 2.23	4183 2.19	4088 2.16	3998 2.11	3913 2.08	3843 2.06	41	41	42
875	4401 2.27	4293 2.23	4194 2.19	4100 2.15	4013 2.12	3940 2.10	42	42	44

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
900	4515 2.31	4403 2.27	4300 2.23	4203 2.18	4112 2.15	4037 2.13	43	44	45
925	4630 2.35	4514 2.31	4407 2.27	4306 2.22	4212 2.19	4133 2.17	44	45	46
950	4744 2.39	4624 2.35	4514 2.30	4409 2.25	4311 2.22	4230 2.20	45	46	47
975	4859 2.43	4735 2.38	4620 2.34	4513 2.29	4411 2.25	4328 2.23	46	47	48
1000	4973 2.46	4845 2.42	4727 2.38	4616 2.32	4511 2.29	4425 2.27	47	48	49
1025	5088 2.50	4956 2.46	4834 2.41	4720 2.36	4611 2.32	4522 2.30	48	49	51
1050	5203 2.54	5067 2.50	4942 2.45	4823 2.39	4711 2.36	4620 2.33	49	50	52
1075	5318 2.58	5178 2.53	5049 2.49	4927 2.43	4811 2.39	4717 2.37	50	51	53
1100	5433 3.02	5289 2.57	5156 2.52	5031 2.46	4912 2.43	4815 2.40	52	52	54
1125	5548 3.06	5401 3.01	5264 2.56	5135 2.50	5012 2.46	4913 2.44	53	53	55
1150	5664 3.10	5512 3.05	5371 3.00	5239 2.53	5113 2.49	5011 2.47	54	55	57
1175	5779 3.14	5623 3.08	5479 3.03	5343 2.57	5213 2.53	5109 2.50	55	56	58
1200	5895	5735	5587	5447	5314	5207	56	57	59

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	3.18	3.12	3.07	3.00	2.56	2.54			
1225	6010 3.21	5847 3.16	5695 3.11	5551 3.04	5415 3.00	5305 2.57	57	58	60
1250	6126 3.25	5959 3.20	5803 3.14	5656 3.07	5516 3.03	5404 3.00	58	59	61
1275	6242 3.29	6071 3.23	5911 3.18	5760 3.11	5617 3.06	5502 3.04	59	60	63
1300	6358 3.33	6183 3.27	6019 3.21	5865 3.14	5718 3.10	5601 3.07	60	61	64
1325	6475 3.37	6295 3.31	6128 3.25	5970 3.18	5819 3.13	5700 3.11	62	62	65
1350	6591 3.41	6407 3.35	6236 3.29	6074 3.21	5921 3.17	5799 3.14	63	63	66
1375	6707 3.45	6520 3.38	6345 3.32	6179 3.25	6022 3.20	5898 3.17	64	64	68
1400	6824 3.48	6633 3.42	6454 3.36	6284 3.28	6124 3.23	5997 3.21	65	66	69
1425	6941 3.52	6745 3.46	6562 3.40	6390 3.31	6225 3.27	6096 3.24	66	67	70
1450	7058 3.56	6858 3.49	6671 3.43	6495 3.35	6327 3.30	6196 3.27	67	68	71

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
1450	7058 3.56	6858 3.49	6671 3.43	6495 3.35	6327 3.30	6196 3.27	67	68	71
1475	7174 4.00	6971 3.53	6781 3.47	6600 3.38	6429 3.34	6295 3.31	68	69	73
1500	7292 4.04	7084 3.57	6890 3.50	6706 3.42	6531 3.37	6395 3.34	69	70	74
1525	7409 4.08	7198 4.01	6999 3.54	6811 3.45	6633 3.40	6495 3.37	71	71	75
1550	7526 4.12	7311 4.04	7109 3.57	6917 3.49	6735 3.44	6595 3.41	72	72	76
1575	7643 4.15	7424 4.08	7218 4.01	7023 3.52	6837 3.47	6695 3.44	73	73	78
1600	7761 4.19	7538 4.12	7328 4.04	7129 3.56	6940 3.51	6795 3.47	74	74	79
1625	7879 4.23	7651 4.15	7438 4.08	7235 3.59	7042 3.54	6895 3.51	75	76	80
1650	7997 4.27	7765 4.19	7548 4.12	7341 4.03	7145 3.57	6996 3.54	76	77	82
1675	8115 4.31	7879 4.23	7658 4.15	7447 4.06	7248 4.01	7096 3.57	77	78	83
1700	8233 4.34	7993 4.26	7768 4.19	7553 4.09	7351 4.04	7197 4.01	78	79	84
1725	8351 4.38	8107 4.30	7878 4.22	7660 4.13	7454 4.08	7298 4.04	80	80	86
1750	8469 4.42	8222 4.34	7989 4.26	7766 4.16	7557 4.11	7399 4.07	81	81	87

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
1775	8588 4.46	8336 4.37	8099 4.29	7873 4.20	7660 4.14	7500 4.11	82	82	88
1800	8706 4.50	8451 4.41	8210 4.33	7980 4.23	7763 4.18	7601 4.14	83	83	89
1825	8825 4.54	8565 4.45	8321 4.36	8087 4.27	7867 4.21	7703 4.18	84	84	90
1850	8944 4.57	8680 4.48	8432 4.40	8194 4.30	7970 4.25	7804 4.21	85	86	92
1875	9063 5.01	8795 4.52	8543 4.43	8301 4.33	8074 4.28	7906 4.24	86	87	93
1900	9182 5.05	8910 4.56	8654 4.47	8408 4.37	8178 4.31	8008 4.28	88	88	95
1925	9301 5.09	9025 4.59	8765 4.50	8515 4.40	8281 4.35	8110 4.31	89	89	96
1950	9420 5.12	9140 5.03	8876 4.54	8623 4.44	8385 4.38	8212 4.34	90	90	98
1975	9540 5.16	9256 5.07	8988 4.57	8730 4.47	8490 4.42	8314 4.38	91	91	99
2000	9659 5.20	9371 5.10	9099 5.01	8838 4.51	8594 4.45	8417 4.41	92	92	101
2025	9779 5.24	9487 5.14	9211 5.04	8946 4.54	8698 4.48	8519 4.44	93	93	102
2050	9899 5.28	9602 5.18	9323 5.08	9054 4.57	8803 4.52	8622 4.48	95	95	103
2075	10019	9718	9435	9162	8907	8725	96	96	105

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	5.31	5.21	5.11	5.01	4.55	4.51			

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
2075	10019 5.31	9718 5.21	9435 5.11	9162 5.01	8907 4.55	8725 4.51	96	96	105
2100	10139 5.35	9834 5.25	9547 5.15	9270 5.04	9012 4.58	8828 4.54	97	97	106
2125	10259 5.39	9950 5.28	9659 5.18	9378 5.08	9117 5.02	8931 4.58	98	98	108
2150	10380 5.43	10067 5.32	9771 5.22	9486 5.11	9222 5.05	9034 5.01	99	99	110
2175	10500 5.46	10183 5.36	9884 5.25	9594 5.14	9327 5.09	9137 5.04	100	100	111

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
2200	10621 5.50	10299 5.39	9997 5.29	9703 5.18	9432 5.12	9241 5.08	102	101	113
2225	10741 5.54	10416 5.43	10109 5.32	9811 5.21	9537 5.15	9345 5.11	103	103	114
2250	10862 5.58	10533 5.47	10222 5.35	9920 5.25	9643 5.19	9448 5.14	104	104	116
2275	10983 6.01	10649 5.50	10335 5.39	10029 5.28	9748 5.22	9552 5.18	105	105	117
2300	11104 6.05	10766 5.54	10448 5.42	10138 5.31	9854 5.25	9657 5.21	106	106	119
2325	11225 6.09	10883 5.57	10561 5.46	10247 5.35	9960 5.29	9761 5.24	108	107	120
2350	11347 6.13	11001 6.01	10674 5.49	10356 5.38	10066 5.32	9865 5.27	109	108	122
2375	11468 6.16	11118 6.04	10787 5.53	10465 5.42	10172 5.36	9970 5.31	110	109	123
2400	11590 6.20	11235 6.08	10901 5.56	10575 5.45	10278 5.39	10075 5.34	111	111	125
2425	11712 6.24	11353 6.12	11014 6.00	10684 5.48	10384 5.42	10179 5.37	112	112	126
2450	11834 6.27	11470 6.15	11128 6.03	10794 5.52	10490 5.46	10284 5.41	113	113	128
2475	11956 6.31	11588 6.19	11242 6.06	10903 5.55	10597 5.49	10390 5.44	115	114	130
2500	12078	11706	11355	11013	10704	10495	116	115	131

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
	6.35	6.22	6.10	5.58	5.52	5.47			
2525	12200 6.39	11824 6.26	11469 6.13	11123 6.02	10810 5.56	10600 5.51	117	116	133
2550	12322 6.42	11942 6.29	11583 6.17	11233 6.05	10917 5.59	10706 5.54	118	118	134
2575	12445 6.46	12061 6.33	11698 6.20	11343 6.09	11024 6.02	10812 5.57	119	119	136
2600	12568 6.50	12179 6.37	11812 6.23	11454 6.12	11131 6.06	10918 6.01	121	120	137
2625	12690 6.53	12298 6.40	11927 6.27	11564 6.15	11239 6.09	11024 6.04	122	121	139
2650	12814 6.57	12416 6.44	12041 6.30	11674 6.19	11346 6.13	11130 6.07	123	122	141
2675	12937 7.01	12535 6.47	12156 6.34	11785 6.22	11454 6.16	11236 6.11	124	123	142
2700	13060 7.04	12654 6.51	12270 6.37	11896 6.25	11561 6.19	11343 6.14	125	125	144

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3 %

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
2700	13060 7.04	12654 6.51	12270 6.37	11896 6.25	11561 6.19	11343 6.14	125	125	144
2725	13183 7.08	12773 6.54	12385 6.40	12007 6.29	11669 6.23	11450 6.17	127	126	145
2750	13307 7.12	12892 6.58	12500 6.44	12118 6.32	11777 6.26	11557 6.21	128	127	147
2775	13430 7.15	13011 7.01	12615 6.47	12229 6.35	11885 6.29	11664 6.24	129	128	149
2800	13554 7.19	13131 7.05	12731 6.50	12340 6.39	11993 6.33	11771 6.27	130	129	150
2825	13678 7.23	13250 7.08	12846 6.54	12451 6.42	12102 6.36	11879 6.31	131	131	152
2850	13802 7.26	13370 7.12	12961 6.57	12562 6.45	12210 6.39	11986 6.34	133	132	154
2875	13926 7.30	13490 7.16	13077 7.01	12674 6.49	12319 6.43	12094 6.37	134	133	155
2900	14050 7.33	13610 7.19	13193 7.04	12785 6.52	12428 6.46	12202 6.41	135	134	157
2925	14174 7.37	13730 7.23	13308 7.07	12897 6.55	12537 6.49	12310 6.44	136	135	158
2950	14299 7.41	13850 7.26	13424 7.11	13009 6.59	12646 6.53	12418 6.47	138	137	160
2975	14423 7.44	13970 7.30	13540 7.14	13121 7.02	12755 6.56	12527 6.51	139	138	162
3000	14548 7.48	14091 7.33	13656 7.17	13233 7.05	12864 7.00	12635 6.54	140	139	163

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3 %

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FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	290	**310**	**330**	**350**	**370**	**390**	**FL290 FL310**	**FL330 FL350**	**FL370 FL390**
3025	14673 7.52	14211 7.37	13773 7.21	13345 7.09	12974 7.03	12744 6.57	141	140	165
3050	14798 7.55	14332 7.40	13889 7.24	13457 7.12	13083 7.06	12854 7.01	142	141	167
3075	14923 7.59	14453 7.44	14006 7.27	13570 7.16	13193 7.10	12963 7.04	144	143	168
3100	15049 8.02	14574 7.47	14122 7.31	13682 7.19	13303 7.13	13073 7.07	145	144	170

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 3 %

FLIGHT PLANNING LRC

Ident.: PER-FPL-FLP-QFP-50-00001831.0012001 / 17 MAR 11

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
200	1587 0.40	1591 0.39	1595 0.39	1601 0.39			14	15	
225	1715 0.44	1714 0.43	1715 0.43	1718 0.42	1722 0.42		15	16	17
250	1844 0.48	1838 0.47	1835 0.46	1836 0.46	1838 0.46	1842 0.46	17	18	18
275	1972 0.52	1962 0.51	1956 0.50	1954 0.49	1954 0.49	1957 0.49	18	19	20
300	2101 0.55	2086 0.54	2076 0.54	2072 0.53	2071 0.52	2072 0.52	19	21	22
325	2229 0.59	2211 0.58	2197 0.57	2190 0.56	2187 0.56	2187 0.56	21	22	24
350	2358 1.03	2335 1.02	2318 1.01	2309 1.00	2304 0.59	2303 0.59	22	24	25
375	2488 1.07	2460 1.05	2439 1.04	2427 1.03	2420 1.03	2419 1.02	23	25	27
400	2617 1.11	2584 1.09	2560 1.08	2546 1.07	2537 1.06	2535 1.06	24	27	29
425	2746 1.15	2709 1.13	2682 1.11	2665 1.10	2654 1.09	2651 1.09	26	28	31
450	2876 1.18	2834 1.16	2804 1.15	2784 1.14	2772 1.13	2768 1.12	27	30	33
475	3006 1.22	2960 1.20	2925 1.18	2904 1.17	2889 1.16	2885 1.16	28	31	34
500	3136 1.26	3085 1.24	3047 1.22	3023 1.21	3007 1.19	3002 1.19	30	33	36
525	3266 1.30	3210 1.27	3170 1.26	3143 1.24	3125 1.23	3119 1.22	31	34	38
550	3396 1.34	3336 1.31	3292 1.29	3263 1.28	3242 1.26	3236 1.26	32	36	40
575	3527 1.37	3462 1.35	3415 1.33	3383 1.31	3361 1.29	3354 1.29	34	38	42
600	3657 1.41	3588 1.38	3537 1.36	3504 1.35	3479 1.33	3472 1.32	35	39	44
625	3788 1.45	3714 1.42	3660 1.40	3624 1.38	3598 1.36	3590 1.36	36	41	46
650	3919 1.49	3840 1.46	3783 1.43	3745 1.41	3716 1.39	3708 1.39	38	42	47
675	4050 1.52	3967 1.49	3906 1.47	3866 1.45	3835 1.43	3827 1.42	39	44	49
700	4181 1.56	4093 1.53	4029 1.50	3987 1.48	3954 1.46	3946 1.46	40	45	51
725	4312 2.00	4220 1.57	4153 1.54	4108 1.52	4073 1.49	4065 1.49	42	47	53
750	4444 2.04	4347 2.00	4276 1.57	4230 1.55	4193 1.53	4184 1.52	43	49	56
775	4576 2.07	4474 2.04	4400 2.01	4351 1.59	4312 1.56	4304 1.56	44	50	57
800	4707 2.11	4601 2.08	4524 2.04	4473 2.02	4432 1.59	4424 1.59	46	52	59
825	4840 2.15	4729 2.11	4648 2.08	4596 2.06	4552 2.03	4544 2.02	47	53	61

LOW AIR CONDITIONING
ΔFUEL = – 0.3 %

ENGINE ANTI ICE ON
ΔFUEL = + 2 %

TOTAL ANTI ICE ON
ΔFUEL = + 5 %

FLIP23C A320-232 IAE V2527-A5 3420 03301.000011 0250300 .7800 .00200 120 0300350 55 0 100100 40100 18590 FCOM-N0-02-05-40-008-140

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
825	4840 2.15	4729 2.11	4648 2.08	4596 2.06	4552 2.03	4544 2.02	47	53	61
850	4972 2.19	4856 2.15	4773 2.12	4718 2.09	4672 2.06	4664 2.06	48	55	63
875	5104 2.22	4984 2.19	4897 2.15	4840 2.12	4793 2.09	4785 2.09	50	57	65
900	5237 2.26	5112 2.22	5022 2.19	4963 2.16	4913 2.13	4906 2.12	51	58	67
925	5370 2.30	5240 2.26	5147 2.22	5086 2.19	5034 2.16	5027 2.16	52	60	69
950	5502 2.33	5368 2.30	5272 2.26	5209 2.23	5155 2.19	5149 2.19	54	62	71
975	5635 2.37	5496 2.33	5397 2.29	5332 2.26	5276 2.23	5270 2.22	55	63	73
1000	5769 2.41	5625 2.37	5522 2.33	5456 2.29	5398 2.26	5392 2.26	56	65	75
1025	5902 2.45	5754 2.40	5648 2.36	5580 2.33	5519 2.29	5514 2.29	58	66	76
1050	6036 2.48	5883 2.44	5773 2.40	5704 2.36	5641 2.33	5637 2.32	59	68	78
1075	6169 2.52	6012 2.48	5899 2.43	5828 2.40	5763 2.36	5759 2.36	60	70	80
1100	6303 2.56	6141 2.51	6025 2.47	5952 2.43	5885 2.39	5882 2.39	62	71	82
1125	6438 2.59	6270 2.55	6152 2.50	6077 2.46	6007 2.43	6005 2.42	63	73	84
1150	6572 3.03	6400 2.59	6278 2.54	6201 2.50	6130 2.46	6129 2.45	64	75	86
1175	6706 3.07	6529 3.02	6405 2.57	6326 2.53	6252 2.49	6252 2.49	66	76	88
1200	6841 3.10	6659 3.06	6531 3.01	6451 2.56	6375 2.53	6376 2.52	67	78	90
1225	6976 3.14	6789 3.09	6658 3.04	6577 3.00	6498 2.56	6500 2.55	68	80	92
1250	7111 3.18	6919 3.13	6785 3.07	6702 3.03	6621 2.59	6625 2.59	70	81	94
1275	7246 3.21	7050 3.17	6913 3.11	6828 3.07	6745 3.03	6749 3.02	71	83	96
1300	7381 3.25	7181 3.20	7040 3.14	6954 3.10	6868 3.06	6874 3.05	73	85	98
1325	7517 3.28	7311 3.24	7168 3.18	7080 3.13	6992 3.09	7000 3.09	74	87	100
1350	7653 3.32	7442 3.27	7296 3.21	7207 3.17	7117 3.13	7126 3.12	75	88	102
1375	7789 3.36	7574 3.31	7424 3.25	7334 3.20	7241 3.16	7252 3.15	77	90	104
1400	7925 3.39	7705 3.35	7553 3.28	7461 3.23	7366 3.19	7378 3.19	78	92	106
1425	8061 3.43	7836 3.38	7681 3.32	7588 3.27	7490 3.23	7505 3.22	79	93	108
1450	8198 3.46	7968 3.42	7810 3.35	7715 3.30	7615 3.26	7632 3.25	81	95	110

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = – 0.3 %	△FUEL = + 2 %	△FUEL = + 5 %

FLIP23C A320-232 IAE V2527-A5 3420 03301.000011 0250300 .7801 .00200 120 0300350 55 0 100100 40100 18590 FCOM-N0-02-05-40-009-140

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
1450	8198 3.46	7968 3.42	7810 3.35	7715 3.30	7615 3.26	7632 3.25	81	95	110
1475	8335 3.50	8100 3.45	7939 3.39	7843 3.33	7741 3.29	7759 3.29	82	97	112
1500	8471 3.54	8232 3.49	8068 3.42	7971 3.37	7866 3.33	7886 3.32	84	99	114
1525	8608 3.57	8364 3.53	8197 3.46	8099 3.40	7992 3.36	8014 3.35	85	100	116
1550	8746 4.01	8496 3.56	8327 3.49	8227 3.43	8117 3.39	8142 3.39	86	102	118
1575	8883 4.04	8629 4.00	8457 3.52	8356 3.47	8243 3.43	8270 3.42	88	104	120
1600	9020 4.08	8762 4.03	8586 3.56	8485 3.50	8370 3.46	8399 3.45	89	106	122
1625	9157 4.12	8895 4.07	8717 3.59	8613 3.53	8496 3.49	8528 3.49	91	107	125
1650	9295 4.15	9028 4.10	8847 4.03	8743 3.57	8623 3.53	8657 3.52	92	109	127
1675	9432 4.19	9162 4.14	8977 4.06	8872 4.00	8750 3.56	8786 3.55	94	111	129
1700	9570 4.22	9296 4.17	9108 4.10	9002 4.03	8877 3.59	8916 3.59	95	113	131
1725	9708 4.26	9430 4.21	9240 4.13	9132 4.07	9004 4.02	9046 4.02	97	114	133
1750	9846 4.30	9564 4.24	9371 4.16	9261 4.10	9132 4.06	9177 4.05	98	116	135
1775	9985 4.33	9699 4.28	9503 4.20	9391 4.13	9259 4.09	9307 4.09	100	118	137
1800	10123 4.37	9834 4.31	9635 4.23	9520 4.17	9388 4.12	9438 4.12	101	120	140
1825	10262 4.40	9969 4.35	9767 4.27	9650 4.20	9517 4.16	9569 4.15	103	122	142
1850	10401 4.44	10104 4.38	9900 4.30	9780 4.23	9646 4.19	9709 4.19*	104	123	144
1875	10540 4.48	10240 4.42	10033 4.34	9910 4.26	9775 4.22	9839 4.22*	106	125	146
1900	10679 4.51	10376 4.45	10166 4.37	10041 4.30	9905 4.26	9970 4.25*	107	127	148
1925	10818 4.55	10512 4.49	10299 4.40	10172 4.33	10035 4.29	10100 4.29*	109	129	150
1950	10958 4.58	10648 4.52	10433 4.44	10303 4.36	10166 4.32	10231 4.32*	110	130	153
1975	11097 5.02	10784 4.55	10566 4.47	10434 4.40	10296 4.36	10362 4.35*	112	132	155
2000	11237 5.05	10921 4.59	10700 4.50	10565 4.43	10427 4.39	10493 4.39*	114	134	157
2025	11377 5.09	11058 5.02	10835 4.54	10697 4.46	10558 4.42	10624 4.42*	115	136	159
2050	11517 5.12	11195 5.06	10969 4.57	10829 4.49	10689 4.46	10756 4.45*	117	138	161
2075	11658 5.16	11332 5.09	11104 5.01	10961 4.53	10821 4.49	10887 4.49*	118	139	164

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = − 0.3 %	△FUEL = + 2 %	△FUEL = + 5 %

FLIP23C A320-232 IAE V2527-A5 3420 03301.000011 0250300 .7801 .00200 120 0300350 55 0 100100 40100 18590 FCOM-N0-02-05-40-010-140

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
2075	11658 5.16	11332 5.09	11104 5.01	10961 4.53	10821 4.49	10887 4.49*	118	139	164
2100	11798 5.20	11469 5.12	11239 5.04	11093 4.56	10952 4.52	11019 4.52*	120	141	166
2125	11939 5.23	11607 5.16	11374 5.07	11225 4.59	11084 4.56	11151 4.55*	122	143	168
2150	12080 5.27	11745 5.19	11509 5.11	11358 5.02	11217 4.59	11284 4.59*	123	145	171
2175	12221 5.30	11883 5.23	11645 5.14	11491 5.06	11349 5.02	11416 5.02*	125	147	173
2200	12362 5.34	12021 5.26	11781 5.17	11624 5.09	11482 5.06	11549 5.05*	126	149	175
2225	12504 5.37	12160 5.29	11917 5.21	11757 5.12	11615 5.09	11682 5.08*	128	150	177
2250	12646 5.41	12298 5.33	12053 5.24	11890 5.15	11749 5.12	11815 5.12*	130	152	179
2275	12788 5.44	12438 5.36	12189 5.28	12024 5.19	11882 5.16	11948 5.15*	131	154	181
2300	12930 5.48	12577 5.40	12326 5.31	12158 5.22	12016 5.19	12082 5.18*	133	156	184
2325	13072 5.51	12716 5.43	12463 5.34	12292 5.25	12150 5.22	12216 5.22*	135	158	186
2350	13214 5.55	12856 5.46	12601 5.38	12426 5.28	12285 5.26	12350 5.25*	136	160	188
2375	13357 5.58	12996 5.50	12738 5.41	12561 5.32	12419 5.29	12484 5.28*	138	162	190
2400	13500 6.02	13136 5.53	12876 5.44	12696 5.35	12555 5.32	12619 5.32*	140	164	192
2425	13643 6.05	13277 5.56	13014 5.48	12831 5.38	12690 5.36	12754 5.35*	141	165	195
2450	13786 6.09	13418 6.00	13153 5.51	12967 5.41	12826 5.39	12889 5.38*	143	167	197
2475	13929 6.12	13558 6.03	13292 5.54	13102 5.45	12962 5.42	13024 5.42*	145	169	199
2500	14073 6.16	13700 6.06	13430 5.58	13238 5.48	13098 5.46	13160 5.45*	146	171	201
2525	14217 6.19	13841 6.10	13570 6.01	13374 5.51	13235 5.49	13295 5.48*	148	173	203
2550	14361 6.23	13983 6.13	13709 6.04	13510 5.54	13372 5.52	13432 5.52*	150	175	206
2575	14505 6.26	14124 6.16	13849 6.08	13647 5.57	13509 5.56	13568 5.55*	152	177	208
2600	14649 6.30	14266 6.19	13989 6.11	13783 6.01	13646 5.59	13704 5.58*	153	179	210
2625	14793 6.33	14409 6.23	14129 6.14	13920 6.04	13784 6.02	13841 6.02*	155	181	212
2650	14938 6.37	14551 6.26	14269 6.17	14058 6.07	13922 6.06	13978 6.05*	157	183	214
2675	15082 6.40	14694 6.29	14410 6.21	14195 6.10	14061 6.09	14115 6.08*	159	185	217
2700	15227 6.44	14836 6.33	14551 6.24	14333 6.13	14199 6.12	14253 6.11*	161	186	219

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = − 0.3 %	△FUEL = + 2 %	△FUEL = + 5 %

FLIP23C A320-232 IAE V2527-A5 3420 03301.000011 0250300 .7801 .00200 120 0300350 55 0 100100 40100 18590 FCOM-N0-02-05-40-011-140

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
2700	15227 6.44	14836 6.33	14551 6.24	14333 6.13	14199 6.12	14253 6.11*	161	186	219
2725	15373 6.47	14978 6.36	14692 6.27	14471 6.17	14338 6.16	14390 6.15*	162	188	221
2750	15518 6.51	15120 6.40	14833 6.31	14609 6.20	14477 6.19	14528 6.18*	164	191	223
2775	15663 6.55	15263 6.43	14974 6.34	14747 6.23	14617 6.22	14666 6.21*	166	193	226
2800	15809 6.58	15406 6.46	15116 6.37	14886 6.26	14757 6.25	14805 6.25*	168	195	228
2825	15955 7.02	15549 6.50	15257 6.41	15024 6.29	14897 6.29	14943 6.28*	169	197	230
2850	16101 7.05	15692 6.53	15399 6.44	15162 6.33	15037 6.32	15082 6.31*	171	199	232
2875	16248 7.09	15835 6.56	15541 6.47	15301 6.36	15178 6.35	15221 6.35*	173	201	235
2900	16394 7.12	15979 7.00	15684 6.50	15441 6.39	15320 6.39	15361 6.38*	175	203	237
2925	16541 7.16	16123 7.03	15826 6.54	15580 6.43	15462 6.42	15501 6.41*	177	205	239
2950	16688 7.19	16267 7.06	15969 6.57	15720 6.46	15604 6.45	15641 6.45*	178	207	242
2975	16835 7.23	16412 7.10	16112 7.00	15860 6.49	15747 6.49	15781 6.48*	180	209	244
3000	16982 7.26	16556 7.13	16256 7.03	16000 6.52	15890 6.52	15922 6.51*	182	211	246
3025	17130 7.30	16701 7.16	16399 7.07	16140 6.56	16033 6.55	16063 6.55*	184	213	248
3050	17277 7.33	16846 7.20	16543 7.10	16281 6.59	16177 6.59	16204 6.58*	186	215	250
3075	17425 7.37	16991 7.23	16688 7.13	16421 7.02	16321 7.02	16345 7.01*	188	217	253
3100	17573 7.40	17137 7.26	16832 7.16	16562 7.06	16465 7.05	16487 7.05*	189	220	255

LOW AIR CONDITIONING
△FUEL = − 0.3 %

ENGINE ANTI ICE ON
△FUEL = + 2 %

TOTAL ANTI ICE ON
△FUEL = + 5 %

FLIP23C A320-232 IAE V2527-A5 3420 03301 000011 0250300 7801 00200 120 0300350 55 0 100100 40100 18590 FCOM-N0-02-05-40-012-140

FLIGHT PLANNING LRC

Ident.: PER-FPL-FLP-QFP-50-00001831.0071001 / 17 MAR 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
200	1599 0.39	1602 0.39	1605 0.39	1609 0.38			15	16	
225	1732 0.43	1731 0.43	1730 0.42	1731 0.42	1733 0.42		16	17	18
250	1865 0.47	1860 0.46	1855 0.46	1852 0.45	1852 0.45	1855 0.45	18	19	20
275	1998 0.51	1989 0.50	1980 0.49	1974 0.49	1971 0.49	1973 0.48	19	20	21
300	2132 0.54	2118 0.54	2105 0.53	2096 0.52	2090 0.52	2090 0.52	20	21	23
325	2265 0.58	2247 0.57	2231 0.56	2218 0.56	2209 0.55	2208 0.55	22	23	25
350	2399 1.02	2377 1.01	2357 1.00	2341 0.59	2329 0.59	2325 0.59	23	24	26
375	2532 1.06	2507 1.05	2483 1.04	2463 1.03	2448 1.02	2443 1.02	24	26	28
400	2666 1.09	2637 1.08	2609 1.07	2586 1.06	2568 1.06	2562 1.05	25	27	30
425	2801 1.13	2767 1.12	2735 1.11	2708 1.10	2688 1.09	2680 1.09	27	28	31
450	2935 1.17	2897 1.16	2861 1.14	2831 1.13	2808 1.12	2798 1.12	28	30	33
475	3069 1.21	3027 1.19	2988 1.18	2954 1.17	2928 1.16	2917 1.15	29	31	35
500	3204 1.24	3158 1.23	3114 1.21	3078 1.20	3048 1.19	3036 1.19	31	33	37
525	3339 1.28	3289 1.26	3241 1.25	3201 1.23	3169 1.22	3155 1.22	32	34	38
550	3474 1.32	3420 1.30	3368 1.28	3325 1.27	3290 1.26	3275 1.25	33	36	40
575	3609 1.36	3551 1.34	3496 1.32	3448 1.30	3411 1.29	3394 1.29	35	37	42
600	3744 1.39	3682 1.37	3623 1.35	3572 1.34	3532 1.32	3514 1.32	36	38	44
625	3880 1.43	3813 1.41	3750 1.39	3696 1.37	3653 1.36	3634 1.35	38	40	46
650	4016 1.47	3945 1.45	3878 1.42	3821 1.41	3774 1.39	3754 1.39	39	41	48
675	4152 1.50	4076 1.48	4006 1.46	3945 1.44	3896 1.43	3875 1.42	40	43	49
700	4288 1.54	4208 1.52	4134 1.49	4070 1.47	4018 1.46	3996 1.45	42	44	51
725	4424 1.58	4340 1.55	4262 1.53	4194 1.51	4140 1.49	4117 1.49	43	46	53
750	4561 2.02	4473 1.59	4391 1.56	4319 1.54	4262 1.53	4238 1.52	44	47	55
775	4697 2.05	4605 2.03	4520 2.00	4445 1.58	4385 1.56	4360 1.55	46	48	57
800	4834 2.09	4738 2.06	4648 2.03	4570 2.01	4507 1.59	4482 1.59	47	50	59
825	4971 2.13	4870 2.10	4777 2.07	4696 2.05	4630 2.03	4604 2.02	48	51	60

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = –0.5 %	△FUEL = + 2.5 %	△FUEL = + 5 %

FLIP23D A320-214 CFM56-5B4/P SA3420 03301.000011 0250300 .7801 .00200 120 0300350 55 0 100100 40100 18590 FCOM-02-05-40-008-180

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
825	4971 2.13	4870 2.10	4777 2.07	4696 2.05	4630 2.03	4604 2.02	48	51	60
850	5108 2.16	5003 2.13	4907 2.10	4821 2.08	4753 2.06	4726 2.05	50	53	62
875	5246 2.20	5137 2.17	5036 2.14	4947 2.11	4876 2.09	4849 2.09	51	54	64
900	5383 2.24	5270 2.21	5166 2.17	5073 2.15	5000 2.13	4971 2.12	53	56	66
925	5521 2.27	5403 2.24	5295 2.21	5200 2.18	5123 2.16	5094 2.15	54	57	68
950	5659 2.31	5537 2.28	5425 2.24	5326 2.22	5247 2.20	5218 2.19	55	59	70
975	5797 2.35	5671 2.31	5555 2.28	5453 2.25	5371 2.23	5341 2.22	57	60	72
1000	5936 2.38	5805 2.35	5686 2.31	5580 2.28	5495 2.26	5465 2.25	58	62	74
1025	6074 2.42	5939 2.38	5816 2.35	5707 2.32	5620 2.30	5589 2.29	60	63	75
1050	6213 2.46	6073 2.42	5947 2.38	5834 2.35	5744 2.33	5713 2.32	61	65	77
1075	6352 2.49	6207 2.46	6077 2.42	5961 2.39	5869 2.36	5837 2.35	62	66	79
1100	6491 2.53	6342 2.49	6208 2.45	6089 2.42	5994 2.40	5962 2.39	64	67	81
1125	6630 2.57	6477 2.53	6340 2.49	6217 2.45	6119 2.43	6087 2.42	65	69	83
1150	6770 3.00	6612 2.56	6471 2.52	6345 2.49	6244 2.46	6212 2.45	67	70	85
1175	6910 3.04	6747 3.00	6603 2.56	6473 2.52	6370 2.50	6337 2.49	68	72	87
1200	7049 3.08	6883 3.03	6734 2.59	6601 2.55	6495 2.53	6463 2.52	69	73	89
1225	7190 3.11	7018 3.07	6866 3.02	6729 2.59	6621 2.56	6589 2.55	71	75	91
1250	7330 3.15	7154 3.10	6999 3.06	6858 3.02	6747 3.00	6715 2.59	72	76	93
1275	7470 3.18	7290 3.14	7131 3.09	6987 3.06	6874 3.03	6841 3.02	74	78	95
1300	7611 3.22	7426 3.18	7264 3.13	7116 3.09	7000 3.06	6968 3.05	75	79	97
1325	7752 3.26	7562 3.21	7396 3.16	7246 3.12	7127 3.10	7095 3.09	77	81	99
1350	7893 3.29	7699 3.25	7529 3.20	7375 3.16	7254 3.13	7223 3.12	78	83	101
1375	8035 3.33	7836 3.28	7663 3.23	7505 3.19	7381 3.16	7350 3.15	80	84	103
1400	8176 3.37	7973 3.32	7796 3.26	7635 3.22	7509 3.20	7478 3.19	81	86	105
1425	8318 3.40	8110 3.35	7930 3.30	7765 3.26	7637 3.23	7606 3.22	82	87	107
1450	8460 3.44	8247 3.39	8063 3.33	7896 3.29	7764 3.26	7735 3.25	84	89	109

LOW AIR CONDITIONING
ΔFUEL = −0.5 %

ENGINE ANTI ICE ON
ΔFUEL = + 2.5 %

TOTAL ANTI ICE ON
ΔFUEL = + 5 %

FLIP23D A320-214 CFM56-5B4/P SA3420 03301.000011 0250300 .7801 .00200 120 0300350 55 0 100100 40100 18590 FCOM-02-05-40-009-180

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
1450	8460 3.44	8247 3.39	8063 3.33	7896 3.29	7764 3.26	7735 3.25	84	89	109
1475	8602 3.47	8384 3.42	8197 3.37	8026 3.32	7892 3.30	7863 3.29	85	90	111
1500	8744 3.51	8522 3.46	8332 3.40	8157 3.36	8021 3.33	7990 3.32*	87	92	113
1525	8887 3.55	8660 3.49	8466 3.43	8288 3.39	8149 3.36	8121 3.35*	88	93	115
1550	9029 3.58	8798 3.53	8600 3.47	8419 3.42	8278 3.40	8251 3.39*	90	95	117
1575	9172 4.02	8936 3.56	8735 3.50	8550 3.46	8407 3.43	8400 3.42*	91	96	119
1600	9315 4.05	9075 4.00	8870 3.54	8682 3.49	8536 3.46	8513 3.45*	93	98	121
1625	9458 4.09	9213 4.03	9005 3.57	8813 3.52	8665 3.50	8644 3.49*	94	100	123
1650	9601 4.12	9352 4.07	9141 4.00	8945 3.56	8795 3.53	8775 3.52*	96	101	125
1675	9745 4.16	9491 4.10	9276 4.04	9078 3.59	8924 3.56	8907 3.55*	97	103	127
1700	9888 4.20	9630 4.14	9411 4.07	9210 4.02	9054 3.59	9039 3.59*	99	104	129
1725	10032 4.23	9770 4.17	9546 4.11	9342 4.06	9185 4.03	9170 4.02*	100	106	131
1750	10176 4.27	9910 4.21	9682 4.14	9474 4.09	9315 4.06	9303 4.05*	102	108	133
1775	10321 4.30	10050 4.24	9818 4.17	9607 4.12	9446 4.09	9435 4.09*	103	109	135
1800	10465 4.34	10190 4.27	9954 4.21	9740 4.16	9577 4.13	9567 4.12*	105	111	138
1825	10610 4.37	10330 4.31	10090 4.24	9873 4.19	9708 4.16	9700 4.15*	106	113	140
1850	10755 4.41	10470 4.34	10226 4.28	10006 4.22	9840 4.19	9833 4.19*	108	114	142
1875	10900 4.45	10611 4.38	10363 4.31	10140 4.26	9972 4.23	9966 4.22*	109	116	144
1900	11045 4.48	10752 4.41	10500 4.34	10273 4.29	10105 4.26	10100 4.26*	111	118	146
1925	11191 4.52	10893 4.45	10637 4.38	10407 4.32	10237 4.29	10233 4.29*	112	119	148
1950	11337 4.55	11034 4.48	10774 4.41	10541 4.36	10370 4.33	10367 4.32*	114	121	151
1975	11483 4.59	11176 4.52	10911 4.45	10675 4.39	10503 4.36	10501 4.36*	115	123	153
2000	11629 5.02	11318 4.55	11049 4.48	10810 4.42	10636 4.39	10635 4.39*	117	124	155
2025	11775 5.06	11460 4.58	11187 4.51	10944 4.46	10769 4.43	10769 4.42*	118	126	157
2050	11922 5.09	11602 5.02	11325 4.55	11079 4.49	10903 4.46	10904 4.46*	120	128	159
2075	12068 5.13	11744 5.05	11463 4.58	11214 4.52	11037 4.49	11039 4.49*	121	129	162

LOW AIR CONDITIONING
△FUEL = −0.5 %

ENGINE ANTI ICE ON
△FUEL = + 2.5 %

TOTAL ANTI ICE ON
△FUEL = + 5 %

FLIP23D A320-214 CFM56-5B4/P SA3420 03301.000011 0250300 .7801 .00200 120 0300350 55 0 100100 40100 18590 FCOM-02-05-40-010-180

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
2075	12068 5.13	11744 5.05	11463 4.58	11214 4.52	11037 4.49	11039 4.49*	121	129	162
2100	12215 5.16	11887 5.09	11601 5.01	11349 4.56	11171 4.53	11174 4.52*	123	131	164
2125	12363 5.20	12029 5.12	11739 5.05	11485 4.59	11306 4.56	11309 4.56*	124	133	166
2150	12510 5.23	12172 5.16	11878 5.08	11620 5.02	11440 4.59	11444 4.59*	126	134	168
2175	12658 5.27	12315 5.19	12017 5.11	11756 5.06	11575 5.03	11579 5.02*	127	136	170
2200	12806 5.30	12459 5.22	12156 5.15	11892 5.09	11710 5.06	11715 5.06*	129	138	173
2225	12954 5.34	12603 5.26	12295 5.18	12028 5.12	11846 5.09	11851 5.09*	130	139	175
2250	13102 5.37	12746 5.29	12435 5.22	12165 5.16	11981 5.13	11987 5.12*	132	141	177
2275	13251 5.41	12891 5.33	12575 5.25	12301 5.19	12117 5.16	12124 5.16*	134	143	179
2300	13400 5.44	13035 5.36	12715 5.28	12438 5.22	12253 5.19	12260 5.19*	135	145	181
2325	13549 5.48	13179 5.39	12855 5.32	12576 5.25	12390 5.23	12397 5.22*	137	146	184
2350	13698 5.51	13324 5.43	12996 5.35	12713 5.29	12527 5.26	12534 5.26*	138	148	186
2375	13848 5.55	13469 5.46	13136 5.38	12851 5.32	12664 5.29	12672 5.29*	140	150	188
2400	13997 5.58	13614 5.50	13277 5.42	12989 5.35	12801 5.33	12809 5.32*	141	152	190
2425	14147 6.02	13760 5.53	13418 5.45	13127 5.39	12939 5.36	12947 5.36*	143	153	193
2450	14297 6.05	13906 5.56	13559 5.48	13265 5.42	13077 5.39	13085 5.39*	144	155	195
2475	14448 6.09	14051 6.00	13701 5.52	13404 5.45	13215 5.43	13223 5.42*	146	157	197
2500	14598 6.12	14197 6.03	13842 5.55	13542 5.49	13354 5.46	13362 5.45*	148	159	199
2525	14748 6.16	14344 6.06	13984 5.58	13681 5.52	13492 5.49	13500 5.49*	149	161	201
2550	14898 6.19	14490 6.10	14126 6.02	13820 5.55	13631 5.53	13639 5.52*	151	162	204
2575	15048 6.22	14637 6.13	14269 6.05	13960 5.58	13770 5.56	13778 5.55*	152	164	206
2600	15199 6.26	14784 6.17	14411 6.08	14099 6.02	13910 5.59	13917 5.59*	154	166	208
2625	15350 6.29	14931 6.20	14554 6.11	14239 6.05	14050 6.03	14057 6.02*	156	168	211
2650	15501 6.33	15078 6.23	14697 6.15	14379 6.08	14190 6.06	14197 6.05*	157	170	213
2675	15652 6.36	15225 6.27	14840 6.18	14519 6.11	14330 6.09	14337 6.09*	159	171	215
2700	15804 6.40	15373 6.30	14984 6.21	14660 6.15	14471 6.13	14477 6.12*	160	173	217

LOW AIR CONDITIONING
△FUEL = −0,5 %

ENGINE ANTI ICE ON
△FUEL = + 2,5 %

TOTAL ANTI ICE ON
△FUEL = + 5 %

FLIP23D A320-214 CFM56-5B4/P SA3420 03301.000011 0250300 .7801 .00200 120 0300350 55 0 100100 40100 18590 FCOM-02-05-40-011-180

FLIGHT PLANNING FROM BRAKE RELEASE TO LANDING
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
2700	15804 6.40	15373 6.30	14984 6.21	14660 6.15	14471 6.13	14477 6.12*	160	173	217
2725	15955 6.43	15521 6.33	15127 6.25	14801 6.18	14612 6.16	14618 6.15*	162	175	220
2750	16107 6.47	15669 6.37	15272 6.28	14941 6.21	14753 6.19	14758 6.19*	164	177	222
2775	16260 6.50	15818 6.40	15416 6.31	15082 6.25	14894 6.23	14899 6.22*	165	179	224
2800	16412 6.53	15966 6.43	15561 6.35	15224 6.28	15036 6.26	15041 6.25*	167	181	226
2825	16564 6.57	16115 6.47	15706 6.38	15366 6.31	15178 6.29	15182 6.29*	169	183	229
2850	16717 7.00	16264 6.50	15851 6.41	15508 6.34	15321 6.33	15324 6.32*	170	184	231
2875	16870 7.04	16413 6.53	15996 6.44	15650 6.38	15470 6.36*	15466 6.35*	172	186	233
2900	17023 7.07	16563 6.57	16142 6.48	15792 6.41	15614 6.39*	15609 6.39*	174	188	235
2925	17177 7.10	16713 7.00	16288 6.51	15935 6.44	15758 6.43*	15751 6.42*	175	190	238
2950	17330 7.14	16863 7.03	16434 6.54	16078 6.48	15903 6.46*	15894 6.45*	177	192	240
2975	17484 7.17	17013 7.07	16580 6.57	16221 6.51	16048 6.49*	16037 6.49*	179	194	242
3000	17638 7.21	17163 7.10	16726 7.01	16364 6.54	16193 6.53*	16181 6.52*	180	196	245
3025	17792 7.24	17314 7.13	16873 7.04	16508 6.58	16338 6.56*	16324 6.55*	182	198	247
3050	17947 7.27	17465 7.16	17020 7.07	16652 7.01	16483 6.59*	16468 6.59*	184	200	249
3075	18102 7.31	17616 7.20	17167 7.10	16796 7.04	16629 7.03*	16612 7.02*	185	202	252
3100	18257 7.34	17767 7.23	17315 7.14	16940 7.07	16775 7.06*	16756 7.05*	187	204	254

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = –0.5 %	△FUEL = + 2.5 %	△FUEL = + 5 %

FLIP23D A320-214 CFM56-5B4/P SA3420 03301.000011 0250300 .7801 .00200 120 0300350 55 0 100100 40100 18590 FCOM-02-05-40-012-180

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ALL ENGINES OPERATIVE

GENERAL

Ident.: PER-FPL-FLP-ALN-20-00001832.0014001 / 25 JAN 17

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The alternate planning tables enable the flight crew to determine the fuel consumption and time required to cover a given air distance from go-around at destination airport to landing at alternate airport.

These tables are established for:
- Go-around: 100 kg or 220 lb
- Climb profile: 250 kt/300 kt/M .78
- Long range speed
- Descent profile: M .78/300 kt/250 kt
- Approach and landing at alternate airport: 120 kg or 270 lb (4 min)
- ISA
- CG = 33 %
- Normal air conditioning
- Anti ice OFF.

Note: *1. In the tables, the asterisk (*) means that a step climb of 4 000 ft must be flown to reach the corresponding flight level.*
2. The flight level shown on the top of each column is the final flight level.
3. For each degree Celsius above ISA temperature apply a fuel correction of
0.015 (kg/°C/NM) x ΔISA (°C) x Air distance (NM)
or 0.033 (lb/°C/NM) x ΔISA (°C) x Air distance (NM)

GENERAL

Ident.: PER-FPL-FLP-ALN-20-00001832.0008001 / 02 MAR 11

[2] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The alternate planning tables enable the flight crew to determine the fuel consumption and time required to cover a given air distance from go-around at destination airport to landing at alternate airport.

These tables are established for:
- Go-around: 100 kg or 220 lb
- Climb profile: 250 kt/300 kt/M .78
- Long range speed
- Descent profile: M .78/300 kt/250 kt
- Approach and landing at alternate airport: 80 kg or 180 lb (4 min)
- ISA
- CG = 33 %
- Normal air conditioning
- Anti ice OFF

Note: *1. In the tables, the asterisk (*) means that a step climb of 4 000 ft must be flown to reach the corresponding flight level.*
2. The flight level shown on the top of each column is the final flight level.
3. For each degree Celsius above ISA temperature apply a fuel correction of
0.015 (kg/°C/NM) × ΔISA (°C) × Air distance (NM)
or 0.033 (lb/°C/NM) × ΔISA (°C) × Air distance (NM)

GENERAL

Ident.: PER-FPL-FLP-ALN-20-00001832.0009001 / 25 FEB 14
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The alternate planning tables enable the flight crew to determine the fuel consumption and time required to cover a given air distance from go-around at destination airport to landing at alternate airport.

These tables are established for:
- Go-around: 100 kg or 220 lb
- Climb profile: 250 kt/300 kt/M .78
- Long range speed
- Descent profile: M .78/300 kt/250 kt
- Approach and landing at alternate airport: 80 kg or 180 lb (4 min)
- ISA
- CG = 33 %
- Normal air conditioning
- Anti ice OFF

Following tables have been calculated using databases for CFM 56–5–B /P. If the engines fitted on the aircraft are not /P or /3, the fuel consumption has to be increased by 3 %.

Note: *1. In the tables, the asterisk (*) means that a step climb of 4 000 ft must be flown to reach the corresponding flight level.*
2. The flight level shown on the top of each column is the final flight level.
3. For each degree Celsius above ISA temperature apply a fuel correction of 0.015 (kg/°C/NM) x ΔISA (°C) x Air distance (NM) or 0.033 (lb/°C/NM) x ΔISA (°C) x Air distance (NM)

CORRECTION FOR DEVIATION FROM REFERENCE WEIGHT

Ident.: PER-FPL-FLP-ALN-20-00001834.0001001 / 28 FEB 11
Applicable to: ALL

The alternate planning tables are based on a reference landing weight at alternate.
The fuel consumption must be corrected when the landing weight is different from the reference landing weight.
If it is lower (or greater) than the reference weight, subtract (or add) the value given in the correction part of the table per 1 000 kg or 1 000 lb below (or above) the reference weight.

ALTERNATE PLANNING ISA

Ident.: PER-FPL-FLP-ALN-20-00001833.0138001 / 20 DEC 16

[3] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
GO-AROUND : 100 KG - VMC PROCEDURE : 120 KG (4 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**120**	**140**	**160**	**180**	**200**	**FL100 FL120**	**FL140 FL160**	**FL180 FL200**
20									
40									
60	637 0.16	647 0.16	651 0.16				2	2	
80	770 0.20	775 0.20	773 0.20	775 0.20	779 0.19		3	3	4
100	902 0.24	902 0.24	896 0.24	893 0.23	894 0.23	897 0.23	4	4	5
120	1035 0.28	1030 0.27	1019 0.27	1012 0.27	1009 0.27	1010 0.26	5	5	6
140	1168 0.31	1158 0.31	1142 0.31	1131 0.31	1125 0.31	1122 0.30	5	6	7
160	1301 0.35	1286 0.35	1265 0.35	1249 0.35	1240 0.34	1235 0.34	6	7	8
180	1434 0.39	1414 0.39	1389 0.39	1368 0.38	1356 0.38	1348 0.38	7	7	9
200	1567 0.42	1542 0.42	1512 0.42	1488 0.42	1472 0.42	1460 0.42	7	8	10
220	1700 0.46	1670 0.46	1635 0.46	1607 0.46	1588 0.46	1573 0.45	8	9	11
240	1834 0.50	1799 0.50	1759 0.50	1726 0.50	1704 0.50	1687 0.49	9	10	12

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 2 %	+ 5.1%

Continued on the following page

Continued from the previous page

ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
GO-AROUND : 100 KG - VMC PROCEDURE : 120 KG (4 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	120	140	160	180	200	FL100 FL120	FL140 FL160	FL180 FL200
260	1967 0.54	1927 0.54	1883 0.54	1845 0.53	1820 0.53	1800 0.53	10	11	13
280	2101 0.57	2056 0.57	2006 0.57	1965 0.57	1936 0.57	1913 0.57	10	12	14
300	2234 1.01	2184 1.01	2130 1.01	2084 1.01	2052 1.01	2027 1.01	11	12	15
320	2368 1.05	2313 1.05	2254 1.05	2204 1.05	2169 1.05	2140 1.04	12	13	16
340	2502 1.09	2442 1.09	2378 1.09	2324 1.08	2285 1.08	2254 1.08	13	14	17
360	2636 1.12	2570 1.12	2502 1.12	2444 1.12	2402 1.12	2368 1.12	13	15	18
380	2770 1.16	2699 1.16	2626 1.16	2564 1.16	2519 1.16	2482 1.16	14	16	20
400	2904 1.20	2828 1.20	2751 1.20	2684 1.20	2635 1.20	2596 1.20	15	17	21
420	3038 1.24	2958 1.24	2875 1.24	2804 1.23	2752 1.24	2710 1.23	16	18	22
440	3172 1.27	3087 1.27	3000 1.27	2924 1.27	2870 1.27	2825 1.27	16	18	23
460	3307 1.31	3216 1.31	3124 1.31	3045 1.31	2987 1.31	2939 1.31	17	19	24
480	3441 1.35	3346 1.35	3249 1.35	3165 1.35	3104 1.35	3054 1.35	18	20	25
500	3576	3475	3374	3286	3222	3169	18	21	26

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.6 %	+ 2 %	+ 5.1%

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ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
GO-AROUND : 100 KG - VMC PROCEDURE : 120 KG (4 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**120**	**140**	**160**	**180**	**200**	**FL100 FL120**	**FL140 FL160**	**FL180 FL200**
	1.38	1.38	1.39	1.39	1.39	1.38			

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 2 %	+ 5.1%

ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
GO-AROUND : 100 KG - VMC PROCEDURE : 120 KG (4 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL					CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	230	**270**	**310**	**350**	**390**	**FL230 FL270**	**FL310 FL350**	**FL390**
100	909 0.22					5		
120	1019 0.26					6		
140	1128 0.29	1144 0.28				7		
160	1238 0.33	1248 0.31	1261 0.30			8	8	
180	1349 0.37	1352 0.34	1357 0.33	1366 0.33		9	9	

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 4.2 %	+ 4.8 %

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ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
GO-AROUND : 100 KG - VMC PROCEDURE : 120 KG (4 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL					CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	230	**270**	**310**	**350**	**390**	**FL230 FL270**	**FL310 FL350**	**FL390**
200	1459 0.40	1456 0.37	1452 0.36	1454 0.36		10	10	
220	1569 0.44	1560 0.40	1548 0.39	1543 0.38		11	11	
240	1680 0.48	1664 0.43	1644 0.42	1632 0.41	1639 0.41	12	12	13
260	1791 0.51	1769 0.46	1740 0.44	1721 0.44	1724 0.43	13	13	14
280	1902 0.55	1873 0.49	1836 0.47	1810 0.47	1810 0.46	14	13	15
300	2013 0.59	1977 0.52	1931 0.50	1899 0.49	1895 0.49	15	14	17
320	2124 1.02	2082 0.55	2027 0.53	1988 0.52	1981 0.52	16	15	18
340	2236 1.06	2187 0.58	2124 0.56	2077 0.55	2067 0.54	18	16	19
360	2347 1.10	2291 1.01	2220 0.59	2167 0.58	2153 0.57	19	16	20
380	2459 1.13	2396 1.04	2316 1.01	2256 1.00	2238 1.00	20	17	21
400	2571 1.17	2501 1.07	2412 1.04	2346 1.03	2324 1.02	21	18	22
420	2683 1.20	2606 1.10	2508 1.07	2435 1.06	2411 1.05	22	19	24
440	2795	2711	2605	2525	2497	23	20	25

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 4.2 %	+ 4.8 %

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ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
GO-AROUND : 100 KG - VMC PROCEDURE : 120 KG (4 MIN)

REF. LANDING WEIGHT = 60000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL					CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	230	**270**	**310**	**350**	**390**	**FL230 FL270**	**FL310 FL350**	**FL390**
	1.24	1.13	1.10	1.09	1.08			
460	2908 1.28	2816 1.16	2701 1.13	2615 1.12	2583 1.10	24	20	26
480	3020 1.31	2921 1.19	2798 1.16	2705 1.14	2670 1.13	25	21	27
500	3133 1.35	3026 1.22	2894 1.19	2795 1.17	2756 1.16	26	22	28

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.6 %	+ 4.2 %	+ 4.8 %

ALTERNATE PLANNING ISA

Ident.: PER-FPL-FLP-ALN-20-00001833.0130001 / 16 MAR 15

[4] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
GO-AROUND : 100 KG - VMC PROCEDURE : 80 KG (4 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**120**	**140**	**160**	**180**	**200**	**FL100 FL120**	**FL140 FL160**	**FL180 FL200**
20									
40	423 0.13						1		
60	550 0.17	568 0.16	570 0.16				2	2	
80	677 0.21	690 0.20	688 0.20	688 0.19	690 0.19	694 0.19	3	3	3
100	803 0.25	813 0.25	807 0.24	802 0.23	799 0.23	799 0.22	4	4	4
120	930 0.29	935 0.29	925 0.27	916 0.27	909 0.26	905 0.26	5	5	5
140	1057 0.33	1058 0.33	1043 0.31	1030 0.31	1019 0.30	1010 0.29	6	6	5
160	1185 0.38	1181 0.37	1162 0.35	1144 0.34	1129 0.34	1115 0.33	7	6	6
180	1312 0.42	1304 0.41	1281 0.39	1258 0.38	1239 0.37	1221 0.37	7	7	7
200	1440 0.46	1427 0.45	1400 0.42	1372 0.42	1349 0.41	1326 0.40	8	8	8
220	1567 0.50	1550 0.49	1518 0.46	1487 0.45	1459 0.44	1432 0.44	9	9	8
240	1695	1673	1637	1601	1569	1538	10	10	9

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 6 %

Continued on the following page

Continued from the previous page

ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
GO-AROUND : 100 KG - VMC PROCEDURE : 80 KG (4 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**120**	**140**	**160**	**180**	**200**	**FL100 FL120**	**FL140 FL160**	**FL180 FL200**
	0.54	0.53	0.50	0.49	0.48	0.47			
260	1823 0.58	1796 0.57	1757 0.54	1716 0.53	1679 0.51	1644 0.51	11	10	10
280	1951 1.02	1920 1.01	1876 0.57	1831 0.56	1789 0.55	1749 0.54	12	11	11
300	2079 1.06	2043 1.05	1995 1.01	1945 1.00	1900 0.59	1855 0.58	13	12	12
320	2207 1.11	2167 1.09	2114 1.05	2060 1.04	2010 1.02	1961 1.01	14	13	12
340	2336 1.15	2290 1.13	2234 1.09	2175 1.07	2121 1.06	2067 1.05	15	14	13
360	2464 1.19	2414 1.17	2353 1.12	2290 1.11	2232 1.09	2174 1.08	16	14	14
380	2593 1.23	2538 1.21	2473 1.16	2405 1.15	2342 1.13	2280 1.12	16	15	15
400	2721 1.27	2662 1.25	2593 1.20	2520 1.18	2453 1.16	2386 1.15	17	16	15
420	2850 1.31	2787 1.29	2713 1.24	2636 1.22	2564 1.20	2493 1.19	18	17	16
440	2979 1.35	2911 1.33	2832 1.27	2751 1.26	2675 1.24	2599 1.23	19	18	17
460	3108 1.39	3035 1.37	2952 1.31	2866 1.29	2786 1.27	2706 1.26	20	18	18
480	3237	3160	3073	2982	2897	2812	21	19	18

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 6 %

Continued on the following page

Continued from the previous page

ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
GO-AROUND : 100 KG - VMC PROCEDURE : 80 KG (4 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**120**	**140**	**160**	**180**	**200**	**FL100 FL120**	**FL140 FL160**	**FL180 FL200**
	1.43	1.41	1.35	1.33	1.31	1.30			
500	3366 1.48	3284 1.45	3193 1.39	3098 1.37	3009 1.34	2919 1.33	22	20	19

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 6 %

ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
GO-AROUND : 100 KG - VMC PROCEDURE : 80 KG (4 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL					CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	230	**270**	**310**	**350**	**390**	**FL230 FL270**	**FL310 FL350**	**FL390**
100	808 0.22					4		
120	907 0.25	927 0.25				6		
140	1006 0.29	1019 0.28	1040 0.27			6	7	
160	1105 0.32	1110 0.31	1126 0.30			7	8	

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 4 %

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ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
GO-AROUND : 100 KG - VMC PROCEDURE : 80 KG (4 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL					CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	230	**270**	**310**	**350**	**390**	**FL230 FL270**	**FL310 FL350**	**FL390**
180	1204 0.36	1202 0.35	1211 0.33	1218 0.33		8	9	
200	1304 0.39	1294 0.38	1296 0.36	1298 0.35		9	10	
220	1403 0.42	1386 0.41	1382 0.40	1378 0.38		10	11	
240	1503 0.46	1478 0.44	1467 0.43	1458 0.41	1459 0.41	10	12	11
260	1603 0.49	1570 0.48	1553 0.46	1538 0.44	1534 0.43	11	12	12
280	1702 0.53	1662 0.51	1639 0.49	1618 0.47	1609 0.46	12	13	13
300	1802 0.56	1754 0.54	1725 0.52	1698 0.50	1685 0.49	13	14	14
320	1902 1.00	1847 0.58	1810 0.55	1778 0.53	1760 0.51	14	15	15
340	2002 1.03	1939 1.01	1896 0.58	1858 0.56	1835 0.54	14	16	16
360	2102 1.06	2031 1.04	1982 1.01	1939 0.58	1911 0.57	15	17	17
380	2202 1.10	2124 1.07	2068 1.04	2019 1.01	1986 1.00	16	18	18
400	2302 1.13	2216 1.11	2155 1.07	2099 1.04	2062 1.02	17	18	19
420	2402	2309	2241	2180	2137	18	19	20

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 4 %

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ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT - ALL ENGINES
CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE - DESCENT : M.78/300KT/250KT
GO-AROUND : 100 KG - VMC PROCEDURE : 80 KG (4 MIN)

REF. LANDING WEIGHT = 55000 KG NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL					CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	230	**270**	**310**	**350**	**390**	**FL230 FL270**	**FL310 FL350**	**FL390**
	1.17	1.14	1.10	1.07	1.05			
440	2503 1.20	2402 1.17	2327 1.14	2261 1.10	2213 1.08	18	20	21
460	2603 1.23	2495 1.20	2413 1.17	2341 1.13	2289 1.10	19	21	21
480	2704 1.27	2588 1.24	2500 1.20	2422 1.16	2365 1.13	20	22	22
500	2804 1.30	2680 1.27	2586 1.23	2503 1.18	2441 1.16	21	23	23

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 1 %	+ 4 %

ALTERNATE PLANNING ISA

Ident.: PER-FPL-FLP-ALN-20-00001833.0010001 / 02 MAR 11

5 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT
GO-AROUND : 100 KG - CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE
DESCENT : M.78/300KT/250KT - VMC PROCEDURE : 80 KG (4MIN)

REF. LDG. WT AT ALTERNATE = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 100	120	140	160	180	200	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL100 FL120	FL140 FL160	FL180 FL200
20									
40	529 0.12						2		
60	680 0.16	658 0.16					3		
80	832 0.20	805 0.20	803 0.20	803 0.20	805 0.19		5	4	4
100	984 0.24	952 0.24	945 0.24	941 0.23	939 0.23	938 0.22	6	6	5
120	1136 0.28	1099 0.28	1088 0.28	1080 0.27	1072 0.26	1065 0.26	7	7	6
140	1289 0.32	1246 0.32	1230 0.32	1218 0.30	1206 0.29	1192 0.29	9	8	6
160	1441 0.36	1393 0.36	1373 0.35	1357 0.34	1340 0.33	1319 0.32	10	10	7
180	1594 0.40	1541 0.40	1517 0.39	1496 0.38	1474 0.36	1446 0.35	11	11	8
200	1747 0.45	1689 0.44	1660 0.43	1635 0.41	1608 0.39	1573 0.38	13	12	9
220	1900 0.49	1837 0.48	1804 0.47	1774 0.45	1742 0.42	1701 0.42	14	14	9
240	2054 0.53	1985 0.52	1947 0.51	1914 0.48	1877 0.46	1828 0.45	15	15	10
260	2208 0.57	2134 0.56	2091 0.55	2054 0.52	2011 0.49	1955 0.48	17	16	11
280	2361 1.01	2282 1.00	2236 0.58	2194 0.55	2146 0.52	2083 0.51	18	18	12
300	2515 1.05	2431 1.04	2380 1.02	2334 0.59	2281 0.55	2210 0.54	20	19	12
320	2670 1.09	2580 1.08	2525 1.06	2474 1.02	2416 0.58	2338 0.58	21	20	13
340	2824 1.13	2730 1.12	2670 1.10	2615 1.06	2551 1.02	2466 1.01	22	22	14
360	2979 1.17	2879 1.16	2815 1.14	2755 1.09	2686 1.05	2593 1.04	24	23	14
380	3134 1.21	3029 1.20	2960 1.17	2896 1.13	2821 1.08	2721 1.07	25	24	15
400	3289 1.25	3179 1.23	3105 1.21	3037 1.16	2957 1.11	2849 1.10	26	26	16
420	3444 1.29	3329 1.27	3251 1.25	3178 1.20	3092 1.14	2977 1.13	28	27	17
440	3599 1.33	3479 1.31	3396 1.29	3319 1.23	3227 1.18	3105 1.17	29	28	17
460	3755 1.37	3629 1.35	3542 1.32	3461 1.27	3362 1.21	3233 1.20	31	30	18
480	3911 1.41	3780 1.39	3688 1.36	3602 1.30	3498 1.24	3361 1.23	32	31	19
500	4067 1.45	3931 1.43	3834 1.40	3744 1.33	3633 1.27	3489 1.26	33	32	19

LOW AIR CONDITIONING ΔFUEL = – 0.3 %
ENGINE ANTI ICE ON ΔFUEL = + 2 %
TOTAL ANTI ICE ON ΔFUEL = + 5 %

FLIP23D 25.02.98 ; AERO : A320-232 01/06/97 ; MOTO : A320-232 01/06/97 ; GENE : A320-232 01/10/97 END OF FLIP FCOM-N0-02-05-50-002-140

ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT
GO-AROUND : 100 KG - CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE
DESCENT : M.78/300KT/250KT - VMC PROCEDURE : 80 KG (4MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 230	270	310	350	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL230 FL270	FL310 FL350	FL390
100								0
120	1063 0.25					6		0
140	1179 0.29	1190 0.28				7		0
160	1295 0.32	1295 0.31				8		0
180	1411 0.35	1400 0.34	1414 0.33			9	10	0
200	1527 0.38	1506 0.38	1512 0.36	1522 0.36		10	12	0
220	1643 0.41	1612 0.41	1611 0.39	1615 0.39		10	13	0
240	1760 0.45	1717 0.44	1710 0.42	1709 0.42		11	14	0
260	1876 0.48	1823 0.47	1809 0.45	1803 0.44	1806 0.44	12	15	16
280	1992 0.51	1929 0.50	1908 0.48	1897 0.47	1898 0.47	13	16	18
300	2109 0.54	2035 0.54	2007 0.51	1991 0.50	1990 0.49	13	17	19
320	2225 0.57	2141 0.57	2106 0.54	2086 0.53	2082 0.52	14	19	21
340	2342 1.00	2248 1.00	2205 0.57	2180 0.55	2174 0.55	15	20	22
360	2458 1.04	2354 1.03	2304 1.00	2274 0.58	2266 0.57	16	21	24
380	2575 1.07	2461 1.06	2404 1.03	2369 1.01	2359 1.00	17	22	25
400	2692 1.10	2567 1.09	2503 1.06	2464 1.04	2451 1.03	17	23	27
420	2809 1.13	2674 1.13	2603 1.09	2559 1.07	2544 1.05	18	24	28
440	2926 1.16	2781 1.16	2702 1.12	2654 1.09	2637 1.08	19	26	30
460	3043 1.20	2888 1.19	2802 1.15	2749 1.12	2730 1.11	20	27	31
480	3160 1.23	2995 1.22	2902 1.18	2844 1.15	2823 1.13	21	28	33
500	3277 1.26	3102 1.25	3002 1.21	2940 1.18	2916 1.16	21	29	35

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = – 0.3 %	△FUEL = + 2 %	△FUEL = + 5 %

FLIP23D 25.02.98 ; AERO : A320-232 01/06/97 ; MOTO : A320-232 01/06/97 ; GENE : A320-232 01/10/97 END OF FLIP FCOM-N0-02-05-50-003-140

ALTERNATE PLANNING ISA

Ident.: PER-FPL-FLP-ALN-20-00001833.0025001 / 02 MAR 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT
GO-AROUND : 100 KG - CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE
DESCENT : M.78/300KT/250KT - VMC PROCEDURE : 80 KG (4MIN)

REF. LDG. WT AT ALTERNATE = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 100	120	140	160	180	200	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL100 FL120	FL140 FL160	FL180 FL200
20									
40	522 0.12						2		
60	676 0.16	659 0.16	660 0.16				3	4	
80	831 0.19	807 0.20	802 0.20	801 0.19	805 0.19		5	5	5
100	986 0.23	955 0.23	943 0.23	937 0.23	934 0.23	937 0.22	6	5	6
120	1140 0.27	1103 0.27	1085 0.27	1072 0.26	1064 0.26	1061 0.26	7	6	7
140	1296 0.31	1251 0.31	1227 0.30	1208 0.30	1193 0.30	1185 0.29	8	7	8
160	1451 0.34	1400 0.34	1369 0.34	1344 0.33	1323 0.33	1309 0.33	9	8	9
180	1606 0.38	1548 0.38	1511 0.37	1480 0.37	1452 0.36	1434 0.36	10	9	10
200	1762 0.42	1697 0.42	1653 0.41	1616 0.40	1582 0.40	1559 0.40	11	10	11
220	1918 0.46	1846 0.45	1796 0.44	1752 0.44	1712 0.43	1684 0.43	12	11	12
240	2074 0.49	1995 0.49	1938 0.48	1889 0.47	1842 0.47	1809 0.46	13	12	12
260	2231 0.53	2144 0.53	2081 0.51	2025 0.51	1972 0.50	1934 0.50	14	13	13
280	2387 0.57	2294 0.56	2224 0.55	2162 0.54	2103 0.54	2059 0.53	15	14	14
300	2544 1.00	2443 1.00	2367 0.59	2299 0.57	2233 0.57	2184 0.57	16	15	15
320	2701 1.04	2593 1.04	2510 1.02	2436 1.01	2364 1.01	2310 1.00	17	16	16
340	2858 1.08	2743 1.07	2653 1.06	2573 1.04	2494 1.04	2435 1.04	18	16	17
360	3014 1.12	2893 1.11	2796 1.09	2710 1.08	2625 1.08	2561 1.07	19	17	18
380	3171 1.15	3043 1.14	2940 1.13	2847 1.11	2756 1.11	2687 1.11	20	18	19
400	3329 1.19	3193 1.18	3084 1.16	2984 1.15	2886 1.15	2813 1.14	21	19	20
420	3486 1.23	3343 1.22	3227 1.20	3122 1.18	3018 1.18	2939 1.17	22	20	21
440	3643 1.26	3494 1.25	3371 1.23	3259 1.22	3149 1.22	3065 1.21	23	21	22
460	3801 1.30	3644 1.29	3515 1.27	3397 1.25	3280 1.25	3192 1.24	24	22	23
480	3959 1.34	3795 1.32	3659 1.30	3534 1.28	3412 1.29	3318 1.28	25	23	24
500	4117 1.37	3946 1.36	3803 1.34	3672 1.32	3543 1.32	3445 1.31	26	24	25

LOW AIR CONDITIONING
△FUEL = − 0.5 %

ENGINE ANTI ICE ON
△FUEL = + 3 %

TOTAL ANTI ICE ON
△FUEL = + 6.5 %

FLIP23D A320-214 CFM56-5B4/P SA3520 03301.000010 100250300 .7801 .00200 80 0300300 55 0 100100 40100 18590 FCOM-02-05-50-002-180

ALTERNATE PLANNING FROM DESTINATION TO ALTERNATE AIRPORT
GO-AROUND : 100 KG - CLIMB : 250KT/300KT/M.78 - CRUISE : LONG RANGE
DESCENT : M.78/300KT/250KT - VMC PROCEDURE : 80 KG (4MIN)

REF. LANDING WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 230	270	310	350	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL230 FL270	FL310 FL350	FL390
100								0
120	1065 0.25					7		0
140	1183 0.29	1193 0.28				9		0
160	1301 0.32	1303 0.31	1319 0.30			10	10	0
180	1419 0.35	1413 0.34	1422 0.33			11	12	0
200	1538 0.38	1523 0.37	1524 0.36	1531 0.35		12	13	0
220	1656 0.42	1633 0.40	1627 0.39	1628 0.38		13	14	0
240	1775 0.45	1744 0.43	1730 0.42	1724 0.41		14	15	0
260	1893 0.48	1854 0.46	1832 0.45	1822 0.44	1822 0.43	15	16	17
280	2012 0.52	1965 0.49	1935 0.48	1919 0.46	1915 0.46	16	17	18
300	2131 0.55	2076 0.52	2038 0.51	2016 0.49	2009 0.49	17	18	20
320	2250 0.58	2186 0.55	2142 0.54	2113 0.52	2103 0.51	18	19	21
340	2369 1.02	2297 0.58	2245 0.56	2211 0.55	2196 0.54	19	21	23
360	2489 1.05	2408 1.01	2348 0.59	2308 0.58	2290 0.57	20	22	24
380	2608 1.08	2519 1.04	2452 1.02	2406 1.00	2385 0.59	21	23	26
400	2728 1.12	2630 1.07	2555 1.05	2504 1.03	2479 1.02	22	24	27
420	2847 1.15	2742 1.10	2659 1.08	2602 1.06	2573 1.05	23	25	27
440	2967 1.18	2853 1.13	2763 1.11	2700 1.09	2668 1.07	24	26	28
460	3087 1.21	2965 1.16	2867 1.14	2798 1.11	2762 1.10	25	27	30
480	3207 1.25	3076 1.19	2971 1.17	2896 1.14	2857 1.13	26	28	31
500	3327 1.28	3188 1.22	3075 1.20	2994 1.17	2952 1.16	27	29	32

LOW AIR CONDITIONING
△FUEL = − 0.5 %

ENGINE ANTI ICE ON
△FUEL = + 3 %

TOTAL ANTI ICE ON
△FUEL = + 5 %

FLIP23D A320-214 CFM56-5B4/P SA3520 03301.000010 100250300 .7801 .00200 80 0300300 55 0 100100 40100 18590 FCOM-02-05-50-003-180

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PERFORMANCE

CLIMB

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PER-CLB-GEN GENERAL

GENERAL ..... A

PER-CLB-CLT CLIMB TABLES

CLIMB - ISA +10 ..... A
CLIMB - ISA +20 ..... B

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Localization Title	Toc Index	ID	Reason
PER-CLB-CLT CLIMB - ISA +10	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-CLB-CLT CLIMB - ISA +10	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-CLB-CLT CLIMB - ISA +10	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-CLB-CLT CLIMB - ISA +20	B	4	Effectivity update: The information now also applies to MSN 09063.
PER-CLB-CLT CLIMB - ISA +20	B	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-CLB-CLT CLIMB - ISA +20	B	6	Effectivity update: The information no longer applies to MSN 05449.

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GENERAL

Ident.: PER-CLB-GEN-00001982.0001001 / 15 FEB 11
Applicable to: ALL

Climb tables are established at MAX CLIMB THRUST with air conditioning in normal mode and anti ice OFF.

The climb speed profile is :
- 250 kt from 1 500 ft up to FL 100
- acceleration from 250 kt to 300 kt
- climb at 300 kt then M .78 up to selected altitude.

All charts are established with a center of gravity corresponding to 33 %.

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CLIMB - ISA +10

Ident.: PER-CLB-CLT-00001987.0121001 / 30 OCT 18

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST NORMAL AIR CONDITIONING ANTI ICE OFF	ISA+10 CG=33.0%	**FROM BRAKE RELEASE** **TIME (MIN)** **FUEL (KG)** **DISTANCE (NM)** **TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)							
	60	62	64	66	68	70	72	74	76
390	17 1279 112 397	18 1340 118 398	19 1405 124 399	20 1473 131 400	21 1547 139 401	22 1626 147 402	23 1715 157 404	25 1814 169 406	
370	15 1192 98 390	16 1246 103 391	16 1302 108 391	17 1360 113 392	18 1421 118 393	19 1484 124 393	20 1552 131 394	21 1624 138 395	22 1701 145 397
350	14 1119 87 383	14 1168 91 383	15 1219 95 384	16 1271 99 384	16 1324 104 385	17 1380 109 386	18 1438 114 386	18 1499 119 387	19 1563 125 388
330	12 1054 78 375	13 1099 81 376	14 1145 85 376	14 1192 89 377	15 1241 92 377	15 1292 96 378	16 1344 101 378	17 1398 105 379	17 1454 110 380
310	11 991 70 367	12 1032 73 367	12 1075 76 368	13 1119 79 368	13 1164 82 369	14 1210 86 369	14 1257 89 370	15 1306 93 370	16 1357 97 371
290	10 926 62 357	11 964 64 357	11 1003 67 357	12 1043 70 358	12 1084 72 358	13 1126 75 359	13 1170 78 359	14 1214 82 359	14 1260 85 360
270	9 848 52 343	10 883 55 344	10 918 57 344	10 954 59 344	11 991 62 345	11 1029 64 345	12 1068 67 345	12 1108 69 346	12 1148 72 346
250	8 778 45 330	8 810 47 331	9 842 49 331	9 875 51 331	10 908 53 332	10 942 55 332	10 977 57 332	11 1013 59 333	11 1050 61 333
240	8 745 42 324	8 775 43 324	8 806 45 325	9 837 47 325	9 869 49 325	9 901 50 325	10 935 52 326	10 969 54 326	10 1004 56 326
220	7 683 36 312	7 710 37 312	7 738 39 312	8 767 40 312	8 796 42 313	8 825 43 313	9 855 45 313	9 886 46 313	9 917 48 314
200	6 624 30 299	6 649 32 299	7 675 33 300	7 701 34 300	7 727 36 300	7 754 37 300	8 781 38 301	8 809 40 301	8 837 41 301
180	5 569 26 287	6 592 27 287	6 615 28 287	6 638 29 287	6 662 30 288	7 686 31 288	7 711 33 288	7 736 34 289	7 762 35 289
160	5 516 22 274	5 537 23 274	5 558 24 274	5 579 25 275	6 601 26 275	6 623 27 275	6 645 28 276	6 668 29 276	6 691 30 276
140	4 465	4 484	5 503	5 522	5 542	5 561	5 582	6 602	6 623

CORRECTIONS	LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.8 %	+ 2.2 %	+ 2.5 %	+ 5.8 %

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CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST	ISA+10	**FROM BRAKE RELEASE**
NORMAL AIR CONDITIONING	CG=33.0%	**TIME (MIN)** **FUEL (KG)**
ANTI ICE OFF		**DISTANCE (NM)** **TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)								
	60	62	64	66	68	70	72	74	76
	19 261	19 261	20 261	21 261	22 262	23 262	23 262	24 263	25 263
120	4 416 15 246	4 433 16 246	4 449 17 246	4 467 17 247	4 484 18 247	5 502 19 247	5 520 19 248	5 538 20 248	5 557 21 249
100	3 367 12 229	3 382 13 229	4 397 13 230	4 412 14 230	4 428 15 230	4 443 15 231	4 459 16 231	4 476 16 232	4 492 17 232
50	2 221 5 181	2 230 6 181	2 239 6 182	2 249 6 182	2 258 6 183	2 268 7 184	2 277 7 184	2 287 7 185	2 297 8 186
15	1 143 2 132	1 149 3 132	1 155 3 133	1 161 3 134	1 167 3 134	1 174 3 135	1 180 3 136	1 186 3 137	2 192 3 138

CORRECTIONS	LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.8 %	+ 2.2 %	+ 2.5 %	+ 5.8 %

CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST	ISA+10	**FROM BRAKE RELEASE**
NORMAL AIR CONDITIONING	CG=33.0%	**TIME (MIN)** **FUEL (KG)**
ANTI ICE OFF		**DISTANCE (NM)** **TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)											
	78	80	82	84	86	88	90	92	94	96	98	100
390												
370	231784 154398	251876 163400	261980 174401									
350	201630 131389	211700 137390	221776 144391	231858 152392	241947 161394	262045 170396	272155 182397	292284 195400				
330	181512 114380	191573 119381	201637 125382	201705 131383	211776 137384	221851 143385	231933 151386	252022 159388	262119 168389	272227 178391	292346 190393	
310	161409 101371	171463 105372	181519 109373	181578 114373	191640 119374	201704 124375	211772 130376	221845 135377	231922 142378	242005 149379	252093 157381	262191 165382
290	151307 88 360	151356 92 361	161406 95 362	161458 99 362	171513 103363	181569 107364	181628 112364	191691 116365	201757 121366	211827 127367	221900 132368	231979 139369

CORRECTIONS	LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.9 %	+ 2.3 %	+ 2.6 %	+ 8.9 %

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CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST	ISA+10	**FROM BRAKE RELEASE**
NORMAL AIR CONDITIONING	CG=33.0%	**TIME (MIN) FUEL (KG)**
ANTI ICE OFF		**DISTANCE (NM) TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)											
	78	**80**	**82**	**84**	**86**	**88**	**90**	**92**	**94**	**96**	**98**	**100**
270	131190 74 347	131233 77 347	141278 80 348	141324 83 348	151371 86 349	151420 90 349	161471 93 350	171525 97 351	171581 101351	181640 105352	191701 109353	191767 114354
250	111087 63 333	121126 66 334	121165 68 334	131206 71 335	131248 73 335	141291 76 336	141336 79 336	151383 82 337	151432 85 337	161483 88 338	161535 91 339	171591 95 339
240	111039 58 327	111076 61 327	111113 63 328	121152 65 328	121191 67 329	131232 70 329	131274 72 330	141319 75 330	141364 78 331	151412 81 331	151461 84 332	161513 87 333
220	10 949 50 314	10 982 52 315	101015 53 315	111050 55 315	111086 57 316	111122 59 316	121160 61 317	121199 64 317	121240 66 318	131282 68 318	131325 71 319	141371 73 320
200	8 866 43 302	9 896 44 302	9 926 46 303	9 957 47 303	10 989 49 303	101022 51 304	101056 52 304	111091 54 305	111127 56 305	111165 58 306	121203 60 306	121244 62 307
180	8 788 36 289	8 815 38 290	8 843 39 290	8 871 40 291	9 900 42 291	9 929 43 291	9 960 45 292	9 991 46 292	101024 48 293	101057 49 293	101092 51 294	111127 53 295
160	7 715 31 277	7 739 32 277	7 764 33 277	7 789 34 278	8 815 35 278	8 842 37 279	8 869 38 279	8 898 39 280	9 927 40 280	9 957 42 281	9 988 43 282	101020 45 282
140	6 644 26 263	6 666 27 264	6 689 28 264	7 711 29 265	7 735 30 265	7 759 31 266	7 784 32 267	7 809 33 267	8 835 34 268	8 862 35 268	8 890 37 269	8 918 38 270
120	5 576 22 249	5 596 22 250	6 616 23 250	6 636 24 251	6 657 25 251	6 679 26 252	6 701 27 253	7 723 27 253	7 746 28 254	7 770 29 255	7 795 30 255	7 821 31 256
100	5 509 17 233	5 527 18 233	5 544 19 234	5 563 19 235	5 581 20 235	5 600 21 236	5 620 22 237	6 640 22 238	6 660 23 238	6 681 24 239	6 703 25 240	6 726 26 241
50	3 307 8 186	3 317 8 187	3 327 8 188	3 337 9 189	3 348 9 190	3 359 9 191	3 370 10 192	3 381 10 193	3 392 10 194	3 404 11 195	3 416 11 196	3 428 11 197
15	2 199 4 139	2 205 4 140	2 212 4 141	2 218 4 142	2 225 4 144	2 231 4 145	2 238 5 146	2 245 5 147	2 252 5 149	2 258 5 150	2 265 5 151	2 272 5 153

CORRECTIONS	LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.9 %	+ 2.3 %	+ 2.6 %	+ 8.9 %

CLIMB - ISA +10

Ident.: PER-CLB-CLT-00001987.0112001 / 16 MAR 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST	ISA+10	**FROM BRAKE RELEASE**
NORMAL AIR CONDITIONING	CG=33.0%	**TIME (MIN)** **FUEL (KG)**
ANTI ICE OFF		**DISTANCE (NM)** **TAS (KT)**

	WEIGHT AT BRAKE RELEASE (1000KG)													
FL	**52**		**54**		**56**		**58**		**60**		**62**		**64**	
390	16	1081	17	1136	18	1194	19	1254	20	1317	21	1384	22	1456
	107	395	113	396	119	396	126	397	133	398	141	399	150	401
370	14	1013	15	1063	16	1114	17	1167	18	1222	18	1279	19	1339
	93	388	98	388	103	389	109	389	114	390	120	391	126	392
350	13	954	14	1000	14	1047	15	1095	16	1145	17	1196	17	1249
	83	380	87	381	92	381	96	382	101	382	106	383	111	384
330	12	900	13	943	13	986	14	1030	14	1076	15	1123	16	1171
	74	372	78	373	82	373	85	374	89	374	94	375	98	375
310	11	848	11	887	12	928	13	969	13	1010	14	1053	14	1098
	66	364	69	364	73	364	76	365	79	365	83	366	87	366
290	10	794	10	830	11	867	11	905	12	943	12	983	13	1023
	59	353	61	354	64	354	67	354	70	355	73	355	76	356
270	9	728	9	761	10	795	10	829	11	864	11	899	11	936
	50	340	53	340	55	341	57	341	60	341	62	341	65	342
250	8	670	8	700	9	731	9	762	9	794	10	826	10	859
	43	328	45	328	47	328	49	328	51	328	54	329	56	329
240	8	642	8	672	8	701	9	731	9	761	9	792	10	823
	40	322	42	322	44	322	46	322	48	322	50	323	52	323
220	7	590	7	617	7	644	8	671	8	699	8	727	9	755
	35	310	36	310	38	310	40	310	41	311	43	311	45	311
200	6	540	6	565	7	589	7	614	7	639	7	665	8	691
	30	298	31	298	33	298	34	298	36	299	37	299	39	299
180	5	492	6	514	6	537	6	560	6	582	7	606	7	629
	26	285	27	286	28	286	29	286	30	286	32	287	33	287
160	5	446	5	466	5	486	5	507	6	527	6	548	6	570
	22	272	23	273	24	273	25	273	26	273	27	274	28	274
140	4	400	4	419	5	437	5	456	5	474	5	493	5	512

CORRECTIONS	**LOW AIR CONDITIONING**	**HIGH AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 2 %	+ 2.5 %	+ 6 %

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CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST NORMAL AIR CONDITIONING ANTI ICE OFF	ISA+10 CG=33.0%	**FROM BRAKE RELEASE** **TIME (MIN)** **FUEL (KG)** **DISTANCE (NM)** **TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)													
	52		54		56		58		60		62		64	
	18	259	19	259	20	259	21	259	22	259	23	260	23	260
120	4	356	4	373	4	389	4	406	4	422	5	439	5	456
	15	243	16	243	16	244	17	244	18	244	19	245	19	245
100	3	313	3	328	4	343	4	357	4	372	4	387	4	402
	12	226	13	226	13	227	14	227	14	227	15	228	16	228
100	3	285	3	298	3	312	3	325	3	338	4	352	4	366
	10	215	11	215	11	216	12	216	12	216	13	217	13	218
50	2	188	2	197	2	206	2	215	2	224	2	233	2	242
	5	177	6	178	6	178	6	179	6	179	7	180	7	181
15	1	120	1	126	1	133	1	138	1	144	1	150	1	156
	2	127	3	128	3	128	3	129	3	130	3	131	3	132

CORRECTIONS	LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 2 %	+ 2.5 %	+ 6 %

CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST NORMAL AIR CONDITIONING ANTI ICE OFF	ISA+10 CG=33.0%	**FROM BRAKE RELEASE** **TIME (MIN)** **FUEL (KG)** **DISTANCE (NM)** **TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)															
	66		68		70		72		74		76		78		79	
390	24	1536	25	1626												
	160	402	171	404												
370	20	1401	21	1468	23	1539	24	1616	25	1702	27	1798				
	133	393	140	394	148	395	157	396	167	398	179	399				
350	18	1305	19	1362	20	1422	21	1486	22	1553	23	1625	24	1702	25	1743
	116	384	122	385	128	386	134	387	141	388	148	389	156	390	161	391
330	16	1221	17	1272	18	1326	19	1382	19	1441	20	1503	21	1567	22	1600
	102	376	107	377	112	377	117	378	122	379	128	380	134	380	137	381
310	15	1143	15	1190	16	1238	17	1289	17	1342	18	1397	19	1454	19	1483

CORRECTIONS	LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 2 %	+ 2.5 %	+ 7 %

Continued on the following page

Continued from the previous page

CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST	ISA+10	**FROM BRAKE RELEASE**
NORMAL AIR CONDITIONING	CG=33.0%	**TIME (MIN)** **FUEL (KG)**
ANTI ICE OFF		**DISTANCE (NM)** **TAS (KT)**

	WEIGHT AT BRAKE RELEASE (1000KG)															
FL	**66**		**68**		**70**		**72**		**74**		**76**		**78**		**79**	
	90	367	94	367	98	368	103	369	107	369	112	370	117	371	119	371
290	13	1065	14	1107	14	1151	15	1197	16	1244	16	1294	17	1345	17	1371
	79	356	83	357	86	357	90	358	94	358	97	359	102	359	104	359
270	12	973	12	1011	13	1050	13	1091	14	1133	14	1177	15	1222	15	1245
	68	342	70	343	73	343	76	344	79	344	82	344	86	345	87	345
250	11	893	11	927	11	963	12	999	12	1037	13	1077	13	1117	13	1138
	58	330	60	330	63	330	65	331	68	331	70	332	73	332	75	332
240	10	855	10	888	11	922	11	957	12	993	12	1031	12	1069	13	1088
	54	324	56	324	58	324	61	325	63	325	65	326	68	326	69	326
220	9	785	9	815	10	845	10	877	10	909	11	943	11	978	11	996
	47	312	48	312	50	312	52	313	54	313	56	313	58	314	59	314
200	8	718	8	745	9	773	9	801	9	831	10	862	10	893	10	909
	40	300	42	300	43	301	45	301	47	301	48	302	50	302	51	302
180	7	654	7	678	8	703	8	729	8	756	9	784	9	812	9	827
	34	287	36	288	37	288	38	289	40	289	41	289	43	290	44	290
160	6	592	7	614	7	636	7	660	7	684	8	709	8	735	8	748
	29	275	30	275	31	275	33	276	34	276	35	276	36	277	37	277
140	6	532	6	552	6	572	6	593	6	615	7	638	7	661	7	672
	24	261	25	261	26	262	27	262	28	263	29	263	30	263	31	263
120	5	474	5	492	5	510	5	529	6	548	6	568	6	589	6	599
	20	246	21	246	22	247	23	247	23	248	24	248	25	249	26	249
100	4	417	4	433	5	449	5	466	5	483	5	501	5	519	5	528
	16	229	17	230	18	230	18	231	19	231	20	232	20	232	21	232
100	4	380	4	394	4	408	4	424	4	439	5	456	5	472	5	481
	14	218	14	219	15	220	16	220	16	221	17	221	18	222	18	222
50	2	251	3	260	3	270	3	280	3	291	3	301	3	312	3	318
	7	182	8	183	8	184	8	184	9	185	9	186	9	187	9	187
15	2	162	2	168	2	174	2	181	2	188	2	195	2	203	2	206
	3	134	4	135	4	136	4	137	4	139	4	140	4	141	5	141

CORRECTIONS	**LOW AIR CONDITIONING**	**HIGH AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 2 %	+ 2.5 %	+ 7 %

CLIMB - ISA +10

Ident.: PER-CLB-CLT-00001987.0065001 / 15 FEB 11

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CLIMB - 250KT/300KT/M.78

MAX. CLIMB THRUST
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA+10
CG=33.0%

FROM BRAKE RELEASE
TIME (MIN) FUEL (KG)
DISTANCE (NM) TAS (KT)

FL	WEIGHT AT BRAKE RELEASE (1000KG)											
	52		54		56		58		60		62		64	
390	19	1392	20	1470	21	1552	23	1642	24	1742	26	1853		
	124	396	132	397	141	398	150	400	161	401	173	403		
370	17	1301	18	1369	19	1440	20	1514	21	1594	22	1679	23	1770
	109	389	115	390	122	391	129	392	136	392	144	393	153	395
350	15	1225	16	1287	17	1351	18	1418	19	1487	20	1561	21	1639
	98	382	103	383	108	384	114	384	120	385	126	386	133	387
330	14	1156	15	1213	15	1272	16	1333	17	1396	18	1462	19	1532
	88	375	92	376	97	376	102	377	107	378	113	378	118	379
310	13	1088	14	1140	14	1195	15	1251	16	1309	16	1370	17	1433
	79	367	83	368	87	368	91	369	96	369	100	370	105	370
290	12	1015	12	1063	13	1113	13	1165	14	1218	15	1273	15	1330
	70	357	73	357	77	358	80	358	84	359	88	359	92	360
270	10	927	11	971	11	1016	12	1062	12	1109	13	1158	14	1209
	59	343	62	344	65	344	68	345	71	345	75	345	78	346
250	9	847	10	887	10	927	11	969	11	1012	11	1056	12	1101
	51	330	53	331	56	331	58	332	61	332	64	332	66	332
240	9	810	9	847	10	886	10	925	10	966	11	1008	11	1051
	47	324	49	324	51	325	54	325	56	325	59	326	61	326
220	8	739	8	773	8	808	9	844	9	880	10	918	10	957
	40	311	42	312	44	312	46	312	48	313	50	313	52	313
200	7	673	7	703	8	735	8	767	8	800	9	834	9	869
	34	298	36	299	37	299	39	299	41	300	43	300	44	300
180	6	609	6	637	7	665	7	694	7	724	8	755	8	786
	29	285	30	285	32	286	33	286	34	286	36	287	37	287
160	5	549	6	574	6	600	6	626	6	652	7	680	7	708
	24	271	25	272	27	272	28	272	29	273	30	273	31	273
140	5	492	5	514	5	537	5	560	6	584	6	609	6	634
	20	257	21	257	22	258	23	258	24	258	25	259	26	259
120	4	437	4	457	5	477	5	498	5	519	5	541	5	564
	17	242	18	242	18	243	19	243	20	243	21	243	22	244
100	3	349	3	365	4	381	4	398	4	415	4	432	4	450
	12	214	12	214	13	215	13	215	14	216	14	216	15	216
50	2	227	2	237	2	248	2	259	2	270	3	281	3	293
	6	176	6	177	7	177	7	178	7	178	8	178	8	179
15	1	142	1	148	1	155	2	161	2	168	2	175	2	183
	3	128	3	128	3	129	3	129	3	130	4	130	4	130

LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = – 0.6 %	△FUEL = + 0.6 %	△FUEL = + 2.5 %	△FUEL = + 5 %

11.0-08F0A320-214 CFM56-5B4/P SA21100000C5KG330 0 018590 0 0 2 1.0 500.0 300.00 1 03250.000300.000 .780 10 FCOM-N0-03-05-10-004-170

CLIMB - 250KT/300KT/M.78

MAX. CLIMB THRUST | ISA+10 | **FROM BRAKE RELEASE**
NORMAL AIR CONDITIONING | CG=33.0% | **TIME (MIN) FUEL (KG)**
ANTI-ICING OFF | | **DISTANCE (NM) TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)						
	66	**68**	**70**	**72**	**74**	**76**	**78**
390							
370	25 1870 163 396	26 1981 175 398	28 2106 189 400				
350	22 1721 141 388	23 1809 149 389	24 1904 158 390	26 2008 168 392	27 2124 179 394	29 2254 192 396	31 2403 208 399
330	20 1604 124 380	21 1680 131 381	22 1761 138 382	23 1848 145 383	24 1941 153 384	25 2042 163 386	27 2152 173 388
310	18 1498 110 371	19 1566 116 372	20 1638 121 373	20 1714 127 374	21 1794 134 375	22 1879 141 376	24 1970 149 377
290	16 1389 97 360	17 1451 101 361	18 1515 106 362	18 1582 111 363	19 1653 116 364	20 1728 122 365	21 1806 128 366
270	14 1261 82 346	15 1315 85 347	15 1372 89 348	16 1430 93 348	17 1491 97 349	17 1555 102 350	18 1622 106 351
250	12 1148 69 333	13 1196 72 334	14 1246 75 334	14 1297 79 335	15 1351 82 336	15 1407 86 337	16 1465 89 337
240	12 1095 64 326	12 1140 67 327	13 1188 69 328	13 1236 72 328	14 1287 76 329	14 1339 79 330	15 1394 82 331
220	10 996 54 313	11 1037 57 314	11 1079 59 315	12 1123 61 315	12 1168 64 316	13 1214 67 317	13 1263 69 318
200	9 904 46 301	10 941 48 301	10 979 50 302	10 1018 52 302	11 1058 54 303	11 1099 56 304	12 1142 59 305
180	8 818 39 287	8 851 41 288	9 885 42 288	9 920 44 289	9 955 46 290	10 992 48 291	10 1031 49 291
160	7 737 33 274	7 766 34 274	8 797 36 275	8 828 37 275	8 860 38 276	9 893 40 277	9 927 41 278
140	6 660 27 259	7 686 28 260	7 713 30 261	7 741 31 261	7 769 32 262	8 799 33 263	8 829 35 264
120	6 586 23 244	6 610 23 245	6 634 24 246	6 659 25 246	6 684 26 247	7 710 27 248	7 737 28 249
100	4 468 16 217	5 487 16 218	5 506 17 218	5 526 18 219	5 546 18 220	5 567 19 221	5 588 20 222
50	3 304 8 180	3 316 9 180	3 328 9 182	3 341 9 183	3 354 10 184	3 367 10 185	3 380 10 186
15	2 190 4 131	2 198 4 132	2 205 4 133	2 213 4 134	2 221 4 136	2 229 5 137	2 237 5 139

LOW AIR CONDITIONING △FUEL = − 0.6 %
HIGH AIR CONDITIONING △FUEL = + 0.6 %
ENGINE ANTI ICE ON △FUEL = + 2.5 %
TOTAL ANTI ICE ON △FUEL = + 5 %

11.0-08F0A320-214 CFM56-5B4/P SA21100000C5KG330 0 018590 0 0 2 1.0 500.0 300.00 1 03250.000300.000 .780 10 FCOM-N0-03-05-10-005-170

CLIMB - ISA +10

Ident.: PER-CLB-CLT-00001987.0010001 / 15 FEB 11

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

CLIMB - 250KT/300KT/M.78

MAX. CLIMB THRUST
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA+10
CG=33.0%

FROM BRAKE RELEASE
TIME (MIN) FUEL (KG)
DISTANCE (NM) TAS (KT)

	WEIGHT AT BRAKE RELEASE (1000KG)													
FL	52		54		56		58		60		62		64	
390	18	1370	19	1440	20	1515	21	1594	23	1681	24	1778	26	1889
	119	393	126	394	133	394	141	396	150	397	160	398	173	400
370	16	1290	17	1352	18	1417	19	1486	20	1557	21	1634	22	1717
	106	386	111	387	117	387	123	388	130	389	137	390	145	391
350	15	1222	16	1278	17	1338	17	1399	18	1463	19	1531	20	1603
	95	379	100	380	105	381	110	381	116	382	121	382	128	383
330	14	1158	15	1211	15	1265	16	1322	17	1380	17	1442	18	1506
	87	373	91	373	95	373	99	374	104	374	109	375	114	375
310	13	1095	13	1144	14	1195	15	1247	15	1300	16	1356	17	1415
	78	365	82	365	86	366	89	366	93	366	97	367	102	367
290	12	1027	12	1073	13	1120	13	1168	14	1217	15	1268	15	1322
	70	355	73	356	76	356	79	356	83	356	86	357	90	357
270	10	943	11	985	11	1027	12	1071	12	1115	13	1162	13	1210
	60	342	62	343	65	343	68	343	71	343	74	343	77	344
250	9	866	10	904	10	943	11	983	11	1024	12	1066	12	1109
	51	330	54	330	56	330	58	330	61	331	63	331	66	331
240	9	830	9	866	10	903	10	941	10	980	11	1020	11	1062
	48	324	50	324	52	324	54	324	56	324	59	324	61	325
220	8	760	8	793	9	827	9	862	9	897	10	933	10	971
	41	311	43	311	45	312	46	312	48	312	50	312	52	312
200	7	694	7	725	8	756	8	787	8	819	9	852	9	887
	35	299	37	299	38	299	40	299	41	299	43	299	45	300
180	6	632	7	660	7	688	7	717	7	746	8	776	8	807
	30	286	31	286	33	287	34	287	35	287	37	287	38	287
160	6	572	6	597	6	623	6	649	7	676	7	703	7	731
	25	273	26	273	28	274	29	274	30	274	31	274	32	274
140	5	514	5	537	5	560	6	583	6	607	6	632	6	657
	21	259	22	259	23	260	24	260	25	260	26	260	27	260
120	4	457	4	477	5	498	5	519	5	541	5	563	5	585
	17	244	18	244	19	244	20	245	21	245	21	245	22	245
100	3	365	3	381	4	397	4	414	4	432	4	450	4	468
	12	215	13	216	13	216	14	217	14	217	15	217	15	218
50	2	235	2	245	2	256	2	267	2	278	3	289	3	301
	6	178	7	179	7	179	7	179	7	180	8	180	8	180
15	1	142	1	148	1	155	2	161	2	168	2	175	2	183
	3	128	3	128	3	129	3	129	3	130	4	130	4	130

LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = − 0.4 %	△FUEL = + 0.4 %	△FUEL = + 6 %	△FUEL = + 11 %

10F -08F0A320-232 IAE V2527-A5 21100000C5KG330 0 018590 0 0 2 1.0 500.0 300.0 1 03250.000300.000 .780 10 FCOM-N0-03-05-10-004-140

CLIMB - 250KT/300KT/M.78

MAX. CLIMB THRUST | ISA+10 | **FROM BRAKE RELEASE**
NORMAL AIR CONDITIONING | CG=33.0% | **TIME (MIN) FUEL (KG)**
ANTI-ICING OFF | | **DISTANCE (NM) TAS (KT)**

	WEIGHT AT BRAKE RELEASE (1000KG)						
FL	66	68	70	72	74	76	78
390							
370	24 1808 154 392	25 1908 164 394	27 2021 175 396	29 2152 190 398			
350	21 1680 134 384	22 1762 142 385	23 1850 150 387	25 1946 159 388	26 2051 169 390	28 2169 180 392	30 2305 194 394
330	19 1575 120 376	20 1647 126 377	21 1724 132 378	22 1805 139 379	23 1892 146 381	24 1986 155 382	26 2087 164 384
310	17 1478 107 368	18 1543 112 369	19 1611 117 369	20 1684 123 370	21 1760 129 372	22 1841 135 373	23 1927 142 374
290	16 1378 94 357	16 1437 98 358	17 1498 103 359	18 1563 108 360	19 1631 113 361	20 1702 118 362	20 1777 124 363
270	14 1260 80 344	15 1312 84 345	15 1366 87 345	16 1423 91 346	16 1482 95 347	17 1544 99 348	18 1609 104 349
250	12 1154 69 331	13 1201 72 332	13 1250 75 332	14 1300 78 333	15 1352 81 334	15 1407 84 335	16 1464 88 335
240	12 1105 64 325	12 1149 66 326	13 1195 69 326	13 1242 72 327	14 1292 75 327	14 1344 78 328	15 1397 81 329
220	10 1010 54 312	11 1050 57 313	11 1091 59 313	12 1134 61 314	12 1178 64 315	13 1224 66 315	13 1271 69 316
200	9 922 47 300	10 958 48 300	10 995 50 301	10 1034 52 301	11 1073 54 302	11 1114 56 303	12 1157 59 303
180	8 839 40 287	9 872 41 288	9 906 43 288	9 940 45 289	10 976 46 290	10 1013 48 290	10 1051 50 291
160	7 760 34 274	8 790 35 275	8 820 36 275	8 852 38 276	8 884 39 277	9 917 41 277	9 951 42 278
140	6 683 28 261	7 710 29 261	7 738 30 262	7 766 32 262	7 795 33 263	8 825 34 264	8 856 35 265
120	6 609 23 246	6 633 24 246	6 658 25 247	6 683 26 247	7 709 27 248	7 736 28 249	7 763 29 250
100	4 487 16 218	5 507 17 219	5 527 17 220	5 547 18 221	5 568 19 222	5 590 20 223	5 612 20 224
50	3 313 8 181	3 326 9 182	3 338 9 183	3 351 10 184	3 364 10 185	3 378 10 186	3 391 11 188
15	2 190 4 131	2 198 4 132	2 205 4 133	2 213 4 134	2 221 4 136	2 229 5 137	2 237 5 139

LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = – 0.4 %	△FUEL = + 0.4 %	△FUEL = + 6 %	△FUEL = + 11 %

10F -08FA320-232-V2527-A5 21100000C5KG330 0 018590 0 0 2 1.0 500.0 300.0 1 03250.000300.000 .780 10 FCOM-N0-03-05-10-005-140

CLIMB - ISA +20

Ident.: PER-CLB-CLT-00001989.0073001 / 30 OCT 18

[4] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST
NORMAL AIR CONDITIONING
ANTI ICE OFF

ISA+20
CG=33.0%

FROM BRAKE RELEASE
TIME (MIN) **FUEL (KG)**
DISTANCE (NM) **TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)								
	60	62	64	66	68	70	72	74	76
390	22 1499 150 412	23 1579 159 413	25 1666 170 414	26 1761 181 416	28 1867 194 417				
370	19 1383 129 404	20 1451 136 405	21 1522 143 406	22 1597 151 407	24 1677 160 408	25 1762 169 409	26 1855 180 410	28 1957 192 412	30 2071 205 414
350	17 1291 114 397	18 1351 120 398	19 1414 126 398	20 1479 132 399	21 1547 139 400	22 1619 146 401	23 1695 153 402	24 1775 161 403	25 1861 170 404
330	16 1209 101 389	16 1264 106 390	17 1320 111 391	18 1379 116 391	19 1439 122 392	20 1503 128 393	20 1569 134 393	21 1638 140 394	22 1711 147 395
310	14 1130 90 381	15 1180 94 381	15 1232 98 382	16 1285 103 382	17 1340 107 383	18 1396 112 383	18 1455 117 384	19 1516 123 385	20 1580 128 386
290	13 1048 79 370	13 1093 82 370	14 1140 86 371	14 1188 89 371	15 1237 93 372	16 1288 97 372	16 1340 102 373	17 1395 106 373	18 1451 111 374
270	11 951 66 356	12 992 69 356	12 1033 72 356	13 1075 75 356	13 1119 78 357	14 1163 81 357	14 1209 85 358	15 1257 88 358	15 1306 92 359
250	10 866 56 342	10 903 58 342	11 940 61 342	11 977 63 343	12 1016 66 343	12 1056 68 343	12 1097 71 344	13 1139 74 344	13 1182 77 345
240	9 827 51 335	10 862 54 335	10 897 56 336	10 932 58 336	11 969 61 336	11 1007 63 337	12 1045 65 337	12 1085 68 337	13 1125 71 338
220	8 754 44 322	8 785 46 322	9 817 48 323	9 849 49 323	10 882 51 323	10 916 53 323	10 950 56 324	11 986 58 324	11 1022 60 324
200	7 686 37 309	8 715 39 310	8 743 40 310	8 772 42 310	8 802 44 310	9 833 45 311	9 864 47 311	9 896 49 311	10 928 51 312
180	6 623 32 297	7 649 33 297	7 675 34 297	7 701 36 297	7 728 37 298	8 755 39 298	8 783 40 298	8 812 42 299	9 842 43 299
160	6 563 27 284	6 586 28 284	6 609 29 284	6 633 30 284	7 658 31 285	7 682 33 285	7 708 34 285	7 733 35 286	8 760 36 286
140	5 506	5 526	5 547	6 568	6 590	6 612	6 635	6 658	7 682

CORRECTIONS	LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 1.1 %	+ 2.9 %	+ 3.3 %	+ 9.6 %

Continued on the following page

Continued from the previous page

CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST
NORMAL AIR CONDITIONING
ANTI ICE OFF

ISA+20
CG=33.0%

FROM BRAKE RELEASE
TIME (MIN) **FUEL (KG)**
DISTANCE (NM) **TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)								
	60	62	64	66	68	70	72	74	76
	22 270	23 270	24 270	25 271	26 271	27 271	28 272	29 272	31 272
120	4 449 18 255	5 468 19 255	5 486 20 255	5 505 21 255	5 525 22 256	5 545 22 256	5 565 23 257	6 585 24 257	6 606 25 257
100	4 394 15 237	4 411 15 237	4 427 16 238	4 444 17 238	4 461 17 238	5 478 18 239	5 496 19 239	5 514 19 240	5 533 20 240
50	2 235 6 188	2 245 7 188	2 255 7 189	2 265 7 189	2 275 8 190	2 285 8 191	3 296 8 191	3 306 8 192	3 317 9 193
15	1 150 3 135	1 157 3 135	1 163 3 136	1 170 3 137	1 176 3 138	1 183 3 138	2 189 4 140	2 196 4 141	2 203 4 142

CORRECTIONS	LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 1.1 %	+ 2.9 %	+ 3.3 %	+ 9.6 %

CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST
NORMAL AIR CONDITIONING
ANTI ICE OFF

ISA+20
CG=33.0%

FROM BRAKE RELEASE
TIME (MIN) **FUEL (KG)**
DISTANCE (NM) **TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)											
	78	80	82	84	86	88	90	92	94	96	98	100
390												
370												
350	271954 180405	282056 191407	302168 204409	322295 218411								
330	231788 155396	251870 163397	261958 171398	272053 181400	292156 192401	302270 204403	322398 218405					
310	211647 134386	221718 141387	231792 147388	241871 155389	251955 163390	262045 171392	282143 180393	292250 191395	312367 203396	332498 216398		
290	181510 115375	191571 121375	201635 126376	211703 132377	221774 138378	231849 144379	241929 151380	252015 159381	262107 167382	282206 176384	292315 186385	
270	161356	171409	171464	181521	191580	191643	201708	211778	221851	231930	242014	252104

CORRECTIONS	LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 1.2 %	+ 3.3 %	+ 3.9 %	+ 13.8 %

Continued on the following page

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CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST
NORMAL AIR CONDITIONING
ANTI ICE OFF

ISA+20
CG=33.0%

FROM BRAKE RELEASE
TIME (MIN) **FUEL (KG)**
DISTANCE (NM) **TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)											
	78	**80**	**82**	**84**	**86**	**88**	**90**	**92**	**94**	**96**	**98**	**100**
	96 359	100360	104360	108361	113362	117363	123363	128364	134365	140366	147367	155369
250	141226 80 345	141272 83 345	151320 86 346	161369 90 347	161420 94 347	171474 97 348	171530 101348	181589 105349	191650 110350	201715 115351	201784 120352	211857 125352
240	131167 73 338	141211 76 339	141255 79 339	151302 82 340	151349 86 340	161399 89 341	161452 92 341	171506 96 342	181563 100343	181623 104343	191686 109344	201752 113345
220	111060 62 325	121098 64 325	121138 67 326	131179 69 326	13122 72 327	141265 75 327	141311 78 328	151358 81 328	151408 84 329	161460 87 330	161514 91 330	171571 94 331
200	10 962 53 312	10 996 55 312	111032 57 313	111068 59 313	121106 61 314	121145 63 314	121186 66 315	131228 68 315	13127 71 316	141317 73 317	141364 76 317	151414 79 318
180	9 872 45 299	9 903 46 300	10 934 48 300	10 967 50 301	10100 52 301	111036 54 302	111072 56 302	111109 58 303	121148 60 303	121188 62 304	131230 64 305	131274 67 305
160	8 787 38 286	8 815 39 287	8 843 41 287	9 873 42 288	9 903 44 288	9 934 45 289	10 966 47 289	10 999 49 290	10103 50 291	111070 52 291	111107 54 292	121146 56 293
140	7 706 32 273	7 731 33 273	7 757 34 274	8 783 35 274	8 810 37 275	8 838 38 276	9 866 39 276	9 896 41 277	9 927 42 278	9 959 44 278	10 992 45 279	101026 47 280
120	6 628 26 258	6 650 27 259	6 673 28 259	7 696 29 260	7 720 30 260	7 745 31 261	7 770 32 262	8 797 34 262	8 824 35 263	8 852 36 264	8 881 37 265	9 912 39 265
100	5 552 21 241	5 571 22 242	6 591 23 242	6 612 23 243	6 633 24 244	6 655 25 245	6 677 26 245	7 700 27 246	7 724 28 247	7 749 29 248	7 774 30 249	8 801 31 250
50	3 328 9 194	3 339 10 195	3 351 10 196	3 362 10 197	3 374 11 198	3 386 11 199	3 398 11 200	4 410 12 201	4 423 12 202	4 436 13 204	4 450 13 205	4 463 14 206
15	2 210 4 143	2 217 4 144	2 224 4 145	2 231 5 147	2 238 5 148	2 245 5 150	2 252 5 151	2 259 5 153	2 266 5 154	2 274 6 155	2 281 6 157	2 289 6 158

CORRECTIONS	LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 1.2 %	+ 3.3 %	+ 3.9 %	+ 13.8 %

CLIMB - ISA +20

Ident.: PER-CLB-CLT-00001989.0064001 / 16 MAR 15

5 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST	ISA+20	**FROM BRAKE RELEASE**
NORMAL AIR CONDITIONING	CG=33.0%	**TIME (MIN)** **FUEL (KG)**
ANTI ICE OFF		**DISTANCE (NM)** **TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)													
	52		54		56		58		60		62		64	
390	22	1319	24	1395	25	1477	27	1564	29	1661				
	153	413	163	414	174	415	187	416	200	418				
370	19	1219	21	1284	22	1352	23	1424	24	1500	26	1581	27	1668
	131	405	139	406	147	406	156	407	165	408	176	410	187	411
350	17	1137	18	1196	19	1256	20	1319	21	1386	23	1455	24	1528
	115	397	121	398	128	399	135	399	143	400	151	401	159	402
330	16	1063	16	1115	17	1170	18	1226	19	1285	20	1346	21	1410
	101	389	107	389	112	390	118	391	124	391	130	392	137	393
310	14	991	15	1039	16	1088	16	1139	17	1191	18	1246	19	1302
	89	380	94	380	98	380	103	381	108	382	113	382	119	383
290	13	917	13	960	14	1004	14	1050	15	1097	16	1145	17	1195
	78	368	81	368	85	369	89	369	93	370	98	370	102	371
270	11	832	12	870	12	910	13	950	13	991	14	1034	14	1077
	65	354	68	354	71	354	75	354	78	355	82	355	85	356
250	10	759	10	794	11	830	11	866	12	903	12	941	13	980
	56	341	58	341	61	341	64	341	67	341	69	342	72	342
240	9	726	10	759	10	793	11	828	11	863	11	899	12	936
	52	334	54	334	57	335	59	335	62	335	64	336	67	336
220	8	663	9	693	9	724	9	755	10	787	10	820	11	853
	44	322	46	322	49	322	51	323	53	323	55	323	57	324
200	7	603	8	631	8	659	8	687	9	716	9	745	9	775
	38	310	40	310	42	310	43	310	45	311	47	311	49	311
180	7	547	7	572	7	597	7	623	8	649	8	675	8	702
	32	297	34	297	35	297	37	298	38	298	40	298	42	299
160	6	493	6	515	6	538	7	561	7	585	7	608	7	633
	27	284	29	284	30	284	31	285	32	285	34	285	35	286
140	5	441	5	461	6	481	6	502	6	523	6	544	6	565

CORRECTIONS	LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 3 %	+ 4 %	+ 9 %

Continued on the following page

Continued from the previous page

CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST NORMAL AIR CONDITIONING ANTI ICE OFF	ISA+20 CG=33.0%	**FROM BRAKE RELEASE** **TIME (MIN)** **FUEL (KG)** **DISTANCE (NM)** **TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)													
	52		54		56		58		60		62		64	
	23	270	24	270	25	270	26	270	27	271	28	271	29	272
120	4	390	5	408	5	426	5	444	5	462	5	481	6	500
	19	254	19	254	20	254	21	255	22	255	23	256	24	256
100	4	340	4	356	4	372	4	388	4	404	5	420	5	437
	15	236	15	236	16	236	17	236	18	237	18	238	19	238
100	3	308	3	322	4	337	4	351	4	366	4	381	4	396
	12	224	13	225	14	225	14	225	15	226	16	226	16	227
50	2	201	2	211	2	220	2	230	2	239	3	249	3	259
	6	186	7	186	7	186	7	187	8	188	8	188	8	189
15	1	128	1	134	1	140	1	146	1	152	2	158	2	164
	3	131	3	131	3	132	3	133	3	134	3	135	4	137

CORRECTIONS	LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 3 %	+ 4 %	+ 9 %

CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST NORMAL AIR CONDITIONING ANTI ICE OFF	ISA+20 CG=33.0%	**FROM BRAKE RELEASE** **TIME (MIN)** **FUEL (KG)** **DISTANCE (NM)** **TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)													
	66		68		70		72		74		76		78		79	
390																
370	29	1763	31	1868												
	199	412	214	414												
350	25	1606	26	1690	28	1780	30	1878	32	1988						
	168	403	178	405	189	406	201	408	215	409						
330	22	1477	23	1548	24	1623	26	1703	27	1789	28	1880	30	1979	31	2032
	144	394	152	395	160	396	169	397	179	398	189	400	201	401	207	402
310	20	1361	20	1423	21	1488	22	1556	23	1630	25	1704	26	1785	27	1827
	125	384	131	385	137	385	144	386	152	387	159	388	168	389	172	390

CORRECTIONS	LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 3 %	+ 4 %	+ 10 %

Continued on the following page

Continued from the previous page

CLIMB - 250KT/300KT/M.78 - ALL ENGINES

MAX. CLIMB THRUST	ISA+20	**FROM BRAKE RELEASE**
NORMAL AIR CONDITIONING	CG=33.0%	**TIME (MIN)** **FUEL (KG)**
ANTI ICE OFF		**DISTANCE (NM)** **TAS (KT)**

	WEIGHT AT BRAKE RELEASE (1000KG)															
FL	**66**		**68**		**70**		**72**		**74**		**76**		**78**		**79**	
290	17	1247	18	1301	19	1358	20	1417	21	1479	21	1544	22	1611	23	1647
	107	371	112	372	117	373	122	373	128	374	134	375	141	376	144	376
270	15	1123	16	1170	16	1219	17	1269	18	1322	18	1377	19	1434	20	1463
	89	356	93	357	97	357	101	358	105	358	110	359	115	359	118	360
250	13	1020	14	1062	14	1105	15	1150	16	1197	16	1245	17	1294	17	1320
	76	343	79	343	82	344	85	344	89	345	93	345	97	346	99	346
240	12	974	13	1013	13	1055	14	1097	15	1141	15	1186	16	1233	16	1257
	70	337	73	337	76	337	79	338	82	338	86	339	89	339	91	339
220	11	887	12	923	12	960	12	998	13	1037	13	1077	14	1118	14	1140
	60	324	62	325	65	325	67	325	70	326	73	326	76	326	77	327
200	10	806	10	838	11	871	11	905	11	941	12	977	12	1014	13	1033
	51	312	53	312	55	313	58	313	60	313	62	314	65	314	66	314
180	9	730	9	759	9	789	10	819	10	851	11	883	11	916	11	933
	43	299	45	300	47	300	49	300	51	301	53	301	55	301	56	302
160	8	657	8	683	8	710	9	737	9	766	9	794	10	824	10	839
	37	286	38	287	40	287	41	287	43	288	44	288	46	289	47	289
140	7	587	7	611	7	634	8	659	8	684	8	710	8	736	9	749
	31	272	32	273	33	273	34	273	36	274	37	274	38	275	39	275
120	6	520	6	540	6	561	7	583	7	605	7	628	7	651	7	663
	25	257	26	257	27	258	28	258	29	259	30	259	32	259	32	260
100	5	454	5	472	5	490	6	509	6	529	6	549	6	569	6	579
	20	239	21	239	22	240	22	241	23	241	24	242	25	242	26	242
100	4	411	5	427	5	444	5	462	5	479	5	497	6	516	6	525
	17	228	18	229	18	229	19	230	20	230	21	231	21	231	22	232
50	3	269	3	279	3	290	3	302	3	313	3	325	3	336	3	342
	9	190	9	191	9	192	10	193	10	194	11	195	11	196	11	196
15	2	171	2	178	2	185	2	192	2	200	2	207	2	214	2	218
	4	138	4	139	4	141	4	142	5	143	5	145	5	146	5	146

CORRECTIONS	**LOW AIR CONDITIONING**	**HIGH AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	+ 3 %	+ 4 %	+ 10 %

CLIMB - ISA +20

Ident.: PER-CLB-CLT-00001989.0010001 / 15 FEB 11

6 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

CLIMB - 250KT/300KT/M.78

MAX. CLIMB THRUST
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA+20
CG=33.0%

FROM BRAKE RELEASE
TIME (MIN) FUEL (KG)
DISTANCE (NM) TAS (KT)

	WEIGHT AT BRAKE RELEASE (1000KG)													
FL	52		54		56		58		60		62		64	
390	25	1667	26	1762	28	1866	30	1983	32	2116				
	168	409	179	410	191	411	205	412	222	414				
370	22	1557	23	1639	25	1726	26	1818	28	1919	29	2030	31	2155
	148	402	156	402	165	403	175	404	186	406	199	407	213	409
350	20	1467	21	1540	22	1617	23	1699	25	1786	26	1880	28	1983
	133	395	140	396	147	397	155	397	164	398	174	400	185	401
330	18	1383	19	1450	20	1519	21	1592	22	1669	24	1752	25	1841
	120	388	126	389	132	389	139	390	146	391	154	392	163	393
310	17	1298	18	1358	19	1422	19	1487	20	1556	21	1629	22	1707
	107	380	112	381	118	381	123	381	129	382	136	383	143	383
290	15	1202	16	1257	17	1315	17	1374	18	1435	19	1499	20	1568
	94	369	98	370	103	370	107	370	112	371	117	371	123	372
270	13	1087	14	1137	15	1188	15	1240	16	1294	17	1351	17	1410
	78	355	82	355	86	355	90	355	94	356	98	356	102	356
250	12	988	12	1032	13	1078	13	1125	14	1174	14	1224	15	1276
	66	341	69	341	73	341	76	341	79	342	82	342	86	342
240	11	942	11	984	12	1028	12	1072	13	1118	14	1165	14	1215
	61	334	64	334	67	334	70	335	73	335	76	335	79	335
220	10	855	10	893	11	933	11	973	11	1014	12	1057	12	1101
	52	320	54	321	56	321	59	321	61	321	64	321	67	322
200	9	776	9	811	9	847	10	883	10	920	11	958	11	998
	44	307	46	307	48	307	50	308	52	308	54	308	56	308
180	8	703	8	735	8	767	9	800	9	833	9	868	10	904
	37	294	39	294	40	294	42	294	44	294	46	295	48	295
160	7	634	7	662	7	691	8	720	8	751	8	782	9	814
	31	280	33	280	34	280	35	280	37	281	38	281	40	281
140	6	566	6	591	6	617	7	644	7	671	7	699	7	728
	26	265	27	265	28	265	29	266	31	266	32	266	33	266
120	5	501	5	523	6	546	6	570	6	594	6	619	6	645
	21	249	22	249	23	249	24	249	25	250	26	250	27	250
100	4	395	4	413	4	432	4	451	5	470	5	490	5	511
	14	219	15	219	16	219	16	220	17	220	18	220	18	221
50	2	252	3	264	3	275	3	287	3	300	3	312	3	326
	7	178	8	179	8	179	8	179	9	180	9	180	9	181
15	2	150	2	157	2	164	2	172	2	179	2	187	2	195
	3	123	3	124	3	124	4	124	4	125	4	125	4	126

LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = − 0.4 %	△FUEL = + 0.4 %	△FUEL = + 6 %	△FUEL = + 11 %

10F 08F0A320-232 IAE V2527-A5 21100000C5KG330 0 018590 0 0 2 1.0 500.0 300.0 1 03250.000300.000 .780 20 FCOM-N0-03-05-10-008-142

CLIMB - 250KT/300KT/M.78

MAX. CLIMB THRUST | ISA+20 | FROM BRAKE RELEASE
NORMAL AIR CONDITIONING | CG=33.0% | TIME (MIN) / FUEL (KG)
ANTI-ICING OFF | | DISTANCE (NM) / TAS (KT)

	WEIGHT AT BRAKE RELEASE (1000KG)						
FL	66	68	70	72	74	76	78
390							
370	34 2299 230 411						
350	29 2096 197 402	31 2221 210 404	33 2363 226 406	36 2526 245 408			
330	26 1938 172 394	28 2043 183 395	29 2159 194 397	31 2286 208 399	33 2428 223 401	36 2590 241 403	
310	23 1792 150 384	25 1882 159 386	26 1980 168 387	28 2087 178 388	29 2203 190 390	31 2330 202 392	33 2471 216 394
290	21 1641 129 372	22 1719 136 373	23 1802 143 374	24 1891 151 375	25 1987 159 377	27 2091 169 378	28 2202 179 379
270	18 1473 107 357	19 1539 112 358	20 1608 118 358	21 1682 123 359	22 1761 130 360	23 1845 136 361	24 1934 143 362
250	16 1331 90 343	16 1389 94 343	17 1449 98 344	18 1513 103 344	19 1580 107 345	20 1651 113 346	20 1725 118 347
240	15 1267 82 336	15 1321 86 336	16 1377 90 337	17 1437 94 337	17 1499 98 338	18 1564 103 339	19 1633 107 339
220	13 1147 69 322	13 1195 72 322	14 1245 75 323	15 1297 79 323	15 1351 82 323	16 1408 86 324	17 1467 89 325
200	11 1040 59 308	12 1082 61 309	12 1127 64 309	13 1173 66 309	13 1220 69 310	14 1271 72 310	14 1323 75 311
180	10 941 50 295	10 980 52 295	11 1019 54 296	11 1061 56 296	12 1103 58 296	12 1148 61 297	13 1195 63 297
160	9 848 42 281	9 883 43 282	10 918 45 282	10 955 47 282	10 993 49 283	11 1033 51 283	11 1075 53 284
140	8 758 35 266	8 789 36 267	8 822 37 267	9 855 39 268	9 889 41 268	9 924 42 269	10 961 44 269
120	7 672 28 250	7 700 29 251	7 728 31 251	8 758 32 252	8 788 33 252	8 820 35 253	9 853 36 253
100	5 533 19 221	5 555 20 222	6 578 21 222	6 602 22 223	6 626 23 224	6 651 24 224	7 678 25 225
50	3 339 10 181	3 353 10 182	4 368 11 183	4 382 11 184	4 398 12 184	4 413 12 185	4 429 13 186
15	2 203 4 127	2 211 4 127	2 220 5 128	2 229 5 129	2 238 5 130	2 247 5 131	2 257 5 132

LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = − 0.4 %	△FUEL = + 0.4 %	△FUEL = + 6 %	△FUEL = + 11 %

10F -08FA320-232 IAE V2527-A5 21100000C5KG330 0 018590 0 0 2 1.0 500.0 300.0 1 03250.000300.000 .780 20 FCOM-N0-03-05-10-009-140

CLIMB - ISA +20

Ident.: PER-CLB-CLT-00001989.0021001 / 15 FEB 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CLIMB - 250KT/300KT/M.78

MAX. CLIMB THRUST
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA+20
CG=33.0%

FROM BRAKE RELEASE
TIME (MIN) FUEL (KG)
DISTANCE (NM) TAS (KT)

FL	WEIGHT AT BRAKE RELEASE (1000KG)													
	52		54		56		58		60		62		64	
390	25	1691	27	1799	29	1920								
	174	412	187	413	202	415								
370	22	1558	24	1648	25	1743	27	1845	28	1957	30	2081	33	2221
	150	404	159	405	169	406	181	407	193	408	207	410	224	412
350	20	1458	21	1538	22	1622	24	1711	25	1806	27	1907	28	2018
	133	397	141	398	149	399	158	400	168	401	178	402	190	403
330	18	1367	19	1440	20	1516	21	1596	23	1680	24	1769	25	1864
	119	390	126	391	133	391	140	392	148	393	157	394	166	395
310	17	1277	18	1343	18	1412	19	1484	20	1559	21	1639	23	1723
	106	381	112	382	118	383	124	383	131	384	138	385	145	386
290	15	1178	16	1238	17	1300	17	1364	18	1431	19	1502	20	1575
	92	370	97	371	102	371	107	372	113	373	119	373	125	374
270	13	1062	14	1115	14	1169	15	1226	16	1284	17	1345	17	1408
	77	355	81	356	85	356	89	357	94	357	99	358	103	358
250	11	962	12	1008	13	1057	13	1106	14	1158	14	1211	15	1267
	65	341	68	342	72	342	75	343	79	343	83	344	86	344
240	11	915	11	959	12	1005	12	1052	13	1100	13	1151	14	1202
	60	334	63	335	66	335	69	336	72	336	76	337	79	337
220	9	829	10	868	10	909	11	950	11	994	12	1038	12	1084
	51	321	53	321	56	322	58	322	61	322	64	323	67	323
200	8	748	9	783	9	819	10	856	10	895	10	934	11	975
	43	307	45	307	47	308	49	308	51	308	53	309	56	309
180	7	673	8	704	8	736	8	769	9	804	9	839	9	875
	36	293	37	293	39	293	41	294	43	294	44	294	46	295
160	6	602	7	630	7	659	7	689	8	719	8	750	8	783
	30	278	31	278	32	279	34	279	35	279	37	280	39	280
140	6	537	6	561	6	587	6	613	7	640	7	668	7	696
	24	263	26	263	27	263	28	264	29	264	31	264	32	265
120	5	474	5	496	5	518	6	542	6	565	6	590	6	615
	20	246	21	246	22	247	23	247	24	247	25	248	26	248
100	4	375	4	392	4	410	4	429	4	448	5	467	5	487
	14	216	14	217	15	217	16	217	16	218	17	218	18	219
50	2	243	3	254	3	265	3	277	3	289	3	302	3	314
	7	176	7	177	8	177	8	177	8	178	9	178	9	179
15	2	150	2	157	2	164	2	172	2	179	2	187	2	195
	3	123	3	124	3	124	4	124	4	125	4	125	4	126

LOW AIR CONDITIONING	HIGH AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = – 0.6 %	△FUEL = + 0.6 %	△FUEL = + 2.5 %	△FUEL = + 5 %

11.0-08F0A320-214 CFM56-5B4/P SA21100000C5KG330 0 018590 0 0 2 1.0 500.0 300.00 1 03250.000300.000 .780 20 FCOM-N0-03-05-10-008-170

CLIMB - 250KT/300KT/M.78

MAX. CLIMB THRUST | ISA+20 | **FROM BRAKE RELEASE**
NORMAL AIR CONDITIONING | CG=33.0% | **TIME (MIN)** | **FUEL (KG)**
ANTI-ICING OFF | **DISTANCE (NM)** | **TAS (KT)**

FL	WEIGHT AT BRAKE RELEASE (1000KG)						
	66	**68**	**70**	**72**	**74**	**76**	**78**
390							
370							
350	30 2138 203 405	32 2271 218 406	34 2423 235 409				
330	27 1966 176 396	28 2075 187 398	30 2195 199 399	32 2328 213 401	34 2478 229 403	37 2650 248 405	
310	24 1811 154 387	25 1906 162 388	27 2007 172 389	28 2118 183 391	30 2238 194 392	32 2370 207 394	34 2517 222 396
290	21 1653 132 375	22 1734 139 376	23 1821 146 377	25 1914 154 378	26 2014 163 379	27 2121 173 380	29 2237 184 382
270	18 1474 109 359	19 1543 114 360	20 1616 120 361	21 1692 126 361	22 1774 132 362	23 1860 139 363	24 1952 147 364
250	16 1324 91 345	16 1384 95 345	17 1447 99 346	18 1512 104 347	19 1581 109 347	20 1654 114 348	21 1731 120 349
240	15 1256 83 338	15 1313 87 338	16 1371 91 339	17 1432 95 339	18 1496 100 340	18 1564 104 341	19 1635 109 342
220	13 1132 70 324	13 1181 73 324	14 1233 76 325	15 1286 79 325	15 1342 83 326	16 1400 87 326	17 1461 91 327
200	11 1017 58 309	12 1061 61 310	12 1106 63 310	13 1153 66 311	13 1202 69 311	14 1253 72 312	14 1306 75 313
180	10 912 48 295	10 951 51 295	11 991 53 296	11 1033 55 296	12 1075 57 297	12 1120 60 297	13 1166 62 298
160	9 816 40 280	9 850 42 281	9 886 44 281	10 922 46 282	10 960 47 282	11 999 49 283	11 1040 52 283
140	8 726 33 265	8 756 35 265	8 788 36 266	8 820 38 266	9 853 39 267	9 888 41 267	10 924 42 268
120	7 641 27 249	7 668 28 249	7 696 29 250	7 724 31 250	8 753 32 251	8 784 33 251	8 816 35 252
100	5 508 19 219	5 529 19 220	5 551 20 220	6 574 21 221	6 597 22 222	6 621 23 223	6 646 24 223
50	3 327 10 179	3 341 10 180	3 355 10 181	4 369 11 182	4 384 11 182	4 399 12 183	4 415 12 184
15	2 203 4 127	2 211 4 127	2 220 5 128	2 229 5 129	2 238 5 130	2 247 5 131	2 257 5 132
LOW AIR CONDITIONING	**HIGH AIR CONDITIONING**		**ENGINE ANTI ICE ON**		**TOTAL ANTI ICE ON**		
△FUEL = − 0.6 %	△FUEL = + 0.6 %		△FUEL = + 2.5 %		△FUEL = + 5 %		

11.0-08F0A320-214 CFM56-5B4/P SA21100000C5KG330 0 018590 0 0 2 1.0 500.0 300.00 1 03250.000300.000 .780 20 FCOM-N0-03-05-10-009-170

PERFORMANCE

CRUISE

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PER-CRZ-ALT ALTITUDE

PER-CRZ-ALT-10 OPTIMUM AND MAXIMUM ALTITUDES

DEFINITIONS....A

PER-CRZ-ALT-20 WIND ALTITUDE TRADE FOR CONSTANT SPECIFIC RANGE

WIND ALTITUDE TRADE FOR CONSTANT SPECIFIC RANGE....A

PER-CRZ-CRT CRUISE TABLES

PER-CRZ-CRT-10 GENERAL

GENERAL....A

PER-CRZ-CRT-20 CRUISE AT M.78

CRUISE - M.78 - ISA....A
CRUISE - M.78 - ISA+20....B

PER-CRZ-CRT-30 CRUISE AT LONG RANGE

LONG RANGE CRUISE - ISA....A
LONG RANGE CRUISE - ISA+20....B

PER-CRZ-ICQ IN CRUISE QUICK CHECK

PER-CRZ-ICQ-10 GENERAL

GENERAL....A
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PER-CRZ-ICQ-20 EXAMPLE

EXAMPLE FOR THE QRH USE....A

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Localization Title	Toc Index	ID	Reason
PER-CRZ-ALT-20 WIND ALTITUDE TRADE FOR CONSTANT SPECIFIC RANGE	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-CRZ-ALT-20 WIND ALTITUDE TRADE FOR CONSTANT SPECIFIC RANGE	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-CRZ-ALT-20 WIND ALTITUDE TRADE FOR CONSTANT SPECIFIC RANGE	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-CRZ-CRT-20 CRUISE - M.78 - ISA	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-CRZ-CRT-20 CRUISE - M.78 - ISA	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-CRZ-CRT-20 CRUISE - M.78 - ISA	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-CRZ-CRT-20 CRUISE - M.78 - ISA+20	B	4	Effectivity update: The information now also applies to MSN 09063.
PER-CRZ-CRT-20 CRUISE - M.78 - ISA+20	B	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-CRZ-CRT-20 CRUISE - M.78 - ISA+20	B	6	Effectivity update: The information no longer applies to MSN 05449.
PER-CRZ-CRT-30 LONG RANGE CRUISE - ISA	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-CRZ-CRT-30 LONG RANGE CRUISE - ISA	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-CRZ-CRT-30 LONG RANGE CRUISE - ISA	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-CRZ-CRT-30 LONG RANGE CRUISE - ISA+20	B	4	Effectivity update: The information now also applies to MSN 09063.
PER-CRZ-CRT-30 LONG RANGE CRUISE - ISA+20	B	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-CRZ-CRT-30 LONG RANGE CRUISE - ISA+20	B	6	Effectivity update: The information no longer applies to MSN 05449.
PER-CRZ-ICQ-10 GENERAL	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-CRZ-ICQ-10 GENERAL	A	2	Effectivity update: The information now also applies to MSN 09063.

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DEFINITIONS

Ident.: PER-CRZ-ALT-10-00001995.0001001 / 22 MAR 17
Applicable to: ALL

- Optimum altitude : the altitude at which the airplane covers the maximum distance per kilogram (pound) of fuel (best specific range). It depends on the actual weight and the deviation from ISA.
- Maximum altitude is defined as the lower of:
  - maximum altitude at maximum cruise thrust in level flight and
  - maximum altitude at maximum climb thrust with 300 ft/min vertical speed.

Refer to QRH/PER-M Optimum & Maximum Altitudes (Paper Only) or use the performance application of FlySmart with Airbus.
The QRH charts are established for a center of gravity at 33 % MAC.
Maximum and optimum altitudes are given for different temperatures at long range speed and M 0.78.

Note: *1. The n = 1.3 g (n = 1.4 g) curve indicates the buffet margin.*
2. Definition of the maximum altitude in the FMGC is different (Refer to DSC-22_20-50-10 MCDU).

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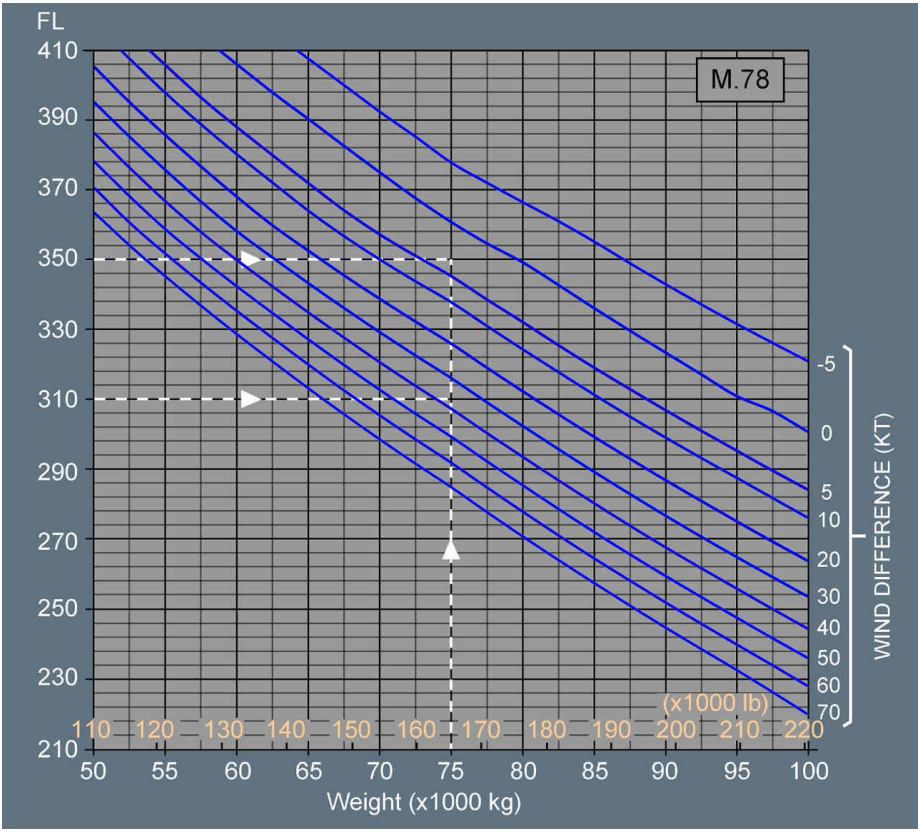
WIND ALTITUDE TRADE FOR CONSTANT SPECIFIC RANGE

Ident.: PER-CRZ-ALT-20-00001998.0039001 / 30 OCT 18

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**



GIVEN : Weight : 75 000 kg (165 340 lb)
Wind at FL 350 : 10 kt head

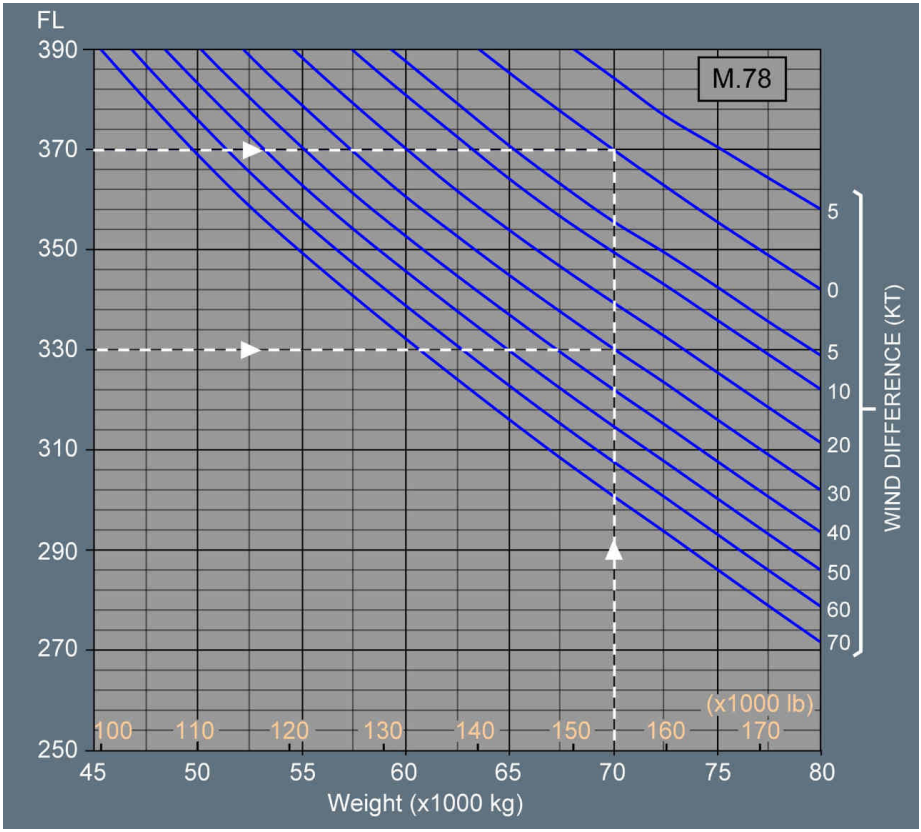
FIND : Minimum wind difference to descend to FL 310 : (37 - 4) = 33 kt

RESULTS : Descent to FL 305 may be considered provided the tail wind at this altitude is more than (33 - 10) = 23 kt.

WIND ALTITUDE TRADE FOR CONSTANT SPECIFIC RANGE

Ident.: PER-CRZ-ALT-20-00001998.0036001 / 16 MAR 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**



GIVEN : Weight : 70 000 kg (143 300 lb)
Wind at FL 370 : 10 kt head

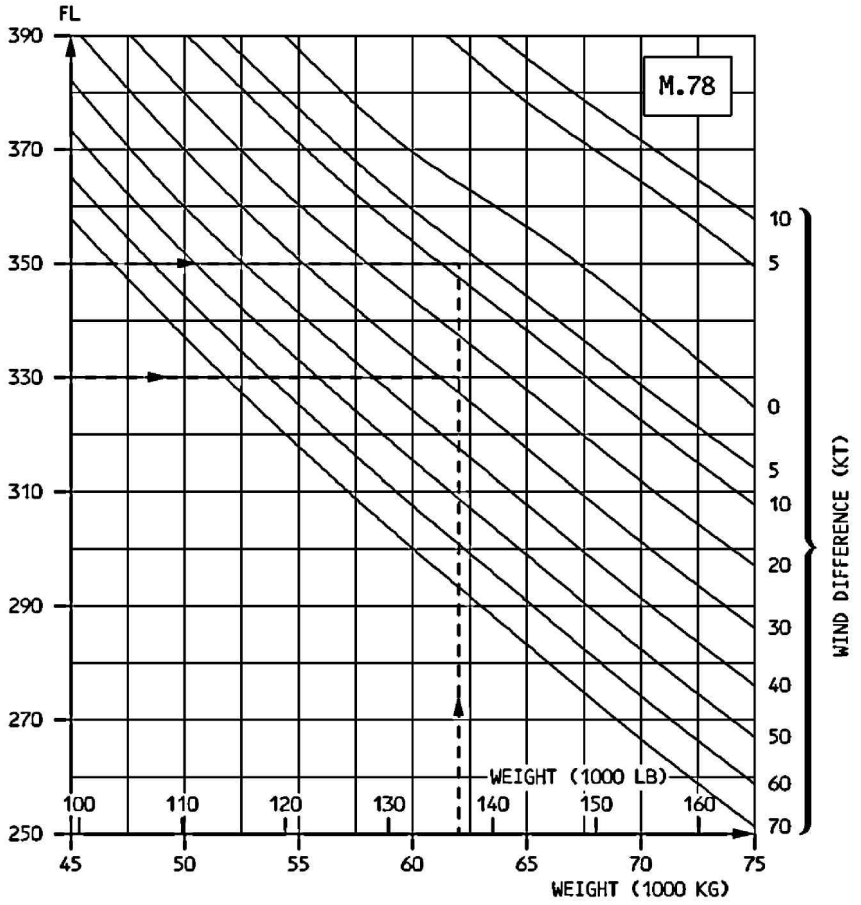
FIND : Minimum wind difference to descend to FL 330 : (30 - 0) = 30 kt

RESULTS : Descent to FL 330 may be considered provided the tail wind at this altitude is more than (30 - 10) = 20 kt.

WIND ALTITUDE TRADE FOR CONSTANT SPECIFIC RANGE

Ident.: PER-CRZ-ALT-20-00001998.0008001 / 10 DEC 09

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**



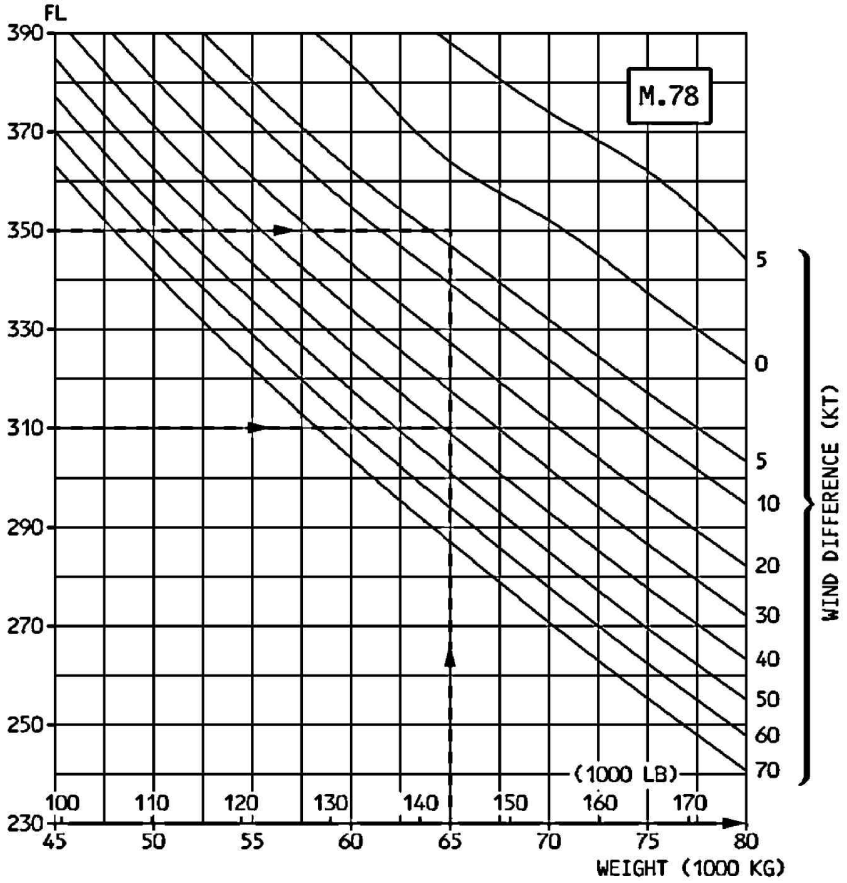
GIVEN : Weight : 62 000 kg (136 700 lb)
Wind at FL 350 : 10 kt head

FIND : Minimum wind difference to descend to FL 330 : (27 - 7) = 20 kt

RESULTS : Descent to FL 330 may be considered provided the tail wind at this altitude is more than (20 - 10) = 10 kt.

WIND ALTITUDE TRADE FOR CONSTANT SPECIFIC RANGE

Ident.: PER-CRZ-ALT-20-00001998.0007001 / 10 DEC 09
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510



GIVEN : Weight : 65 000 kg (143 300 lb)
Wind at FL 350 : 10 kt head

FIND : Minimum wind difference to descend to FL 310 : (40 - 4) = 36 kt

RESULTS : Descent to FL 310 may be considered provided the tail wind at this altitude is more than (36 - 10) = 26 kt.

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GENERAL

Ident.: PER-CRZ-CRT-10-00004112.0002001 / 01 DEC 14
Applicable to: ALL

Cruise tables are established:

- for ISA and ISA + 20
- with normal air conditioning and anti ice OFF
- from FL 290 to FL 390 at M 0.78
- from FL 100 to FL 390 at long range speed
- with a 33 % center of gravity.

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CRUISE - M.78 - ISA

Ident.: PER-CRZ-CRT-20-00002005.0067001 / 30 OCT 18

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CRUISE - M.78 - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
64	81.0	.780	81.0	.780	81.2	.780	81.6	.780	82.6	.780	84.4	.780
	1265	302	1181	289	1108	277	1045	264	1001	252	984	241
	182.5	462	193.7	458	204.8	454	215.2	450	223.4	447	227.2	447
66	81.1	.780	81.2	.780	81.5	.780	81.9	.780	83.1	.780	85.1	.780
	1274	302	1192	289	1120	277	1059	264	1020	252	1012	241
	181.1	462	192.0	458	202.5	454	212.2	450	219.3	447	221.1	447
68	81.3	.780	81.5	.780	81.8	.780	82.3	.780	83.6	.780	85.8	.780
	1284	302	1203	289	1133	277	1075	264	1040	252	1041	241
	179.8	462	190.3	458	200.2	454	209.1	450	215.0	447	214.9	447
70	81.6	.780	81.7	.780	82.1	.780	82.8	.780	84.1	.780	86.5	.780
	1294	302	1214	289	1147	277	1092	264	1064	252	1072	241
	178.4	462	188.5	458	197.8	454	205.9	450	210.3	447	208.6	447
72	81.8	.780	82.0	.780	82.4	.780	83.2	.780	84.7	.780	87.3	.780
	1305	302	1226	289	1161	277	1110	264	1090	252	1108	241
	176.9	462	186.6	458	195.4	454	202.6	450	205.3	447	201.8	447
74	82.0	.780	82.3	.780	82.8	.780	83.6	.780	85.3	.780	88.3	.780
	1315	302	1239	289	1176	277	1129	264	1118	252	1149	241
	175.5	462	184.7	458	192.8	454	199.0	450	200.1	447	194.6	447
76	82.2	.780	82.5	.780	83.2	.780	84.1	.780	86.0	.780		
	1327	302	1253	289	1193	277	1150	264	1148	252		
	174.0	462	182.7	458	190.2	454	195.4	450	194.8	447		
78	82.4	.780	82.8	.780	83.6	.780	84.6	.780	86.7	.780		
	1339	302	1267	289	1210	277	1175	264	1180	252		
	172.5	462	180.6	458	187.5	454	191.3	450	189.5	447		
80	82.7	.780	83.2	.780	84.0	.780	85.2	.780	87.5	.780		
	1351	302	1282	289	1228	277	1202	264	1217	252		

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 1.2 %	+ 4.1 %

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CRUISE - M.78 - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390
	170.9	462	178.6	458	184.6	454	187.1	450	183.8	447	
	82.9	.780	83.5	.780	84.4	.780	85.7	.780	88.4	.780	
82	1364	302	1297	289	1249	277	1231	264	1259	252	
	169.2	462	176.4	458	181.7	454	182.7	450	177.6	447	
	83.2	.780	83.8	.780	84.8	.780	86.3	.780	89.4	.780	
84	1378	302	1314	289	1270	277	1261	264	1305	252	
	167.5	462	174.2	458	178.6	454	178.3	450	171.4	447	
	83.5	.780	84.2	.780	85.3	.780	87.0	.780			
86	1392	302	1331	289	1295	277	1293	264			
	165.8	462	171.9	458	175.2	454	173.9	450			
	83.8	.780	84.6	.780	85.8	.780	87.7	.780			
88	1407	302	1350	289	1322	277	1330	264			
	164.1	462	169.5	458	171.6	454	169.1	450			
	84.1	.780	85.0	.780	86.3	.780	88.5	.780			
90	1423	302	1370	289	1350	277	1371	264			
	162.3	462	167.0	458	168.0	454	164.0	450			
	84.4	.780	85.4	.780	86.9	.780	89.4	.780			
92	1439	302	1392	289	1380	277	1416	264			
	160.4	462	164.4	458	164.3	454	158.8	450			
	84.7	.780	85.8	.780	87.4	.780					
94	1457	302	1416	289	1412	277					
	158.5	462	161.7	458	160.6	454					
	85.1	.780	86.3	.780	88.1	.780					
96	1475	302	1442	289	1447	277					
	156.5	462	158.7	458	156.7	454					
	85.4	.780	86.7	.780	88.7	.780					
98	1495	302	1470	289	1486	277					
	154.4	462	155.7	458	152.7	454					
100	85.8	.780	87.2	.780							

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 1.2 %	+ 4.1 %

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CRUISE - M.78 - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA	**N1 (%)**	**MACH**
NORMAL AIR CONDITIONING	CG=33.0%	**FUEL FLOW (KG/H/ENG)**	**IAS (KT)**
ANTI ICE OFF		**SR (NM/1000KG)**	**TAS (KT)**

WEIGHT (1000KG)	FL290		FL310		FL330	FL350	FL370	FL390
	1516	302	1500	289				
	152.3	462	152.6	458				

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 1.2 %	+ 4.1 %

CRUISE - M.78 - ISA

Ident.: PER-CRZ-CRT-20-00002005.0061001 / 16 MAR 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

CRUISE - M.78 - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
50	78.9	.780	78.7	.780	78.7	.780	78.7	.780	79.2	.780	80.2	.780
	1138	302	1051	289	972	277	902	264	845	252	800	241
	202.9	462	217.8	458	233.3	454	249.1	450	264.7	447	279.7	447
52	79.0	.780	78.9	.780	78.9	.780	79.0	.780	79.5	.780	80.6	.780
	1144	302	1059	289	982	277	912	264	856	252	812	241
	201.7	462	216.2	458	231.1	454	246.4	450	261.2	447	275.4	447
54	79.2	.780	79.1	.780	79.1	.780	79.3	.780	79.8	.780	81.0	.780
	1152	302	1067	289	991	277	923	264	867	252	826	241
	200.4	462	214.5	458	228.9	454	243.6	450	257.9	447	270.7	447
56	79.4	.780	79.3	.780	79.4	.780	79.6	.780	80.2	.780	81.4	.780
	1160	302	1076	289	1001	277	934	264	879	252	841	241
	199.0	462	212.7	458	226.6	454	240.8	450	254.4	447	266.1	447
58	79.5	.780	79.5	.780	79.6	.780	79.9	.780	80.5	.780	81.9	.780
	1168	302	1085	289	1011	277	945	264	892	252	856	241
	197.7	462	210.9	458	224.3	454	237.8	450	250.7	447	261.2	447
60	79.7	.780	79.8	.780	79.9	.780	80.1	.780	80.9	.780	82.5	.780
	1176	302	1095	289	1022	277	956	264	907	252	875	241
	196.2	462	209.0	458	221.9	454	235.1	450	246.7	447	255.6	447
62	79.9	.780	80.0	.780	80.2	.780	80.5	.780	81.3	.780	83.1	.780
	1186	302	1105	289	1033	277	969	264	921	252	897	241
	194.7	462	207.1	458	219.5	454	232.1	450	242.9	447	249.3	447
64	80.1	.780	80.2	.780	80.5	.780	80.8	.780	81.8	.780	83.9	.780
	1195	302	1116	289	1045	277	982	264	937	252	923	241
	193.1	462	205.1	458	217.1	454	228.9	450	238.7	447	242.2	447
66	80.3	.780	80.5	.780	80.7	.780	81.1	.780	82.3	.780	84.7	.780
	1205	302	1127	289	1056	277	996	264	956	252	954	241

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 1 %	+ 1 %

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CRUISE - M.78 - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
	191.5	462	203.1	458	214.7	454	225.6	450	234.0	447	234.5	447
	80.5	.780	80.7	.780	81.0	.780	81.5	.780	82.9	.780	85.7	.780
68	1216	302	1138	289	1069	277	1011	264	978	252	988	241
	189.9	462	201.1	458	212.3	454	222.4	450	228.8	447	226.4	447
	80.7	.780	81.0	.780	81.3	.780	81.9	.780	83.6	.780		
70	1226	302	1150	289	1082	277	1027	264	1003	252		
	188.2	462	199.0	458	209.6	454	218.9	450	223.0	447		
	81.0	.780	81.2	.780	81.6	.780	82.3	.780	84.3	.780		
72	1237	302	1161	289	1097	277	1045	264	1032	252		
	186.5	462	197.0	458	206.8	454	215.1	450	216.7	447		
	81.2	.780	81.5	.780	82.0	.780	82.9	.780	85.1	.780		
74	1249	302	1174	289	1111	277	1066	264	1065	252		
	184.8	462	195.0	458	204.1	454	211.0	450	210.1	447		
	81.5	.780	81.8	.780	82.3	.780	83.5	.780	86.1	.780		
76	1261	302	1187	289	1127	277	1089	264	1102	252		
	183.1	462	192.8	458	201.3	454	206.3	450	203.0	447		
	81.7	.780	82.0	.780	82.7	.780	84.1	.780				
78	1273	302	1201	289	1144	277	1117	264				
	181.4	462	190.5	458	198.3	454	201.2	450				
	81.8	.780	82.2	.780	82.9	.780	84.4	.780				
79	1278	302	1209	289	1153	277	1132	264				
	180.5	462	189.3	458	196.7	454	198.6	450				

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 1 %	+ 1 %

CRUISE - M.78 - ISA

Ident.: PER-CRZ-CRT-20-00002005.0010001 / 09 DEC 09

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CRUISE - M.78

MAX. CRUISE THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=33.0%

N1 (%)
KG/H/ENG
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
50	80.8	.780	80.6	.780	80.4	.780	80.4	.780	80.9	.780	82.0	.780
	1305	302	1211	289	1127	277	1053	264	994	252	954	241
	176.9	462	188.9	458	201.3	454	213.5	450	225.0	447	234.6	447
52	80.9	.780	80.7	.780	80.6	.780	80.7	.780	81.3	.780	82.5	.780
	1315	302	1222	289	1139	277	1066	264	1011	252	975	241
	175.6	462	187.3	458	199.2	454	210.8	450	221.2	447	229.3	447
54	81.1	.780	80.9	.780	80.9	.780	81.0	.780	81.7	.780	82.9	.780
	1324	302	1232	289	1152	277	1082	264	1030	252	1000	241
	174.3	462	185.7	458	196.8	454	207.8	450	217.2	447	223.6	447
56	81.2	.780	81.1	.780	81.1	.780	81.3	.780	82.1	.780	83.5	.780
	1335	302	1244	289	1166	277	1098	264	1051	252	1030	241
	173.0	462	184.0	458	194.6	454	204.7	450	212.9	447	217.1	447
58	81.4	.780	81.3	.780	81.4	.780	81.7	.780	82.5	.780	84.1	.780
	1345	302	1257	289	1180	277	1116	264	1074	252	1063	241
	171.6	462	182.1	458	192.2	454	201.5	450	208.3	447	210.5	447
60	81.6	.780	81.6	.780	81.7	.780	82.1	.780	83.0	.780	84.7	.780
	1356	302	1271	289	1196	277	1135	264	1099	252	1097	241
	170.2	462	180.1	458	189.6	454	198.1	450	203.6	447	203.9	447
62	81.8	.780	81.8	.780	82.0	.780	82.5	.780	83.5	.780	85.4	.780
	1368	302	1284	289	1213	277	1157	264	1129	252	1133	241
	168.7	462	178.2	458	187.0	454	194.4	450	198.1	447	197.4	447
64	82.0	.780	82.0	.780	82.3	.780	82.9	.780	84.0	.780		
	1382	302	1299	289	1231	277	1180	264	1162	252		
	167.1	462	176.2	458	184.3	454	190.5	450	192.6	447		
66	82.2	.780	82.3	.780	82.7	.780	83.3	.780	84.6	.780		
	1396	302	1315	289	1250	277	1205	264	1196	252		
	165.4	462	174.0	458	181.4	454	186.5	450	187.1	447		
68	82.4	.780	82.6	.780	83.1	.780	83.7	.780	85.2	.780		
	1409	302	1332	289	1272	277	1235	264	1232	252		
	163.8	462	171.8	458	178.3	454	182.1	450	181.6	447		
70	82.6	.780	82.9	.780	83.4	.780	84.2	.780	85.9	.780		
	1424	302	1350	289	1296	277	1267	264	1269	252		
	162.1	462	169.5	458	175.1	454	177.4	450	176.3	447		
72	82.9	.780	83.2	.780	83.8	.780	84.7	.780				
	1441	302	1370	289	1321	277	1301	264				
	160.2	462	167.1	458	171.7	454	172.8	450				
74	83.1	.780	83.6	.780	84.2	.780	85.3	.780				
	1458	302	1391	289	1348	277	1337	264				
	158.4	462	164.5	458	168.2	454	168.2	450				
76	83.4	.780	83.9	.780	84.6	.780	85.9	.780				
	1475	302	1414	289	1380	277	1374	264				
	156.5	462	161.8	458	164.3	454	163.7	450				
78	83.7	.780	84.3	.780	85.1	.780	86.5	.780				
	1495	302	1439	289	1414	277	1411	264				
	154.4	462	159.0	458	160.5	454	159.3	450				

LOW AIR CONDITIONING
△FUEL = −0.5 %

ENGINE ANTI ICE ON
△FUEL = +2.0 %

TOTAL ANTI ICE ON
△FUEL = +4.5 %

CRUISE - M.78 - ISA

Ident.: PER-CRZ-CRT-20-00002005.0013001 / 09 DEC 09

3 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

CRUISE - M.78

MAX. CRUISE THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0%

EPR
KG/H/ENG
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
50	1.217	.780	1.223	.780	1.232	.780	1.246	.780	1.265	.780	1.293	.780
	1280	302	1177	289	1087	277	1019	264	969	252	930	241
	180.3	462	194.4	458	208.7	454	220.5	450	230.7	447	240.5	447
52	1.219	.780	1.226	.780	1.237	.780	1.253	.780	1.274	.780	1.305	.780
	1284	302	1183	289	1099	277	1036	264	987	252	949	241
	179.7	462	193.4	458	206.3	454	217.1	450	226.6	447	235.7	447
54	1.221	.780	1.229	.780	1.242	.780	1.259	.780	1.284	.780	1.320	.780
	1290	302	1190	289	1115	277	1053	264	1005	252	973	241
	178.9	462	192.2	458	203.5	454	213.4	450	222.6	447	229.8	447
56	1.223	.780	1.233	.780	1.248	.780	1.266	.780	1.295	.780	1.337	.780
	1296	302	1200	289	1131	277	1072	264	1023	252	1006	241
	178.1	462	190.6	458	200.6	454	209.7	450	218.6	447	222.3	447
58	1.225	.780	1.237	.780	1.253	.780	1.275	.780	1.307	.780	1.355	.780
	1302	302	1215	289	1148	277	1090	264	1044	252	1041	241
	177.2	462	188.4	458	197.6	454	206.3	450	214.3	447	214.9	447
60	1.228	.780	1.242	.780	1.260	.780	1.284	.780	1.321	.780	1.376	.780
	1311	302	1230	289	1166	277	1108	264	1070	252	1078	241
	176.1	462	186.0	458	194.6	454	202.9	450	209.1	447	207.4	447
62	1.232	.780	1.247	.780	1.266	.780	1.294	.780	1.337	.780	1.399	.780
	1321	302	1247	289	1185	277	1127	264	1103	252	1120	241
	174.7	462	183.5	458	191.5	454	199.5	450	202.9	447	199.8	447
64	1.236	.780	1.252	.780	1.274	.780	1.305	.780	1.354	.780		
	1336	302	1264	289	1203	277	1148	264	1138	252		
	172.8	462	181.0	458	188.5	454	195.9	450	196.6	447		
66	1.241	.780	1.258	.780	1.282	.780	1.318	.780	1.372	.780		
	1352	302	1283	289	1221	277	1173	264	1176	252		
	170.7	462	178.4	458	185.7	454	191.7	450	190.3	447		
68	1.245	.780	1.264	.780	1.291	.780	1.332	.780	1.393	.780		
	1369	302	1302	289	1240	277	1206	264	1216	252		
	168.7	462	175.8	458	182.9	454	186.5	450	183.9	447		
70	1.250	.780	1.270	.780	1.301	.780	1.347	.780	1.415	.780		
	1386	302	1321	289	1261	277	1240	264	1261	252		
	166.5	462	173.2	458	179.9	454	181.2	450	177.4	447		
72	1.256	.780	1.278	.780	1.312	.780	1.364	.780				
	1405	302	1339	289	1284	277	1278	264				
	164.3	462	170.9	458	176.6	454	175.8	450				
74	1.261	.780	1.286	.780	1.325	.780	1.382	.780				
	1424	302	1358	289	1316	277	1318	264				
	162.1	462	168.5	458	172.4	454	170.6	450				
76	1.267	.780	1.295	.780	1.339	.780	1.402	.780				
	1443	302	1378	289	1350	277	1360	264				
	159.9	462	166.1	458	168.0	454	165.3	450				

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = – 0.4 %	△FUEL = + 3 %	△FUEL = + 5.5 %

10F -08F0A320-232 IAE V2527-A5 12100000C5KG330 0 018590 0 0 1 1.0 .0 .0 0 01 .780 .000 .000 0 FCOM-N0-03-05-15-007-140

CRUISE - M.78 - ISA+20

Ident.: PER-CRZ-CRT-20-00002015.0067001 / 30 OCT 18

[4] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CRUISE - M.78 - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA+20	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
64	84.5	.780	84.6	.780	84.9	.780	85.3	.780	86.4	.780	88.3	.780
	1343	302	1256	289	1179	277	1114	264	1068	252	1051	241
	179.1	481	190.0	477	200.8	474	210.8	470	219.0	468	222.4	468
66	84.7	.780	84.9	.780	85.2	.780	85.7	.780	86.9	.780	89.0	.780
	1354	302	1267	289	1192	277	1129	264	1088	252	1080	241
	177.8	481	188.4	477	198.6	474	207.9	470	214.9	468	216.5	468
68	84.9	.780	85.1	.780	85.5	.780	86.1	.780	87.4	.780		
	1364	302	1279	289	1206	277	1146	264	1109	252		
	176.4	481	186.6	477	196.3	474	204.9	470	210.7	468		
70	85.1	.780	85.4	.780	85.8	.780	86.5	.780	88.0	.780		
	1374	302	1291	289	1221	277	1164	264	1135	252		
	175.1	481	184.9	477	194.0	474	201.8	470	206.0	468		
72	85.3	.780	85.6	.780	86.1	.780	87.0	.780	88.6	.780		
	1386	302	1304	289	1236	277	1183	264	1163	252		
	173.7	481	183.0	477	191.6	474	198.5	470	201.1	468		
74	85.6	.780	85.9	.780	86.5	.780	87.4	.780	89.2	.780		
	1397	302	1318	289	1252	277	1204	264	1193	252		
	172.2	481	181.1	477	189.1	474	195.0	470	196.0	468		
76	85.8	.780	86.2	.780	86.9	.780	87.9	.780				
	1409	302	1332	289	1270	277	1227	264				
	170.8	481	179.2	477	186.5	474	191.4	470				
78	86.0	.780	86.5	.780	87.3	.780	88.5	.780				
	1422	302	1347	289	1288	277	1254	264				
	169.2	481	177.2	477	183.8	474	187.3	470				
80	86.3	.780	86.8	.780	87.7	.780	89.0	.780				
	1435	302	1363	289	1308	277	1282	264				

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 1.2 %	+ 4.1 %

Continued on the following page

Continued from the previous page

CRUISE - M.78 - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA+20	**N1 (%)**	**MACH**
NORMAL AIR CONDITIONING	CG=33.0%	**FUEL FLOW (KG/H/ENG)**	**IAS (KT)**
ANTI ICE OFF		**SR (NM/1000KG)**	**TAS (KT)**

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370	FL390
	167.7	481	175.2	477	181.0	474	183.2	470		
82	86.6	.780	87.2	.780	88.1	.780	89.6	.780		
	1449	302	1379	289	1329	277	1313	264		
	166.1	481	173.1	477	178.1	474	178.9	470		
84	86.8	.780	87.5	.780	88.6	.780				
	1463	302	1397	289	1353	277				
	164.4	481	170.9	477	175.0	474				
86	87.1	.780	87.9	.780	89.1	.780				
	1478	302	1416	289	1379	277				
	162.8	481	168.6	477	171.7	474				
88	87.4	.780	88.3	.780	89.6	.780				
	1494	302	1436	289	1408	277				
	161.0	481	166.3	477	168.2	474				
90	87.7	.780	88.7	.780						
	1511	302	1457	289						
	159.3	481	163.8	477						
92	88.1	.780	89.1	.780						
	1529	302	1480	289						
	157.4	481	161.3	477						
94	88.4	.780	89.6	.780						
	1547	302	1506	289						
	155.5	481	158.5	477						
96	88.8	.780								
	1567	302								
	153.6	481								
98	89.1	.780								
	1588	302								
	151.5	481								
100	89.5	.780								

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 1.2 %	+ 4.1 %

Continued on the following page

Continued from the previous page

CRUISE - M.78 - ALL ENGINES						
MAX. CRUISE THRUST LIMITS NORMAL AIR CONDITIONING ANTI ICE OFF	ISA+20 CG=33.0%	N1 (%) FUEL FLOW (KG/H/ENG) SR (NM/1000KG)	MACH IAS (KT) TAS (KT)			
WEIGHT (1000KG)	**FL290**	**FL310**	**FL330**	**FL350**	**FL370**	**FL390**
	1610 302 149.4 481					

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 1.2 %	+ 4.1 %

CRUISE - M.78 - ISA+20

Ident.: PER-CRZ-CRT-20-00002015.0061001 / 16 MAR 15

5 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

CRUISE - M.78 - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA+20	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
50	82.4	.780	82.3	.780	82.2	.780	82.3	.780	82.9	.780	83.9	.780
	1207	302	1116	289	1034	277	961	264	900	252	852	241
	199.3	481	213.9	477	229.0	474	244.4	470	259.9	468	274.4	468
52	82.5	.780	82.4	.780	82.5	.780	82.6	.780	83.2	.780	84.3	.780
	1215	302	1125	289	1044	277	972	264	912	252	865	241
	198.1	481	212.3	477	226.8	474	241.7	470	256.5	468	270.2	468
54	82.7	.780	82.6	.780	82.7	.780	82.9	.780	83.5	.780	84.7	.780
	1222	302	1133	289	1054	277	983	264	923	252	880	241
	196.8	481	210.6	477	224.6	474	239.0	470	253.2	468	265.6	468
56	82.9	.780	82.9	.780	83.0	.780	83.2	.780	83.9	.780	85.2	.780
	1231	302	1143	289	1065	277	994	264	936	252	895	241
	195.5	481	208.9	477	222.4	474	236.3	470	249.8	468	261.1	468
58	83.0	.780	83.1	.780	83.3	.780	83.5	.780	84.3	.780	85.7	.780
	1239	302	1153	289	1075	277	1006	264	950	252	912	241
	194.2	481	207.1	477	220.2	474	233.4	470	246.1	468	256.3	468
60	83.2	.780	83.3	.780	83.5	.780	83.8	.780	84.7	.780	86.3	.780
	1248	302	1163	289	1087	277	1018	264	965	252	932	241
	192.7	481	205.2	477	217.9	474	230.7	470	242.2	468	250.8	468
62	83.4	.780	83.6	.780	83.8	.780	84.2	.780	85.1	.780		
	1258	302	1174	289	1099	277	1031	264	981	252		
	191.2	481	203.3	477	215.5	474	227.7	470	238.4	468		
64	83.6	.780	83.8	.780	84.1	.780	84.5	.780	85.5	.780		
	1269	302	1185	289	1111	277	1046	264	998	252		
	189.7	481	201.4	477	213.1	474	224.6	470	234.3	468		
66	83.8	.780	84.1	.780	84.4	.780	84.9	.780	86.1	.780		
	1279	302	1197	289	1123	277	1061	264	1018	252		

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 1 %	+ 1 %

Continued on the following page

Continued from the previous page

CRUISE - M.78 - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA+20	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390
	188.1	481	199.5	477	210.9	474	221.4	470	229.7	468	
68	84.1	.780	84.3	.780	84.7	.780	85.2	.780	86.7	.780	
	1290	302	1209	289	1136	277	1076	264	1041	252	
	186.5	481	197.5	477	208.4	474	218.2	470	224.6	468	
70	84.3	.780	84.6	.780	85.0	.780	85.6	.780			
	1301	302	1221	289	1151	277	1093	264			
	184.9	481	195.4	477	205.8	474	214.8	470			
72	84.5	.780	84.8	.780	85.3	.780	86.1	.780			
	1313	302	1234	289	1166	277	1112	264			
	183.3	481	193.5	477	203.1	474	211.1	470			
74	84.8	.780	85.1	.780	85.6	.780	86.7	.780			
	1325	302	1246	289	1181	277	1134	264			
	181.6	481	191.5	477	200.4	474	207.0	470			
76	85.0	.780	85.4	.780	86.0	.780					
	1338	302	1261	289	1198	277					
	179.9	481	189.4	477	197.6	474					
78	85.2	.780	85.7	.780	86.4	.780					
	1350	302	1276	289	1216	277					
	178.2	481	187.1	477	194.7	474					
79	85.4	.780	85.8	.780	86.6	.780					
	1356	302	1284	289	1226	277					
	177.4	481	186.0	477	193.1	474					

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 1 %	+ 1 %

CRUISE - M.78 - ISA+20

Ident.: PER-CRZ-CRT-20-00002015.0009001 / 09 DEC 09

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CRUISE - M.78

MAX. CRUISE THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA+20
CG=33.0%

N1 (%)
KG/H/ENG
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
50	84.3	.780	84.1	.780	84.0	.780	84.0	.780	84.6	.780	85.7	.780
	1376	302	1278	289	1188	277	1112	264	1049	252	1007	241
	174.9	481	186.8	477	199.3	474	211.3	470	222.8	468	232.2	468
52	84.4	.780	84.3	.780	84.2	.780	84.3	.780	85.0	.780	86.2	.780
	1386	302	1288	289	1201	277	1126	264	1067	252	1030	241
	173.6	481	185.3	477	197.1	474	208.7	470	219.1	468	227.0	468
54	84.6	.780	84.5	.780	84.5	.780	84.6	.780	85.4	.780	86.7	.780
	1396	302	1300	289	1216	277	1142	264	1087	252	1057	241
	172.3	481	183.7	477	194.8	474	205.6	470	215.1	468	221.1	468
56	84.8	.780	84.7	.780	84.7	.780	85.0	.780	85.8	.780	87.2	.780
	1407	302	1312	289	1230	277	1160	264	1109	252	1089	241
	171.0	481	181.9	477	192.6	474	202.5	470	210.8	468	214.7	468
58	84.9	.780	84.9	.780	85.0	.780	85.4	.780	86.2	.780		
	1418	302	1326	289	1245	277	1178	264	1133	252		
	169.7	481	180.0	477	190.2	474	199.4	470	206.3	468		
60	85.1	.780	85.1	.780	85.3	.780	85.8	.780	86.7	.780		
	1430	302	1340	289	1262	277	1198	264	1161	252		
	168.3	481	178.1	477	187.7	474	196.0	470	201.4	468		
62	85.3	.780	85.4	.780	85.6	.780	86.2	.780	87.2	.780		
	1443	302	1355	289	1280	277	1221	264	1193	252		
	166.8	481	176.2	477	185.0	474	192.3	470	196.0	468		
64	85.5	.780	85.6	.780	86.0	.780	86.5	.780				
	1457	302	1370	289	1299	277	1246	264				
	165.1	481	174.2	477	182.3	474	188.5	470				
66	85.7	.780	85.9	.780	86.4	.780	87.0	.780				
	1472	302	1388	289	1319	277	1273	264				
	163.5	481	172.0	477	179.5	474	184.5	470				
68	85.9	.780	86.2	.780	86.7	.780	87.4	.780				
	1486	302	1406	289	1342	277	1305	264				
	161.9	481	169.8	477	176.4	474	180.0	470				
70	86.2	.780	86.5	.780	87.1	.780	87.9	.780				
	1502	302	1425	289	1367	277	1339	264				
	160.2	481	167.6	477	173.2	474	175.4	470				
72	86.4	.780	86.9	.780	87.5	.780						
	1519	302	1445	289	1394	277						
	158.4	481	165.2	477	169.9	474						
74	86.7	.780	87.2	.780	87.9	.780						
	1537	302	1468	289	1424	277						
	156.5	481	162.6	477	166.3	474						
76	87.0	.780	87.6	.780								
	1556	302	1492	289								
	154.7	481	160.0	477								
78	87.3	.780	87.9	.780								
	1576	302	1519	289								
	152.6	481	157.2	477								

LOW AIR CONDITIONING
△FUEL = −0.5 %

ENGINE ANTI ICE ON
△FUEL = +2.0 %

TOTAL ANTI ICE ON
△FUEL = +4.5 %

CRUISE - M.78 - ISA+20

Ident.: PER-CRZ-CRT-20-00002015.0013001 / 09 DEC 09

6 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

CRUISE - M.78

MAX. CRUISE THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA+20
CG=33.0%

EPR
KG/H/ENG
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
50	1.220	.780	1.227	.780	1.235	.780	1.250	.780	1.269	.780	1.297	.780
	1352	302	1245	289	1151	277	1081	264	1028	252	986	241
	178.0	481	191.8	477	205.7	474	217.2	470	227.3	468	237.1	468
52	1.222	.780	1.229	.780	1.240	.780	1.256	.780	1.278	.780	1.310	.780
	1357	302	1251	289	1165	277	1099	264	1046	252	1006	241
	177.4	481	190.8	477	203.3	474	213.8	470	223.5	468	232.3	468
54	1.224	.780	1.232	.780	1.245	.780	1.263	.780	1.288	.780	1.324	.780
	1363	302	1259	289	1181	277	1117	264	1065	252	1033	241
	176.6	481	189.7	477	200.5	474	210.2	470	219.6	468	226.2	468
56	1.226	.780	1.236	.780	1.251	.780	1.270	.780	1.299	.780	1.341	.780
	1369	302	1271	289	1198	277	1137	264	1084	252	1068	241
	175.8	481	187.8	477	197.7	474	206.6	470	215.6	468	218.9	468
58	1.228	.780	1.240	.780	1.256	.780	1.279	.780	1.311	.780		
	1375	302	1286	289	1216	277	1155	264	1106	252		
	174.9	481	185.6	477	194.8	474	203.4	470	211.4	468		
60	1.231	.780	1.245	.780	1.263	.780	1.288	.780	1.325	.780		
	1385	302	1303	289	1235	277	1174	264	1135	252		
	173.8	481	183.3	477	191.7	474	200.1	470	206.0	468		
62	1.235	.780	1.250	.780	1.269	.780	1.298	.780	1.341	.780		
	1397	302	1320	289	1255	277	1193	264	1170	252		
	172.3	481	180.9	477	188.7	474	196.8	470	199.8	468		
64	1.239	.780	1.256	.780	1.277	.780	1.309	.780				
	1413	302	1338	289	1273	277	1216	264				
	170.3	481	178.4	477	186.0	474	193.2	470				
66	1.244	.780	1.261	.780	1.286	.780	1.322	.780				
	1430	302	1358	289	1292	277	1244	264				
	168.3	481	175.8	477	183.2	474	188.8	470				
68	1.248	.780	1.267	.780	1.295	.780	1.336	.780				
	1447	302	1378	289	1312	277	1279	264				
	166.3	481	173.3	477	180.5	474	183.7	470				
70	1.253	.780	1.274	.780	1.305	.780						
	1466	302	1397	289	1334	277						
	164.2	481	170.9	477	177.5	474						
72	1.259	.780	1.282	.780	1.316	.780						
	1485	302	1416	289	1359	277						
	162.0	481	168.6	477	174.2	474						
74	1.264	.780	1.290	.780								
	1505	302	1436	289								
	159.9	481	166.2	477								
76	1.270	.780										
	1526	302										
	157.7	481										

LOW AIR CONDITIONING
△FUEL = – 0.4 %

ENGINE ANTI ICE ON
△FUEL = + 3 %

TOTAL ANTI ICE ON
△FUEL = + 5.5 %

10F -08F0A320-232 IAE V2527-A5 12100000C5KG330 0 018590 0 0 1 1.0 .0 .0 0 01 .780 .000 .000 20 FCOM-N0-03-05-15-010-140

LONG RANGE CRUISE - ISA

Ident.: PER-CRZ-CRT-30-00002018.0067001 / 30 OCT 18

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL200		FL230		FL250		FL270	
64	60.5	.505	62.3	.511	65.0	.519	70.5	.597	74.1	.658	75.8	.687
	1085	280	984	257	922	237	1031	258	1091	274	1084	275
	148.5	322	162.6	320	172.8	319	175.7	362	181.6	396	189.3	410
66	60.9	.506	62.8	.512	65.7	.523	71.8	.616	74.8	.666	77.0	.706
	1099	280	1002	258	949	239	1082	266	1120	278	1131	283
	146.9	323	160.2	321	169.1	321	172.7	374	179.1	401	186.2	421
68	61.2	.507	63.3	.515	66.6	.532	73.5	.643	75.4	.675	77.6	.713
	1113	281	1021	259	989	243	1148	279	1149	281	1160	286
	145.3	323	157.8	322	165.0	327	170.1	390	176.7	406	183.5	426
70	61.6	.507	64.0	.518	67.7	.543	74.7	.661	76.3	.687	78.0	.716
	1126	281	1043	261	1034	248	1197	287	1186	287	1178	287
	143.8	324	155.4	324	161.2	333	167.4	401	174.4	414	181.4	428
72	61.9	.508	64.7	.522	70.7	.591	75.3	.668	77.5	.705	78.4	.719
	1140	281	1069	263	1150	271	1226	290	1236	295	1195	288
	142.2	324	153.0	327	157.7	363	165.3	405	171.8	425	179.5	429
74	62.3	.509	65.5	.528	71.7	.605	75.9	.675	78.1	.714	78.7	.721
	1154	282	1098	266	1200	278	1254	293	1268	299	1212	289
	140.6	325	150.5	330	154.8	371	163.3	410	169.4	430	177.5	430
76	62.6	.509	66.2	.532	73.0	.625	76.6	.685	78.5	.716	79.1	.723
	1170	282	1125	268	1257	287	1288	298	1286	300	1230	290
	139.0	325	148.1	333	152.7	384	161.3	416	167.7	431	175.5	432
78	63.0	.510	66.8	.535	74.6	.649	77.8	.703	78.8	.719	79.5	.727
	1186	283	1151	270	1324	299	1341	306	1303	301	1252	292
	137.4	326	145.7	335	150.6	399	159.2	427	166.0	433	173.4	434
80	63.4	.511	67.4	.540	75.7	.666	78.5	.713	79.1	.721	80.0	.731
	1203	283	1180	272	1378	307	1378	311	1320	302	1275	294

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.4 %	+ 1.1 %	+ 11.6 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL200		FL230		FL250		FL270	
	135.7	326	143.3	338	148.5	409	157.0	433	164.4	434	171.2	436
	63.9	.513	68.3	.548	76.1	.670	78.8	.716	79.5	.723	80.4	.735
82	1221	284	1219	276	1401	309	1396	312	1338	303	1299	296
	134.0	327	140.7	343	146.9	412	155.5	434	162.7	435	169.0	439
	64.3	.515	69.0	.554	76.6	.675	79.2	.718	79.8	.726	80.9	.741
84	1241	285	1254	280	1426	311	1414	313	1358	304	1328	298
	132.3	328	138.3	347	145.4	415	154.0	436	160.9	437	166.7	443
	64.9	.517	69.6	.559	77.1	.681	79.5	.720	80.2	.730	81.5	.750
86	1265	287	1287	282	1455	315	1431	314	1381	306	1361	302
	130.5	330	136.1	350	143.8	419	152.7	437	159.1	439	164.4	447
	65.5	.521	70.3	.566	77.9	.695	79.8	.722	80.7	.734	82.0	.754
88	1291	289	1324	286	1501	321	1448	315	1404	308	1389	304
	128.8	332	133.8	354	142.2	427	151.3	438	157.3	442	162.1	450
	66.1	.525	70.9	.572	78.7	.707	80.1	.724	81.1	.738	82.4	.758
90	1320	291	1360	289	1547	327	1467	316	1428	309	1415	306
	127.0	335	131.7	358	140.4	435	149.8	440	155.4	444	160.0	453
	66.8	.530	71.5	.577	79.3	.715	80.4	.727	81.6	.744	82.8	.762
92	1350	294	1393	291	1583	331	1488	317	1459	312	1440	307
	125.2	338	129.7	361	138.8	439	148.3	441	153.5	448	157.9	455
	67.3	.533	72.1	.583	79.6	.718	80.8	.731	82.1	.751	83.2	.764
94	1377	295	1430	295	1602	332	1511	319	1491	315	1464	308
	123.5	340	127.7	365	137.7	441	146.8	444	151.6	452	155.8	456
	67.8	.536	72.9	.592	79.9	.721	81.2	.735	82.5	.755	83.6	.766
96	1403	297	1475	300	1622	334	1536	321	1517	317	1486	309
	121.8	342	125.8	371	136.5	443	145.2	446	149.7	454	153.8	457
	68.4	.539	75.9	.650	80.3	.724	81.6	.738	82.9	.758	84.0	.768
98	1433	299	1642	330	1642	335	1560	323	1543	319	1509	310
	120.1	344	124.0	407	135.4	445	143.7	448	147.9	456	151.9	458
100	69.2	.546	77.1	.669	80.6	.727	82.0	.743	83.2	.761	84.4	.770

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.4 %	+ 1.1 %	+ 11.6 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL200		FL230		FL250		FL270	
	1473	303	1715	340	1662	337	1588	325	1567	320	1534	311
	118.3	348	122.2	419	134.3	447	142.1	451	146.1	458	149.9	460

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.4 %	+ 1.1 %	+ 11.6 %

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
64	77.5	.716	78.2	.724	79.2	.740	80.6	.761	82.2	.770	84.4	.780
	1076	275	1029	266	1005	261	995	257	980	249	986	241
	197.0	424	206.4	425	214.0	430	220.3	438	225.5	442	227.0	448
66	77.9	.718	78.6	.728	80.0	.750	81.2	.764	82.9	.774	85.2	.782
	1092	276	1050	268	1038	265	1020	259	1007	250	1018	242
	194.7	425	203.3	427	210.1	436	216.0	441	220.5	444	220.2	449
68	78.3	.721	79.1	.732	80.5	.755	81.7	.767	83.5	.778	86.0	.783
	1110	277	1073	270	1064	267	1044	260	1037	252	1053	242
	192.3	427	200.2	430	206.3	439	211.9	442	215.3	446	213.4	449
70	78.7	.724	79.8	.739	81.1	.760	82.3	.770	84.1	.780	86.8	.785
	1129	279	1102	273	1090	269	1068	261	1065	253	1088	243
	189.9	429	196.9	434	202.7	442	207.9	444	210.1	448	206.7	450
72	79.1	.728	80.4	.749	81.6	.763	82.9	.774	84.8	.782	87.7	.785
	1151	280	1135	277	1115	270	1095	262	1096	253	1126	243
	187.3	431	193.6	439	199.1	444	203.7	446	204.5	448	199.9	450
74	79.6	.732	81.0	.754	82.1	.766	83.5	.777	85.6	.783	88.7	.785
	1173	282	1162	279	1139	271	1123	263	1130	254	1168	243

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 2.3 %	+ 11.4 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
	184.7	434	190.4	443	195.7	446	199.5	448	198.8	449	192.7	450
	80.1	.737	81.5	.759	82.6	.769	84.1	.781	86.3	.784		
76	1199	284	1188	281	1163	272	1152	265	1164	254		
	182.0	436	187.4	445	192.3	447	195.2	450	193.2	450		
	80.7	.746	81.9	.763	83.2	.772	84.7	.781	87.0	.785		
78	1231	288	1213	282	1188	273	1180	265	1199	254		
	179.3	442	184.4	447	188.9	449	190.8	450	187.7	450		
	81.3	.753	82.4	.765	83.8	.775	85.3	.782	87.8	.785		
80	1261	290	1237	283	1216	275	1212	265	1237	254		
	176.6	445	181.5	449	185.4	451	186.1	451	181.9	450		
	81.7	.757	82.9	.768	84.3	.778	86.0	.784	88.8	.785		
82	1287	292	1260	284	1244	276	1245	266	1280	254		
	174.0	448	178.7	450	181.9	453	181.4	452	175.8	450		
	82.2	.761	83.4	.770	84.9	.781	86.7	.784	89.5	.782		
84	1313	294	1285	285	1273	277	1279	266	1312	253		
	171.5	450	175.9	452	178.3	454	176.8	452	170.8	448		
	82.6	.764	83.9	.773	85.4	.781	87.3	.785				
86	1337	295	1310	286	1301	277	1314	266				
	169.0	452	173.0	453	174.7	454	172.2	452				
	83.1	.766	84.4	.776	86.0	.782	88.0	.785				
88	1360	296	1338	288	1333	278	1352	266				
	166.6	453	170.1	455	170.7	455	167.4	453				
	83.5	.768	84.9	.779	86.6	.784	88.9	.785				
90	1383	297	1367	289	1366	278	1393	266				
	164.3	455	167.1	457	166.8	456	162.4	452				
	83.9	.770	85.4	.781	87.2	.784	89.4	.781				
92	1408	298	1395	290	1400	278	1419	265				
	161.9	456	164.2	458	162.9	456	158.6	450				
94	84.4	.773	85.9	.781	87.8	.785						

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 2.3 %	+ 11.4 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA	**N1 (%)**	**MACH**
NORMAL AIR CONDITIONING	CG=33.0%	**FUEL FLOW (KG/H/ENG)**	**IAS (KT)**
ANTI ICE OFF		**SR (NM/1000KG)**	**TAS (KT)**

WEIGHT (1000KG)	FL290		FL310		FL330		FL350	FL370	FL390
	1434	299	1422	290	1435	279			
	159.5	457	161.2	458	159.1	457			
	84.9	.775	86.4	.782	88.4	.785			
96	1461	300	1453	290	1472	279			
	157.1	459	157.9	459	155.2	457			
	85.4	.779	87.0	.783	89.1	.785			
98	1490	301	1486	291	1510	279			
	154.6	461	154.6	460	151.1	456			
	85.8	.781	87.5	.784					
100	1518	302	1520	291					
	152.1	462	151.4	460					

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	+ 2.3 %	+ 11.4 %

LONG RANGE CRUISE - ISA

Ident.: PER-CRZ-CRT-30-00002018.0061001 / 16 MAR 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL200		FL230		FL250		FL270	
50	55.2	.430	58.5	.466	63.7	.533	65.5	.554	67.0	.574	68.3	.591
	839	238	809	234	823	243	791	238	780	237	764	234
	163.7	275	180.6	292	198.8	327	212.3	336	221.3	345	230.7	353
52	55.9	.436	60.8	.494	64.6	.541	66.3	.561	67.9	.582	69.0	.596
	859	241	872	249	848	247	814	241	806	241	785	236
	161.9	278	177.5	310	195.8	332	209.1	340	217.5	350	226.8	356
54	56.8	.444	61.9	.508	65.2	.547	67.2	.571	68.5	.588	69.8	.604
	886	246	911	256	870	250	843	246	827	243	810	240
	160.1	284	174.6	318	193.0	336	205.6	346	213.9	354	222.8	361
56	57.7	.453	62.6	.513	65.8	.552	68.0	.579	69.1	.593	70.6	.612
	917	250	933	259	890	252	869	249	847	245	835	243
	157.5	289	172.4	322	190.4	339	202.2	351	210.6	357	218.9	365
58	58.4	.459	63.3	.520	66.5	.558	68.7	.586	69.9	.599	71.4	.621
	943	254	957	262	912	255	893	252	871	248	863	247
	155.3	293	170.1	326	187.8	342	199.0	355	207.1	361	215.0	371
60	58.9	.462	64.1	.527	67.3	.565	69.2	.590	70.6	.608	72.2	.631
	962	256	982	266	937	258	913	254	898	252	892	251
	153.3	295	168.0	330	185.1	347	196.1	358	203.7	366	211.2	377
62	59.8	.472	64.9	.534	68.0	.572	69.8	.595	71.3	.615	73.0	.640
	996	261	1009	269	964	262	934	257	924	255	920	255
	151.2	301	165.8	335	182.4	352	193.2	361	200.4	370	207.5	382
64	61.5	.492	65.6	.540	68.7	.579	70.5	.601	72.1	.624	73.8	.647
	1053	272	1034	273	990	265	959	260	953	259	947	258
	149.1	314	163.8	339	179.7	356	190.2	365	197.1	376	204.0	386
66	62.6	.504	66.2	.545	69.3	.585	71.2	.609	72.8	.633	74.5	.656
	1094	279	1055	275	1014	268	986	263	983	263	976	262

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.3 %	+ 1 %	+ 4 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL200		FL230		FL250		FL270	
	147.1	322	161.8	341	177.2	359	187.3	369	193.9	381	200.6	392
68	63.3	.511	66.7	.549	69.8	.588	71.9	.616	73.6	.641	75.3	.666
	1124	283	1075	277	1034	270	1014	266	1011	266	1007	266
	145.3	326	160.0	344	174.8	362	184.5	374	190.8	386	197.2	397
70	63.8	.515	67.1	.552	70.3	.593	72.6	.625	74.3	.648	76.0	.675
	1143	285	1093	278	1055	272	1044	270	1039	269	1038	270
	143.8	329	158.1	346	172.5	364	181.6	379	187.8	390	193.9	403
72	64.4	.519	67.5	.554	70.9	.598	73.3	.633	75.0	.655	76.7	.684
	1165	288	1110	280	1080	274	1073	274	1067	273	1071	274
	142.2	332	156.3	347	170.1	368	178.9	384	184.9	394	190.7	408
74	65.0	.526	67.9	.557	71.6	.605	74.0	.640	75.7	.664	77.4	.693
	1192	291	1130	281	1108	278	1102	277	1099	277	1102	277
	140.7	335	154.5	349	167.8	372	176.2	388	182.0	400	187.6	414
76	65.6	.530	68.4	.561	72.2	.612	74.6	.647	76.3	.673	77.9	.700
	1216	294	1153	284	1135	281	1130	280	1130	280	1131	280
	139.2	339	152.6	352	165.5	376	173.7	392	179.2	405	184.7	418
78	66.2	.537	68.9	.565	72.8	.619	75.3	.654	77.0	.681	78.6	.712
	1244	297	1175	285	1164	284	1159	284	1162	284	1168	286
	137.7	342	150.7	354	163.2	380	171.1	397	176.5	410	181.9	425
79	66.5	.539	69.1	.567	73.1	.622	75.6	.657	77.3	.686	78.9	.717
	1256	299	1186	287	1179	286	1173	285	1179	286	1186	288
	137.0	344	149.8	355	162.1	382	170.0	399	175.1	413	180.5	428

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.3 %	+ 1 %	+ 4 %

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
50	69.7	.608	71.2	.631	72.9	.654	74.7	.685	76.7	.718	79.0	.752
	748	231	740	230	733	229	733	229	740	231	751	231
	240.5	360	250.0	370	259.6	381	269.2	395	278.5	412	287.2	431
52	70.5	.617	72.2	.641	73.9	.667	75.6	.696	77.6	.734	79.7	.761
	774	235	768	234	763	233	762	233	774	236	777	234
	235.9	365	244.9	376	254.1	388	263.2	401	272.0	421	280.8	436
54	71.4	.627	73.1	.651	74.8	.679	76.5	.711	78.4	.746	80.4	.766
	802	239	796	238	794	238	795	239	804	240	800	236
	231.4	371	240.0	382	248.7	395	257.5	410	266.0	428	274.6	440
56	72.3	.638	74.0	.661	75.7	.691	77.3	.726	79.2	.756	81.0	.771
	831	243	824	242	826	243	830	244	832	244	823	238
	227.0	377	235.3	388	243.5	402	252.0	418	260.4	433	268.4	442
58	73.1	.646	74.8	.673	76.5	.702	78.2	.740	79.8	.763	81.7	.776
	857	246	856	246	855	247	865	249	858	246	849	240
	222.8	382	230.7	395	238.6	408	246.6	426	255.1	437	262.0	445
60	73.9	.654	75.7	.684	77.3	.717	78.9	.749	80.4	.768	82.5	.780
	885	250	886	251	891	252	893	253	881	248	876	241
	218.8	387	226.3	401	233.9	417	241.8	432	249.9	440	255.5	447
62	74.7	.664	76.4	.694	78.1	.730	79.5	.757	81.0	.772	83.2	.781
	915	254	917	255	925	257	920	256	904	249	901	241
	214.9	393	222.0	407	229.3	424	237.2	437	244.7	443	248.7	448
64	75.5	.674	77.1	.704	78.8	.741	80.1	.763	81.6	.776	83.9	.780
	946	258	948	259	958	262	945	258	930	251	925	241
	211.0	399	217.9	413	224.9	431	232.8	440	239.4	445	241.9	448
66	76.2	.684	77.9	.717	79.4	.749	80.6	.768	82.3	.780	84.7	.779
	977	262	983	264	986	265	969	260	957	253	951	241
	207.2	405	214.0	421	221.0	436	228.5	443	233.9	448	234.8	447
68	77.0	.694	78.6	.729	80.0	.757	81.2	.771	83.0	.781	85.6	.778
	1009	266	1018	269	1014	268	992	261	982	253	983	240
	203.6	411	210.1	428	217.1	440	224.2	445	228.2	448	226.8	446

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.3 %	+ 1 %	+ 5 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
70	77.6	.703	79.3	.740	80.6	.762	81.7	.775	83.6	.781	86.3	.771
	1040	270	1052	273	1039	270	1017	263	1006	253	1005	238
	200.1	416	206.3	434	213.4	443	219.7	447	222.6	448	220.0	442
72	78.3	.716	79.9	.748	81.1	.767	82.3	.780	84.3	.779		
	1076	275	1081	276	1063	272	1045	264	1030	252		
	196.8	424	203.0	439	209.7	446	215.1	450	216.8	447		
74	79.0	.727	80.4	.755	81.6	.770	83.0	.781	85.1	.779		
	1112	280	1109	279	1087	273	1070	265	1063	252		
	193.5	430	199.7	443	206.1	448	210.4	450	210.3	447		
76	79.7	.738	80.9	.761	82.1	.774	83.6	.781	86.0	.778		
	1148	284	1136	281	1112	274	1095	265	1097	252		
	190.2	437	196.5	446	202.4	450	205.7	450	203.4	446		
78	80.2	.745	81.4	.765	82.6	.778	84.2	.780	86.6	.770		
	1177	287	1160	283	1139	276	1119	265	1117	249		
	187.4	441	193.4	449	198.6	452	201.0	450	197.8	442		
79	80.5	.748	81.6	.767	82.9	.780	84.4	.780				
	1191	289	1173	284	1153	277	1131	264				
	186.0	443	191.9	450	196.7	453	198.7	449				

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.3 %	+ 1 %	+ 5 %

LONG RANGE CRUISE - ISA

Ident.: PER-CRZ-CRT-30-00002018.0009001 / 10 DEC 09
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

LONG RANGE CRUISE

MAX. CRUISE THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=33.0%

N1 (%)
KG/H/ENG
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL200		FL230		FL250		FL270	
50	58.3	.439	64.1	.513	67.8	.557	68.9	.571	70.3	.590	72.2	.620
	1028	242	1065	259	1014	255	964	246	951	244	957	247
	136.2	280	151.0	321	168.8	342	179.8	347	186.6	355	193.5	370
52	59.5	.450	65.0	.522	68.1	.558	69.7	.579	71.2	.600	73.6	.640
	1075	249	1099	263	1029	255	995	249	987	248	1007	255
	133.7	287	148.7	327	166.6	343	176.5	351	183.0	361	189.7	382
54	61.9	.482	66.4	.536	68.6	.561	70.6	.588	72.3	.615	75.0	.657
	1171	267	1145	270	1050	257	1029	253	1030	255	1055	262
	131.3	308	146.6	336	164.1	345	173.3	357	179.6	370	186.0	392
56	63.6	.502	67.7	.549	69.4	.568	71.5	.597	73.6	.633	75.7	.666
	1240	278	1189	277	1082	260	1065	258	1081	263	1086	266
	129.1	320	144.5	344	161.3	349	170.2	362	176.3	381	182.9	397
58	64.6	.513	68.5	.555	70.1	.575	72.4	.609	74.9	.650	76.2	.669
	1283	284	1219	280	1113	263	1105	263	1130	270	1110	267
	127.5	327	142.7	348	158.6	353	167.2	370	173.1	391	180.0	400
60	65.6	.521	68.8	.557	70.8	.582	73.5	.624	75.9	.663	76.6	.672
	1321	289	1236	281	1145	267	1152	270	1172	276	1131	268
	126.0	333	141.1	349	156.0	357	164.4	379	170.2	399	177.3	401
62	66.5	.530	69.1	.558	71.5	.590	74.7	.640	76.4	.667	77.3	.679
	1358	294	1252	282	1180	270	1202	277	1198	278	1164	272
	124.6	338	139.6	349	153.5	362	161.6	389	167.7	402	174.2	405
64	67.3	.538	69.4	.559	72.3	.598	75.8	.654	76.9	.670	78.0	.687
	1393	298	1268	282	1216	274	1249	284	1220	279	1199	275
	123.2	343	138.0	350	151.1	367	159.0	397	165.3	404	171.1	410
66	68.2	.545	69.7	.560	73.2	.610	76.6	.665	77.3	.673	78.7	.696
	1427	302	1285	283	1259	280	1288	289	1242	280	1235	279
	121.9	348	136.5	351	148.8	374	156.6	404	163.0	405	168.1	415
68	68.8	.550	70.3	.565	74.1	.623	77.1	.669	77.9	.680	79.4	.704
	1453	305	1315	285	1306	286	1314	290	1276	284	1273	282
	120.7	351	134.6	354	146.5	383	154.5	406	160.3	409	165.2	420
70	69.4	.554	70.9	.571	75.2	.637	77.5	.672	78.5	.688	80.1	.713
	1479	307	1347	288	1356	293	1337	292	1312	287	1312	286
	119.6	354	132.7	358	144.3	391	152.5	408	157.7	414	162.4	426
72	69.8	.557	71.5	.577	76.2	.650	77.9	.674	79.2	.695	80.8	.722
	1500	309	1381	292	1404	299	1359	293	1349	290	1350	290
	118.4	355	130.9	361	142.2	399	150.5	409	155.1	419	159.6	431
74	70.1	.558	72.1	.583	77.0	.661	78.4	.681	79.8	.703	81.2	.729
	1518	310	1413	295	1448	305	1394	296	1386	294	1386	293
	117.3	356	129.1	365	140.2	406	148.2	413	152.6	423	157.0	435
76	70.3	.559	72.7	.589	77.6	.667	79.0	.687	80.5	.712	81.7	.737
	1535	310	1449	298	1480	308	1428	299	1426	298	1424	296
	116.3	357	127.4	369	138.5	410	146.0	417	150.2	429	154.3	440
78	70.6	.560	73.4	.596	78.0	.671	79.6	.693	81.1	.720	82.2	.744
	1551	311	1485	302	1506	309	1463	302	1465	301	1463	299
	115.2	357	125.7	373	136.8	412	143.8	421	147.9	433	151.8	444

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = –0.5 %	△FUEL = +2.5 %	△FUEL = +5 %

LONG RANGE CRUISE

MAX. CRUISE THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=33.0%

N1 (%)
KG/H/ENG
NM/1000KG
MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
50	74.8	.662	75.5	.671	76.9	.694	78.4	.722	79.9	.749	81.8	.771
	976	253	941	246	933	244	932	243	935	242	939	238
	200.6	392	209.3	394	216.4	404	223.4	416	229.9	430	235.7	442
52	75.3	.666	76.3	.680	77.8	.706	79.1	.733	80.6	.759	82.4	.778
	1000	255	974	249	970	248	969	247	970	245	972	240
	197.2	394	204.9	399	211.6	410	218.1	423	224.3	435	229.5	446
54	75.8	.669	77.1	.690	78.7	.718	79.8	.745	81.3	.768	83.1	.783
	1022	256	1009	253	1009	253	1008	251	1007	248	1007	242
	193.9	396	200.6	405	207.0	418	213.0	429	218.7	441	222.9	449
56	76.5	.676	77.9	.699	79.3	.727	80.5	.754	82.0	.775	83.6	.783
	1051	259	1043	257	1044	256	1043	255	1041	251	1038	242
	190.4	400	196.5	410	202.6	423	208.3	434	213.4	445	216.3	449
58	77.2	.685	78.8	.710	80.0	.738	81.2	.763	82.5	.781	84.3	.786
	1086	263	1082	261	1083	260	1080	258	1075	253	1076	243
	186.6	406	192.6	417	198.2	429	203.6	440	208.2	448	209.3	451
60	78.0	.694	79.5	.721	80.6	.747	81.8	.771	83.1	.784	85.0	.788
	1122	266	1121	266	1119	264	1116	261	1109	254	1116	244
	183.0	411	188.7	423	194.1	434	199.0	444	202.8	450	202.5	452
62	78.7	.703	80.1	.730	81.2	.755	82.4	.777	83.6	.784	85.8	.789
	1158	270	1157	269	1155	267	1150	263	1140	254	1156	244
	179.6	416	185.0	428	190.1	439	194.7	448	197.2	450	195.8	453
64	79.5	.713	80.7	.739	81.8	.764	82.9	.781	84.2	.786	86.1	.780
	1197	274	1197	273	1194	270	1182	265	1179	255	1170	241
	176.3	422	181.3	434	186.1	444	190.3	450	191.4	451	191.1	447
66	80.2	.723	81.3	.748	82.5	.771	83.4	.784	84.9	.788		
	1235	278	1233	276	1231	273	1217	266	1218	255		
	173.1	428	177.9	439	182.2	449	185.8	452	185.6	452		
68	80.7	.730	81.8	.755	83.0	.776	83.9	.784	85.6	.789		
	1272	281	1270	279	1264	275	1247	266	1258	256		
	170.0	432	174.5	443	178.6	452	181.3	452	180.0	453		
70	81.3	.739	82.4	.764	83.5	.780	84.4	.786	86.2	.789		
	1311	285	1309	283	1296	277	1285	267	1296	256		
	166.8	437	171.1	448	175.0	454	176.3	453	174.7	453		
72	81.8	.747	83.0	.771	83.9	.783	85.0	.788	86.4	.772		
	1348	288	1346	285	1331	278	1324	267	1291	250		
	163.9	442	167.9	452	171.2	456	171.6	454	171.5	443		
74	82.3	.753	83.5	.776	84.4	.784	85.6	.789				
	1384	291	1382	288	1362	278	1363	268				
	161.1	446	164.8	455	167.5	456	166.8	455				
76	82.8	.761	84.0	.780	84.8	.785	86.2	.789				
	1423	294	1415	289	1398	279	1402	268				
	158.3	450	161.8	458	163.4	457	162.3	455				
78	83.4	.768	84.4	.782	85.4	.787	86.5	.782				
	1462	297	1446	290	1436	279	1417	265				
	155.5	455	158.7	459	159.4	458	159.0	451				

LOW AIR CONDITIONING
△FUEL = −0.5 %

ENGINE ANTI ICE ON
△FUEL = +2.5 %

TOTAL ANTI ICE ON
△FUEL = +5 %

LONG RANGE CRUISE - ISA

Ident.: PER-CRZ-CRT-30-00002018.0013001 / 10 DEC 09

3 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

LONG RANGE CRUISE

MAX. CRUISE THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0%

EPR
KG/H/ENG
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL200		FL230		FL250		FL270	
50	1.013	.439	1.027	.480	1.052	.573	1.079	.615	1.092	.619	1.105	.620
	1011	243	991	241	1073	262	1049	266	983	257	921	246
	138.7	280	151.6	300	164.0	352	177.9	373	189.5	373	200.8	370
52	1.015	.447	1.030	.489	1.063	.603	1.084	.616	1.098	.623	1.111	.622
	1048	247	1032	246	1147	277	1059	266	999	258	939	247
	136.2	286	148.4	306	161.4	370	176.6	374	187.6	375	197.7	371
54	1.017	.455	1.033	.497	1.070	.609	1.089	.618	1.102	.621	1.118	.627
	1087	252	1072	250	1172	280	1071	267	1007	258	964	249
	133.8	291	145.4	312	159.7	374	175.2	375	185.6	374	194.3	374
56	1.019	.463	1.037	.514	1.075	.614	1.094	.621	1.107	.621	1.126	.634
	1124	256	1131	259	1191	282	1087	269	1020	258	992	252
	131.5	296	142.5	322	158.3	377	173.5	377	183.2	374	190.7	378
58	1.022	.471	1.042	.536	1.079	.616	1.100	.623	1.114	.625	1.135	.641
	1162	260	1201	270	1202	283	1100	270	1044	259	1023	255
	129.3	300	139.8	336	157.3	378	171.9	378	180.3	376	187.0	383
60	1.024	.478	1.046	.558	1.083	.617	1.103	.621	1.120	.631	1.144	.650
	1200	264	1275	282	1213	283	1107	268	1071	262	1058	259
	127.1	305	137.1	350	156.2	379	170.1	377	177.4	380	183.4	388
62	1.026	.485	1.051	.575	1.088	.619	1.109	.623	1.128	.638	1.158	.669
	1237	268	1333	291	1227	285	1126	269	1101	265	1110	267
	125.0	309	135.1	360	155.0	380	167.9	378	174.3	384	179.9	399
64	1.029	.492	1.059	.600	1.093	.622	1.115	.627	1.136	.645	1.171	.682
	1279	273	1410	304	1243	286	1151	271	1133	268	1152	273
	122.9	314	133.4	376	153.7	382	165.4	381	171.2	388	176.8	407
66	1.032	.499	1.064	.607	1.098	.625	1.121	.633	1.145	.654	1.181	.692
	1318	276	1441	308	1259	287	1179	274	1170	272	1188	277
	120.9	319	132.0	380	152.4	384	162.9	384	168.2	394	173.9	413
68	1.035	.514	1.069	.612	1.102	.623	1.128	.639	1.159	.671	1.191	.700
	1381	285	1462	310	1267	286	1209	277	1222	280	1220	280
	118.9	328	131.0	383	151.1	383	160.3	388	165.3	404	171.2	418
70	1.038	.531	1.073	.615	1.106	.623	1.135	.646	1.170	.683	1.198	.703
	1448	294	1479	311	1279	286	1243	280	1264	285	1244	282
	117.0	339	130.1	385	149.5	383	157.7	392	162.6	411	168.6	419
72	1.042	.547	1.076	.616	1.111	.627	1.144	.654	1.179	.692	1.207	.714
	1515	303	1490	312	1304	288	1280	284	1300	289	1287	286
	115.2	349	129.4	386	147.6	385	155.1	397	160.2	417	165.5	426
74	1.046	.564	1.080	.617	1.116	.631	1.156	.671	1.188	.699	1.217	.726
	1586	313	1501	313	1332	290	1334	291	1333	292	1334	292
	113.6	360	128.7	386	145.6	388	152.6	407	157.9	421	162.4	433
76	1.049	.577	1.084	.619	1.122	.636	1.167	.682	1.195	.704	1.226	.737
	1641	321	1515	314	1361	293	1377	297	1361	294	1378	296
	112.3	369	127.9	388	143.6	391	150.3	414	155.7	424	159.6	440

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = – 0.3 %	△FUEL = + 2 %	△FUEL = + 5 %

10F -08F0A320-232 IAE V2527-A5 12200000C5KG330 0 018590 0 0 1 1.0 .0 .0 0 01 .990 .000 .000 0 FCOM-N0-03-05-15-011-140

LONG RANGE CRUISE

MAX. CRUISE THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=33.0%

EPR
KG/H/ENG
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
50	1.122	.629	1.147	.650	1.184	.689	1.215	.714	1.247	.743	1.291	.777
	887	240	877	237	889	242	885	240	897	239	925	240
	209.9	372	217.4	381	225.2	401	232.6	412	237.6	426	241.0	446
52	1.131	.636	1.163	.670	1.195	.696	1.229	.732	1.260	.755	1.310	.784
	916	243	925	245	917	244	931	246	939	244	960	242
	205.6	377	212.6	393	220.6	405	226.5	422	230.5	433	234.3	450
54	1.141	.645	1.177	.684	1.207	.707	1.239	.738	1.279	.771	1.326	.785
	948	246	964	251	954	249	964	249	988	249	989	243
	201.3	382	208.2	401	215.5	411	220.8	426	223.8	442	227.6	450
56	1.155	.662	1.189	.694	1.220	.723	1.250	.749	1.297	.782	1.344	.787
	993	253	997	255	1000	255	1005	253	1028	253	1026	243
	197.1	392	204.3	407	210.3	421	214.8	432	218.1	448	219.9	451
58	1.169	.677	1.198	.698	1.231	.735	1.263	.760	1.313	.785	1.363	.787
	1037	259	1021	256	1041	259	1047	257	1059	254	1063	243
	193.2	401	200.5	410	205.4	428	209.0	438	212.7	451	212.4	452
60	1.181	.689	1.210	.712	1.241	.742	1.281	.775	1.327	.786	1.384	.787
	1075	264	1066	262	1075	262	1097	262	1089	255	1101	244
	189.7	408	196.0	418	200.7	431	203.5	447	207.0	451	205.1	452
62	1.191	.698	1.221	.727	1.251	.751	1.297	.782	1.344	.787	1.407	.786
	1108	268	1112	268	1116	265	1134	265	1126	255	1140	243
	186.5	413	191.7	427	195.7	437	198.8	451	200.5	451	197.8	451
64	1.199	.701	1.232	.738	1.263	.761	1.311	.786	1.361	.787		
	1132	269	1153	272	1158	269	1165	267	1161	255		
	183.3	415	187.7	433	190.9	442	194.3	453	194.4	451		
66	1.210	.715	1.240	.743	1.279	.775	1.324	.786	1.381	.788		
	1179	275	1186	274	1210	275	1194	267	1201	255		
	179.5	423	183.8	436	186.3	451	189.7	453	188.1	452		
68	1.220	.728	1.250	.752	1.294	.782	1.340	.787	1.401	.787		
	1225	280	1228	278	1248	278	1230	267	1239	255		
	175.9	431	179.6	441	182.3	455	184.4	454	182.1	451		
70	1.230	.739	1.260	.760	1.307	.786	1.355	.787	1.422	.785		
	1268	285	1270	281	1280	279	1267	267	1279	254		
	172.6	438	175.6	446	178.5	457	179.1	454	176.0	450		
72	1.237	.742	1.273	.771	1.320	.786	1.372	.788				
	1296	286	1317	286	1309	279	1306	267				
	169.5	439	171.7	452	174.7	457	173.9	454				
74	1.245	.750	1.288	.781	1.332	.787	1.390	.787				
	1337	289	1363	290	1342	279	1344	267				
	165.9	444	168.1	458	170.5	458	168.8	454				
76	1.255	.758	1.300	.785	1.346	.788	1.410	.786				
	1379	293	1396	291	1379	280	1386	267				
	162.6	448	164.9	460	166.1	458	163.5	453				

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = – 0.3 %	△FUEL = + 2 %	△FUEL = + 5 %

10F -08F0A320-232 IAE V2527-A5 12200000C5KG330 0 018590 0 0 1 1 0 0 0 0 0 01 .990 .000 .000 0 FCOM-N0-03-05-15-01 2-140

LONG RANGE CRUISE - ISA+20

Ident.: PER-CRZ-CRT-30-00002033.0149001 / 30 OCT 18

4 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA+20	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL200		FL230		FL250		FL270	
64	62.9	.504	64.6	.508	67.6	.518	73.3	.593	77.1	.655	79.1	.687
	1129	279	1026	256	965	236	1079	256	1149	273	1147	275
	147.8	334	160.9	330	171.2	331	173.5	374	178.7	411	186.1	427
66	63.2	.505	65.1	.508	68.4	.522	74.4	.608	77.8	.663	80.3	.705
	1144	280	1043	256	996	238	1128	262	1180	276	1197	283
	146.1	334	158.5	331	167.4	333	170.2	384	176.2	416	183.1	438
68	63.6	.506	65.6	.509	69.4	.531	76.4	.640	78.5	.671	81.0	.713
	1159	280	1060	257	1037	242	1206	277	1209	280	1229	286
	144.5	335	156.2	331	163.3	339	167.5	404	173.9	421	180.4	443
70	64.0	.507	66.1	.511	70.5	.541	77.7	.657	79.6	.687	81.4	.716
	1174	281	1080	257	1084	247	1259	285	1254	287	1248	287
	142.9	335	153.8	332	159.4	346	164.8	415	171.5	430	178.3	445
72	64.3	.508	66.7	.513	73.3	.586	78.4	.665	80.8	.705	81.8	.718
	1188	281	1101	258	1199	268	1291	289	1308	295	1266	288
	141.3	336	151.4	333	155.9	374	162.7	420	169.0	442	176.4	447
74	64.7	.508	67.3	.515	74.4	.599	78.9	.672	81.4	.713	82.1	.721
	1203	281	1126	260	1252	275	1320	292	1342	298	1284	289
	139.7	336	148.9	335	152.7	382	160.7	424	166.6	447	174.4	448
76	65.1	.509	68.0	.519	75.7	.617	79.7	.683	81.8	.716	82.5	.723
	1219	282	1153	262	1310	284	1358	297	1361	300	1304	290
	138.1	337	146.4	338	150.5	394	158.8	431	164.9	449	172.4	450
78	65.5	.510	68.6	.522	77.4	.645	81.1	.703	82.1	.718	82.9	.727
	1236	282	1179	263	1388	297	1418	306	1379	301	1327	292
	136.5	337	143.9	339	148.4	412	156.6	444	163.2	450	170.4	452
80	65.9	.511	69.2	.525	78.6	.661	81.8	.712	82.5	.720	83.4	.730
	1254	283	1208	265	1444	305	1456	310	1396	301	1350	293

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.4 %	+ 1.2 %	+ 11.5 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI ICE OFF

ISA+20
CG=33.0%

N1 (%) **MACH**
FUEL FLOW (KG/H/ENG) **IAS (KT)**
SR (NM/1000KG) **TAS (KT)**

WEIGHT (1000KG)	FL100		FL150		FL200		FL230		FL250		FL270	
	134.8	338	141.3	341	146.2	422	154.4	450	161.6	451	168.2	454
	66.3	.512	70.2	.534	79.1	.667	82.1	.715	82.8	.722	83.8	.734
82	1273	284	1252	269	1472	307	1477	312	1415	302	1375	295
	133.1	339	138.5	347	144.6	426	152.9	452	159.9	453	166.0	457
	66.8	.514	71.2	.544	79.6	.672	82.5	.718	83.2	.725	84.4	.741
84	1294	285	1304	275	1501	310	1496	313	1436	304	1407	298
	131.3	340	135.7	354	143.1	429	151.5	453	158.2	455	163.8	461
	67.4	.516	72.6	.562	80.3	.681	82.8	.719	83.6	.729	85.0	.749
86	1319	286	1371	284	1537	315	1513	314	1460	305	1442	302
	129.6	342	133.2	365	141.5	435	150.1	454	156.5	457	161.5	466
	68.0	.520	73.7	.576	81.5	.701	83.1	.721	84.0	.732	85.5	.754
88	1345	288	1432	291	1600	324	1531	315	1484	307	1471	304
	127.8	344	130.9	375	139.9	448	148.8	456	154.6	459	159.3	469
	68.6	.524	74.4	.585	82.2	.709	83.4	.724	84.5	.736	85.9	.758
90	1374	290	1477	296	1640	328	1551	316	1510	309	1499	305
	126.0	346	128.7	380	138.1	453	147.3	457	152.8	461	157.2	471
	69.3	.527	75.0	.590	82.7	.715	83.8	.727	85.0	.743	86.3	.761
92	1404	292	1512	299	1670	331	1573	317	1543	312	1526	307
	124.3	349	126.9	384	136.7	457	145.9	459	150.9	465	155.1	473
	69.8	.531	75.6	.595	83.0	.717	84.2	.730	85.5	.750	86.7	.764
94	1433	294	1547	301	1688	332	1597	319	1578	315	1551	308
	122.5	351	125.1	387	135.6	458	144.4	461	149.0	470	153.1	475
	70.4	.533	77.7	.633	83.2	.719	84.6	.734	85.9	.754	87.1	.766
96	1462	296	1666	321	1705	333	1622	320	1606	317	1575	309
	120.7	353	123.5	411	134.5	459	142.8	463	147.1	473	151.1	476
	71.0	.538	79.2	.655	83.5	.720	85.0	.737	86.4	.758	87.6	.768
98	1495	298	1746	332	1723	334	1647	322	1633	318	1600	310
	119.0	356	121.9	426	133.5	460	141.3	466	145.3	475	149.2	477
100	71.8	.544	80.0	.667	83.8	.722	85.5	.743	86.8	.761	88.0	.770

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.4 %	+ 1.2 %	+ 11.5 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA+20	N1 (%) MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG) IAS (KT)
ANTI ICE OFF		SR (NM/1000KG) TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL200		FL230		FL250		FL270	
	1538	302	1801	339	1742	335	1680	325	1660	320	1625	311
	117.1	360	120.4	434	132.4	461	139.7	469	143.6	477	147.2	479

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.4 %	+ 1.2 %	+ 11.5 %

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA+20	N1 (%) MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG) IAS (KT)
ANTI ICE OFF		SR (NM/1000KG) TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
64	80.9	.716	81.6	.723	82.8	.738	84.2	.760	86.0	.770	88.3	.780
	1140	275	1092	266	1067	261	1058	257	1044	249	1052	241
	193.6	442	202.6	443	210.1	448	216.1	457	221.1	462	222.2	468
66	81.3	.718	82.1	.727	83.5	.748	84.9	.764	86.6	.774	89.1	.782
	1158	276	1114	268	1102	264	1086	258	1073	250	1087	242
	191.3	443	199.6	445	206.2	454	211.8	460	216.1	464	215.6	469
68	81.7	.721	82.6	.731	84.1	.755	85.5	.767	87.4	.779	89.5	.773
	1176	277	1139	270	1132	267	1111	260	1106	252	1100	239
	189.0	445	196.6	448	202.5	458	207.8	462	211.0	467	210.8	464
70	82.1	.723	83.3	.739	84.7	.760	86.0	.770	88.0	.780		
	1196	278	1170	273	1160	269	1136	261	1136	253		
	186.6	446	193.3	452	198.8	461	203.9	463	205.9	468		
72	82.6	.727	84.0	.748	85.3	.763	86.7	.773	88.7	.782		
	1219	280	1205	276	1186	270	1165	262	1169	253		
	184.1	449	190.1	458	195.3	463	199.8	465	200.4	469		
74	83.0	.731	84.5	.754	85.8	.766	87.3	.777	89.5	.783		
	1242	281	1234	279	1212	271	1196	263	1205	254		

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.4 %	+ 1.1 %	+ 11 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA+20	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390
	181.5	451	187.0	461	191.9	465	195.5	468	194.7	469	
76	83.6	.737	85.1	.759	86.4	.769	87.9	.780	89.8	.778	
	1271	284	1262	281	1237	272	1228	264	1221	252	
	178.8	455	183.9	464	188.7	467	191.3	470	191.0	466	
78	84.2	.745	85.6	.762	86.9	.772	88.5	.781			
	1305	287	1289	282	1264	273	1258	265			
	176.1	460	181.0	467	185.3	468	187.0	470			
80	84.8	.752	86.1	.765	87.5	.775	89.2	.782			
	1337	290	1315	283	1294	275	1291	265			
	173.5	464	178.1	468	181.9	470	182.3	471			
82	85.3	.756	86.5	.767	88.1	.778	89.8	.783			
	1365	292	1339	284	1325	276	1325	265			
	170.9	467	175.4	470	178.3	473	177.9	471			
84	85.8	.760	87.0	.770	88.6	.780					
	1393	294	1365	285	1355	277					
	168.4	469	172.7	471	174.9	474					
86	86.2	.763	87.6	.772	89.2	.781					
	1418	295	1392	286	1386	277					
	166.0	471	169.8	473	171.2	474					
88	86.7	.765	88.1	.775	89.8	.782					
	1443	296	1422	287	1419	278					
	163.6	472	166.9	475	167.3	475					
90	87.1	.768	88.6	.779	89.8	.766					
	1469	297	1453	289	1408	271					
	161.3	474	164.0	477	165.1	465					
92	87.6	.770	89.2	.781							
	1494	298	1483	289							
	159.0	475	161.1	478							
94	88.1	.772	89.6	.781							

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.4 %	+ 1.1 %	+ 11 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA+20	**N1 (%)**	**MACH**
NORMAL AIR CONDITIONING	CG=33.0%	**FUEL FLOW (KG/H/ENG)**	**IAS (KT)**
ANTI ICE OFF		**SR (NM/1000KG)**	**TAS (KT)**

WEIGHT (1000KG)	FL290		FL310		FL330	FL350	FL370	FL390
	1522	299	1512	290				
	156.6	477	158.1	478				
	88.6	.775	89.8	.773				
96	1551	300	1516	287				
	154.2	478	156.1	473				
	89.1	.778						
98	1582	301						
	151.8	480						
	89.5	.780						
100	1612	302						
	149.3	482						

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.4 %	+ 1.1 %	+ 11 %

LONG RANGE CRUISE - ISA+20

Ident.: PER-CRZ-CRT-30-00002033.0143001 / 16 MAR 15

[5] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA+20	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL200		FL230		FL250		FL270	
50	57.1	.426	59.7	.447	66.3	.532	68.2	.553	69.8	.571	71.1	.586
	867	235	810	224	865	243	832	238	818	236	800	232
	162.7	282	179.3	290	196.5	340	209.9	349	218.8	358	227.9	365
52	57.5	.428	61.2	.464	67.2	.541	69.1	.561	70.6	.579	71.9	.593
	879	236	858	233	892	247	856	241	845	239	823	235
	161.0	283	176.0	302	193.6	345	206.6	354	214.9	363	223.9	369
54	58.7	.439	63.7	.496	67.9	.545	70.0	.570	71.3	.585	72.7	.600
	914	243	934	250	912	249	885	245	868	242	849	238
	159.1	291	172.8	323	190.9	348	203.2	360	211.3	367	219.8	373
56	59.7	.449	65.0	.511	68.5	.550	70.8	.577	72.0	.590	73.5	.610
	951	248	979	258	934	252	911	249	889	244	878	242
	156.4	297	169.8	332	188.2	351	199.9	364	207.9	370	215.8	379
58	60.6	.457	65.7	.518	69.2	.556	71.4	.583	72.7	.597	74.4	.619
	982	253	1004	261	956	254	936	251	915	247	909	246
	154.0	302	167.6	337	185.7	355	196.7	368	204.4	374	211.9	385
60	61.1	.461	66.6	.526	70.0	.564	72.0	.587	73.5	.604	75.3	.630
	1002	255	1034	265	983	258	957	253	942	250	942	251
	152.0	305	165.4	342	183.0	360	193.7	371	200.9	379	208.0	392
62	62.1	.470	67.4	.534	70.7	.571	72.6	.592	74.3	.613	76.2	.639
	1037	260	1063	269	1010	261	979	255	972	254	972	254
	149.9	311	163.3	347	180.3	364	190.8	374	197.6	384	204.3	397
64	63.7	.489	68.2	.541	71.4	.577	73.4	.598	75.1	.623	76.9	.646
	1094	270	1091	273	1037	264	1006	258	1005	258	1000	257
	147.8	323	161.2	352	177.7	368	187.8	378	194.2	390	200.9	402
66	64.8	.501	68.7	.545	72.0	.582	74.1	.606	75.9	.632	77.7	.655
	1138	277	1111	275	1061	267	1035	262	1037	262	1031	261

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.3 %	+ 1 %	+ 5 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA+20	**N1 (%)**	**MACH**
NORMAL AIR CONDITIONING	CG=33.0%	**FUEL FLOW (KG/H/ENG)**	**IAS (KT)**
ANTI ICE OFF		**SR (NM/1000KG)**	**TAS (KT)**

WEIGHT (1000KG)	FL100		FL150		FL200		FL230		FL250		FL270	
	145.8	332	159.3	354	175.2	372	184.8	382	191.0	396	197.5	407
	65.6	.509	69.3	.549	72.6	.586	74.8	.614	76.7	.640	78.5	.665
68	1170	282	1134	277	1083	269	1065	265	1067	266	1064	265
	143.9	337	157.5	357	172.8	374	182.0	387	187.9	401	194.2	413
	66.1	.513	69.8	.553	73.1	.590	75.5	.623	77.4	.646	79.2	.674
70	1191	284	1156	279	1106	271	1098	269	1094	269	1098	269
	142.4	339	155.7	360	170.4	377	179.1	393	185.0	405	190.9	419
	66.7	.517	70.4	.558	73.7	.596	76.3	.632	78.1	.654	80.0	.683
72	1215	286	1178	282	1133	273	1131	273	1125	272	1131	273
	140.8	342	154.0	363	168.0	381	176.3	399	182.1	410	187.8	425
	67.4	.524	71.0	.564	74.4	.602	77.1	.639	78.8	.663	80.7	.692
74	1244	290	1205	285	1160	276	1162	277	1158	276	1164	277
	139.3	346	152.1	366	165.6	384	173.6	404	179.3	415	184.7	430
	68.1	.529	71.6	.568	75.0	.609	77.7	.645	79.5	.671	81.3	.699
76	1272	293	1230	287	1191	280	1190	280	1192	280	1195	280
	137.8	350	150.2	370	163.3	389	171.1	407	176.5	421	181.8	434
	68.7	.535	72.1	.573	75.6	.616	78.4	.652	80.2	.680	81.9	.710
78	1299	297	1255	290	1222	283	1221	283	1227	284	1233	285
	136.3	354	148.4	373	161.0	394	168.6	412	173.8	426	179.0	441
	69.1	.538	72.3	.575	76.0	.620	78.7	.656	80.6	.684	82.3	.716
79	1313	298	1268	291	1239	285	1238	285	1244	286	1253	287
	135.6	356	147.5	374	159.9	396	167.4	414	172.4	429	177.6	445

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.3 %	+ 1 %	+ 5 %

CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA+20	N1 (%)	MACH
NORMAL AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H/ENG)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
50	72.5	.603	74.4	.630	76.2	.654	78.1	.684	80.2	.717	82.6	.751
	784	229	783	230	777	228	778	229	785	230	798	231
	237.2	372	246.1	386	255.5	397	264.7	412	273.7	430	282.1	450
52	73.4	.613	75.4	.640	77.2	.666	79.0	.696	81.2	.733	83.4	.760
	813	233	812	233	809	233	810	233	822	236	826	234
	232.6	378	241.1	392	250.0	405	258.7	419	267.2	439	275.7	456
54	74.4	.625	76.3	.649	78.2	.679	79.9	.710	82.1	.746	84.1	.766
	845	238	840	237	842	238	844	238	856	240	851	236
	228.0	385	236.3	397	244.7	412	253.2	427	261.2	447	269.6	459
56	75.4	.635	77.2	.659	79.1	.690	80.9	.725	82.8	.755	84.8	.770
	876	242	871	241	874	242	881	244	885	244	876	238
	223.6	392	231.7	404	239.5	419	247.7	437	255.8	453	263.5	462
58	76.3	.644	78.1	.671	79.8	.699	81.7	.738	83.5	.762	85.5	.776
	905	246	904	246	904	246	917	249	912	246	904	240
	219.4	397	227.1	411	234.7	425	242.3	445	250.5	457	257.2	465
60	77.1	.653	79.0	.682	80.7	.714	82.5	.748	84.1	.767	86.3	.780
	935	249	938	250	942	251	948	253	937	248	932	241
	215.4	403	222.6	418	230.1	433	237.6	451	245.4	460	250.8	468
62	78.0	.663	79.8	.692	81.6	.727	83.1	.756	84.7	.771		
	968	254	971	254	979	256	977	256	962	249		
	211.4	409	218.3	424	225.5	442	233.1	455	240.3	462		
64	78.8	.674	80.5	.702	82.4	.740	83.7	.763	85.4	.777		
	1001	258	1003	258	1016	261	1005	258	991	251		
	207.6	416	214.3	430	221.0	449	228.7	459	235.0	466		
66	79.6	.684	81.3	.716	83.0	.749	84.3	.767	86.1	.780		
	1035	262	1041	263	1047	265	1030	260	1018	253		
	203.9	422	210.4	438	217.1	455	224.4	462	229.6	468		
68	80.3	.694	82.1	.728	83.6	.756	84.8	.771	86.7	.780		
	1068	266	1079	268	1076	267	1054	261	1041	253		
	200.3	428	206.6	446	213.3	459	220.1	464	224.5	468		

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.3 %	+ 1 %	+ 5 %

Continued on the following page

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CRUISE - LONG RANGE - ALL ENGINES

MAX. CRUISE THRUST LIMITS	ISA+20	**N1 (%)**	**MACH**
NORMAL AIR CONDITIONING	CG=33.0%	**FUEL FLOW (KG/H/ENG)**	**IAS (KT)**
ANTI ICE OFF		**SR (NM/1000KG)**	**TAS (KT)**

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370	FL390
70	81.0	.702	82.8	.739	84.2	.762	85.5	.775		
	1101	270	1116	273	1104	270	1082	263		
	196.9	433	202.8	453	209.6	463	215.7	467		
72	81.7	.715	83.4	.748	84.7	.767	86.1	.779		
	1140	275	1147	276	1130	271	1111	264		
	193.6	441	199.5	458	206.0	465	211.2	469		
74	82.4	.726	84.0	.755	85.2	.770	86.7	.781		
	1177	279	1177	279	1155	273	1138	265		
	190.3	448	196.3	462	202.4	468	206.6	470		
76	83.1	.736	84.5	.761	85.7	.774	86.8	.765		
	1214	284	1206	281	1181	274	1130	259		
	187.1	454	193.1	466	198.8	470	203.9	461		
78	83.7	.744	85.0	.765	86.3	.778				
	1246	287	1231	283	1210	276				
	184.3	459	190.1	468	195.1	472				
79	84.0	.748	85.2	.767	86.6	.779				
	1262	289	1244	284	1225	276				
	182.9	462	188.6	469	193.2	473				

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.3 %	+ 1 %	+ 5 %

LONG RANGE CRUISE - ISA+20

Ident.: PER-CRZ-CRT-30-00002033.0009001 / 10 DEC 09
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

LONG RANGE CRUISE

MAX. CRUISE THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA+20
CG=33.0%

N1 (%)
KG/H/ENG
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL200		FL230		FL250		FL270	
50	60.7	.440	67.8	.528	70.4	.553	71.7	.568	73.2	.587	75.0	.614
	1083	243	1144	266	1045	253	998	245	985	243	987	244
	134.6	291	149.9	343	169.0	353	179.9	359	186.6	368	193.4	382
52	64.0	.482	68.7	.534	70.8	.554	72.6	.576	74.1	.596	76.5	.634
	1207	267	1173	269	1062	254	1031	248	1022	247	1041	252
	132.1	319	148.0	347	166.7	354	176.5	364	182.9	374	189.4	394
54	66.3	.508	69.5	.541	71.3	.558	73.4	.584	75.1	.610	78.0	.652
	1295	281	1203	273	1086	255	1065	252	1065	253	1092	260
	129.8	336	146.2	352	164.1	356	173.2	369	179.4	382	185.6	405
56	67.1	.514	70.4	.547	72.1	.565	74.3	.593	76.4	.627	78.8	.661
	1325	285	1232	276	1119	259	1101	256	1116	260	1128	264
	128.4	340	144.5	356	161.2	361	170.0	374	176.0	393	182.3	411
58	67.6	.518	71.0	.552	72.8	.572	75.1	.602	77.8	.643	79.3	.665
	1347	287	1256	278	1153	262	1138	260	1167	267	1154	266
	127.2	343	142.8	359	158.5	365	167.0	380	172.7	403	179.3	414
60	68.3	.523	71.3	.553	73.6	.579	76.2	.616	78.9	.658	79.8	.668
	1375	290	1274	279	1187	265	1187	266	1215	274	1177	267
	125.8	346	141.1	360	155.8	370	164.0	389	169.6	412	176.5	415
62	69.1	.530	71.7	.555	74.4	.587	77.4	.633	79.5	.663	80.5	.676
	1408	294	1293	280	1223	269	1240	274	1243	276	1213	270
	124.5	350	139.5	361	153.2	375	161.2	400	167.0	415	173.2	420
64	69.8	.535	72.0	.556	75.1	.594	78.7	.649	80.0	.666	81.2	.684
	1437	297	1311	281	1259	273	1292	281	1269	277	1250	273
	123.2	354	137.9	361	150.8	380	158.4	409	164.5	418	170.1	425
66	70.5	.541	72.4	.557	75.9	.603	79.6	.660	80.5	.670	81.9	.692
	1467	300	1330	281	1298	277	1336	286	1296	279	1289	277
	121.9	358	136.3	362	148.4	385	155.9	417	162.0	420	167.0	430
68	71.2	.546	73.0	.563	76.8	.616	80.1	.664	81.1	.677	82.6	.700
	1496	303	1363	284	1347	283	1365	288	1333	282	1328	281
	120.7	361	134.3	366	146.1	393	153.7	420	159.2	424	164.0	436
70	71.9	.551	73.6	.568	77.9	.631	80.5	.667	81.8	.685	83.4	.710
	1525	305	1396	287	1401	290	1390	290	1371	286	1370	285
	119.5	364	132.4	370	143.7	403	151.6	421	156.6	429	161.1	441
72	72.3	.554	74.2	.574	79.0	.643	81.0	.670	82.4	.692	84.1	.719
	1548	307	1431	290	1451	296	1416	291	1409	289	1412	289
	118.3	366	130.5	373	141.6	411	149.5	423	154.0	434	158.3	447
74	72.6	.555	74.8	.580	80.0	.656	81.6	.677	83.1	.700	84.6	.727
	1567	308	1464	293	1500	302	1453	294	1448	292	1452	292
	117.2	367	128.7	377	139.5	419	147.2	428	151.4	439	155.6	452
76	72.9	.556	75.4	.586	80.6	.663	82.2	.684	83.8	.708	85.1	.735
	1585	308	1500	296	1537	306	1491	297	1490	296	1494	295
	116.0	368	127.0	381	137.7	423	144.9	432	149.0	444	152.9	457
78	73.2	.557	76.1	.592	81.0	.666	82.8	.691	84.5	.717	85.7	.743
	1603	309	1538	300	1564	307	1529	300	1533	300	1537	299
	114.9	369	125.3	385	136.0	425	142.6	436	146.6	449	150.3	462

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = –0.5 %	△FUEL = +2.5 %	△FUEL = +5 %

LONG RANGE CRUISE

MAX. CRUISE THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA+20
CG=33.0%

N1 (%)
KG/H/ENG
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
50	77.9	.657	78.7	.667	80.3	.691	81.9	.719	83.5	.748	85.5	.769
	1012	251	979	244	973	242	974	242	982	241	987	237
	200.2	405	208.6	408	215.5	419	222.1	433	228.1	448	233.6	461
52	78.5	.662	79.6	.677	81.1	.700	82.6	.730	84.2	.757	86.1	.776
	1039	253	1016	248	1010	246	1015	246	1021	244	1023	240
	196.6	409	204.0	415	210.6	425	216.7	440	222.4	454	227.3	465
54	79.0	.666	80.4	.686	82.1	.713	83.4	.742	85.0	.766	86.7	.781
	1064	255	1052	252	1052	251	1057	250	1059	248	1061	242
	193.1	411	199.7	420	205.8	433	211.5	447	216.8	459	220.8	468
56	79.7	.673	81.3	.696	82.8	.724	84.1	.751	85.6	.774	87.3	.781
	1096	258	1090	256	1092	255	1095	254	1096	250	1093	242
	189.4	415	195.4	426	201.2	439	206.7	453	211.5	464	214.3	468
58	80.5	.682	82.1	.707	83.5	.735	84.7	.760	86.2	.780	87.3	.756
	1133	261	1130	260	1135	259	1134	257	1133	252	1082	233
	185.7	421	191.3	432	196.6	446	201.9	458	206.3	468	209.4	453
60	81.3	.691	82.9	.717	84.2	.745	85.4	.768	86.8	.782		
	1172	265	1172	264	1176	263	1173	260	1167	253		
	182.0	426	187.4	439	192.4	453	197.3	463	200.9	469		
62	82.1	.700	83.5	.727	84.8	.754	86.0	.774	87.3	.783		
	1209	268	1213	268	1215	267	1209	262	1203	254		
	178.5	432	183.5	445	188.4	458	192.9	466	195.2	470		
64	82.9	.709	84.2	.738	85.4	.762	86.5	.780	87.7	.778		
	1250	273	1256	272	1255	270	1245	264	1224	252		
	175.1	438	179.8	451	184.4	463	188.5	470	190.5	467		
66	83.6	.719	84.8	.746	86.0	.770	87.1	.783	87.8	.750		
	1292	277	1296	276	1294	273	1281	265	1210	242		
	171.8	444	176.3	457	180.6	467	184.0	471	185.6	449		
68	84.1	.727	85.4	.754	86.6	.775	87.6	.783				
	1331	280	1334	279	1330	275	1315	266				
	168.6	449	172.9	461	176.9	470	179.4	472				
70	84.7	.736	85.9	.761	87.1	.779	88.0	.782				
	1374	284	1375	282	1364	276	1346	265				
	165.4	454	169.5	466	173.3	473	175.0	471				
72	85.3	.745	86.5	.768	87.6	.783	88.1	.761				
	1415	287	1414	284	1403	278	1335	257				
	162.4	460	166.3	470	169.5	475	171.6	458				
74	85.8	.752	87.0	.773	88.0	.783						
	1454	290	1450	287	1435	278						
	159.6	464	163.2	473	165.7	475						
76	86.3	.759	87.5	.777	88.1	.768						
	1494	293	1484	288	1430	272						
	156.7	468	160.2	475	163.0	466						
78	86.9	.766	87.9	.781	88.1	.743						
	1535	296	1522	290	1419	262						
	153.9	473	157.1	478	159.1	451						

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = –0.5 %	△FUEL = +2.5 %	△FUEL = +5 %

LONG RANGE CRUISE - ISA+20

Ident.: PER-CRZ-CRT-30-00002033.0013001 / 10 DEC 09

6 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

LONG RANGE CRUISE

MAX. CRUISE THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA+20
CG=33.0%

EPR
KG/H/ENG
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL200		FL230		FL250		FL270	
50	1.013	.438	1.028	.478	1.055	.576	1.082	.615	1.095	.619	1.107	.619
	1059	242	1038	240	1135	264	1104	266	1034	257	971	246
	137.0	290	149.7	311	161.9	368	175.9	388	187.5	388	198.4	385
52	1.016	.446	1.031	.488	1.067	.604	1.086	.616	1.100	.621	1.113	.622
	1098	247	1083	245	1209	277	1114	266	1049	258	989	247
	134.6	295	146.5	317	159.5	386	174.7	389	185.6	389	195.4	387
54	1.018	.454	1.034	.496	1.073	.610	1.091	.618	1.104	.619	1.120	.627
	1137	251	1124	250	1234	280	1126	267	1057	257	1015	249
	132.2	301	143.6	323	157.9	390	173.3	390	183.6	388	192.0	390
56	1.020	.462	1.038	.514	1.078	.614	1.097	.622	1.109	.620	1.128	.633
	1176	255	1187	259	1253	282	1143	269	1073	257	1044	252
	129.9	306	140.7	334	156.6	392	171.6	392	181.1	389	188.5	394
58	1.022	.470	1.043	.536	1.082	.616	1.101	.621	1.116	.624	1.137	.641
	1216	260	1262	270	1263	283	1153	269	1098	259	1077	255
	127.7	311	138.0	348	155.6	393	170.0	392	178.3	391	184.9	398
60	1.025	.477	1.048	.558	1.086	.617	1.105	.620	1.123	.630	1.147	.651
	1257	264	1341	282	1274	283	1164	268	1125	261	1116	259
	125.6	316	135.4	363	154.6	394	168.2	392	175.3	395	181.3	405
62	1.027	.485	1.053	.578	1.090	.619	1.111	.622	1.130	.636	1.161	.668
	1299	268	1410	292	1289	284	1184	269	1156	264	1168	267
	123.4	321	133.4	376	153.4	395	165.9	393	172.4	399	177.9	416
64	1.030	.492	1.062	.602	1.096	.622	1.117	.627	1.138	.643	1.173	.681
	1341	272	1487	305	1305	286	1210	271	1190	267	1211	272
	121.4	325	131.7	392	152.1	397	163.5	396	169.3	403	174.8	423
66	1.033	.499	1.067	.608	1.100	.623	1.123	.632	1.148	.654	1.184	.691
	1382	276	1515	308	1319	286	1239	274	1232	272	1249	276
	119.4	330	130.5	395	150.8	398	161.0	399	166.3	410	172.0	429
68	1.036	.513	1.072	.612	1.103	.621	1.130	.638	1.161	.670	1.193	.697
	1446	284	1537	310	1326	285	1272	276	1285	279	1280	279
	117.4	340	129.6	398	149.5	396	158.4	403	163.4	420	169.3	434
70	1.040	.531	1.076	.615	1.108	.622	1.138	.645	1.172	.682	1.200	.700
	1519	294	1553	312	1344	286	1306	279	1329	285	1305	280
	115.6	351	128.7	400	147.8	397	155.9	407	160.9	427	166.7	435
72	1.043	.547	1.079	.616	1.113	.626	1.147	.655	1.182	.692	1.210	.713
	1590	303	1564	312	1370	288	1348	284	1368	289	1357	286
	113.8	362	128.1	401	145.9	400	153.4	414	158.4	433	163.5	444
74	1.047	.565	1.082	.617	1.118	.630	1.159	.671	1.191	.699	1.220	.725
	1668	314	1575	313	1398	290	1403	291	1402	292	1405	291
	112.1	374	127.4	401	143.9	403	150.9	423	156.2	438	160.5	451
76	1.050	.578	1.086	.619	1.124	.635	1.169	.681	1.197	.701	1.229	.736
	1725	321	1590	314	1429	292	1447	296	1427	293	1453	296
	110.9	383	126.6	402	142.0	406	148.7	430	154.0	440	157.6	458

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = – 0.3 %	△FUEL = + 2 %	△FUEL = + 5 %

10F -08F0A320-232 IAE V2527-A5 12200000C5KG330 0 018590 0 0 1 1 0 .0 .0 0 01 .990 .000 .000 15 FCOM-N0-03-05-15-017-140

LONG RANGE CRUISE

MAX. CRUISE THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA+20
CG=33.0%

EPR
KG/H/ENG
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL290		FL310		FL330		FL350		FL370		FL390	
50	1.124	.628	1.150	.650	1.187	.687	1.218	.714	1.250	.743	1.295	.776
	934	239	926	237	937	241	937	240	952	239	979	240
	207.4	388	214.8	398	222.6	417	229.6	430	234.1	446	237.7	465
52	1.133	.635	1.166	.669	1.197	.693	1.231	.729	1.263	.755	1.314	.784
	965	242	974	245	964	243	982	246	996	243	1017	242
	203.2	392	210.2	409	218.1	421	223.6	439	227.2	452	231.0	470
54	1.143	.644	1.180	.683	1.210	.706	1.242	.737	1.283	.771	1.330	.785
	999	246	1016	250	1006	248	1020	249	1047	249	1049	243
	198.9	397	205.8	418	212.9	428	217.8	444	220.8	462	224.2	470
56	1.158	.662	1.192	.693	1.223	.722	1.253	.748	1.300	.781	1.348	.787
	1049	253	1050	254	1056	254	1064	253	1088	253	1089	243
	194.8	409	201.9	424	207.7	439	211.8	451	215.2	468	216.5	471
58	1.171	.677	1.200	.697	1.234	.733	1.266	.759	1.316	.785		
	1094	259	1076	256	1096	258	1109	257	1122	254		
	191.0	418	198.1	427	202.8	445	206.1	457	209.8	471		
60	1.184	.689	1.213	.712	1.244	.741	1.285	.774	1.331	.786		
	1133	264	1126	262	1138	262	1160	262	1154	254		
	187.6	425	193.6	436	197.8	450	200.8	466	204.0	471		
62	1.193	.696	1.224	.727	1.254	.751	1.300	.782	1.348	.787		
	1165	267	1175	268	1182	265	1200	265	1194	255		
	184.4	429	189.3	445	192.9	456	196.2	471	197.6	472		
64	1.202	.701	1.234	.736	1.266	.761	1.315	.785				
	1193	269	1215	271	1227	269	1234	266				
	181.1	432	185.3	450	188.2	462	191.6	473				
66	1.213	.715	1.243	.743	1.283	.775	1.328	.786				
	1243	275	1254	274	1280	275	1265	266				
	177.4	441	181.3	455	183.8	470	186.9	473				
68	1.223	.727	1.252	.751	1.297	.782	1.342	.785				
	1291	280	1297	278	1320	278	1299	266				
	173.8	449	177.2	460	179.9	475	182.0	473				
70	1.232	.736	1.263	.760	1.311	.785						
	1332	284	1342	281	1354	279						
	170.5	454	173.3	465	176.1	477						
72	1.240	.741	1.277	.772	1.320	.783						
	1368	286	1394	286	1374	278						
	167.2	457	169.4	472	173.1	476						
74	1.248	.749	1.291	.781								
	1412	289	1439	290								
	163.7	462	166.0	478								
76	1.258	.757	1.299	.780								
	1457	292	1456	289								
	160.3	467	163.9	477								

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
△FUEL = – 0.3 %	△FUEL = + 2 %	△FUEL = + 5 %

10F -08F0A320-232 IAE V2527-A5 12200000C5KG330 0 018590 0 0 1 1 0 0 0 0 01 990 000 000 20 FCOM-N0-03-05-15-020-140

GENERAL

Ident.: PER-CRZ-ICQ-10-00002036.0001001 / 22 MAR 17

[1] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

In cruise, a quick check table (*Refer to QRH/PER-M In Cruise Quick Check at a Given Mach Number (Paper Only)* or use the performance application of FlySmart with Airbus) allows the flight crew to determine the fuel consumption and the time required to cover a given air distance from any moment in cruise to land.

The QRH table is established for:
- Cruise Mach number: M 0.78
- Descent profile: M 0.78/300 kt/250 kt
- Approach and landing: 120 kg or 270 lb -6 min IMC
- ISA
- CG = 33 %
- Normal air conditioning
- Anti ice OFF

Note:
1. *In the table, the asterisk "*" means that a step climb of 4 000 ft has been made to reach the corresponding flight level.*
2. *The flight level shown on the top of each column is the final flight level.*
3. *For each degree celsius above ISA apply a fuel correction of*
   0.005 (kg/°C/NM) x ΔISA (°C) x Air Distance (NM)
   or 0.011 (lb/°C/NM) x ΔISA (°C) x Air Distance (NM)

GENERAL

Ident.: PER-CRZ-ICQ-10-00002036.0004001 / 22 MAR 17

[2] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

In cruise, a quick check table (*Refer to QRH/PER-M In Cruise Quick Check at a Given Mach Number (Paper Only)* or use the performance application of FlySmart with Airbus) allows the flight crew to determine the fuel consumption and the time required to cover a given air distance from any moment in cruise to land.

The QRH table is established for:
- Cruise Mach number: M 0.78
- Descent profile: M 0.78/300 kt/250 kt
- Approach and landing: 140 kg or 310 lb -6 min IMC
- ISA
- CG = 33 %
- Normal air conditioning
- Anti ice OFF

Note: *1. In the table, the asterisk "*" means that a step climb of 4 000 ft has been made to reach the corresponding flight level.*
2. The flight level shown on the top of each column is the final flight level.
3. For each degree celsius above ISA apply a fuel correction of
0.005 (kg/°C/NM) × ΔISA (°C) × Air Distance (NM)
or 0.011 (lb/°C/NM) × ΔISA (°C) × Air Distance (NM)

CORRECTION FOR DEVIATION FROM REFERENCE WEIGHT

Ident.: PER-CRZ-ICQ-10-00002039.0001001 / 22 MAR 16

Applicable to: ALL

The in cruise quick check table is based on a reference initial weight.
The fuel consumption must be corrected when the actual weight is different from the reference initial weight.
If it is lower (or greater) than the reference weight, subtract (or add) the value given in the correction part of the table per 1 000 kg or 1 000 lb below (or above) the reference weight.

EXAMPLE FOR THE QRH USE

Ident.: PER-CRZ-ICQ-20-00014741.0001001 / 22 MAR 17
Applicable to: ALL

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.

In-cruise quick check with cruise at M.78

FL 370

Actual cruise weight : 55 000 kg

Remaining ground distance : 800 NM

ISA +10

Average wind during flight : -40 kt (head wind)

- Evaluation of air distance to be covered
  - Use the “Ground Distance/Air Distance” conversion table (*Refer to PER-OPD-CON-AEO M.78*)

AIR DISTANCE (NM) - M.78							
GROUND	TAILWIND			WIND COMPONENTS (KT)			HEADWIND
DIST. (NM)	**+150**	**+100**	**+50**	**0**	**-50**	**-100**	**-150**
10	7	8	9	10	11	13	15
20	15	16	18	20	23	26	30
30	22	25	27	30	34	39	45
40	30	33	36	40	45	51	60
50	37	41	45	50	56	64	75
100	75	82	90	100	113	129	150
200	150	164	180	200	225	257	300
300	225	245	270	300	338	386	450
400	300	327	360	400	450	514	600
500	375	409	450	500	563	643	750
1000	750	818	900	1000	1125	1286	1501
1500	1125	1227	1350	1500	1688	1929	2251
2000	1500	1636	1800	2000	2250	2572	3001
2500	1875	2045	2250	2500	2813	3215	3752
3000	2250	2454	2700	3000	3375	3858	4502
3500	2624	2863	3150	3500	3938	4501	5252
4000	2999	3272	3600	4000	4500	5144	6003
4500	3374	3681	4050	4500	5063	5787	6753
5000	3749	4090	4500	5000	5626	6430	7503

The corresponding air distance is : 880 NM

- Determination of the fuel consumption and time for the reference initial weight in cruise.
  - Enter table (*Refer to QRH/PER-M In Cruise Quick Check at a Given Mach Number (Paper Only)*) with an air distance of 880 NM and FL 370 for ISA.

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING
CRUISE : M.78 - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. INITIAL WEIGHT = 60000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 290	310	330	350	370	390	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL290 FL310	FL330 FL350	FL370 FL390
725	4001 1.43	3772 1.44	3583 1.45	3427 1.46	3313 1.46	3278 1.46	16	24	42
750	4145 1.47	3909 1.47	3712 1.48	3551 1.49	3433 1.49	3397 1.49	17	25	43
775	4290 1.50	4045 1.51	3842 1.52	3675 1.52	3552 1.53	3516 1.53	18	26	45
800	4434 1.53	4181 1.54	3971 1.55	3799 1.56	3672 1.56	3634 1.56	18	27	46
825	4578 1.56	4317 1.57	4100 1.58	3922 1.59	3791 2.00	3752 2.00	19	28	48
850	4722 2.00	4452 2.01	4229 2.01	4046 2.02	3910 2.03	3870 2.03	20	29	49
875	4866 2.03	4588 2.04	4358 2.05	4169 2.06	4029 2.06	3988 2.06	20	30	51
900	5010 2.06	4724 2.07	4486 2.08	4292 2.09	4148 2.10	4105 2.10	21	31	52
925	5153 2.09	4859 2.10	4615 2.11	4415 2.12	4266 2.13	4222 2.13	22	32	54
950	5297 2.13	4995 2.14	4743 2.15	4538 2.16	4385 2.16	4340 2.16	22	33	55
975	5440 2.16	5130 2.17	4871 2.18	4661 2.19	4503 2.20	4456 2.20	23	34	57
1000	5584 2.19	5265 2.20	DO NOT USE FOR OPERATIONAL PURPOSE						58
1025	5727 2.22	5400 2.23							60
1050	5870 2.26	5535 2.27	5256 2.28	5028 2.29	4857 2.30	4806 2.30	25	36	61
1075	6013 2.29	5670 2.30	5383 2.31	5150 2.32	4974 2.33	4922 2.33	26	37	63
1100	6156 2.32	5805 2.33	5511 2.34	5272 2.36	5092 2.36	5038 2.36	26	38	64
1125	6299 2.35	5940 2.37	5639 2.38	5394 2.39	5209 2.40	5153 2.40	27	39	65
1150	6442 2.39	6074 2.40	5766 2.41	5516 2.42	5326 2.43	5269 2.43	28	40	67
1175	6584 2.42	6209 2.43	5893 2.44	5637 2.46	5443 2.46	5384 2.46	28	41	68
1200	6727 2.45	6343 2.46	6020 2.48	5759 2.49	5560 2.50	5499 2.50	29	42	70
1225	6869 2.48	6477 2.50	6148 2.51	5880 2.52	5676 2.53	5614 2.53	30	43	71
1250	7012 2.52	6611 2.53	6274 2.54	6001 2.56	5793 2.56	5729 2.56	30	44	72
1275	7154 2.55	6745 2.56	6401 2.58	6122 2.59	5909 3.00	5843 3.00	31	45	74
1300	7296 2.58	6879 2.59	6528 3.01	6243 3.02	6025 3.03	5957 3.03	31	46	75
1325	7439 3.01	7013 3.03	6655 3.04	6364 3.06	6141 3.07	6071 3.07	32	46	76
1350	7581 3.05	7147 3.06	6781 3.08	6485 3.09	6257 3.10	6185 3.10	33	47	78

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
ΔFUEL = – 0.5 %	ΔFUEL = + 3 %	ΔFUEL = + 6 %

Fuel consumption : 4 053 kg
Time needed : 2 h 07 min

- Correction due to real in cruise weight of 55 000 kg
  - Δ fuel consumption : -51 kg per 1 000 kg below reference
  - Δ fuel : -51 × (60 - 55) = -255 kg
- Temperature correction :
  - Δ fuel consumption : +0.005 kg per 1 °above ISA and per 1 NM Air distance
  - Δ fuel : +0.005 × 10 × 880 = 44 kg

RESULT

Fuel : 4 053 - 255 + 44 = 3 842 kg
Time : 2 h 07 min

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PERFORMANCE

HOLDING

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PER-HLD-GEN GENERAL

GENERAL ..... A

PER-HLD-HLD HOLDING TABLES

CONF 0 - GREEN DOT SPEED ..... A

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Localization Title	Toc Index	ID	Reason
PER-HLD-GEN GENERAL	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045, 09063.
PER-HLD-GEN GENERAL	A	2	Effectivity update: The information no longer applies to MSN 05449.
PER-HLD-HLD CONF 0 - GREEN DOT SPEED	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-HLD-HLD CONF 0 - GREEN DOT SPEED	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-HLD-HLD CONF 0 - GREEN DOT SPEED	A	3	Effectivity update: The information no longer applies to MSN 05449.

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GENERAL

Ident.: PER-HLD-GEN-00002129.0001001 / 01 DEC 14

1 **Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510, 06720-09063**

Holding table contains information about the total fuel flow that allows the flight crew to plan holding and reserve fuel requirements.
It is established for flight in a race track holding pattern in clean configuration at green dot speed.
This chart is established with air conditioning in normal mode and the center of gravity at 33 %.

GENERAL

Ident.: PER-HLD-GEN-00002129.0002001 / 01 DEC 14

2 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

Holding table contains information about the total fuel flow that allows the flight crew to plan holding and reserve fuel requirements.
It is established for flight in a race track holding pattern in clean configuration at green dot speed + 20 kt.
This chart is established with air conditioning in normal mode and the center of gravity at 33 %.

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CONF 0 - GREEN DOT SPEED

Ident.: PER-HLD-HLD-00002146.0081001 / 30 OCT 18

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

RACE TRACK HOLDING PATTERN - GREEN DOT SPEED - ALL ENGINES

MAX. CRUISE THRUST LIMITS CLEAN CONFIGURATION NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**N1 (%)** **FF (KG/H/ENG)**

WEIGHT (1000KG)	FL15	FL50	FL100	FL140	FL180	FL200	FL220	FL250
58	48.2 844	50.8 868	54.5 881	57.9 883	61.5 866	63.1 859	64.9 851	67.9 843
60	49.0 877	51.5 898	55.3 910	58.8 912	62.3 892	64.0 886	65.8 877	69.0 874
62	49.8 908	52.3 927	56.2 939	59.6 942	63.1 918	64.9 913	66.8 905	70.0 900
64	50.6 940	53.0 957	57.0 967	60.4 968	63.9 945	65.7 940	67.7 935	70.9 936
66	51.3 971	53.8 986	57.8 997	61.2 992	64.7 973	66.6 967	68.7 962	71.9 968
68	51.9 1001	54.5 1016	58.6 1027	61.9 1016	65.5 1001	67.5 996	69.5 993	72.8 1002
70	52.6 1030	55.2 1045	59.3 1056	62.6 1040	66.3 1027	68.4 1024	70.4 1016	73.6 1037
72	53.3 1060	55.9 1075	60.1 1086	63.4 1064	67.1 1054	69.2 1051	71.3 1049	74.4 1074
74	53.9 1090	56.6 1104	60.8 1115	64.1 1090	67.9 1084	70.0 1082	72.1 1086	75.1 1109
76	54.6 1120	57.3 1133	61.5 1139	64.8 1117	68.7 1113	70.8 1106	72.9 1120	75.8 1140
78	55.2 1150	57.9 1163	62.1 1163	65.5 1143	69.5 1140	71.6 1137	73.7 1157	76.4 1170
80	55.8 1179	58.6 1193	62.7 1187	66.2 1169	70.3 1171	72.4 1175	74.4 1193	77.1 1204
82	56.4 1209	59.3 1223	63.3 1211	66.9 1197	71.0 1198	73.1 1210	75.1 1230	77.9 1241

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1Â° ABOVE ISA	STRAIGHT LINE
FUEL	- 0.5 %	+ 1.1 %	+ 6.1 %	+ 0.3 %	- 6.1 %

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RACE TRACK HOLDING PATTERN - GREEN DOT SPEED - ALL ENGINES

MAX. CRUISE THRUST LIMITS CLEAN CONFIGURATION NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**N1 (%)** **FF (KG/H/ENG)**

WEIGHT (1000KG)	FL15	FL50	FL100	FL140	FL180	FL200	FL220	FL250
84	57.1 1239	59.9 1253	64.0 1235	67.6 1224	71.7 1222	73.8 1245	75.7 1264	78.5 1274
86	57.6 1269	60.5 1284	64.6 1260	68.2 1253	72.4 1261	74.5 1282	76.3 1296	79.1 1303
88	58.2 1299	61.2 1314	65.2 1286	68.9 1284	73.1 1299	75.2 1319	76.9 1325	79.8 1337
90	58.8 1329	61.7 1338	65.8 1313	69.6 1315	73.8 1332	75.8 1355	77.6 1357	80.4 1374
92	59.4 1360	62.2 1362	66.4 1339	70.3 1345	74.4 1366	76.4 1388	78.2 1394	81.0 1411
94	60.0 1390	62.7 1386	67.0 1366	70.9 1377	75.1 1400	76.9 1420	78.8 1429	81.6 1441
96	60.5 1421	63.3 1410	67.6 1394	71.6 1411	75.7 1435	77.5 1448	79.4 1461	82.2 1467
98	61.1 1452	63.8 1434	68.2 1422	72.2 1437	76.2 1470	78.1 1481	80.0 1490	82.7 1496
100	61.6 1479	64.3 1459	68.8 1451	72.8 1465	76.8 1503	78.7 1518	80.5 1522	83.3 1530

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1Â° ABOVE ISA	STRAIGHT LINE
FUEL	- 0.5 %	+ 1.1 %	+ 6.1 %	+ 0.3 %	- 6.1 %

CONF 0 - GREEN DOT SPEED

Ident.: PER-HLD-HLD-00002146.0075001 / 16 MAR 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

RACE TRACK HOLDING PATTERN - GREEN DOT SPEED - ALL ENGINES

MAX. CRUISE THRUST LIMITS CLEAN CONFIGURATION NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	N1 (%) FF (KG/H/ENG)

WEIGHT (1000KG)	FL15	FL50	FL100	FL140	FL180	FL200	FL220	FL250
44	42.7 716	45.2 701	48.9 677	52.2 663	55.5 643	57.2 638	58.8 631	61.2 628
46	43.7 738	46.3 723	50.0 702	53.2 688	56.6 669	58.3 664	59.8 659	62.3 658
48	44.7 760	47.3 747	51.0 727	54.2 710	57.6 695	59.3 690	60.9 687	63.4 686
50	45.6 783	48.2 770	51.9 750	55.1 732	58.6 720	60.3 717	61.9 715	64.4 710
52	46.6 806	49.1 793	52.8 776	56.0 758	59.6 746	61.2 745	62.9 745	65.4 735
54	47.5 829	50.0 817	53.7 802	56.9 784	60.5 774	62.2 773	63.8 775	66.4 761
56	48.3 854	50.9 842	54.5 824	57.8 811	61.4 802	63.1 803	64.7 801	67.3 787
58	49.2 878	51.7 866	55.3 846	58.7 837	62.2 830	63.9 833	65.6 825	68.2 814
60	50.0 902	52.4 888	56.1 870	59.5 863	63.0 859	64.8 862	66.5 850	69.1 840
62	50.7 925	53.2 913	56.9 896	60.3 889	63.8 889	65.6 886	67.3 876	70.0 867
64	51.4 950	53.9 940	57.7 923	61.1 916	64.7 919	66.4 910	68.1 902	70.9 894
66	52.1 974	54.6 963	58.5 950	61.8 942	65.4 943	67.2 936	68.9 929	71.8 922
68	52.8 997	55.3 986	59.2 976	62.6 969	66.1 967	67.9 961	69.7 955	72.6 951

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA	STRAIGHT LINE
FUEL	- 0.5 %	+ 2 %	+ 6 %	+ 0.3 %	- 5 %

Continued on the following page

Continued from the previous page

RACE TRACK HOLDING PATTERN - GREEN DOT SPEED - ALL ENGINES

MAX. CRUISE THRUST LIMITS CLEAN CONFIGURATION NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**N1 (%)** **FF (KG/H/ENG)**

WEIGHT (1000KG)	FL15	FL50	FL100	FL140	FL180	FL200	FL220	FL250
70	53.5 1021	56.0 1008	59.9 1002	63.4 996	66.9 992	68.7 988	70.5 982	73.3 980
72	54.1 1047	56.7 1032	60.6 1029	64.1 1024	67.6 1018	69.4 1014	71.3 1010	74.0 1010
74	54.8 1072	57.4 1060	61.4 1056	64.8 1050	68.3 1044	70.2 1041	72.0 1037	74.8 1040
76	55.4 1095	58.0 1088	62.1 1083	65.5 1076	69.0 1070	70.9 1068	72.8 1066	75.5 1070
78	56.1 1119	58.7 1116	62.8 1110	66.2 1101	69.7 1097	71.6 1095	73.5 1096	76.3 1099
79	56.4 1131	59.0 1130	63.1 1124	66.5 1114	70.1 1111	71.9 1110	73.8 1111	76.7 1114

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA	STRAIGHT LINE
FUEL	- 0.5 %	+ 2 %	+ 6 %	+ 0.3 %	- 5 %

CONF 0 - GREEN DOT SPEED

Ident.: PER-HLD-HLD-00002146.0023001 / 16 FEB 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

RACE TRACK HOLDING PATTERN - GREEN DOT SPEED

MAX. CRUISE THRUST LIMITS
CLEAN CONFIGURATION
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=33.0%

N1 (%)
FF (KG/H/ENG)

WEIGHT (1000KG)	FL 15	FL 50	FL100	FL140	FL180	FL200	FL220	FL250
46	45.6 890	47.9 873	51.1 839	54.0 813	57.5 794	58.9 789	60.6 787	63.5 784
48	46.5 926	48.9 908	52.1 871	55.1 844	58.4 828	59.9 823	61.7 821	64.7 818
50	47.4 962	49.8 940	53.0 901	56.2 876	59.4 861	61.0 859	62.8 855	65.8 851
52	48.3 997	50.6 971	53.9 931	57.3 908	60.3 896	62.0 892	63.9 889	66.7 884
54	49.2 1033	51.4 1002	54.9 963	58.3 942	61.3 931	63.0 926	65.0 924	67.7 916
56	50.1 1065	52.2 1033	55.8 994	59.1 975	62.2 964	64.0 960	66.1 955	68.6 949
58	50.8 1097	52.9 1063	56.8 1026	59.9 1008	63.2 997	65.1 994	66.9 988	69.5 982
60	51.5 1128	53.7 1094	57.7 1059	60.7 1043	64.1 1031	66.1 1026	67.7 1021	70.4 1016
62	52.2 1158	54.5 1125	58.7 1092	61.6 1078	65.1 1065	66.9 1058	68.6 1054	71.2 1049
64	52.9 1189	55.3 1156	59.4 1126	62.4 1110	66.0 1097	67.7 1091	69.4 1087	72.1 1084
66	53.6 1219	56.1 1188	60.1 1159	63.2 1143	67.0 1129	68.5 1124	70.3 1120	72.9 1119
68	54.3 1250	56.9 1221	60.9 1193	64.1 1176	67.7 1162	69.3 1157	71.1 1154	73.7 1155
70	55.0 1282	57.8 1254	61.6 1228	64.9 1210	68.4 1195	70.1 1191	71.8 1188	74.6 1192
72	55.8 1314	58.6 1287	62.3 1261	65.7 1243	69.2 1228	70.8 1224	72.5 1223	75.4 1230
74	56.5 1347	59.4 1321	63.1 1294	66.6 1275	69.9 1262	71.6 1258	73.3 1258	76.1 1269
76	57.2 1380	60.2 1355	63.8 1327	67.4 1307	70.6 1296	72.3 1292	74.0 1295	76.9 1309
78	58.0 1413	60.8 1389	64.5 1360	68.2 1339	71.3 1330	73.0 1328	74.8 1332	77.6 1350
LOW AIR CONDITIONING $\Delta FF = -0.3$ %	**ENGINE ANTI ICE ON** $\Delta FF = +5$ %		**TOTAL ANTI ICE ON** $\Delta FF = +9$ %		**PER 1° ABOVE ISA** $\Delta FF = +0.3$ %		**STRAIGHT LINE** $\Delta FF = -5$ %	

CONF 0 - GREEN DOT SPEED

Ident.: PER-HLD-HLD-00002146.0010001 / 16 FEB 11

3 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

RACE TRACK HOLDING PATTERN - GREEN DOT SPEED + 20 KNOTS

MAX. CRUISE THRUST LIMITS
CLEAN CONFIGURATION
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=33.0%

EPR
FF (KG/H/ENG)

WEIGHT (1000KG)	FL 15	FL 50	FL100	FL140	FL180	FL200	FL220	FL250
46	1.011 919	1.015 885	1.022 844	1.031 827	1.046 822	1.055 821	1.065 826	1.083 835
48	1.012 949	1.016 914	1.024 876	1.034 861	1.050 858	1.060 858	1.071 863	1.091 868
50	1.013 979	1.017 944	1.026 909	1.038 897	1.054 895	1.065 896	1.077 901	1.098 899
52	1.014 1009	1.018 973	1.028 942	1.041 933	1.059 932	1.070 933	1.083 940	1.106 923
54	1.015 1038	1.020 1003	1.031 976	1.044 970	1.063 970	1.075 971	1.089 975	1.114 948
56	1.016 1068	1.021 1035	1.033 1011	1.048 1008	1.068 1008	1.081 1010	1.095 1007	1.123 973
58	1.017 1098	1.023 1068	1.036 1047	1.052 1045	1.073 1047	1.086 1048	1.101 1039	1.131 1000
60	1.018 1129	1.024 1102	1.038 1084	1.055 1084	1.078 1086	1.092 1081	1.108 1065	1.140 1030
62	1.019 1160	1.026 1136	1.041 1122	1.059 1122	1.083 1126	1.098 1114	1.115 1090	1.148 1059
64	1.020 1192	1.028 1170	1.044 1161	1.062 1161	1.088 1163	1.104 1146	1.123 1115	1.157 1089
66	1.022 1226	1.030 1206	1.047 1199	1.066 1201	1.093 1196	1.110 1171	1.130 1143	1.166 1119
68	1.023 1260	1.031 1242	1.050 1238	1.070 1241	1.098 1229	1.117 1197	1.138 1173	1.175 1151
70	1.024 1294	1.033 1278	1.053 1277	1.074 1281	1.103 1257	1.123 1222	1.145 1203	1.184 1185
72	1.026 1330	1.035 1317	1.056 1317	1.078 1322	1.109 1282	1.130 1250	1.153 1233	1.194 1220
74	1.027 1365	1.038 1357	1.059 1357	1.082 1363	1.115 1308	1.137 1280	1.160 1263	1.203 1261
76	1.029 1402	1.040 1397	1.062 1398	1.086 1403	1.121 1335	1.143 1311	1.168 1294	1.213 1302
78	1.030 1439	1.042 1437	1.065 1440	1.090 1438	1.127 1361	1.150 1340	1.176 1326	1.223 1343

LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA	STRAIGHT LINE
ΔFF = –0.2 %	ΔFF = +3.5 %	ΔFF = +5.5 %	ΔFF = +0.3 %	ΔFF = –5 %

PERFORMANCE

DESCENT

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PER-DES-GEN GENERAL

GENERAL ..... A

PER-DES-STD STANDARD

DESCENT- M.78/300KT/250KT ..... A

PER-DES-EMG EMERGENCY

EMER Descent ..... A

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Localization Title	Toc Index	ID	Reason
PER-DES-STD DESCENT- M.78/300KT/250KT	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-DES-STD DESCENT- M.78/300KT/250KT	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-DES-STD DESCENT- M.78/300KT/250KT	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-DES-EMG EMER Descent	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-DES-EMG EMER Descent	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-DES-EMG EMER Descent	A	3	Effectivity update: The information no longer applies to MSN 05449.

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GENERAL

Ident.: PER-DES-GEN-00002131.0001001 / 09 DEC 09
Applicable to: ALL

Descent tables are established for normal descent speed M .78 / 300 kt /250 kt and emergency descent at MMO/VMO with airbrakes extended, down to 1 500 ft with :

- Normal air conditioning
- CG = 33 %
- Anti ice OFF

For normal descent, cabin vertical speed is limited to 350 ft/min

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DESCENT- M.78/300KT/250KT

Ident.: PER-DES-STD-00002133.0100001 / 20 DEC 16

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

DESCENT - M.78/300KT/250KT - ALL ENGINES

IDLE THRUST NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**MAXIMUM CABIN RATE OF DESCENT 350FT/MIN**

	WEIGHT (1000KG)								
	60				80				
FL	**TIME (MIN)**	**FUEL (KG)**	**DIST. (NM)**	**N1 (%)**	**TIME (MIN)**	**FUEL (KG)**	**DIST. (NM)**	**N1 (%)**	**IAS (KT)**
390	16.2	137	98	IDLE					241
370	15.5	132	92	IDLE	18.0	152	108	IDLE	252
350	14.8	127	87	IDLE	17.2	147	102	IDLE	264
330	14.2	123	83	IDLE	16.6	142	97	IDLE	277
310	13.7	119	79	IDLE	15.9	138	92	IDLE	289
290	13.2	116	75	IDLE	15.3	134	87	IDLE	300
270	12.5	111	69	IDLE	14.4	128	81	IDLE	300
250	11.8	106	64	IDLE	13.6	122	75	IDLE	300
240	11.4	104	62	IDLE	13.2	119	72	IDLE	300
220	10.7	99	57	IDLE	12.3	113	66	IDLE	300
200	10.0	93	52	IDLE	11.4	106	60	IDLE	300
180	9.3	88	47	IDLE	10.6	99	54	IDLE	300
160	8.5	81	43	IDLE	9.6	92	48	IDLE	300
140	7.7	74	38	IDLE	8.7	83	42	IDLE	300
120	6.9	67	33	IDLE	7.7	75	37	IDLE	300
100	6.1	60	28	IDLE	6.7	66	31	IDLE	300
50	2.4	24	10	IDLE	2.6	27	11	IDLE	250
15	0.0	0	0	IDLE	0.0	0	0	IDLE	250

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**	**PER 1° ABOVE ISA**
FUEL	- 4 %	+ 5 %	+ 35 %	+ 0.3 %
TIME	- 0.1 %	+ 1 %	+ 5.7 %	+ 0.2 %
DISTANCE	- 0.1 %	+ 1.4 %	+ 6.2 %	+ 0.4 %

DESCENT- M.78/300KT/250KT

Ident.: PER-DES-STD-00002133.0094001 / 16 MAR 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

DESCENT - M.78/300KT/250KT - ALL ENGINES

IDLE THRUST NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**MAXIMUM CABIN RATE OF DESCENT 350FT/MIN**

	WEIGHT (1000KG)								
	45				65				
FL	**TIME (MIN)**	**FUEL (KG)**	**DIST. (NM)**	**N1 (%)**	**TIME (MIN)**	**FUEL (KG)**	**DIST. (NM)**	**N1 (%)**	**IAS (KT)**
390	15.5	174	97	67.4	16.7	126	101	IDLE	241
370	14.0	145	86	68.7	15.9	121	95	IDLE	252
350	12.3	109	73	70.7	15.2	117	90	IDLE	264
330	11.1	86	65	IDLE	14.6	113	85	IDLE	277
310	10.7	83	61	IDLE	14.0	109	81	IDLE	289
290	10.3	81	58	IDLE	13.5	106	77	IDLE	300
270	9.7	77	54	IDLE	12.7	101	71	IDLE	300
250	9.2	74	50	IDLE	12.0	96	66	IDLE	300
240	8.9	72	48	IDLE	11.6	94	63	IDLE	300
220	8.3	68	44	IDLE	10.9	89	58	IDLE	300
200	7.8	65	40	IDLE	10.1	84	53	IDLE	300
180	7.2	61	37	IDLE	9.3	79	48	IDLE	300
160	6.6	57	33	IDLE	8.6	73	43	IDLE	300
140	6.0	53	29	IDLE	7.8	67	38	IDLE	300
120	5.4	48	26	IDLE	6.9	61	33	IDLE	300
100	4.8	43	22	IDLE	6.1	55	28	IDLE	300
100	4.3	39	19	IDLE	5.4	49	24	IDLE	250
50	1.8	18	8	IDLE	2.3	22	10	IDLE	250
15	0.0	0	0	IDLE	0.0	0	0	IDLE	250

CORRECTIONS	**LOW AIR CONDITIONING**	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**	**PER 1° ABOVE ISA**
FUEL	- 3 %	+ 10 %	+ 40 %	+ 0.5 %
TIME	-	+ 1.5 %	+ 5 %	+ 0.5 %
DISTANCE	-	+ 1.5 %	+ 5 %	+ 0.4 %

DESCENT- M.78/300KT/250KT

Ident.: PER-DES-STD-00002133.0028001 / 09 DEC 09

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

DESCENT - M.78/300KT/250KT

IDLE THRUST
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=33.0%

MAXIMUM CABIN RATE OF DESCENT 350FT/MIN

WEIGHT (1000KG)	45				65				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	EPR	TIME (MIN)	FUEL (KG)	DIST. (NM)	EPR	IAS (KT)
390	16.1	188	98	1.047	19.0	192	114	IDLE	241
370	14.6	158	87	1.066	18.2	185	108	IDLE	252
350	13.5	139	78	IDLE	17.5	178	102	IDLE	264
330	12.9	134	74	IDLE	16.8	171	97	IDLE	277
310	12.4	129	71	IDLE	16.1	166	93	IDLE	289
290	12.0	125	67	IDLE	15.5	160	88	IDLE	300
270	11.4	120	63	IDLE	14.7	153	82	IDLE	300
250	10.8	115	58	IDLE	13.9	146	76	IDLE	300
240	10.5	112	56	IDLE	13.5	143	73	IDLE	300
220	9.9	107	52	IDLE	12.7	136	67	IDLE	300
200	9.3	102	48	IDLE	11.8	129	62	IDLE	300
180	8.7	97	44	IDLE	11.0	122	56	IDLE	300
160	8.0	91	40	IDLE	10.1	114	50	IDLE	300
140	7.4	85	36	IDLE	9.2	106	45	IDLE	300
120	6.7	79	32	IDLE	8.3	97	39	IDLE	300
100	6.0	72	28	IDLE	7.4	88	34	IDLE	300
50	2.2	28	10	IDLE	2.7	34	12	IDLE	250
15	.0	0	0	IDLE	.0	0	0	IDLE	250

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
TIME	–	+ 4 %	+ 18 %	+ 0.3 %
FUEL	– 1 %	+ 17 %	+ 85 %	+ 0.4 %
DISTANCE	–	+ 4 %	+ 18 %	+ 0.4 %

10F -08F0A320-232 IAE V2527-A5 23100000C5KG330 0 018590 0 0-1-350.0 15.0 .00 0 03 .780300.000250.000 0 FCOM-N0-03-05-30-002-140

DESCENT- M.78/300KT/250KT

Ident.: PER-DES-STD-00002133.0037001 / 09 DEC 09
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

DESCENT - M.78/300KT/250KT

IDLE THRUST
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=33.0%

MAXIMUM CABIN RATE OF DESCENT 350FT/MIN

WEIGHT (1000KG)	45				65				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1	IAS (KT)
390	16.1	204	101	68.8	17.4	165	106	IDLE	241
370	14.6	174	89	69.9	16.7	160	100	IDLE	252
350	12.9	134	77	72.1	16.0	156	95	IDLE	264
330	12.0	119	70	IDLE	15.4	153	91	IDLE	277
310	11.6	117	67	IDLE	14.8	149	86	IDLE	289
290	11.1	114	64	IDLE	14.2	145	82	IDLE	300
270	10.6	110	59	IDLE	13.4	141	76	IDLE	300
250	10.0	107	55	IDLE	12.7	136	71	IDLE	300
240	9.7	105	53	IDLE	12.3	133	68	IDLE	300
220	9.1	100	49	IDLE	11.5	127	62	IDLE	300
200	8.5	94	45	IDLE	10.6	119	56	IDLE	300
180	7.8	86	40	IDLE	9.8	109	51	IDLE	300
160	7.1	78	36	IDLE	8.8	97	45	IDLE	300
140	6.3	67	31	IDLE	7.9	83	39	IDLE	300
120	5.6	57	27	IDLE	6.9	70	33	IDLE	300
100	4.9	48	23	IDLE	6.0	58	28	IDLE	300
50	1.7	15	7	IDLE	2.1	18	9	IDLE	250
15	.0	0	0	IDLE	.0	0	0	IDLE	250

CORRECTIONS	LOW AIR CONDITIONING	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
TIME	–	+ 6 %	+ 6 %	–
FUEL	– 2 %	+ 28 %	+ 44 %	+ 0.2 %
DISTANCE	–	+ 3 %	+ 4 %	+ 0.3 %

11.0-08F0A320-214 CFM56-5B4/P SA23100000C5KG330 0 018590 0 0-1-350.0 15.0 .00 0 03 .780300.000250.000 0 FCOM-N0-03-05-30-002-170

EMER DESCENT

Ident.: PER-DES-EMG-00002134.0245001 / 21 MAR 17

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

EMER DESCENT - M.82/350KT - ALL ENGINES

IDLE THRUST NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**AIRBRAKES EXTENDED**

	WEIGHT (1000KG)								
	55				75				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1 (%)	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1 (%)	IAS (KT)
390	6.2	52	44	IDLE	7.9	67	57	IDLE	255
370	5.8	49	42	IDLE	7.5	64	53	IDLE	267
350	5.5	47	39	IDLE	7.1	61	50	IDLE	279
330	5.2	45	37	IDLE	6.7	58	47	IDLE	292
310	4.9	43	35	IDLE	6.4	56	45	IDLE	306
290	4.7	41	33	IDLE	6.1	54	42	IDLE	319
270	4.4	40	31	IDLE	5.8	52	40	IDLE	333
250	4.2	38	29	IDLE	5.5	50	38	IDLE	347
240	4.1	38	28	IDLE	5.4	49	37	IDLE	350
220	3.8	35	26	IDLE	5.0	46	33	IDLE	350
200	3.5	33	23	IDLE	4.5	43	30	IDLE	350
180	3.2	31	21	IDLE	4.1	40	27	IDLE	350
160	2.8	28	18	IDLE	3.7	36	24	IDLE	350
140	2.5	25	16	IDLE	3.3	33	21	IDLE	350
120	2.2	22	14	IDLE	2.8	29	18	IDLE	350
100	1.8	19	11	IDLE	2.4	24	15	IDLE	350
50	0.9	10	5	IDLE	1.2	13	7	IDLE	350
0	0.0	0	0	IDLE	0.0	0	0	IDLE	350

EMER DESCENT

Ident.: PER-DES-EMG-00002134.0239001 / 21 MAR 17

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

EMER DESCENT - M.82/350KT - ALL ENGINES

IDLE THRUST NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**AIRBRAKES EXTENDED**

	WEIGHT (1000KG)								
	45				65				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1 (%)	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1 (%)	IAS (KT)
390	4.6	36	32	IDLE	6.3	49	45	IDLE	255
370	4.3	34	30	IDLE	5.9	47	42	IDLE	267
350	4.0	32	28	IDLE	5.6	45	40	IDLE	279
330	3.8	31	27	IDLE	5.3	43	38	IDLE	292
310	3.6	30	25	IDLE	5.1	42	35	IDLE	306
290	3.5	29	24	IDLE	4.8	40	34	IDLE	319
270	3.3	28	22	IDLE	4.6	39	32	IDLE	333
250	3.1	27	21	IDLE	4.4	38	30	IDLE	347
240	3.0	26	21	IDLE	4.3	37	29	IDLE	350
220	2.8	25	19	IDLE	3.9	35	26	IDLE	350
200	2.6	23	17	IDLE	3.6	32	24	IDLE	350
180	2.3	21	15	IDLE	3.3	30	21	IDLE	350
160	2.1	19	13	IDLE	2.9	27	19	IDLE	350
140	1.9	17	12	IDLE	2.6	24	17	IDLE	350
120	1.6	15	10	IDLE	2.3	21	14	IDLE	350
100	1.4	13	8	IDLE	1.9	18	12	IDLE	350
50	0.7	7	4	IDLE	1.0	9	6	IDLE	350
0	0.0	0	0	IDLE	0.0	0	0	IDLE	350

EMER DESCENT

Ident.: PER-DES-EMG-00002134.0011001 / 21 MAR 17

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

EMERGENCY DESCENT - M.82/350KT

IDLE THRUST NORMAL AIR CONDITIONING ANTI-ICING OFF			ISA CG=33.0%		**AIRBRAKES EXTENDED**				
WEIGHT (1000KG)	**45**				**65**				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	EPR	TIME (MIN)	FUEL (KG)	DIST. (NM)	EPR	IAS (KT)
390	4.8	42	34	IDLE	6.5	57	47	IDLE	255
370	4.5	39	32	IDLE	6.2	54	44	IDLE	267
350	4.2	37	30	IDLE	5.9	51	42	IDLE	279
330	4.0	35	28	IDLE	5.6	48	39	IDLE	292
310	3.8	33	26	IDLE	5.3	46	37	IDLE	306
290	3.6	31	25	IDLE	5.1	44	35	IDLE	319
270	3.4	29	23	IDLE	4.8	41	33	IDLE	333
250	3.2	28	22	IDLE	4.6	39	31	IDLE	347
240	3.1	27	21	IDLE	4.4	38	30	IDLE	350
220	2.9	25	19	IDLE	4.1	35	28	IDLE	350
200	2.6	23	17	IDLE	3.8	33	25	IDLE	350
180	2.4	21	16	IDLE	3.4	30	22	IDLE	350
160	2.2	19	14	IDLE	3.1	27	20	IDLE	350
140	1.9	17	12	IDLE	2.7	25	17	IDLE	350
120	1.7	15	10	IDLE	2.4	22	15	IDLE	350
100	1.4	13	9	IDLE	2.0	19	12	IDLE	350
50	.7	7	4	IDLE	1.0	10	6	IDLE	350
0	.0	0	0	IDLE	.0	0	0	IDLE	350

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EMER DESCENT

Ident.: PER-DES-EMG-00002134.0201001 / 21 MAR 17
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

EMERGENCY DESCENT - M.82/350KT

IDLE THRUST NORMAL AIR CONDITIONING ANTI-ICING OFF			ISA CG=33.0%		AIRBRAKES EXTENDED				
WEIGHT (1000KG)	45				65				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1	IAS (KT)
390	4.8	48	34	IDLE	6.6	66	47	IDLE	255
370	4.5	46	32	IDLE	6.2	64	44	IDLE	267
350	4.3	45	30	IDLE	5.9	62	42	IDLE	279
330	4.0	43	28	IDLE	5.6	60	40	IDLE	292
310	3.8	42	27	IDLE	5.3	59	38	IDLE	306
290	3.6	41	25	IDLE	5.1	57	35	IDLE	319
270	3.4	40	24	IDLE	4.8	56	33	IDLE	333
250	3.3	38	22	IDLE	4.6	54	32	IDLE	347
240	3.2	38	21	IDLE	4.5	53	31	IDLE	350
220	2.9	36	20	IDLE	4.1	51	28	IDLE	350
200	2.7	33	18	IDLE	3.8	47	25	IDLE	350
180	2.4	30	16	IDLE	3.4	42	22	IDLE	350
160	2.2	27	14	IDLE	3.1	38	20	IDLE	350
140	1.9	23	12	IDLE	2.7	32	17	IDLE	350
120	1.6	19	10	IDLE	2.3	26	14	IDLE	350
100	1.4	15	8	IDLE	1.9	21	12	IDLE	350
50	.7	7	4	IDLE	1.0	9	6	IDLE	350
0	.0	0	0	IDLE	.0	0	0	IDLE	350

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PERFORMANCE

GO AROUND

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PER-GOA-GEN GENERAL

GENERAL ..... A
PROCEDURE ..... B

PER-GOA-ACG APPROACH CLIMB LIMITING WEIGHT

PER-GOA-ACG-NOR NORMAL

CONF 2 ..... A
CONF 3 ..... B

PER-GOA-ACG-CAT CAT II

CAT II - CONF 2 ..... A
CAT II - CONF 3 ..... B

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Localization Title	Toc Index	ID	Reason
PER-GOA-GEN GENERAL	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-GOA-GEN GENERAL	A	2	Effectivity update: The information now also applies to MSN 09063.
PER-GOA-GEN PROCEDURE	B	3	Effectivity update: The information now also applies to MSN 09063.
PER-GOA-GEN PROCEDURE	B	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-GOA-GEN PROCEDURE	B	5	Effectivity update: The information no longer applies to MSN 05449.
PER-GOA-ACG-NOR CONF 2	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-GOA-ACG-NOR CONF 2	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-GOA-ACG-NOR CONF 2	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-GOA-ACG-NOR CONF 3	B	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-GOA-ACG-NOR CONF 3	B	5	Effectivity update: The information now also applies to MSN 09063.
PER-GOA-ACG-NOR CONF 3	B	6	Effectivity update: The information no longer applies to MSN 05449.
PER-GOA-ACG-CAT CAT II - CONF 2	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-GOA-ACG-CAT CAT II - CONF 2	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-GOA-ACG-CAT CAT II - CONF 2	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-GOA-ACG-CAT CAT II - CONF 3	B	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-GOA-ACG-CAT CAT II - CONF 3	B	5	Effectivity update: The information now also applies to MSN 09063.
PER-GOA-ACG-CAT CAT II - CONF 3	B	6	Effectivity update: The information no longer applies to MSN 05449.

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GENERAL

Ident.: PER-GOA-GEN-00002140.0001001 / 28 JAN 11

[1] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

In the go around configuration corresponding to the all engine procedure, the minimum steady gradient one engine inoperative required by the regulations is 2.1 % at a speed not exceeding 1.4 Vs. This requirement is also called approach climb performance by regulations.
The following tables allow to determine the go around limiting weight which satisfies the required gradient with the certified go around configurations 3 and 2.
The required gradient of 2.1 % is considered at the airport reference altitude. The power setting is “GO AROUND” thrust with the air conditioning ON. The speed is 1.23 Vs of the specified configuration. For the occasional cases where approach climb performance is found restrictive, a correction is given for an increased speed, up to 1.4 Vs.

Note: *Landing climb performance (2 engines running) is never limiting.*

GENERAL

Ident.: PER-GOA-GEN-00002140.0002001 / 28 JAN 11

[2] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

In the go around configuration corresponding to the all engine procedure, the minimum steady gradient one engine inoperative required by the regulations is 2.1 % at a speed not exceeding 1.4 Vs. This requirement is also called approach climb performance by regulations.
The following graph allow to determine the go around limiting weight which satisfies the required gradient with the certified go around configurations 3 and 2.
The required gradient of 2.1 % is considered at the airport reference altitude. The power setting is “GO AROUND” thrust with the air conditioning ON. The speed is 1.23 Vs of the specified configuration. For the occasional cases where approach climb performance is found restrictive, a correction is given for an increased speed, up to 1.4 Vs.

Note: *Landing climb performance (2 engines running) is never limiting.*

PROCEDURE

Ident.: PER-GOA-GEN-00002141.0025001 / 21 MAR 17

[3] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

According to airport pressure altitude and temperature determine if the slats/flaps setting must be restricted as a function of the landing weight, in order to meet the go around gradient requirement of 2.1 %.

Establish the final approach configuration with one more step of flaps. If the approach is interrupted, retract the flaps by one step during the go-around.

In case of category 2 and 3 approaches, AIR OPS requires a regulatory approach climb gradient of 2.5 % to be maintained.

Use the tables for CAT II & III approaches to determine the maximum approach climb limiting weight according to airport pressure altitude and temperature.

Note:

1. *If circumstances dictate, landing may be made at a weight corresponding to the maximum structural takeoff weight. (Refer to PRO-ABN-MISC [QRH] OVERWEIGHT LANDING).*
2. *When icing conditions are predicted during the flight and TAT is 10 °C or below and there is an evidence of significant ice accretion, to take into account ice formation on the non heated structure:*
   - *Decrease the approach climb limiting weight by 7.1 %*
   - *The minimum speed is:*
     - *VLS + 5 kt in CONF FULL*
     - *VLS + 10 kt in CONF below FULL*

   For Landing Performance assessment, refer to QRH PER-A.
3. *In the following tables corrections for anti ice are only valid for OAT lower than 10 °C.*
4. *Use the CAT II tables in case of CAT III approach calculation.*

PROCEDURE

Ident.: PER-GOA-GEN-00002141.0021001 / 21 MAR 17

4 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

According to airport pressure altitude and temperature determine if the slats/flaps setting must be restricted as a function of the landing weight, in order to meet the go around gradient requirement of 2.1 %.

Establish the final approach configuration with one more step of flaps. If the approach is interrupted, retract the flaps by one step during the go-around.

In case of category 2 and 3 approaches, AIR OPS requires a regulatory approach climb gradient of 2.5 % to be maintained.

Use the tables for CAT II & III approaches to determine the maximum approach climb limiting weight according to airport pressure altitude and temperature.

Note:

1. *If circumstances dictate, landing may be made at a weight corresponding to the maximum structural takeoff weight. (Refer to PRO-ABN-MISC [QRH] OVERWEIGHT LANDING).*
2. *When icing conditions are predicted during the flight and TAT is 10 °C or below and there is an evidence of significant ice accretion, to take into account ice formation on the non heated structure:*
   - *Decrease the approach climb limiting weight by 6 %*
   - *In CONF FULL, the approach speed must not be lower than VREF +5 kt, or in CONF 3, the approach speed must not be lower than VLS +10 kt.*

   For Landing Performance assessment, refer to QRH PER-A.
3. *In the following tables corrections for anti ice are only valid for OAT lower than 10 °C.*
4. *Use the CAT II tables in case of CAT III approach calculation.*

PROCEDURE

Ident.: PER-GOA-GEN-00002141.0001001 / 21 MAR 17

5 **Applicable to: MSN 01767-05411**

According to airport pressure altitude and temperature determine if the slats/flaps setting must be restricted as a function of the landing weight, in order to meet the go around gradient requirement of 2.1 %.

Establish the final approach configuration with one more step of flaps. If the approach is interrupted, retract the flaps by one step during the go-around.

In case of category 2 and 3 approaches, JAR-OPS requires a regulatory approach climb gradient of 2.5 % to be maintained.

Use the tables for CAT II & III approaches to determine the maximum approach climb limiting weight according to airport pressure altitude and temperature.

Note:

1. *If circumstances dictate, landing may be made at a weight corresponding to the maximum structural takeoff weight. (Refer to PRO-ABN-MISC [QRH] OVERWEIGHT LANDING).*
2. *When icing conditions are predicted during the flight and TAT is 10 °C or below and there is an evidence of significant ice accretion, to take into account ice formation on the non heated structure:*
   - *Decrease the approach climb limiting weight by 4.5 %*
   - *In CONF FULL, the approach speed must not be lower than VREF +5 kt, or in CONF 3, the approach speed must not be lower than VLS +10 kt.*

   For Landing Performance assessment, refer to QRH PER-A.
3. *In the following tables corrections for anti ice are only valid for OAT lower than 10 °C.*
4. *Use the CAT II tables in case of CAT III approach calculation.*

PROCEDURE

Ident.: PER-GOA-GEN-00002141.0012001 / 21 MAR 17
Applicable to: MSN 05437-06336

According to airport pressure altitude and temperature determine if the slats/flaps setting must be restricted as a function of the landing weight, in order to meet the go around gradient requirement of 2.1 %.
Establish the final approach configuration with one more step of flaps. If the approach is interrupted, retract the flaps by one step during the go-around.
In case of category 2 and 3 approaches, JAR-OPS requires a regulatory approach climb gradient of 2.5 % to be maintained.
Use the tables for CAT II & III approaches to determine the maximum approach climb limiting weight according to airport pressure altitude and temperature.

Note:
1. *If circumstances dictate, landing may be made at a weight corresponding to the maximum structural takeoff weight. (Refer to PRO-ABN-MISC [QRH] OVERWEIGHT LANDING).*
2. *When icing conditions are predicted during the flight and TAT is 10 °C or below and there is an evidence of significant ice accretion, to take into account ice formation on the non heated structure:*
   - *Decrease the approach climb limiting weight by 8.0 %*
   - *In CONF FULL, the approach speed must not be lower than VREF +5 kt, or in CONF 3, the approach speed must not be lower than VLS +10 kt.*

   For Landing Performance assessment, refer to QRH PER-A.
3. *In the following tables corrections for anti ice are only valid for OAT lower than 10 °C.*
4. *Use the CAT II tables in case of CAT III approach calculation.*

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CONF 2

Ident.: PER-GOA-ACG-NOR-00002142.0645001 / 15 FEB 17

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 2

ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	High Air Conditioning Anti Ice OFF	Gradient : 2.1 % V = 1.23 Vs

OAT (°C)	PRESSURE ALTITUDE (FT)													
	-2000	0	200	400	600	800	1000	1500	2000	5000	8000	9200	12000	15100
≤10	100.9	100.1	99.7	99.3	98.8	98.4	98.0	97.0	96.0	89.0	78.3	75.4	68.0	59.3
20	100.9	100.1	99.7	99.3	98.9	98.4	98.0	97.0	96.0	89.0	76.7	73.1	66.2	55.9
22	100.9	100.1	99.7	99.3	98.9	98.4	98.0	97.0	96.0	87.9	76.1	72.5	65.6	54.7
24	100.9	100.1	99.7	99.3	98.9	98.4	98.0	97.0	96.0	86.8	75.4	71.6	64.5	53.5
26	100.9	100.1	99.7	99.3	98.9	98.4	98.0	97.0	96.0	85.5	74.2	70.8	63.3	
28	100.9	100.1	99.7	99.3	98.9	98.4	98.0	96.3	94.5	84.1	73.0	69.8	62.0	
30	100.9	100.1	99.3	98.6	97.9	97.2	96.5	94.7	93.0	82.8	71.8	68.6	60.7	
32	100.9	98.5	97.7	97.0	96.3	95.7	95.0	93.2	91.5	81.5	70.7	67.5		
34	100.9	96.9	96.2	95.5	94.8	94.1	93.4	91.7	90.0	80.1	69.6	66.3		
36	99.3	95.4	94.7	94.0	93.3	92.6	91.9	90.2	88.5	78.8	68.6	65.1		
38	97.9	93.9	93.2	92.5	91.8	91.1	90.4	88.8	87.2	77.6	67.6			
40	96.4	92.4	91.7	91.1	90.4	89.7	89.1	87.4	85.8	76.4				
42	95.0	91.2	90.5	89.8	89.1	88.5	87.8	86.1	84.5	74.9				
44	93.5	89.8	89.1	88.5	87.7	87.0	86.2	84.7	83.3	73.4				
46	92.2	88.0	87.2	86.5	85.8	85.1	84.5	83.2	82.0					
48	90.8	85.8	85.1	84.4	83.8	83.2	82.6	80.5	78.5					
50	88.8	83.5	82.5	81.6	80.7	79.8	79.0	77.0	75.1					
52	86.5	80.0	79.1	78.3	77.4	76.6	75.7	73.7						
54	84.1	76.5	75.6	74.8										
55	82.5	74.8												

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	SPEED INCREASE (PER 0.01 Vs)
WEIGHT	+ 980 kg	At or below 9200 ft : no correction Above 9200 ft : - 440 kg	At or below 5000 ft : -50 kg Above 5000 ft : - 4700 kg	+ 220 kg

CONF 2

Ident.: PER-GOA-ACG-NOR-00002142.0638001 / 16 NOV 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 2

ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	High Air Conditioning Anti Ice OFF	Gradient : 2.1 % V = 1.23 Vs

OAT	PRESSURE ALTITUDE (FT)											
(°C)	-1000	0	200	400	600	800	1000	1500	2000	5000	10000	14500
≤10	87.0	86.4	86.3	86.2	86.1	86.0	85.9	85.5	85.2	83.1	75.2	63.7
20	87.0	86.4	86.3	86.2	86.1	86.0	85.9	85.5	85.2	83.1	73.5	60.9
22	87.0	86.4	86.3	86.2	86.1	86.0	85.9	85.6	85.2	83.2	73.1	59.9
24	87.0	86.4	86.3	86.2	86.1	86.0	85.9	85.5	85.2	83.2	72.6	58.9
26	87.0	86.4	86.3	86.2	86.1	86.0	85.9	85.6	85.2	83.2	71.8	57.9
28	87.0	86.4	86.3	86.2	86.1	86.0	85.9	85.5	85.2	83.2	70.6	
30	87.0	86.4	86.3	86.2	86.1	86.0	85.9	85.5	85.2	83.2	69.4	
32	87.0	86.4	86.3	86.2	86.1	86.0	85.9	85.6	85.2	82.4	68.2	
34	87.0	86.4	86.3	86.2	86.1	86.0	85.9	85.5	85.2	81.0	67.0	
36	87.0	86.4	86.3	86.2	86.1	86.0	85.9	85.5	85.2	79.6		
38	87.0	86.4	86.3	86.2	86.1	86.0	85.9	85.6	85.3	78.5		
40	86.9	86.4	86.3	86.3	86.2	86.1	86.0	85.7	85.3	77.4		
42	87.0	86.5	86.4	86.4	86.3	86.2	86.1	85.7	85.3	76.2		
44	87.0	86.6	86.5	86.4	86.3	86.2	86.0	85.4	84.3	74.9		
46	87.1	86.5	86.4	86.3	85.8	85.4	84.9	83.8	82.7			
48	87.0	85.4	84.9	84.5	84.0	83.6	83.2	81.5	79.8			
50	86.0	83.6	83.0	82.4	81.8	81.1	80.5	78.8	77.3			
52	84.2	81.2	80.5	79.9	79.2	78.6	77.9	76.3				
54	81.5	78.7	78.1	77.4								
55	80.2	77.5										

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	SPEED INCREASE (PER 0.01 Vs)
WEIGHT	+2200 kg	- 400 kg	- 4000 kg	+ 200 kg

CONF 2

Ident.: PER-GOA-ACG-NOR-00002142.0320001 / 21 MAR 11

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

APPROACH CLIMB LIMITING WEIGHT (1000 KG) ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	Gradient : 2.1 % High Air Conditioning Anti ice OFF V = 1.23 Vs	CONF 2

PRESSURE ALTITUDE (FT)												
OAT (°C)	-1000	0	200	400	600	800	1000	1500	2000	5000	10000	14500
≤10	81.3	81.2	81.1	80.9	80.8	80.7	80.5	80.2	79.9	74.8	65.6	56.5
20	81.3	81.2	81.1	80.9	80.8	80.7	80.5	80.2	79.9	74.8	65.5	54.2
22	81.3	81.2	81.1	80.9	80.8	80.7	80.5	80.2	79.9	74.8	64.9	
24	81.3	81.2	81.1	80.9	80.8	80.7	80.5	80.2	79.9	74.8	64.2	
26	81.3	81.2	81.1	80.9	80.8	80.7	80.5	80.2	79.9	74.8	63.3	
28	81.3	81.2	81.1	80.9	80.8	80.7	80.5	80.2	79.9	74.8	62.4	
30	81.3	81.2	81.1	80.9	80.8	80.7	80.5	80.2	79.9	74.8	61.4	
32	81.3	81.2	81.1	80.9	80.8	80.7	80.5	80.2	79.9	73.9	60.4	
34	81.3	81.2	81.1	80.9	80.8	80.7	80.5	80.2	79.9	72.9	59.4	
36	81.3	81.2	81.1	80.9	80.8	80.7	80.5	80.2	79.9	71.9		
38	81.3	81.2	81.1	80.9	80.8	80.7	80.5	80.2	79.9	70.7		
40	81.3	81.2	81.0	80.9	80.8	80.7	80.5	80.2	79.6	69.5		
42	81.3	81.2	81.0	80.9	80.8	80.7	80.5	79.7	78.2	68.3		
44	81.3	81.2	81.0	80.9	80.8	80.3	79.7	78.2	76.8	67.0		
46	81.3	81.2	80.6	80.0	79.5	78.9	78.3	76.8	75.5			
48	81.3	79.7	79.1	78.5	77.9	77.3	76.8	75.6	74.2			
50	81.3	78.2	77.7	77.1	76.6	76.2	75.7	74.2	72.8			
52	79.7	76.9	76.4	76.0	75.4	74.9	74.3	72.9				
54	78.3	75.8	75.2	74.6								
55	77.6	75.1										

AIR CONDITIONING OFF ADD 1000 kg	ENGINE ANTI ICE ON SUBTRACT 500 kg	TOTAL ANTI ICE ON SUBTRACT 2400 kg	SPEED INCREASE PER 0.01 VS ADD 270 kg

CONF 2

Ident.: PER-GOA-ACG-NOR-00002142.0322001 / 24 MAR 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 2

ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	High Air Conditioning Anti Ice OFF	Gradient : 2.1 % V = 1.23 Vs

OAT (°C)	PRESSURE ALTITUDE (FT)											
	-2000	0	200	400	600	800	1000	2000	5000	9200	12000	14100
≤10	84.6	83.6	83.4	83.1	82.9	82.7	82.4	81.3	81.6	73.1	65.9	60.4
20	84.2	83.3	83.1	82.8	82.6	82.4	82.1	81.1	81.3	70.5	60.5	54.4
22	84.1	83.2	83.0	82.8	82.5	82.3	82.1	81.0	81.3	69.3	59.5	53.6
24	84.1	83.2	82.9	82.7	82.5	82.2	82.0	81.0	80.9	68.1	58.6	
26	84.0	83.1	82.9	82.7	82.4	82.2	82.0	80.9	79.9	66.8	57.7	
28	83.9	83.1	82.8	82.6	82.4	82.1	81.9	80.9	79.0	65.7		
30	83.9	83.0	82.8	82.6	82.3	82.1	81.9	80.8	78.0	64.6		
32	83.8	83.0	82.8	82.5	82.3	82.1	81.8	80.8	77.0	63.5		
34	83.8	82.9	82.7	82.5	82.3	82.0	81.8	80.8	76.2	62.3		
36	83.7	82.9	82.7	82.5	82.2	82.0	81.8	80.7	74.7	61.2		
38	83.7	82.9	82.7	82.4	82.2	82.0	81.8	80.7	72.9			
40	83.7	82.9	82.6	82.4	82.2	82.0	81.8	80.7	71.1			
42	83.6	82.8	82.6	82.4	82.2	81.9	81.7	78.8	69.4			
44	83.6	82.8	82.2	81.6	81.0	80.4	79.9	77.0	67.7			
46	83.5	80.9	80.3	79.8	79.2	78.6	78.1	75.5				
48	83.4	79.1	78.5	78.0	77.4	76.8	76.4	73.7				
50	81.5	77.3	76.7	76.3	75.8	75.3	74.7	72.0				
52	79.6	75.7	75.1	74.6	74.0	73.5	73.0					
54	77.6	73.9	73.3	72.8								
55	76.8	73.0										

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	SPEED INCREASE (PER 0.01 Vs)
WEIGHT	+ 1400 kg	- 300 kg up to 9200 ft - 3600 kg above 9200 ft	- 1100 kg up to 5000 ft - 7000 kg above 5000 ft	+ 200 kg

CONF 2

Ident.: PER-GOA-ACG-NOR-00002142.0593001 / 21 DEC 12
Applicable to: MSN 05437-06336

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 2

ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	High Air Conditioning Anti Ice OFF	Gradient : 2.1 % V = 1.23 Vs

OAT	PRESSURE ALTITUDE (FT)											
(°C)	-1000	0	200	400	600	800	1000	1500	2000	5000	10000	14100
≤10	85.6	85.5	85.3	85.2	85.1	84.9	84.8	84.4	84.1	78.4	68.9	60.2
20	85.6	85.5	85.3	85.2	85.1	84.9	84.8	84.4	84.1	78.4	68.9	58.1
22	85.6	85.5	85.3	85.2	85.1	84.9	84.8	84.4	84.1	78.4	68.2	57.1
24	85.6	85.5	85.3	85.2	85.1	84.9	84.8	84.4	84.1	78.4	67.4	
26	85.6	85.5	85.3	85.2	85.1	84.9	84.8	84.4	84.1	78.4	66.6	
28	85.6	85.5	85.3	85.2	85.0	84.9	84.8	84.4	84.1	78.4	65.5	
30	85.6	85.5	85.3	85.2	85.0	84.9	84.8	84.4	84.1	78.4	64.5	
32	85.6	85.5	85.3	85.2	85.0	84.9	84.8	84.4	84.1	77.6	63.5	
34	85.6	85.5	85.3	85.2	85.1	84.9	84.8	84.4	84.1	76.6	62.4	
36	85.6	85.5	85.3	85.2	85.0	84.9	84.8	84.4	84.1	75.5		
38	85.6	85.5	85.3	85.2	85.0	84.9	84.8	84.4	84.1	74.2		
40	85.6	85.5	85.3	85.2	85.0	84.9	84.8	84.4	83.8	73.0		
42	85.6	85.5	85.3	85.2	85.0	84.9	84.8	83.9	82.3	71.7		
44	85.5	85.5	85.3	85.2	85.0	84.5	83.9	82.3	80.7	70.4		
46	85.5	85.4	84.9	84.3	83.6	83.0	82.4	80.8	79.1			
48	85.5	83.9	83.3	82.7	82.0	81.4	80.8	79.2	77.7			
50	85.6	82.4	81.7	81.1	80.5	79.9	79.3	77.8	76.5			
52	83.9	80.9	80.3	79.7	79.1	78.4	77.9	76.5				
54	82.4	79.4	78.8	78.2								
55	81.7	78.7										

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	SPEED INCREASE (PER 0.01 Vs)
WEIGHT	+ 1300 kg	0 kg up to 10000 ft - 400 kg above 10000 ft	- 2400 kg	+ 310 kg

CONF 3

Ident.: PER-GOA-ACG-NOR-00002143.0729001 / 03 JAN 17

4 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 3

ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	High Air Conditioning Anti Ice OFF	Gradient : 2.1 % V = 1.23 Vs

OAT	PRESSURE ALTITUDE (FT)											
(°C)	-1000	0	200	400	600	800	1000	1500	2000	5000	10000	15000
≤10	84.2	83.7	83.6	83.5	83.4	83.3	83.3	82.9	82.6	80.8	73.2	60.6
20	84.2	83.7	83.6	83.5	83.5	83.4	83.3	82.9	82.6	80.8	71.5	57.5
22	84.2	83.7	83.6	83.5	83.5	83.4	83.3	82.9	82.6	80.8	71.0	56.5
24	84.2	83.7	83.6	83.5	83.5	83.4	83.3	82.9	82.6	80.8	70.5	55.5
26	84.2	83.7	83.6	83.5	83.5	83.4	83.3	82.9	82.6	80.8	69.8	
28	84.2	83.7	83.6	83.5	83.5	83.4	83.3	82.9	82.6	80.8	68.6	
30	84.2	83.7	83.6	83.5	83.5	83.4	83.3	82.9	82.6	80.9	67.4	
32	84.2	83.7	83.6	83.5	83.5	83.4	83.3	82.9	82.6	80.0	66.1	
34	84.2	83.7	83.6	83.5	83.5	83.4	83.3	82.9	82.6	78.6	64.9	
36	84.1	83.7	83.6	83.5	83.5	83.4	83.3	82.9	82.6	77.3		
38	84.1	83.7	83.6	83.5	83.5	83.4	83.3	83.0	82.7	76.2		
40	84.1	83.7	83.6	83.6	83.5	83.4	83.4	83.1	82.7	75.0		
42	84.1	83.8	83.7	83.7	83.6	83.5	83.4	83.1	82.7	73.8		
44	84.2	83.8	83.8	83.7	83.6	83.5	83.4	82.8	81.7	72.6		
46	84.2	83.8	83.7	83.6	83.1	82.7	82.3	81.2	80.1			
48	84.2	82.7	82.2	81.8	81.4	81.0	80.6	78.9	77.3			
50	83.2	80.9	80.3	79.7	79.1	78.5	77.9	76.3	74.7			
52	81.5	78.5	77.9	77.3	76.7	76.0	75.3	73.7				
54	78.8	76.1	75.4	74.7								
55	77.6	74.8										

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	SPEED INCREASE (PER 0.01 Vs)
WEIGHT	+ 1100 kg	- 1100 kg	- 3800 kg	- 380 kg

CONF 3

Ident.: PER-GOA-ACG-NOR-00002143.0727001 / 15 FEB 17

[5] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 3

ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	High Air Conditioning Anti Ice OFF	Gradient : 2.1 % V = 1.23 Vs

OAT (°C)	PRESSURE ALTITUDE (FT)													
	-2000	0	200	400	600	800	1000	1500	2000	5000	8000	9200	12000	15100
≤10	94.9	94.3	93.9	93.5	93.1	92.7	92.3	91.3	90.4	83.9	74.0	71.2	64.4	56.0
20	94.9	94.3	93.9	93.5	93.1	92.7	92.4	91.4	90.4	83.9	72.3	69.0	62.5	52.6
22	94.9	94.3	93.9	93.5	93.1	92.7	92.4	91.4	90.4	82.8	71.6	68.3	61.9	51.5
24	94.9	94.3	93.9	93.5	93.1	92.7	92.4	91.4	90.4	81.7	71.0	67.6	60.8	50.5
26	94.9	94.3	93.9	93.5	93.1	92.8	92.4	91.4	90.4	80.4	69.9	66.8	59.7	
28	94.9	94.3	93.9	93.5	93.1	92.8	92.3	90.6	88.9	79.1	68.7	65.8	58.4	
30	94.9	94.3	93.6	92.9	92.2	91.5	90.8	89.1	87.5	77.8	67.6	64.6	57.2	
32	94.9	92.7	92.0	91.3	90.6	90.0	89.3	87.7	86.0	76.6	66.6	63.5		
34	94.8	91.2	90.5	89.8	89.2	88.5	87.9	86.2	84.6	75.4	65.6	62.4		
36	93.3	89.7	89.0	88.4	87.7	87.1	86.4	84.8	83.2	74.1	64.6	61.2		
38	91.9	88.2	87.6	86.9	86.3	85.6	84.9	83.4	81.9	72.9	63.5			
40	90.5	86.8	86.1	85.5	84.9	84.3	83.6	82.1	80.6	71.6				
42	89.0	85.5	84.9	84.3	83.7	83.0	82.4	80.8	79.4	70.3				
44	87.7	84.3	83.6	83.0	82.3	81.5	80.8	79.4	78.2	69.0				
46	86.4	82.4	81.6	80.9	80.2	79.6	79.0	77.9	77.0					
48	85.1	80.0	79.3	78.7	78.1	77.6	77.0	75.3	73.6					
50	83.1	77.6	76.8	76.0	75.3	74.5	73.7	72.1	70.3					
52	80.7	74.5	73.8	73.0	72.3	71.5	70.8	69.1						
54	78.1	71.5	70.7	70.0										
55	76.6	70.0												

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	SPEED INCREASE (PER 0.01 Vs)
WEIGHT	+ 1100 kg	At or below 9200 ft : no correction Above 9200 ft : - 420 kg	At or below 5000 ft : - 100 kg Above 5000 ft : -4600 kg	At or below 8000 ft : + 200 kg Above 8000 ft : +130 kg

CONF 3

Ident.: PER-GOA-ACG-NOR-00002143.0385001 / 21 MAR 11

6 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

APPROACH CLIMB LIMITING WEIGHT (1000 KG) ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	Gradient : 2.1% High Air Conditioning Anti ice OFF V = 1.23 Vs	CONF 3

PRESSURE ALTITUDE (FT)												
OAT (°C)	–1000	0	200	400	600	800	1000	1500	2000	5000	10000	14500
≤ 10	82.0	81.9	81.7	81.6	81.5	81.3	81.2	80.9	80.5	75.3	65.9	56.8
20	82.0	81.9	81.7	81.6	81.5	81.3	81.2	80.9	80.5	75.3	65.9	54.5
22	82.0	81.9	81.7	81.6	81.5	81.3	81.2	80.9	80.5	75.3	65.2	
24	82.0	81.9	81.7	81.6	81.5	81.3	81.2	80.9	80.5	75.3	64.5	
26	82.0	81.9	81.7	81.6	81.5	81.3	81.2	80.9	80.5	75.2	63.7	
28	82.0	81.9	81.7	81.6	81.5	81.3	81.2	80.9	80.5	75.2	62.7	
30	82.0	81.9	81.7	81.6	81.5	81.3	81.2	80.9	80.5	75.2	61.8	
32	82.0	81.9	81.7	81.6	81.5	81.3	81.2	80.9	80.5	74.4	60.8	
34	82.0	81.9	81.7	81.6	81.5	81.3	81.2	80.9	80.5	73.4	59.8	
36	82.0	81.9	81.7	81.6	81.5	81.3	81.2	80.9	80.5	72.3		
38	82.0	81.9	81.7	81.6	81.5	81.3	81.2	80.9	80.5	71.1		
40	82.0	81.9	81.7	81.6	81.5	81.3	81.2	80.9	80.3	69.9		
42	82.0	81.9	81.7	81.6	81.5	81.3	81.2	80.3	78.8	68.7		
44	82.0	81.9	81.7	81.6	81.5	81.0	80.4	78.9	77.3	67.5		
46	82.0	81.9	81.3	80.7	80.1	79.5	78.9	77.4	76.0			
48	82.0	80.4	79.8	79.2	78.6	78.0	77.4	76.1	74.6			
50	82.0	78.9	78.3	77.8	77.2	76.6	76.1	74.7	73.3			
52	80.4	77.5	77.0	76.4	75.9	75.4	74.8	73.4				
54	79.0	76.2	75.7	75.1								
55	78.3	75.6										

AIR CONDITIONING OFF ADD 1200 kg	ENGINE ANTI ICE ON SUBTRACT 500 kg	TOTAL ANTI ICE ON SUBTRACT 2400 kg	SPEED INCREASE PER 0.01 VS ADD 210 kg

CONF 3

Ident.: PER-GOA-ACG-NOR-00002143.0387001 / 24 MAR 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 3

ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	High Air Conditioning Anti Ice OFF	Gradient : 2.1 % V = 1.23 Vs

OAT (°C)	PRESSURE ALTITUDE (FT)											
	-2000	0	200	400	600	800	1000	2000	5000	9200	12000	14100
≤10	84.4	83.4	83.2	82.9	82.7	82.5	82.2	81.1	81.4	72.8	65.6	60.1
20	84.0	83.1	82.9	82.6	82.4	82.2	81.9	80.8	81.1	70.2	60.2	54.2
22	83.9	83.0	82.8	82.6	82.3	82.1	81.9	80.8	81.1	69.0	59.2	53.3
24	83.9	83.0	82.7	82.5	82.3	82.0	81.8	80.7	80.6	67.8	58.3	
26	83.8	82.9	82.7	82.5	82.2	82.0	81.8	80.7	79.7	66.5	57.5	
28	83.7	82.9	82.6	82.4	82.2	81.9	81.7	80.6	78.8	65.4		
30	83.7	82.8	82.6	82.4	82.1	81.9	81.7	80.6	77.8	64.4		
32	83.6	82.8	82.6	82.3	82.1	81.9	81.6	80.6	76.8	63.3		
34	83.6	82.7	82.5	82.3	82.1	81.8	81.6	80.6	75.9	62.1		
36	83.5	82.7	82.5	82.3	82.0	81.8	81.6	80.5	74.4	60.9		
38	83.5	82.7	82.5	82.2	82.0	81.8	81.6	80.5	72.6			
40	83.5	82.7	82.4	82.2	82.0	81.8	81.6	80.5	70.8			
42	83.4	82.6	82.4	82.2	82.0	81.7	81.5	78.6	69.1			
44	83.4	82.5	82.0	81.4	80.8	80.3	79.7	76.8	67.5			
46	83.3	80.7	80.2	79.6	79.0	78.5	77.9	75.2				
48	83.2	78.9	78.3	77.8	77.2	76.7	76.2	73.4				
50	81.3	77.1	76.6	76.1	75.6	75.0	74.5	71.7				
52	79.4	75.4	74.9	74.3	73.8	73.2	72.7					
54	77.5	73.6	73.1	72.5								
55	76.6	72.7										

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	SPEED INCREASE (PER 0.01 Vs)
WEIGHT	+ 1400 kg	- 300 kg up to 9200 ft - 3600 kg above 9200 ft	- 1100 kg up to 5000 ft - 6900 kg above 5000 ft	+ 200 kg

CONF 3

Ident.: PER-GOA-ACG-NOR-00002143.0673001 / 21 DEC 12
Applicable to: MSN 05437-06336

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 3

ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	High Air Conditioning Anti Ice OFF	Gradient : 2.1 % V = 1.23 Vs

OAT	PRESSURE ALTITUDE (FT)											
(°C)	-1000	0	200	400	600	800	1000	1500	2000	5000	10000	14100
≤10	85.5	85.4	85.3	85.1	85.0	84.9	84.7	84.4	84.0	78.3	68.7	60.0
20	85.5	85.4	85.3	85.1	85.0	84.8	84.7	84.3	84.0	78.3	68.7	57.9
22	85.5	85.4	85.3	85.1	85.0	84.8	84.7	84.3	84.0	78.3	68.0	57.0
24	85.5	85.4	85.3	85.1	85.0	84.8	84.7	84.3	84.0	78.3	67.2	
26	85.5	85.4	85.3	85.1	85.0	84.8	84.7	84.3	84.0	78.3	66.4	
28	85.5	85.4	85.3	85.1	85.0	84.8	84.7	84.3	84.0	78.3	65.4	
30	85.5	85.4	85.3	85.1	85.0	84.8	84.7	84.3	84.0	78.3	64.4	
32	85.5	85.4	85.3	85.1	85.0	84.8	84.7	84.3	84.0	77.4	63.4	
34	85.5	85.4	85.3	85.1	85.0	84.8	84.7	84.3	84.0	76.5	62.3	
36	85.5	85.4	85.3	85.1	85.0	84.8	84.7	84.3	84.0	75.3		
38	85.5	85.4	85.3	85.1	85.0	84.8	84.7	84.3	84.0	74.1		
40	85.5	85.4	85.3	85.1	85.0	84.8	84.7	84.3	83.7	72.8		
42	85.5	85.4	85.3	85.1	85.0	84.8	84.7	83.8	82.2	71.6		
44	85.5	85.4	85.3	85.1	85.0	84.5	83.8	82.3	80.7	70.3		
46	85.5	85.4	84.8	84.2	83.6	83.0	82.3	80.7	79.1			
48	85.5	83.9	83.2	82.6	82.0	81.4	80.7	79.2	77.7			
50	85.5	82.3	81.7	81.1	80.5	79.9	79.3	77.8	76.4			
52	83.9	80.9	80.2	79.6	79.0	78.4	77.8	76.5				
54	82.4	79.4	78.8	78.2								
55	81.7	78.7										

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	SPEED INCREASE (PER 0.01 Vs)
WEIGHT	+ 1300 kg	0 kg up to 10000 ft - 400 kg above 10000 ft	- 2400 kg	+ 230 kg

CAT II - CONF 2

Ident.: PER-GOA-ACG-CAT-00002144.0402001 / 15 FEB 17

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 2 - CAT II

ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	High Air Conditioning Anti Ice OFF	Gradient : 2.5 %

OAT (°C)	PRESSURE ALTITUDE (FT)													
	-2000	0	200	400	600	800	1000	1500	2000	5000	8000	9200	12000	15100
≤10	98.6	98.0	97.6	97.2	96.8	96.4	96.0	95.1	94.0	87.2	76.9	74.0	67.1	58.6
20	98.6	98.0	97.6	97.2	96.8	96.4	96.1	95.1	94.1	87.3	75.4	71.9	65.3	55.2
22	98.6	98.0	97.6	97.2	96.8	96.4	96.1	95.1	94.1	86.2	74.7	71.3	64.7	54.1
24	98.6	98.0	97.6	97.2	96.8	96.4	96.1	95.1	94.1	85.1	74.1	70.5	63.6	52.9
26	98.6	98.0	97.6	97.2	96.8	96.4	96.1	95.1	94.1	83.9	72.9	69.7	62.5	
28	98.6	98.0	97.6	97.2	96.8	96.4	96.1	94.3	92.6	82.5	71.7	68.7	61.2	
30	98.6	98.0	97.2	96.6	95.9	95.2	94.5	92.8	91.1	81.2	70.5	67.5	59.8	
32	98.6	96.4	95.7	95.0	94.3	93.6	92.9	91.3	89.6	79.9	69.5	66.4		
34	98.5	94.8	94.1	93.5	92.8	92.1	91.4	89.7	88.1	78.5	68.4	65.2		
36	97.0	93.3	92.6	92.0	91.3	90.6	89.9	88.3	86.6	77.3	67.4	64.0		
38	95.7	91.8	91.1	90.4	89.8	89.1	88.4	86.8	85.3	76.0	66.4			
40	94.2	90.3	89.7	89.0	88.4	87.7	87.1	85.5	83.9	74.8				
42	92.7	89.1	88.5	87.8	87.2	86.5	85.8	84.2	82.7	73.4				
44	91.3	87.8	87.1	86.5	85.7	85.0	84.3	82.8	81.5	71.9				
46	89.9	86.0	85.3	84.5	83.9	83.2	82.6	81.3	80.2					
48	88.6	83.9	83.2	82.5	81.9	81.4	80.8	78.7	76.7					
50	86.7	81.6	80.7	79.8	78.9	78.1	77.2	75.3	73.4					
52	84.5	78.2	77.3	76.5	75.7	74.9	74.1	72.2						
54	82.2	74.8	74.0	73.2										
55	80.7	73.2												

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
WEIGHT	+ 1000 kg	At or below 9200 ft : no correction Above 9200 ft : - 430 kg	At or below 5000 ft : - 50 kg Above 5000 ft : - 4720 kg

CAT II - CONF 2

Ident.: PER-GOA-ACG-CAT-00002144.0393001 / 16 NOV 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 2 - CAT II

ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	High Air Conditioning Anti Ice OFF	Gradient : 2.5 %

OAT	PRESSURE ALTITUDE (FT)											
(°C)	-1000	0	200	400	600	800	1000	1500	2000	5000	10000	14500
≤10	84.2	83.6	83.6	83.5	83.4	83.3	83.2	82.9	82.5	80.7	73.2	62.0
20	84.2	83.6	83.6	83.5	83.4	83.3	83.2	82.9	82.5	80.7	71.5	59.3
22	84.2	83.7	83.6	83.5	83.4	83.3	83.2	82.9	82.5	80.7	71.1	58.4
24	84.2	83.7	83.6	83.5	83.4	83.3	83.2	82.9	82.5	80.7	70.6	57.4
26	84.2	83.7	83.6	83.5	83.4	83.3	83.2	82.9	82.5	80.7	69.8	56.4
28	84.2	83.7	83.6	83.5	83.4	83.3	83.2	82.9	82.5	80.7	68.7	
30	84.1	83.7	83.6	83.5	83.4	83.3	83.2	82.9	82.5	80.7	67.5	
32	84.2	83.7	83.6	83.5	83.4	83.3	83.2	82.9	82.5	79.9	66.3	
34	84.1	83.7	83.6	83.5	83.4	83.3	83.2	82.9	82.5	78.6	65.1	
36	84.1	83.7	83.6	83.5	83.4	83.3	83.2	82.9	82.5	77.4		
38	84.1	83.7	83.6	83.5	83.4	83.3	83.2	82.9	82.6	76.2		
40	84.1	83.7	83.6	83.5	83.5	83.4	83.3	83.0	82.6	75.0		
42	84.1	83.7	83.7	83.6	83.5	83.4	83.3	83.0	82.6	73.9		
44	84.2	83.8	83.7	83.6	83.5	83.4	83.3	82.7	81.6	72.7		
46	84.2	83.8	83.7	83.5	83.1	82.7	82.2	81.1	80.1			
48	84.2	82.6	82.2	81.8	81.4	81.0	80.5	78.9	77.4			
50	83.2	80.9	80.3	79.7	79.2	78.6	78.0	76.4	74.8			
52	81.5	78.6	78.0	77.4	76.8	76.1	75.5	73.9				
54	78.9	76.2	75.6	74.9								
55	77.7	75.0										

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
WEIGHT	+ 2200 kg	- 400 kg	- 4000 kg

CAT II - CONF 2

Ident.: PER-GOA-ACG-CAT-00002144.0060001 / 02 MAR 11

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

APPROACH CLIMB LIMITING WEIGHT (1000 KG) ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	Gradient : 2.5% High Air Conditioning Anti ice OFF	CAT II CONF 2

PRESSURE ALTITUDE (FT)												
OAT (°C)	–1000	0	200	400	600	800	1000	1500	2000	5000	10000	14500
≤ 10	80.7	80.6	80.5	80.4	80.2	80.1	80.0	79.6	79.3	74.3	65.1	56.3
20	80.7	80.6	80.5	80.3	80.2	80.1	80.0	79.6	79.3	74.3	65.1	54.1
22	80.7	80.6	80.5	80.3	80.2	80.1	80.0	79.6	79.3	74.3	64.5	
24	80.7	80.6	80.5	80.3	80.2	80.1	80.0	79.6	79.3	74.3	63.8	
26	80.7	80.6	80.5	80.3	80.2	80.1	80.0	79.6	79.3	74.3	63.0	
28	80.7	80.6	80.5	80.3	80.2	80.1	80.0	79.6	79.3	74.3	62.0	
30	80.7	80.6	80.5	80.3	80.2	80.1	80.0	79.6	79.3	74.3	61.1	
32	80.7	80.6	80.5	80.3	80.2	80.1	80.0	79.6	79.3	73.4	60.2	
34	80.7	80.6	80.5	80.3	80.2	80.1	80.0	79.6	79.3	72.4	59.2	
36	80.7	80.6	80.5	80.3	80.2	80.1	80.0	79.6	79.3	71.3		
38	80.7	80.6	80.5	80.3	80.2	80.1	80.0	79.6	79.3	70.2		
40	80.7	80.6	80.5	80.3	80.2	80.1	79.9	79.6	79.1	69.0		
42	80.7	80.6	80.5	80.3	80.2	80.1	79.9	79.1	77.7	67.9		
44	80.7	80.6	80.5	80.3	80.2	79.7	79.1	77.7	76.3	66.6		
46	80.7	80.6	80.1	79.5	78.9	78.3	77.7	76.4	75.0			
48	80.7	79.2	78.6	78.0	77.4	76.9	76.4	75.1	73.6			
50	80.7	77.7	77.2	76.7	76.2	75.7	75.1	73.7	72.3			
52	79.2	76.5	76.0	75.5	74.9	74.3	73.8	72.4				
54	77.8	75.2	74.7	74.1								
55	77.2	74.5										

AIR CONDITIONING OFF ADD 1100 kg	ENGINE ANTI ICE ON SUBTRACT 500 kg	TOTAL ANTI ICE ON SUBTRACT 2400 kg

CAT II - CONF 2

Ident.: PER-GOA-ACG-CAT-00002144.0062001 / 24 MAR 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 2 - CAT II

ONE ENGINE OUT
ONE ENGINE AT GO AROUND THRUST
High Air Conditioning
Anti Ice OFF
Gradient : 2.5 %

OAT (°C)	PRESSURE ALTITUDE (FT)											
	-2000	0	200	400	600	800	1000	2000	5000	9200	12000	14100
≤10	83.0	82.0	81.8	81.6	81.4	81.1	80.9	79.8	80.0	71.7	64.7	59.4
20	82.6	81.7	81.5	81.3	81.1	80.8	80.6	79.5	79.8	69.2	59.5	53.6
22	82.6	81.7	81.4	81.2	81.0	80.8	80.5	79.5	79.7	68.0	58.5	52.8
24	82.5	81.6	81.4	81.2	80.9	80.7	80.5	79.4	79.3	66.9	57.6	
26	82.4	81.6	81.3	81.1	80.9	80.7	80.4	79.4	78.4	65.6	56.8	
28	82.4	81.5	81.3	81.1	80.8	80.6	80.4	79.3	77.5	64.6		
30	82.3	81.5	81.2	81.0	80.8	80.6	80.3	79.3	76.6	63.5		
32	82.3	81.4	81.2	81.0	80.8	80.5	80.3	79.3	75.8	62.4		
34	82.2	81.4	81.2	80.9	80.7	80.5	80.3	79.2	74.8	61.3		
36	82.2	81.3	81.1	80.9	80.7	80.5	80.3	79.2	73.3	60.1		
38	82.2	81.3	81.1	80.9	80.7	80.5	80.3	79.2	71.5			
40	82.1	81.3	81.1	80.9	80.7	80.4	80.2	79.1	69.8			
42	82.1	81.3	81.1	80.9	80.6	80.4	80.2	77.3	68.1			
44	82.0	81.2	80.6	80.1	79.5	79.0	78.4	75.8	66.6			
46	82.0	79.4	78.9	78.3	77.8	77.2	76.7	74.1				
48	81.9	77.6	77.1	76.6	76.1	75.7	75.1	72.4				
50	80.0	76.0	75.5	75.0	74.5	73.9	73.4	70.7				
52	78.1	74.3	73.8	73.3	72.7	72.2	71.7					
54	76.4	72.6	72.0	71.5								
55	75.6	71.7										

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
WEIGHT	+ 1400 kg	- 300 kg up to 9200 ft - 3400 kg above 9200 ft	- 1000 kg up to 5000 ft - 6700 kg above 5000 ft

CAT II - CONF 2

Ident.: PER-GOA-ACG-CAT-00002144.0347001 / 21 DEC 12
Applicable to: MSN 05437-06336

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 2 - CAT II

ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	High Air Conditioning Anti Ice OFF	Gradient : 2.5 %

OAT	PRESSURE ALTITUDE (FT)											
(°C)	-1000	0	200	400	600	800	1000	1500	2000	5000	10000	14100
≤10	84.4	84.3	84.1	84.0	83.9	83.7	83.6	83.2	82.9	77.4	67.9	59.5
20	84.4	84.3	84.1	84.0	83.9	83.7	83.6	83.2	82.9	77.4	67.9	57.4
22	84.4	84.3	84.1	84.0	83.9	83.7	83.6	83.2	82.9	77.4	67.3	56.5
24	84.4	84.3	84.1	84.0	83.9	83.7	83.6	83.2	82.9	77.4	66.5	
26	84.4	84.3	84.1	84.0	83.9	83.7	83.6	83.2	82.9	77.4	65.7	
28	84.4	84.3	84.1	84.0	83.9	83.7	83.6	83.2	82.9	77.4	64.7	
30	84.4	84.3	84.1	84.0	83.9	83.7	83.6	83.2	82.9	77.4	63.7	
32	84.4	84.3	84.1	84.0	83.9	83.7	83.6	83.2	82.9	76.6	62.7	
34	84.4	84.3	84.1	84.0	83.9	83.7	83.6	83.2	82.9	75.5	61.7	
36	84.4	84.3	84.1	84.0	83.9	83.7	83.6	83.2	82.9	74.4		
38	84.4	84.3	84.1	84.0	83.9	83.7	83.6	83.2	82.9	73.2		
40	84.4	84.3	84.1	84.0	83.9	83.7	83.6	83.2	82.6	72.0		
42	84.4	84.2	84.1	84.0	83.9	83.7	83.6	82.7	81.2	70.8		
44	84.4	84.2	84.1	84.0	83.9	83.3	82.7	81.2	79.6	69.5		
46	84.4	84.2	83.7	83.1	82.5	81.9	81.2	79.7	78.1			
48	84.4	82.8	82.2	81.5	80.9	80.3	79.7	78.2	76.8			
50	84.4	81.2	80.6	80.0	79.4	78.8	78.3	76.9	75.5			
52	82.8	79.8	79.2	78.6	78.0	77.5	77.0	75.5				
54	81.3	78.4	77.8	77.3								
55	80.6	77.7										

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
WEIGHT	+ 1290 kg	0 kg up to 10000 ft - 400 kg above 10000 ft	- 2300 kg

CAT II - CONF 3

Ident.: PER-GOA-ACG-CAT-00002145.0465001 / 03 JAN 17

[4] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 3 - CAT II

ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	High Air Conditioning Anti Ice OFF	Gradient : 2.5 %

OAT	PRESSURE ALTITUDE (FT)											
(°C)	-1000	0	200	400	600	800	1000	1500	2000	5000	10000	15000
≤10	81.5	81.1	81.0	80.9	80.8	80.7	80.7	80.3	80.0	78.3	70.9	58.7
20	81.5	81.1	81.0	80.9	80.8	80.8	80.7	80.3	80.0	78.3	69.2	55.8
22	81.5	81.1	81.0	80.9	80.9	80.8	80.7	80.3	80.0	78.3	68.8	54.8
24	81.5	81.1	81.0	80.9	80.8	80.8	80.7	80.3	80.0	78.3	68.3	53.9
26	81.5	81.1	81.0	80.9	80.9	80.8	80.7	80.3	80.0	78.3	67.5	
28	81.5	81.1	81.0	80.9	80.9	80.8	80.7	80.3	80.0	78.3	66.4	
30	81.5	81.1	81.0	80.9	80.8	80.8	80.7	80.3	80.0	78.3	65.2	
32	81.5	81.1	81.0	80.9	80.9	80.8	80.7	80.3	80.0	77.5	64.0	
34	81.5	81.1	81.0	80.9	80.9	80.8	80.7	80.3	80.0	76.2	62.8	
36	81.5	81.1	81.0	80.9	80.8	80.8	80.7	80.3	80.0	74.9		
38	81.5	81.1	81.0	80.9	80.9	80.8	80.7	80.4	80.1	73.8		
40	81.5	81.1	81.0	81.0	80.9	80.8	80.8	80.5	80.1	72.6		
42	81.5	81.2	81.1	81.1	81.0	80.9	80.8	80.5	80.1	71.5		
44	81.6	81.2	81.1	81.1	81.0	80.9	80.8	80.2	79.1	70.3		
46	81.6	81.2	81.1	81.0	80.6	80.1	79.7	78.6	77.7			
48	81.6	80.1	79.7	79.3	78.9	78.5	78.1	76.5	74.9			
50	80.6	78.4	77.9	77.3	76.7	76.1	75.5	74.0	72.4			
52	79.0	76.2	75.6	75.0	74.4	73.7	73.1	71.5				
54	76.5	73.8	73.2	72.5								
55	75.3	72.6										

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
WEIGHT	+ 1100 kg	- 1000 kg	- 3500 kg

CAT II - CONF 3

Ident.: PER-GOA-ACG-CAT-00002145.0461001 / 15 FEB 17

[5] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 3 - CAT II

ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	High Air Conditioning Anti Ice OFF	Gradient : 2.5 %

OAT (°C)	PRESSURE ALTITUDE (FT)													
	-2000	0	200	400	600	800	1000	1500	2000	5000	8000	9200	12000	15100
≤10	92.0	91.4	91.0	90.7	90.3	89.9	89.5	88.6	87.6	81.3	71.8	69.1	62.6	54.5
20	92.0	91.4	91.1	90.7	90.3	89.9	89.6	88.6	87.6	81.3	70.2	67.0	60.8	51.9
22	92.0	91.4	91.1	90.7	90.3	89.9	89.6	88.6	87.6	80.3	69.6	66.4	60.2	51.0
24	92.0	91.4	91.1	90.7	90.3	89.9	89.6	88.6	87.6	79.2	69.0	65.7	59.1	50.0
26	92.0	91.4	91.1	90.7	90.3	89.9	89.6	88.6	87.6	78.0	67.9	64.9	58.1	
28	92.0	91.4	91.1	90.7	90.3	89.9	89.5	87.9	86.3	76.8	66.8	64.0	56.9	
30	92.0	91.4	90.7	90.0	89.4	88.7	88.1	86.4	84.9	75.6	65.8	62.9	55.7	
32	92.0	89.9	89.2	88.6	87.9	87.3	86.7	85.1	83.5	74.4	64.9	61.9		
34	92.0	88.5	87.8	87.2	86.6	85.9	85.3	83.7	82.2	73.2	63.9	60.8		
36	90.5	87.1	86.4	85.8	85.2	84.6	83.9	82.4	80.8	72.0	62.9	59.6		
38	89.2	85.7	85.1	84.4	83.8	83.2	82.5	81.1	79.6	70.9	61.9			
40	87.9	84.3	83.7	83.1	82.5	81.9	81.3	79.8	78.3	69.7				
42	86.5	83.1	82.5	81.9	81.3	80.7	80.1	78.6	77.2	68.5				
44	85.2	81.9	81.3	80.7	80.0	79.2	78.6	77.2	76.1	67.2				
46	84.0	80.1	79.3	78.6	77.9	77.3	76.8	75.7	74.9					
48	82.7	77.8	77.1	76.5	75.9	75.4	74.9	73.3	71.6					
50	80.8	75.4	74.6	73.9	73.1	72.4	71.7	70.1	68.5					
52	78.4	72.4	71.7	71.0	70.3	69.6	68.9	67.3						
54	75.9	69.6	68.9	68.2										
55	74.4	68.2												

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
WEIGHT	+ 1200 kg	At or below 9200 ft : no correction Above 9200 ft : - 400 kg	At or below 5000 ft : - 50 kg Above 5000 ft : - 4310 kg

CAT II - CONF 3

Ident.: PER-GOA-ACG-CAT-00002145.0060001 / 21 MAR 11

6 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

APPROACH CLIMB LIMITING WEIGHT (1000 KG) ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	Gradient : 2.5% High Air Conditioning Anti ice OFF	CAT II CONF 3

	PRESSURE ALTITUDE (FT)											
OAT (°C)	–1000	0	200	400	600	800	1000	1500	2000	5000	10000	14500
≤ 10	79.5	79.4	79.3	79.1	79.0	78.9	78.7	78.4	78.1	73.0	64.0	55.3
20	79.5	79.4	79.3	79.1	79.0	78.9	78.7	78.4	78.1	73.0	64.0	53.1
22	79.5	79.4	79.3	79.1	79.0	78.9	78.7	78.4	78.1	73.0	63.4	
24	79.5	79.4	79.3	79.1	79.0	78.9	78.7	78.4	78.1	73.0	62.7	
26	79.5	79.4	79.3	79.1	79.0	78.9	78.7	78.4	78.1	73.0	61.9	
28	79.5	79.4	79.3	79.1	79.0	78.9	78.7	78.4	78.1	73.0	61.0	
30	79.5	79.4	79.3	79.1	79.0	78.9	78.7	78.4	78.1	73.0	60.1	
32	79.5	79.4	79.3	79.1	79.0	78.9	78.7	78.4	78.1	72.2	59.1	
34	79.5	79.4	79.3	79.1	79.0	78.9	78.7	78.4	78.1	71.2	58.2	
36	79.5	79.4	79.3	79.1	79.0	78.9	78.7	78.4	78.1	70.2		
38	79.5	79.4	79.3	79.1	79.0	78.9	78.7	78.4	78.1	69.0		
40	79.5	79.4	79.3	79.1	79.0	78.9	78.7	78.4	77.8	67.9		
42	79.5	79.4	79.3	79.1	79.0	78.9	78.7	77.9	76.5	66.8		
44	79.5	79.4	79.3	79.1	79.0	78.5	77.9	76.6	75.2	65.6		
46	79.5	79.4	78.9	78.3	77.7	77.2	76.6	75.3	73.8			
48	79.5	78.0	77.4	76.9	76.4	75.8	75.3	73.9	72.5			
50	79.5	76.6	76.1	75.6	75.1	74.5	73.9	72.6	71.2			
52	78.0	75.4	74.8	74.3	73.7	73.2	72.6	71.2				
54	76.7	74.1	73.5	73.0								
55	76.2	73.4										

AIR CONDITIONING OFF ADD 1100 kg	ENGINE ANTI ICE ON SUBTRACT 500 kg	TOTAL ANTI ICE ON SUBTRACT 2300 kg

CAT II - CONF 3

Ident.: PER-GOA-ACG-CAT-00002145.0062001 / 24 MAR 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 3 - CAT II

ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	High Air Conditioning Anti Ice OFF	Gradient : 2.5 %

OAT (°C)	PRESSURE ALTITUDE (FT)											
	-2000	0	200	400	600	800	1000	2000	5000	9200	12000	14100
≤10	81.0	80.1	79.9	79.7	79.4	79.2	79.0	77.9	78.2	69.9	63.1	57.9
20	80.7	79.8	79.6	79.4	79.2	78.9	78.7	77.7	77.9	67.5	58.0	52.3
22	80.6	79.8	79.6	79.3	79.1	78.9	78.7	77.6	77.9	66.3	57.1	51.5
24	80.6	79.7	79.5	79.3	79.0	78.8	78.6	77.5	77.4	65.2	56.2	
26	80.5	79.7	79.4	79.2	79.0	78.8	78.5	77.5	76.6	64.0	55.4	
28	80.5	79.6	79.4	79.2	78.9	78.7	78.5	77.5	75.8	63.0		
30	80.4	79.6	79.3	79.1	78.9	78.7	78.5	77.4	74.9	62.0		
32	80.4	79.5	79.3	79.1	78.9	78.6	78.4	77.4	73.9	60.9		
34	80.3	79.5	79.3	79.1	78.8	78.6	78.4	77.4	73.0	59.8		
36	80.3	79.5	79.2	79.0	78.8	78.6	78.4	77.4	71.5	58.7		
38	80.2	79.4	79.2	79.0	78.8	78.6	78.4	77.4	69.8			
40	80.2	79.4	79.2	79.0	78.8	78.6	78.4	77.3	68.1			
42	80.1	79.4	79.2	79.0	78.7	78.5	78.3	75.6	66.5			
44	80.1	79.3	78.8	78.2	77.7	77.1	76.6	74.0	65.0			
46	80.1	77.6	77.0	76.6	76.1	75.6	75.0	72.3				
48	80.0	76.0	75.5	74.9	74.4	73.9	73.3	70.6				
50	78.1	74.3	73.8	73.2	72.7	72.2	71.7	69.0				
52	76.4	72.6	72.1	71.5	71.0	70.5	70.0					
54	74.7	70.9	70.4	69.8								
55	73.8	70.0										

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
WEIGHT	+ 1300 kg	- 300 kg up to 9200 ft - 3400 kg above 9200 ft	- 1000 kg up to 5000 ft - 6600 kg above 5000 ft

CAT II - CONF 3

Ident.: PER-GOA-ACG-CAT-00002145.0407001 / 21 DEC 12
Applicable to: MSN 05437-06336

APPROACH CLIMB LIMITING WEIGHT (1000 KG) - CONF 3 - CAT II

ONE ENGINE OUT ONE ENGINE AT GO AROUND THRUST	High Air Conditioning Anti Ice OFF	Gradient : 2.5 %

OAT	PRESSURE ALTITUDE (FT)											
(°C)	-1000	0	200	400	600	800	1000	1500	2000	5000	10000	14100
≤10	82.7	82.6	82.5	82.3	82.2	82.0	81.9	81.6	81.2	75.9	66.5	58.2
20	82.7	82.6	82.5	82.3	82.2	82.0	81.9	81.6	81.2	75.9	66.5	56.2
22	82.7	82.6	82.4	82.3	82.2	82.0	81.9	81.5	81.2	75.9	65.8	55.3
24	82.7	82.6	82.4	82.3	82.2	82.0	81.9	81.5	81.2	75.9	65.1	
26	82.7	82.6	82.4	82.3	82.2	82.0	81.9	81.5	81.2	75.9	64.3	
28	82.7	82.6	82.4	82.3	82.2	82.0	81.9	81.5	81.2	75.9	63.4	
30	82.7	82.6	82.4	82.3	82.2	82.0	81.9	81.5	81.2	75.9	62.4	
32	82.7	82.6	82.4	82.3	82.2	82.0	81.9	81.5	81.2	75.0	61.4	
34	82.7	82.6	82.4	82.3	82.2	82.0	81.9	81.5	81.2	74.0	60.4	
36	82.7	82.6	82.4	82.3	82.2	82.0	81.9	81.5	81.2	72.9		
38	82.7	82.6	82.4	82.3	82.2	82.0	81.9	81.5	81.2	71.7		
40	82.7	82.6	82.4	82.3	82.2	82.0	81.9	81.5	81.0	70.6		
42	82.7	82.6	82.4	82.3	82.2	82.0	81.9	81.0	79.5	69.4		
44	82.7	82.6	82.4	82.3	82.2	81.7	81.1	79.6	78.0	68.1		
46	82.7	82.6	82.0	81.4	80.8	80.2	79.6	78.1	76.7			
48	82.7	81.1	80.5	79.9	79.3	78.7	78.1	76.8	75.3			
50	82.7	79.6	79.1	78.5	77.9	77.4	76.8	75.4	74.0			
52	81.2	78.2	77.7	77.2	76.6	76.0	75.5	74.0				
54	79.8	76.9	76.4	75.8								
55	79.1	76.3										

CORRECTIONS	AIR CONDITIONING OFF	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
WEIGHT	+ 1200 kg	0 kg up to 10000 ft - 400 kg above 10000 ft	- 2300 kg

PERFORMANCE

LANDING

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PER-LDG-GEN GENERAL

GENERAL ..... A
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PER-LDG-CTA RUNWAY CONTAMINATION

PER-LDG-CTA-10 GENERAL

GENERAL ..... A

PER-LDG-CTA-20 DEFINITIONS

DEFINITIONS ..... A
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PER-LDG-DIS DISPATCH

PER-LDG-DIS-MAT Runway Condition Assessment Matrix for Landing

Runway Condition Assessment Matrix for Landing ..... A

PER-LDG-DIS-RLD REQUIRED LANDING DISTANCES / MANUAL LANDING

RLD CONF FULL ..... A
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REQUIRED LANDING DISTANCE AT RIO SANTOS DUMONT (SBRJ/SDU) ..... D

PER-LDG-DIS-RLA REQUIRED LANDING DISTANCES

AUTOMATIC LANDING ON DRY RUNWAY ..... A

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Localization Title	Toc Index	ID	Reason
PER-LDG-DIS-RLD RLD CONF FULL	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-LDG-DIS-RLD RLD CONF FULL	A	2	Effectivity update: The information no longer applies to MSN 05449.
PER-LDG-DIS-RLD RLD CONF FULL	A	3	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-LDG-DIS-RLD RLD CONF 3	B	4	Effectivity update: The information now also applies to MSN 09063.
PER-LDG-DIS-RLD RLD CONF 3	B	5	Effectivity update: The information no longer applies to MSN 05449.
PER-LDG-DIS-RLD RLD CONF 3	B	6	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-LDG-DIS-RLA AUTOMATIC LANDING ON DRY RUNWAY	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-LDG-DIS-RLA AUTOMATIC LANDING ON DRY RUNWAY	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-LDG-DIS-RLA AUTOMATIC LANDING ON DRY RUNWAY	A	3	Effectivity update: The information no longer applies to MSN 05449.

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GENERAL

Ident.: PER-LDG-GEN-00013287.0001001 / 19 APR 17
Applicable to: ALL

REQUIRED LANDING DISTANCE (RLD) AT DISPATCH

The RLD is the regulatory reference to be used for dispatch landing performance computation.

The RLD is the factored certified landing distance based on:
- Maximum manual braking initiated immediately after main gear touchdown
- Prompt selection of max reverse thrust, maintained to 70kt, and idle thrust to full stop (when credit is used)
- Antiskid and all spoilers operative
- The regulatory dispatch factor.

MANUAL LANDING

CONTAMINATED RUNWAY

If the surface is contaminated, EU-OPS operators must use the longer of the RLD for wet runway and the RLD for the applicable contaminant for dispatch.

AUTOMATIC LANDING

The RLD for automatic landing is defined as the RLD in manual landing corrected with the increment given in AFM. These increments assume maximum manual braking from main gear touchdown.

IN-FLIGHT LANDING DISTANCE

The flight crew should use the Landing Distances published in the QRH as the reference for In-Flight landing performance computation. The In-Flight Landing Distances reflect the performance achievable in a typical operational landing without margin, assuming realistic airborne phase from threshold to touchdown and deceleration on ground to full stop.

The In-Flight Landing Distances consider:
- Airborne phase of 7 seconds from threshold to touchdown
- Maximum manual braking initiated immediately after main gear touchdown
- Normal system delays in braking activation in case of autobrake
- Prompt selection of max reverse thrust, maintained to 70kt, and idle thrust to full stop (when credit is used)
- Antiskid and all spoilers operative.

FACTORED IN-FLIGHT LANDING DISTANCE

The flight crew should apply an appropriate margin to the In-Flight Landing Distances published in the QRH to account for operational variability (e.g. in wind and runway condition reporting) and flying technique (e.g. speed and height above threshold, flare).

This factor should account for:
- The Applicable Regulations
- The Airline Policy
- The discretion of the Pilot.

The Factored In-Flight Landing Distance may in some cases, and in particular on contaminated runway, exceed the RLD considered at dispatch.
The requirements for dispatch remain unchanged and are based on the RLD. However, when arrival conditions are expected to be marginal it is recommended to make a preliminary calculation of In-Flight Landing Distance or Factored In-Flight Landing Distance at dispatch in order to nominate suitable destination alternates.

DISPATCH

Ident.: PER-LDG-GEN-00013288.0001001 / 18 MAR 11
Applicable to: ALL

The pilot must check before departure that the available runway length at destination is at least equal to the required landing distance for the forecasted landing weight.
In case of aircraft system failure affecting landing distance known before the dispatch, the available runway length must be at least equal to the required landing distance with failure, i.e. the required landing distance without failure multiplied by the coefficient given in the Flight Manual or the MMEL.

USE OF THE AUTOBRAKE SYSTEM

Ident.: PER-LDG-GEN-00012045.0001001 / 22 MAY 12
Applicable to: ALL

The autobrake system is designed to help the pilot in case of :
- aborted takeoff or
- landing on short runways or
- operation with low visibility weather conditions

Furthermore, it ensures a straight roll-out and optimizes the landing distance on contaminated runways provided the contamination is evenly distributed.

At landing, select the braking mode according to :
- runway length
- configuration
- runway condition

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GENERAL

Ident.: PER-LDG-CTA-10-00013002.0001001 / 21 JUL 14
Applicable to: ALL

This section presents the recommendations of Airbus for operations from wet runways or from runways which are covered with contaminants such as standing water, slush or snow.

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DEFINITIONS

Ident.: PER-LDG-CTA-20-00013004.0001001 / 31 AUG 17
Applicable to: ALL

DAMP	:	A runway is considered as damp, when the surface of the runway is not dry, but the water on the surface does not cause a shiny appearance.
WET	:	A runway is considered as wet, when the surface of the runway has a shiny appearance due to a thin film of water. When this film does not exceed 3 mm, there is no significant danger of hydroplaning.
FROST	:	The deposit of ice crystals on the runway is referred to as frost. The direct sublimation of humidity contained in the air on a runway, when the surface temperature is below freezing, causes frost.
COMPACTED SNOW	:	The maintenance personnel use a snow groomer to compress snow on a runway in order to obtain a hard surface.
SLIPPERY WHEN WET:		Notice to Airmen (NOTAM) report a runway as "slippery when wet", when the runway partially or entirely fails to satisfy the minimum (regulatory) friction requirement of the responsible authority.
DRY SNOW	:	Dry snow is snow that, if compacted by hand, does not stay compressed when released. The wind can blow dry snow. The density of dry snow is approximately 0.2 kg/l (1.7 lb/US Gal).
WET SNOW	:	Wet snow is snow that, if compacted by hand, stays compressed when released, and with which snowballs can be created. The density of wet snow is approximately 0.4 kg/l (3.35 lb/US Gal).
STANDING WATER	:	Standing water occurs due to heavy rain and/or insufficient runway drainage with a depth of more than 3 mm.
SLUSH	:	Slush is snow soaked with water, which spatters when stepped on firmly. Slush occurs at temperatures around 5 °C and has a density of approximately 0.85 kg/l (7.1 lb/US Gal).
ICE (Cold and Dry)	:	Situation in which ice occurs on the runway in cold and dry conditions.
WET ICE	:	When the ice on a runway melts, or there are loose/fluid contaminants on top of the ice, the ice is referred to as "wet ice". When there is wet ice on a runway, braking and directional control are difficult or not possible, because the runway surface is very slippery.

EQUIVALENCES

Ident.: PER-LDG-CTA-20-00014917.0002001 / 21 JUL 14
Applicable to: ALL

For the below-listed reported contaminants, the following equivalent runway conditions can be retained for the landing performance determination.

Reported contaminant		Equivalent Runway Condition
Type of contaminant	**Depth of contaminant**	
Slush	≤ 3 mm (1/8 in)	Wet
Water		
Wet snow		
Dry snow		

RUNWAY CONDITION ASSESSMENT MATRIX FOR LANDING

Ident.: PER-LDG-DIS-MAT-00014450.0001001 / 05 JUN 18
Applicable to: ALL

Runway Surface Conditions		Observations on Deceleration and Directional Control	Related Landing Performance		Maximum Crosswind for Landing (Gust included)
Runway State or / and Runway Contaminant	ESF(1) or PIREP(2)		Code	Level	
Dry	**-**	-	**6**	**DRY**	38 kt
Damp **Wet** Up to 3 mm (1/8") of water **Slush** Up to 3 mm (1/8") **Dry snow** Up to 3 mm (1/8") **Wet snow** Up to 3 mm (1/8") **Frost**	**Good**	Braking deceleration is normal for the wheel braking effort applied. Directional control is normal.	**5**	**GOOD**	38 kt
Compacted snow OAT at or below -15 °C	**Good to Medium**	Braking deceleration and controllability is between Good and Medium.	**4**	**GOOD TO MEDIUM**	29 kt
Dry snow More than 3 mm (1/8"), up to 100 mm (4") **Wet snow** More than 3 mm (1/8"), up to 30 mm (6/5") **Compacted snow** OAT above -15 °C **Dry snow over compacted snow** **Wet snow over compacted snow** **Slippery when wet**	**Medium**	Braking deceleration is noticeably reduced for the wheel braking effort applied. Directional control may be reduced.	**3**	**MEDIUM**	25 kt
Water More than 3 mm (1/8"), up to 13 mm (1/2") **Slush** More than 3 mm (1/8"), up to 13 mm (1/2")	**Medium to Poor**	Braking deceleration and controllability is between Medium and Poor. Potential for hydroplaning exists.	**2**	**MEDIUM TO POOR**	20 kt
Ice (cold & dry)	**Poor**	Braking deceleration is significantly reduced for the wheel braking effort applied. Directional	**1**	**POOR**	15 kt

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Runway Surface Conditions		Observations on Deceleration and Directional Control	Related Landing Performance		Maximum Crosswind for Landing (Gust included)
Runway State or / and Runway Contaminant	ESF[1] or PIREP[2]		Code	Level	
		control may be significantly reduced.			
Wet ice **Water on top of Compacted Snow** **Dry Snow or Wet Snow over ice**	**Less than Poor**	Braking deceleration is minimal to non-existant for the wheel braking effort applied. Directional control may be uncertain.	-	-	-

(1) *ESF: Estimated Surface Friction*

(2) *PIREP: Pilot Report of Braking Action*

Note: Refer for FCOM LIM-AFS chapter for Automatic Approach, Landing and Rollout limitations.

RLD CONF FULL

Ident.: PER-LDG-DIS-RLD-00022099.0125001 / 27 FEB 18
Applicable to: MSN 02135, 02139

The RLD in the first table considers: Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing, and VAPP=VLS.

Required Landing Distance (ft)						
Runway State / Weight (1000 kg)	Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
46	3 770	4 330	4 300	4 740	4 270	4 410
50	3 950	4 540	4 570	5 040	4 560	4 710
54	4 130	4 740	4 840	5 340	4 860	5 020
58	4 310	4 950	5 110	5 650	5 160	5 350
62	4 500	5 180	5 390	5 950	5 460	5 750
66	4 860	5 590	5 660	6 260	5 760	6 160

Corrections on landing distances (ft)							
Runway State		Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
Altitude	Per 1 000 ft ABOVE SL	+ 190	+ 220	+ 280	+ 330	+ 440	+ 440
Speed	Per 5 kt	+ 300	+ 350	+ 280	+ 300	+ 360	+ 530
Wind	Per 5 kt TW	+ 470	+ 530	+ 480	+ 570	+ 730	+ 980
Reverse	Per Thrust Reverser Operative	-	-	- 250	- 330	- 260	- 270
CG	Extended Forward CG	+ 90	+ 100	+ 130	+ 140	+ 140	+ 160

RLD CONF FULL

Ident.: PER-LDG-DIS-RLD-00022099.0100001 / 27 FEB 18

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The RLD in the first table considers: Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing, and VAPP=VLS.

Required Landing Distance (m)						
Runway State / Weight (1000 kg)	Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
58	1 310	1 500	1 410	1 580	1 490	1 530
62	1 360	1 560	1 490	1 660	1 580	1 620
66	1 410	1 620	1 560	1 750	1 670	1 720
70	1 460	1 680	1 630	1 830	1 760	1 810
74	1 510	1 740	1 700	1 900	1 850	1 900
80	1 620	1 860	1 800	2 020	1 990	2 050
85	1 750	2 010	1 880	2 110	2 120	2 190
90	1 900	2 190	1 970	2 210	2 250	2 320

Corrections on Landing Distance (m)							
Runway State		Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
Altitude	Per 1 000 ft ABOVE SL	+ 110	+ 130	+ 100	+ 110	+ 170	+ 160
Speed	Per 5 kt	+ 140	+ 150	+ 100	+ 110	+ 160	+ 200
Wind	Per 5 kt TW	+ 230	+ 260	+ 160	+ 200	+ 290	+ 350
Reverse	Per Thrust Reverser Operative	-	-	- 70	- 110	- 100	- 100

RLD CONF FULL

Ident.: PER-LDG-DIS-RLD-00022099.0038001 / 27 FEB 18
Applicable to: MSN 05437-06336

The RLD in the first table considers: Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing, and VAPP=VLS.

Required Landing Distance (m)						
Runway State / Weight (1000 kg)	Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
46	1 150	1 320	1 310	1 450	1 310	1 350
50	1 210	1 390	1 400	1 540	1 390	1 440
54	1 260	1 450	1 480	1 630	1 480	1 530
58	1 320	1 510	1 560	1 720	1 570	1 630
62	1 380	1 580	1 640	1 820	1 670	1 760
66	1 480	1 710	1 730	1 910	1 760	1 880

Corrections on Landing Distance (m)							
Runway State		Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
Altitude	Per 1 000 ft ABOVE SL	+ 60	+ 70	+ 90	+ 100	+ 140	+ 140
Speed	Per 5 kt	+ 100	+ 100	+ 80	+ 90	+ 110	+ 160
Wind	Per 5 kt TW	+ 150	+ 170	+ 150	+ 180	+ 220	+ 300
Reverse	Per Thrust Reverser Operative	-	-	- 70	- 100	- 80	- 90
CG	Extended Forward CG	+ 30	+ 30	+ 40	+ 50	+ 40	+ 50

RLD CONF FULL

Ident.: PER-LDG-DIS-RLD-00022099.0019001 / 27 FEB 18
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The RLD in the first table considers: Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing, and VAPP=VLS.

Required Landing Distance (m)						
Runway State / Weight (1000 kg)	Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
46	1 170	1 340	1 370	1 530	1 360	1 410
50	1 220	1 400	1 450	1 620	1 450	1 500
54	1 270	1 460	1 540	1 720	1 540	1 590
58	1 330	1 530	1 620	1 810	1 630	1 700
62	1 390	1 600	1 700	1 900	1 730	1 820
66	1 500	1 730	1 780	1 990	1 820	1 950

Corrections on Landing Distance (m)							
Runway State		Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
Altitude	Per 1 000 ft ABOVE SL	+ 60	+ 70	+ 80	+ 90	+ 130	+ 130
Speed	Per 5 kt	+ 100	+ 110	+ 90	+ 100	+ 120	+ 180
Wind	Per 5 kt TW	+ 150	+ 170	+ 160	+ 190	+ 240	+ 330
Reverse	Per Thrust Reverser Operative	-	-	- 70	- 90	- 70	- 80
CG	Extended Forward CG	+ 30	+ 30	+ 50	+ 60	+ 50	+ 60

RLD CONF FULL

Ident.: PER-LDG-DIS-RLD-00022099.0015001 / 27 FEB 18

[2] **Applicable to: MSN 01957-02121, 02138, 02195-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

The RLD in the first table considers: Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing, and VAPP=VLS.

Required Landing Distance (m)						
Runway State / Weight (1000 kg)	Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
46	1 150	1 320	1 310	1 450	1 310	1 350
50	1 210	1 390	1 400	1 540	1 390	1 440
54	1 260	1 450	1 480	1 630	1 480	1 530
58	1 320	1 510	1 560	1 720	1 570	1 630
62	1 380	1 580	1 640	1 820	1 670	1 760
66	1 480	1 710	1 730	1 910	1 760	1 880

Corrections on Landing Distance (m)							
Runway State		Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
Altitude	Per 1 000 ft ABOVE SL	+ 60	+ 70	+ 90	+ 100	+ 140	+ 140
Speed	Per 5 kt	+ 100	+ 100	+ 80	+ 90	+ 110	+ 160
Wind	Per 5 kt TW	+ 150	+ 170	+ 150	+ 180	+ 220	+ 300
Reverse	Per Thrust Reverser Operative	-	-	- 70	- 100	- 80	- 90
CG	Extended Forward CG	+ 30	+ 30	+ 40	+ 50	+ 40	+ 50

RLD CONF FULL

Ident.: PER-LDG-DIS-RLD-00022099.0012001 / 27 FEB 18

[3] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The RLD in the first table considers: Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing, and VAPP=VLS.

Required Landing Distance (m)						
Runway State / Weight (1000 kg)	Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
46	1 200	1 380	1 380	1 540	1 360	1 410
50	1 200	1 380	1 390	1 550	1 380	1 420
54	1 230	1 410	1 440	1 610	1 430	1 480
58	1 290	1 480	1 520	1 700	1 520	1 570
62	1 350	1 550	1 600	1 790	1 610	1 660
68	1 480	1 700	1 720	1 930	1 760	1 840

Corrections on Landing Distance (m)							
Runway State		Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
Altitude	Per 1 000 ft ABOVE SL	+ 60	+ 70	+ 80	+ 100	+ 140	+ 130
Speed	Per 5 kt	+ 90	+ 110	+ 90	+ 100	+ 150	+ 190
Wind	Per 5 kt TW	+ 150	+ 170	+ 160	+ 190	+ 260	+ 320
Reverse	Per Thrust Reverser Operative	-	-	- 80	- 120	- 70	- 80
CG	Extended Forward CG	+ 20	+ 20	+ 20	+ 30	+ 40	+ 40

RLD CONF 3

Ident.: PER-LDG-DIS-RLD-00022207.0089001 / 27 FEB 18
Applicable to: MSN 02135, 02139

The RLD in the first table considers: Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing, and VAPP=VLS.

Required Landing Distance (ft)						
Runway State / Weight (1000 kg)	Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
46	3 960	4 550	4 630	5 140	4 620	4 780
50	4 150	4 770	4 920	5 470	4 940	5 110
54	4 340	4 990	5 210	5 800	5 260	5 440
58	4 540	5 230	5 500	6 120	5 590	5 900
62	4 820	5 550	5 790	6 460	5 920	6 370
66	5 280	6 070	6 090	6 790	6 270	6 840

Corrections on Landing Distance (ft)							
Runway State		Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
Altitude	Per 1 000 ft ABOVE SL	+ 210	+ 240	+ 310	+ 360	+ 520	+ 530
Speed	Per 5 kt	+ 330	+ 380	+ 300	+ 340	+ 480	+ 610
Wind	Per 5 kt TW	+ 480	+ 550	+ 510	+ 600	+ 830	+ 1 120
Reverse	Per Thrust Reverser Operative	-	-	- 330	- 420	- 330	- 350
CG	Extended Forward CG	+ 90	+ 100	+ 150	+ 170	+ 190	+ 190

RLD CONF 3

Ident.: PER-LDG-DIS-RLD-00022207.0068001 / 27 FEB 18

[4] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The RLD in the first table considers: Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing, and VAPP=VLS.

Required Landing Distance (m)						
Runway State / Weight (1000 kg)	Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
58	1 420	1 630	1 580	1 780	1 700	1 740
62	1 470	1 690	1 660	1 870	1 800	1 850
66	1 530	1 760	1 750	1 970	1 910	1 960
70	1 590	1 830	1 830	2 060	2 030	2 090
74	1 650	1 900	1 900	2 140	2 150	2 210
80	1 810	2 080	2 010	2 270	2 320	2 390
85	1 980	2 270	2 110	2 380	2 470	2 550
90	2 170	2 500	2 210	2 490	2 640	2 720

Corrections on Landing Distance (m)							
Runway State		Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
Altitude	Per 1 000 ft ABOVE SL	+ 130	+ 150	+ 120	+ 140	+ 220	+ 200
Speed	Per 5 kt	+ 150	+ 170	+ 110	+ 120	+ 170	+ 210
Wind	Per 5 kt TW	+ 250	+ 280	+ 170	+ 210	+ 320	+ 400
Reverse	Per Thrust Reverser Operative	-	-	- 110	- 160	- 150	- 150

RLD CONF 3

Ident.: PER-LDG-DIS-RLD-00022207.0033001 / 27 FEB 18
Applicable to: MSN 05437-06336

The RLD in the first table considers: Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing, and VAPP=VLS.

Required Landing Distance (m)						
Runway State / Weight (1000 kg)	Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
46	1 210	1 390	1 410	1 570	1 410	1 460
50	1 270	1 460	1 500	1 670	1 510	1 560
54	1 330	1 520	1 590	1 770	1 610	1 660
58	1 390	1 600	1 680	1 870	1 710	1 800
62	1 470	1 690	1 770	1 970	1 810	1 940
66	1 610	1 850	1 860	2 070	1 920	2 090

Corrections on Landing Distance (m)							
Runway State		Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
Altitude	Per 1 000 ft ABOVE SL	+ 70	+ 80	+ 100	+ 110	+ 160	+ 170
Speed	Per 5 kt	+ 100	+ 120	+ 90	+ 110	+ 140	+ 180
Wind	Per 5 kt TW	+ 150	+ 170	+ 160	+ 190	+ 260	+ 340
Reverse	Per Thrust Reverser Operative	-	-	- 90	- 130	- 100	- 110
CG	Extended Forward CG	+ 30	+ 30	+ 40	+ 50	+ 50	+ 60

RLD CONF 3

Ident.: PER-LDG-DIS-RLD-00022207.0019001 / 27 FEB 18
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

The RLD in the first table considers: Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing, and VAPP=VLS.

Required Landing Distance (m)						
Runway State / Weight (1000 kg)	Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
46	1 250	1 430	1 500	1 690	1 500	1 550
50	1 300	1 500	1 590	1 790	1 600	1 650
54	1 360	1 570	1 680	1 890	1 690	1 770
58	1 430	1 640	1 770	1 990	1 800	1 910
62	1 520	1 750	1 860	2 090	1 900	2 060
66	1 670	1 920	1 950	2 200	2 030	2 220

Corrections on Landing Distance (m)							
Runway State		Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
Altitude	Per 1 000 ft ABOVE SL	+ 70	+ 70	+ 90	+ 110	+ 160	+ 160
Speed	Per 5 kt	+ 100	+ 120	+ 100	+ 100	+ 150	+ 190
Wind	Per 5 kt TW	+ 150	+ 180	+ 170	+ 200	+ 270	+ 380
Reverse	Per Thrust Reverser Operative	-	-	- 90	- 120	- 100	- 100
CG	Extended Forward CG	+ 30	+ 30	+ 50	+ 50	+ 60	+ 60

RLD CONF 3

Ident.: PER-LDG-DIS-RLD-00022207.0015001 / 27 FEB 18

[5] **Applicable to: MSN 01957-02121, 02138, 02195-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

The RLD in the first table considers: Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing, and VAPP=VLS.

Required Landing Distance (m)						
Runway State / Weight (1000 kg)	Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
46	1 210	1 390	1 410	1 570	1 410	1 460
50	1 270	1 460	1 500	1 670	1 510	1 560
54	1 330	1 520	1 590	1 770	1 610	1 660
58	1 390	1 600	1 680	1 870	1 710	1 800
62	1 470	1 690	1 770	1 970	1 810	1 940
66	1 610	1 850	1 860	2 070	1 920	2 090

Corrections on Landing Distance (m)							
Runway State		Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
Altitude	Per 1 000 ft ABOVE SL	+ 70	+ 80	+ 100	+ 110	+ 160	+ 170
Speed	Per 5 kt	+ 100	+ 120	+ 90	+ 110	+ 140	+ 180
Wind	Per 5 kt TW	+ 150	+ 170	+ 160	+ 190	+ 260	+ 340
Reverse	Per Thrust Reverser Operative	-	-	- 90	- 130	- 100	- 110
CG	Extended Forward CG	+ 30	+ 30	+ 40	+ 50	+ 50	+ 60

RLD CONF 3

Ident.: PER-LDG-DIS-RLD-00022207.0012001 / 27 FEB 18

6 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The RLD in the first table considers: Sea Level (SL), ISA, no wind, no slope, no engine reverse thrust, manual landing, and VAPP=VLS.

Required Landing Distance (m)						
Runway State / Weight (1000 kg)	Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
46	1 250	1 440	1 460	1 630	1 450	1 490
50	1 310	1 510	1 550	1 740	1 550	1 600
54	1 370	1 580	1 640	1 850	1 650	1 720
58	1 440	1 660	1 740	1 950	1 780	1 860
62	1 530	1 760	1 830	2 060	1 930	2 010
68	1 730	1 990	1 970	2 220	2 140	2 230

Corrections on Landing Distance (m)							
Runway State		Dry	Wet	Compacted snow	Dry / Wet snow	Slush	Standing Water
Altitude	Per 1 000 ft ABOVE SL	+ 70	+ 80	+ 100	+ 120	+ 170	+ 160
Speed	Per 5 kt	+ 100	+ 120	+ 100	+ 110	+ 150	+ 190
Wind	Per 5 kt TW	+ 150	+ 170	+ 170	+ 200	+ 280	+ 360
Reverse	Per Thrust Reverser Operative	-	-	- 100	- 140	- 100	- 100
CG	Extended Forward CG	+ 30	+ 30	+ 40	+ 40	+ 50	+ 60

EXAMPLE

Ident.: PER-LDG-DIS-RLD-00014743.0001001 / 29 JUL 16
Applicable to: ALL

EXAMPLE 1

The following data and graphs are for example only, and are not for operational use. Even if the data in the following example is in “kg” and “m”, the same method can be applied for “lb” and “ft”.

Required Landing Distance (RLD) determination with multiple corrections

Data: Landing CONF = CONF FULL
- LW = 58 T
- DRY runway
- Airport altitude = 2 000 ft
- Approach speed = VLS
- 5 kt TW
- ISA conditions
- No slope

Read the reference distance for 58 T from RLD table:

Required Landing Distances (m)					
Runway State / Weight (1000 kg)	Dry	Wet	Compacted snow	Slush	Standing Water
46	1 150	1 320	1 310	1 300	1 350
50	Do not use for operational purpose				
54	1 260	1 450	1 480	1 480	1 530
58	1 320	1 510	1 560	1 570	1 630
62	1 380	1 580	1 640	1 670	1 750
66	1 480	1 710	1 730	1 760	1 880

RLD (DRY, 0 ft, VLS, no wind) = 1 320 m

Read the different corrections:

Corrections on Landing Distances (m)						
Runway State		Dry	Wet	Compacted snow	Slush	Standing Water
Altitude	Per 1 000 ft ABOVE SL	+ 60	+ 70	+ 90	+ 130	+ 140
Speed	Per 5 kt	+ 100	+ 100	+ 80	+ 110	+ 160
Wind	Per 5 kt TW	+ 140	+ 170	+ 150	+ 220	+ 300
Reverse	Per Thrust Reverser Operative	-	-	- 90	- 90	- 110
CG	Extended Forward CG	+ 30	+ 30	+ 40	+ 40	+ 50

Altitude correction: 60 x 2 = +120 m
Wind correction: 140 x 1 = +140 m

RLD (DRY, 2 000 ft, VLS, 5 kt TW) = 1 320 + 120 + 140 = 1 580 m

EXAMPLE 2

Required Landing Distance (RLD) calculation with WET CHECK (Mandatory for EASA operators)

Data: Landing CONF = CONF FULL
LW = 58 T
Runway covered with STANDING WATER
Airport altitude = 2 000 ft
Approach speed = VLS
Credit for all thrust reversers
ISA conditions
No slope

Required Landing Distances (m)					
Runway State / Weight (1000 kg)	Dry	Wet	Compacted snow	Slush	Standing Water
46	1 150	1 320	1 310	1 300	1 350
50	1 210	1 390	1 400	1 390	1 440
54	1 260	1 450	1 480	1 480	1 530
58	1 320	1 510	1 560	1 570	1 630
62	1 380	1 580	1 640	1 670	1 750
66	1 480	1 710	1 730	1 760	1 880

Corrections on Landing Distances (m)						
Runway State		Dry	Wet	Compacted snow	Slush	Standing Water
Altitude	Per 1 000 ft ABOVE SL	+ 60	+ 70	+ 90	+ 130	+ 140
Speed	Per 5 kt	+ 100	+ 100	+ 80	+ 110	+ 160
Wind	Per 5 kt TW	+ 140	+ 170	+ 150	+ 220	+ 300
Reverse	Per Thrust Reverser Operative	-	-	- 90	- 90	- 110
CG	Extended Forward CG	+ 30	+ 30	+ 40	+ 40	+ 50

RLD (WATER, 2 000 ft, VLS, no wind, all reversers) = 1 630 + 140 x 2 - 110 x 2 = 1 690 m

Compare this distance to the landing distance in the same conditions on WET runway:
RLD (WET, 2 000 ft, VLS, no wind) = 1 510 + 70 x 2 = 1 650 m

RLD (WET) < RLD (WATER), therefore RLD = 1 690 m

REQUIRED LANDING DISTANCE AT RIO SANTOS DUMONT (SBRJ/SDU)

Ident.: PER-LDG-DIS-RLD-00013208.0001001 / 18 MAR 11
Applicable to: MSN 02737

INTRODUCTION

The following tables show the required landing distances on wet runway at Santos Dumont airport (SBRJ/SDU) for A320-232/-233 fitted with BSCU STD 8 (or higher standard). The use of these tables is subject to a Flight Manual supplement. The performance on wet runway given in these tables is applicable provided the runway is maintained to acceptable standards for Porous Friction Course type runways in accordance with FAA AC 150/5320-12 or CAA CAP 683 or equivalent

MANUAL LANDING

REQUIRED LANDING DISTANCE CONF FULL – BASIC CG ENVELOPE

A320-232 /-233	Basic CG						
CONF FULL ZP= 0 FT	REQUIRED MANUAL LANDING DISTANCE ON WET RUNWAY (METERS) AT RIO SANTOS DUMONT (SBRJ/SDU) RUNWAYS 02R AND 20L – LDA = 1323 m						
WEIGHT (1000 KG)	15 KT Tailwind	10 KT Tailwind	5 KT Tailwind	No wind	10 KT Headwind	20 KT Headwind	30 KT Headwind
38		1252	1173	1099	1049	1001	956
40		1254	1175	1099	1051	1004	958
42		1256	1177	1101	1053	1005	960
44		1290	1196	1120	1070	1023	977
46		1327	1231	1147	1097	1048	1002
48			1266	1174	1124	1075	1027
50			1299	1205	1150	1100	1052
52			1332	1237	1177	1126	1077
54				1269	1206	1152	1102
56				1302	1239	1178	1127
58				1335	1271	1209	1153
60					1304	1241	1179
62					1336	1273	1210
64						1304	1242
66						1336	1273

REQUIRED LANDING DISTANCE CONF FULL – EXTENDED CG ENVELOPE

A320–232 /–233	Extended FWD CG						
CONF FULL ZP= 0 FT	REQUIRED MANUAL LANDING DISTANCE ON WET RUNWAY (METERS) AT RIO SANTOS DUMONT (SRBJ/SDU) RUNWAYS 02R AND 20L – LDA = 1323 m						
WEIGHT (1000 KG)	15 KT Tailwind	10 KT Tailwind	5 KT Tailwind	No wind	10 KT Headwind	20 KT Headwind	30 KT Headwind
38		1268	1188	1110	1060	1013	967
40		1272	1190	1113	1062	1014	968
42		1295	1196	1117	1067	1019	972
44		1331	1232	1146	1095	1046	998
46			1267	1174	1123	1072	1024
48			1302	1203	1150	1099	1050
50			1337	1237	1178	1126	1076
52				1272	1206	1153	1102
54				1305	1239	1179	1128
56				1338	1271	1206	1153
58					1303	1237	1178
60					1335	1269	1204
62						1300	1234
64						1331	1265
66							1297

REQUIRED LANDING DISTANCE AT RIO SANTOS DUMONT (SBRJ/SDU)

Ident.: PER-LDG-DIS-RLD-00013208.0006001 / 18 MAR 11
Applicable to: MSN 03750

INTRODUCTION

The following table shows the required landing distances on wet runway at Santos Dumont airport (SBRJ/SDU) for A320-214/-215/-216 aircraft models fitted with BSCU STD 9 or L4.1 (or higher versions). The use of this table is subject to a specific Flight Manual Supplement. The performance on wet runway given in this table is applicable provided the runway is maintained to acceptable standards for Porous Friction Course type runways in accordance with FAA AC 150/5320-12 or CAA CAP 683 or equivalent.

MANUAL LANDING

REQUIRED LANDING DISTANCE CONF FULL

BASIC CG							
A320–214 A320–215 A320–216	Required manual landing distance (m) on wet PFC runway in RIO SANTOS DUMONT						
CONF FULL ZP= 0 ft	Runway 20L or 02R LDA = 1323 m						
Weight (t)	15 kt tailwind	10 kt tailwind	5 kt tailwind	No wind	10 kt headwind	20 kt headwind	30 kt headwind
38	1404	1318	1234	1155	1104	1054	1005
40		1320	1236	1157	1106	1056	1006
42		1321	1237	1157	1106	1056	1008
44		1323	1239	1158	1107	1057	1008
46			1257	1162	1117	1076	1034
48			1291	1192	1149	1107	1067
50			1324	1225	1182	1139	1098
52				1257	1213	1170	1129
54				1290	1245	1202	1159
56				1322	1277	1234	1190
58				1355	1309	1264	1222
60					1341	1296	1253
62						1327	1283
64							1313
66							1344

REQUIRED LANDING DISTANCE CONF FULL – EXTENDED CG ENVELOPE

EXTENDED FORWARD CG							
A320–214 A320–215 A320–216 CONF FULL ZP= 0 ft	Required manual landing distance (m) on wet PFC runway in RIO SANTOS DUMONT Runway 20L or 02R LDA = 1323 m						
Weight (t)	15 kt tailwind	10 kt tailwind	5 kt tailwind	No wind	10 kt headwind	20 kt headwind	30 kt headwind
38	1427	1337	1250	1168	1116	1066	1017
40			1252	1171	1118	1067	1018
42			1255	1172	1119	1067	1018
44			1256	1172	1118	1071	1029
46			1291	1192	1148	1105	1063
48			1327	1226	1181	1137	1096
50				1259	1214	1170	1127
52				1292	1247	1202	1159
54				1325	1279	1234	1191
56					1311	1265	1222
58					1342	1297	1252
60						1327	1282
62							1312
64							1343
66							

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AUTOMATIC LANDING ON DRY RUNWAY

Ident.: PER-LDG-DIS-RLA-00013359.0688001 / 21 NOV 17

1 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

Determine the corrected required landing distance for manual landing from the data above.
The required landing distance for automatic landing is equal to the corrected required landing distance for manual landing except in the following cases.

- **If landing weight is equal to or below 60 000 kg (132 280 lb):**

  The required landing distance for automatic landing is equal to the corrected required landing distance for manual landing increased by:
  - 190 m (624 ft) for landing in CONF 3
  - 102 m (337 ft) for landing in CONF FULL.

- **If landing weight is above 60 000 kg (132 280 lb) and equal to or below 70 000 kg (154 320 lb):**

  The required landing distance for automatic landing is equal to the corrected required landing distance for manual landing increased by:
  - 90 m (297 ft) for landing in CONF 3
  - 69 m (226 ft) for landing in CONF FULL.

- **If landing weight is above 70 000 kg (154 320 lb) and landing in CONF FULL:**
  The required landing distance for automatic landing is equal to the corrected required landing distance for manual landing increased by 85 m (280 ft).

AUTOMATIC LANDING ON DRY RUNWAY

Ident.: PER-LDG-DIS-RLA-00013359.0641001 / 16 NOV 15

2 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

Determine the corrected required landing distance for manual landing from the data above.

The required landing distance for automatic landing is equal to the corrected required landing distance for manual landing except in the following case:
- In case of landing in CONF FULL with headwind, it is equal to the corrected required landing distance for manual required landing increased by 170 m.

AUTOMATIC LANDING ON DRY RUNWAY

Ident.: PER-LDG-DIS-RLA-00013359.0023001 / 18 MAR 11

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

Determine the corrected required landing distance for manual landing from the data above.

The required landing distance for automatic landing is equal to the corrected required landing distance for manual landing except in the following case:

- In case of landing in CONF 3 with landing weight equal to or less than 55 000 kg and with no wind or headwind, it is equal to the corrected required landing distance for manual required landing increased by 95 m.
- In case of landing in CONF FULL with landing weight equal to or less than 70 000 kg it is equal to the corrected required landing distance for manual required landing increased by 90 m.

AUTOMATIC LANDING ON DRY RUNWAY

Ident.: PER-LDG-DIS-RLA-00013359.0191001 / 18 MAR 11

3 **Applicable to: MSN 01957-02121, 02138, 02195-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-05411**

Determine the corrected required landing distance for manual landing from the data above.

The required landing distance for automatic landing is equal to the corrected required landing distance for manual landing except in the following case:

- In case of landing in CONF 3 with landing weight equal to or less than 65 000 kg and with headwind at or above 10 kt, it is equal to the corrected required landing distance for manual landing increased by 90 m.
- In case of landing in CONF FULL with landing weight equal to or less than 45 000 kg and with headwind at or above 30 kt, it is equal to the corrected required landing distance for manual landing increased by 10 m.

AUTOMATIC LANDING ON DRY RUNWAY

Ident.: PER-LDG-DIS-RLA-00013359.0205001 / 18 MAR 11
Applicable to: MSN 02135, 02139

Determine the corrected required landing distance for manual landing from the data above.

The required landing distance for automatic landing is equal to the corrected required landing distance for manual landing except in the following case:

- In case of landing in CONF 3 with landing weight equal to or less than 65 000 kg and with headwind at or above 10 kt, it is equal to the corrected required landing distance for manual landing increased by 285 ft.
- In case of landing in CONF FULL with landing weight equal to or less than 45 000 kg and with headwind at or above 30 kt, it is equal to the corrected required landing distance for manual landing increased by 25 ft.

AUTOMATIC LANDING ON DRY RUNWAY

Ident.: PER-LDG-DIS-RLA-00013359.0596001 / 21 DEC 12
Applicable to: MSN 05437-06336

Determine the corrected required landing distance for manual landing from the data above.

The required landing distance for automatic landing is equal to the corrected required landing distance for manual landing except in the following case:

- In case of landing in CONF 3 with landing weight equal to or less than 50 000 kg and with headwind at or above 25 kt, it is equal to the corrected required landing distance for manual landing increased by 40 m.

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PERFORMANCE

ONE ENGINE INOPERATIVE

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PER-OEI-GEN GENERAL

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PER-OEI-DES-20 FIXED SPEED STRATEGIES

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Localization Title	Toc Index	ID	Reason
PER-OEI-CRT-10 LONG RANGE CRUISE - 1 ENGINE OUT - ISA	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-CRT-10 LONG RANGE CRUISE - 1 ENGINE OUT - ISA	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-OEI-CRT-10 LONG RANGE CRUISE - 1 ENGINE OUT - ISA	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-OEI-CRT-10 LONG RANGE CRUISE - 1 ENGINE OUT - ISA +20	B	4	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-CRT-10 LONG RANGE CRUISE - 1 ENGINE OUT - ISA +20	B	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-OEI-CRT-10 LONG RANGE CRUISE - 1 ENGINE OUT - ISA +20	B	6	Effectivity update: The information no longer applies to MSN 05449.
PER-OEI-CRT-20 CRUISE - MCT/VMO - 1 ENGINE OUT - ISA	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-CRT-20 CRUISE - MCT/VMO - 1 ENGINE OUT - ISA	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-OEI-CRT-20 CRUISE - MCT/VMO - 1 ENGINE OUT - ISA	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-OEI-CRT-20 CRUISE - MCT/VMO - 1 ENGINE OUT - ISA +20	B	4	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-CRT-20 CRUISE - MCT/VMO - 1 ENGINE OUT - ISA +20	B	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-OEI-CRT-20 CRUISE - MCT/VMO - 1 ENGINE OUT - ISA +20	B	6	Effectivity update: The information no longer applies to MSN 05449.
PER-OEI-CRT-20 CRUISE - MCT/320KT - 1 ENGINE OUT - ISA	C	7	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-CRT-20 CRUISE - MCT/320KT - 1 ENGINE OUT - ISA	C	8	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.

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Localization Title	Toc Index	ID	Reason
PER-OEI-CRT-20 CRUISE - MCT/320KT - 1 ENGINE OUT - ISA	C	9	Effectivity update: The information no longer applies to MSN 05449.
PER-OEI-CRT-20 CRUISE - MCT/320KT - 1 ENGINE OUT - ISA +20	D	10	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-CRT-20 CRUISE - MCT/320KT - 1 ENGINE OUT - ISA +20	D	11	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-OEI-CRT-20 CRUISE - MCT/320KT - 1 ENGINE OUT - ISA +20	D	12	Effectivity update: The information no longer applies to MSN 05449.
PER-OEI-ICQ-10 IN CRUISE QUICK CHECK AT LONG RANGE SPEED	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-OEI-ICQ-10 IN CRUISE QUICK CHECK AT LONG RANGE SPEED	A	2	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-ICQ-20 GENERAL	A	1	Effectivity update: The information now also applies to MSN 08961, 09031, 09045. The information no longer applies to MSN 05449.
PER-OEI-ICQ-20 GENERAL	A	2	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-ICQ-20 IN CRUISE QUICK CHECK VMO	C	3	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-ICQ-20 IN CRUISE QUICK CHECK VMO	C	4	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-OEI-ICQ-20 IN CRUISE QUICK CHECK VMO	C	5	Effectivity update: The information no longer applies to MSN 05449.
PER-OEI-ICQ-20 IN CRUISE QUICK CHECK 320KT	D	6	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-ICQ-20 IN CRUISE QUICK CHECK 320KT	D	7	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-OEI-ICQ-20 IN CRUISE QUICK CHECK 320KT	D	8	Effectivity update: The information no longer applies to MSN 05449.
PER-OEI-HLD HOLDING	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-HLD HOLDING	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-OEI-HLD HOLDING	A	3	Effectivity update: The information no longer applies to MSN 05449.

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Localization Title	Toc Index	ID	Reason
PER-OEI-DES-10 DESCENT - M.78/300KT	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-DES-10 DESCENT - M.78/300KT	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-OEI-DES-10 DESCENT - M.78/300KT	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-OEI-DES-15 GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - ISA	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-DES-15 GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - ISA	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-OEI-DES-15 GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - ISA	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-OEI-DES-15 GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - ISA +20	B	4	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-DES-15 GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - ISA +20	B	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-OEI-DES-15 GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - ISA +20	B	6	Effectivity update: The information no longer applies to MSN 05449.
PER-OEI-DES-20 DESCENT - M.80/350KT	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-DES-20 DESCENT - M.80/350KT	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-OEI-DES-20 DESCENT - M.80/350KT	A	3	Effectivity update: The information no longer applies to MSN 05449.
PER-OEI-DES-20 DESCENT - M.78/320KT	B	4	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-DES-20 DESCENT - M.78/320KT	B	5	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-OEI-DES-20 DESCENT - M.78/320KT	B	6	Effectivity update: The information no longer applies to MSN 05449.
PER-OEI-DES-30 DESCENT TO LANDING	A	1	Effectivity update: The information now also applies to MSN 09063.
PER-OEI-DES-30 DESCENT TO LANDING	A	2	Effectivity update: The information now also applies to MSN 08961, 09031, 09045.
PER-OEI-DES-30 DESCENT TO LANDING	A	3	Effectivity update: The information no longer applies to MSN 05449.

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INTRODUCTION

Ident.: PER-OEI-GEN-00002064.0001001 / 10 DEC 09
Applicable to: ALL

This chapter provides the single engine performance data to be used for the conduct and monitoring of the flight following an engine failure.
The diversion strategy (descent and cruise speed schedules) shall be selected, and specified in the operator's routes specifications, as a function of the prevailing operational factors (e.g. obstacles clearance requirements and/or ETOPS operation).

FLIGHT PREPARATION

Ident.: PER-OEI-GEN-00002065.0001001 / 01 DEC 14
Applicable to: ALL

In readiness for a possible engine failure occurring during the flight, any flight shall be planned so as to comply with any of the following requirements, as applicable :

- obstacle clearance,
- oxygen,
- maximum diversion distance (ETOPS operation).

The following FCOM sections provide flight preparation and fuel planning information :

- *Refer to PER-FPL-GEN-MFR MINIMUM RECOMMENDED FUEL REQUIREMENTS*, for Standard Fuel Planning,
- *Refer to PRO-SPO-40-10 General*, for Extended Range Operation (ETOPS) and associated fuel requirements.

STRATEGY

Ident.: PER-OEI-GEN-00002067.0001001 / 23 NOV 11
Applicable to: ALL

Depending on the prevailing operational constraints, the most appropriate diversion strategy shall be selected, out of the following options:

	STANDARD STRATEGY	OBSTACLE STRATEGY	FIXED SPEED STRATEGIES	
			320 kt	VMO
DESCENT TO CEILING	• M .78/300 kt • MCT	• Green Dot Speed • MCT	• M .78/320 kt • MCT	• M .80/350 kt • MCT
CRUISE	LR ceiling LR speed	- Obstacle not cleared: Maintain Green Dot Speed at MCT - Obstacle cleared : Revert to standard strategy	FL per *Refer to PRO-SPO-40-60 ETOPS Fuel Requirement from Critical Point to Landing - One Engine Out - Cruise at 320kt* MCT/320 kt	FL per *Refer to PRO-SPO-40-60 ETOPS Fuel Requirement from Critical Point to Landing - One Engine Out - Cruise at 350kt* MCT/350 kt
DESCENT TO LANDING	IDLE/M .78/300 kt/250 kt			
Approx increase in fuel consumption compared with both engines operative	+33 %			

For ETOPS operations, any of the above diversion strategies can be used provided that the selected strategy and speed schedule is used in:

- establishing the area of operation (maximum diversion distance), *Refer to PRO-SPO-40-60 General*,
- calculating the diversion fuel requirements for the single engine ETOPS critical scenario, *Refer to PRO-SPO-40-30 ETOPS Fuel Scenarios*,
- demonstrating the applicable obstacle clearance requirements (net flight path and net ceiling).

During the diversion, the flight crew is expected to use the planned speed schedule.
However, based on the evaluation of the actual situation, the pilot in command has the authority to deviate from this planned one engine inoperative speed.

CEILINGS

Ident.: PER-OEI-ALT-10-00016065.0001001 / 22 MAR 17
Applicable to: ALL

Refer to QRH/PER-L Ceilings (Paper Only) or use the performance application of FlySmart with Airbus.

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LONG RANGE CRUISE - 1 ENGINE OUT - ISA

Ident.: PER-OEI-CRT-10-00002108.0060001 / 30 OCT 18

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	N1 (%) FUEL FLOW (KG/H) SR (NM/1000KG)	MACH IAS (KT) TAS (KT)

WEIGHT (1000KG)	FL100		FL120		FL140		FL160		FL180		FL200	
	77.1	.464	78.7	.478	80.4	.493	82.5	.515	83.4	.517	85.2	.534
64	1987	257	1974	255	1969	253	1962	255	1891	246	1905	244
	149.1	296	153.3	303	157.6	310	163.9	322	169.4	320	172.3	328
	77.9	.469	79.4	.483	80.7	.491	82.9	.515	84.3	.525	86.1	.542
66	2044	260	2030	257	1985	252	1990	254	1960	249	1978	248
	146.6	300	150.6	306	155.6	309	161.5	321	165.7	325	168.4	333
	78.7	.475	80.5	.492	82.9	.518	83.8	.523	85.3	.534	86.9	.550
68	2103	263	2108	262	2120	266	2059	258	2039	254	2051	251
	144.1	303	148.0	312	153.6	325	158.4	326	162.1	330	164.6	338
	79.3	.479	81.0	.494	83.2	.516	84.8	.531	86.3	.542	88.0	.561
70	2158	265	2144	263	2140	265	2135	263	2117	258	2141	257
	141.8	306	145.8	313	151.7	325	155.2	331	158.7	336	161.1	345
	80.3	.487	81.3	.492	83.6	.517	85.7	.539	87.2	.551	88.9	.568
72	2229	270	2160	262	2177	266	2208	267	2193	262	2213	260
	139.5	311	144.2	311	149.5	325	152.3	336	155.5	341	157.8	349
	81.1	.494	83.6	.519	84.5	.525	86.6	.546	88.2	.560	89.8	.574
74	2296	273	2308	277	2248	270	2277	270	2276	267	2284	263
	137.2	315	142.4	329	146.7	330	149.6	341	152.4	347	154.4	353
	81.6	.494	83.8	.517	85.5	.533	87.4	.552	89.0	.568	90.6	.579
76	2329	274	2327	276	2325	274	2343	273	2351	271	2357	265
	135.5	315	140.8	328	144.1	335	147.0	344	149.5	352	151.0	356
	81.8	.492	84.2	.518	86.3	.539	88.1	.557	89.8	.574	91.4	.584
78	2344	272	2364	277	2394	277	2408	276	2420	273	2429	268
	134.0	314	139.0	328	141.6	339	144.4	348	146.8	355	147.7	359
	84.1	.520	85.0	.525	87.1	.546	88.8	.563	90.4	.578	92.4	.590
80	2501	288	2436	280	2464	281	2476	279	2485	276	2511	270
	132.6	332	136.7	333	139.3	343	142.0	352	144.0	358	144.3	362
82	84.3	.519	85.9	.533	87.8	.551	89.5	.568	91.0	.581	92.9	.587

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 2.4 %	+ 3.6 %

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CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI ICE OFF

ISA
CG=33.0%

N1 (%) **MACH**
FUEL FLOW (KG/H) **IAS (KT)**
SR (NM/1000KG) **TAS (KT)**

WEIGHT (1000KG)	FL100		FL120		FL140		FL160		FL180		FL200	
	2523	287	2511	284	2529	284	2538	281	2548	277	2547	269
	131.2	331	134.4	337	137.1	347	139.6	354	141.3	360	141.6	361
	84.7	.519	86.6	.539	88.5	.557	90.1	.572	91.7	.584	92.9	.575
84	2556	288	2582	288	2595	287	2599	284	2613	279	2547	263
	129.7	331	132.3	342	134.9	350	137.4	357	138.4	362	138.7	353
	85.4	.525	87.4	.545	89.2	.562	90.7	.576	92.4	.587	92.9	.562
86	2622	291	2652	291	2663	290	2662	286	2682	280	2560	257
	127.8	335	130.3	345	132.8	354	135.0	359	135.6	364	134.8	345
	86.2	.531	88.1	.550	89.8	.567	91.2	.578	93.2	.590		
88	2696	294	2718	294	2728	292	2719	287	2749	281		
	125.8	339	128.3	349	130.8	357	132.7	361	132.8	365		
	86.9	.537	88.7	.555	90.4	.571	91.8	.581	93.2	.580		
90	2766	298	2782	297	2790	294	2781	288	2744	277		
	124.0	343	126.5	352	128.8	359	130.3	362	131.0	359		
	87.6	.543	89.4	.560	90.9	.575	92.4	.584	93.1	.562		
92	2835	301	2848	300	2852	296	2850	290	2725	268		
	122.2	347	124.7	355	126.8	362	127.9	364	127.7	348		
	88.3	.548	90.0	.565	91.4	.578	93.1	.587				
94	2904	304	2915	302	2910	298	2919	291				
	120.6	350	122.9	358	124.9	363	125.4	366				
	88.9	.553	90.5	.569	91.9	.580	93.1	.578				
96	2968	307	2977	305	2968	299	2912	287				
	118.9	353	121.2	361	122.9	365	123.9	361				
	89.5	.558	91.1	.573	92.4	.582	93.0	.558				
98	3035	310	3037	306	3030	300	2873	276				
	117.3	356	119.5	363	120.9	366	121.2	348				
	90.1	.563	91.6	.576	92.5	.577						
100	3100	312	3099	308	3038	297						
	115.8	359	117.8	365	119.5	363						

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 2.4 %	+ 3.6 %

CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
NORMAL AIR CONDITIONING
ANTI ICE OFF

ISA
CG=33.0%

N1 (%) **MACH**
FUEL FLOW (KG/H) **IAS (KT)**
SR (NM/1000KG) **TAS (KT)**

WEIGHT (1000KG)	FL210		FL220		FL230		FL240		FL250		FL260	
64	86.1	.544	87.2	.558	88.3	.569	89.3	.575	89.7	.571	89.7	.556
	1920	244	1949	245	1967	245	1973	243	1941	236	1886	224
	173.5	333	174.5	340	175.6	346	176.2	348	177.2	344	176.7	333
66	87.1	.555	88.2	.567	89.2	.574	90.4	.582	89.7	.556		
	2003	249	2024	249	2034	247	2051	246	1943	229		
	169.4	339	170.6	345	171.3	349	171.4	352	172.3	335		
68	88.2	.565	89.2	.573	90.2	.579	90.3	.570				
	2085	253	2095	252	2105	250	2052	240				
	165.7	345	166.6	349	167.0	352	167.9	345				
70	89.1	.572	90.1	.578	91.0	.582	90.3	.554				
	2159	257	2168	254	2167	251	2056	233				
	162.1	350	162.6	353	162.9	353	163.0	335				
72	89.9	.576	91.0	.583	91.0	.570						
	2225	259	2240	256	2169	245						
	158.5	353	158.6	355	159.5	346						
74	90.8	.581	91.6	.582	90.9	.554						
	2297	261	2285	256	2176	238						
	154.8	355	155.2	355	154.5	336						
76	91.7	.586	91.6	.571								
	2372	263	2290	251								
	151.1	358	151.8	348								
78	92.3	.584	91.6	.555								
	2413	262	2299	244								
	148.1	357	147.1	338								
80	92.3	.573										
	2417	257										
	144.9	350										
82	92.2	.558										
	2428	250										
	140.6	341										
84												
86												

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 2 %	+ 3.5 %

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CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS NORMAL AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**N1 (%)** **MACH** **FUEL FLOW (KG/H)** **IAS (KT)** **SR (NM/1000KG)** **TAS (KT)**

WEIGHT (1000KG)	FL210	FL220	FL230	FL240	FL250	FL260
88						
90						
92						
94						
96						
98						
100						

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 2 %	+ 3.5 %

LONG RANGE CRUISE - 1 ENGINE OUT - ISA

Ident.: PER-OEI-CRT-10-00002108.0055001 / 16 MAR 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**N1 (%)** **FUEL FLOW (KG/H)** **SR (NM/1000KG)**	**MACH** **IAS (KT)** **TAS (KT)**

WEIGHT (1000KG)	**FL100**		**FL120**		**FL140**		**FL160**		**FL180**		**FL200**	
50	70.1	.405	71.7	.419	73.1	.430	74.7	.441	76.8	.459	79.4	.489
	1446	224	1441	223	1417	220	1396	217	1401	217	1443	223
	178.9	259	184.5	266	190.7	270	197.1	275	203.0	284	208.3	301
52	71.1	.412	72.7	.426	74.1	.436	75.7	.448	78.1	.473	80.4	.496
	1500	227	1495	227	1471	223	1453	221	1478	224	1495	226
	175.3	263	180.7	270	186.6	274	192.5	280	198.0	293	203.9	305
54	72.0	.418	73.6	.432	75.2	.444	77.0	.459	79.6	.487	81.3	.503
	1553	231	1546	230	1528	227	1524	226	1559	231	1548	229
	171.9	267	177.1	274	182.6	279	188.1	287	193.3	301	199.6	309
56	72.9	.425	74.5	.437	76.1	.451	78.2	.470	80.6	.494	82.1	.510
	1608	235	1596	233	1586	231	1597	232	1614	234	1602	232
	168.6	271	173.6	277	178.7	283	183.9	294	189.4	306	195.4	313
58	73.8	.431	75.4	.444	77.2	.459	79.5	.482	81.4	.500	83.0	.517
	1661	238	1652	236	1651	235	1675	238	1666	237	1659	236
	165.5	275	170.1	281	175.0	289	179.7	301	185.7	309	191.3	317
60	74.6	.435	76.4	.450	78.2	.468	80.6	.491	82.2	.506	83.9	.524
	1711	241	1709	239	1718	240	1737	242	1722	240	1719	239
	162.4	278	166.8	285	171.3	294	176.2	306	182.0	313	187.2	322
62	75.5	.441	77.3	.458	79.3	.477	81.4	.497	83.0	.513	84.8	.531
	1767	244	1772	244	1788	245	1792	245	1779	243	1780	243
	159.4	282	163.6	290	167.8	300	172.9	310	178.4	317	183.3	326
64	76.4	.447	78.3	.465	80.3	.486	82.1	.502	83.8	.519	85.7	.537
	1825	247	1836	248	1855	249	1847	248	1838	247	1839	246
	156.4	286	160.4	295	164.6	305	169.8	313	174.9	321	179.5	330
66	77.3	.454	79.2	.473	81.2	.493	82.9	.508	84.7	.526	86.5	.543
	1886	251	1904	252	1917	253	1902	251	1899	250	1898	248
	153.6	290	157.4	300	161.6	310	166.6	317	171.4	326	175.8	334
68	78.2	.461	80.2	.481	82.0	.498	83.7	.514	85.4	.532	87.3	.548

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 1 %	+ 4 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**N1 (%)** **FUEL FLOW (KG/H)** **SR (NM/1000KG)**	**MACH** **IAS (KT)** **TAS (KT)**

WEIGHT (1000KG)	**FL100**		**FL120**		**FL140**		**FL160**		**FL180**		**FL200**	
	1950	255	1974	256	1973	256	1962	254	1958	253	1955	250
	150.8	294	154.5	305	158.8	313	163.6	321	168.1	329	172.2	337
	79.0	.468	81.1	.488	82.7	.504	84.5	.521	86.3	.537	88.0	.552
70	2015	259	2039	260	2029	259	2024	257	2018	256	2013	253
	148.1	299	151.8	309	156.1	317	160.5	325	164.9	333	168.5	339
	79.9	.475	81.9	.494	83.4	.509	85.2	.527	87.1	.543	88.8	.557
72	2083	263	2099	264	2088	262	2086	260	2079	258	2074	255
	145.5	303	149.2	313	153.4	320	157.6	329	161.7	336	165.0	342
	80.8	.482	82.6	.499	84.2	.515	86.0	.532	87.8	.548	89.6	.562
74	2151	267	2154	266	2149	265	2146	263	2139	261	2140	257
	143.0	308	146.8	316	150.7	324	154.7	332	158.5	339	161.4	345
	81.6	.489	83.3	.504	85.0	.521	86.7	.538	88.5	.552	90.5	.568
76	2217	270	2212	269	2213	268	2208	266	2198	263	2206	260
	140.7	312	144.5	320	148.1	328	151.9	335	155.5	342	158.1	349
	82.4	.494	83.9	.509	85.7	.527	87.5	.543	89.3	.557	91.3	.572
78	2278	274	2271	272	2277	271	2270	269	2262	265	2270	262
	138.5	316	142.2	323	145.6	331	149.2	339	152.4	345	154.8	351
	82.7	.497	84.3	.512	86.0	.530	87.8	.545	89.7	.559	91.6	.572
79	2308	275	2301	273	2308	272	2299	270	2296	266	2293	262
	137.4	317	141.0	324	144.3	333	147.9	340	150.8	346	153.2	351

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 1 %	+ 4 %

CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**N1 (%)** **FUEL FLOW (KG/H)** **SR (NM/1000KG)**	**MACH** **IAS (KT)** **TAS (KT)**

WEIGHT (1000KG)	**FL210**		**FL220**		**FL230**		**FL240**		**FL250**		**FL260**	
	80.2	.497	81.0	.505	81.7	.513	82.6	.522	83.5	.531	84.4	.540
50	1436	222	1429	221	1422	220	1421	219	1420	219	1417	218

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 1 %	+ 3 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
HIGH AIR CONDITIONING
ANTI ICE OFF

ISA
CG=33.0%

N1 (%) **MACH**
FUEL FLOW (KG/H) **IAS (KT)**
SR (NM/1000KG) **TAS (KT)**

WEIGHT (1000KG)	FL210		FL220		FL230		FL240		FL250		FL260	
	211.8	304	215.3	308	218.8	311	222.0	316	225.2	320	228.4	324
	81.1	.504	81.9	.512	82.7	.521	83.6	.531	84.6	.539	85.3	.545
52	1488	225	1482	224	1482	224	1480	223	1478	222	1469	220
	207.2	308	210.5	312	213.6	316	216.6	321	219.6	325	222.5	327
	82.0	.511	82.9	.520	83.7	.529	84.7	.538	85.5	.545	86.3	.551
54	1542	228	1540	228	1540	227	1539	226	1531	225	1527	223
	202.7	313	205.7	317	208.6	321	211.4	325	214.1	328	216.5	330
	82.9	.518	83.8	.528	84.7	.536	85.6	.544	86.4	.550	87.3	.558
56	1599	232	1599	231	1598	230	1593	229	1587	227	1589	225
	198.3	317	201.0	321	203.7	326	206.4	329	208.7	331	210.5	334
	83.9	.526	84.8	.535	85.6	.542	86.4	.549	87.3	.556	88.5	.565
58	1659	235	1658	234	1654	233	1647	231	1648	229	1653	228
	193.9	322	196.5	326	199.1	329	201.4	332	203.2	335	204.8	339
	84.8	.533	85.7	.541	86.5	.547	87.3	.554	88.4	.563	89.5	.569
60	1719	238	1717	237	1707	235	1707	233	1713	232	1711	230
	189.7	326	192.2	330	194.5	332	196.3	335	197.8	339	199.3	341
	85.7	.539	86.5	.546	87.3	.553	88.3	.561	89.4	.568	89.4	.554
62	1777	241	1772	240	1768	238	1771	236	1774	234	1701	224
	185.7	330	187.9	333	189.8	335	191.4	339	192.7	342	195.4	332
	86.5	.545	87.3	.551	88.2	.558	89.3	.566	90.3	.569		
64	1835	244	1829	242	1830	240	1834	239	1826	235		
	181.7	333	183.6	336	185.2	339	186.6	342	187.7	343		
	87.3	.549	88.2	.556	89.3	.565	90.2	.570	90.9	.564		
66	1890	246	1890	244	1898	243	1892	240	1855	233		
	177.8	336	179.3	339	180.7	343	182.0	344	183.0	339		
	88.1	.554	89.1	.562	90.2	.569	91.1	.570				
68	1952	248	1956	247	1958	245	1943	240				
	173.8	339	175.2	343	176.4	345	177.2	344				
	88.9	.560	90.0	.568	91.0	.571						
70	2015	251	2022	250	2012	246						
	169.9	342	171.2	346	172.2	346						

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 1 %	+ 3 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**N1 (%)** **MACH** **FUEL FLOW (KG/H)** **IAS (KT)** **SR (NM/1000KG)** **TAS (KT)**

WEIGHT (1000KG)	FL210		FL220		FL230		FL240	FL250	FL260
72	89.9 2083 166.2	.566 254 346	90.9 2080 167.3	.571 251 348	91.9 2067 167.8	.571 246 347			
74	90.7 2145 162.6	.570 256 349	91.7 2133 163.4	.572 251 348					
76	91.5 2200 159.0	.572 257 350	92.8 2211 159.1	.577 254 352					
78	92.3 2253 155.4	.572 257 350							
79	92.8 2288 153.5	.574 258 351							

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 1 %	+ 3 %

LONG RANGE CRUISE - 1 ENGINE OUT - ISA

Ident.: PER-OEI-CRT-10-00002108.0020001 / 10 DEC 09
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

LONG RANGE CRUISE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
PACK FLOW HI
ANTI-ICING OFF

ISA
CG = 33.0%

N1 (%)
KG/H
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL120		FL140		FL160		FL180		FL200	
50	75.5	.453	77.4	.472	78.9	.487	80.3	.500	81.8	.516	82.7	.525
	1891	251	1888	251	1867	250	1842	247	1824	245	1783	240
	153.0	289	158.3	299	163.9	306	169.6	312	175.1	319	180.8	322
52	76.7	.463	78.5	.480	79.7	.492	81.3	.508	82.5	.520	83.6	.532
	1967	256	1959	256	1924	253	1908	251	1876	247	1852	243
	150.1	295	155.3	304	160.9	309	166.1	317	171.5	322	176.6	327
54	77.8	.471	79.3	.486	80.7	.499	82.2	.515	83.1	.524	84.5	.540
	2041	261	2021	259	1991	256	1973	254	1929	249	1924	247
	147.4	301	152.5	308	157.8	314	162.8	321	168.1	324	172.5	332
56	78.9	.479	80.1	.492	81.6	.507	82.9	.519	83.9	.530	85.4	.547
	2112	265	2078	262	2059	260	2029	257	1998	252	1995	250
	144.9	306	149.9	311	154.7	319	159.7	324	164.4	328	168.6	336
58	79.7	.485	80.9	.498	82.5	.513	83.5	.523	84.7	.537	86.0	.552
	2175	268	2141	265	2126	264	2081	258	2068	256	2057	253
	142.4	310	147.3	315	151.9	323	156.7	326	160.9	333	164.9	339
60	80.4	.490	81.8	.504	83.3	.519	84.2	.528	85.6	.545	86.7	.556
	2233	271	2209	269	2187	266	2145	261	2141	259	2119	255
	140.1	313	144.6	320	149.1	326	153.7	330	157.5	337	161.3	342
62	81.1	.495	82.7	.511	83.8	.522	84.9	.534	86.3	.550	87.3	.561
	2292	274	2277	272	2239	268	2214	264	2209	262	2183	256
	137.9	316	142.1	324	146.5	328	150.6	333	154.3	341	157.7	344
64	82.0	.502	83.5	.517	84.4	.525	85.7	.541	86.9	.555	88.1	.567
	2363	278	2343	276	2293	270	2289	268	2272	264	2259	259
	135.5	320	139.7	327	144.0	330	147.6	338	151.1	343	154.1	348
66	82.8	.508	84.1	.520	85.1	.531	86.5	.548	87.5	.558	88.7	.570
	2431	281	2399	278	2362	273	2362	271	2334	266	2325	261
	133.3	324	137.4	330	141.3	334	144.7	342	148.1	346	150.6	350
68	83.6	.514	84.6	.523	85.8	.537	87.1	.552	88.1	.562	89.2	.571
	2499	284	2453	279	2433	276	2426	273	2401	268	2383	261
	131.2	328	135.2	332	138.7	338	142.0	344	145.0	348	147.2	351
70	84.3	.519	85.1	.527	86.5	.543	87.6	.556	88.8	.569	90.2	.581
	2563	287	2510	281	2506	279	2488	275	2481	271	2492	266
	129.1	331	133.0	334	136.2	341	139.4	347	141.9	352	143.1	357
72	84.8	.522	85.8	.532	87.2	.549	88.2	.559	89.4	.571	91.1	.588
	2619	289	2582	284	2580	282	2553	277	2544	272	2595	270
	127.1	333	130.7	337	133.7	345	136.7	349	139.0	353	139.3	361
74	85.3	.524	86.5	.538	87.7	.553	88.8	.563	89.9	.572	92.0	.595
	2672	291	2655	287	2645	284	2618	279	2602	273	2697	273
	125.3	335	128.4	341	131.4	348	134.2	351	136.1	354	135.6	366
76	85.8	.528	87.1	.544	88.2	.556	89.4	.568	90.8	.580	93.1	.606
	2731	293	2729	291	2707	286	2697	282	2710	277	2821	278
	123.4	337	126.3	345	129.2	350	131.5	355	132.6	359	132.0	372
78	86.4	.533	87.8	.549	88.8	.559	90.0	.572	91.6	.588	93.7	.607
	2802	295	2802	293	2772	288	2767	283	2817	281	2883	279
	121.4	340	124.2	348	126.9	352	128.9	357	129.3	364	129.3	373

ENGINE ANTI ICE ON
△FUEL = + 3.5 %

TOTAL ANTI ICE ON
△FUEL = + 7 %

LONG RANGE CRUISE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

N1 (%)
KG/H
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL210		FL220		FL230		FL240		FL250		FL260	
50	83.3	.533	84.1	.541	84.7	.549	85.2	.554	85.8	.560	86.5	.567
	1778	238	1777	237	1771	236	1759	233	1750	231	1752	229
	183.3	326	185.6	330	188.0	333	190.4	335	192.5	337	194.1	340
52	84.3	.541	85.0	.548	85.5	.554	86.0	.559	86.7	.567	87.2	.568
	1851	242	1846	241	1833	238	1821	235	1825	234	1807	230
	178.8	331	181.1	334	183.4	336	185.4	338	187.0	341	188.5	341
54	85.2	.548	85.7	.553	86.2	.558	86.9	.566	87.4	.568	88.4	.580
	1920	246	1907	243	1896	240	1898	239	1880	235	1912	235
	174.6	335	176.8	337	178.8	339	180.4	342	181.8	342	181.8	348
56	85.9	.553	86.4	.558	87.0	.565	87.6	.569	88.4	.577	88.6	.568
	1983	248	1970	245	1969	243	1958	240	1975	238	1917	229
	170.7	338	172.6	340	174.2	343	175.5	344	175.9	347	177.5	340
58	86.5	.557	87.1	.564	87.7	.569	88.5	.574	89.5	.586	88.5	.539
	2045	250	2041	248	2035	245	2039	242	2075	242	1899	217
	166.8	341	168.3	344	169.7	345	170.3	347	170.1	353	170.2	323
60	87.2	.562	87.9	.569	88.4	.571	89.5	.585	90.6	.595		
	2112	252	2112	250	2100	246	2144	247	2178	246		
	162.9	344	164.2	347	165.2	347	164.9	353	164.5	358		
62	88.0	.569	88.5	.570	89.6	.583	90.6	.593	92.1	.610		
	2190	255	2169	251	2211	251	2243	250	2302	253		
	159.0	348	160.2	347	160.0	354	159.7	358	159.3	367		
64	88.6	.570	89.5	.579	90.5	.590	91.8	.605	92.4	.601		
	2247	256	2270	255	2306	254	2362	256	2323	249		
	155.2	349	155.5	353	155.2	358	154.8	366	155.7	362		
66	89.4	.575	90.4	.587	91.5	.599	92.6	.605	92.6	.582		
	2327	258	2371	259	2413	258	2422	256	2315	241		
	151.2	352	150.9	358	150.6	363	151.0	366	151.3	350		
68	90.3	.584	91.4	.595	92.7	.609	92.9	.594				
	2434	263	2473	262	2523	263	2434	251				
	146.9	358	146.6	363	146.5	370	147.5	359				
70	91.2	.591	92.6	.606	93.1	.601	93.0	.569				
	2529	266	2595	267	2547	260	2418	240				
	142.9	362	142.4	370	143.3	365	142.3	344				
72	92.2	.599	93.2	.605	93.3	.585						
	2638	269	2648	267	2543	252						
	138.9	366	139.3	369	139.7	355						
74	93.3	.609	93.5	.597	93.5	.554						
	2752	274	2666	263	2524	238						
	135.4	373	136.4	364	133.1	336						
76	93.6	.603	93.6	.577								
	2778	271	2656	254								
	132.7	369	132.3	351								
78	93.9	.591										
	2784	265										
	129.8	361										

ENGINE ANTI ICE ON
△FUEL = + 3.5 %

TOTAL ANTI ICE ON
△FUEL = + 7 %

LONG RANGE CRUISE - 1 ENGINE OUT - ISA

Ident.: PER-OEI-CRT-10-00002108.0009001 / 10 DEC 09

3 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

LONG RANGE CRUISE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

EPR
KG/H
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL120		FL140		FL160		FL180		FL200	
50	1.151	.430	1.171	.447	1.232	.512	1.240	.510	1.255	.511	1.295	.538
	1811	237	1834	238	2034	263	1904	252	1812	243	1840	246
	151.4	274	154.4	283	158.3	322	167.1	318	174.5	316	179.6	330
52	1.158	.435	1.185	.463	1.236	.512	1.245	.510	1.266	.515	1.315	.550
	1879	240	1950	246	2053	263	1928	252	1868	245	1920	252
	147.8	278	150.4	293	156.8	322	165.0	318	170.8	319	176.0	338
54	1.170	.447	1.230	.512	1.239	.511	1.252	.510	1.287	.532	1.325	.553
	1983	247	2206	273	2072	263	1963	252	1970	253	1962	253
	143.9	285	147.2	325	155.2	322	162.3	319	167.1	329	173.2	340
56	1.183	.461	1.234	.513	1.244	.511	1.262	.514	1.310	.549	1.336	.555
	2098	255	2229	274	2095	262	2018	254	2079	261	2005	254
	140.4	295	145.8	325	153.4	321	159.1	321	163.6	340	170.2	341
58	1.226	.510	1.238	.513	1.249	.510	1.275	.522	1.321	.554	1.351	.563
	2373	283	2248	273	2121	262	2090	258	2129	264	2073	258
	137.2	326	144.4	325	151.3	321	155.9	326	161.1	343	166.8	346
60	1.233	.514	1.241	.512	1.258	.514	1.302	.546	1.330	.556	1.368	.572
	2415	285	2267	273	2173	264	2232	270	2169	265	2152	262
	135.8	328	143.0	324	148.6	323	152.6	341	158.6	344	163.3	352
62	1.236	.514	1.246	.511	1.267	.518	1.316	.554	1.341	.559	1.388	.585
	2434	285	2291	273	2230	266	2299	274	2219	266	2248	268
	134.7	328	141.4	324	146.0	326	150.3	346	156.0	346	160.0	360
64	1.239	.513	1.252	.512	1.286	.533	1.325	.556	1.357	.568	1.404	.594
	2454	284	2329	273	2341	274	2343	275	2298	270	2323	272
	133.5	328	139.3	325	143.2	335	148.1	347	153.0	352	157.0	365
66	1.243	.513	1.261	.516	1.307	.551	1.333	.558	1.373	.578	1.419	.601
	2476	284	2387	275	2465	283	2385	276	2384	275	2395	276
	132.2	327	136.9	327	140.5	346	146.0	348	150.1	358	154.2	369
68	1.247	.512	1.270	.520	1.318	.556	1.344	.562	1.391	.589	1.423	.595
	2499	283	2447	278	2523	286	2441	278	2475	281	2394	273
	130.7	327	134.6	329	138.7	350	143.7	351	147.3	364	152.6	365
70	1.254	.514	1.290	.538	1.326	.558	1.358	.570	1.405	.596	1.426	.584
	2550	285	2579	288	2563	287	2520	282	2547	284	2385	268
	128.8	328	132.3	341	136.9	351	141.1	356	144.8	369	150.4	359
72	1.262	.517	1.309	.553	1.334	.560	1.374	.579	1.419	.602	1.432	.568
	2604	287	2694	296	2607	288	2607	287	2617	287	2371	260
	126.8	330	130.1	350	135.0	352	138.7	361	142.4	373	147.1	349
74	1.270	.521	1.319	.558	1.344	.564	1.390	.589	1.432	.607	1.445	.529
	2666	289	2751	298	2665	290	2699	292	2682	290	2337	242
	124.8	333	128.5	353	133.0	355	136.3	368	140.1	376	139.1	325
76	1.290	.539	1.326	.559	1.357	.571	1.403	.596	1.434	.601		
	2805	299	2791	299	2745	294	2774	296	2678	287		
	122.8	344	126.9	354	130.8	359	134.2	372	138.9	372		
78	1.308	.554	1.334	.561	1.371	.580	1.416	.602	1.438	.590		
	2927	307	2836	300	2831	299	2844	299	2668	282		
	120.8	354	125.4	355	128.7	364	132.1	376	137.0	366		

ENGINE ANTI ICE ON
△FUEL = + 2.5 %

TOTAL ANTI ICE ON
△FUEL = + 6 %

LONG RANGE CRUISE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

EPR
KG/H
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL210		FL220		FL230		FL240		FL250		FL260	
50	1.316	.550	1.328	.552	1.344	.556	1.366	.568	1.393	.584	1.416	.595
	1841	247	1802	242	1777	239	1782	239	1801	241	1798	241
	182.9	337	186.7	336	190.1	338	192.7	343	195.2	352	198.3	357
52	1.327	.553	1.341	.556	1.363	.567	1.389	.583	1.412	.594	1.435	.603
	1881	248	1850	244	1855	244	1875	246	1874	246	1865	244
	179.7	338	183.1	339	185.5	344	188.0	352	190.9	358	193.7	361
54	1.338	.555	1.359	.566	1.385	.581	1.408	.593	1.431	.602	1.449	.605
	1925	249	1928	249	1947	251	1949	251	1942	249	1908	245
	176.5	340	178.9	345	181.2	353	183.9	358	186.6	362	190.0	363
56	1.355	.565	1.380	.579	1.404	.592	1.426	.601	1.440	.600	1.453	.592
	2001	253	2017	255	2024	255	2019	254	1963	248	1899	240
	172.7	345	174.9	353	177.4	359	180.0	363	183.8	361	186.9	355
58	1.374	.576	1.399	.590	1.417	.595	1.430	.592	1.444	.585	1.461	.569
	2086	259	2100	260	2071	257	2014	250	1952	242	1881	230
	168.9	352	171.2	360	174.3	361	177.8	358	180.5	352	181.3	341
60	1.394	.588	1.407	.588	1.420	.585	1.435	.578	1.452	.562		
	2174	264	2123	259	2065	252	2003	244	1935	232		
	165.4	360	168.8	358	172.0	355	174.3	349	174.7	338		
62	1.410	.596	1.411	.578	1.426	.570	1.444	.552				
	2248	268	2117	254	2055	246	1986	233				
	162.3	365	166.5	353	168.4	346	168.1	334				
64	1.418	.595	1.416	.563	1.435	.544						
	2272	267	2108	247	2037	234						
	160.1	364	162.8	343	161.9	330						
66	1.421	.585	1.427	.536								
	2264	263	2090	235								
	158.0	358	156.2	326								
68	1.426	.570										
	2253	256										
	154.8	349										
70	1.436	.543										
	2232	243										
	148.9	332										
72												
74												
76												
78												

ENGINE ANTI ICE ON
△FUEL = + 2.5 %

TOTAL ANTI ICE ON
△FUEL = + 6 %

LONG RANGE CRUISE - 1 ENGINE OUT - ISA +20

Ident.: PER-OEI-CRT-10-00002111.0104001 / 30 OCT 18

4 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS	ISA+20	N1 (%)	MACH
HIGH AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL100		FL120		FL140		FL160		FL180		FL200	
64	80.1	.464	81.7	.477	83.4	.489	85.4	.505	86.7	.515	88.6	.534
	2090	257	2075	254	2040	251	2004	250	1985	245	2013	244
	146.9	307	151.0	313	156.5	319	163.5	327	166.9	331	169.4	341
66	80.9	.469	82.7	.485	83.7	.486	85.9	.508	87.6	.521	89.5	.541
	2150	259	2147	258	2050	249	2049	251	2054	248	2088	247
	144.4	310	148.4	319	154.7	317	160.5	329	163.3	335	165.5	346
68	81.7	.474	83.6	.492	85.6	.508	86.7	.512	88.4	.528	90.4	.549
	2211	262	2217	262	2176	261	2111	253	2127	251	2166	251
	142.0	314	145.8	323	152.4	332	157.3	332	159.8	340	161.8	350
70	82.4	.479	84.1	.492	86.0	.509	87.5	.517	89.3	.536	91.5	.559
	2269	265	2246	262	2211	261	2175	256	2205	255	2256	256
	139.7	317	143.9	323	150.2	332	154.1	335	156.3	345	158.3	357
72	83.5	.488	84.3	.489	86.5	.511	88.2	.523	90.2	.543	92.4	.567
	2352	270	2260	261	2256	262	2244	259	2281	258	2335	259
	137.4	323	142.2	321	147.7	333	151.1	339	153.1	349	155.0	362
74	84.3	.493	86.6	.517	87.4	.517	89.0	.530	91.0	.550	93.3	.572
	2415	273	2418	276	2329	266	2319	262	2361	262	2408	262
	135.2	326	140.4	339	145.0	338	148.1	343	149.9	354	151.7	365
76	84.6	.492	86.9	.515	88.3	.525	89.9	.537	92.1	.561	93.9	.574
	2437	273	2437	275	2407	270	2397	266	2455	267	2465	263
	133.7	326	138.8	338	142.3	342	145.1	348	147.0	361	148.6	366
78	84.8	.490	87.4	.517	89.2	.533	90.7	.543	92.9	.567	93.8	.564
	2451	271	2485	276	2492	274	2473	269	2532	270	2464	258
	132.3	324	136.8	340	139.7	348	142.4	352	144.2	365	146.2	360
80	87.2	.518	88.3	.524	90.2	.542	91.5	.551	93.7	.572	93.8	.551
	2619	287	2562	280	2576	279	2554	273	2604	273	2463	252
	130.7	342	134.5	345	137.2	353	139.7	357	141.4	368	142.8	352
82	87.4	.516	89.2	.532	91.0	.548	92.5	.562	93.7	.565		

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 0.7 %	+ 6 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS	ISA+20	**N1 (%)**	**MACH**
HIGH AIR CONDITIONING	CG=33.0%	**FUEL FLOW (KG/H)**	**IAS (KT)**
ANTI ICE OFF		**SR (NM/1000KG)**	**TAS (KT)**

WEIGHT (1000KG)	FL100		FL120		FL140		FL160		FL180		FL200
	2639	286	2642	284	2653	282	2654	278	2604	269	
	129.4	341	132.2	349	134.9	358	137.1	364	139.5	363	
	87.8	.517	90.0	.538	91.9	.555	93.3	.568	93.6	.554	
84	2679	287	2718	288	2731	286	2732	282	2603	264	
	127.8	342	130.1	354	132.7	362	134.7	368	137.0	357	
	88.6	.524	90.7	.544	92.6	.562	93.5	.564	93.5	.536	
86	2754	290	2791	291	2807	289	2748	280	2578	255	
	125.8	346	128.1	358	130.6	366	133.0	366	133.6	345	
	89.4	.530	91.4	.549	93.2	.565	93.4	.556			
88	2832	294	2859	293	2867	291	2744	275			
	123.9	351	126.2	361	128.6	369	131.2	360			
	90.1	.536	92.1	.554	93.1	.558	93.4	.543			
90	2908	297	2928	296	2857	287	2733	269			
	122.0	355	124.4	364	127.4	364	128.8	352			
	90.9	.542	92.6	.557	93.1	.549	93.2	.517			
92	2982	301	2984	298	2847	283	2690	255			
	120.3	359	122.8	366	125.8	358	124.4	335			
	91.6	.547	92.6	.551	93.1	.539					
94	3054	304	2977	295	2842	277					
	118.6	362	121.7	362	123.8	352					
	92.2	.551	92.6	.544	93.0	.524					
96	3117	306	2973	291	2833	269					
	117.1	365	120.3	358	120.6	342					
	92.2	.546	92.6	.536							
98	3113	303	2970	286							
	116.1	361	118.6	352							
	92.1	.540	92.6	.524							
100	3110	300	2966	280							
	114.9	358	116.2	345							

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 0.7 %	+ 6 %

CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA+20 CG=33.0%	**N1 (%)** **FUEL FLOW (KG/H)** **SR (NM/1000KG)**	**MACH** **IAS (KT)** **TAS (KT)**

WEIGHT (1000KG)	FL210		FL220		FL230		FL240		FL250	FL260
64	89.6 2031 170.4	.544 244 346	90.7 2059 171.4	.557 245 353	91.9 2081 172.4	.568 245 359	91.5 1986 174.4	.550 232 346		
66	90.6 2115 166.5	.553 248 352	91.8 2138 167.5	.565 248 358	92.1 2095 169.2	.561 242 354	91.3 1949 168.1	.521 219 328		
68	91.6 2197 162.8	.562 252 358	92.7 2211 163.6	.571 251 362	92.0 2090 165.3	.547 235 345				
70	92.6 2277 159.2	.570 256 362	92.6 2210 160.9	.561 246 356						
72	93.3 2334 155.8	.572 257 364	92.6 2203 157.0	.546 239 346						
74	93.2 2333 153.2	.562 252 357								
76	93.2 2328 149.5	.547 245 348								
78										
80										
82										
84										
86										
88										
90										
92										
94										
96										

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 0.5 %	+ 2.6 %

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Continued from the previous page

CRUISE - LONG RANGE - 1 ENGINE OUT						
MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF			ISA+20 CG=33.0%		**N1 (%)** **FUEL FLOW (KG/H)** **SR (NM/1000KG)**	**MACH** **IAS (KT)** **TAS (KT)**
WEIGHT (1000KG)	**FL210**	**FL220**	**FL230**	**FL240**	**FL250**	**FL260**
98						
100						

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 0.5 %	+ 2.6 %

LONG RANGE CRUISE - 1 ENGINE OUT - ISA +20

Ident.: PER-OEI-CRT-10-00002111.0098001 / 16 MAR 15

5 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS	ISA+20	N1 (%)	MACH
HIGH AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL100		FL120		FL140		FL160		FL180		FL200	
50	72.6	.403	74.2	.415	75.7	.424	77.6	.438	79.8	.458	82.6	.488
	1506	222	1488	220	1459	217	1457	216	1473	217	1519	222
	177.1	267	183.2	273	189.7	277	195.0	284	200.1	295	205.2	312
52	73.6	.409	75.2	.420	76.8	.431	78.7	.445	81.3	.472	83.6	.495
	1558	226	1539	223	1516	220	1515	219	1557	224	1575	226
	173.6	270	179.4	276	185.4	281	190.4	288	195.1	304	200.8	316
54	74.5	.415	76.1	.426	77.9	.438	80.0	.457	82.9	.487	84.6	.502
	1614	229	1593	227	1577	224	1591	225	1645	231	1632	229
	170.1	275	175.7	280	181.2	286	186.0	296	190.4	313	196.6	321
56	75.5	.422	77.1	.432	78.9	.445	81.4	.469	83.9	.494	85.4	.509
	1673	233	1650	230	1637	228	1674	231	1703	234	1689	232
	166.8	279	172.1	284	177.2	290	181.7	304	186.6	318	192.4	325
58	76.4	.428	78.2	.439	80.0	.452	82.9	.483	84.7	.500	86.3	.516
	1731	236	1712	234	1701	232	1761	238	1757	237	1750	235
	163.5	283	168.6	289	173.4	295	177.5	313	183.0	322	188.3	330
60	77.4	.434	79.1	.446	81.3	.465	83.9	.491	85.5	.506	87.3	.524
	1790	240	1773	237	1787	238	1827	242	1814	240	1814	239
	160.4	287	165.1	293	169.6	303	174.0	318	179.4	325	184.3	334
62	78.4	.440	80.1	.453	82.5	.476	84.8	.497	86.3	.512	88.2	.530
	1852	243	1838	241	1870	244	1883	245	1873	243	1877	242
	157.3	291	161.8	298	166.0	311	170.9	322	175.9	329	180.4	339
64	79.3	.446	81.2	.462	83.8	.486	85.6	.503	87.2	.519	89.1	.536
	1915	247	1914	246	1951	249	1942	248	1936	246	1937	245
	154.3	295	158.6	304	162.7	317	167.7	326	172.4	334	176.7	342
66	80.2	.453	82.2	.471	84.6	.493	86.3	.508	88.1	.526	89.9	.542
	1977	250	1990	251	2012	253	2000	251	2001	250	2000	248
	151.5	299	155.5	310	159.8	321	164.6	329	168.9	338	173.0	346
68	81.1	.460	83.3	.480	85.4	.498	87.1	.514	88.9	.532	90.7	.547

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 1 %	+ 4 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA+20 CG=33.0%	**N1 (%)** **FUEL FLOW (KG/H)** **SR (NM/1000KG)**	**MACH** **IAS (KT)** **TAS (KT)**

WEIGHT (1000KG)	**FL100**		**FL120**		**FL140**		**FL160**		**FL180**		**FL200**	
	2045	254	2070	256	2069	256	2061	254	2064	253	2061	250
	148.7	304	152.5	316	157.1	325	161.6	333	165.6	342	169.4	349
70	82.0	.467	84.3	.488	86.1	.503	87.9	.521	89.7	.537	91.5	.552
	2114	258	2138	260	2129	258	2127	257	2128	256	2124	252
	146.1	309	149.8	320	154.3	329	158.6	337	162.4	346	165.8	352
72	82.9	.474	85.1	.493	86.8	.509	88.7	.527	90.5	.543	92.3	.556
	2187	262	2199	263	2188	261	2194	261	2192	258	2190	255
	143.5	314	147.4	324	151.7	332	155.7	341	159.2	349	162.2	355
74	83.9	.482	85.8	.498	87.5	.514	89.5	.532	91.3	.548	93.0	.558
	2261	267	2258	266	2250	264	2256	263	2255	261	2239	255
	141.0	319	145.0	327	149.1	335	152.9	345	156.2	352	159.2	356
76	84.8	.488	86.5	.503	88.3	.520	90.2	.537	92.0	.552	93.0	.550
	2329	270	2319	268	2316	267	2319	266	2319	263	2240	252
	138.7	323	142.6	331	146.5	339	150.1	348	153.1	355	156.8	351
78	85.5	.494	87.2	.508	89.0	.525	90.9	.542	92.6	.555	93.1	.538
	2393	273	2381	271	2381	270	2383	268	2375	264	2237	246
	136.5	327	140.3	334	143.9	343	147.4	351	150.3	357	153.6	344
79	85.9	.496	87.5	.511	89.4	.528	91.3	.544			93.2	.530
	2423	275	2413	273	2413	271	2414	269			2236	242
	135.5	328	139.2	336	142.7	344	146.1	353			151.3	338

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 1 %	+ 4 %

CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA+20 CG=33.0%	**N1 (%)** **FUEL FLOW (KG/H)** **SR (NM/1000KG)**	**MACH** **IAS (KT)** **TAS (KT)**

WEIGHT (1000KG)	**FL210**		**FL220**		**FL230**		**FL240**		**FL250**		**FL260**	
50	83.4	.496	84.2	.503	85.0	.511	86.0	.521	86.9	.530	87.9	.539
	1512	221	1505	220	1499	219	1499	219	1499	218	1497	217

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 1%	+ 3 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
HIGH AIR CONDITIONING
ANTI ICE OFF

ISA+20
CG=33.0%

N1 (%)
FUEL FLOW (KG/H)
SR (NM/1000KG)

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL210		FL220		FL230		FL240		FL250		FL260	
	208.7	315	212.1	319	215.4	323	218.5	328	221.6	332	224.7	336
	84.4	.503	85.2	.511	86.1	.520	87.0	.529	88.0	.538	88.8	.544
52	1568	225	1562	224	1562	223	1561	222	1560	222	1552	219
	204.1	320	207.2	324	210.2	328	213.2	333	216.1	337	218.8	340
	85.3	.510	86.2	.519	87.1	.528	88.1	.537	89.0	.543	89.9	.550
54	1625	228	1625	227	1625	227	1623	226	1617	224	1614	222
	199.6	324	202.4	329	205.2	333	208.0	338	210.6	340	212.8	344
	86.3	.518	87.2	.527	88.2	.535	89.1	.543	89.9	.549	89.8	.538
56	1688	231	1688	231	1686	230	1682	228	1677	226	1607	217
	195.1	329	197.8	334	200.4	338	202.9	341	205.2	344	208.9	336
	87.3	.525	88.2	.534	89.1	.541	90.0	.548	90.9	.554	89.8	.515
58	1752	235	1750	234	1746	233	1740	231	1739	229	1594	207
	190.8	334	193.3	338	195.8	342	198.0	345	199.8	347	201.7	322
	88.2	.532	89.2	.540	90.0	.546	90.9	.554	90.9	.543		
60	1815	238	1812	237	1805	235	1806	233	1733	224		
	186.7	339	189.0	343	191.2	345	192.9	348	196.3	340		
	89.1	.539	90.0	.546	90.9	.552	91.5	.554	90.9	.525		
62	1877	241	1872	239	1869	238	1845	233	1727	216		
	182.7	343	184.7	346	186.6	349	188.9	348	190.5	329		
	90.0	.544	90.9	.551	91.9	.558	91.6	.542				
64	1936	244	1934	242	1938	240	1840	228				
	178.7	346	180.5	349	182.0	353	185.2	341				
	90.8	.549	91.7	.556	92.2	.554						
66	1997	246	1999	244	1956	238						
	174.8	349	176.3	352	178.8	350						
	91.6	.554	92.7	.562	92.2	.541						
68	2061	248	2069	247	1952	233						
	170.9	352	172.2	356	175.1	342						
	92.5	.559	92.8	.554								
70	2129	251	2072	243								
	167.1	356	169.6	351								

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 1%	+ 3 %

Continued on the following page

Continued from the previous page

CRUISE - LONG RANGE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS	ISA+20	**N1 (%)** / **MACH**
HIGH AIR CONDITIONING	CG=33.0%	**FUEL FLOW (KG/H)** / **IAS (KT)**
ANTI ICE OFF		**SR (NM/1000KG)** / **TAS (KT)**

WEIGHT (1000KG)	FL210	FL220	FL230	FL240	FL250	FL260
72	92.9 .557 2155 249 164.3 354	92.9 .543 2070 238 166.1 344				
74	93.0 .547 2154 245 161.5 348					
76	93.1 .532 2151 238 157.3 338					
78						
79						

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 1%	+ 3 %

LONG RANGE CRUISE - 1 ENGINE OUT - ISA +20

Ident.: PER-OEI-CRT-10-00002111.0009001 / 10 DEC 09

6 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

LONG RANGE CRUISE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
PACK FLOW HI
ANTI-ICING OFF

ISA+20
CG=33.0%

EPR
KG/H
NM/1000KG
MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL120		FL140		FL160		FL180		FL200	
50	1.151	.427	1.173	.447	1.233	.510	1.242	.508	1.257	.509	1.300	.539
	1888	236	1931	238	2127	262	1994	251	1902	242	1944	246
	149.7	283	152.3	294	156.6	333	165.2	329	172.2	328	177.2	344
52	1.160	.435	1.188	.464	1.237	.510	1.247	.508	1.268	.514	1.316	.548
	1975	240	2054	247	2147	262	2020	251	1960	244	2010	250
	145.8	288	148.4	305	155.0	333	163.0	329	168.6	330	173.9	350
54	1.171	.447	1.232	.511	1.240	.509	1.254	.510	1.292	.534	1.326	.550
	2084	247	2309	273	2167	262	2062	252	2085	254	2053	251
	141.9	296	145.5	336	153.4	332	160.1	330	164.8	344	171.0	351
56	1.185	.461	1.235	.511	1.245	.509	1.264	.514	1.312	.548	1.337	.553
	2203	255	2330	273	2192	261	2120	254	2180	261	2100	253
	138.5	305	144.2	336	151.6	332	157.0	333	161.6	352	168.0	353
58	1.230	.511	1.239	.511	1.250	.509	1.281	.526	1.322	.551	1.354	.562
	2497	283	2350	272	2223	261	2217	260	2229	262	2180	257
	135.5	338	142.8	336	149.4	332	153.8	341	159.1	355	164.5	359
60	1.234	.512	1.243	.510	1.260	.513	1.305	.546	1.332	.553	1.368	.568
	2524	284	2373	272	2281	263	2350	270	2274	263	2249	260
	134.3	339	141.3	335	146.7	335	150.6	354	156.6	356	161.4	363
62	1.237	.512	1.247	.510	1.269	.516	1.317	.551	1.344	.558	1.371	.560
	2544	284	2398	272	2340	265	2407	273	2333	266	2245	256
	133.2	339	139.6	335	144.1	337	148.4	357	153.9	359	159.4	358
64	1.240	.511	1.254	.512	1.290	.535	1.325	.553	1.359	.567	1.375	.548
	2563	283	2445	273	2472	275	2449	274	2415	270	2239	251
	132.0	338	137.5	336	141.3	349	146.3	358	150.9	364	156.4	350
66	1.244	.511	1.263	.515	1.309	.549	1.335	.555	1.377	.577	1.382	.530
	2587	283	2504	275	2583	283	2495	275	2508	275	2226	242
	130.7	338	135.2	338	138.8	358	144.2	360	148.0	371	152.0	338
68	1.248	.510	1.272	.520	1.320	.554	1.347	.561	1.382	.574	1.396	.490
	2617	283	2573	278	2638	285	2564	278	2522	273	2207	223
	129.1	338	132.8	342	137.0	361	141.8	364	146.3	369	141.9	313
70	1.256	.513	1.295	.541	1.327	.555	1.361	.569	1.385	.565		
	2670	284	2723	289	2681	286	2647	282	2516	269		
	127.1	340	130.5	355	135.2	362	139.2	369	144.5	364		
72	1.264	.516	1.310	.551	1.336	.557	1.377	.579	1.389	.553		
	2730	286	2819	295	2727	287	2741	287	2509	263		
	125.2	342	128.5	362	133.3	364	136.8	375	141.7	356		
74	1.273	.522	1.320	.555	1.347	.563	1.379	.572	1.396	.533		
	2802	289	2875	297	2798	290	2737	284	2494	254		
	123.2	345	126.9	365	131.3	367	135.5	371	137.6	343		
76	1.295	.541	1.327	.557	1.360	.569	1.382	.564				
	2958	300	2917	298	2877	293	2731	280				
	121.1	358	125.4	366	129.1	372	133.9	366				
78	1.310	.552	1.335	.559	1.362	.564	1.386	.553				
	3062	306	2965	299	2874	290	2724	274				
	119.4	365	123.8	367	127.9	368	131.5	358				

ENGINE ANTI ICE ON
△FUEL = + 2.5 %

TOTAL ANTI ICE ON
△FUEL = + 6 %

LONG RANGE CRUISE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
PACK FLOW HI
ANTI-ICING OFF

ISA+20
CG=33.0%

EPR
KG/H
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL210	FL220	FL230	FL240	FL250	FL260
50	1.318 .548 1930 246 180.6 349	1.330 .550 1890 241 184.3 348	1.347 .556 1872 239 187.4 351	1.370 .568 1880 239 190.0 357	1.383 .569 1838 235 193.9 356	1.396 .565 1785 228 197.7 353
52	1.328 .550 1971 246 177.5 350	1.344 .555 1947 244 180.6 352	1.363 .563 1939 242 183.3 356	1.375 .561 1886 236 187.1 353	1.388 .556 1831 229 190.3 349	1.403 .546 1775 220 192.1 341
54	1.340 .553 2021 248 174.2 352	1.354 .556 1986 244 177.4 352	1.366 .554 1935 238 180.6 350	1.380 .547 1879 230 183.2 344	1.395 .535 1819 220 184.2 335	1.419 .499 1747 201 178.5 312
56	1.358 .563 2103 253 170.3 358	1.358 .546 1982 239 174.5 346	1.372 .538 1926 231 176.3 340	1.388 .523 1864 220 176.5 329	1.412 .484 1798 199 168.8 303	
58	1.366 .561 2130 252 167.7 357	1.364 .528 1973 232 169.7 335	1.381 .511 1910 219 168.8 322	1.406 .467 1853 195 158.5 294		
60	1.370 .551 2125 247 165.0 351	1.375 .495 1958 217 160.3 314				
62	1.375 .534 2114 239 160.8 340					
64						
66						
68						
70						
72						
74						
76						
78						

ENGINE ANTI ICE ON
△FUEL = + 2.5 %

TOTAL ANTI ICE ON
△FUEL = + 6 %

LONG RANGE CRUISE - 1 ENGINE OUT - ISA +20

Ident.: PER-OEI-CRT-10-00002111.0063001 / 04 MAR 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

LONG RANGE CRUISE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
PACK FLOW HI
ANTI-ICING OFF

ISA+20
CG=33.0%

N1 (%)
KG/H
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL120		FL140		FL160		FL180		FL200	
50	78.2	.450	80.2	.468	81.8	.484	83.3	.498	84.9	.513	85.9	.523
	1957	249	1957	249	1940	248	1916	246	1901	244	1864	239
	152.2	298	157.3	308	162.7	316	168.2	322	173.6	330	179.1	334
52	79.4	.459	81.3	.477	82.6	.489	84.3	.506	85.6	.517	86.8	.530
	2036	254	2032	254	1999	251	1989	250	1958	246	1937	242
	149.3	304	154.3	313	159.6	319	164.7	328	169.9	333	174.8	339
54	80.5	.468	82.2	.483	83.7	.497	85.4	.513	86.3	.521	87.8	.538
	2113	259	2098	258	2075	255	2060	253	2015	248	2012	246
	146.5	309	151.4	318	156.4	324	161.3	332	166.4	335	170.7	343
56	81.7	.476	83.0	.488	84.7	.504	86.0	.517	87.1	.529	88.6	.545
	2190	263	2158	260	2147	259	2118	255	2090	251	2087	249
	143.8	315	148.7	321	153.3	329	158.1	335	162.7	340	166.8	348
58	82.6	.482	83.9	.495	85.6	.511	86.6	.521	88.0	.536	89.4	.550
	2260	267	2229	264	2217	262	2175	257	2165	255	2155	252
	141.3	319	145.9	325	150.4	333	155.1	337	159.2	345	163.0	351
60	83.3	.487	84.9	.502	86.3	.516	87.4	.526	88.9	.543	90.0	.554
	2322	270	2303	268	2280	265	2244	260	2243	258	2222	254
	138.9	323	143.3	330	147.6	337	152.0	341	155.7	349	159.4	354
62	84.1	.493	85.8	.509	86.9	.519	88.2	.533	89.6	.548	90.7	.559
	2388	273	2375	271	2337	267	2318	264	2314	261	2290	256
	136.6	326	140.7	334	145.0	339	148.9	345	152.4	353	155.8	357
64	85.0	.500	86.6	.515	87.5	.523	89.0	.539	90.2	.553	91.5	.565
	2464	277	2446	275	2396	269	2396	267	2381	263	2372	259
	134.2	331	138.2	338	142.4	341	145.9	350	149.3	356	152.1	361
66	85.8	.506	87.2	.518	88.3	.529	89.8	.546	90.8	.557	92.1	.567
	2537	280	2505	276	2471	272	2472	270	2449	265	2437	260
	131.9	335	135.9	340	139.7	345	143.0	354	146.2	358	148.6	362
68	86.6	.511	87.7	.521	89.0	.535	90.4	.550	91.5	.561	92.7	.569
	2607	283	2563	278	2546	275	2541	272	2520	267	2506	261
	129.8	338	133.7	343	137.1	349	140.3	356	143.2	361	145.1	364
70	87.4	.516	88.3	.525	89.7	.541	90.9	.554	92.2	.567	93.7	.580
	2674	286	2627	280	2624	278	2607	274	2604	270	2626	266
	127.7	342	131.4	345	134.5	353	137.6	359	140.1	365	141.0	370
72	87.9	.519	89.0	.531	90.4	.547	91.5	.557	92.8	.569	94.5	.584
	2732	288	2703	284	2701	281	2675	276	2668	271	2715	268
	125.7	343	129.1	349	132.1	357	135.0	361	137.1	366	137.4	373
74	88.3	.522	89.7	.536	91.0	.551	92.1	.562	93.3	.570	94.6	.573
	2789	289	2779	287	2772	284	2750	278	2735	272	2711	262
	123.8	345	126.9	353	129.7	360	132.3	364	134.1	367	134.8	366
76	88.9	.526	90.4	.542	91.5	.555	92.8	.567	93.9	.572	94.6	.556
	2856	291	2857	290	2839	285	2832	281	2803	272	2706	254
	121.9	348	124.7	356	127.5	362	129.7	367	131.2	368	131.1	355
78	89.5	.531	91.0	.547	92.1	.558	93.3	.569	94.0	.561	94.8	.528
	2930	294	2934	292	2909	287	2900	282	2801	267	2700	241
	119.9	351	122.6	360	125.2	364	127.2	369	128.8	361	124.8	337

ENGINE ANTI ICE ON
△FUEL = + 3.5 %

TOTAL ANTI ICE ON
△FUEL = + 7 %

LONG RANGE CRUISE - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
PACK FLOW HI
ANTI-ICING OFF

ISA+20
CG=33.0%

N1 (%)
KG/H
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL210		FL220		FL230		FL240		FL250		FL260	
50	86.6	.531	87.4	.540	88.1	.547	88.6	.552	89.2	.558	89.5	.556
	1863	238	1862	237	1857	235	1846	233	1838	230	1799	225
	181.5	338	183.7	342	186.0	345	188.3	348	190.3	350	193.1	347
52	87.6	.539	88.3	.547	88.9	.552	89.4	.558	90.1	.564	89.5	.539
	1937	241	1934	240	1923	238	1914	235	1913	233	1787	217
	177.0	343	179.2	347	181.3	349	183.3	351	184.9	354	188.3	336
54	88.5	.546	89.0	.552	89.6	.557	90.4	.565	90.8	.565	89.5	.500
	2010	245	2000	242	1990	240	1993	238	1972	233	1764	201
	172.8	347	174.9	350	176.8	352	178.2	355	179.7	354	177.0	312
56	89.2	.551	89.8	.556	90.5	.564	91.0	.566	92.0	.576		
	2076	247	2066	244	2069	243	2052	239	2083	238		
	168.8	351	170.6	353	172.1	356	173.4	356	173.5	361		
58	89.9	.555	90.6	.562	91.2	.566	92.0	.574	92.6	.574		
	2142	249	2142	247	2133	244	2149	242	2131	237		
	164.9	353	166.4	356	167.6	358	168.0	361	168.7	360		
60	90.6	.560	91.3	.566	92.0	.571	93.0	.580	92.6	.554		
	2215	251	2212	249	2212	246	2242	245	2121	229		
	160.9	356	162.2	359	162.9	360	162.8	365	163.8	347		
62	91.4	.566	91.9	.567	93.1	.580	93.0	.565	92.7	.489		
	2294	254	2273	249	2323	250	2234	238	2095	201		
	157.0	360	158.1	359	157.8	366	159.2	356	146.4	307		
64	92.0	.567	93.0	.578	93.4	.574	93.1	.540				
	2354	254	2388	254	2350	247	2223	227				
	153.3	361	153.3	366	154.2	362	152.9	340				
66	92.9	.574	93.7	.581	93.4	.555						
	2449	258	2469	256	2341	239						
	149.0	365	149.1	368	149.8	351						
68	93.9	.582	93.8	.567	93.6	.517						
	2560	262	2463	249	2327	222						
	144.8	371	146.0	360	140.3	327						
70	94.2	.576	93.9	.546								
	2587	259	2455	240								
	141.7	367	141.1	346								
72	94.2	.561										
	2582	252										
	138.3	357										
74	94.3	.537										
	2574	241										
	132.8	342										
76												
78												

ENGINE ANTI ICE ON
△FUEL = + 3.5 %

TOTAL ANTI ICE ON
△FUEL = + 7 %

CRUISE - MCT/VMO - 1 ENGINE OUT - ISA

Ident.: PER-OEI-CRT-20-00002112.0065001 / 30 OCT 18

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CRUISE - MCT/VMO - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**N1 (%)** **FUEL FLOW (KG/H)** **SR (NM/1000KG)**	**MACH** **IAS (KT)** **TAS (KT)**

WEIGHT (1000KG)	**FL100**		**FL150**		**FL160**		**FL180**		**FL200**		**FL220**	
64	92.0	.625	93.1	.638	93.4	.639	93.7	.639	93.9	.639	92.1	.621
	3341	348	2999	324	2929	318	2767	306	2623	294	2332	274
	119.4	399	133.3	400	136.2	399	143.1	396	149.8	393	162.2	378
66	92.0	.623	93.1	.636	93.4	.637	93.6	.637	93.8	.636	92.0	.616
	3340	347	2998	323	2928	317	2764	305	2618	293	2329	272
	119.1	398	132.9	398	135.8	398	142.7	394	149.3	391	161.3	376
68	92.0	.622	93.1	.634	93.3	.635	93.6	.634	93.7	.633	91.9	.611
	3339	346	2997	321	2926	316	2761	303	2613	291	2324	269
	118.9	397	132.5	397	135.4	396	142.2	392	148.7	389	160.2	372
70	92.0	.620	93.1	.632	93.3	.633	93.6	.631	93.6	.629	91.7	.605
	3338	345	2996	320	2925	315	2757	302	2608	289	2319	266
	118.6	396	132.1	396	135.0	395	141.7	391	148.1	386	158.8	368
72	92.0	.619	93.1	.630	93.3	.630	93.5	.628	93.5	.624	91.6	.594
	3337	344	2996	319	2923	313	2755	300	2603	287	2299	262
	118.3	395	131.6	394	134.5	393	141.1	389	147.4	384	157.4	362
74	92.0	.617	93.1	.627	93.3	.627	93.5	.624	93.4	.620	91.6	.582
	3336	343	2995	318	2921	312	2751	298	2597	285	2285	256
	118.1	394	131.2	393	134.0	392	140.5	386	146.6	381	155.2	355
76	91.9	.615	93.1	.625	93.3	.625	93.5	.620	93.3	.615	91.6	.571
	3335	342	2994	317	2920	311	2747	296	2591	282	2290	251
	117.8	393	130.7	391	133.5	390	139.8	384	145.7	378	151.8	348
78	91.9	.614	93.1	.622	93.3	.621	93.4	.616	93.1	.608	91.6	.555
	3334	341	2993	315	2918	309	2742	294	2585	279	2299	244
	117.5	392	130.2	390	132.9	388	139.0	381	144.6	374	147.1	338
80	91.9	.612	93.0	.619	93.2	.618	93.4	.611	93.0	.601		
	3333	340	2991	314	2916	307	2739	292	2579	276		
	117.2	391	129.6	388	132.3	386	138.2	378	143.2	369		
82	91.9	.610	93.0	.616	93.2	.615	93.3	.606	92.9	.587		

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 2.6 %	+ 4 %

Continued on the following page

Continued from the previous page

CRUISE - MCT/VMO - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
HIGH AIR CONDITIONING
ANTI ICE OFF

ISA
CG=33.0%

N1 (%) **MACH**
FUEL FLOW (KG/H) **IAS (KT)**
SR (NM/1000KG) **TAS (KT)**

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220
	3332	339	2990	312	2913	305	2736	289	2547	269	
	116.8	389	129.1	386	131.7	384	137.1	375	141.6	361	
	91.9	.608	93.0	.613	93.2	.611	93.3	.600	92.9	.575	
84	3331	338	2989	310	2911	303	2735	287	2547	263	
	116.5	388	128.4	384	130.9	381	135.9	372	138.7	353	
	91.9	.606	93.0	.609	93.2	.606	93.3	.596	92.9	.562	
86	3330	337	2987	308	2908	301	2744	284	2560	257	
	116.1	387	127.7	381	130.1	378	134.4	369	134.8	345	
	91.9	.604	93.0	.605	93.2	.601	93.2	.590			
88	3329	335	2985	306	2906	298	2749	281			
	115.8	385	127.0	379	129.1	375	132.8	365			
	91.9	.601	92.9	.600	93.1	.597	93.2	.580			
90	3327	334	2984	304	2912	296	2744	277			
	115.4	384	126.1	376	127.9	373	131.0	359			
	91.8	.599	92.9	.597	93.1	.592	93.1	.562			
92	3328	333	2989	302	2917	294	2725	268			
	114.9	382	125.1	374	126.7	370	127.7	348			
	91.8	.597	92.9	.592	93.1	.587					
94	3328	332	2992	300	2919	291					
	114.5	381	124.0	371	125.4	366					
	91.8	.594	92.9	.587	93.1	.578					
96	3329	330	2992	297	2912	287					
	114.0	379	122.9	368	123.9	361					
	91.8	.592	92.8	.579	93.0	.558					
98	3328	329	2984	293	2873	276					
	113.5	378	121.6	363	121.2	348					
	91.8	.589	92.8	.564							
100	3327	327	2953	285							
	113.0	376	119.7	354							

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 2.6 %	+ 4 %

CRUISE - MCT/VMO - 1 ENGINE OUT - ISA

Ident.: PER-OEI-CRT-20-00002112.0059001 / 16 MAR 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

CRUISE - MCT/VMO - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	N1 (%) FUEL FLOW (KG/H) SR (NM/1000KG)	MACH IAS (KT) TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
50	88.8	.596	92.0	.632	92.0	.634	92.1	.638	92.7	.645	93.4	.651
	2962	331	2835	320	2748	315	2579	305	2456	297	2339	288
	128.3	380	139.6	396	143.9	395	153.1	395	161.3	396	169.6	397
52	88.8	.595	91.9	.630	92.0	.632	92.0	.636	92.6	.643	93.4	.648
	2961	330	2831	320	2742	314	2573	304	2451	296	2331	287
	128.2	380	139.5	395	143.8	394	153.0	394	161.1	395	169.4	395
54	88.8	.594	91.9	.629	91.9	.630	92.0	.634	92.6	.640	93.3	.645
	2959	330	2826	319	2736	314	2567	303	2445	295	2323	285
	128.1	379	139.4	394	143.7	393	152.9	392	160.9	393	169.2	393
56	88.8	.593	91.9	.627	91.9	.628	91.9	.631	92.6	.638	93.2	.641
	2957	329	2822	318	2730	313	2559	302	2439	293	2314	284
	127.9	378	139.3	393	143.7	392	152.8	391	160.6	392	168.9	391
58	88.8	.592	91.9	.626	91.9	.626	91.9	.629	92.5	.635	93.2	.637
	2956	329	2817	317	2723	312	2552	301	2432	292	2304	282
	127.8	378	139.2	392	143.6	391	152.6	389	160.3	390	168.6	388
60	88.8	.591	91.8	.624	91.8	.624	91.8	.626	92.5	.632	93.1	.633
	2954	328	2811	316	2715	310	2543	299	2425	290	2293	280
	127.6	377	139.0	391	143.4	389	152.4	388	160.0	388	168.3	386
62	88.8	.589	91.8	.622	91.7	.622	91.8	.623	92.4	.628	93.0	.628
	2952	327	2805	315	2706	309	2533	298	2416	289	2281	277
	127.5	376	138.9	390	143.4	388	152.3	386	159.7	386	167.9	383
64	88.8	.588	91.8	.620	91.7	.619	91.7	.619	92.4	.624	92.9	.623
	2950	327	2798	314	2697	308	2523	296	2407	287	2267	275
	127.3	375	138.7	388	143.2	386	152.0	384	159.3	383	167.4	379
66	88.8	.587	91.7	.617	91.6	.616	91.6	.616	92.3	.620	92.8	.616
	2948	326	2791	313	2687	306	2512	294	2396	285	2251	272
	127.1	375	138.5	387	143.0	384	151.8	381	158.9	381	166.8	376
68	88.8	.585	91.7	.614	91.6	.613	91.6	.611	92.3	.615	92.7	.609

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 3 %	+ 4 %

Continued on the following page

Continued from the previous page

CRUISE - MCT/VMO - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
HIGH AIR CONDITIONING
ANTI ICE OFF

ISA
CG=33.0%

N1 (%) **MACH**
FUEL FLOW (KG/H) **IAS (KT)**
SR (NM/1000KG) **TAS (KT)**

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
	2946	325	2784	311	2676	304	2499	292	2384	282	2234	269
	126.8	374	138.3	385	142.8	382	151.5	379	158.4	378	166.2	371
	88.8	.584	91.7	.612	91.5	.609	91.5	.607	92.2	.609	92.5	.601
70	2944	324	2775	310	2664	303	2485	290	2371	280	2216	265
	126.6	373	138.0	383	142.6	380	151.2	376	157.9	374	165.4	366
	88.8	.582	91.6	.608	91.4	.605	91.4	.601	92.1	.603	92.6	.595
72	2941	323	2766	308	2651	300	2470	287	2357	277	2213	262
	126.3	371	137.8	381	142.4	377	150.8	372	157.2	370	163.8	362
	88.8	.580	91.6	.605	91.3	.601	91.4	.597	92.1	.597	92.7	.587
74	2939	322	2757	306	2638	298	2466	285	2350	274	2215	259
	126.0	370	137.5	379	142.1	375	150.0	370	156.1	367	161.6	358
	88.8	.578	91.5	.601	91.3	.597	91.4	.594	92.2	.592	92.9	.579
76	2937	321	2747	304	2635	297	2468	283	2352	272	2218	255
	125.6	369	137.1	377	141.5	373	149.0	368	154.6	364	159.0	353
	88.8	.576	91.5	.598	91.3	.594	91.5	.590	92.3	.586	93.1	.568
78	2934	320	2744	303	2635	295	2470	281	2354	269	2222	250
	125.3	368	136.6	375	140.8	371	147.8	365	152.9	360	155.8	346
	88.8	.575	91.5	.597	91.4	.593	91.5	.587	92.4	.582	93.3	.562
79	2933	319	2743	302	2635	294	2470	280	2354	267	2227	247
	125.1	367	136.3	374	140.4	370	147.2	364	151.9	358	153.8	343

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 3 %	+ 4 %

CRUISE - MCT/VMO - 1 ENGINE OUT - ISA

Ident.: PER-OEI-CRT-20-00002112.0012001 / 09 DEC 09

3 Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

CRUISE - MCT/VMO - 1 ENGINE OUT

MAX. CONTINUOUS THRUST
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

EPR
KG/H
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
50	1.346	.610	1.405	.638	1.414	.642	1.418	.640	1.409	.629	1.398	.613
	3284	339	3014	324	2938	320	2707	307	2416	289	2138	270
	118.5	389	132.7	400	136.4	401	146.5	397	159.9	386	174.8	374
52	1.346	.609	1.405	.637	1.414	.641	1.419	.639	1.410	.627	1.399	.610
	3284	339	3013	323	2937	319	2706	306	2415	288	2136	269
	118.4	389	132.5	399	136.2	400	146.3	396	159.5	385	174.0	372
54	1.347	.608	1.405	.636	1.415	.640	1.419	.638	1.411	.625	1.400	.606
	3284	338	3013	323	2936	319	2704	305	2413	287	2134	267
	118.2	388	132.3	399	136.0	399	146.0	395	159.1	384	173.1	369
56	1.347	.608	1.406	.635	1.415	.639	1.420	.636	1.412	.623	1.402	.602
	3283	338	3012	322	2935	318	2703	305	2412	286	2132	265
	118.1	388	132.1	398	135.8	399	145.7	394	158.6	382	172.1	367
58	1.347	.607	1.406	.634	1.416	.638	1.421	.634	1.413	.620	1.404	.596
	3283	337	3011	322	2934	317	2702	304	2410	285	2128	262
	118.0	387	132.0	397	135.6	398	145.4	393	157.9	381	170.6	363
60	1.347	.606	1.407	.633	1.416	.636	1.421	.633	1.414	.616	1.407	.588
	3282	337	3010	321	2933	317	2700	303	2408	283	2123	259
	117.8	387	131.7	397	135.4	397	145.0	392	157.2	379	168.8	358
62	1.348	.605	1.407	.632	1.417	.635	1.422	.630	1.416	.612	1.411	.578
	3282	336	3009	320	2932	316	2699	302	2405	281	2117	254
	117.7	386	131.5	396	135.1	396	144.6	390	156.4	376	166.5	353
64	1.348	.604	1.408	.630	1.417	.633	1.423	.628	1.418	.608	1.416	.563
	3281	336	3007	319	2930	315	2697	300	2403	279	2108	247
	117.5	386	131.3	395	134.8	395	144.1	389	155.3	373	162.8	343
66	1.349	.603	1.409	.628	1.418	.631	1.424	.625	1.420	.602	1.427	.536
	3281	335	3006	319	2929	314	2694	299	2400	276	2090	235
	117.3	385	131.0	394	134.5	394	143.5	387	154.1	370	156.2	326
68	1.349	.602	1.409	.627	1.419	.629	1.426	.621	1.423	.595		
	3280	335	3004	318	2927	313	2692	297	2394	273		
	117.1	384	130.7	393	134.1	392	142.9	385	152.6	365		
70	1.350	.601	1.410	.624	1.420	.626	1.427	.617	1.426	.584		
	3279	334	3002	317	2925	311	2689	295	2385	268		
	116.9	383	130.3	391	133.6	391	142.1	382	150.4	359		
72	1.350	.599	1.411	.622	1.421	.623	1.430	.612	1.432	.568		
	3279	333	3000	315	2922	310	2685	292	2371	260		
	116.7	383	129.9	390	133.1	389	141.1	379	147.1	349		
74	1.351	.598	1.412	.619	1.423	.620	1.432	.607	1.445	.529		
	3278	332	2998	314	2920	308	2682	290	2337	242		
	116.4	382	129.4	388	132.5	387	140.1	376	139.1	325		
76	1.351	.596	1.414	.616	1.424	.616	1.434	.601				
	3277	331	2995	312	2917	306	2678	287				
	116.1	381	128.8	386	131.8	385	138.9	372				
78	1.352	.594	1.415	.613	1.426	.612	1.438	.590				
	3276	330	2993	310	2913	304	2668	282				
	115.7	379	128.2	384	131.0	382	137.0	366				

ENGINE ANTI ICE ON
△FUEL = + 2%

TOTAL ANTI ICE ON
△FUEL = + 4%

CRUISE - MCT/VMO - 1 ENGINE OUT - ISA

Ident.: PER-OEI-CRT-20-00002112.0023001 / 09 DEC 09

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CRUISE - MCT/VMO - 1 ENGINE OUT

MAX. CONTINUOUS THRUST
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

N1 (%)
KG/H
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
50	89.6	.609	91.3	.641	91.4	.645	91.1	.644	91.3	.649	91.1	.647
	3249	338	3072	325	3010	321	2798	308	2663	299	2480	286
	119.6	389	130.7	402	133.7	403	142.5	399	149.7	399	158.9	394
52	89.6	.608	91.3	.640	91.5	.644	91.2	.643	91.4	.647	91.2	.645
	3251	338	3076	325	3015	321	2804	308	2673	298	2490	285
	119.3	388	130.3	401	133.3	402	141.9	398	148.7	398	157.8	393
54	89.6	.607	91.3	.639	91.5	.642	91.2	.641	91.5	.645	91.3	.642
	3252	337	3080	324	3019	320	2811	307	2683	297	2500	284
	119.1	387	129.9	400	132.8	401	141.2	397	147.8	397	156.5	391
56	89.6	.605	91.4	.637	91.6	.641	91.3	.639	91.6	.644	91.5	.640
	3254	337	3084	323	3024	319	2820	306	2694	296	2512	283
	118.8	386	129.4	399	132.2	400	140.4	396	146.8	395	155.2	390
58	89.6	.604	91.4	.636	91.6	.639	91.4	.638	91.8	.642	91.6	.637
	3255	336	3088	322	3029	318	2828	305	2705	295	2525	281
	118.4	386	128.9	398	131.7	399	139.6	395	145.7	394	153.8	388
60	89.6	.603	91.5	.634	91.7	.637	91.5	.636	91.9	.639	91.8	.634
	3257	335	3093	321	3035	317	2836	304	2717	294	2539	280
	118.1	385	128.4	397	131.1	398	138.8	394	144.6	393	152.2	386
62	89.7	.601	91.5	.632	91.7	.636	91.6	.634	92.0	.637	91.9	.630
	3259	334	3098	320	3041	316	2845	303	2731	293	2554	278
	117.7	384	127.8	396	130.4	397	137.9	392	143.3	391	150.4	384
64	89.7	.600	91.6	.630	91.8	.634	91.7	.631	92.2	.634	92.1	.627
	3260	333	3104	319	3047	315	2856	302	2745	292	2571	277
	117.4	383	127.2	395	129.8	395	136.9	391	142.0	390	148.6	382
66	89.7	.598	91.6	.628	91.9	.631	91.8	.629	92.3	.632	92.3	.622
	3258	332	3109	318	3054	314	2868	301	2761	291	2587	275
	117.1	381	126.5	393	129.1	394	135.8	389	140.5	388	146.6	379
68	89.7	.595	91.7	.626	91.9	.629	91.9	.626	92.5	.629	92.6	.617
	3257	331	3116	317	3061	313	2881	300	2779	289	2605	272
	116.7	380	125.9	392	128.3	393	134.6	388	139.0	386	144.4	376
70	89.7	.593	91.7	.624	92.0	.627	92.0	.623	92.7	.625	92.9	.612
	3255	330	3122	316	3068	312	2896	298	2797	287	2625	270
	116.3	379	125.1	391	127.5	391	133.3	386	137.3	384	142.1	373
72	89.7	.591	91.8	.621	92.1	.624	92.2	.620	92.9	.621	93.2	.605
	3253	328	3129	315	3077	310	2911	297	2817	286	2648	267
	115.9	377	124.4	389	126.6	390	131.9	384	135.5	382	139.3	369
74	89.7	.588	91.9	.619	92.2	.621	92.4	.617	93.1	.617	93.5	.597
	3251	327	3137	313	3086	309	2928	295	2836	283	2666	263
	115.5	376	123.5	387	125.6	388	130.4	382	133.6	379	136.4	364
76	89.7	.586	92.0	.616	92.3	.618	92.5	.613	93.4	.612	93.6	.577
	3249	325	3145	312	3097	307	2946	293	2857	281	2656	254
	115.1	374	122.6	386	124.6	386	128.8	380	131.6	376	132.3	351
78	89.7	.583	92.0	.612	92.4	.615	92.7	.609	93.7	.607		
	3246	324	3154	310	3109	305	2967	291	2883	279		
	114.6	372	121.6	384	123.3	383	127.1	377	129.3	373		

ENGINE ANTI ICE ON
△FUEL = + 1.5 %

TOTAL ANTI ICE ON
△FUEL = + 4 %

CRUISE - MCT/VMO - 1 ENGINE OUT - ISA +20

Ident.: PER-OEI-CRT-20-00002115.0086001 / 30 OCT 18

[4] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CRUISE - MCT/VMO - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS	ISA+20	N1 (%)	MACH
HIGH AIR CONDITIONING	CG=33.0%	FUEL FLOW (KG/H)	IAS (KT)
ANTI ICE OFF		SR (NM/1000KG)	TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
64	92.3	.594	93.8	.609	93.9	.610	93.9	.611	94.2	.611	92.7	.586
	3173	330	2859	308	2787	303	2638	292	2503	281	2216	258
	124.0	393	138.4	396	141.9	395	149.0	393	155.9	390	167.6	371
66	92.3	.593	93.8	.606	93.8	.608	93.9	.608	94.1	.607	92.7	.579
	3171	329	2859	307	2786	302	2637	291	2502	279	2211	255
	123.7	392	137.9	394	141.4	394	148.4	391	155.0	388	165.9	367
68	92.3	.591	93.7	.604	93.8	.605	93.9	.605	94.1	.603	92.7	.571
	3169	328	2859	306	2786	301	2636	289	2500	277	2211	251
	123.4	391	137.4	393	140.8	392	147.7	389	154.0	385	163.6	362
70	92.3	.589	93.7	.602	93.8	.603	93.8	.602	94.0	.597	92.6	.561
	3167	327	2859	305	2785	299	2634	287	2490	274	2210	246
	123.1	390	136.9	391	140.2	390	146.9	387	153.1	381	160.9	356
72	92.3	.587	93.7	.599	93.8	.600	93.8	.597	94.0	.590	92.6	.546
	3164	326	2859	303	2785	298	2625	285	2475	270	2203	239
	122.8	389	136.3	390	139.6	389	146.2	384	152.1	376	157.0	346
74	92.3	.585	93.7	.597	93.8	.597	93.8	.591	93.9	.582		
	3161	325	2858	302	2783	296	2615	282	2467	267		
	122.5	387	135.8	388	139.0	387	145.4	380	150.6	371		
76	92.3	.583	93.7	.594	93.7	.593	93.7	.585	93.9	.574		
	3158	324	2856	300	2779	295	2608	279	2465	263		
	122.2	386	135.2	386	138.3	385	144.4	376	148.6	366		
78	92.3	.581	93.7	.591	93.7	.589	93.7	.579	93.8	.564		
	3155	323	2853	299	2772	292	2604	276	2464	258		
	121.9	385	134.6	384	137.7	382	143.0	372	146.2	360		
80	92.2	.579	93.6	.587	93.6	.583	93.7	.572	93.8	.551		
	3151	321	2849	297	2762	289	2604	273	2463	252		
	121.5	383	134.0	382	136.9	378	141.4	368	142.8	352		
82	92.2	.576	93.6	.583	93.6	.578	93.7	.565				

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.2 %	- 5.7 %

Continued on the following page

Continued from the previous page

CRUISE - MCT/VMO - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
HIGH AIR CONDITIONING
ANTI ICE OFF

ISA+20
CG=33.0%

N1 (%) **MACH**
FUEL FLOW (KG/H) **IAS (KT)**
SR (NM/1000KG) **TAS (KT)**

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200	FL220
	3147	320	2841	295	2756	286	2604	269		
	121.2	381	133.3	379	135.8	374	139.5	363		
	92.2	.574	93.5	.577	93.6	.571	93.6	.554		
84	3142	318	2832	292	2752	283	2603	264		
	120.8	380	132.4	375	134.5	370	137.0	357		
	92.2	.571	93.5	.571	93.5	.564	93.5	.536		
86	3139	317	2826	288	2748	280	2578	255		
	120.3	378	131.3	371	133.0	366	133.6	345		
	92.2	.568	93.5	.564	93.4	.556				
88	3135	315	2817	285	2744	275				
	119.8	376	130.1	366	131.2	360				
	92.2	.564	93.4	.555	93.4	.543				
90	3131	313	2809	280	2733	269				
	119.2	373	128.4	361	128.8	352				
	92.2	.560	93.3	.543	93.2	.517				
92	3127	311	2797	274	2690	255				
	118.6	371	126.3	353	124.4	335				
	92.2	.556	93.2	.526						
94	3122	309	2776	265						
	117.9	368	123.1	342						
	92.2	.551								
96	3117	306								
	117.1	365								
	92.2	.546								
98	3113	303								
	116.1	361								
	92.1	.540								
100	3110	300								
	114.9	358								

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.2 %	- 5.7 %

CRUISE - MCT/VMO - 1 ENGINE OUT - ISA +20

Ident.: PER-OEI-CRT-20-00002115.0080001 / 16 MAR 15

[5] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

CRUISE - MCT/VMO - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA+20 CG=33.0%	N1 (%) FUEL FLOW (KG/H) SR (NM/1000KG)	MACH IAS (KT) TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
50	88.8	.563	91.3	.592	91.6	.596	92.1	.602	92.5	.607	92.5	.606
	2727	312	2549	300	2489	296	2370	288	2246	279	2085	267
	136.6	372	151.1	385	155.1	386	163.5	388	172.6	388	184.2	384
52	88.9	.562	91.4	.591	91.7	.595	92.1	.600	92.5	.604	92.4	.602
	2727	312	2549	299	2490	295	2366	287	2241	277	2078	265
	136.3	372	150.7	384	154.7	385	163.2	386	172.2	386	183.6	382
54	88.9	.561	91.4	.590	91.7	.593	92.1	.598	92.5	.601	92.4	.598
	2727	311	2549	298	2491	294	2366	286	2236	276	2074	264
	136.1	371	150.4	383	154.3	384	162.6	385	171.8	384	182.8	379
56	88.9	.560	91.4	.588	91.7	.591	92.2	.596	92.5	.598	92.5	.595
	2727	310	2550	297	2492	293	2367	285	2233	274	2074	262
	135.8	370	150.0	382	153.8	383	161.9	383	171.0	382	181.7	377
58	88.9	.558	91.4	.586	91.7	.590	92.2	.594	92.5	.595	92.5	.590
	2727	310	2550	297	2494	293	2368	283	2234	273	2074	260
	135.5	369	149.5	381	153.2	382	161.2	382	170.1	380	180.5	374
60	88.9	.557	91.4	.584	91.8	.588	92.2	.591	92.6	.592	92.5	.586
	2727	309	2551	296	2496	292	2369	282	2235	271	2073	258
	135.1	368	149.0	380	152.6	381	160.5	380	169.2	378	179.1	371
62	88.9	.555	91.5	.582	91.8	.586	92.3	.588	92.6	.588	92.6	.581
	2727	308	2552	295	2498	291	2370	281	2235	270	2073	256
	134.7	367	148.4	379	151.9	379	159.7	379	168.1	376	177.6	368
64	88.9	.554	91.5	.580	91.9	.583	92.3	.585	92.7	.584	92.6	.575
	2728	307	2553	293	2500	289	2371	279	2236	268	2073	253
	134.3	366	147.8	377	151.2	378	158.8	377	166.9	373	176.0	365
66	88.9	.552	91.5	.578	91.9	.581	92.3	.582	92.7	.580	92.7	.570
	2728	306	2555	292	2502	288	2372	278	2236	266	2072	250
	133.8	365	147.1	376	150.4	376	157.9	374	165.6	370	174.3	361
68	88.9	.550	91.6	.576	92.0	.578	92.4	.579	92.8	.575	92.8	.563

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	- 5 %

Continued on the following page

Continued from the previous page

CRUISE - MCT/VMO - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
HIGH AIR CONDITIONING
ANTI ICE OFF

ISA+20
CG=33.0%

N1 (%) **MACH**
FUEL FLOW (KG/H) **IAS (KT)**
SR (NM/1000KG) **TAS (KT)**

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
	2729	305	2556	291	2504	287	2373	276	2237	263	2072	247
	133.3	364	146.4	374	149.6	375	156.9	372	164.2	367	172.1	357
	88.9	.548	91.6	.573	92.0	.575	92.4	.575	92.8	.570	92.8	.554
70	2728	304	2558	290	2506	285	2373	274	2237	261	2072	243
	132.9	362	145.6	372	148.7	373	155.8	370	162.8	364	169.6	351
	88.9	.546	91.7	.570	92.1	.572	92.5	.570	92.9	.565	92.9	.543
72	2727	303	2559	288	2508	284	2374	272	2238	258	2070	238
	132.4	361	144.8	371	147.8	371	154.5	367	161.1	361	166.1	344
	88.9	.543	91.7	.567	92.1	.569	92.5	.566	93.0	.558		
74	2727	301	2560	286	2510	282	2374	270	2239	255		
	131.8	359	143.9	368	146.8	368	153.3	364	159.2	356		
	88.9	.540	91.7	.563	92.2	.565	92.6	.561	93.0	.550		
76	2725	300	2561	284	2512	280	2375	267	2240	252		
	131.2	358	143.0	366	145.7	366	151.9	361	156.8	351		
	88.9	.537	91.8	.559	92.2	.561	92.6	.555	93.1	.538		
78	2724	298	2562	282	2514	278	2375	264	2237	246		
	130.6	356	141.9	364	144.5	363	150.3	357	153.6	344		
	88.9	.536	91.8	.557	92.3	.559	92.7	.551	93.2	.530		
79	2723	297	2562	281	2514	277	2374	262	2236	242		
	130.2	355	141.4	362	144.0	362	149.4	355	151.3	338		

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	- 5 %

CRUISE - MCT/VMO - 1 ENGINE OUT - ISA +20

Ident.: PER-OEI-CRT-20-00002115.0043001 / 09 DEC 09

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CRUISE - MCT/VMO - 1 ENGINE OUT

MAX. CONTINUOUS THRUST
PACK FLOW HI
ANTI-ICING OFF

ISA+20
CG=33.0%

N1 (%)
KG/H
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
50	90.1	.577	92.5	.612	92.7	.617	92.8	.620	93.1	.626	92.8	.621
	3029	321	2912	310	2864	307	2712	297	2595	288	2402	274
	126.1	382	136.6	398	139.5	400	147.2	399	154.0	400	163.9	394
52	90.1	.576	92.5	.610	92.8	.615	92.9	.619	93.2	.624	92.9	.619
	3028	320	2916	309	2869	306	2720	296	2604	287	2411	273
	125.8	381	136.1	397	138.9	399	146.3	398	153.0	398	162.6	392
54	90.1	.574	92.5	.609	92.8	.613	93.0	.617	93.3	.622	93.0	.616
	3027	319	2921	308	2874	305	2729	295	2615	286	2422	272
	125.5	380	135.5	396	138.3	397	145.4	397	151.8	397	161.1	390
56	90.1	.573	92.6	.607	92.9	.612	93.0	.615	93.5	.620	93.2	.612
	3026	318	2926	307	2880	304	2738	294	2626	285	2434	270
	125.2	379	134.9	395	137.6	396	144.4	395	150.7	396	159.4	388
58	90.1	.571	92.6	.605	92.9	.610	93.1	.613	93.6	.617	93.3	.608
	3025	317	2932	306	2886	303	2749	293	2637	284	2447	268
	124.9	378	134.2	393	136.8	395	143.4	394	149.4	394	157.6	386
60	90.1	.569	92.7	.603	93.0	.607	93.2	.610	93.7	.614	93.5	.604
	3023	316	2938	305	2892	302	2759	292	2650	282	2463	266
	124.5	376	133.4	392	136.1	394	142.3	393	148.0	392	155.5	383
62	90.1	.567	92.7	.601	93.0	.605	93.4	.608	93.9	.611	93.7	.599
	3022	314	2944	304	2899	300	2771	290	2665	281	2478	264
	124.1	375	132.7	391	135.2	392	141.1	391	146.5	390	153.3	380
64	90.1	.564	92.8	.598	93.1	.603	93.5	.605	94.0	.608	93.7	.591
	3020	313	2945	303	2906	299	2784	289	2680	279	2474	260
	123.6	373	132.0	389	134.4	390	139.8	389	144.9	388	151.5	375
66	90.1	.562	92.8	.595	93.2	.600	93.6	.602	94.2	.604	93.7	.581
	3018	312	2943	301	2913	298	2798	288	2699	277	2469	256
	123.1	372	131.4	387	133.4	389	138.4	387	143.0	386	149.1	368
68	90.1	.559	92.8	.591	93.2	.596	93.7	.598	94.4	.600	93.8	.567
	3017	310	2941	299	2911	296	2808	286	2720	275	2463	249
	122.6	370	130.7	385	132.7	386	137.1	385	140.9	383	146.0	360
70	90.1	.556	92.8	.588	93.2	.592	93.8	.593	94.5	.593	93.9	.546
	3014	308	2939	297	2909	294	2807	283	2718	272	2455	240
	122.0	368	130.0	382	131.8	383	135.9	382	139.3	379	141.1	346
72	90.1	.553	92.8	.583	93.2	.587	93.8	.587	94.5	.584		
	3012	307	2937	295	2907	291	2805	280	2715	268		
	121.4	366	129.1	379	130.8	380	134.6	378	137.4	373		
74	90.1	.549	92.8	.579	93.3	.582	93.8	.580	94.6	.573		
	3010	305	2935	292	2905	289	2804	277	2711	262		
	120.7	363	128.2	376	129.8	377	133.1	373	134.8	366		
76	90.1	.545	92.9	.573	93.3	.576	93.9	.572	94.6	.556		
	3007	302	2932	290	2903	286	2803	272	2706	254		
	119.9	361	127.1	373	128.5	373	131.2	368	131.1	355		
78	90.1	.540	92.9	.567	93.3	.569	94.0	.561	94.8	.528		
	3005	300	2929	287	2901	282	2801	267	2700	241		
	119.0	358	126.0	369	127.1	369	128.8	361	124.8	337		

ENGINE ANTI ICE ON
△FUEL = + 1.5 %

TOTAL ANTI ICE ON
△FUEL = + 4 %

CRUISE - MCT/VMO - 1 ENGINE OUT - ISA +20

Ident.: PER-OEI-CRT-20-00002115.0032001 / 09 DEC 09

6 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

CRUISE - MCT/VMO - 1 ENGINE OUT

MAX. CONTINUOUS THRUST
PACK FLOW HI
ANTI-ICING OFF

ISA+20
CG=33.0%

EPR
KG/H
NM/1000KG
MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
50	1.309	.583	1.357	.605	1.366	.608	1.370	.606	1.360	.592	1.349	.570
	3132	324	2826	306	2761	302	2542	289	2261	271	1991	251
	123.1	385	139.2	393	142.8	394	153.3	390	167.1	378	181.5	361
52	1.310	.582	1.357	.604	1.366	.607	1.370	.604	1.361	.589	1.352	.564
	3131	323	2826	306	2760	302	2541	289	2259	270	1989	248
	122.9	385	138.9	393	142.5	393	152.9	389	166.4	376	179.6	357
54	1.310	.581	1.358	.603	1.367	.606	1.371	.602	1.362	.585	1.354	.556
	3131	323	2825	305	2759	301	2540	288	2257	268	1986	244
	122.8	384	138.7	392	142.3	393	152.5	387	165.5	374	177.4	352
56	1.310	.580	1.358	.601	1.367	.604	1.372	.600	1.364	.581	1.358	.546
	3130	322	2824	304	2758	300	2539	287	2255	266	1982	239
	122.6	384	138.4	391	141.9	392	152.1	386	164.5	371	174.5	346
58	1.311	.579	1.359	.600	1.368	.603	1.373	.597	1.366	.575	1.364	.528
	3130	321	2824	304	2757	299	2537	285	2253	263	1973	232
	122.4	383	138.1	390	141.6	391	151.4	384	163.0	367	169.7	335
60	1.311	.578	1.359	.598	1.369	.601	1.374	.594	1.368	.568	1.375	.495
	3129	321	2823	303	2756	298	2535	284	2249	260	1958	217
	122.2	382	137.7	389	141.2	389	150.8	382	161.4	363	160.3	314
62	1.311	.577	1.360	.596	1.370	.598	1.375	.591	1.371	.560		
	3128	320	2822	302	2755	297	2533	282	2245	256		
	122.0	381	137.3	388	140.8	388	150.0	380	159.4	358		
64	1.312	.575	1.361	.593	1.371	.596	1.377	.586	1.375	.548		
	3127	319	2820	300	2753	296	2529	280	2239	251		
	121.7	381	136.8	386	140.2	386	149.0	377	156.4	350		
66	1.312	.574	1.362	.591	1.372	.593	1.379	.580	1.382	.530		
	3127	319	2819	299	2751	294	2526	277	2226	242		
	121.4	380	136.3	384	139.6	384	147.7	373	152.0	338		
68	1.313	.572	1.363	.588	1.373	.589	1.382	.574	1.396	.490		
	3126	318	2817	297	2748	292	2522	273	2207	223		
	121.1	379	135.7	382	138.9	382	146.3	369	141.9	313		
70	1.314	.570	1.364	.584	1.375	.584	1.385	.565				
	3125	317	2815	295	2745	290	2516	269				
	120.8	377	134.9	380	137.9	379	144.5	364				
72	1.314	.568	1.366	.579	1.377	.579	1.389	.553				
	3123	315	2812	293	2741	287	2509	263				
	120.4	376	134.0	377	136.8	375	141.7	356				
74	1.315	.566	1.368	.574	1.379	.572	1.396	.533				
	3122	314	2809	290	2737	284	2494	254				
	119.9	374	132.9	373	135.5	371	137.6	343				
76	1.316	.563	1.370	.568	1.382	.564	1.411	.492				
	3121	313	2805	287	2731	280	2469	233				
	119.4	373	131.6	369	133.9	366	128.1	316				
78	1.317	.560	1.373	.560	1.386	.553						
	3119	311	2800	283	2724	274						
	118.8	371	130.1	364	131.5	358						

ENGINE ANTI ICE ON
△FUEL = + 2%

TOTAL ANTI ICE ON
△FUEL = + 4%

CRUISE - MCT/320KT - 1 ENGINE OUT - ISA

Ident.: PER-OEI-CRT-20-00002116.0065001 / 30 OCT 18

7 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CRUISE - MCT/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
HIGH AIR CONDITIONING
ANTI ICE OFF

ISA
CG=33.0%

N1 (%) **MACH**
FUEL FLOW (KG/H) **IAS (KT)**
SR (NM/1000KG) **TAS (KT)**

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
	87.2	.576	92.5	.631	93.4	.639	93.7	.639	93.9	.639	92.1	.621
64	2828	320	2926	320	2929	318	2767	306	2623	294	2332	274
	130.1	368	135.1	395	136.2	399	143.1	396	149.8	393	162.2	378
	87.4	.576	92.7	.631	93.4	.637	93.6	.637	93.8	.636	92.0	.616
66	2839	320	2947	320	2928	317	2764	305	2618	293	2329	272
	129.6	368	134.2	395	135.8	398	142.7	394	149.3	391	161.3	376
	87.5	.576	92.8	.631	93.3	.635	93.6	.634	93.7	.633	91.9	.611
68	2854	320	2968	320	2926	316	2761	303	2613	291	2324	269
	128.9	368	133.2	395	135.4	396	142.2	392	148.7	389	160.2	372
	87.7	.576	93.0	.631	93.3	.633	93.6	.631	93.6	.629	91.7	.605
70	2871	320	2990	320	2925	315	2757	302	2608	289	2319	266
	128.1	368	132.2	395	135.0	395	141.7	391	148.1	386	158.8	368
	87.9	.576	93.1	.630	93.3	.630	93.5	.628	93.5	.624	91.6	.594
72	2888	320	2996	319	2923	313	2755	300	2603	287	2299	262
	127.4	368	131.6	394	134.5	393	141.1	389	147.4	384	157.4	362
	88.0	.576	93.1	.627	93.3	.627	93.5	.624	93.4	.620	91.6	.582
74	2906	320	2995	318	2921	312	2751	298	2597	285	2285	256
	126.6	368	131.2	393	134.0	392	140.5	386	146.6	381	155.2	355
	88.2	.576	93.1	.625	93.3	.625	93.5	.620	93.3	.615	91.6	.571
76	2925	320	2994	317	2920	311	2747	296	2591	282	2290	251
	125.8	368	130.7	391	133.5	390	139.8	384	145.7	378	151.8	348
	88.4	.576	93.1	.622	93.3	.621	93.4	.616	93.1	.608	91.6	.555
78	2944	320	2993	315	2918	309	2742	294	2585	279	2299	244
	125.0	368	130.2	390	132.9	388	139.0	381	144.6	374	147.1	338
	88.6	.576	93.0	.619	93.2	.618	93.4	.611	93.0	.601		
80	2964	320	2991	314	2916	307	2739	292	2579	276		
	124.1	368	129.6	388	132.3	386	138.2	378	143.2	369		
82	88.8	.576	93.0	.616	93.2	.615	93.3	.606	92.9	.587		

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 2.6 %	+ 4 %

Continued on the following page

Continued from the previous page

CRUISE - MCT/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
HIGH AIR CONDITIONING
ANTI ICE OFF

ISA
CG=33.0%

N1 (%) **MACH**
FUEL FLOW (KG/H) **IAS (KT)**
SR (NM/1000KG) **TAS (KT)**

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220
	2985	320	2990	312	2913	305	2736	289	2547	269	
	123.2	368	129.1	386	131.7	384	137.1	375	141.6	361	
	89.0	.576	93.0	.613	93.2	.611	93.3	.600	92.9	.575	
84	3006	320	2989	310	2911	303	2735	287	2547	263	
	122.4	368	128.4	384	130.9	381	135.9	372	138.7	353	
	89.3	.576	93.0	.609	93.2	.606	93.3	.596	92.9	.562	
86	3029	320	2987	308	2908	301	2744	284	2560	257	
	121.5	368	127.7	381	130.1	378	134.4	369	134.8	345	
	89.5	.576	93.0	.605	93.2	.601	93.2	.590			
88	3052	320	2985	306	2906	298	2749	281			
	120.6	368	127.0	379	129.1	375	132.8	365			
	89.7	.576	92.9	.600	93.1	.597	93.2	.580			
90	3076	320	2984	304	2912	296	2744	277			
	119.6	368	126.1	376	127.9	373	131.0	359			
	89.9	.576	92.9	.597	93.1	.592	93.1	.562			
92	3100	320	2989	302	2917	294	2725	268			
	118.7	368	125.1	374	126.7	370	127.7	348			
	90.2	.576	92.9	.592	93.1	.587					
94	3126	320	2992	300	2919	291					
	117.7	368	124.0	371	125.4	366					
	90.4	.576	92.9	.587	93.1	.578					
96	3153	320	2992	297	2912	287					
	116.7	368	122.9	368	123.9	361					
	90.7	.576	92.8	.579	93.0	.558					
98	3182	320	2984	293	2873	276					
	115.6	368	121.6	363	121.2	348					
	90.9	.576	92.8	.564							
100	3211	320	2953	285							
	114.6	368	119.7	354							

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 2.6 %	+ 4 %

CRUISE - MCT/320KT - 1 ENGINE OUT - ISA

Ident.: PER-OEI-CRT-20-00002116.0059001 / 16 MAR 15

[8] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

CRUISE - MCT/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	N1 (%) FUEL FLOW (KG/H) SR (NM/1000KG)	MACH IAS (KT) TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
50	86.9	.576	91.9	.631	92.0	.634	92.1	.638	92.7	.645	93.4	.651
	2731	320	2827	320	2748	315	2579	305	2456	297	2339	288
	134.7	368	139.8	395	143.9	395	153.1	395	161.3	396	169.6	397
52	87.0	.576	91.9	.630	92.0	.632	92.0	.636	92.6	.643	93.4	.648
	2741	320	2831	320	2742	314	2573	304	2451	296	2331	287
	134.2	368	139.5	395	143.8	394	153.0	394	161.1	395	169.4	395
54	87.1	.576	91.9	.629	91.9	.630	92.0	.634	92.6	.640	93.3	.645
	2752	320	2826	319	2736	314	2567	303	2445	295	2323	285
	133.7	368	139.4	394	143.7	393	152.9	392	160.9	393	169.2	393
56	87.2	.576	91.9	.627	91.9	.628	91.9	.631	92.6	.638	93.2	.641
	2763	320	2822	318	2730	313	2559	302	2439	293	2314	284
	133.1	368	139.3	393	143.7	392	152.8	391	160.6	392	168.9	391
58	87.3	.576	91.9	.626	91.9	.626	91.9	.629	92.5	.635	93.2	.637
	2775	320	2817	317	2723	312	2552	301	2432	292	2304	282
	132.6	368	139.2	392	143.6	391	152.6	389	160.3	390	168.6	388
60	87.4	.576	91.8	.624	91.8	.624	91.8	.626	92.5	.632	93.1	.633
	2787	320	2811	316	2715	310	2543	299	2425	290	2293	280
	132.0	368	139.0	391	143.4	389	152.4	388	160.0	388	168.3	386
62	87.5	.576	91.8	.622	91.7	.622	91.8	.623	92.4	.628	93.0	.628
	2801	320	2805	315	2706	309	2533	298	2416	289	2281	277
	131.4	368	138.9	390	143.4	388	152.3	386	159.7	386	167.9	383
64	87.7	.576	91.8	.620	91.7	.619	91.7	.619	92.4	.624	92.9	.623
	2815	320	2798	314	2697	308	2523	296	2407	287	2267	275
	130.7	368	138.7	388	143.2	386	152.0	384	159.3	383	167.4	379
66	87.8	.576	91.7	.617	91.6	.616	91.6	.616	92.3	.620	92.8	.616
	2830	320	2791	313	2687	306	2512	294	2396	285	2251	272
	130.0	368	138.5	387	143.0	384	151.8	381	158.9	381	166.8	376
68	88.0	.576	91.7	.614	91.6	.613	91.6	.611	92.3	.615	92.7	.609

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 3 %	+ 4 %

Continued on the following page

Continued from the previous page

CRUISE - MCT/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**N1 (%)** **FUEL FLOW (KG/H)** **SR (NM/1000KG)**

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
	2846	320	2784	311	2676	304	2499	292	2384	282	2234	269
	129.3	368	138.3	385	142.8	382	151.5	379	158.4	378	166.2	371
	88.1	.576	91.7	.612	91.5	.609	91.5	.607	92.2	.609	92.5	.601
70	2863	320	2775	310	2664	303	2485	290	2371	280	2216	265
	128.5	368	138.0	383	142.6	380	151.2	376	157.9	374	165.4	366
	88.3	.576	91.6	.608	91.4	.605	91.4	.601	92.1	.603	92.6	.595
72	2880	320	2766	308	2651	300	2470	287	2357	277	2213	262
	127.7	368	137.8	381	142.4	377	150.8	372	157.2	370	163.8	362
	88.5	.576	91.6	.605	91.3	.601	91.4	.597	92.1	.597	92.7	.587
74	2899	320	2757	306	2638	298	2466	285	2350	274	2215	259
	126.9	368	137.5	379	142.1	375	150.0	370	156.1	367	161.6	358
	88.7	.576	91.5	.601	91.3	.597	91.4	.594	92.2	.592	92.9	.579
76	2919	320	2747	304	2635	297	2468	283	2352	272	2218	255
	126.1	368	137.1	377	141.5	373	149.0	368	154.6	364	159.0	353
	88.8	.576	91.5	.598	91.3	.594	91.5	.590	92.3	.586	93.1	.568
78	2934	320	2744	303	2635	295	2470	281	2354	269	2222	250
	125.3	368	136.6	375	140.8	371	147.8	365	152.9	360	155.8	346
	88.8	.575	91.5	.597	91.4	.593	91.5	.587	92.4	.582	93.3	.562
79	2933	319	2743	302	2635	294	2470	280	2354	267	2227	247
	125.1	367	136.3	374	140.4	370	147.2	364	151.9	358	153.8	343

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 3 %	+ 4 %

CRUISE - MCT/320KT - 1 ENGINE OUT - ISA

Ident.: PER-OEI-CRT-20-00002116.0012001 / 09 DEC 09

9 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

CRUISE - MCT/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

EPR
KG/H
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
50	1.297	.576	1.393	.631	1.414	.642	1.418	.640	1.409	.629	1.398	.613
	2922	320	2942	320	2938	320	2707	307	2416	289	2138	270
	125.9	368	134.4	395	136.4	401	146.5	397	159.9	386	174.8	374
52	1.299	.576	1.395	.631	1.414	.641	1.419	.639	1.410	.627	1.399	.610
	2929	320	2951	320	2937	319	2706	306	2415	288	2136	269
	125.6	368	134.0	395	136.2	400	146.3	396	159.5	385	174.0	372
54	1.300	.576	1.397	.631	1.415	.640	1.419	.638	1.411	.625	1.400	.606
	2937	320	2960	320	2936	319	2704	305	2413	287	2134	267
	125.3	368	133.6	395	136.0	399	146.0	395	159.1	384	173.1	369
56	1.302	.576	1.399	.631	1.415	.639	1.420	.636	1.412	.623	1.402	.602
	2946	320	2970	320	2935	318	2703	305	2412	286	2132	265
	124.9	368	133.1	395	135.8	399	145.7	394	158.6	382	172.1	367
58	1.304	.576	1.402	.631	1.416	.638	1.421	.634	1.413	.620	1.404	.596
	2955	320	2980	320	2934	317	2702	304	2410	285	2128	262
	124.5	368	132.7	395	135.6	398	145.4	393	157.9	381	170.6	363
60	1.306	.576	1.404	.631	1.416	.636	1.421	.633	1.414	.616	1.407	.588
	2965	320	2991	320	2933	317	2700	303	2408	283	2123	259
	124.1	368	132.2	395	135.4	397	145.0	392	157.2	379	168.8	358
62	1.308	.576	1.407	.631	1.417	.635	1.422	.630	1.416	.612	1.411	.578
	2976	320	3003	320	2932	316	2699	302	2405	281	2117	254
	123.6	368	131.6	395	135.1	396	144.6	390	156.4	376	166.5	353
64	1.310	.576	1.408	.630	1.417	.633	1.423	.628	1.418	.608	1.416	.563
	2987	320	3007	319	2930	315	2697	300	2403	279	2108	247
	123.2	368	131.3	395	134.8	395	144.1	389	155.3	373	162.8	343
66	1.312	.576	1.409	.628	1.418	.631	1.424	.625	1.420	.602	1.427	.536
	2998	320	3006	319	2929	314	2694	299	2400	276	2090	235
	122.7	368	131.0	394	134.5	394	143.5	387	154.1	370	156.2	326
68	1.315	.576	1.409	.627	1.419	.629	1.426	.621	1.423	.595		
	3011	320	3004	318	2927	313	2692	297	2394	273		
	122.2	368	130.7	393	134.1	392	142.9	385	152.6	365		
70	1.317	.576	1.410	.624	1.420	.626	1.427	.617	1.426	.584		
	3025	320	3002	317	2925	311	2689	295	2385	268		
	121.6	368	130.3	391	133.6	391	142.1	382	150.4	359		
72	1.321	.576	1.411	.622	1.421	.623	1.430	.612	1.432	.568		
	3043	320	3000	315	2922	310	2685	292	2371	260		
	120.9	368	129.9	390	133.1	389	141.1	379	147.1	349		
74	1.324	.576	1.412	.619	1.423	.620	1.432	.607	1.445	.529		
	3063	320	2998	314	2920	308	2682	290	2337	242		
	120.1	368	129.4	388	132.5	387	140.1	376	139.1	325		
76	1.327	.576	1.414	.616	1.424	.616	1.434	.601				
	3084	320	2995	312	2917	306	2678	287				
	119.3	368	128.8	386	131.8	385	138.9	372				
78	1.331	.576	1.415	.613	1.426	.612	1.438	.590				
	3106	320	2993	310	2913	304	2668	282				
	118.4	368	128.2	384	131.0	382	137.0	366				

ENGINE ANTI ICE ON
△FUEL = + 2.5 %

TOTAL ANTI ICE ON
△FUEL = + 5 %

CRUISE - MCT/320KT - 1 ENGINE OUT - ISA

Ident.: PER-OEI-CRT-20-00002116.0023001 / 09 DEC 09

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CRUISE - MCT/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

N1 (%)
KG/H
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
50	86.7	.576	90.5	.631	91.2	.643	91.1	.644	91.3	.649	91.1	.647
	2868	320	2958	320	2984	320	2798	308	2663	299	2480	286
	128.3	368	133.6	395	134.4	401	142.5	399	149.7	399	158.9	394
52	86.8	.576	90.6	.631	91.4	.643	91.2	.643	91.4	.647	91.2	.645
	2883	320	2976	320	3004	320	2804	308	2673	298	2490	285
	127.6	368	132.8	395	133.5	401	141.9	398	148.7	398	157.8	393
54	87.0	.576	90.7	.631	91.5	.642	91.2	.641	91.5	.645	91.3	.642
	2899	320	2996	320	3019	320	2811	307	2683	297	2500	284
	126.9	368	132.0	395	132.8	401	141.2	397	147.8	397	156.5	391
56	87.1	.576	90.9	.631	91.6	.641	91.3	.639	91.6	.644	91.5	.640
	2917	320	3017	320	3024	319	2820	306	2694	296	2512	283
	126.1	368	131.0	395	132.2	400	140.4	396	146.8	395	155.2	390
58	87.3	.576	91.1	.631	91.6	.639	91.4	.638	91.8	.642	91.6	.637
	2934	320	3039	320	3029	318	2828	305	2705	295	2525	281
	125.4	368	130.1	395	131.7	399	139.6	395	145.7	394	153.8	388
60	87.4	.576	91.3	.631	91.7	.637	91.5	.636	91.9	.639	91.8	.634
	2954	320	3064	320	3035	317	2836	304	2717	294	2539	280
	124.5	368	129.0	395	131.1	398	138.8	394	144.6	393	152.2	386
62	87.6	.576	91.4	.631	91.7	.636	91.6	.634	92.0	.637	91.9	.630
	2975	320	3089	320	3041	316	2845	303	2731	293	2554	278
	123.7	368	128.0	395	130.4	397	137.9	392	143.3	391	150.4	384
64	87.8	.576	91.6	.630	91.8	.634	91.7	.631	92.2	.634	92.1	.627
	2997	320	3104	319	3047	315	2856	302	2745	292	2571	277
	122.8	368	127.2	395	129.8	395	136.9	391	142.0	390	148.6	382
66	88.0	.576	91.6	.628	91.9	.631	91.8	.629	92.3	.632	92.3	.622
	3019	320	3109	318	3054	314	2868	301	2761	291	2587	275
	121.8	368	126.5	393	129.1	394	135.8	389	140.5	388	146.6	379
68	88.2	.576	91.7	.626	91.9	.629	91.9	.626	92.5	.629	92.6	.617
	3043	320	3116	317	3061	313	2881	300	2779	289	2605	272
	120.9	368	125.9	392	128.3	393	134.6	388	139.0	386	144.4	376
70	88.4	.576	91.7	.624	92.0	.627	92.0	.623	92.7	.625	92.9	.612
	3067	320	3122	316	3068	312	2896	298	2797	287	2625	270
	120.0	368	125.1	391	127.5	391	133.3	386	137.3	384	142.1	373
72	88.6	.576	91.8	.621	92.1	.624	92.2	.620	92.9	.621	93.2	.605
	3092	320	3129	315	3077	310	2911	297	2817	286	2648	267
	119.0	368	124.4	389	126.6	390	131.9	384	135.5	382	139.3	369
74	88.8	.576	91.9	.619	92.2	.621	92.4	.617	93.1	.617	93.5	.597
	3119	320	3137	313	3086	309	2928	295	2836	283	2666	263
	118.0	368	123.5	387	125.6	388	130.4	382	133.6	379	136.4	364
76	89.0	.576	92.0	.616	92.3	.618	92.5	.613	93.4	.612	93.6	.577
	3148	320	3145	312	3097	307	2946	293	2857	281	2656	254
	116.9	368	122.6	386	124.6	386	128.8	380	131.6	376	132.3	351
78	89.2	.576	92.0	.612	92.4	.615	92.7	.609	93.7	.607		
	3178	320	3154	310	3109	305	2967	291	2883	279		
	115.8	368	121.6	384	123.3	383	127.1	377	129.3	373		

ENGINE ANTI ICE ON
△FUEL = + 2 %

TOTAL ANTI ICE ON
△FUEL = + 5 %

CRUISE - MCT/320KT - 1 ENGINE OUT - ISA +20

Ident.: PER-OEI-CRT-20-00002119.0066001 / 30 OCT 18

10 **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

CRUISE - MCT/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
HIGH AIR CONDITIONING
ANTI ICE OFF

ISA+20
CG=33.0%

N1 (%) **MACH**
FUEL FLOW (KG/H) **IAS (KT)**
SR (NM/1000KG) **TAS (KT)**

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
	90.6	.576	93.8	.609	93.9	.610	93.9	.611	94.2	.611	92.7	.586
64	2975	320	2859	308	2787	303	2638	292	2503	281	2216	258
	128.2	381	138.4	396	141.9	395	149.0	393	155.9	390	167.6	371
	90.7	.576	93.8	.606	93.8	.608	93.9	.608	94.1	.607	92.7	.579
66	2992	320	2859	307	2786	302	2637	291	2502	279	2211	255
	127.5	381	137.9	394	141.4	394	148.4	391	155.0	388	165.9	367
	90.9	.576	93.7	.604	93.8	.605	93.9	.605	94.1	.603	92.7	.571
68	3009	320	2859	306	2786	301	2636	289	2500	277	2211	251
	126.7	381	137.4	393	140.8	392	147.7	389	154.0	385	163.6	362
	91.1	.576	93.7	.602	93.8	.603	93.8	.602	94.0	.597	92.6	.561
70	3027	320	2859	305	2785	299	2634	287	2490	274	2210	246
	126.0	381	136.9	391	140.2	390	146.9	387	153.1	381	160.9	356
	91.2	.576	93.7	.599	93.8	.600	93.8	.597	94.0	.590	92.6	.546
72	3045	320	2859	303	2785	298	2625	285	2475	270	2203	239
	125.2	381	136.3	390	139.6	389	146.2	384	152.1	376	157.0	346
	91.4	.576	93.7	.597	93.8	.597	93.8	.591	93.9	.582		
74	3064	320	2858	302	2783	296	2615	282	2467	267		
	124.5	381	135.8	388	139.0	387	145.4	380	150.6	371		
	91.6	.576	93.7	.594	93.7	.593	93.7	.585	93.9	.574		
76	3084	320	2856	300	2779	295	2608	279	2465	263		
	123.7	381	135.2	386	138.3	385	144.4	376	148.6	366		
	91.8	.576	93.7	.591	93.7	.589	93.7	.579	93.8	.564		
78	3104	320	2853	299	2772	292	2604	276	2464	258		
	122.9	381	134.6	384	137.7	382	143.0	372	146.2	360		
	92.0	.576	93.6	.587	93.6	.583	93.7	.572	93.8	.551		
80	3125	320	2849	297	2762	289	2604	273	2463	252		
	122.0	381	134.0	382	136.9	378	141.4	368	142.8	352		
82	92.2	.576	93.6	.583	93.6	.578	93.7	.565				

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 0.6 %	+ 0.6 %

Continued on the following page

Continued from the previous page

CRUISE - MCT/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
HIGH AIR CONDITIONING
ANTI ICE OFF

ISA+20
CG=33.0%

N1 (%) **MACH**
FUEL FLOW (KG/H) **IAS (KT)**
SR (NM/1000KG) **TAS (KT)**

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200	FL220
	3147	320	2841	295	2756	286	2604	269		
	121.2	381	133.3	379	135.8	374	139.5	363		
	92.2	.574	93.5	.577	93.6	.571	93.6	.554		
84	3142	318	2832	292	2752	283	2603	264		
	120.8	380	132.4	375	134.5	370	137.0	357		
	92.2	.571	93.5	.571	93.5	.564	93.5	.536		
86	3139	317	2826	288	2748	280	2578	255		
	120.3	378	131.3	371	133.0	366	133.6	345		
	92.2	.568	93.5	.564	93.4	.556				
88	3135	315	2817	285	2744	275				
	119.8	376	130.1	366	131.2	360				
	92.2	.564	93.4	.555	93.4	.543				
90	3131	313	2809	280	2733	269				
	119.2	373	128.4	361	128.8	352				
	92.2	.560	93.3	.543	93.2	.517				
92	3127	311	2797	274	2690	255				
	118.6	371	126.3	353	124.4	335				
	92.2	.556	93.2	.526						
94	3122	309	2776	265						
	117.9	368	123.1	342						
	92.2	.551								
96	3117	306								
	117.1	365								
	92.2	.546								
98	3113	303								
	116.1	361								
	92.1	.540								
100	3110	300								
	114.9	358								

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 0.6 %	+ 0.6 %

CRUISE - MCT/320KT - 1 ENGINE OUT - ISA +20

Ident.: PER-OEI-CRT-20-00002119.0060001 / 16 MAR 15

[11] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

CRUISE - MCT/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA+20 CG=33.0%	**N1 (%)** **FUEL FLOW (KG/H)** **SR (NM/1000KG)**	**MACH** **IAS (KT)** **TAS (KT)**

WEIGHT (1000KG)	**FL100**		**FL150**		**FL160**		**FL180**		**FL200**		**FL220**	
50	88.8	.563	91.3	.592	91.6	.596	92.1	.602	92.5	.607	92.5	.606
	2727	312	2549	300	2489	296	2370	288	2246	279	2085	267
	136.6	372	151.1	385	155.1	386	163.5	388	172.6	388	184.2	384
52	88.9	.562	91.4	.591	91.7	.595	92.1	.600	92.5	.604	92.4	.602
	2727	312	2549	299	2490	295	2366	287	2241	277	2078	265
	136.3	372	150.7	384	154.7	385	163.2	386	172.2	386	183.6	382
54	88.9	.561	91.4	.590	91.7	.593	92.1	.598	92.5	.601	92.4	.598
	2727	311	2549	298	2491	294	2366	286	2236	276	2074	264
	136.1	371	150.4	383	154.3	384	162.6	385	171.8	384	182.8	379
56	88.9	.560	91.4	.588	91.7	.591	92.2	.596	92.5	.598	92.5	.595
	2727	310	2550	297	2492	293	2367	285	2233	274	2074	262
	135.8	370	150.0	382	153.8	383	161.9	383	171.0	382	181.7	377
58	88.9	.558	91.4	.586	91.7	.590	92.2	.594	92.5	.595	92.5	.590
	2727	310	2550	297	2494	293	2368	283	2234	273	2074	260
	135.5	369	149.5	381	153.2	382	161.2	382	170.1	380	180.5	374
60	88.9	.557	91.4	.584	91.8	.588	92.2	.591	92.6	.592	92.5	.586
	2727	309	2551	296	2496	292	2369	282	2235	271	2073	258
	135.1	368	149.0	380	152.6	381	160.5	380	169.2	378	179.1	371
62	88.9	.555	91.5	.582	91.8	.586	92.3	.588	92.6	.588	92.6	.581
	2727	308	2552	295	2498	291	2370	281	2235	270	2073	256
	134.7	367	148.4	379	151.9	379	159.7	379	168.1	376	177.6	368
64	88.9	.554	91.5	.580	91.9	.583	92.3	.585	92.7	.584	92.6	.575
	2728	307	2553	293	2500	289	2371	279	2236	268	2073	253
	134.3	366	147.8	377	151.2	378	158.8	377	166.9	373	176.0	365
66	88.9	.552	91.5	.578	91.9	.581	92.3	.582	92.7	.580	92.7	.570
	2728	306	2555	292	2502	288	2372	278	2236	266	2072	250
	133.8	365	147.1	376	150.4	376	157.9	374	165.6	370	174.3	361
68	88.9	.550	91.6	.576	92.0	.578	92.4	.579	92.8	.575	92.8	.563

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	- 0.5 %	- 6 %

Continued on the following page

Continued from the previous page

CRUISE - MCT/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS	ISA+20	**N1 (%)**	**MACH**
HIGH AIR CONDITIONING	CG=33.0%	**FUEL FLOW (KG/H)**	**IAS (KT)**
ANTI ICE OFF		**SR (NM/1000KG)**	**TAS (KT)**

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
	2729	305	2556	291	2504	287	2373	276	2237	263	2072	247
	133.3	364	146.4	374	149.6	375	156.9	372	164.2	367	172.1	357
	88.9	.548	91.6	.573	92.0	.575	92.4	.575	92.8	.570	92.8	.554
70	2728	304	2558	290	2506	285	2373	274	2237	261	2072	243
	132.9	362	145.6	372	148.7	373	155.8	370	162.8	364	169.6	351
	88.9	.546	91.7	.570	92.1	.572	92.5	.570	92.9	.565	92.9	.543
72	2727	303	2559	288	2508	284	2374	272	2238	258	2070	238
	132.4	361	144.8	371	147.8	371	154.5	367	161.1	361	166.1	344
	88.9	.543	91.7	.567	92.1	.569	92.5	.566	93.0	.558		
74	2727	301	2560	286	2510	282	2374	270	2239	255		
	131.8	359	143.9	368	146.8	368	153.3	364	159.2	356		
	88.9	.540	91.7	.563	92.2	.565	92.6	.561	93.0	.550		
76	2725	300	2561	284	2512	280	2375	267	2240	252		
	131.2	358	143.0	366	145.7	366	151.9	361	156.8	351		
	88.9	.537	91.8	.559	92.2	.561	92.6	.555	93.1	.538		
78	2724	298	2562	282	2514	278	2375	264	2237	246		
	130.6	356	141.9	364	144.5	363	150.3	357	153.6	344		
	88.9	.536	91.8	.557	92.3	.559	92.7	.551	93.2	.530		
79	2723	297	2562	281	2514	277	2374	262	2236	242		
	130.2	355	141.4	362	144.0	362	149.4	355	151.3	338		

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	- 0.5 %	- 6 %

CRUISE - MCT/320KT - 1 ENGINE OUT - ISA +20

Ident.: PER-OEI-CRT-20-00002119.0023001 / 09 DEC 09

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

CRUISE - MCT/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST
PACK FLOW HI
ANTI-ICING OFF

ISA+20
CG=33.0%

N1 (%)
KG/H
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100			FL150			FL160			FL180			FL200			FL220		
50	90.0	.576		92.5	.612		92.7	.617		92.8	.620		93.1	.626		92.8	.621	
	3017	320		2912	310		2864	307		2712	297		2595	288		2402	274	
	126.4	381		136.6	398		139.5	400		147.2	399		154.0	400		163.9	394	
52	90.1	.576		92.5	.610		92.8	.615		92.9	.619		93.2	.624		92.9	.619	
	3028	320		2916	309		2869	306		2720	296		2604	287		2411	273	
	125.8	381		136.1	397		138.9	399		146.3	398		153.0	398		162.6	392	
54	90.1	.574		92.5	.609		92.8	.613		93.0	.617		93.3	.622		93.0	.616	
	3027	319		2921	308		2874	305		2729	295		2615	286		2422	272	
	125.5	380		135.5	396		138.3	397		145.4	397		151.8	397		161.1	390	
56	90.1	.573		92.6	.607		92.9	.612		93.0	.615		93.5	.620		93.2	.612	
	3026	318		2926	307		2880	304		2738	294		2626	285		2434	270	
	125.2	379		134.9	395		137.6	396		144.4	395		150.7	396		159.4	388	
58	90.1	.571		92.6	.605		92.9	.610		93.1	.613		93.6	.617		93.3	.608	
	3025	317		2932	306		2886	303		2749	293		2637	284		2447	268	
	124.9	378		134.2	393		136.8	395		143.4	394		149.4	394		157.6	386	
60	90.1	.569		92.7	.603		93.0	.607		93.2	.610		93.7	.614		93.5	.604	
	3023	316		2938	305		2892	302		2759	292		2650	282		2463	266	
	124.5	376		133.4	392		136.1	394		142.3	393		148.0	392		155.5	383	
62	90.1	.567		92.7	.601		93.0	.605		93.4	.608		93.9	.611		93.7	.599	
	3022	314		2944	304		2899	300		2771	290		2665	281		2478	264	
	124.1	375		132.7	391		135.2	392		141.1	391		146.5	390		153.3	380	
64	90.1	.564		92.8	.598		93.1	.603		93.5	.605		94.0	.608		93.7	.591	
	3020	313		2945	303		2906	299		2784	289		2680	279		2474	260	
	123.6	373		132.0	389		134.4	390		139.8	389		144.9	388		151.5	375	
66	90.1	.562		92.8	.595		93.2	.600		93.6	.602		94.2	.604		93.7	.581	
	3018	312		2943	301		2913	298		2798	288		2699	277		2469	256	
	123.1	372		131.4	387		133.4	389		138.4	387		143.0	386		149.1	368	
68	90.1	.559		92.8	.591		93.2	.596		93.7	.598		94.4	.600		93.8	.567	
	3017	310		2941	299		2911	296		2808	286		2720	275		2463	249	
	122.6	370		130.7	385		132.7	386		137.1	385		140.9	383		146.0	360	
70	90.1	.556		92.8	.588		93.2	.592		93.8	.593		94.5	.593		93.9	.546	
	3014	308		2939	297		2909	294		2807	283		2718	272		2455	240	
	122.0	368		130.0	382		131.8	383		135.9	382		139.3	379		141.1	346	
72	90.1	.553		92.8	.583		93.2	.587		93.8	.587		94.5	.584				
	3012	307		2937	295		2907	291		2805	280		2715	268				
	121.4	366		129.1	379		130.8	380		134.6	378		137.4	373				
74	90.1	.549		92.8	.579		93.3	.582		93.8	.580		94.6	.573				
	3010	305		2935	292		2905	289		2804	277		2711	262				
	120.7	363		128.2	376		129.8	377		133.1	373		134.8	366				
76	90.1	.545		92.9	.573		93.3	.576		93.9	.572		94.6	.556				
	3007	302		2932	290		2903	286		2803	272		2706	254				
	119.9	361		127.1	373		128.5	373		131.2	368		131.1	355				
78	90.1	.540		92.9	.567		93.3	.569		94.0	.561		94.8	.528				
	3005	300		2929	287		2901	282		2801	267		2700	241				
	119.0	358		126.0	369		127.1	369		128.8	361		124.8	337				

ENGINE ANTI ICE ON
△FUEL = + 2 %

TOTAL ANTI ICE ON
△FUEL = + 5 %

CRUISE - MCT/320KT - 1 ENGINE OUT - ISA +20

Ident.: PER-OEI-CRT-20-00002119.0012001 / 09 DEC 09

12 Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336

CRUISE - MCT/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST
PACK FLOW HI
ANTI-ICING OFF

ISA+20
CG=33.0%

EPR
KG/H
NM/1000KG

MACH
IAS (KT)
TAS (KT)

WEIGHT (1000KG)	FL100		FL150		FL160		FL180		FL200		FL220	
50	1.301	.576	1.357	.605	1.366	.608	1.370	.606	1.360	.592	1.349	.570
	3070	320	2826	306	2761	302	2542	289	2261	271	1991	251
	124.2	381	139.2	393	142.8	394	153.3	390	167.1	378	181.5	361
52	1.302	.576	1.357	.604	1.366	.607	1.370	.604	1.361	.589	1.352	.564
	3078	320	2826	306	2760	302	2541	289	2259	270	1989	248
	123.9	381	138.9	393	142.5	393	152.9	389	166.4	376	179.6	357
54	1.304	.576	1.358	.603	1.367	.606	1.371	.602	1.362	.585	1.354	.556
	3086	320	2825	305	2759	301	2540	288	2257	268	1986	244
	123.6	381	138.7	392	142.3	393	152.5	387	165.5	374	177.4	352
56	1.305	.576	1.358	.601	1.367	.604	1.372	.600	1.364	.581	1.358	.546
	3095	320	2824	304	2758	300	2539	287	2255	266	1982	239
	123.2	381	138.4	391	141.9	392	152.1	386	164.5	371	174.5	346
58	1.307	.576	1.359	.600	1.368	.603	1.373	.597	1.366	.575	1.364	.528
	3104	320	2824	304	2757	299	2537	285	2253	263	1973	232
	122.9	381	138.1	390	141.6	391	151.4	384	163.0	367	169.7	335
60	1.309	.576	1.359	.598	1.369	.601	1.374	.594	1.368	.568	1.375	.495
	3115	320	2823	303	2756	298	2535	284	2249	260	1958	217
	122.4	381	137.7	389	141.2	389	150.8	382	161.4	363	160.3	314
62	1.311	.576	1.360	.596	1.370	.598	1.375	.591	1.371	.560		
	3126	320	2822	302	2755	297	2533	282	2245	256		
	122.0	381	137.3	388	140.8	388	150.0	380	159.4	358		
64	1.312	.575	1.361	.593	1.371	.596	1.377	.586	1.375	.548		
	3127	319	2820	300	2753	296	2529	280	2239	251		
	121.7	381	136.8	386	140.2	386	149.0	377	156.4	350		
66	1.312	.574	1.362	.591	1.372	.593	1.379	.580	1.382	.530		
	3127	319	2819	299	2751	294	2526	277	2226	242		
	121.4	380	136.3	384	139.6	384	147.7	373	152.0	338		
68	1.313	.572	1.363	.588	1.373	.589	1.382	.574	1.396	.490		
	3126	318	2817	297	2748	292	2522	273	2207	223		
	121.1	379	135.7	382	138.9	382	146.3	369	141.9	313		
70	1.314	.570	1.364	.584	1.375	.584	1.385	.565				
	3125	317	2815	295	2745	290	2516	269				
	120.8	377	134.9	380	137.9	379	144.5	364				
72	1.314	.568	1.366	.579	1.377	.579	1.389	.553				
	3123	315	2812	293	2741	287	2509	263				
	120.4	376	134.0	377	136.8	375	141.7	356				
74	1.315	.566	1.368	.574	1.379	.572	1.396	.533				
	3122	314	2809	290	2737	284	2494	254				
	119.9	374	132.9	373	135.5	371	137.6	343				
76	1.316	.563	1.370	.568	1.382	.564	1.411	.492				
	3121	313	2805	287	2731	280	2469	233				
	119.4	373	131.6	369	133.9	366	128.1	316				
78	1.317	.560	1.373	.560	1.386	.553						
	3119	311	2800	283	2724	274						
	118.8	371	130.1	364	131.5	358						

ENGINE ANTI ICE ON
△FUEL = + 2.5 %

TOTAL ANTI ICE ON
△FUEL = + 5 %

IN CRUISE QUICK CHECK AT LONG RANGE SPEED

Ident.: PER-OEI-ICQ-10-00002122.0001001 / 22 MAR 17

[1] **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

In cruise quick check tables (*Refer to QRH/PER-L In Cruise Quick Check Long Range (Paper Only)* or use the performance application of FlySmart with Airbus) allow the flight crew to determine the fuel consumption and the time required to cover a given air distance from any moment in cruise to landing, with one engine inoperative.

The QRH tables are established for:
- Cruise Mach number : long range
- Descent profile : M .78/300 kt/250 kt
- Approach and landing : 120 kg or 270 lb - 6 min IMC
- ISA
- CG = 33 %
- Pack flow HI
- Anti ice OFF

Note:
1. *In the tables, the asterisk (*) means that a step climb of 4 000 ft must be flown to reach the corresponding flight level.*
2. *The flight level shown on the top of each column is the final flight level.*
3. *For each degree Celsius above ISA temperature apply a fuel correction of 0.015 (kg/°C/NM) x Δ ISA (°C) x air distance (NM) or 0.033 (lb/°C/NM) x ΔISA (°C) x air distance (NM).*

IN CRUISE QUICK CHECK AT LONG RANGE SPEED

Ident.: PER-OEI-ICQ-10-00002122.0003001 / 22 MAR 17

[2] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

In cruise quick check tables (*Refer to QRH/PER-L In Cruise Quick Check Long Range (Paper Only)* or use the performance application of FlySmart with Airbus) allow the flight crew to determine the fuel consumption and the time required to cover a given air distance from any moment in cruise to landing, with one engine inoperative.

The QRH tables are established for :

- Cruise Mach number : long range
- Descent profile : M .78/250 kt/300 kt
- Approach and landing : 140 kg or 340 lb -6 min IMC
- ISA
- CG = 33 %
- Normal air conditioning
- Anti ice OFF

Note:

1. *In the tables, the asterisk (*) means that a step climb of 4 000 ft must be flown to reach the corresponding flight level.*
2. *The flight level shown on the top of each column is the final flight level.*
3. *For each degree Celsius above ISA temperature apply a fuel correction of 0.015 (kg/°C/NM) × Δ ISA (°C) × air distance (NM) or 0.033 (lb/°C/NM) × ΔISA (°C) × air distance (NM).*

CORRECTION FOR DEVIATION FROM REFERENCE WEIGHT

Ident.: PER-OEI-ICQ-10-00002123.0001001 / 21 MAR 17

Applicable to: ALL

The in cruise quick check tables are based on a reference initial weight.
A correction on the fuel consumption has to be made, when the actual initial weight is different from the reference initial weight.
If it is lower (or greater) than the reference weight, subtract (or add) the value given in the correction part of the table per 1 000 kg or 1 000 lb below (or above) the reference initial weight (*Refer to PER-OEI-DES-20 DESCENT - M.80/350KT*).

GENERAL

Ident.: PER-OEI-ICQ-20-00002125.0001001 / 14 NOV 11

1 **Applicable to: MSN 01767-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

The following in cruise quick check tables allow the flight crew to determine the fuel consumption and the time required to cover a given air distance from any moment in cruise to landing with one engine inoperative.

These tables are established for:

- Cruise speed: MCT/VMO, MCT/320 kt.
- Descent profile: M .78/300 kt/250 kt
- Approach and landing: 120 kg or 270 lb - 6 min IMC
- ISA
- CG = 33 %
- Pack flow HI
- Anti ice OFF

Note: *1. In the tables, the asterisk "*" means that a step climb of 4 000 ft has been made to reach the corresponding flight level.*

2. The flight level shown on the top of each column is the final flight level.

3. For each degree Celsius above ISA apply a fuel correction of
0.015 (kg/°C/NM) x ΔISA (°C) x Air Distance (NM)
or 0.033 (lb/°C/NM) x ΔISA (°C) x Air Distance (NM)

GENERAL

Ident.: PER-OEI-ICQ-20-00002125.0003001 / 14 NOV 11

[2] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

The following in cruise quick check tables allow the flight crew to determine the fuel consumption and the time required to cover a given air distance from any moment in cruise to landing with one engine inoperative.

These tables are established for :

- Cruise speed: MCT/VMO, MCT/320 kt.
- Descent profile: M .78/300 kt/250 kt
- Approach and landing: 140 kg or 310 lb – 6 min IMC
- ISA
- CG = 33 %
- Normal Air Conditioning
- Anti ice OFF

Note: *1. In the tables, the asterisk "*" means that a step climb of 4 000 ft has been made to reach the corresponding flight level.*

2. The flight level shown on the top of each column is the final flight level.

3. For each degree Celsius above ISA apply a fuel correction of
0.015 (kg/°C/NM) x ΔISA (°C) x Air Distance (NM)
or 0.033 (lb/°C/NM) x ΔISA (°C) x Air Distance (NM)

CORRECTION FOR DEVIATION FROM REFERENCE WEIGHT

Ident.: PER-OEI-ICQ-20-00002126.0001001 / 21 MAR 17

Applicable to: ALL

The in cruise quick check tables are based on a reference initial weight. The fuel consumption must be corrected when the actual weight is different from the reference initial weight.
If it is lower (or greater) than the reference weight, subtract (or add) the value given in the correction part of the table per 1 000 kg or 1 000 lb below (or above) the reference weight (*Refer to PER-OEI-DES-20 DESCENT - M.80/350KT*).

IN CRUISE QUICK CHECK VMO

Ident.: PER-OEI-ICQ-20-00002127.0092001 / 20 DEC 16

[3] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - 1 ENGINE OUT
CRUISE : MCT/VMO - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. INITIAL WEIGHT = 60000 KG HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**150**	**160**	**180**	**200**	**220**	**FL100 FL150**	**FL160 FL180**	**FL200 FL220**
200	1605 0.38	1383 0.38	1342 0.38	1259 0.38	1184 0.38	1079 0.39	0	0	0
250	2022 0.45	1756 0.45	1708 0.45	1607 0.45	1517 0.46	1385 0.47	0	0	0
300	2439 0.53	2130 0.53	2073 0.53	1954 0.53	1849 0.53	1690 0.54	1	0	0
350	2855 1.00	2503 1.00	2438 1.00	2302 1.00	2181 1.01	1995 1.02	1	0	0
400	3271 1.08	2876 1.07	2803 1.08	2649 1.08	2513 1.08	2300 1.10	2	0	1
450	3686 1.15	3249 1.15	3168 1.15	2997 1.15	2845 1.16	2605 1.18	3	1	1
500	4101 1.22	3622 1.22	3533 1.22	3344 1.23	3177 1.23	2910 1.26	3	1	2
550	4515 1.30	3994 1.30	3897 1.30	3691 1.30	3509 1.31	3214 1.33	4	2	2
600	4930 1.37	4366 1.37	4262 1.37	4038 1.38	3841 1.38	3518 1.41	5	2	3
650	5344 1.45	4738 1.45	4626 1.45	4384 1.45	4172 1.46	3822 1.49	5	3	3
700	5757 1.52	5110 1.52	4990 1.52	4731 1.53	4504 1.53	4126 1.57	6	3	4
750	6170	5482	5353	5077	4835	4430	7	3	4

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 1.7 %	+ 4.4 %

Continued on the following page

Continued from the previous page

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - 1 ENGINE OUT
CRUISE : MCT/VMO - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. INITIAL WEIGHT = 60000 KG HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**150**	**160**	**180**	**200**	**220**	**FL100 FL150**	**FL160 FL180**	**FL200 FL220**
	2.00	1.59	2.00	2.00	2.01	2.04			
800	6582 2.07	5853 2.07	5717 2.07	5424 2.08	5166 2.08	4733 2.12	7	4	5
850	6995 2.15	6225 2.14	6080 2.14	5770 2.15	5497 2.16	5037 2.20	7	4	5
900	7406 2.22	6596 2.22	6443 2.22	6116 2.22	5827 2.23	5340 2.27	8	5	6
950	7817 2.30	6966 2.29	6805 2.29	6462 2.30	6158 2.31	5643 2.35	9	6	6
1000	8228 2.37	7337 2.36	7168 2.36	6807 2.37	6488 2.38	5946 2.43	9	6	7
1050	8639 2.45	7708 2.44	7530 2.44	7153 2.45	6818 2.46	6249 2.51	10	7	7
1100	9049 2.52	8078 2.51	7893 2.51	7498 2.52	7148 2.53	6551 2.58	11	7	7
1150	9458 2.59	8449 2.58	8256 2.59	7843 3.00	7478 3.00	6854 3.06	11	8	9
1200	9867 3.07	8820 3.06	8618 3.06	8189 3.07	7807 3.08	7156 3.14	12	8	9
1250	10276 3.14	9190 3.13	8981 3.13	8533 3.14	8137 3.15	7458 3.21	13	8	10
1300	10685 3.22	9560 3.21	9344 3.21	8878 3.22	8466 3.23	7760 3.29	14	9	10
1350	11093 3.29	9930 3.28	9706 3.28	9223 3.29	8795 3.30	8062 3.37	14	9	11
1400	11500	10300	10068	9567	9125	8364	15	9	11

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 1.7 %	+ 4.4 %

Continued on the following page

Continued from the previous page

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - 1 ENGINE OUT
CRUISE : MCT/VMO - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. INITIAL WEIGHT = 60000 KG HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**150**	**160**	**180**	**200**	**220**	**FL100 FL150**	**FL160 FL180**	**FL200 FL220**
	3.37	3.35	3.35	3.37	3.37	3.44			

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 1.7 %	+ 4.4 %

IN CRUISE QUICK CHECK VMO

Ident.: PER-OEI-ICQ-20-00002127.0086001 / 16 MAR 15

4 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - 1 ENGINE OUT
CRUISE : MCT/VMO - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. INITIAL WEIGHT = 55000 KG HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**150**	**160**	**180**	**200**	**220**	**FL100 FL150**	**FL160 FL180**	**FL200 FL220**
200	1509 0.39	1333 0.38	1286 0.38	1194 0.38	1119 0.38	1051 0.38	0	0	0
250	1900 0.47	1693 0.46	1635 0.46	1522 0.46	1431 0.46	1347 0.46	0	0	0
300	2291 0.55	2053 0.53	1984 0.53	1851 0.54	1743 0.53	1644 0.53	0	0	1
350	2682 1.03	2413 1.01	2333 1.01	2179 1.01	2055 1.01	1940 1.01	0	0	1
400	3073 1.11	2773 1.09	2682 1.09	2507 1.09	2367 1.09	2237 1.09	0	0	1
450	3464 1.19	3133 1.16	3031 1.16	2834 1.16	2679 1.16	2533 1.16	0	0	2
500	3855 1.26	3493 1.24	3380 1.24	3162 1.24	2990 1.24	2829 1.24	0	1	2
550	4245 1.34	3852 1.31	3728 1.31	3490 1.32	3302 1.31	3126 1.31	1	1	3
600	4636 1.42	4212 1.39	4077 1.39	3818 1.39	3614 1.39	3422 1.39	1	1	4
650	5027 1.50	4571 1.46	4426 1.47	4146 1.47	3925 1.47	3718 1.47	1	1	4
700	5417 1.58	4931 1.54	4775 1.54	4474 1.54	4236 1.54	4014 1.54	2	2	5
750	5808	5290	5123	4801	4548	4310	2	2	5

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 2 %	+ 4.5 %

Continued on the following page

Continued from the previous page

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - 1 ENGINE OUT
CRUISE : MCT/VMO - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. INITIAL WEIGHT = 55000 KG HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**150**	**160**	**180**	**200**	**220**	**FL100 FL150**	**FL160 FL180**	**FL200 FL220**
	2.06	2.02	2.02	2.02	2.02	2.02			
800	6198 2.14	5649 2.09	5472 2.09	5129 2.10	4859 2.09	4607 2.09	2	2	6
850	6588 2.22	6008 2.17	5821 2.17	5457 2.17	5170 2.17	4903 2.17	2	3	6
900	6979 2.29	6368 2.24	6170 2.24	5784 2.25	5482 2.24	5198 2.24	3	3	7
950	7369 2.37	6727 2.32	6518 2.32	6112 2.32	5793 2.32	5494 2.32	3	3	7
1000	7759 2.45	7086 2.39	6867 2.40	6440 2.40	6104 2.40	5790 2.40	3	4	8
1050	8149 2.53	7445 2.47	7215 2.47	6767 2.47	6415 2.47	6086 2.47	4	4	8
1100	8539 3.01	7804 2.54	7564 2.55	7095 2.55	6725 2.55	6382 2.55	4	4	9
1150	8929 3.09	8163 3.02	7913 3.02	7422 3.03	7036 3.02	6678 3.02	4	5	9
1200		8522 3.10	8261 3.10	7750 3.10	7347 3.10	6973 3.10	4	5	9
1250		8882 3.17	8610 3.17	8077 3.18	7658 3.17	7269 3.17	5	5	10
1300			8958 3.25	8405 3.25	7969 3.25	7564 3.25	5	6	10
1350				8732 3.33	8279 3.32	7860 3.32	5	6	11
1400					8590	8155	6	6	11

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 2 %	+ 4.5 %

Continued on the following page

Continued from the previous page

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - 1 ENGINE OUT
CRUISE : MCT/VMO - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. INITIAL WEIGHT = 55000 KG HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**150**	**160**	**180**	**200**	**220**	**FL100 FL150**	**FL160 FL180**	**FL200 FL220**
					3.40	3.40			

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 2 %	+ 4.5 %

IN CRUISE QUICK CHECK VMO

Ident.: PER-OEI-ICQ-20-00002127.0022001 / 10 DEC 09
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - ONE ENGINE FAILURE
CRUISE : MCT/VMO - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. INITIAL WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 100	150	160	180	200	220	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL100 FL150	FL160 FL180	FL200 FL220
200	1648 0.38	1399 0.38	1357 0.38	1257 0.38	1180 0.38	1098 0.38	0	0	0
250	2069 0.45	1785 0.45	1735 0.45	1612 0.46	1520 0.46	1418 0.46	0	0	1
300	2489 0.53	2171 0.53	2112 0.53	1967 0.53	1859 0.53	1738 0.54	1	1	2
350	2909 1.01	2556 1.00	2489 1.00	2322 1.01	2198 1.01	2058 1.01	1	2	4
400	3329 1.08	2941 1.08	2866 1.08	2676 1.08	2536 1.08	2378 1.09	2	2	5
450	3749 1.16	3326 1.15	3242 1.15	3030 1.16	2874 1.16	2697 1.17	2	3	6
500	4169 1.24	3711 1.23	3619 1.23	3383 1.23	3211 1.23	3015 1.24	3	4	7
550	4589 1.32	4095 1.30	3995 1.30	3737 1.31	3549 1.31	3333 1.32	3	5	8
600	5008 1.39	4479 1.38	4371 1.38	4090 1.38	3885 1.38	3651 1.39	4	5	9
650	5427 1.47	4863 1.45	4746 1.45	4442 1.46	4222 1.46	3968 1.47	4	6	10
700	5846 1.55	5247 1.53	5122 1.52	4795 1.53	4558 1.54	4286 1.55	5	7	11
750	6265 2.03	5631 2.00	5497 2.00	5147 2.01	4894 2.01	4602 2.02	5	7	12
800	6683 2.10	6014 2.08	5872 2.07	5499 2.08	5230 2.09	4919 2.10	6	8	13
850	7102 2.18	6397 2.15	6246 2.15	5851 2.16	5565 2.16	5235 2.18	6	9	14
900	7520 2.26	6780 2.22	6621 2.22	6202 2.23	5899 2.24	5550 2.25	7	9	15
950	7938 2.33	7162 2.30	6995 2.30	6553 2.31	6234 2.31	5865 2.33	7	10	16
1000	8356 2.41	7545 2.37	7369 2.37	6904 2.38	6568 2.39	6180 2.40	7	11	17
1050	8773 2.49	7927 2.45	7743 2.44	7254 2.46	6902 2.46	6495 2.48	8	11	18
1100	9191 2.56	8309 2.52	8116 2.52	7605 2.53	7235 2.54	6809 2.56	8	12	19
1150	9608 3.04	8690 3.00	8489 2.59	7955 3.01	7568 3.01	7123 3.03	9	13	20
1200	10025 3.12	9072 3.07	8862 3.07	8305 3.08	7901 3.09	7436 3.11	9	13	21
1250	10442 3.19	9454 3.14	9235 3.14	8654 3.16	8233 3.16	7750 3.18	10	14	22
1300	10859 3.27	9835 3.22	9608 3.22	9004 3.23	8565 3.24	8063 3.26	10	14	23
1350	11275 3.35	10216 3.29	9980 3.29	9353 3.31	8897 3.31	8375 3.33	12	15	24
1400	11692 3.43	10597 3.37	10352 3.36	9701 3.38	9228 3.39	8687 3.41	12	16	25

ENGINE ANTI ICE ON
△FUEL = + 2.5 %

TOTAL ANTI ICE ON
△FUEL = + 5 %

FLIP23D A320-214 CFM56-5B4/P SA3611 03301.001011 0250300 .7800 .00100 120 0300350 55 0 100100 40100 18590 FCOM-N0-03-06-50-014-170

IN CRUISE QUICK CHECK VMO

Ident.: PER-OEI-ICQ-20-00002127.0011001 / 10 DEC 09

5 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - ONE ENGINE FAILURE
CRUISE : MCT/VMO - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. INITIAL WEIGHT = 55000 KG
PACK FLOW HI
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 100	150	160	180	200	220	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL100 FL150	FL160 FL180	FL200 FL220
200	1583 0.39	1342 0.39	1294 0.39	1195 0.39	1095 0.39	1002 0.40	0	0	0
250	1986 0.47	1714 0.46	1655 0.46	1533 0.46	1410 0.47	1292 0.48	0	0	0
300	2389 0.55	2086 0.54	2016 0.54	1871 0.54	1724 0.55	1581 0.56	0	0	1
350	2792 1.03	2457 1.02	2377 1.01	2209 1.02	2037 1.03	1871 1.04	0	0	1
400	3195 1.11	2829 1.09	2738 1.09	2547 1.10	2351 1.10	2160 1.12	0	0	1
450	3598 1.19	3200 1.17	3099 1.17	2885 1.17	2665 1.18	2450 1.20	0	0	2
500	4001 1.27	3571 1.24	3459 1.24	3223 1.25	2978 1.26	2738 1.28	0	0	2
550	4403 1.35	3942 1.32	3820 1.32	3560 1.33	3291 1.34	3027 1.37	1	1	3
600	4805 1.43	4313 1.40	4181 1.40	3898 1.40	3604 1.42	3316 1.45	1	1	4
650	5208 1.51	4684 1.47	4541 1.47	4235 1.48	3917 1.50	3604 1.53	1	1	4
700	5610 1.59	5055 1.55	4901 1.55	4573 1.56	4230 1.57	3892 2.01	1	1	5
750	6012 2.07	5426 2.03	5261 2.03	4910 2.03	4543 2.05	4180 2.09	2	2	5
800	6414 2.15	5796 2.10	5621 2.10	5247 2.11	4855 2.13	4468 2.17	2	2	6
850	6815 2.23	6167 2.18	5981 2.18	5583 2.19	5168 2.21	4755 2.25	2	2	6
900	7217 2.32	6537 2.25	6341 2.25	5920 2.26	5480 2.29	5043 2.33	3	3	7
950	7619 2.40	6907 2.33	6700 2.33	6257 2.34	5792 2.36	5330 2.41	3	3	7
1000	8020 2.48	7277 2.41	7060 2.41	6593 2.42	6104 2.44	5617 2.49	3	3	7
1050	8421 2.56	7647 2.48	7419 2.48	6929 2.49	6416 2.52	5904 2.57	4	4	8
1100	8822 3.04	8017 2.56	7778 2.56	7266 2.57	6727 3.00	6190 3.05	4	4	8
1150	9223 3.12	8387 3.04	8137 3.03	7602 3.05	7039 3.08	6476 3.13	4	4	9
1200	9624 3.20	8757 3.11	8496 3.11	7938 3.12	7351 3.15	6763 3.21	4	5	9
1250	10025 3.28	9126 3.19	8855 3.19	8274 3.20	7662 3.23	7049 3.29	5	5	9
1300	10425 3.36	9496 3.26	9214 3.26	8609 3.28	7973 3.31	7335 3.37	5	5	10
1350	10826 3.44	9865 3.34	9573 3.34	8945 3.35	8285 3.39	7621 3.45	5	5	10
1400	11226 3.52	10234 3.42	9932 3.42	9281 3.43	8596 3.46	7907 3.53	6	6	10

ENGINE ANTI ICE ON
△FUEL = + 1.5 %

TOTAL ANTI ICE ON
△FUEL = + 3 %

FLIP23C A320-232 IAE V2527-A5 3611 03301.001011 0250300 .7800 .00100 120 0300350 55 0 100100 40100 18590 N0-03-06-50-014-140

IN CRUISE QUICK CHECK 320KT

Ident.: PER-OEI-ICQ-20-00002128.0073001 / 20 DEC 16

[6] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - 1 ENGINE OUT
CRUISE : MCT/320KT - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. INITIAL WEIGHT = 60000 KG HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**150**	**160**	**180**	**200**	**220**	**FL100 FL150**	**FL160 FL180**	**FL200 FL220**
200	1483 0.40	1356 0.38	1340 0.38	1259 0.38	1184 0.38	1079 0.39	1	0	0
250	1864 0.48	1720 0.46	1704 0.45	1607 0.45	1517 0.46	1385 0.47	2	0	0
300	2245 0.56	2085 0.53	2067 0.53	1954 0.53	1849 0.53	1690 0.54	3	1	0
350	2626 1.04	2448 1.01	2430 1.00	2302 1.00	2181 1.01	1995 1.02	4	2	0
400	3007 1.13	2812 1.09	2792 1.08	2649 1.08	2513 1.08	2300 1.10	5	2	1
450	3387 1.21	3175 1.16	3154 1.15	2997 1.15	2845 1.16	2605 1.18	5	3	1
500	3767 1.29	3537 1.24	3516 1.23	3344 1.23	3177 1.23	2910 1.26	6	4	2
550	4147 1.37	3899 1.31	3877 1.30	3691 1.30	3509 1.31	3214 1.33	7	5	2
600	4526 1.45	4261 1.39	4238 1.38	4038 1.38	3841 1.38	3518 1.41	8	6	3
650	4906 1.53	4622 1.46	4598 1.45	4384 1.45	4172 1.46	3822 1.49	9	6	3
700	5285 2.01	4983 1.54	4958 1.53	4731 1.53	4504 1.53	4126 1.57	10	7	4
750	5664	5344	5317	5077	4835	4430	11	8	4

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 1.7 %	+ 5 %

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Continued from the previous page

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - 1 ENGINE OUT
CRUISE : MCT/320KT - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. INITIAL WEIGHT = 60000 KG HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**150**	**160**	**180**	**200**	**220**	**FL100 FL150**	**FL160 FL180**	**FL200 FL220**
	2.10	2.02	2.00	2.00	2.01	2.04			
800	6042 2.18	5703 2.09	5675 2.08	5424 2.08	5166 2.08	4733 2.12	12	9	5
850	6421 2.26	6063 2.17	6033 2.15	5770 2.15	5497 2.16	5037 2.20	13	10	5
900	6799 2.34	6422 2.24	6391 2.22	6116 2.22	5827 2.23	5340 2.27	13	11	6
950	7177 2.42	6781 2.32	6748 2.30	6462 2.30	6158 2.31	5643 2.35	14	11	6
1000	7554 2.50	7139 2.39	7105 2.37	6807 2.37	6488 2.38	5946 2.43	16	12	7
1050	7932 2.59	7497 2.47	7461 2.45	7153 2.45	6818 2.46	6249 2.51	17	14	7
1100	8309 3.07	7854 2.55	7817 2.52	7498 2.52	7148 2.53	6551 2.58	17	15	7
1150	8685 3.15	8211 3.02	8173 3.00	7843 3.00	7478 3.00	6854 3.06	18	16	9
1200	9062 3.23	8569 3.10	8529 3.07	8189 3.07	7807 3.08	7156 3.14	19	17	9
1250	9438 3.31	8925 3.17	8885 3.15	8533 3.14	8137 3.15	7458 3.21	20	18	10
1300	9813 3.39	9282 3.25	9240 3.22	8878 3.22	8466 3.23	7760 3.29	21	19	10
1350	10189 3.47	9638 3.33	9595 3.30	9223 3.29	8795 3.30	8062 3.37	22	20	11
1400	10564	9993	9949	9567	9125	8364	23	21	11

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 1.7 %	+ 5 %

Continued on the following page

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IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - 1 ENGINE OUT
CRUISE : MCT/320KT - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 140 KG (6 MIN)

REF. INITIAL WEIGHT = 60000 KG HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**150**	**160**	**180**	**200**	**220**	**FL100 FL150**	**FL160 FL180**	**FL200 FL220**
	3.56	3.40	3.37	3.37	3.37	3.44			

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 1.7 %	+ 5 %

IN CRUISE QUICK CHECK 320KT

Ident.: PER-OEI-ICQ-20-00002128.0067001 / 16 MAR 15

7 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - 1 ENGINE OUT
CRUISE : MCT/320KT - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. INITIAL WEIGHT = 55000 KG HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**150**	**160**	**180**	**200**	**220**	**FL100 FL150**	**FL160 FL180**	**FL200 FL220**
200	1453 0.40	1333 0.38	1286 0.38	1194 0.38	1119 0.38	1051 0.38	0	0	0
250	1828 0.48	1693 0.46	1635 0.46	1522 0.46	1431 0.46	1347 0.46	0	0	0
300	2202 0.56	2053 0.53	1984 0.53	1851 0.54	1743 0.53	1644 0.53	0	0	1
350	2576 1.04	2413 1.01	2333 1.01	2179 1.01	2055 1.01	1940 1.01	0	0	1
400	2950 1.12	2773 1.09	2682 1.09	2507 1.09	2367 1.09	2237 1.09	1	0	1
450	3323 1.21	3133 1.16	3031 1.16	2834 1.16	2679 1.16	2533 1.16	1	0	2
500	3697 1.29	3493 1.24	3380 1.24	3162 1.24	2990 1.24	2829 1.24	2	1	2
550	4070 1.37	3852 1.31	3728 1.31	3490 1.32	3302 1.31	3126 1.31	2	1	3
600	4442 1.45	4212 1.39	4077 1.39	3818 1.39	3614 1.39	3422 1.39	2	1	4
650	4815 1.53	4571 1.46	4426 1.47	4146 1.47	3925 1.47	3718 1.47	3	1	4
700	5187 2.01	4931 1.54	4775 1.54	4474 1.54	4236 1.54	4014 1.54	3	2	5
750	5559	5290	5123	4801	4548	4310	4	2	5

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 2 %	+ 4.5 %

Continued on the following page

Continued from the previous page

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - 1 ENGINE OUT
CRUISE : MCT/320KT - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. INITIAL WEIGHT = 55000 KG HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**150**	**160**	**180**	**200**	**220**	**FL100 FL150**	**FL160 FL180**	**FL200 FL220**
	2.09	2.02	2.02	2.02	2.02	2.02			
800	5931 2.18	5649 2.09	5472 2.09	5129 2.10	4859 2.09	4607 2.09	4	2	6
850	6303 2.26	6009 2.17	5821 2.17	5457 2.17	5170 2.17	4903 2.17	5	3	6
900	6674 2.34	6368 2.24	6170 2.24	5784 2.25	5482 2.24	5198 2.24	5	3	7
950	7045 2.42	6727 2.32	6518 2.32	6112 2.32	5793 2.32	5494 2.32	5	3	7
1000	7416 2.50	7086 2.39	6867 2.40	6440 2.40	6104 2.40	5790 2.40	6	4	8
1050	7786 2.58	7446 2.47	7215 2.47	6767 2.47	6415 2.47	6086 2.47	6	4	8
1100	8157 3.07	7805 2.55	7564 2.55	7095 2.55	6725 2.55	6382 2.55	7	4	9
1150	8527 3.15	8164 3.02	7913 3.02	7422 3.03	7036 3.02	6678 3.02	7	5	9
1200	8897 3.23	8523 3.10	8261 3.10	7750 3.10	7347 3.10	6973 3.10	7	5	9
1250		8882 3.17	8610 3.17	8077 3.18	7658 3.17	7269 3.17	8	5	10
1300			8958 3.25	8405 3.25	7969 3.25	7564 3.25	8	6	10
1350				8732 3.33	8279 3.32	7860 3.32	9	6	11
1400					8590	8155	9	6	11

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 2 %	+ 4.5 %

Continued on the following page

Continued from the previous page

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - 1 ENGINE OUT
CRUISE : MCT/320KT - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6 MIN)

REF. INITIAL WEIGHT = 55000 KG HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**FUEL CONSUMED (KG)** **TIME (H.MIN)**

AIR DIST. (NM)	FLIGHT LEVEL						CORRECTION ON FUEL CONSUMPTION (KG/1000KG)		
	100	**150**	**160**	**180**	**200**	**220**	**FL100 FL150**	**FL160 FL180**	**FL200 FL220**
					3.40	3.40			

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 2 %	+ 4.5 %

IN CRUISE QUICK CHECK 320KT

Ident.: PER-OEI-ICQ-20-00002128.0022001 / 10 DEC 09
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - ONE ENGINE FAILURE
CRUISE : MCT/320KT - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. INITIAL WEIGHT = 55000 KG
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)
TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 100	150	160	180	200	220	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL100 FL150	FL160 FL180	FL200 FL220
200	1556 0.39	1381 0.38	1358 0.38	1257 0.38	1180 0.38	1098 0.38	2	0	0
250	1950 0.47	1760 0.46	1737 0.45	1612 0.46	1520 0.46	1418 0.46	3	1	1
300	2344 0.55	2139 0.53	2115 0.53	1967 0.53	1859 0.53	1738 0.54	4	1	2
350	2737 1.03	2518 1.01	2493 1.00	2322 1.01	2198 1.01	2058 1.01	5	2	4
400	3130 1.12	2896 1.08	2870 1.08	2676 1.08	2536 1.08	2378 1.09	6	3	5
450	3523 1.20	3274 1.16	3248 1.15	3030 1.16	2874 1.16	2697 1.17	7	4	6
500	3915 1.28	3651 1.24	3618 1.23	3383 1.23	3211 1.23	3015 1.24	8	5	7
550	4306 1.36	4028 1.31	3993 1.30	3737 1.31	3549 1.31	3333 1.32	9	6	8
600	4698 1.44	4404 1.39	4368 1.38	4090 1.38	3885 1.38	3651 1.39	10	7	9
650	5089 1.52	4780 1.46	4742 1.45	4442 1.46	4222 1.46	3968 1.47	11	8	10
700	5479 2.01	5156 1.54	5116 1.53	4795 1.53	4558 1.54	4286 1.55	12	9	11
750	5869 2.09	5531 2.02	5489 2.00	5147 2.01	4894 2.01	4602 2.02	13	10	12
800	6258 2.17	5906 2.09	5862 2.07	5499 2.08	5230 2.09	4919 2.10	14	11	13
850	6648 2.25	6280 2.17	6234 2.15	5851 2.16	5565 2.16	5235 2.18	15	11	14
900	7036 2.33	6654 2.24	6606 2.22	6202 2.23	5899 2.24	5550 2.25	16	12	15
950	7425 2.41	7027 2.32	6977 2.30	6553 2.31	6234 2.31	5865 2.33	17	13	16
1000	7813 2.49	7400 2.39	7348 2.37	6904 2.38	6568 2.39	6180 2.40	18	14	17
1050	8201 2.58	7773 2.47	7719 2.45	7254 2.46	6902 2.46	6495 2.48	19	15	18
1100	8588 3.06	8145 2.55	8089 2.52	7605 2.53	7235 2.54	6809 2.56	20	16	19
1150	8975 3.14	8517 3.02	8459 3.00	7955 3.01	7568 3.01	7123 3.03	21	17	20
1200	9361 3.22	8889 3.10	8828 3.07	8305 3.08	7901 3.09	7436 3.11	22	18	21
1250	9748 3.30	9260 3.17	9197 3.15	8654 3.16	8233 3.16	7750 3.18	23	19	22
1300	10134 3.38	9631 3.25	9565 3.22	9004 3.23	8565 3.24	8063 3.26	25	20	23
1350	10519 3.46	10001 3.32	9933 3.30	9353 3.31	8897 3.31	8375 3.33	26	21	24
1400	10905 3.55	10371 3.40	10301 3.37	9701 3.38	9228 3.39	8687 3.41	28	22	25

ENGINE ANTI ICE ON
△FUEL = + 2.5 %

TOTAL ANTI ICE ON
△FUEL = + 6 %

FLIP23D A320-214 CFM56-5B4/P SA3611 03301.001011 0250300 .7800 .00100 120 0300350 55 0 100100 40100 18590 FCOM-N0-03-06-50-015-170

IN CRUISE QUICK CHECK 320KT

Ident.: PER-OEI-ICQ-20-00002128.0011001 / 10 DEC 09

[8] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

IN CRUISE QUICK CHECK FROM ANY MOMENT IN CRUISE TO LANDING - ONE ENGINE FAILURE
CRUISE : MCT/320KT - DESCENT : M.78/300KT/250KT
IMC PROCEDURE : 120 KG (6MIN)

REF. INITIAL WEIGHT = 55000 KG
PACK FLOW HI
ANTI-ICING OFF

ISA
CG = 33.0 %

FUEL CONSUMED (KG)

TIME (H.MIN)

AIR DIST. (NM)	FLIGHT LEVEL 100	150	160	180	200	220	CORRECTION ON FUEL CONSUMPTION (KG/1000KG) FL100 FL150	FL160 FL180	FL200 FL220
200	1572 0.39	1342 0.39	1294 0.39	1195 0.39	1095 0.39	1002 0.40	0	0	0
250	1971 0.47	1714 0.46	1655 0.46	1533 0.46	1410 0.47	1292 0.48	0	0	0
300	2371 0.55	2086 0.54	2016 0.54	1871 0.54	1724 0.55	1581 0.56	0	0	1
350	2770 1.03	2457 1.02	2377 1.01	2209 1.02	2037 1.03	1871 1.04	0	0	1
400	3170 1.12	2829 1.09	2738 1.09	2547 1.10	2351 1.10	2160 1.12	0	0	1
450	3569 1.20	3200 1.17	3099 1.17	2885 1.17	2665 1.18	2450 1.20	1	0	2
500	3967 1.28	3571 1.24	3459 1.24	3223 1.25	2978 1.26	2738 1.28	1	0	2
550	4366 1.36	3942 1.32	3820 1.32	3560 1.33	3291 1.34	3027 1.37	2	1	3
600	4764 1.44	4313 1.40	4181 1.40	3898 1.40	3604 1.42	3316 1.45	2	1	4
650	5163 1.52	4684 1.47	4541 1.47	4235 1.48	3917 1.50	3604 1.53	2	1	4
700	5561 2.01	5055 1.55	4901 1.55	4573 1.56	4230 1.57	3892 2.01	3	1	5
750	5958 2.09	5426 2.03	5261 2.03	4910 2.03	4543 2.05	4180 2.09	3	2	5
800	6356 2.17	5796 2.10	5621 2.10	5247 2.11	4855 2.13	4468 2.17	4	2	6
850	6753 2.25	6167 2.18	5981 2.18	5583 2.19	5168 2.21	4755 2.25	4	2	6
900	7151 2.33	6537 2.25	6341 2.25	5920 2.26	5480 2.29	5043 2.33	4	3	7
950	7548 2.41	6907 2.33	6700 2.33	6257 2.34	5792 2.36	5330 2.41	5	3	7
1000	7945 2.49	7277 2.41	7060 2.41	6593 2.42	6104 2.44	5617 2.49	5	3	7
1050	8341 2.58	7647 2.48	7419 2.48	6929 2.49	6416 2.52	5904 2.57	6	4	8
1100	8738 3.06	8017 2.56	7778 2.56	7266 2.57	6727 3.00	6190 3.05	6	4	8
1150	9134 3.14	8387 3.04	8137 3.03	7602 3.05	7039 3.08	6476 3.13	6	4	9
1200	9530 3.22	8757 3.11	8496 3.11	7938 3.12	7351 3.15	6763 3.21	7	5	9
1250	9926 3.30	9126 3.19	8855 3.19	8274 3.20	7662 3.23	7049 3.29	7	5	9
1300	10322 3.38	9496 3.26	9214 3.26	8609 3.28	7973 3.31	7335 3.37	8	5	10
1350	10717 3.46	9865 3.34	9573 3.34	8945 3.35	8285 3.39	7621 3.45	8	5	10
1400	11112 3.55	10234 3.42	9932 3.42	9281 3.43	8596 3.46	7907 3.53	9	6	10

ENGINE ANTI ICE ON
△FUEL = + 2.5 %

TOTAL ANTI ICE ON
△FUEL = + 5 %

FLIP23C A320-232 IAE V2527-A5 3611 03301.001011 0250300 .7800 .00100 120 0300350 55 0 100100 40100 18590 N0-03-06-50-015-140

HOLDING

Ident.: PER-OEI-HLD-00002130.0149001 / 30 OCT 18

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

RACE TRACK HOLDING PATTERN - GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS CLEAN CONFIGURATION HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**N1 (%)** **FF (KG/H)**

WEIGHT (1000KG)	FL15	FL50	FL100	FL120	FL140	FL160	FL180	FL200
64	67.0 1770	70.1 1794	74.8 1816	76.7 1814	78.6 1822	80.5 1809	82.7 1809	84.7 1843
66	67.9 1829	71.0 1856	75.7 1874	77.6 1874	79.5 1883	81.5 1869	83.6 1879	85.6 1914
68	68.7 1889	71.9 1920	76.6 1935	78.5 1937	80.3 1940	82.4 1936	84.5 1950	86.6 1988
70	69.6 1949	72.8 1981	77.4 1987	79.4 1998	81.2 1996	83.3 2004	85.4 2020	87.6 2064
72	70.4 2011	73.6 2041	78.3 2049	80.2 2059	82.1 2054	84.2 2072	86.3 2093	88.6 2143
74	71.2 2075	74.4 2103	79.1 2112	81.0 2114	82.9 2119	85.0 2142	87.2 2167	89.6 2226
76	72.0 2139	75.2 2164	79.9 2173	81.8 2170	83.8 2184	85.9 2213	88.1 2243	
78	72.8 2203	76.0 2219	80.7 2234	82.6 2228	84.6 2251	86.8 2286	89.1 2324	
80	73.5 2265	76.8 2280	81.4 2289	83.4 2292	85.4 2319	87.6 2361		
82	74.3 2326	77.5 2345	82.2 2345	84.2 2357	86.2 2389	88.5 2439		
84	75.0 2388	78.2 2396	82.9 2401	84.9 2423	87.1 2460	89.4 2520		
86	75.7 2451	78.9 2454	83.7 2463	85.7 2490	87.9 2535			
88	76.4 2510	79.7 2516	84.4 2528	86.4 2559	88.7 2610			
90	77.1	80.4	85.1	87.2				

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
FUEL	+ 0.7 %	+ 6.9 %	+ 0.3 %

Continued on the following page

Continued from the previous page

RACE TRACK HOLDING PATTERN - GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS CLEAN CONFIGURATION HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**N1 (%)** **FF (KG/H)**

WEIGHT (1000KG)	FL15	FL50	FL100	FL120	FL140	FL160	FL180	FL200
	2568	2576	2593	2630				
92	77.8 2634	81.0 2637	85.8 2659	88.0 2702				
94	78.4 2697	81.7 2698	86.5 2727	88.7 2776				
96	79.1 2747	82.3 2756	87.2 2796					
98	79.7 2804	82.9 2811	87.9 2867					
100	80.3 2864	83.5 2866						

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
FUEL	+ 0.7 %	+ 6.9 %	+ 0.3 %

HOLDING

Ident.: PER-OEI-HLD-00002130.0143001 / 16 MAR 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

RACE TRACK HOLDING PATTERN - GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS CLEAN CONFIGURATION HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**N1 (%)** **FF (KG/H)**

WEIGHT (1000KG)	FL15	FL50	FL100	FL120	FL140	FL160	FL180	FL200
46	58.4 1253	61.4 1247	66.0 1247	67.8 1249	69.8 1247	71.8 1240	73.9 1235	75.9 1237
48	59.5 1302	62.6 1300	67.2 1304	69.0 1304	71.0 1301	73.1 1294	75.1 1292	77.2 1295
50	60.7 1354	63.8 1353	68.4 1357	70.1 1360	72.2 1356	74.3 1351	76.4 1349	78.4 1356
52	61.8 1407	65.0 1407	69.4 1412	71.2 1415	73.3 1412	75.4 1408	77.6 1406	79.4 1419
54	62.9 1460	66.1 1464	70.5 1467	72.3 1470	74.4 1469	76.5 1466	78.6 1468	80.5 1483
56	64.0 1514	67.1 1519	71.5 1523	73.4 1527	75.4 1528	77.7 1525	79.6 1531	81.6 1547
58	65.0 1568	68.1 1571	72.5 1578	74.4 1585	76.5 1587	78.6 1586	80.6 1594	82.6 1612
60	66.0 1624	69.0 1623	73.5 1635	75.4 1644	77.5 1647	79.6 1648	81.6 1658	83.6 1679
62	66.9 1677	69.9 1678	74.4 1693	76.3 1704	78.5 1707	80.5 1712	82.5 1724	84.5 1742
64	67.8 1730	70.8 1734	75.4 1752	77.3 1764	79.4 1768	81.4 1776	83.5 1790	85.5 1807
66	68.7 1783	71.7 1790	76.3 1813	78.3 1824	80.2 1831	82.3 1840	84.4 1853	86.4 1872
68	69.5 1837	72.5 1846	77.2 1875	79.2 1885	81.1 1895	83.2 1906	85.2 1917	87.4 1939
70	70.3 1893	73.3 1904	78.1 1935	80.0 1947	82.0 1959	84.0 1970	86.1 1983	88.4 2011
72	71.1	74.2	78.9	80.8	82.8	84.9	87.0	89.5

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
FUEL	+ 1 %	+ 5 %	+ 0.3 %

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Continued from the previous page

RACE TRACK HOLDING PATTERN - GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS CLEAN CONFIGURATION HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**N1 (%)** **FF (KG/H)**

WEIGHT (1000KG)	FL15	FL50	FL100	FL120	FL140	FL160	FL180	FL200
	1949	1963	1995	2010	2024	2034	2051	2089
74	71.9 2006	75.0 2024	79.8 2058	81.6 2074	83.6 2087	85.7 2100	87.8 2120	
76	72.7 2065	75.8 2086	80.6 2122	82.5 2140	84.5 2152	86.5 2167	88.8 2191	
78	73.5 2125	76.6 2149	81.4 2188	83.3 2205	85.3 2219	87.4 2238	89.8 2270	
79	73.8 2155	77.0 2181	81.7 2221	83.7 2237	85.7 2253	87.8 2273		

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
FUEL	+ 1 %	+ 5 %	+ 0.3 %

HOLDING

Ident.: PER-OEI-HLD-00002130.0024001 / 28 FEB 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

RACE TRACK HOLDING PATTERN - GREEN DOT SPEED - 1 ENGINE OUT

MAX. CRUISE THRUST LIMITS
CLEAN CONFIGURATION
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

N1 (%)
FF (KG/H)

WEIGHT (1000KG)	FL 15	FL 50	FL100	FL120	FL140	FL160	FL180	FL200
48	61.2 1573	63.7 1562	68.1 1553	69.7 1549	71.4 1545	73.2 1544	75.1 1544	77.1 1549
50	62.2 1637	64.8 1626	69.2 1617	70.8 1613	72.5 1610	74.4 1610	76.4 1611	78.2 1618
52	63.1 1701	65.9 1691	70.2 1681	71.9 1677	73.7 1676	75.6 1677	77.5 1682	79.4 1687
54	64.1 1766	67.0 1758	71.2 1745	73.0 1742	74.8 1742	76.8 1744	78.6 1751	80.6 1757
56	65.1 1831	68.1 1823	72.3 1810	74.0 1808	75.9 1809	77.8 1815	79.7 1820	81.5 1830
58	66.1 1896	69.2 1885	73.3 1875	75.1 1875	77.1 1877	78.9 1884	80.8 1890	82.4 1906
60	67.1 1963	70.2 1949	74.3 1941	76.1 1943	78.1 1947	79.9 1953	81.7 1963	83.4 1982
62	68.1 2027	71.0 2014	75.3 2009	77.2 2011	79.0 2017	80.9 2024	82.6 2038	84.3 2066
64	69.1 2090	71.9 2079	76.3 2077	78.2 2081	80.0 2087	81.9 2095	83.4 2114	85.2 2153
66	70.1 2153	72.8 2145	77.2 2146	79.1 2150	80.9 2158	82.7 2170	84.3 2193	
68	70.9 2217	73.7 2211	78.2 2215	80.0 2220	81.8 2229	83.5 2246	85.2 2278	
70	71.7 2284	74.6 2278	79.1 2283	80.8 2291	82.7 2302	84.3 2322		
72	72.5 2350	75.4 2346	79.9 2354	81.7 2363	83.4 2377	85.1 2402		
74	73.3 2417	76.3 2416	80.7 2426	82.6 2436	84.2 2454			
76	74.1 2486	77.1 2486	81.6 2499	83.4 2510	85.0 2531			

ENGINE ANTI ICE ON
△FF = + 3 %

TOTAL ANTI ICE ON
△FF = + 6 %

PER 1° ABOVE ISA
△FF = + 0.3 %

11.0-08F0A320-214 CFM56-5B4/P SA14300010C6KG330 0 018590 0 0 1 1.0 180.0 30.00 0 01 1.000 .000 .000 0 FCOM-N0-03-06-55-001-200

HOLDING

Ident.: PER-OEI-HLD-00002130.0012001 / 28 FEB 11

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

RACE TRACK HOLDING PATTERN AT GREEN DOT SPEED - 1 ENGINE OUT

MAX. CRUISE THRUST LIMITS
CLEAN CONFIGURATION
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

EPR
FF (KG/H)

WEIGHT (1000KG)	FL 15	FL 50	FL100	FL120	FL140	FL160	FL180	FL200
48	1.077 1582	1.094 1583	1.128 1578	1.144 1583	1.163 1591	1.184 1601	1.207 1595	1.234 1588
50	1.082 1653	1.100 1654	1.136 1650	1.153 1655	1.172 1663	1.194 1669	1.220 1658	1.248 1660
52	1.086 1723	1.106 1723	1.144 1720	1.162 1728	1.182 1740	1.205 1735	1.232 1727	1.263 1726
54	1.091 1795	1.112 1789	1.152 1793	1.171 1801	1.192 1810	1.217 1798	1.245 1798	1.278 1788
56	1.096 1868	1.119 1859	1.160 1866	1.180 1878	1.202 1876	1.228 1866	1.258 1865	1.293 1848
58	1.101 1938	1.125 1930	1.168 1940	1.189 1953	1.212 1940	1.240 1937	1.271 1927	1.308 1910
60	1.107 2006	1.132 1998	1.176 2015	1.198 2019	1.223 2005	1.251 2003	1.285 1988	1.324 1975
62	1.112 2074	1.138 2067	1.185 2093	1.207 2085	1.234 2076	1.264 2066	1.299 2049	1.340 2041
64	1.118 2142	1.145 2138	1.193 2164	1.217 2149	1.244 2141	1.276 2129	1.313 2112	1.357 2113
66	1.123 2210	1.151 2213	1.201 2232	1.227 2217	1.255 2207	1.289 2190	1.328 2178	
68	1.129 2279	1.158 2287	1.210 2297	1.236 2281	1.267 2270	1.302 2252	1.344 2248	
70	1.135 2348	1.164 2363	1.219 2361	1.246 2345	1.278 2333	1.315 2315		
72	1.140 2419	1.171 2438	1.228 2424	1.256 2411	1.290 2395	1.329 2385		
74	1.146 2496	1.178 2516	1.237 2486	1.267 2476	1.302 2457			
76	1.152 2573	1.185 2598	1.246 2552	1.278 2540				

ENGINE ANTI ICE ON
△FF = + 2 %

TOTAL ANTI ICE ON
△FF = + 4.5 %

PER 1° ABOVE ISA
△FF = + 0.3 %

10F -08F0A320-232 IAE V2527-A5 14300010C6KG330 0 018590 0 0 1 1.0 180.0 30.00 0 0 1.000 .000 .000 0 FCOM-N0-03-06-55-001-140

DESCENT - M.78/300KT

Ident.: PER-OEI-DES-10-00002135.0070001 / 20 DEC 16

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

DESCENT - M.78/300KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**MINIMUM RATE OF DESCENT 500FT/MIN**

	WEIGHT (1000KG)								
	70				90				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	IAS (KT)
390	40.6	1397	273	MCT				MCT	241
370	39.2	1364	262	MCT				MCT	252
350	37.7	1327	251	MCT	36.7	1335	244	MCT	264
330	36.3	1289	241	MCT	35.4	1302	235	MCT	277
310	34.9	1249	230	MCT	34.1	1265	225	MCT	289
290	33.5	1206	219	MCT	32.7	1222	214	MCT	300
270	31.5	1141	204	MCT	30.7	1157	199	MCT	300
250	29.1	1061	187	MCT	28.4	1081	182	MCT	300
230	26.0	950	165	MCT	25.7	982	163	MCT	300
220	24.0	874	151	V/S	24.0	915	151	MCT	300
210	22.0	799	137	V/S	22.0	836	137	V/S	300
200	20.0	725	124	V/S	20.0	757	124	V/S	300
190	18.0	651	111	V/S	18.0	679	111	V/S	300
180	16.0	578	98	V/S	16.0	602	98	V/S	300
170	14.0	504	85	V/S	14.0	526	85	V/S	300
160	12.0	431	72	V/S	12.0	449	72	V/S	300
150	10.0	358	60	V/S	10.0	373	60	V/S	300
140	8.0	285	47	V/S	8.0	297	47	V/S	300
100	0.0	0	0	V/S	0.0	0	0	V/S	300

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
FUEL	+ 1.9 %	+ 6.3 %	+ 0.2 %
TIME	+ 0.8 %	+ 0.2 %	-
DISTANCE	+ 0.9 %	+ 0.3 %	+ 0.2 %

DESCENT - M.78/300KT

Ident.: PER-OEI-DES-10-00002135.0064001 / 16 MAR 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

DESCENT - M.78/300KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**MINIMUM RATE OF DESCENT 500FT/MIN**

	WEIGHT (1000KG)								
	50				70				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	IAS (KT)
390	39.7	1290	266	MCT	40.3	1316	271	MCT	241
370	38.3	1263	255	MCT	39.0	1291	261	MCT	252
350	36.9	1234	245	MCT	37.6	1262	251	MCT	264
330	35.6	1205	236	MCT	36.3	1232	240	MCT	277
310	34.5	1175	227	MCT	35.0	1199	231	MCT	289
290	33.3	1143	218	MCT	33.6	1163	220	MCT	300
270	31.6	1094	205	MCT	31.7	1107	206	MCT	300
250	29.5	1028	189	MCT	29.4	1034	189	MCT	300
230	26.0	907	165	V/S	26.0	915	165	V/S	300
220	24.0	834	151	V/S	24.0	842	151	V/S	300
210	22.0	763	137	V/S	22.0	769	137	V/S	300
200	20.0	692	124	V/S	20.0	696	124	V/S	300
190	18.0	621	111	V/S	18.0	625	111	V/S	300
180	16.0	550	98	V/S	16.0	554	98	V/S	300
170	14.0	480	85	V/S	14.0	483	85	V/S	300
160	12.0	411	72	V/S	12.0	413	72	V/S	300
150	10.0	341	60	V/S	10.0	343	60	V/S	300
140	8.0	273	47	V/S	8.0	274	47	V/S	300
100	0.0	0	0	V/S	0.0	0	0	V/S	300

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
FUEL	+ 2 %	+ 4 %	+ 0.3 %
TIME	+ 1 %	-	-
DISTANCE	+ 1 %	+ 0.5 %	+ 0.2 %

DESCENT - M.78/300KT

Ident.: PER-OEI-DES-10-00002135.0009001 / 09 MAR 11

3 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

DESCENT - M.78/300KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

MINIMUM RATE OF DESCENT 500FT/MIN

WEIGHT (1000KG)	50				70				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	IAS (KT)
390	42.2	1416	285	MCT					241
370	40.3	1375	271	MCT	40.1	1365	269	MCT	252
350	38.4	1330	257	MCT	38.7	1330	259	MCT	264
330	36.7	1284	244	MCT	37.1	1291	247	MCT	277
310	35.1	1238	232	MCT	35.6	1248	235	MCT	289
290	33.6	1191	220	MCT	34.0	1198	223	MCT	300
270	31.5	1123	204	MCT	31.7	1124	206	MCT	300
250	28.9	1037	186	MCT	29.0	1033	186	MCT	300
230	25.8	929	164	MCT	25.8	922	163	MCT	300
220	24.0	863	151	MCT	24.0	857	151	MCT	300
210	22.0	790	137	V/S	22.0	784	137	V/S	300
200	20.0	717	124	V/S	20.0	711	124	V/S	300
190	18.0	645	111	V/S	18.0	639	111	V/S	300
180	16.0	573	98	V/S	16.0	567	98	V/S	300
170	14.0	501	85	V/S	14.0	495	85	V/S	300
160	12.0	430	72	V/S	12.0	424	72	V/S	300
150	10.0	358	60	V/S	10.0	354	60	V/S	300
140	8.0	287	47	V/S	8.0	283	47	V/S	300
100	.0	0	0	V/S	.0	0	0	V/S	300

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
TIME	– 1 %	– 2 %	–
FUEL	+ 1 %	+ 2 %	+ 0.25 %
DISTANCE	– 1 %	– 2 %	+ 0.25 %

10F -08F0A320-232 IAE V2527-A5 2320D0010C6KG330 0 018590 0 0 3 .0 .0 500.00 0 02 .780300.000 .000 0 FCOM-N0-03-06-30-003-140

DESCENT - M.78/300KT

Ident.: PER-OEI-DES-10-00002135.0020001 / 09 MAR 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

DESCENT - M.78/300KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

MINIMUM RATE OF DESCENT 500FT/MIN

WEIGHT (1000KG)	50				70				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	IAS (KT)
390	41.6	1408	280	MCT					241
370	39.8	1372	267	MCT	39.4	1386	264	MCT	252
350	38.1	1330	255	MCT	38.0	1353	253	MCT	264
330	36.5	1288	243	MCT	36.5	1315	243	MCT	277
310	35.1	1246	231	MCT	35.0	1274	231	MCT	289
290	33.6	1201	220	MCT	33.5	1226	219	MCT	300
270	31.5	1134	205	MCT	31.3	1156	203	MCT	300
250	29.1	1052	187	MCT	28.8	1072	185	MCT	300
230	26.0	942	165	MCT	25.9	967	164	MCT	300
220	24.0	867	151	V/S	24.0	896	151	V/S	300
210	22.0	793	137	V/S	22.0	818	137	V/S	300
200	20.0	719	124	V/S	20.0	741	124	V/S	300
190	18.0	645	111	V/S	18.0	665	111	V/S	300
180	16.0	572	98	V/S	16.0	589	98	V/S	300
170	14.0	499	85	V/S	14.0	514	85	V/S	300
160	12.0	427	72	V/S	12.0	439	72	V/S	300
150	10.0	355	60	V/S	10.0	365	60	V/S	300
140	8.0	283	47	V/S	8.0	291	47	V/S	300
100	.0	0	0	V/S	.0	0	0	V/S	300

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
TIME	– 0.3 %	– 1.5 %	–
FUEL	+ 2 %	+ 4 %	+ 0.3 %
DISTANCE	– 0.5 %	– 1.5 %	+ 0.2 %

11.0-08F0A320-214 CFM56-5B4/P SA2320001OC6KG330 0 018590 0 0 3 .0 .0 500.00 0 02 .780300.000 .000 0 FCOM-N0-03-06-30-003-200

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - ISA

Ident.: PER-OEI-DES-15-00002080.0068001 / 30 OCT 18

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**DISTANCE (NM) TIME (MIN)** **INITIAL SPEED (KT) FUEL (1000KG)** **LEVEL OFF (FT)**

INIT. GW (1000KG)	INITIAL FLIGHT LEVEL								
	230	250	270	290	310	330	350	370	390
64			104 19 214 0.6 26700	209 39 217 1.2 26900	252 46 220 1.4 27000	283 51 223 1.5 27100	307 55 225 1.6 27100	326 58 227 1.7 27200	343 60 229 1.7 27200
66			171 32 218 1.0 26000	233 43 221 1.3 26100	272 49 225 1.5 26200	300 54 228 1.6 26200	320 57 231 1.7 26300	339 60 232 1.8 26300	354 62 233 1.8 26300
68		51 10 217 0.3 24900	206 38 221 1.2 25200	255 47 225 1.5 25300	286 52 229 1.6 25400	312 56 233 1.7 25400	333 59 236 1.8 25500	349 62 236 1.8 25500	365 64 236 1.9 25500
70		118 22 220 0.7 24400	203 38 225 1.2 24600	246 45 230 1.4 24600	277 50 234 1.6 24700	302 54 237 1.7 24700	323 57 241 1.8 24700	340 60 240 1.8 24700	356 62 239 1.9 24800
72		147 27 225 0.9 23900	204 38 230 1.2 24000	241 44 234 1.4 24100	270 49 238 1.6 24100	291 52 241 1.6 24100	312 55 244 1.7 24200	328 57 244 1.8 24200	342 59 243 1.8 24200
74		165 31 230 1.0 23400	211 39 234 1.3 23500	242 44 239 1.4 23600	269 48 243 1.6 23600	290 51 245 1.7 23600	307 54 248 1.7 23600	323 56 247 1.8 23600	337 58 246 1.8 23700
76	67 12 231 0.4 22800	180 33 234 1.2 23000	217 39 239 1.4 23000	248 44 244 1.5 23000	271 48 247 1.6 23100	288 50 249 1.7 23100	307 53 251 1.7 23100	322 55 251 1.8 23100	335 57 250 1.8 23100
78	126 23 236 0.9 22400	192 35 239 1.3 22500	225 40 244 1.4 22500	250 44 248 1.5 22500	273 48 251 1.6 22600	292 51 253 1.7 22600	308 53 255 1.8 22600	323 55 254 1.8 22600	334 56 253 1.9 22600
80	152 28	202 36	232 41	257 45	277 48	295 51	310 53	323 55	

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 5.6 %	+ 7.3 %
TIME	+ 4 %	+ 5 %
DISTANCE	+ 4 %	+ 4.6 %
LEVEL OFF	+ 60 ft	- 240 ft

Continued on the following page

Continued from the previous page

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**DISTANCE (NM) TIME (MIN)** **INITIAL SPEED (KT) FUEL (1000KG)** **LEVEL OFF (FT)**

INIT. GW (1000KG)	INITIAL FLIGHT LEVEL 230	250	270	290	310	330	350	370	390
	240 1.0 21900	244 1.3 22000	248 1.5 22000	253 1.6 22100	256 1.7 22100	257 1.8 22100	258 1.8 22100	258 1.9 22100	
82	167 30 244 1.2 21500	208 37 249 1.4 21500	237 42 253 1.5 21500	261 45 257 1.7 21600	280 48 260 1.7 21600	297 51 260 1.8 21600	312 53 261 1.9 21600	324 54 260 1.9 21600	
84	181 32 249 1.3 21000	216 38 253 1.5 21100	243 43 257 1.6 21100	264 46 261 1.7 21100	283 49 264 1.8 21100	298 51 264 1.8 21100	313 53 264 1.9 21200	325 54 262 1.9 21200	
86	191 34 253 1.4 20600	224 39 258 1.5 20600	247 43 262 1.7 20600	269 46 266 1.8 20700	285 49 267 1.8 20700	301 51 267 1.9 20700	315 53 267 1.9 20700	325 54 264 2.0 20700	
88	200 35 257 1.4 20100	230 40 262 1.6 20200	253 44 266 1.7 20200	272 46 270 1.8 20200	288 49 271 1.9 20200	302 51 271 1.9 20200	317 53 270 2.0 20200	325 54 266 2.0 20300	
90	221 39 262 1.6 19600	248 43 267 1.8 19700	268 46 271 1.9 19700	286 49 274 1.9 19700	300 51 275 2.0 19700	316 53 274 2.1 19800	326 54 273 2.1 19800		
92	244 43 266 1.8 19100	266 46 271 1.9 19100	286 49 274 2.0 19100	303 51 278 2.1 19200	317 53 279 2.1 19200	331 55 277 2.2 19200	340 56 276 2.2 19200		
94	266 46 270 2.0 18400	292 50 275 2.1 18500	308 53 278 2.2 18500	327 55 281 2.3 18500	342 57 282 2.4 18500	354 59 281 2.4 18600	363 60 279 2.4 18600		
96	288 50 274 2.2 17800	309 53 279 2.3 17800	328 56 282 2.4 17800	344 58 284 2.5 17900	357 60 285 2.5 17900	370 62 284 2.6 17900	378 63 279 2.6 17900		
98	305 53 278 2.4	326 56 283 2.5	343 59 285 2.5	356 60 288 2.6	373 63 289 2.7	384 64 288 2.7			

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 5.6 %	+ 7.3 %
TIME	+ 4 %	+ 5 %
DISTANCE	+ 4 %	+ 4.6 %
LEVEL OFF	+ 60 ft	- 240 ft

Continued on the following page

Continued from the previous page

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**DISTANCE (NM) TIME (MIN)** **INITIAL SPEED (KT) FUEL (1000KG)** **LEVEL OFF (FT)**

INIT. GW (1000KG)	**INITIAL FLIGHT LEVEL**								
	230	**250**	**270**	**290**	**310**	**330**	**350**	**370**	**390**
	17100	17200	17200	17200	17200	17300			
100	322 56 282 2.5 16500	343 59 287 2.6 16500	360 61 289 2.7 16600	376 64 291 2.8 16600	388 65 292 2.8 16600	398 67 292 2.9 16600			

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 5.6 %	+ 7.3 %
TIME	+ 4 %	+ 5 %
DISTANCE	+ 4 %	+ 4.6 %
LEVEL OFF	+ 60 ft	- 240 ft

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - ISA

Ident.: PER-OEI-DES-15-00002080.0062001 / 16 MAR 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**DISTANCE (NM) TIME (MIN)** **INITIAL SPEED (KT) FUEL (1000KG)** **LEVEL OFF (FT)**

INIT. GW (1000KG)	**INITIAL FLIGHT LEVEL**								
	230	**250**	**270**	**290**	**310**	**330**	**350**	**370**	**390**
50						162 30 198 0.6 31900	219 40 200 0.8 32000	254 46 202 0.9 32000	278 50 204 1.0 32000
52					64 12 200 0.3 30800	193 35 202 0.8 31100	237 43 204 0.9 31100	265 48 206 1.0 31200	287 51 208 1.1 31200
54					152 28 204 0.6 30100	218 40 206 0.9 30200	253 46 208 1.0 30300	279 50 210 1.1 30300	298 53 212 1.2 30300
56					188 35 208 0.8 29300	235 43 210 1.0 29400	265 48 212 1.1 29500	289 52 214 1.2 29500	307 54 216 1.2 29500
58				136 25 210 0.6 28400	212 39 212 0.9 28600	251 46 214 1.1 28600	278 50 216 1.2 28600	297 53 218 1.2 28700	316 56 220 1.3 28700
60				182 33 214 0.9 27600	236 43 216 1.1 27700	269 48 218 1.2 27800	292 52 220 1.3 27800	312 55 222 1.3 27800	329 58 224 1.4 27900
62			108 20 216 0.5 26700	210 38 218 1.0 26900	254 46 220 1.2 26900	282 51 222 1.3 27000	303 54 224 1.4 27000	322 57 226 1.4 27000	338 59 228 1.5 27100
64			166 31 220 0.8 26000	231 42 222 1.1 26100	267 48 224 1.3 26200	292 52 226 1.4 26200	312 55 228 1.4 26200	330 58 230 1.5 26300	344 60 232 1.5 26300
66			168 31	228 41	268 48	301 54	321 57	338 59	353 61

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 8.5 %	+ 12 %
TIME	+ 4 %	+ 10 %
DISTANCE	+ 4 %	+ 9 %
LEVEL OFF	+ 70 ft	- 300 ft

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GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**DISTANCE (NM) TIME (MIN)** **INITIAL SPEED (KT) FUEL (1000KG)** **LEVEL OFF (FT)**

INIT. GW (1000KG)	INITIAL FLIGHT LEVEL 230	250	270	290	310	330	350	370	390
			224 0.9 25400	226 1.1 25400	228 1.3 25400	230 1.4 25500	232 1.5 25500	234 1.5 25500	236 1.6 25500
68		8 1 226 0.0 24900	143 26 228 0.7 25100	184 33 230 0.9 25100	214 38 232 1.0 25100	236 41 234 1.1 25100	255 44 236 1.2 25100	272 47 238 1.2 25100	287 49 240 1.3 25100
70		76 14 230 0.4 24500	167 30 232 0.9 24600	202 36 234 1.0 24700	227 40 236 1.1 24700	247 43 238 1.2 24700	263 45 240 1.3 24700	280 48 242 1.3 24800	293 50 244 1.3 24800
72		87 15 234 0.5 24000	182 32 236 1.0 24100	212 37 238 1.1 24200	236 41 240 1.2 24200	255 44 242 1.3 24200	271 46 244 1.3 24200	287 49 246 1.4 24200	299 50 248 1.4 24200
74		152 27 238 0.9 23600	192 34 240 1.1 23600	218 38 242 1.2 23700	241 42 244 1.3 23700	259 44 246 1.3 23700	275 47 248 1.4 23700	290 49 250 1.4 23700	
76	43 8 240 0.3 22900	166 29 242 1.0 23100	200 35 244 1.1 23100	225 39 246 1.2 23100	246 42 248 1.3 23200	262 44 250 1.4 23200	278 47 252 1.4 23200	293 49 254 1.5 23200	
78	109 19 244 0.7 22500	175 31 246 1.0 22600	206 36 248 1.2 22600	230 39 250 1.3 22600	250 42 252 1.4 22700	267 45 254 1.4 22700	280 47 256 1.5 22700	294 49 258 1.5 22700	
79	84 15 246 0.5 22200	183 32 248 1.1 22300	212 37 250 1.2 22400	234 40 252 1.3 22400	253 43 254 1.4 22400	267 45 256 1.4 22400	284 47 258 1.5 22400	296 49 260 1.5 22400	

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 8.5 %	+ 12 %
TIME	+ 4 %	+ 10 %
DISTANCE	+ 4 %	+ 9 %
LEVEL OFF	+ 70 ft	- 300 ft

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - ISA

Ident.: PER-OEI-DES-15-00002080.0022001 / 09 DEC 09

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED

MAX. CONTINUOUS THRUST
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

DISTANCE (NM) **TIME (MIN)**
INITIAL SPEED(KT) **FUEL(1000KG)**
LEVEL OFF (FT)

INIT. GW (1000KG)	INITIAL FLIGHT LEVEL 230	250	270	290	310	330	350	370	390
50					83 16 196 .4 30700	205 38 198 1.0 31000	253 47 200 1.2 31200	284 52 202 1.3 31200	308 56 204 1.4 31300
52					170 32 200 .9 29900	237 44 202 1.2 30000	273 51 204 1.3 30100	301 55 206 1.5 30200	322 58 208 1.5 30200
54				102 20 202 .6 28700	207 39 204 1.1 29000	255 48 206 1.3 29100	287 53 208 1.5 29200	311 57 210 1.5 29200	331 60 212 1.6 29200
56				174 33 206 1.0 27800	238 45 208 1.3 28000	276 51 210 1.5 28100	304 56 212 1.6 28200	324 59 214 1.6 28200	345 62 216 1.7 28200
58			111 21 208 .6 26600	215 41 210 1.2 26900	262 49 212 1.5 27000	294 55 214 1.6 27100	320 59 216 1.7 27200	339 62 218 1.8 27200	358 65 220 1.8 27200
60			179 34 212 1.1 25800	244 46 214 1.4 26000	283 53 216 1.6 26100	311 58 218 1.7 26100	334 61 220 1.8 26200	353 64 222 1.9 26200	369 67 224 1.9 26300
62			101 19 216 .6 25300	176 33 218 1.0 25400	220 41 220 1.2 25400	240 44 222 1.3 25400	267 48 224 1.4 25400	302 54 226 1.6 25400	321 57 228 1.7 25400
64			72 13 220 .4 25200	117 21 222 .7 25200	149 27 224 .8 25200	175 31 226 .9 25300	197 35 228 1.0 25300	216 37 230 1.1 25300	233 40 232 1.2 25300
66			61 11 224 .4 25100	98 18 226 .6 25100	126 22 228 .7 25100	149 26 230 .8 25100	169 29 232 .9 25100	187 32 234 .9 25100	203 34 236 1.0 25100
68		26 5 226 .2 24900	62 11 228 .4 25000	94 17 230 .5 25000	120 21 232 .7 25000	141 24 234 .8 25000	153 26 236 .8 25000	170 28 238 .8 25000	185 30 240 .9 25000
70		119 21 230 .8 24500	158 28 232 1.1 24600	182 32 234 1.2 24600	205 36 236 1.3 24600	222 39 238 1.3 24700	238 41 240 1.4 24700	253 43 242 1.4 24700	
72		153 27 234 1.1 23900	190 34 236 1.3 24000	214 38 238 1.4 24000	234 41 240 1.5 24100	252 44 242 1.6 24100	268 46 244 1.6 24100	284 48 246 1.7 24100	
74		178 32 238 1.3 23400	210 37 240 1.5 23400	232 41 242 1.6 23500	253 44 244 1.7 23500	270 47 246 1.7 23500	286 49 248 1.8 23500	300 51 250 1.8 23500	
76	106 19 240 .8 22600	196 35 242 1.4 22800	223 39 244 1.6 22900	246 43 246 1.7 22900	264 46 248 1.8 22900	280 48 250 1.8 22900	295 50 252 1.9 23000	311 52 254 1.9 23000	
78	145 26 244 1.1 22100	209 37 246 1.6 22300	236 41 248 1.7 22300	256 44 250 1.8 22300	274 47 252 1.9 22300	291 50 254 1.9 22400	306 52 256 2.0 22400		

CORRECTIONS	DISTANCE	TIME	FUEL	LEVEL OFF
ENGINE ANTI ICE ON	+ 3 %	+ 3 %	+ 7 %	– 100 FT
TOTAL ANTI ICE ON	+ 8 %	+ 8 %	+ 10 %	– 700 FT

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - ISA

Ident.: PER-OEI-DES-15-00002080.0009001 / 10 MAR 11

3 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
HIGH AIR CONDITIONING
ANTI ICE OFF

ISA
CG=33.0%

DISTANCE (NM) TIME (MIN)
INITIAL SPEED (KT) FUEL (1000KG)
LEVEL OFF (FT)

INIT. GW (1000KG)	INITIAL FLIGHT LEVEL								
	230	250	270	290	310	330	350	370	390
50					154 30 191 0.8 30000	215 42 193 1.0 30100	251 48 195 1.2 30100	278 53 197 1.3 30200	300 57 199 1.3 30200
52				97 19 193 0.5 28700	208 41 195 1.1 29000	252 49 197 1.2 29100	282 54 199 1.4 29200	305 58 201 1.4 29200	325 61 203 1.5 29300
54				172 34 197 0.9 27900	238 47 199 1.2 28000	274 53 201 1.4 28100	301 58 203 1.5 28200	321 61 205 1.6 28200	341 64 207 1.6 28200
56			55 11 199 0.3 26700	203 40 201 1.1 26900	258 51 203 1.4 27000	289 56 205 1.5 27100	315 60 207 1.6 27200	336 64 209 1.7 27200	352 66 211 1.7 27200
58			102 20 203 0.6 26400	171 33 205 1.0 26500	214 41 207 1.2 26500	244 47 209 1.3 26500	268 51 211 1.4 26500	287 54 213 1.4 26600	306 57 215 1.5 26600
60			116 23 207 0.7 26000	166 32 209 0.9 26000	201 38 211 1.1 26100	227 43 213 1.2 26100	249 47 215 1.3 26100	268 50 217 1.4 26100	284 52 219 1.4 26100
62			124 24 211 0.7 25600	165 31 213 1.0 25700	195 37 215 1.1 25700	218 41 217 1.2 25700	239 44 219 1.3 25700	256 47 221 1.3 25700	272 49 223 1.4 25800
64			128 24 215 0.8 25300	165 31 217 1.0 25300	192 36 219 1.1 25400	214 39 221 1.2 25400	232 42 223 1.3 25400	249 45 225 1.3 25400	264 47 227 1.4 25400
66		51 10 217 0.3 24900	134 25 219 0.8 25000	165 31 221 1.0 25000	188 35 223 1.1 25000	210 38 225 1.2 25000	226 41 227 1.2 25100	242 43 229 1.3 25100	257 45 231 1.3 25100
68		129 24 221 0.9 24400	182 34 223 1.2 24500	207 38 225 1.3 24500	228 42 227 1.4 24600	246 45 229 1.5 24600	261 47 231 1.5 24600	277 49 233 1.5 24600	290 51 235 1.6 24600
70		162 30 225 1.1 23800	206 38 227 1.4 23900	230 42 229 1.5 23900	250 46 231 1.6 24000	268 48 233 1.6 24000	282 50 235 1.7 24000	298 53 237 1.7 24000	
72	38 7 227 0.3 22900	185 34 229 1.3 23200	223 41 231 1.5 23300	245 45 233 1.6 23300	265 48 235 1.7 23400	282 51 237 1.7 23400	296 53 239 1.8 23400	310 55 241 1.8 23400	
74	122 23 231 0.9 22500	205 38 233 1.4 22700	236 43 235 1.6 22700	257 47 237 1.7 22700	275 49 239 1.8 22800	293 52 241 1.9 22800	307 54 243 1.9 22800	321 56 245 1.9 22800	
76	159 29 235 1.2 22000	220 40 237 1.6 22100	249 45 239 1.7 22100	268 48 241 1.8 22200	286 51 243 1.9 22200	300 53 245 1.9 22200	316 56 247 2.0 22200	331 58 249 2.0 22200	
78	205 38 239 1.5 21300	252 46 241 1.8 21400	277 50 243 2.0 21500	295 53 245 2.0 21500	312 55 247 2.1 21500	326 58 249 2.2 21600	339 59 251 2.2 21600		

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 14 %	+ 28 %
TIME	+ 13 %	+ 26 %
DISTANCE	+ 12 %	+ 23 %
LEVEL OFF	- 700 ft	- 1800 ft

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - ISA +20

Ident.: PER-OEI-DES-15-00002088.0068001 / 30 OCT 18

[4] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH NORMAL AIR CONDITIONING ANTI ICE OFF	ISA+20 CG=33.0%	DISTANCE (NM) TIME (MIN) INITIAL SPEED (KT) FUEL (1000KG) LEVEL OFF (FT)

INIT. GW (1000KG)	INITIAL FLIGHT LEVEL								
	230	250	270	290	310	330	350	370	390
64		74 14 211 0.4 24700	208 39 214 1.2 25000	258 47 217 1.4 25000	291 53 220 1.5 25100	317 57 223 1.6 25100	339 60 225 1.7 25200	357 63 227 1.8 25200	373 65 229 1.8 25200
66		137 26 214 0.8 24200	210 39 218 1.2 24400	250 46 221 1.4 24400	282 51 225 1.5 24500	304 54 228 1.6 24500	326 58 231 1.7 24500	344 60 232 1.7 24500	360 62 233 1.8 24500
68		163 30 217 1.0 23700	218 40 221 1.3 23800	255 46 225 1.4 23800	282 51 229 1.6 23900	304 54 233 1.6 23900	324 57 236 1.7 23900	339 59 236 1.8 23900	354 61 236 1.8 24000
70	35 6 218 0.2 22900	183 34 220 1.1 23200	227 41 225 1.3 23200	260 47 230 1.5 23300	285 51 234 1.6 23300	306 54 237 1.7 23300	324 57 241 1.7 23400	340 59 240 1.8 23400	354 61 239 1.8 23400
72	90 17 222 0.6 22500	198 36 225 1.2 22700	236 43 230 1.4 22700	265 48 234 1.6 22700	288 51 238 1.6 22800	308 54 241 1.7 22800	326 57 244 1.8 22800	341 59 244 1.8 22800	356 61 243 1.9 22800
74	102 19 227 0.7 22000	211 38 230 1.3 22100	244 44 234 1.5 22200	269 48 239 1.6 22200	292 51 243 1.7 22200	311 54 245 1.8 22300	327 56 248 1.8 22300	342 58 247 1.9 22300	
76	173 31 231 1.1 21600	221 40 234 1.4 21600	250 45 239 1.6 21700	275 49 244 1.7 21700	296 52 247 1.7 21700	313 54 249 1.8 21700	330 56 251 1.9 21800	344 58 251 1.9 21800	
78	188 34 236 1.3 21100	228 41 239 1.5 21100	257 45 244 1.6 21200	280 49 248 1.7 21200	298 51 251 1.8 21200	315 54 253 1.8 21200	332 56 255 1.9 21300	346 58 254 2.0 21300	
80	202 36	236 42	263 46	284 49	303 52	320 54	334 56	346 58	

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 6.3 %	+ 17.5 %
TIME	+ 6.4 %	+ 19 %
DISTANCE	+ 5.9 %	+ 14.7 %
LEVEL OFF	- 270 ft	- 2900 ft

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GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH NORMAL AIR CONDITIONING ANTI ICE OFF	ISA+20 CG=33.0%	**DISTANCE (NM) TIME (MIN)** **INITIAL SPEED (KT) FUEL (1000KG)** **LEVEL OFF (FT)**

INIT. GW (1000KG)	INITIAL FLIGHT LEVEL 230	250	270	290	310	330	350	370	390
	240 1.4 20600	244 1.6 20700	248 1.7 20700	253 1.8 20700	256 1.8 20700	257 1.9 20800	258 2.0 20800	258 2.0 20800	
82	212 38 244 1.5 20200	244 43 249 1.6 20200	267 46 253 1.7 20200	289 50 257 1.8 20300	307 52 260 1.9 20300	322 54 260 2.0 20300	337 56 261 2.0 20300	350 58 260 2.0 20300	
84	244 43 249 1.7 19600	272 48 253 1.9 19700	291 51 257 1.9 19700	311 53 261 2.0 19700	327 56 264 2.1 19800	342 58 264 2.1 19800	355 59 264 2.2 19800		
86	275 48 253 2.0 19000	301 53 258 2.1 19000	320 55 262 2.2 19000	339 58 266 2.2 19100	356 60 267 2.3 19100	367 62 267 2.3 19100	383 64 267 2.4 19100		
88	294 52 257 2.1 18300	318 55 262 2.2 18300	339 59 266 2.3 18400	356 61 270 2.4 18400	373 63 271 2.5 18400	387 65 271 2.5 18400	399 67 270 2.5 18400		
90	312 55 262 2.3 17600	335 58 267 2.4 17600	354 61 271 2.5 17700	369 63 274 2.5 17700	385 65 275 2.6 17700	399 67 274 2.6 17700	411 68 273 2.7 17700		
92	327 57 266 2.4 16900	349 60 271 2.5 16900	366 63 274 2.6 17000	383 65 278 2.7 17000	398 67 279 2.7 17000	411 69 277 2.8 17000			
94	343 60 270 2.6 16200	362 63 275 2.7 16300	380 65 278 2.7 16300	397 68 281 2.8 16300	412 70 282 2.9 16300	424 71 281 2.9 16300			
96	356 62 274 2.7 15500	375 65 279 2.8 15600	392 67 282 2.9 15600	408 69 284 2.9 15600	423 71 285 3.0 15600	435 73 284 3.0 15700			
98	374 65 278 2.9	393 68 283 3.0	410 71 285 3.1	425 72 288 3.1	439 74 289 3.2				

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 6.3 %	+ 17.5 %
TIME	+ 6.4 %	+ 19 %
DISTANCE	+ 5.9 %	+ 14.7 %
LEVEL OFF	- 270 ft	- 2900 ft

Continued on the following page

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GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH NORMAL AIR CONDITIONING ANTI ICE OFF	ISA+20 CG=33.0%	**DISTANCE (NM) TIME (MIN)** **INITIAL SPEED (KT) FUEL (1000KG)** **LEVEL OFF (FT)**

INIT. GW (1000KG)	**INITIAL FLIGHT LEVEL**								
	230	**250**	**270**	**290**	**310**	**330**	**350**	**370**	**390**
	14800	14900	14900	14900	14900				
100	387 68 282 3.0 14100	406 70 287 3.1 14100	422 73 289 3.2 14100	437 75 291 3.3 14100	451 76 292 3.3 14200				

CORRECTIONS	**ENGINE ANTI ICE ON**	**TOTAL ANTI ICE ON**
FUEL	+ 6.3 %	+ 17.5 %
TIME	+ 6.4 %	+ 19 %
DISTANCE	+ 5.9 %	+ 14.7 %
LEVEL OFF	- 270 ft	- 2900 ft

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - ISA +20

Ident.: PER-OEI-DES-15-00002088.0062001 / 16 MAR 15

5 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA+20 CG=33.0%	**DISTANCE (NM) TIME (MIN)** **INITIAL SPEED (KT) FUEL (1000KG)** **LEVEL OFF (FT)**

INIT. GW (1000KG)	INITIAL FLIGHT LEVEL								
	230	250	270	290	310	330	350	370	390
50					175 32 196 0.7 29900	236 43 198 0.9 30000	271 49 200 1.0 30000	297 53 202 1.1 30100	319 57 204 1.2 30100
52				87 16 198 0.4 28800	211 39 200 0.9 29000	257 47 202 1.0 29100	287 52 204 1.1 29100	310 55 206 1.2 29200	330 58 208 1.2 29200
54				168 31 202 0.7 28100	236 43 204 1.0 28200	273 50 206 1.1 28200	299 54 208 1.2 28300	321 57 210 1.3 28300	339 60 212 1.3 28300
56			42 8 204 0.2 26900	207 38 206 0.9 27200	256 47 208 1.1 27300	288 52 210 1.2 27400	312 56 212 1.3 27400	332 59 214 1.4 27400	349 61 216 1.4 27400
58			154 28 208 0.7 26300	233 43 210 1.1 26400	273 50 212 1.2 26500	300 54 214 1.3 26500	323 58 216 1.4 26600	341 60 218 1.4 26600	358 63 220 1.5 26600
60			198 37 212 1.0 25500	254 46 214 1.2 25600	286 52 216 1.3 25700	313 56 218 1.4 25700	333 59 220 1.5 25700	352 62 222 1.5 25700	367 64 224 1.5 25800
62			156 28 216 0.8 25100	204 37 218 1.0 25100	237 42 220 1.1 25100	262 46 222 1.2 25200	283 50 224 1.2 25200	301 52 226 1.3 25200	317 55 228 1.3 25200
64		81 15 218 0.4 24600	178 32 220 0.9 24700	214 38 222 1.0 24700	240 43 224 1.1 24800	261 46 226 1.2 24800	279 48 228 1.3 24800	295 51 230 1.3 24800	309 52 232 1.3 24800
66		94 17	196 35	227 40	253 44	273 48	290 50	306 52	321 54

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 12 %	+ 17.5 %
TIME	+ 3.5 %	+ 18 %
DISTANCE	+ 3 %	+ 14.5 %
LEVEL OFF	- 300 ft	- 1900 ft

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GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA+20 CG=33.0%	**DISTANCE (NM) TIME (MIN)** **INITIAL SPEED (KT) FUEL (1000KG)** **LEVEL OFF (FT)**

INIT. GW (1000KG)	INITIAL FLIGHT LEVEL 230	250	270	290	310	330	350	370	390
		222 0.5 24000	224 1.0 24200	226 1.1 24200	228 1.2 24200	230 1.3 24200	232 1.3 24200	234 1.4 24300	236 1.4 24300
68		166 30 226 0.9 23600	209 37 228 1.1 23600	238 42 230 1.2 23700	261 45 232 1.3 23700	280 48 234 1.3 23700	296 51 236 1.4 23700	312 53 238 1.4 23700	
70	55 10 228 0.3 22900	182 32 230 1.0 23000	218 38 232 1.2 23100	244 43 234 1.3 23100	266 46 236 1.3 23100	284 49 238 1.4 23200	300 51 240 1.4 23200	315 53 242 1.5 23200	
72	122 22 232 0.7 22400	194 34 234 1.1 22500	226 39 236 1.2 22600	249 43 238 1.3 22600	269 46 240 1.4 22600	288 49 242 1.4 22600	303 51 244 1.5 22600	318 53 246 1.5 22700	
74	151 27 236 0.9 22000	204 36 238 1.2 22000	232 40 240 1.3 22100	255 44 242 1.4 22100	274 47 244 1.4 22100	291 49 246 1.5 22100	305 51 248 1.5 22100	320 53 250 1.6 22100	
76	193 34 240 1.2 21400	234 41 242 1.4 21400	260 45 244 1.5 21500	280 48 246 1.5 21500	298 51 248 1.6 21500	314 53 250 1.6 21500	328 55 252 1.7 21500		
78	216 38 244 1.3 20700	251 43 246 1.5 20800	275 47 248 1.6 20800	296 50 250 1.7 20800	313 53 252 1.7 20800	327 55 254 1.8 20900	342 57 256 1.8 20900		
79	223 39 246 1.4 20400	258 44 248 1.5 20400	279 48 250 1.6 20500	301 51 252 1.7 20500	315 53 254 1.7 20500	333 56 256 1.8 20500	347 58 258 1.8 20500		

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 12 %	+ 17.5 %
TIME	+ 3.5 %	+ 18 %
DISTANCE	+ 3 %	+ 14.5 %
LEVEL OFF	- 300 ft	- 1900 ft

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - ISA +20

Ident.: PER-OEI-DES-15-00002088.0022001 / 22 MAR 17

Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED

MAX. CONTINUOUS THRUST — ISA+20 — **DISTANCE (NM)** — **TIME (MIN)**
PACK FLOW HI — CG=33.0% — **INITIAL SPEED(KT)** — **FUEL(1000KG)**
ANTI-ICING OFF — **LEVEL OFF (FT)**

INIT. GW (1000KG)	INITIAL FLIGHT LEVEL 230	250	270	290	310	330	350	370	390
50				119 23 194 .6 28600	224 42 196 1.1 28900	273 51 198 1.3 29000	307 57 200 1.5 29100	333 61 202 1.5 29100	354 64 204 1.6 29200
52				191 36 198 1.0 27700	255 48 200 1.3 27900	295 55 202 1.5 27900	324 60 204 1.6 28000	348 63 206 1.7 28100	368 66 208 1.7 28100
54			138 27 200 .8 26400	231 44 202 1.2 26700	280 53 204 1.5 26800	314 58 206 1.6 26900	339 62 208 1.7 26900	362 66 210 1.8 27000	381 69 212 1.8 27000
56			200 38 204 1.1 25500	262 50 206 1.4 25700	301 56 208 1.6 25800	330 61 210 1.7 25800	353 65 212 1.8 25900	374 68 214 1.9 25900	392 71 216 1.9 26000
58			96 18 208 .5 25200	152 28 210 .8 25300	212 39 212 1.1 25300	243 44 214 1.3 25300	268 48 216 1.4 25300	291 52 218 1.4 25300	309 54 220 1.5 25300
60			74 14 212 .4 25100	118 21 214 .6 25100	150 27 216 .8 25100	176 31 218 .9 25100	198 35 220 1.0 25100	218 38 222 1.0 25100	236 40 224 1.1 25100
62		26 5 214 .2 24900	64 12 216 .4 25000	100 18 218 .5 25000	128 23 220 .7 25000	152 26 222 .8 25000	173 30 224 .8 25000	191 32 226 .9 25000	208 35 228 .9 25000
64		121 22 218 .8 24500	165 30 220 1.0 24500	194 35 222 1.2 24600	214 38 224 1.2 24600	234 41 226 1.3 24600	253 44 228 1.4 24700	268 46 230 1.4 24700	
66		159 29 222 1.1 23900	197 35 224 1.2 24000	223 40 226 1.4 24000	245 43 228 1.5 24000	265 46 230 1.5 24100	281 49 232 1.6 24100	299 51 234 1.6 24100	
68	11 2 224 .1 22900	183 33 226 1.2 23300	216 39 228 1.4 23400	240 43 230 1.5 23400	260 46 232 1.6 23400	281 49 234 1.7 23500	296 51 236 1.7 23500	313 53 238 1.8 23500	
70	92 17 228 .7 22500	201 36 230 1.4 22700	230 41 232 1.5 22800	253 45 234 1.6 22800	273 48 236 1.7 22800	291 50 238 1.8 22900	308 53 240 1.8 22900	323 55 242 1.9 22900	
72	153 27 232 1.1 22000	215 38 234 1.5 22100	242 43 236 1.6 22200	263 46 238 1.7 22200	282 49 240 1.8 22200	298 51 242 1.9 22300	316 54 244 1.9 22300		
74	177 31 236 1.3 21500	227 40 238 1.6 21600	251 44 240 1.7 21600	272 47 242 1.8 21600	289 50 244 1.9 21700	307 52 246 1.9 21700	324 55 248 2.0 21700		
76	195 34 240 1.4 20900	237 41 242 1.7 21000	260 45 244 1.8 21100	279 48 246 1.9 21100	297 51 248 2.0 21100	314 53 250 2.0 21100	328 55 252 2.1 21100		
78	210 37 244 1.6 20400	245 43 246 1.8 20500	267 46 248 1.9 20500	287 49 250 2.0 20500	303 51 252 2.0 20500	320 54 254 2.1 20600	335 56 256 2.1 20600		

CORRECTIONS	**DISTANCE**	**TIME**	**FUEL**	**LEVEL OFF**
ENGINE ANTI ICE ON	+ 3 %	+ 3 %	+ 7 %	– 100 FT
TOTAL ANTI ICE ON	+ 8 %	+ 8 %	+ 10 %	– 700 FT

- For LONG RANGE CRUISE table *Refer to PER-OEI-CRT-10 LONG RANGE CRUISE - 1 ENGINE OUT - ISA*
- For IN CRUISE QUICK CHECK *Refer to QRH/PER-L In Cruise Quick Check Long Range (Paper Only)* or use the performance application of FlySmart with Airbus.

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - ISA +20

Ident.: PER-OEI-DES-15-00002088.0009001 / 22 MAR 17

6 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

GROSS FLIGHT PATH DESCENT AT GREEN DOT SPEED - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
HIGH AIR CONDITIONING
ANTI ICE OFF

ISA+20
CG=33.0%

DISTANCE (NM) **TIME (MIN)**
INITIAL SPEED (KT) **FUEL (1000KG)**
LEVEL OFF (FT)

INIT. GW (1000KG)	INITIAL FLIGHT LEVEL								
	230	250	270	290	310	330	350	370	390
50				160 32 189 0.8 28000	231 45 191 1.1 28200	273 53 193 1.3 28300	303 58 195 1.4 28400	328 62 197 1.5 28400	349 65 199 1.6 28500
52			53 10 191 0.3 26800	207 41 193 1.1 27000	258 50 195 1.3 27100	293 57 197 1.5 27200	320 61 199 1.6 27200	342 65 201 1.6 27300	361 68 203 1.7 27300
54			63 12 195 0.3 26300	168 33 197 0.9 26400	213 41 199 1.1 26500	245 47 201 1.2 26500	271 51 203 1.3 26500	292 54 205 1.4 26600	313 58 207 1.5 26600
56			114 22 199 0.6 26000	165 32 201 0.9 26000	200 38 203 1.0 26100	228 43 205 1.2 26100	251 47 207 1.2 26100	271 50 209 1.3 26100	290 53 211 1.4 26100
58			123 24 203 0.7 25600	163 31 205 0.9 25600	193 36 207 1.0 25700	218 41 209 1.1 25700	241 44 211 1.2 25700	260 47 213 1.3 25700	277 50 215 1.3 25700
60			130 25 207 0.8 25300	164 31 209 0.9 25300	192 36 211 1.0 25300	214 39 213 1.1 25300	234 43 215 1.2 25300	252 45 217 1.3 25400	268 47 219 1.3 25400
62		62 12 209 0.4 24800	133 25 211 0.8 25000	164 30 213 0.9 25000	187 34 215 1.0 25000	209 38 217 1.1 25000	228 41 219 1.2 25000	246 44 221 1.2 25000	261 46 223 1.3 25000
64		139 26 213 0.9 24300	190 35 215 1.2 24400	215 40 217 1.3 24400	236 43 219 1.4 24500	254 46 221 1.4 24500	270 48 223 1.5 24500	287 51 225 1.5 24500	302 53 227 1.6 24500
66		174 32 217 1.1 23700	216 40 219 1.4 23800	239 44 221 1.5 23800	259 47 223 1.5 23800	278 50 225 1.6 23900	294 52 227 1.7 23900	309 55 229 1.7 23900	
68	77 14 219 0.5 22800	198 37 221 1.3 23100	233 43 223 1.5 23100	256 47 225 1.6 23200	275 50 227 1.7 23200	293 52 229 1.7 23200	308 55 231 1.8 23200	322 57 233 1.8 23300	
70	140 26 223 1.0 22300	216 40 225 1.5 22500	248 45 227 1.6 22500	269 49 229 1.7 22600	286 51 231 1.8 22600	304 54 233 1.8 22600	319 56 235 1.9 22600	334 58 237 1.9 22600	
72	186 34 227 1.3 21700	238 43 229 1.6 21800	264 48 231 1.8 21900	282 51 233 1.8 21900	296 53 235 1.9 22000	314 55 237 1.9 22000	329 58 239 2.0 22000		
74	225 41 231 1.6 21000	270 49 233 1.9 21100	296 53 235 2.0 21100	316 57 237 2.1 21200	332 59 239 2.2 21200	345 61 241 2.2 21200	359 63 243 2.2 21200		
76	252 46 235 1.8 20200	294 53 237 2.1 20300	317 57 239 2.2 20400	335 60 241 2.3 20400	350 62 243 2.3 20400	365 64 245 2.4 20400	381 66 247 2.4 20400		
78	281 51 239 2.1 19400	315 57 241 2.3 19500	337 60 243 2.4 19500	355 63 245 2.5 19600	370 65 247 2.5 19600	384 67 249 2.6 19600			

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON
FUEL	+ 14 %	+ 28 %
TIME	+ 13 %	+ 26 %
DISTANCE	+ 12 %	+ 23 %
LEVEL OFF	- 700 ft	- 1800 ft

- For LONG RANGE CRUISE table *Refer to PER-OEI-CRT-10 LONG RANGE CRUISE - 1 ENGINE OUT - ISA*
- For IN CRUISE QUICK CHECK *Refer to QRH/PER-L In Cruise Quick Check Long Range (Paper Only)* or use the performance application of FlySmart with Airbus.

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DESCENT - M.80/350KT

Ident.: PER-OEI-DES-20-00002136.0070001 / 20 DEC 16

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

DESCENT - M.80/350KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**MINIMUM RATE OF DESCENT 500FT/MIN**

	WEIGHT (1000KG)								
	70				90				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	IAS (KT)
390	28.3	1208	210	MCT				MCT	248
370	27.1	1180	200	MCT				MCT	260
350	25.8	1149	191	MCT	26.0	1161	192	MCT	272
330	24.6	1117	182	MCT	24.9	1133	184	MCT	284
310	23.5	1084	173	MCT	23.8	1101	176	MCT	297
290	22.4	1050	164	MCT	22.7	1067	167	MCT	311
270	21.4	1016	156	MCT	21.6	1031	158	MCT	324
250	20.4	983	148	MCT	20.6	995	150	MCT	338
230	19.4	946	140	MCT	19.5	954	141	MCT	350
220	18.7	916	135	MCT	18.7	922	135	MCT	350
210	17.9	881	128	MCT	17.8	883	128	MCT	350
200	16.9	838	121	MCT	16.8	838	120	MCT	350
190	15.8	788	112	MCT	15.7	785	111	MCT	350
180	14.6	731	103	MCT	14.4	726	102	MCT	350
170	13.3	666	93	MCT	13.0	660	92	MCT	350
160	11.7	591	82	MCT	11.5	586	80	MCT	350
150	10.0	503	69	MCT	9.9	502	68	MCT	350
140	8.0	402	55	V/S	8.0	407	55	MCT	350
100	0.0	0	0	V/S	0.0	0	0	V/S	350

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
FUEL	+ 3.2 %	+ 5 %	- 0.7 %
TIME	+ 1.8 %	+ 0.4 %	- 0.8 %
DISTANCE	+ 1.8 %	+ 0.4 %	- 0.6 %

DESCENT - M.80/350KT

Ident.: PER-OEI-DES-20-00002136.0064001 / 16 MAR 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

DESCENT - M.80/350KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**MINIMUM RATE OF DESCENT 500FT/MIN**

	WEIGHT (1000KG)								
	50				70				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	IAS (KT)
390	23.6	962	174	MCT	26.5	1078	196	MCT	248
370	22.4	939	165	MCT	25.4	1057	188	MCT	260
350	21.2	915	156	MCT	24.2	1033	179	MCT	272
330	20.2	891	148	MCT	23.1	1007	170	MCT	284
310	19.2	867	141	MCT	22.0	979	162	MCT	297
290	18.4	843	134	MCT	20.9	950	153	MCT	311
270	17.6	820	128	MCT	20.0	921	146	MCT	324
250	16.8	796	122	MCT	19.0	891	138	MCT	338
230	16.1	768	116	MCT	18.0	854	130	MCT	350
220	15.5	744	111	MCT	17.3	825	124	MCT	350
210	14.8	717	106	MCT	16.5	790	118	MCT	350
200	14.1	687	100	MCT	15.6	753	111	MCT	350
190	13.3	653	94	MCT	14.6	711	104	MCT	350
180	12.5	615	88	MCT	13.6	664	96	MCT	350
170	11.5	570	80	MCT	12.4	610	87	MCT	350
160	10.4	518	72	MCT	11.1	548	77	MCT	350
150	9.1	458	63	MCT	9.6	478	66	MCT	350
140	7.7	387	53	MCT	7.9	396	54	MCT	350
100	0.0	0	0	V/S	0.0	0	0	V/S	350

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
FUEL	+ 5 %	+ 4 %	- 2 %
TIME	+ 3.5 %	+ 0.5 %	- 1.5 %
DISTANCE	+ 3.5 %	+ 0.5 %	- 1 %

DESCENT - M.80/350KT

Ident.: PER-OEI-DES-20-00002136.0023001 / 22 FEB 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

DESCENT - M.80/350KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

MINIMUM RATE OF DESCENT 500FT/MIN

WEIGHT (1000KG)	50				70				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	IAS (KT)
390	24.8	1011	183	MCT					248
370	23.3	980	172	MCT	25.3	1060	188	MCT	260
350	21.9	946	162	MCT	24.1	1030	178	MCT	272
330	20.6	911	151	MCT	22.8	998	169	MCT	284
310	19.4	876	142	MCT	21.6	962	159	MCT	297
290	18.3	842	133	MCT	20.4	924	149	MCT	311
270	17.3	809	126	MCT	19.2	886	140	MCT	324
250	16.4	778	119	MCT	18.1	849	131	MCT	338
230	15.6	749	112	MCT	17.1	811	123	MCT	350
220	15.1	728	108	MCT	16.4	785	118	MCT	350
210	14.5	705	103	MCT	15.6	756	112	MCT	350
200	13.8	679	98	MCT	14.8	724	105	MCT	350
190	13.2	651	93	MCT	14.0	689	99	MCT	350
180	12.4	620	87	MCT	13.1	651	92	MCT	350
170	11.5	582	81	MCT	12.1	607	84	MCT	350
160	10.5	534	73	MCT	10.9	551	76	MCT	350
150	9.2	473	64	MCT	9.4	483	65	MCT	350
140	7.8	399	53	MCT	7.8	402	54	MCT	350
100	.0	0	0	V/S	.0	0	0	V/S	350

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
TIME	– 1.5 %	– 4.5 %	–
FUEL	+ 0.5 %	–	+ 0.3 %
DISTANCE	– 1.5 %	– 5 %	+ 0.3 %

11.0-08F0A320-214 CFM56-5B4/P SA23200010C6KG330 0 018590 0 0 3 .0 .0 500.00 0 02 .800350.000 .000 0 FCOM-N0-03-06-50-003-200

DESCENT - M.80/350KT

Ident.: PER-OEI-DES-20-00002136.0012001 / 22 FEB 11

3 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

DESCENT - M.80/350KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

MINIMUM RATE OF DESCENT 500FT/MIN

WEIGHT (1000KG)	50				70				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	IAS (KT)
390	27.1	1150	200	MCT					248
370	25.6	1116	189	MCT	28.1	1214	208	MCT	260
350	24.0	1079	177	MCT	26.9	1186	199	MCT	272
330	22.7	1043	167	MCT	25.6	1153	189	MCT	284
310	21.5	1007	157	MCT	24.4	1117	179	MCT	297
290	20.4	973	149	MCT	23.1	1079	170	MCT	311
270	19.4	942	141	MCT	21.9	1040	160	MCT	324
250	18.6	913	134	MCT	20.9	1003	152	MCT	338
230	17.8	885	128	MCT	19.9	966	143	MCT	350
220	17.3	866	124	MCT	19.2	941	138	MCT	350
210	16.7	842	119	MCT	18.4	909	132	MCT	350
200	16.0	811	114	MCT	17.4	869	124	MCT	350
190	15.1	772	107	MCT	16.3	819	116	MCT	350
180	14.1	724	99	MCT	15.1	760	106	MCT	350
170	12.9	665	90	MCT	13.6	687	95	MCT	350
160	11.5	593	80	MCT	11.9	602	83	MCT	350
150	9.9	512	68	MCT	10.0	507	69	MCT	350
140	8.0	416	55	V/S	8.0	405	55	V/S	350
100	.0	0	0	V/S	.0	0	0	V/S	350

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
TIME	– 5 %	– 12 %	–
FUEL	– 5 %	– 12 %	+ 0.2 %
DISTANCE	– 5 %	– 12 %	+ 0.2 %

10F -08F0A320-232 IAE V2527-A5 23200010C6KG330 0 018590 0 0 3 .0 .0 500.00 0 02 .800350.000 .000 0 FCOM-N0-03-06-50-003-140

DESCENT - M.78/320KT

Ident.: PER-OEI-DES-20-00002137.0070001 / 20 DEC 16

[4] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

DESCENT - M.78/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**MINIMUM RATE OF DESCENT 500FT/MIN**

	WEIGHT (1000KG)								
	70				90				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	IAS (KT)
390	36.6	1390	256	MCT				MCT	241
370	35.2	1357	246	MCT				MCT	252
350	33.7	1321	235	MCT	33.3	1332	232	MCT	264
330	32.3	1282	224	MCT	32.1	1299	223	MCT	277
310	30.9	1243	213	MCT	30.8	1262	213	MCT	289
290	29.6	1203	203	MCT	29.5	1222	203	MCT	302
270	28.3	1162	194	MCT	28.2	1180	193	MCT	315
250	26.8	1109	182	MCT	26.6	1124	180	MCT	320
230	24.7	1033	166	MCT	24.4	1045	164	MCT	320
220	23.5	982	157	MCT	23.2	995	155	MCT	320
210	21.9	919	146	MCT	21.7	935	144	MCT	320
200	20.0	837	132	V/S	20.0	860	132	MCT	320
190	18.0	751	118	V/S	18.0	771	118	V/S	320
180	16.0	666	104	V/S	16.0	683	104	V/S	320
170	14.0	582	90	V/S	14.0	596	90	V/S	320
160	12.0	498	77	V/S	12.0	510	77	V/S	320
150	10.0	415	64	V/S	10.0	424	64	V/S	320
140	8.0	331	50	V/S	8.0	339	50	V/S	320
100	0.0	0	0	V/S	0.0	0	0	V/S	320

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
FUEL	+ 2.1 %	+ 5.8 %	+ 0.2 %
TIME	+ 1 %	+ 0.4 %	-
DISTANCE	+ 1 %	+ 0.4 %	+ 0.2 %

DESCENT - M.78/320KT

Ident.: PER-OEI-DES-20-00002137.0064001 / 16 MAR 15

5 **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

DESCENT - M.78/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	**MINIMUM RATE OF DESCENT 500FT/MIN**

	WEIGHT (1000KG)								
	50				70				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	IAS (KT)
390	35.2	1285	245	MCT	36.4	1323	254	MCT	241
370	33.7	1258	234	MCT	35.1	1298	244	MCT	252
350	32.3	1229	224	MCT	33.7	1269	234	MCT	264
330	31.1	1200	214	MCT	32.3	1238	224	MCT	277
310	29.9	1170	205	MCT	31.0	1206	214	MCT	289
290	28.8	1141	197	MCT	29.8	1172	205	MCT	302
270	27.8	1111	189	MCT	28.6	1137	195	MCT	315
250	26.5	1070	179	MCT	27.1	1088	184	MCT	320
230	24.6	1001	165	MCT	24.9	1008	167	MCT	320
220	23.3	952	156	MCT	23.4	954	157	MCT	320
210	21.7	889	144	MCT	21.8	888	145	MCT	320
200	20.0	817	132	MCT	20.0	814	132	MCT	320
190	18.0	735	118	V/S	18.0	731	118	V/S	320
180	16.0	651	104	V/S	16.0	648	104	V/S	320
170	14.0	568	90	V/S	14.0	565	90	V/S	320
160	12.0	485	77	V/S	12.0	482	77	V/S	320
150	10.0	403	64	V/S	10.0	401	64	V/S	320
140	8.0	321	50	V/S	8.0	319	50	V/S	320
100	0.0	0	0	V/S	0.0	0	0	V/S	320

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
FUEL	+ 2.5 %	+ 4 %	+ 0.5 %
TIME	+ 1.4 %	+ 0.5 %	- 0.5 %
DISTANCE	+ 1.5 %	+ 0.3 %	+ 0.2 %

DESCENT - M.78/320KT

Ident.: PER-OEI-DES-20-00002137.0012001 / 02 FEB 11

6 **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

DESCENT - M.78/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

MINIMUM RATE OF DESCENT 500FT/MIN

WEIGHT (1000KG)	50				70				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	IAS (KT)
390	36.5	1351	256	MCT					241
370	34.6	1311	242	MCT	35.7	1332	249	MCT	252
350	32.8	1266	228	MCT	34.2	1298	239	MCT	264
330	31.1	1219	215	MCT	32.7	1259	227	MCT	277
310	29.5	1173	203	MCT	31.2	1215	215	MCT	289
290	28.0	1130	192	MCT	29.6	1170	204	MCT	302
270	26.8	1089	182	MCT	28.2	1124	193	MCT	315
250	25.4	1040	171	MCT	26.5	1064	179	MCT	320
230	23.6	976	158	MCT	24.2	985	163	MCT	320
220	22.6	939	150	MCT	23.0	940	154	MCT	320
210	21.4	893	142	MCT	21.6	887	144	MCT	320
200	19.9	833	131	MCT	20.0	819	132	MCT	320
190	18.0	753	118	V/S	18.0	737	118	V/S	320
180	16.0	668	104	V/S	16.0	653	104	V/S	320
170	14.0	584	90	V/S	14.0	570	90	V/S	320
160	12.0	500	77	V/S	12.0	488	77	V/S	320
150	10.0	416	64	V/S	10.0	406	64	V/S	320
140	8.0	332	50	V/S	8.0	324	50	V/S	320
100	.0	0	0	V/S	.0	0	0	V/S	320

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
TIME	– 2 %	– 5 %	–
FUEL	– 1 %	– 2 %	+ 0.3 %
DISTANCE	– 2 %	– 5 %	+ 0.3 %

10F -08F0A320-232 IAE V2527-A5 2320D010C6KG330 0 018590 0 0 3 .0 .0 500.00 0 02 .780320.000 .000 0 FCOM-N0-03-06-50-004-140

DESCENT - M.78/320KT

Ident.: PER-OEI-DES-20-00002137.0023001 / 02 FEB 11
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

DESCENT - M.78/320KT - 1 ENGINE OUT

MAX. CONTINUOUS THRUST LIMITS
PACK FLOW HI
ANTI-ICING OFF

ISA
CG=33.0%

MINIMUM RATE OF DESCENT 500FT/MIN

WEIGHT (1000KG)	50				70				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	TIME (MIN)	FUEL (KG)	DIST. (NM)	MODE	IAS (KT)
390	35.7	1327	250	MCT					241
370	34.0	1290	237	MCT	34.4	1315	240	MCT	252
350	32.3	1249	224	MCT	33.0	1282	230	MCT	264
330	30.7	1207	212	MCT	31.6	1244	219	MCT	277
310	29.2	1164	201	MCT	30.1	1202	208	MCT	289
290	27.8	1123	191	MCT	28.6	1158	197	MCT	302
270	26.6	1082	181	MCT	27.2	1113	186	MCT	315
250	25.2	1032	170	MCT	25.6	1056	173	MCT	320
230	23.3	966	156	MCT	23.5	981	157	MCT	320
220	22.3	927	148	MCT	22.3	938	149	MCT	320
210	21.1	882	140	MCT	21.1	890	140	MCT	320
200	19.7	828	130	MCT	19.7	834	130	MCT	320
190	18.0	755	118	V/S	18.0	763	118	MCT	320
180	16.0	669	104	V/S	16.0	678	104	V/S	320
170	14.0	584	90	V/S	14.0	591	90	V/S	320
160	12.0	499	77	V/S	12.0	505	77	V/S	320
150	10.0	415	64	V/S	10.0	420	64	V/S	320
140	8.0	332	50	V/S	8.0	335	50	V/S	320
100	.0	0	0	V/S	.0	0	0	V/S	320

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
TIME	– 0.6 %	– 3 %	–
FUEL	+ 1.5 %	+ 5 %	+ 0.3 %
DISTANCE	– 0.8 %	– 2.5 %	+ 0.3 %

11.0-08F0A320-214 CFM56-5B4/P SA2320001OC6KG330 0 018590 0 0 3 .0 .0 500.00 0 02 .780320.000 .000 0 FCOM-N0-03-06-50-004-200

DESCENT TO LANDING

Ident.: PER-OEI-DES-30-00002138.0066001 / 20 DEC 16

[1] **Applicable to: MSN 08557, 08587, 08655, 08710, 08768, 09063**

DESCENT - M.78/300KT/250KT - 1 ENGINE OUT

IDLE THRUST HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	

	WEIGHT (1000KG)								
	70				90				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1 (%)	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1 (%)	IAS (KT)
390	16.1	85	97	IDLE					241
370	15.4	81	92	IDLE					252
350	14.8	78	87	IDLE	16.5	87	98	IDLE	264
330	14.2	75	83	IDLE	15.8	84	93	IDLE	277
310	13.7	73	79	IDLE	15.2	81	89	IDLE	289
290	13.1	70	75	IDLE	14.6	78	84	IDLE	300
270	12.4	67	69	IDLE	13.8	74	78	IDLE	300
250	11.7	63	64	IDLE	13.0	70	72	IDLE	300
240	11.3	61	62	IDLE	12.5	67	69	IDLE	300
220	10.6	57	57	IDLE	11.7	63	63	IDLE	300
200	9.9	53	52	IDLE	10.8	59	57	IDLE	300
180	9.1	50	47	IDLE	10.0	54	51	IDLE	300
160	8.4	46	42	IDLE	9.1	49	46	IDLE	300
140	7.6	41	37	IDLE	8.1	45	40	IDLE	300
120	6.8	37	32	IDLE	7.2	40	34	IDLE	300
100	6.0	33	28	IDLE	6.3	35	29	IDLE	300
50	2.2	13	10	IDLE	2.3	13	10	IDLE	250
15	0.0	0	0	IDLE	0.0	0	0	IDLE	250

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
FUEL	+ 1 %	+ 67 %	+ 0.3 %
TIME	-	+ 7.6 %	+ 0.2 %
DISTANCE	-	+ 7.7 %	+ 0.4 %

DESCENT TO LANDING

Ident.: PER-OEI-DES-30-00002138.0060001 / 16 MAR 15

[2] **Applicable to: MSN 06720-08541, 08558-08586, 08627-08654, 08688-08702, 08737, 08771-09045**

DESCENT - M.78/300KT/250KT - 1 ENGINE OUT

IDLE THRUST HIGH AIR CONDITIONING ANTI ICE OFF	ISA CG=33.0%	

	WEIGHT (1000KG)								
	50				70				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1 (%)	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1 (%)	IAS (KT)
390	12.6	56	75	IDLE	15.8	71	96	IDLE	241
370	12.0	54	71	IDLE	15.2	68	91	IDLE	252
350	11.4	52	67	IDLE	14.5	66	86	IDLE	264
330	11.0	50	64	IDLE	13.9	64	82	IDLE	277
310	10.5	49	60	IDLE	13.4	62	77	IDLE	289
290	10.1	47	57	IDLE	12.9	59	73	IDLE	300
270	9.6	45	53	IDLE	12.2	57	68	IDLE	300
250	9.1	43	49	IDLE	11.5	54	63	IDLE	300
240	8.8	41	47	IDLE	11.1	52	60	IDLE	300
220	8.2	39	44	IDLE	10.4	49	55	IDLE	300
200	7.7	37	40	IDLE	9.7	46	50	IDLE	300
180	7.1	34	36	IDLE	8.9	43	46	IDLE	300
160	6.5	32	33	IDLE	8.2	40	41	IDLE	300
140	6.0	29	29	IDLE	7.4	37	36	IDLE	300
120	5.4	27	25	IDLE	6.6	33	31	IDLE	300
100	4.8	24	22	IDLE	5.8	29	27	IDLE	300
100	4.2	22	19	IDLE	5.1	26	23	IDLE	250
50	1.8	10	8	IDLE	2.2	12	9	IDLE	250
15	0.0	0	0	IDLE	0.0	0	0	IDLE	250

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
FUEL	+ 2.2 %	+ 67.5 %	+ 0.4 %
TIME	-	+ 6.3 %	+ 0.2 %
DISTANCE	-	+ 6.5 %	+ 0.4 %

DESCENT TO LANDING

Ident.: PER-OEI-DES-30-00002138.0011001 / 09 DEC 09

[3] **Applicable to: MSN 01957-02359, 02405-02482, 02609-02670, 02737-03071, 03264-03618, 03782-04216, 04312, 04328-04384, 04481-04506, 04518-06336**

DESCENT - M.78/300KT/250KT - 1 ENGINE OUT

IDLE THRUST
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=33.0%

WEIGHT (1000KG)	50				70				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	EPR	TIME (MIN)	FUEL (KG)	DIST. (NM)	EPR	IAS (KT)
390	14.7	75	88	IDLE					241
370	14.0	71	83	IDLE	17.4	87	104	IDLE	252
350	13.4	68	79	IDLE	16.7	84	99	IDLE	264
330	12.9	66	75	IDLE	16.1	82	94	IDLE	277
310	12.4	64	71	IDLE	15.5	79	89	IDLE	289
290	11.9	62	67	IDLE	14.9	76	85	IDLE	300
270	11.3	59	63	IDLE	14.1	73	79	IDLE	300
250	10.7	56	58	IDLE	13.3	69	73	IDLE	300
240	10.4	55	56	IDLE	12.9	68	70	IDLE	300
220	9.8	53	52	IDLE	12.0	64	64	IDLE	300
200	9.1	50	47	IDLE	11.2	61	59	IDLE	300
180	8.5	47	43	IDLE	10.4	57	53	IDLE	300
160	7.8	44	39	IDLE	9.5	53	47	IDLE	300
140	7.1	41	35	IDLE	8.6	49	42	IDLE	300
120	6.4	38	30	IDLE	7.7	45	36	IDLE	300
100	5.7	34	26	IDLE	6.7	40	31	IDLE	300
50	2.1	13	9	IDLE	2.5	16	11	IDLE	250
15	.0	0	0	IDLE	.0	0	0	IDLE	250

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
TIME	+ 2 %	+ 8 %	+ 0.2 %
FUEL	+ 15 %	+ 70 %	+ 0.5 %
DISTANCE	+ 2 %	+ 8 %	+ 0.4 %

10 -08F0A320-232 IAE V2527-A5 23100010C5KG330 0 018590 0 0-1 .0 .0 .00 0 03 .780300.000250.000 0 FCOM-N0-03-06-60-001-140

DESCENT TO LANDING

Ident.: PER-OEI-DES-30-00002138.0022001 / 09 DEC 09
Applicable to: MSN 01767-01920, 02388, 02584, 02712, 03138, 03750, 04294, 04314, 04393-04438, 04510

DESCENT - M.78/300KT/250KT - 1 ENGINE OUT

IDLE THRUST
NORMAL AIR CONDITIONING
ANTI-ICING OFF

ISA
CG=33.0%

WEIGHT (1000KG)	50				70				
FL	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1	TIME (MIN)	FUEL (KG)	DIST. (NM)	N1	IAS (KT)
390	14.1	66	85	IDLE					241
370	13.5	64	80	IDLE	16.5	79	99	IDLE	252
350	12.9	62	76	IDLE	15.8	77	94	IDLE	264
330	12.4	61	72	IDLE	15.2	75	90	IDLE	277
310	11.9	59	69	IDLE	14.6	73	85	IDLE	289
290	11.4	58	65	IDLE	14.1	71	81	IDLE	300
270	10.9	56	61	IDLE	13.3	69	75	IDLE	300
250	10.3	54	56	IDLE	12.5	66	69	IDLE	300
240	9.9	53	54	IDLE	12.1	65	67	IDLE	300
220	9.3	51	50	IDLE	11.3	62	61	IDLE	300
200	8.7	48	45	IDLE	10.5	58	55	IDLE	300
180	8.0	44	41	IDLE	9.6	53	50	IDLE	300
160	7.3	39	37	IDLE	8.8	48	44	IDLE	300
140	6.6	34	32	IDLE	7.9	41	39	IDLE	300
120	5.9	29	28	IDLE	7.0	35	33	IDLE	300
100	5.2	25	24	IDLE	6.0	29	28	IDLE	300
50	1.9	8	8	IDLE	2.2	9	9	IDLE	250
15	.0	0	0	IDLE	.0	0	0	IDLE	250

CORRECTIONS	ENGINE ANTI ICE ON	TOTAL ANTI ICE ON	PER 1° ABOVE ISA
TIME	+ 2.5 %	+ 3 %	+ 0.2 %
FUEL	+ 22 %	+ 38 %	+ 0.5 %
DISTANCE	+ 2.5 %	+ 3 %	+ 0.5 %

11.0-08F0A320-214 CFM56-5B4/P SA2310001OC5KG330 0 018590 0 0–1 .0 .0 .00 0 03 .780300.000250.000 0 FCOM-N0-03-06-60-001-200